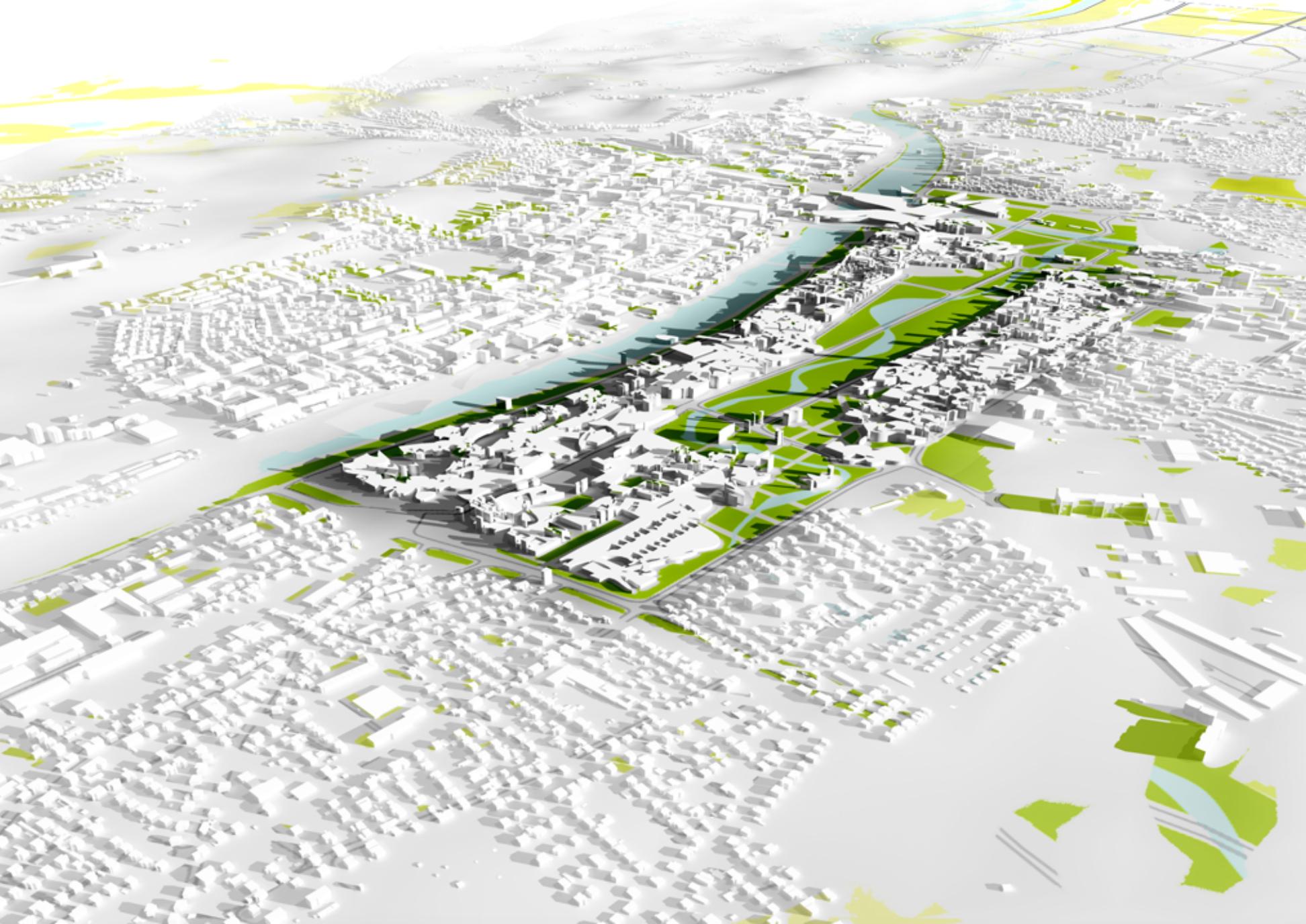


SCI-Arc FUTURE INITIATIVES SUMMER 2012 THESIS

MARIBOR AI 2012

5 Points Towards a Differential Urbanism

Authored by David Bergman, Peter Zellner, Janiva Henry, Yaying Weng, Yuan He
Edited by David Bergman and Peter Zellner



Acknowledgments

Eric Owen Moss

SCI-Arc Director / Eric Owen Moss Architects

HsinMing Fung

SCI-Arc Director of Academic Affairs / Hodgetts + Fung

Hernan Diaz Alonso

SCI-Arc Graduate Programs Chair / Xefirotarch

Credits

Editors: Peter Zellner, David Bergman

Design and Body of Work: Peter Zellner, David Bergman, Janiva Henry, Yaying Weng, Yuan He

All rights reserved.

No part of this publication may be reproduced or transmitted
in any form or by any means, including photo
copy, recording or any other information storage and
retrieval system, without prior permission from the
Southern California
Institute of Architecture.

Copyright ©2012 SCI-Arc

Southern California
Institute of Architecture
960 East 3rd Street
Los Angeles, CA 90013



CONTENTS

About SCI-Arc	1
About the Future Initiatives Program	2
2112Ai [Architectural intelligence] Maribor 2012 European Capital of Culture	3
ANALYSIS	5
FIGURE AND NETWORK: Historic Development	7
NETWORK ANALYSIS	9
FIGURES AND FIELDS ANALYSIS: Scale	13
TOPOGRAPHICAL ANALYSIS: The Figure and It's Unfolded Ground	17
BUILDING AND OPEN SPACE TYPOLOGIES ANALYSIS	21
GREEN SYSTEMS ANALYSIS	23
WATER SYSTEMS ANALYSIS	25
ZONING AND LANDUSE ANALYSIS	27
PROPOSALS	31
NETWORK PROPOSALS	33
FIGURES AND FIELDS PROPOSALS: Scale	37
TOPOGRAPHICAL PROPOSALS: The Figure and It's Unfolded Ground	39
BUILDING AND OPEN SPACE TYPOLOGIES PROPOSALS	43
URBAN TRANSECTS	45
GREEN SYSTEMS PROPOSALS	47
WATER SYSTEMS PROPOSALS	49
DESIGN DETAILS	51
ZONING AND LANDUSE PROPOSALS	53
PROJECT PHASING	55

About SCI-Arc

Eric Owen Moss
Director

Hsinming Fung
Director of Academic Affairs

Hernan Diaz Alonso
Graduate Programs Chair

John Enright
Undergraduate Program Chair

The Southern California Institute of Architecture is dedicated to educating architects to imagine and shape the future. It is an independent, accredited institution offering undergraduate, graduate, and postgraduate programs in architecture. In 2012 *Graduate Architecture* ranked SCI-Arc as #1 school of architecture and design in North America and around the world.

SCI-Arc's faculty is composed of approximately 80 esteemed architects, theorists, writers, and artists renowned for confronting conventional architecture and education. Studio interaction is open and intensive. Students are rigorously challenged to re-examine assumptions, and to create, explore, and provoke the boundaries of architecture.

Through public lectures, panel discussions, events, and gallery exhibitions, SCI-Arc embraces its connection to the community, and establishes an intimate relationship to both Los Angeles and its 500 students, many of whom choose to study here from countries worldwide. Attracting local and international students, faculty, and members of the interested public inside and outside of architecture, SCI-Arc is at once a school and a forum for cultural discourse.

Located in an open space building that runs a quarter-mile long and stands over 30 feet high, SCI-Arc's studios are spacious and bright. Originally built in 1907, the Santa Fe Freight Depot was eventually phased from use, and the building remained vacant through the 1990s. Covered in years layered by graffiti artists, it wore the beginnings of an emerging Arts District, which would gradually infuse and renew the eastside of downtown Los Angeles. Sensing the strength of its pulse, SCI-Arc made it home in 2000. Today SCI-Arc is a lively and integral part of a historic and future-tense cultural center, surrounded by a diversity of residential options, urban infrastructure, and attractions.

About the Future Initiatives Program

David Bergman
Coordinator

Peter Zellner
Coordinator

SCI-Arc Future Initiatives (SCIFI) is a one-year post-professional degree program leading to a Master of Design Research (M.DesR) in City Design, Planning, and Policy. Open to applicants with a professional degree in architecture or a bachelor's degree or equivalent in any field, the program requires attendance in the fall, spring, and summer terms.

SCIFI is focused on promoting innovation within design, policy, and planning in response to the economic, social, and environmental futures of global cities and regions. Future Initiatives is dedicated to supporting investigations into the impacts of urban and planning policy, transnational financial markets, real estate speculation, and socio-economic globalization on the evolution of local urban fabrics.

SCIFI provides an integrated curricular focus on urban issues of scale. It is positioned as a local, national, and international center for the discussion of urban futures, contingent and variable planning strategies, and the development of advanced tools for urban research and design. Combining intensive research into the near-term future of cities with the use of current open-source design tools, SCIFI aims to invent new ways of modeling and testing variable urban design scenarios.

Working over three sequenced terms, SCIFI students develop solution-seeking urban research and urban design methods/techniques/processes grounded in the study of the history of the city, urban and regional development methods, city planning, and city management tools. Students integrate skills from across SCI-Arc's programs including design technologies, cultural studies, and hard technology applications. The SCIFI program is calibrated to incrementally build research skills, urban design expertise, and unique strategic thinking about cities and urban regions. By working from the unique, local, and particular, to the large, global, and generic, SCIFI students gain expertise in the subject of city-making through a comprehensive, nuanced understanding of a city's history and design across scales. This careful sequencing of context and city-scale-based teaching, merged with intensive workshop-based learning, is intended to inculcate increased control over the subject of city formation, paralleled by a growing mastery of new urban research methodologies and urban design tools.

SCIFI culminates in the production of thesis design or research projects. Working with core and visiting faculty, students generate deliverables that form the basis of a dissertation-quality research portfolio. The goal is for students to apply these experiences as part of an ongoing dialogue with the city formation process.

2112Ai [Architectural intelligence]

Maribor 2012 European Capital of Culture

Peter Zellner & David Bergman Co-Coordinators

SCI-Arc FUTURE INITIATIVES SUMMER STUDIO 2012

MARIBOR: Five Principles for a Differential Urbanism

SCIFI FUTURE INITIATIVES 2011-2012:

Yuan He Janiva Henry 'Winnie' Yaying Weng

Project Overview

This project represents a comprehensive vision to manage growth and development in Maribor over the next 50 years. Our vision for Maribor is for it to be integrated fully into the European context, as a distinctly Slovenian city. The plan results in a framework for amenity driven development.

Project Description

This project creates a framework for growth and development in Maribor over the next 50 years. It's based on the vision that integrates the city into a broader European context while retaining a unique identity as a progressive and distinctly Slovenian city. The plan leverages the city's geography along with critical assets such as its University, the city's historic core, and the agricultural and mountainous landscapes to create an amenity driven growth strategy. This is accomplished by addressing five critical issues related to urban form:

- 1) Conserve land-- the plan seeks to direct growth into compact and contiguous areas in order to prevent unmanaged sprawl.
- 2) Maximize existing infrastructure-- the use of existing infrastructure can serve as a framework to support future development.
- 3) Focus on the River-- at present Maribor's urban waterfront is underdeveloped, this plan seeks to transform river adjacent land uses, which are now largely industrial and infrastructure, into community amenities.
- 4) Increase connectivity—presently Maribor is fragmented with areas produced in different time periods disconnected from one another. The plan seeks to improve mobility and urban form by increasing street connections.
- 5) Improve non-motorized transportation-- this plan envisions a city in which pedestrian and bicycle transportation can predominate.

These five principles, when fully implemented, can create a highly amenitized public realm that will produce a distinctive city. By producing a high-quality community Maribor will be able to attract growth and development in a manner that reinforces its character and specific sense of place.

Five Principles for a Differential Urbanism

1. Differential Urbanism permits both metric and non-metric geometries to produce both urban discontinuities and continuities.
2. Differential Urbanism develops both networks and fields to organize urban objects.
3. Differential Urbanism endorses both the autonomous object and the ambiguous composite figure
4. Differential Urbanism employs techniques for making continuities such as folding, smoothing, associating and gluing as well as techniques for making discontinuities such as cutting, closing, butting, disassociating and unfolding.
5. Differential Urbanism must produce a traversal relationality between figure, field, ground and network.

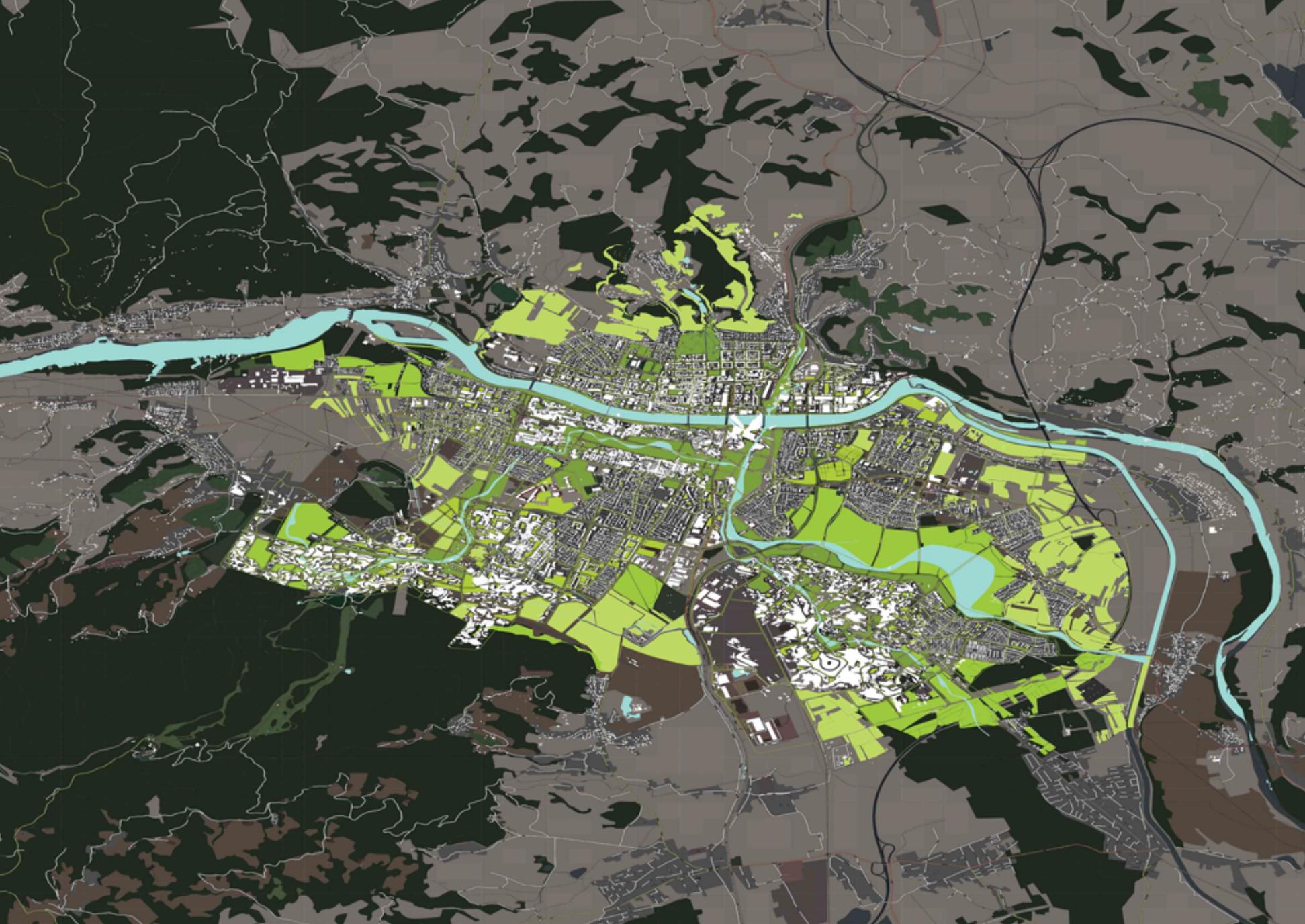
"There is nothing more pervasive in the dynamics of cities than geometry. All of the geometries known to mathematicians may be classified into two broad classes: metric and non-metric. Metric geometries, such as the familiar Euclidean geometry, are those in which concepts like length, area and volume are fundamental. Non-metric geometries form a more heterogeneous class, they include projective, differential, and topological geometries, but in all of them lengths, areas and volumes are not basic concepts. The distinction between the two classes is sometimes drawn in terms of the types of transformations that leave geometric properties unchanged: while under transformations like translation, rotation and mirror-imaging all length, areas and volumes remain invariant, under topological transformations like stretching or folding they do not. Hence, their lack of relevance in this non-metric branch of geometry. On the other hand, properties like connectivity do remain unchanged under folding and stretching: if two points on a topological object could be joined by a path prior to these operations they can still be joined afterwards, provided no cutting or gluing has been performed. Connectivity is, for this reason, a fundamental non-metric property."

Manuel Delanda , "The Pervasive Role of Geometry and Matter in the Life of Cities"

This studio developed five conditions or objectives for what is defined as a differential urbanism: an up-to-date approach to city design that produces a traversal relationality between urban figure, field, ground and network.

Differential Urbanism initially set out some provisional definitions for re-modeling several historical understandings of the urban topos, in Greek a "common place" or in Latin locus, a place. From there the studio drew out a parallel, revised and annotated history for a theory of a contemporary topological urbanism, drawn from the perspective of new tools and new architectural theories registered at the scale of the city.

Differential Urbanism examined several lineages in recent urban thinking in the contemporary context: Object Oriented Urbanism via Aldo Rossi, John Hejduk and OM Ungers; Field and Network Urbanism, via Stan Allen's Field Conditions and Fumihiko Maki's Collective Form; and Ambiguous Composite Figure Urbanism via Colin Rowe's Collage City. Differential Urbanism also has recharted novel uses for Rob Krier's morphological indices of urban spaces and types used here as spatial bridging devices between object and field. Lastly, Differential Urbanism scrutinizes several new and topical urban design approaches that blur figure-field relations via mathematically and digitally driven techniques such as folding, topological stranding and other parametric approaches to urbanism.

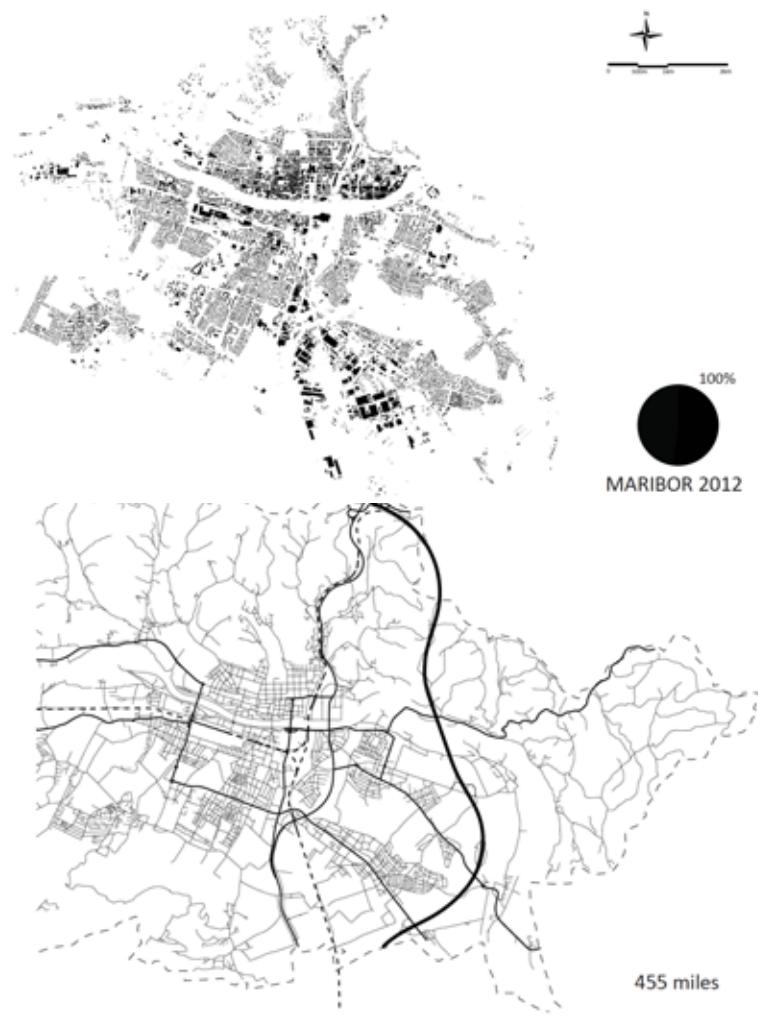


ANALYSIS

FIGURE AND NETWORK: Historic Development



Expanding from a medieval core on the Drava River, Maribor has expended to accommodate the development of a 20th century industrial economy.



NETWORK ANALYSIS



Maribor's historical development in discrete districts has produced a disconnected street network, minimizing pedestrian usage and scale in its outer regions.





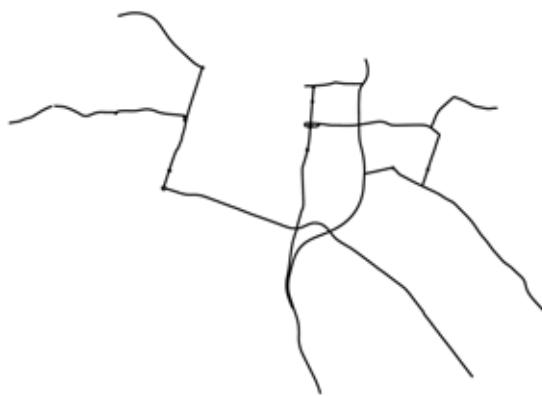
Maribor is well located in central Europe relative to metropolitan centers in Austria such as Vienna and the rest of the EU.



RAILWAY



FREEWAY



TRUNK WAY



ACCESS ROADS



FIGURES AND FIELDS ANALYSIS: Scale



The preindustrial origins of the city are reflected in the distribution of building footprints and building sizes in the city.



10-200 sq.m



200-500 sq.m



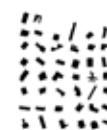
500-1k sq.m



1k-2k sq.m



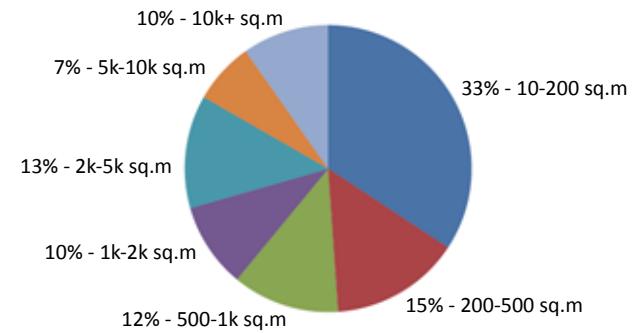
2k-5k sq.m

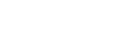


5k-10k sq.m



10k+ sq.m





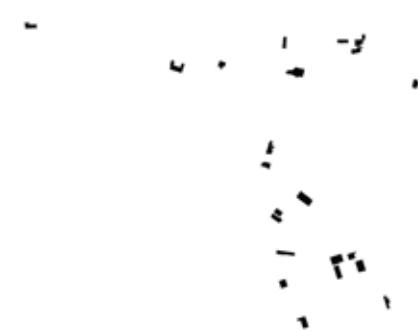
Approximately half of the city's built environment is made up of buildings less than 500 sq. m. in overall footprint size.



13%
2K - 5K sq.m

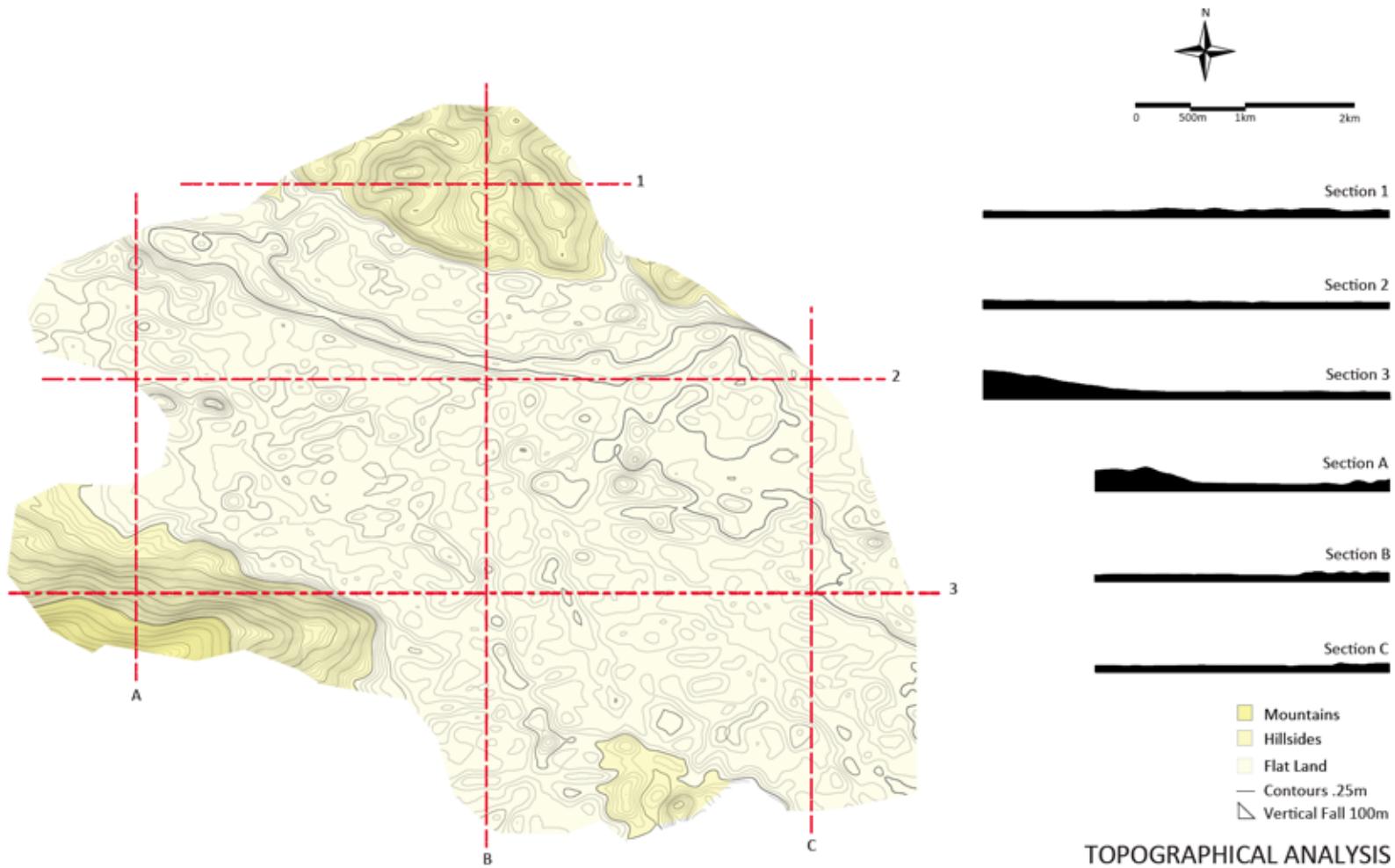


7%
5K - 10K sq.m

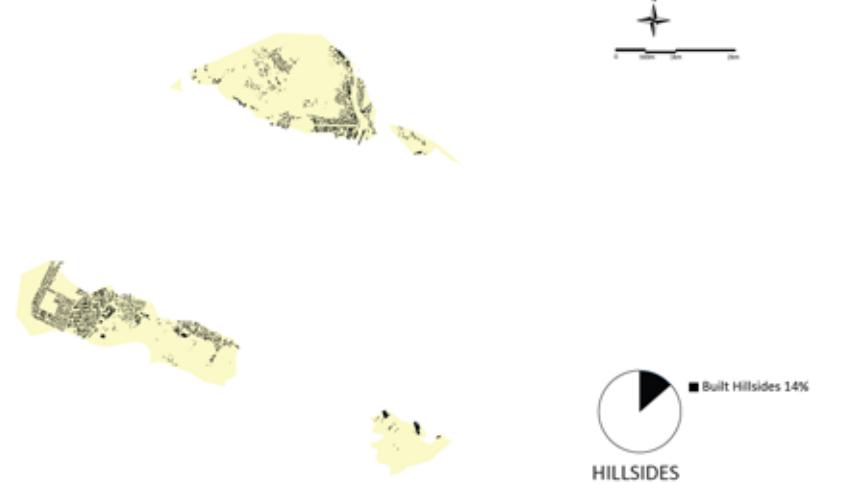
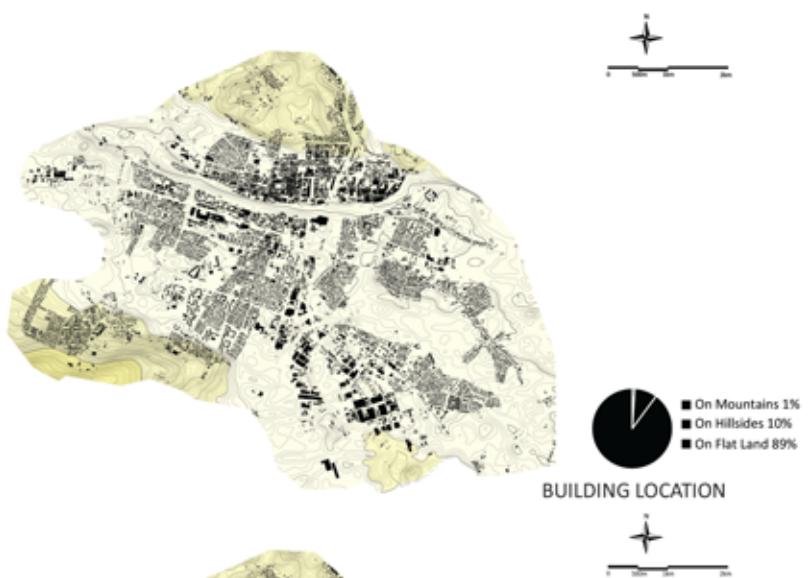


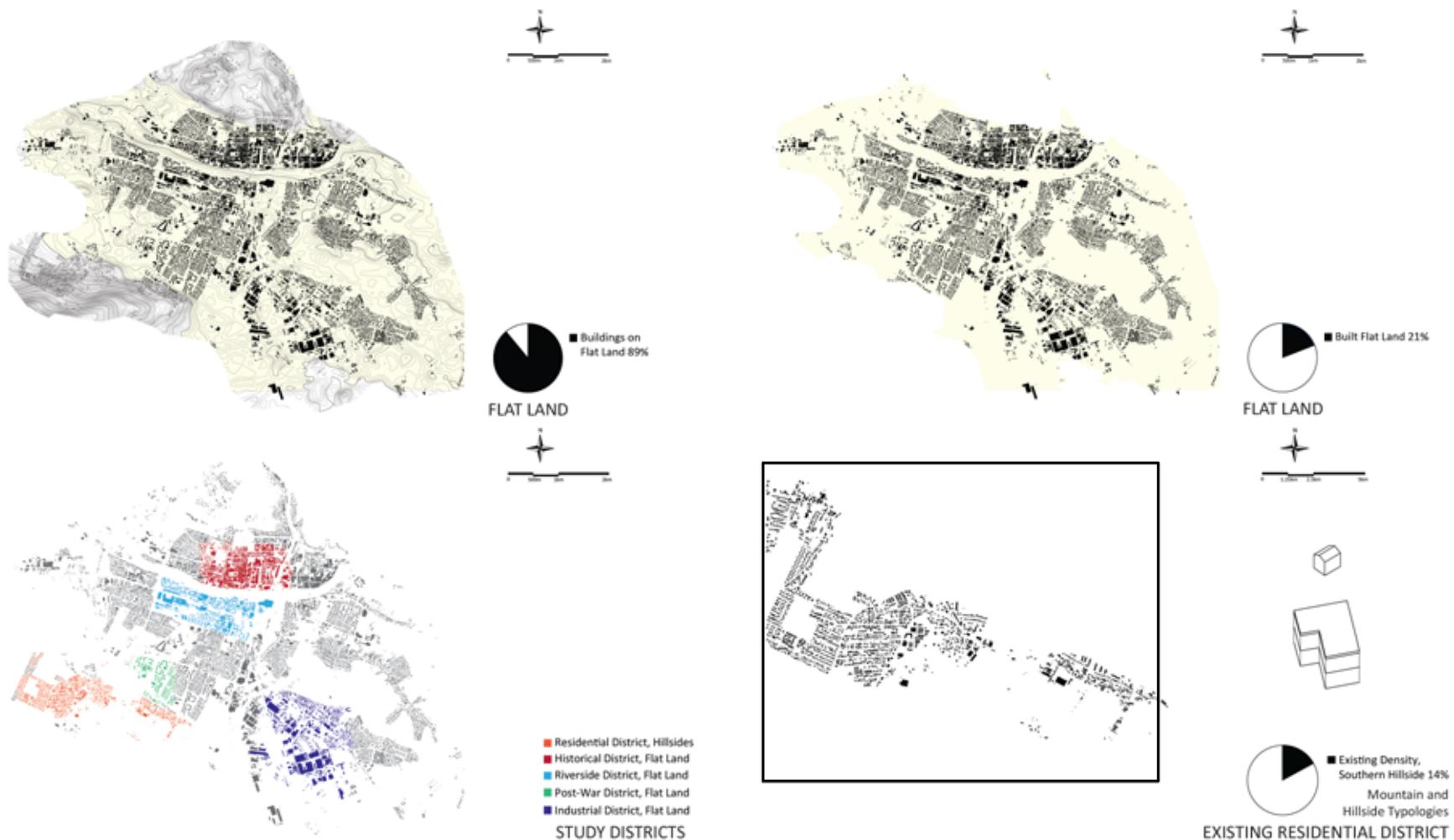
10%
10K+ sq.m

TOPOGRAPHICAL ANALYSIS: The Figure and It's Unfolded Ground

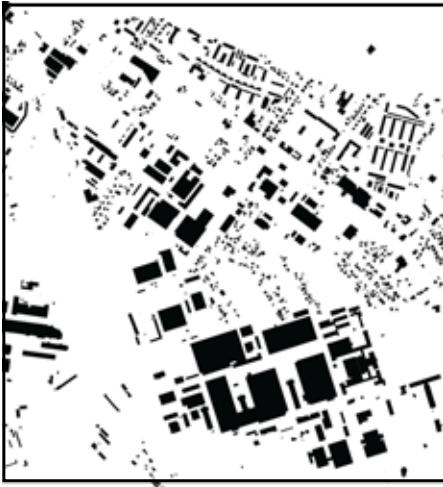
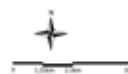
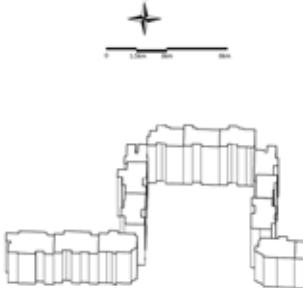


The physical disposition of Maribor in the Drava river valley informs the city's urban morphology.





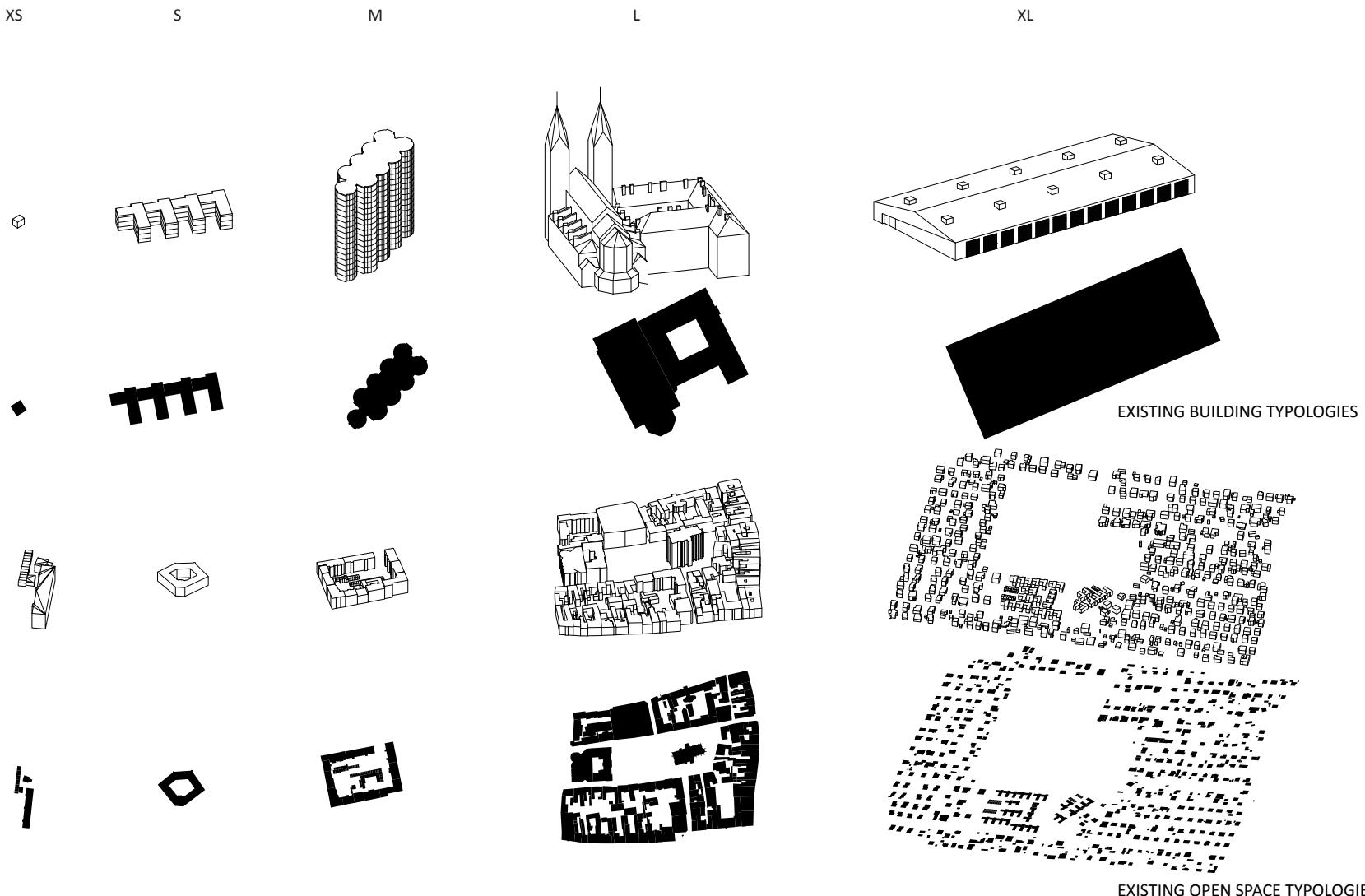
Districts in the city conform to topographical and morphological categories.



BUILDING AND OPEN SPACE TYPOLOGIES ANALYSIS



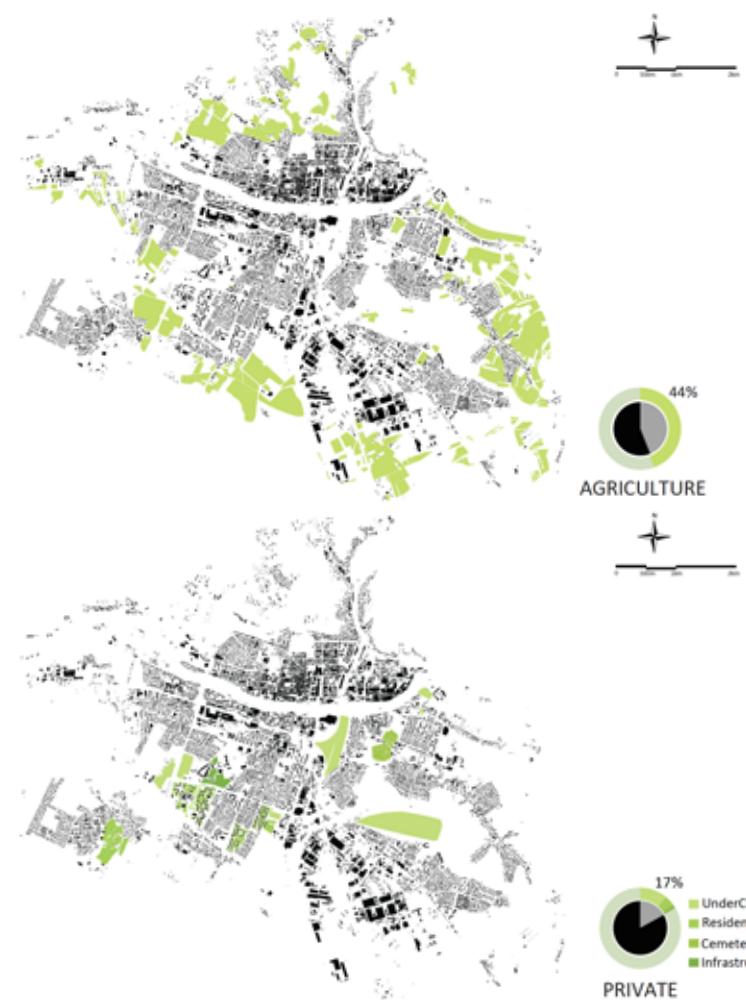
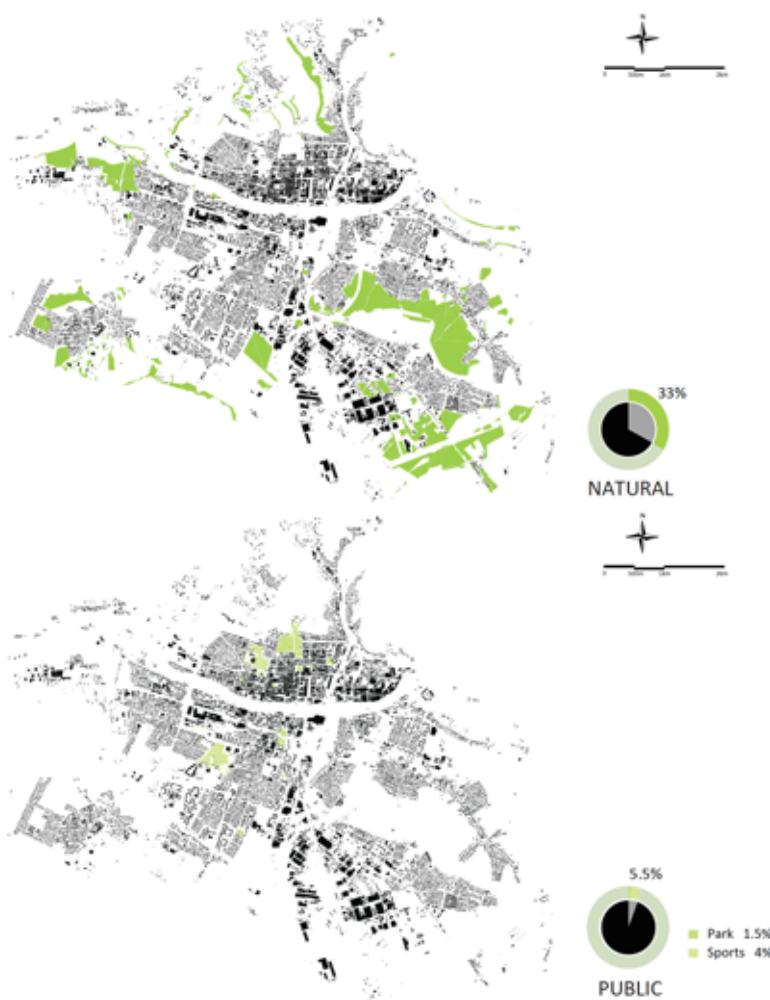
Four key categories of figure ground relationships are observed in the existing city.



GREEN SYSTEMS ANALYSIS



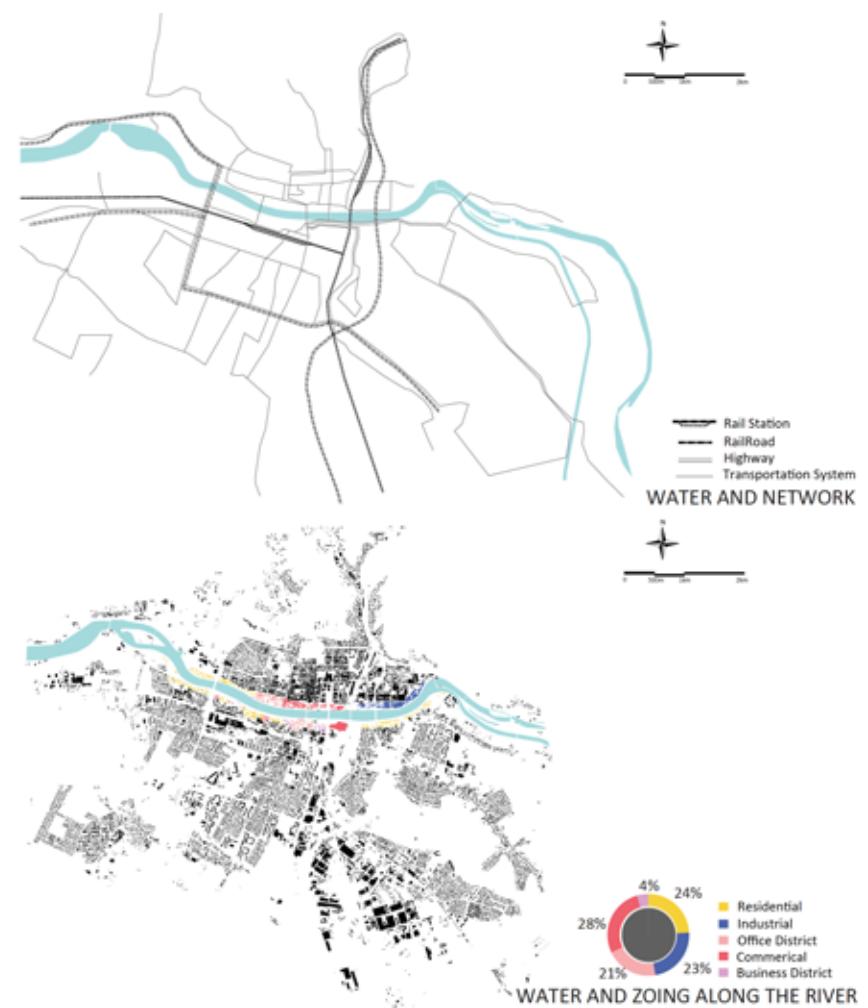
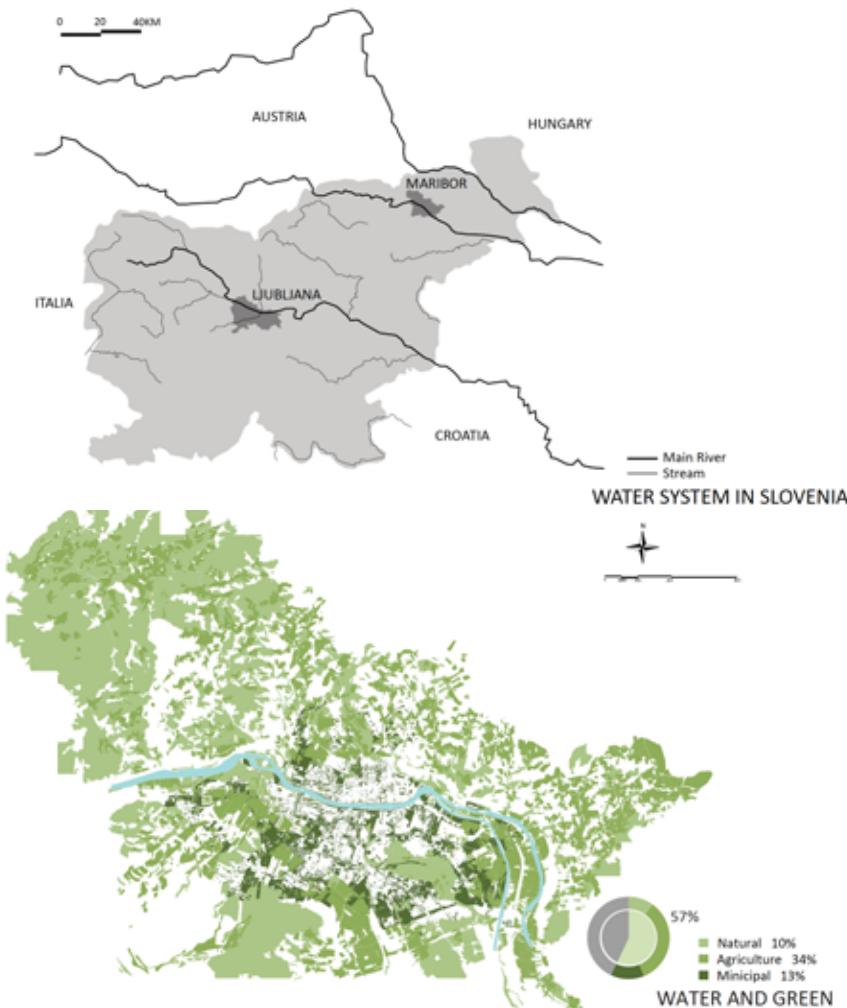
Agriculture remains an important part of the Drava River Valley and fills much of the interstitial space of Maribor.



WATER SYSTEMS ANALYSIS



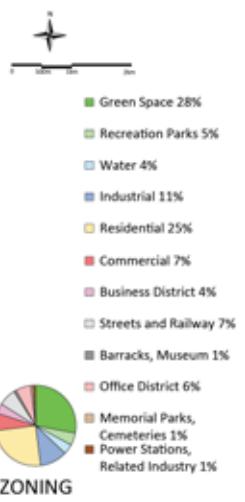
Historically used as industrial infrastructure, Maribor's water system offers redevelopment opportunities for a leisure and amenity driven future.



ZONING AND LANDUSE ANALYSIS



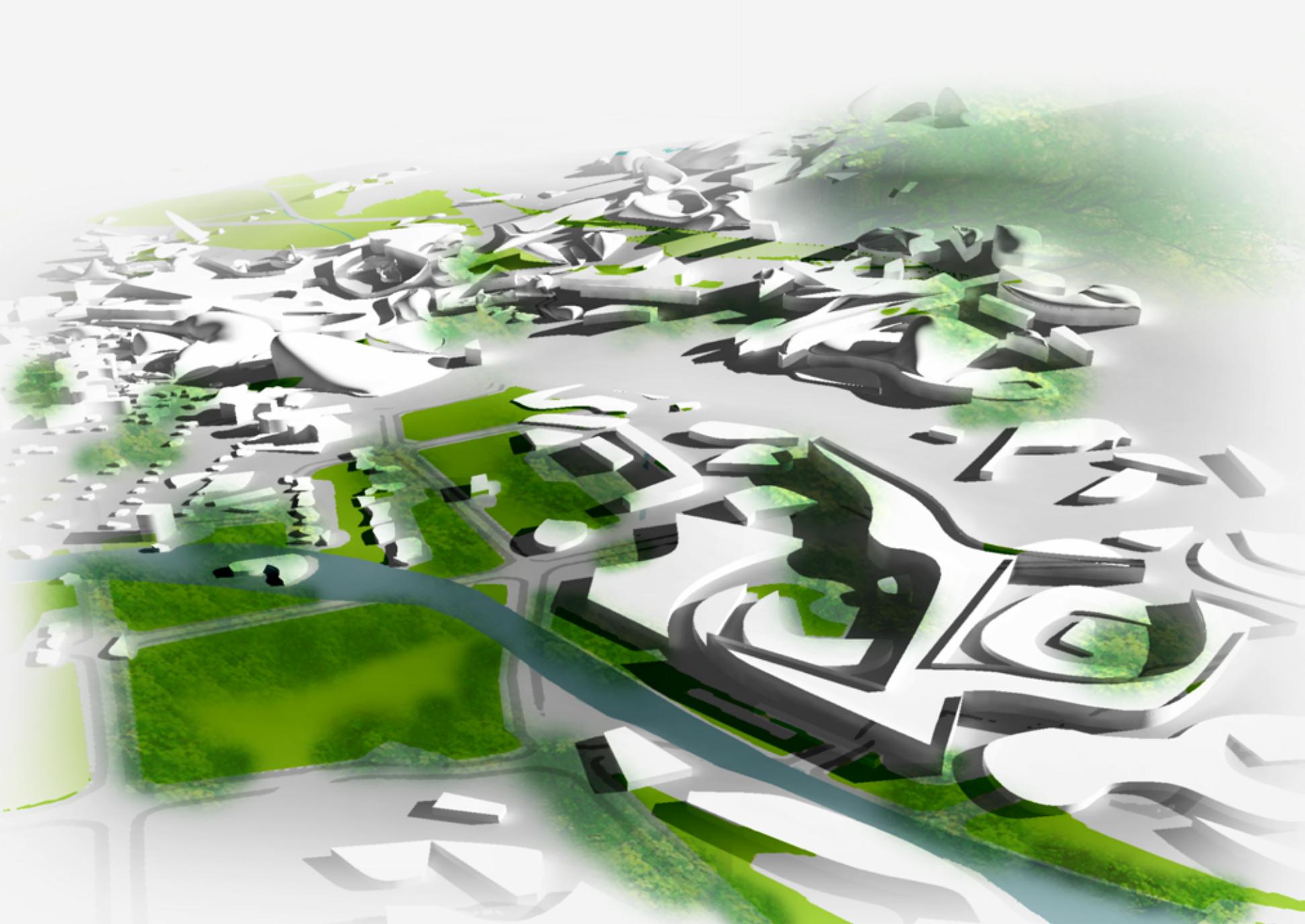
Outside of the medieval core, Maribor has a loose development pattern with both passive and active open space infiltrating the city.





Single family residential construction dominates general land use in Maribor.





PROPOSALS

NETWORK PROPOSALS



Increasing connectivity will reinforce opportunities for non-motorized transportation in the city.

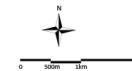




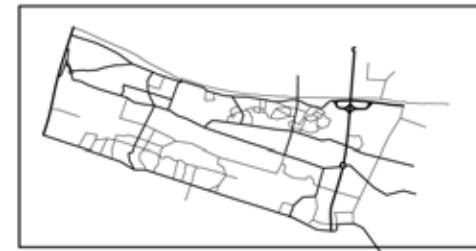
EXISTING HISTORICAL DISTRICT



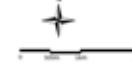
EXISTING HISTORIC CENTER



EXISTING RIVERSIDE DISTRICT



PROPOSED EDUCATION CENTER



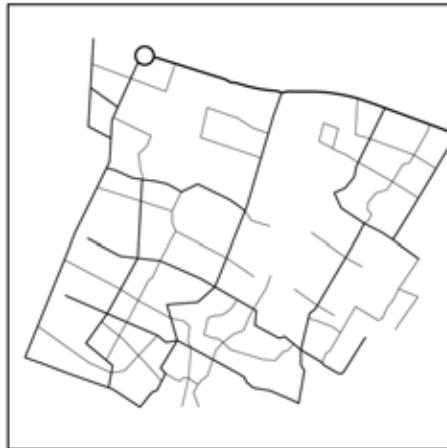
The new street network proposals reflect yet unite the differences found in the different districts of the city.



EXISTING POST-WAR DISTRICT



EXISTING INDUSTRIAL DISTRICT



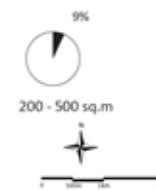
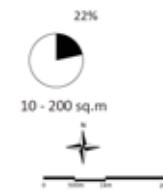
PROPOSED TECHNOLOGY CENTER



PROPOSED INDUSTRIAL CENTER



FIGURES AND FIELDS PROPOSALS: Scale



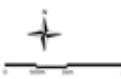
Future development can retain the small grain pattern of the city's form.



2K - 5K sq.m



5K - 10K sq.m



10K+ sq.m

TOPOGRAPHICAL PROPOSALS: The Figure and It's Unfolded Ground

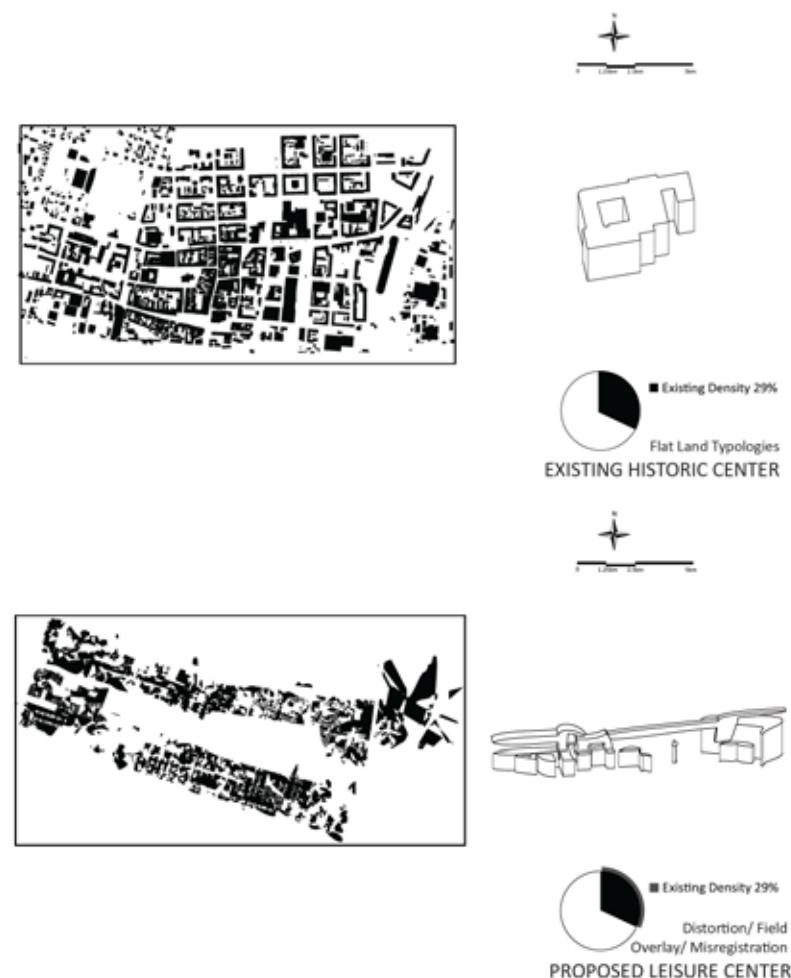


Opportunities exist to increase density in Maribor in order to produce intelligent growth patterns in the future that will optimize existing infrastructure and preserve open space.

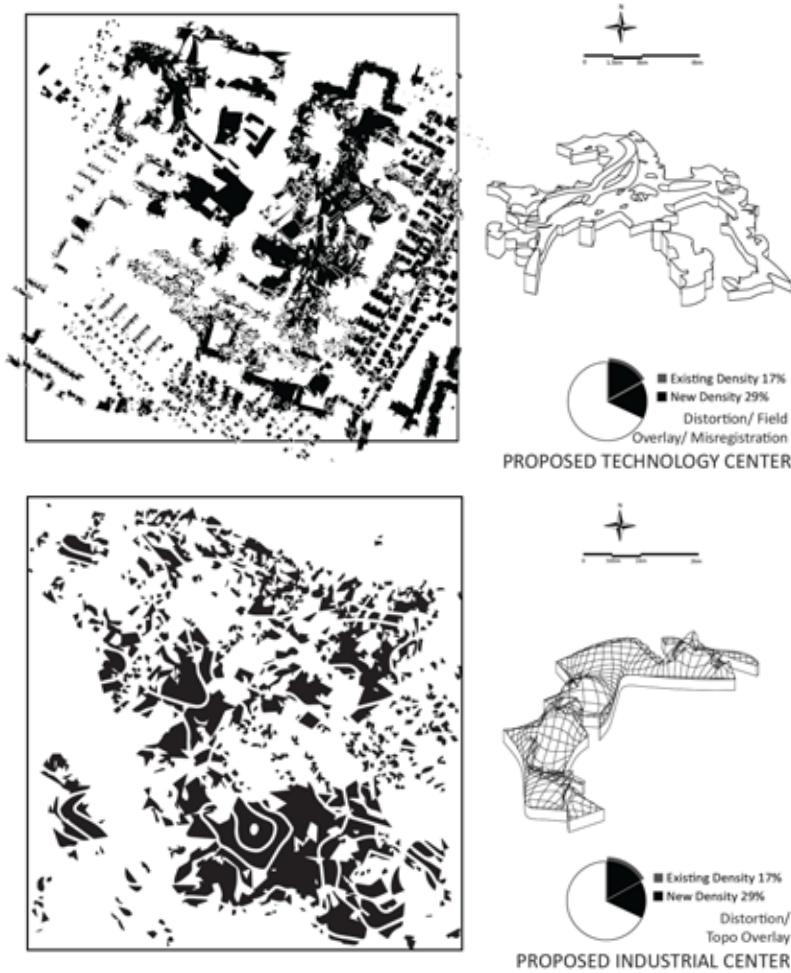
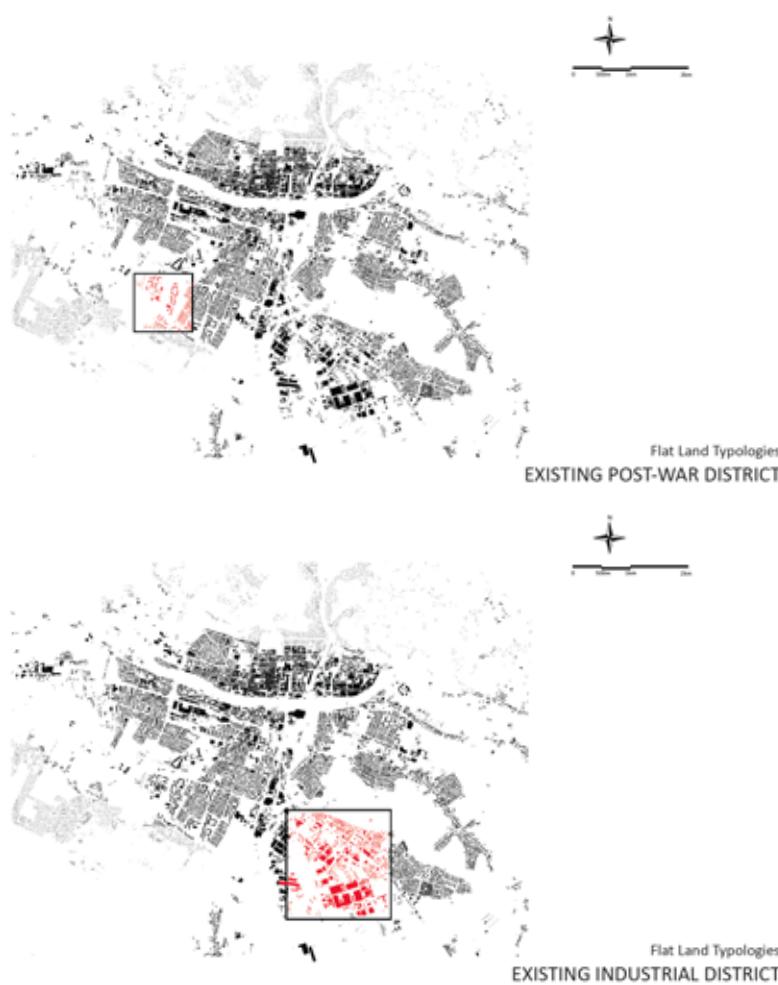


Mountain and
Hillside Typologies
EXISTING RESIDENTIAL DISTRICT





By recognizing the characteristics of each of the city's 5 districts it is possible to make interventions tailored to specific local conditions.



BUILDING AND OPEN SPACE TYPOLOGIES PROPOSALS



New building typologies can serve to support a compact and contiguous development pattern.

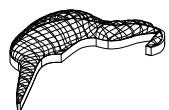
XS



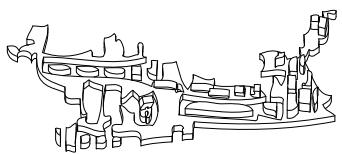
S



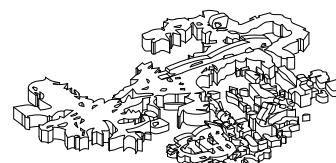
M



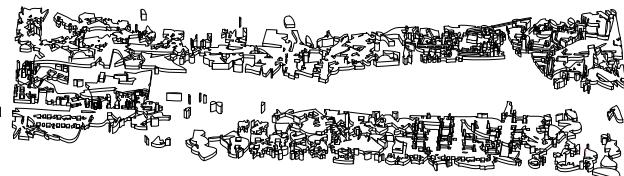
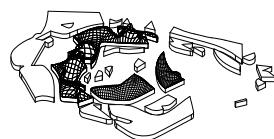
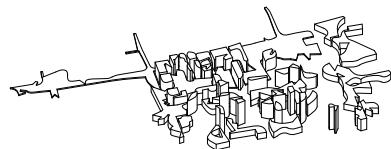
L



XL



PROPOSED BUILDING TYPOLOGIES



PROPOSED OPEN SPACE TYPOLOGIES

URBAN TRANSECTS



Existing Mountain and Hillside Transect
RESIDENTIAL DISTRICT



Proposed Mountain and Hillside Transect
Distortion/ Topo Overlay
EDUCATION CENTER

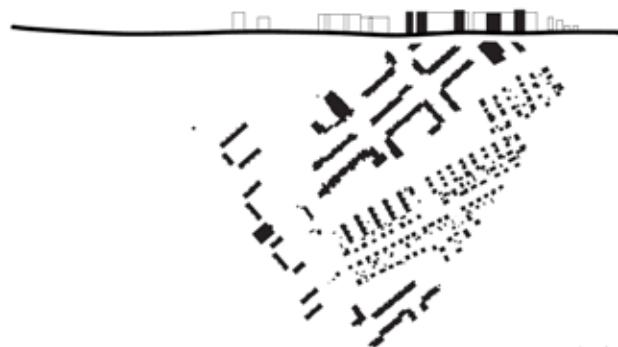


Existing Flat Land Transect
HISTORICAL AND RIVERSIDE DISTRICTS

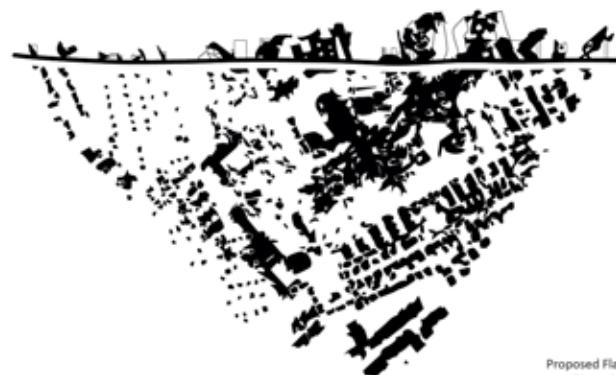


Proposed Flat Land Transect
Distortion/ Field Overlay
HISTORIC AND LEISURE CENTERS

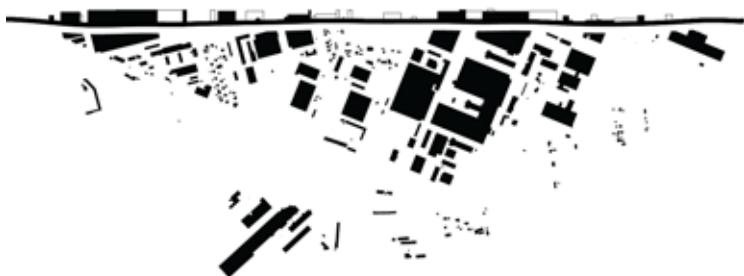
In section the proposal generates a compact development pattern for the city that maximizes existing infrastructure while maintaining existing open space and generating new urban topologies.



Existing Flat Land Transect
POST-WAR DISTRICT



Proposed Flat Land Transect
Distortion/ Field Overlay
TECHNOLOGY CENTER



Existing Flat Land Transect:
INDUSTRIAL DISTRICT

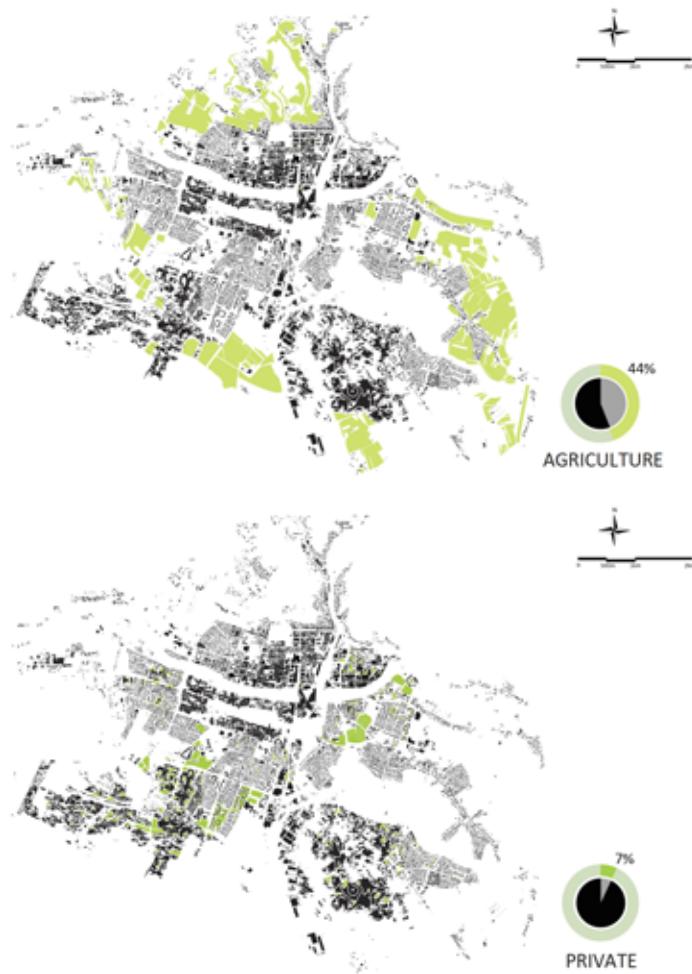
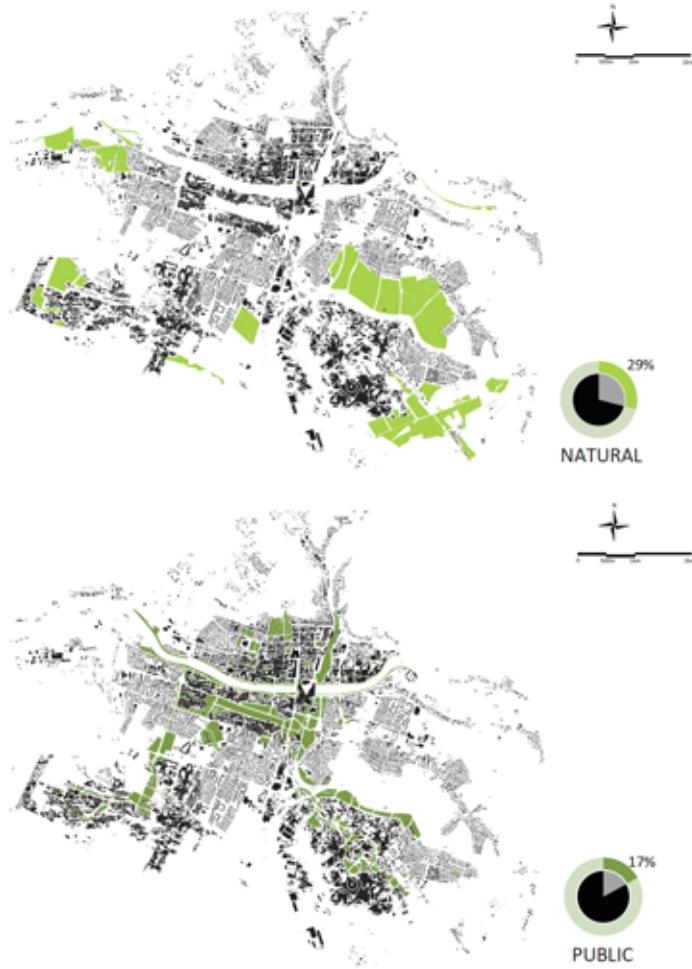


Proposed Flat Land Transect
Distortion/ Topo Overlay
INDUSTRIAL CENTER

GREEN SYSTEMS PROPOSALS



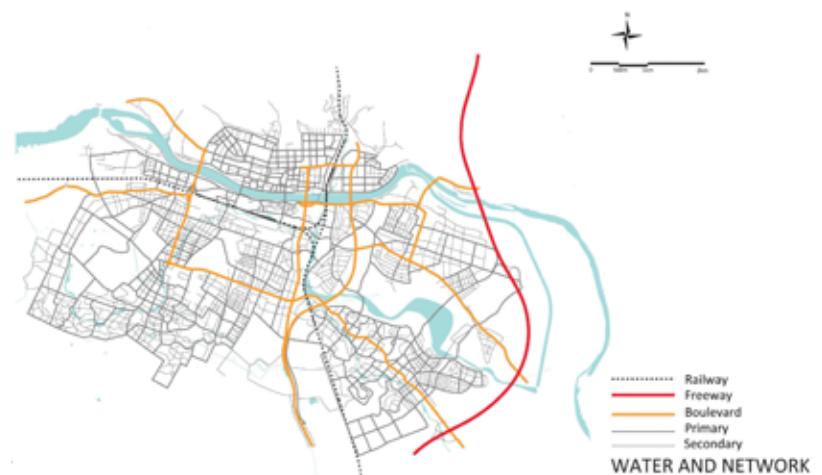
Agricultural uses along with active open spaces will form the backbone of a new green and public space strategy.



WATER SYSTEMS PROPOSALS



Opening the river waterfront will create a more pedestrian oriented zone that will tie the city together into a coherent system.



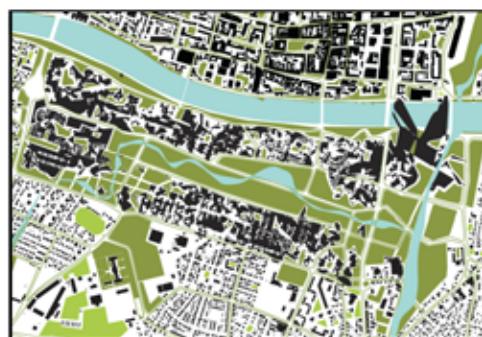
DESIGN DETAILS



Leveraging open space and waterfront conditions will allow for a development pattern that preserves the city's sense of place as it grows.



EXISTING RIVERSIDE DISTRICT



PROPOSED LEISURE CENTER



EXISTING INDUSTRIAL DISTRICT

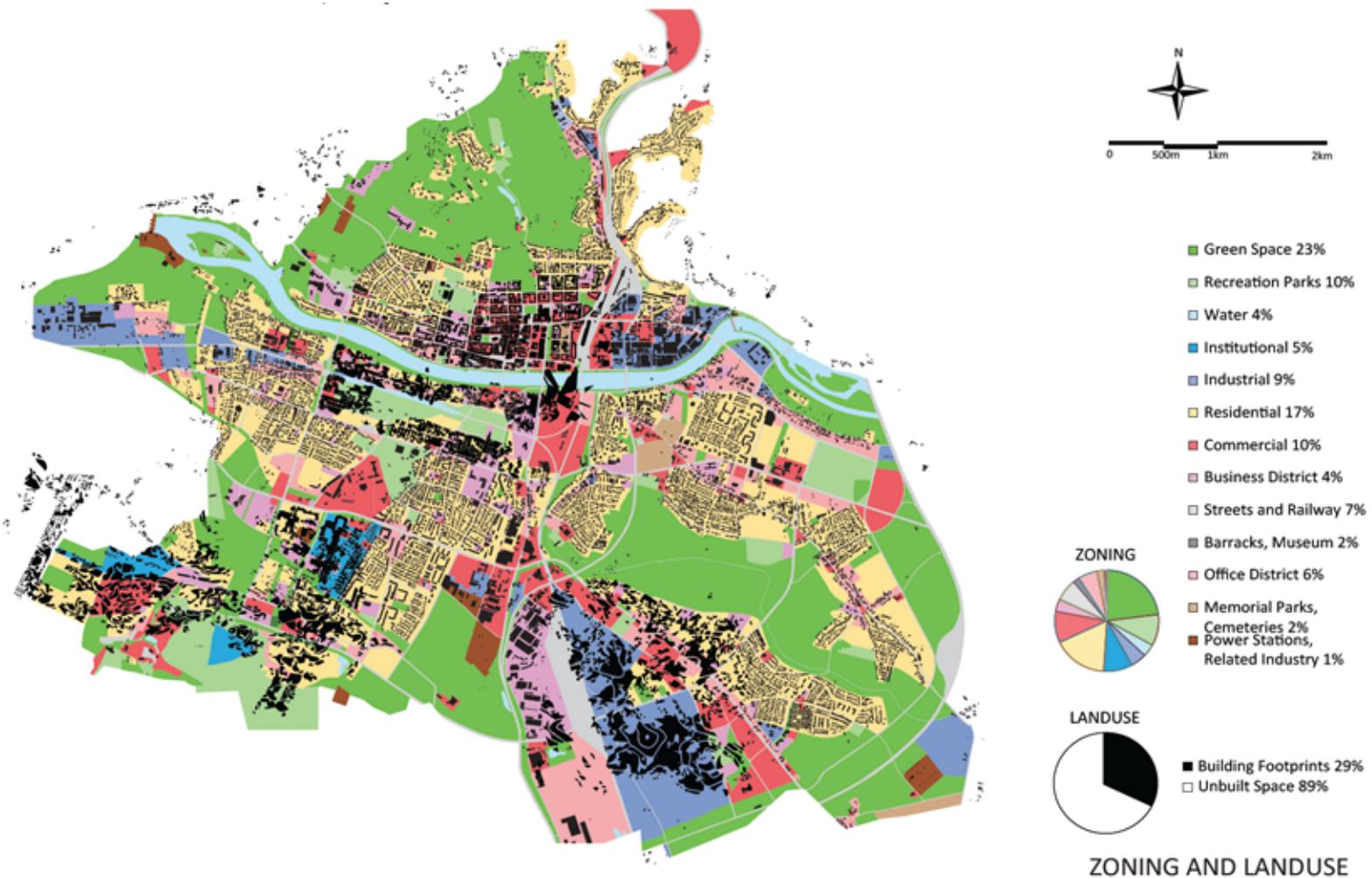


PROPOSED INDUSTRIAL CENTER

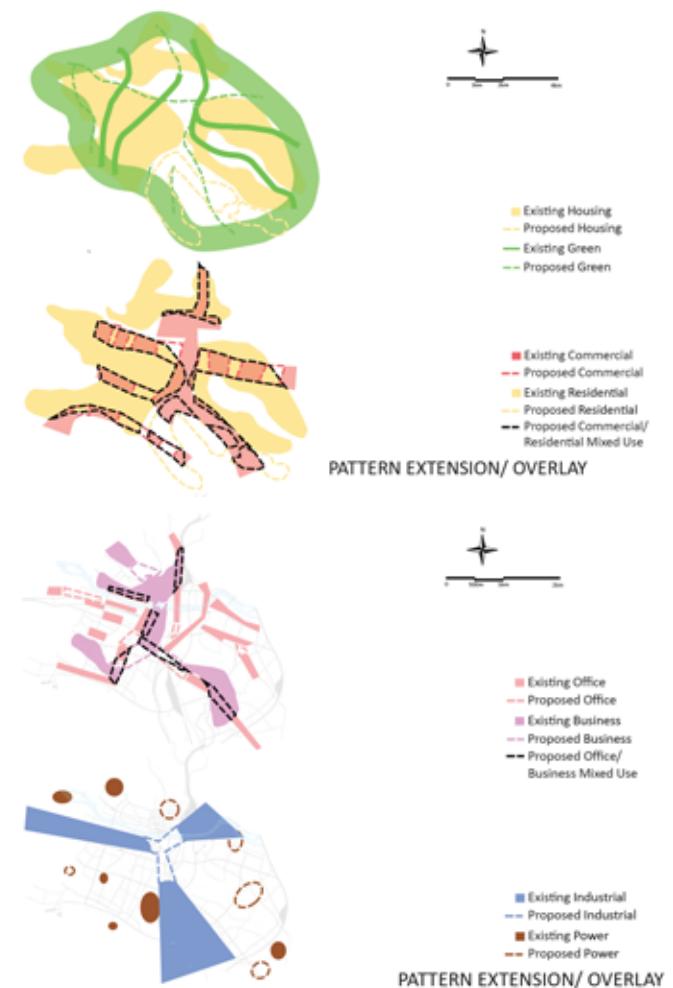
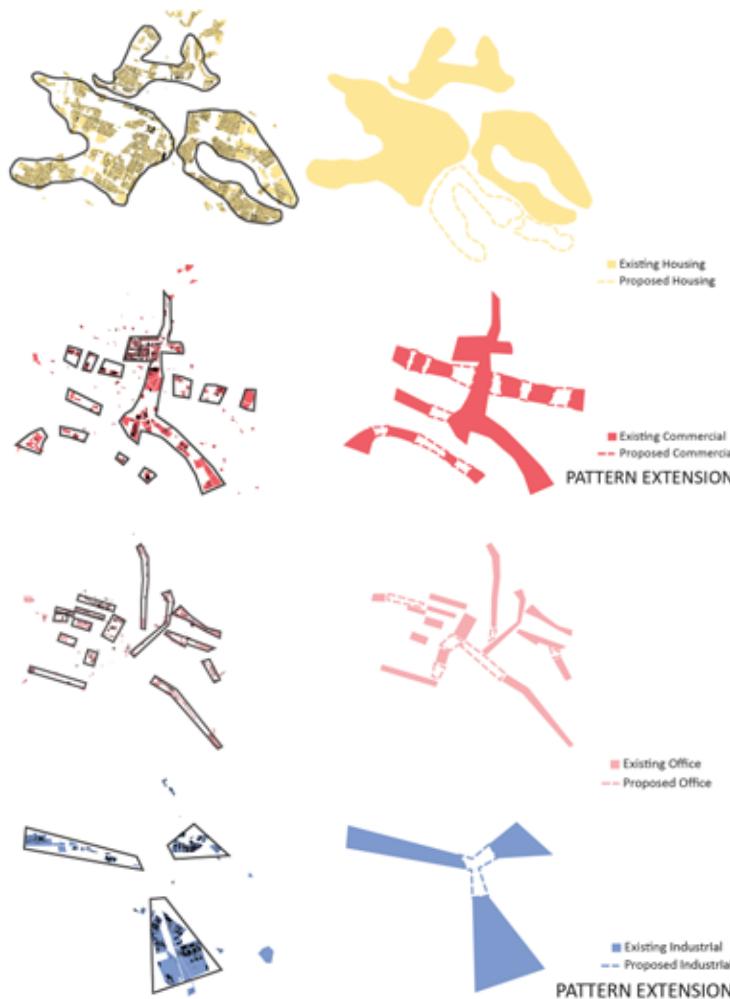
Water
Natural
Agriculture
Public
Private

Water
Natural
Agriculture
Public
Private

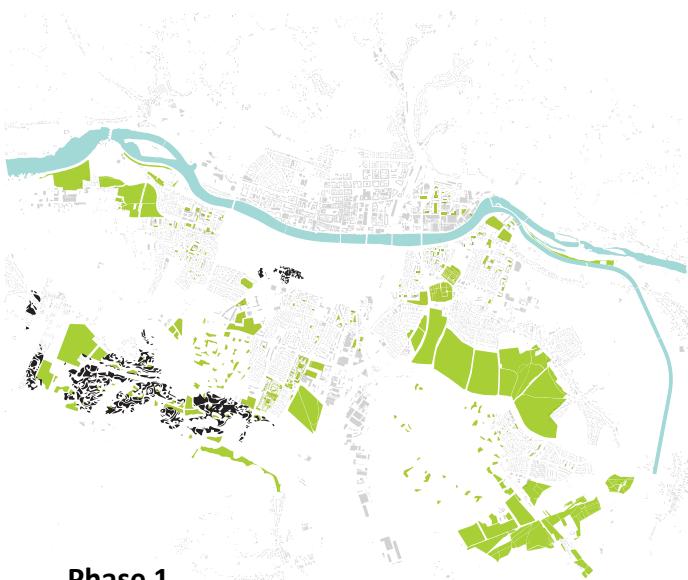
ZONING AND LANDUSE PROPOSALS



The result of this redevelopment proposal is to produce a comprehensive growth management strategy for Maribor that results in a compact and efficient development pattern for the city over the next 50 years.



PROJECT PHASING



Phase 1 2012-2022

Develop Campuses
Clean and Develop Brownfields
Develop Access Roads



Phase 2 2022-2032

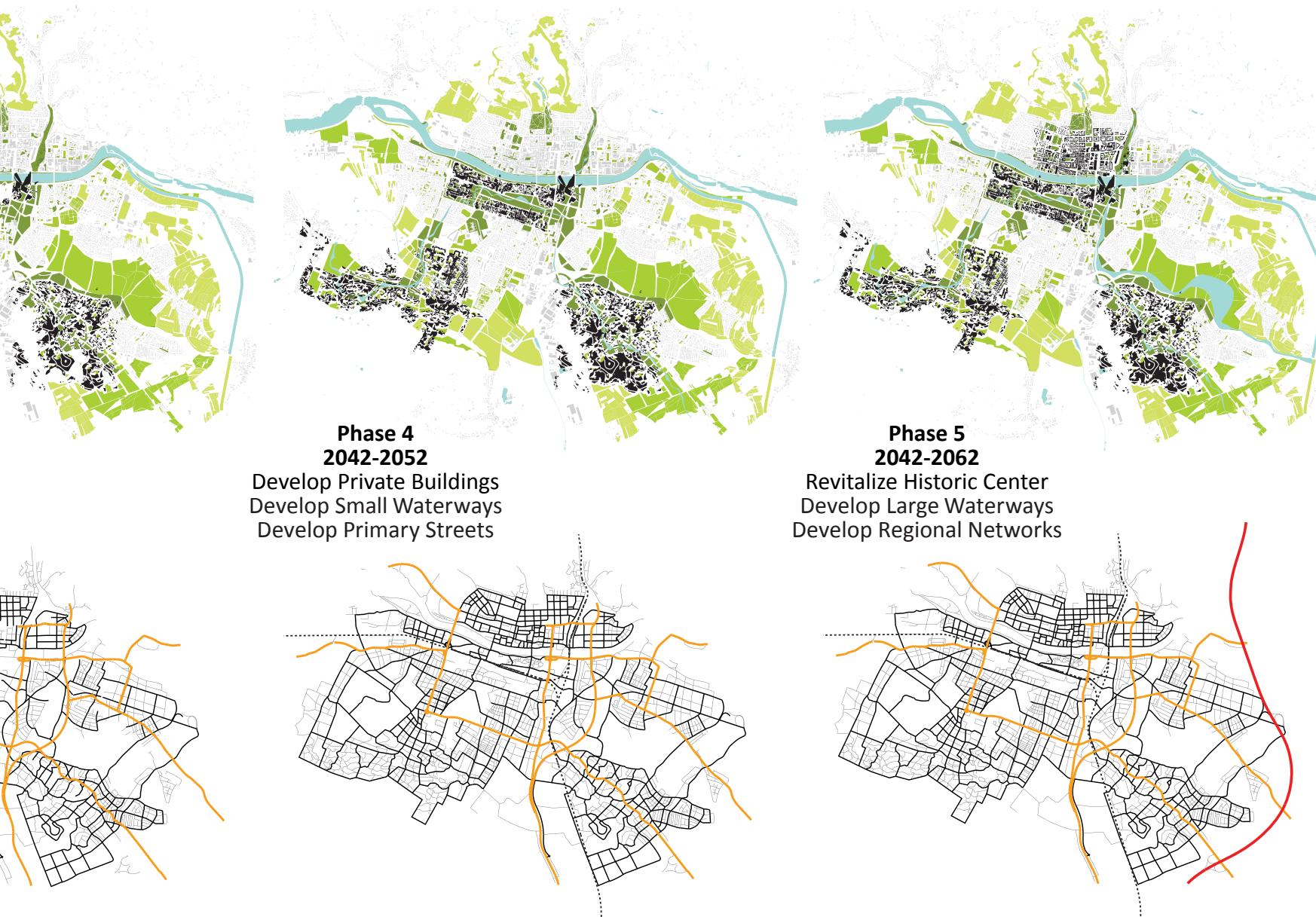
Develop Housing
Develop Small Public Green Spaces
Develop Tertiary Streets

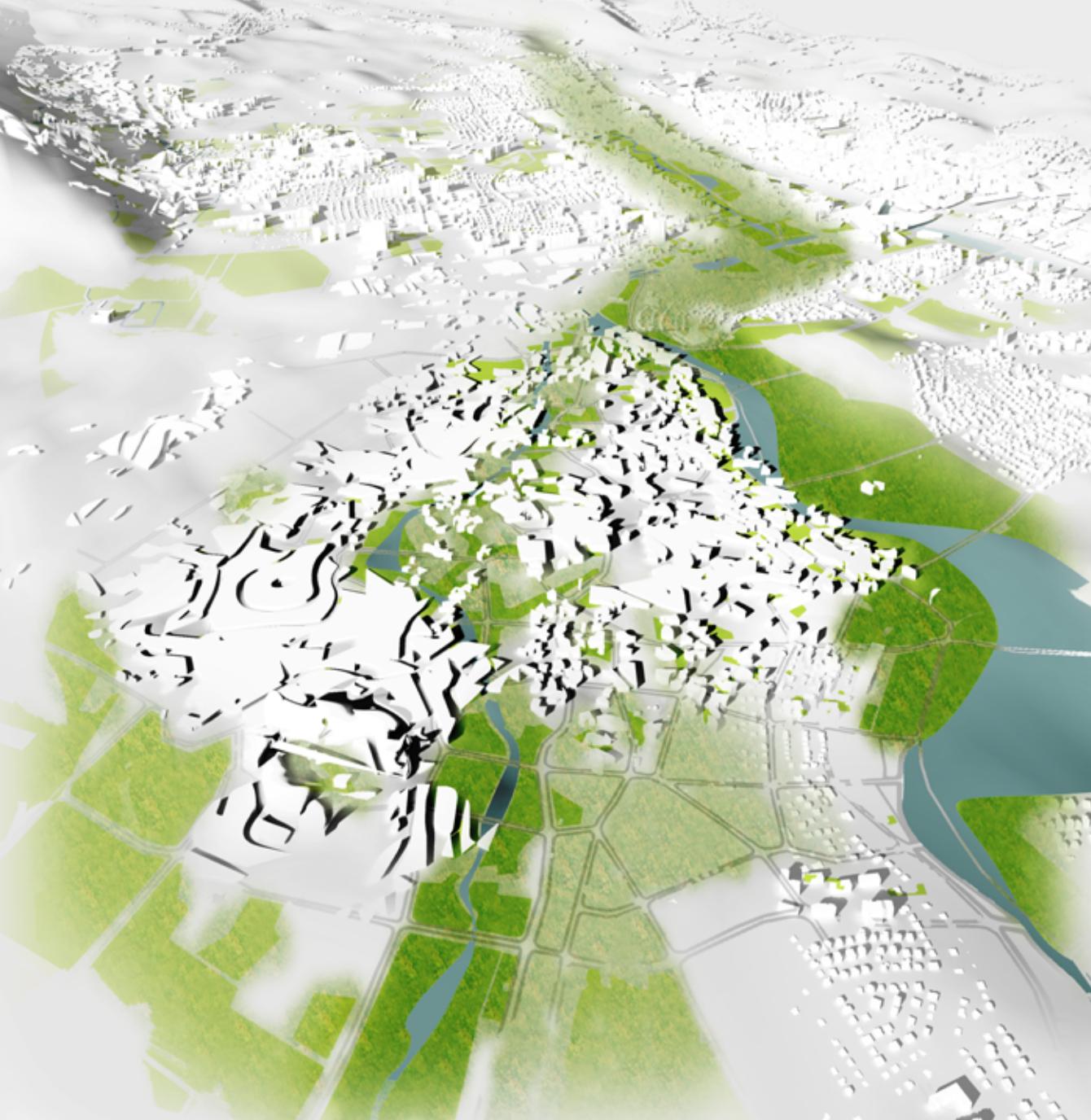


Phase 3 2032-2042

Develop Governmental Buildings
Develop Large Public Green Spaces
Develop Secondary Streets







Peter Zellner



David Bergman



Janiva Henry



'Winnie' Yaying Weng



Yuan He

