Interim Results Planning Studies Workshop

Ho Chi Minh City

March 15th, 2012

"Planning Studies for Climate Change Adapted Neighbourhoods"

Outline

- **Concept of Planning Studies & Introduction to Selected Study Sites**
- **Interim Planning Results**
  - **Urban Climate**
  - **Urban Flooding**
  - **Stormwater Management**
  - **Land use**
  - **Climate Change Awareness**
- **Conclusion & Discussion**

Planning Studies
Objectives

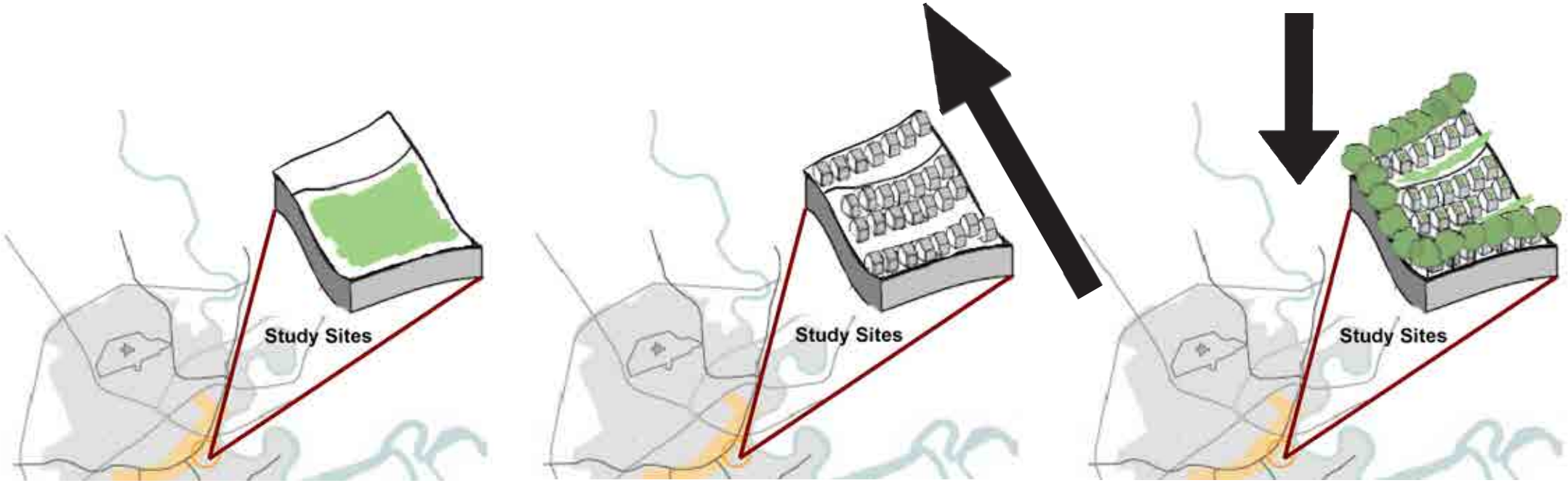
- **Downscaling of City-wide Assessment of Climate Change & Environmental Criteria**
- **Simulation of Different Planning Scenarios for Exemplary Study Sites**
- **Evaluation & Demonstration (“Testing”) of Applicable Adaptation Measures & Strategies**
- **Incorporation of Recommendations & Results into a Support Tool for the Administration (Handbook)**

Exemplary Study Sites
Elaboration of an Alternative Planning Scenario

Simulation of the Alternative Scenario(s) in Terms of

- Urban Climate
- Flooding
- Water management
- Land use

Selected Planning and Design Strategies will Influence the **Urban Form and Layout of the Neighbourhood**

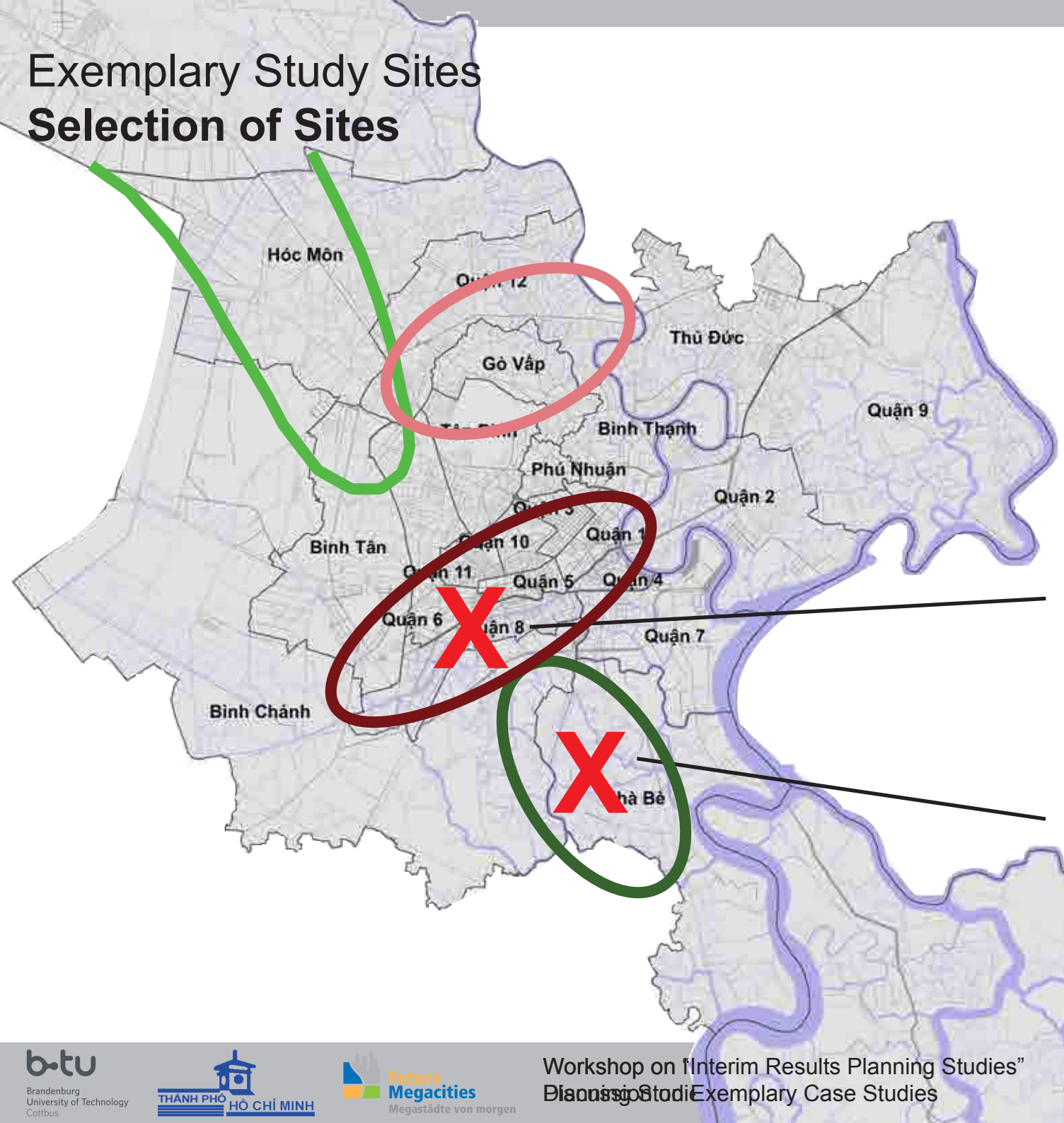


Site with Existing Situation
Actual Scenario

Site with Planned Urban Design Scheme according to Masterplans/ Design Studies
Planned Scenario

Site with Alternative (optimized) Urban Design
Alternative Scenario(s)

Exemplary Study Sites
Selection of Sites



- Urbanization Promotion Area
- Redevelopment Area
- High Risk Area
- Urbanization Control Area

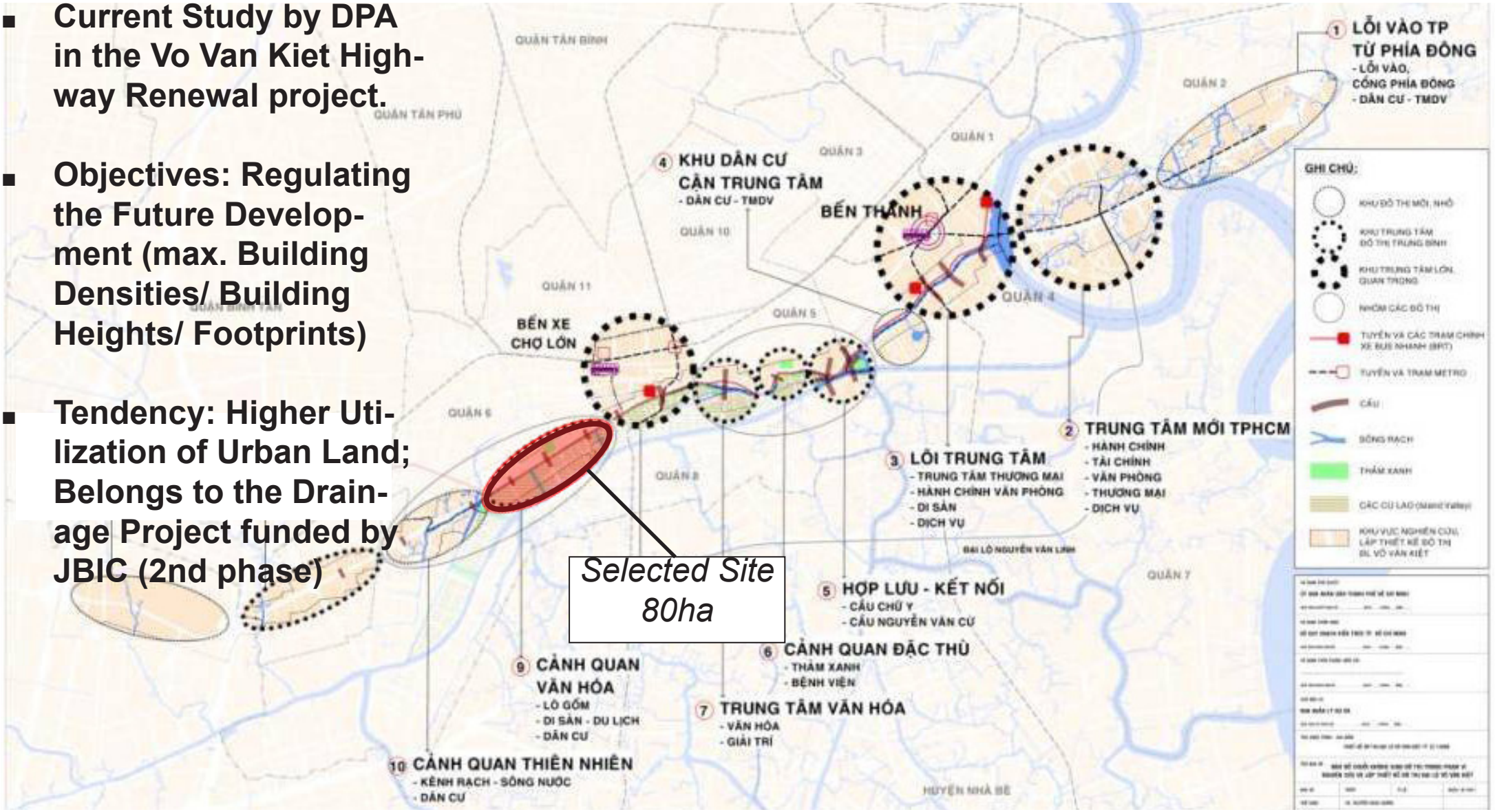
Redevelopment of a Climate Sensitive Inner City Area
District 6/ Ward 3 & District 8/ Ward 14

New Housing Development on Flood-prone Areas
District Nha Be/ Ward Nhon Duc

Introduction to the Sites

Site 1: Redevelopment of a Climate-Sensitive Inner-City Area

- **Current Study by DPA in the Vo Van Kiet High-way Renewal project.**
- **Objectives: Regulating the Future Develop-ment (max. Building Densities/ Building Heights/ Footprints)**
- **Tendency: Higher Uti-lization of Urban Land; Belongs to the Drain-age Project funded by JBIC (2nd phase)**



DPA

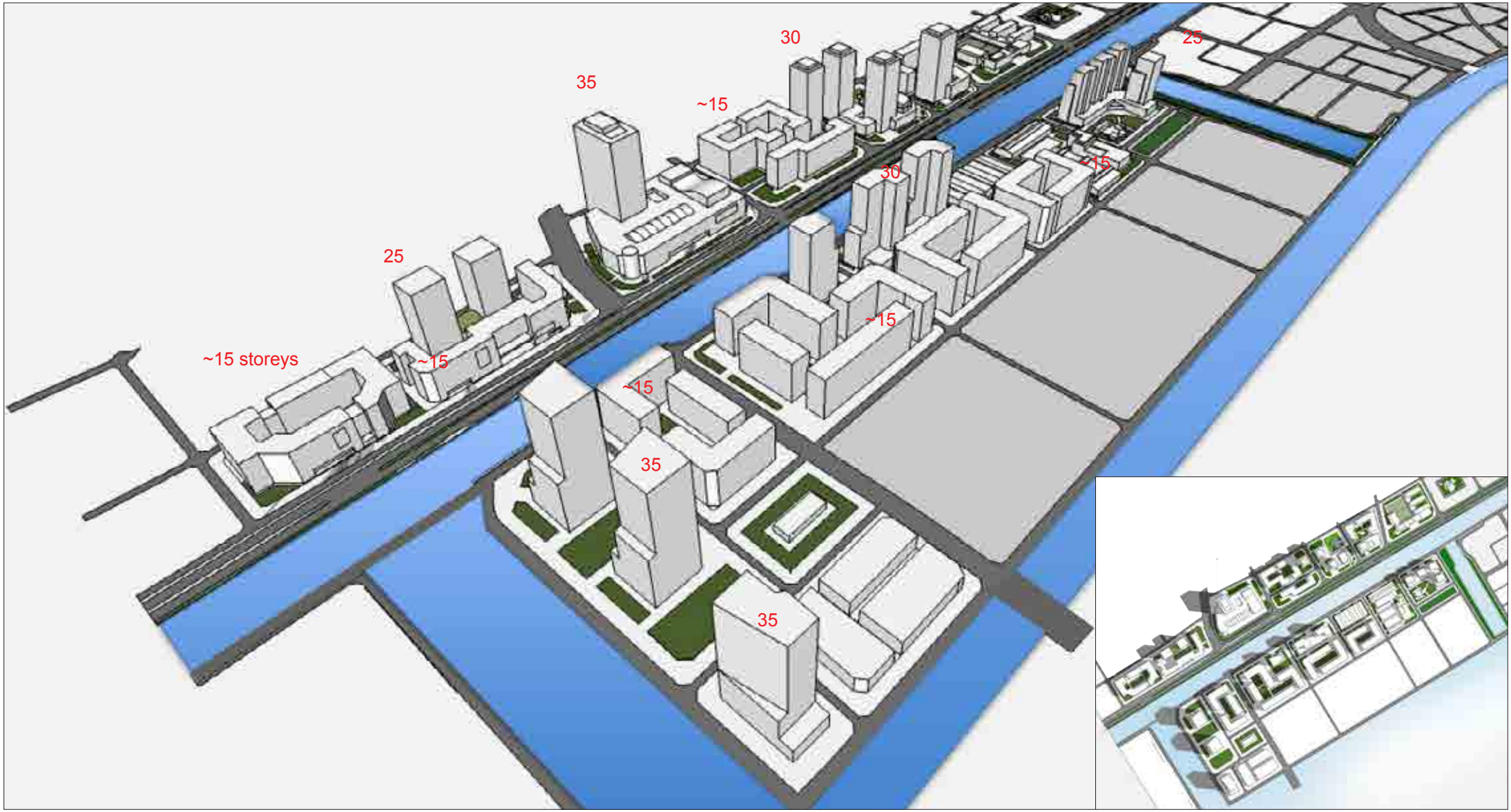
Introduction to the Sites

Site 1: Redevelopment of a Climate-Sensitive Inner-City Area

District 6/ Ward 3 & District 8/ Ward 14

Introduction to the Sites

Site 1: Redevelopment of a Climate-Sensitive Inner-City Area

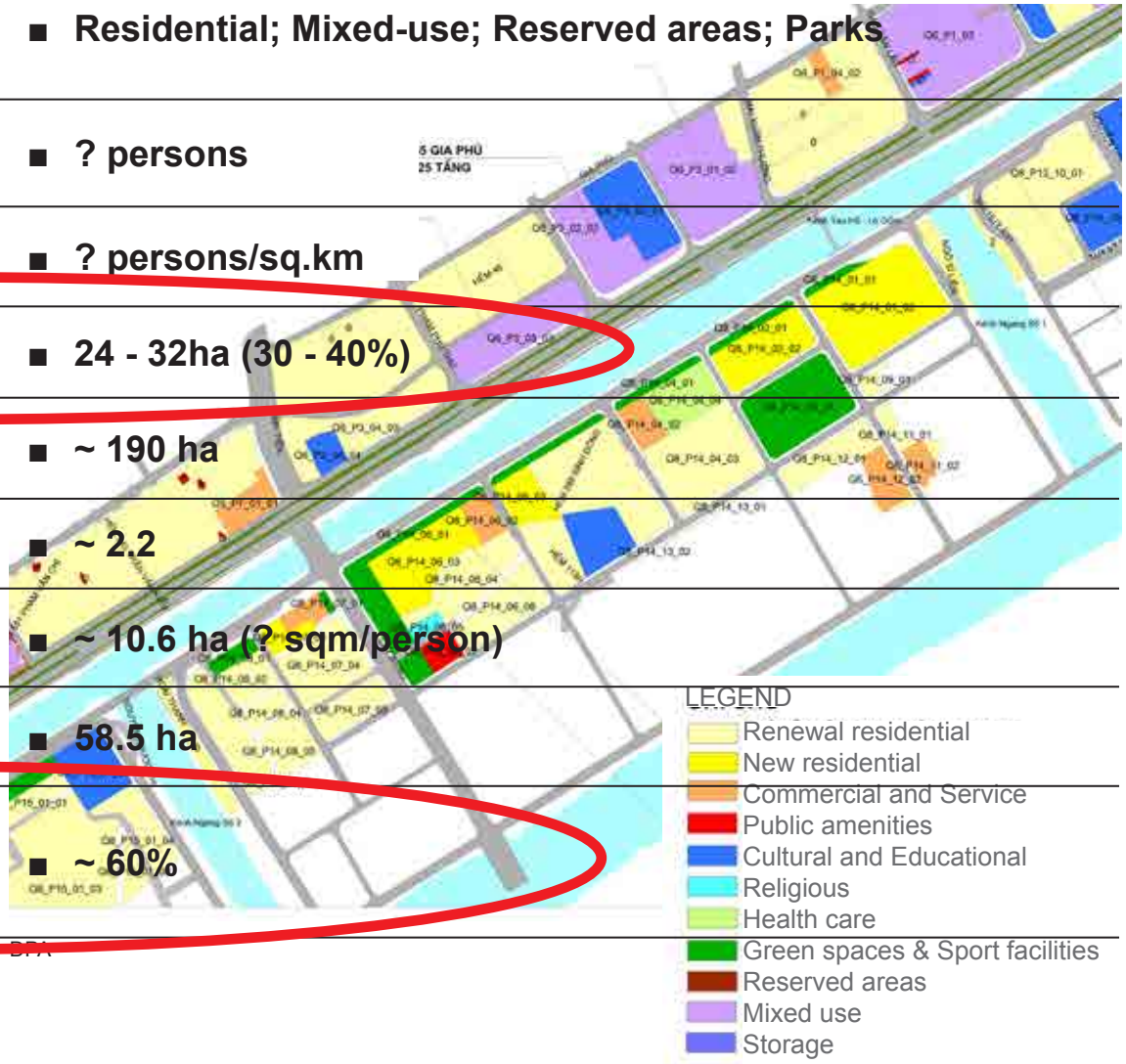


DPA

Introduction to the Sites

Site 1: Redevelopment of a Climate-Sensitive Inner-City Area

	Existing Plan	Planning scenario
Urban program:	■ Residential; Warehouses; Historic houses.	■ Residential; Mixed-use; Reserved areas; Parks
Inhabitants	■ ~30,600 persons	■ ? persons
Density	■ ~383 persons/ha (DPA)	■ ? persons/sq.km
Built-up areas	■ 56 - 64ha (70 - 80%)	■ 24 - 32ha (30 - 40%)
GFA	■ 112 - 128 ha	■ ~ 190 ha
FAR	■ 1.4 - 1.6	■ ~ 2.2
Greenery	■ 1.5 - 2 ha (0.5 - 0.7 sqm/person)	■ ~ 10.6 ha (? sqm/person)
Water surface	■ 58.5 ha	■ 58.5 ha
Impermeable surfaces	■ 50-60%	■ ~ 60%



DPA

District 6/ Ward 3 & District 8/ Ward 14

Introduction to the Sites

Site 2: New Housing Development on Flood-prone Areas

- **Project for a New Housing Development on Wetland Area in Ward Nhon Duc, District Nha Be**
- **Objective: Envisage a General Urbanization**
- **Tendency: Only Main Canals will be Left Open/ Land Filling**

District Nha Be/ Ward Nhon Duc

Introduction to the Sites
Site 2: New Housing Development on Flood-prone Areas

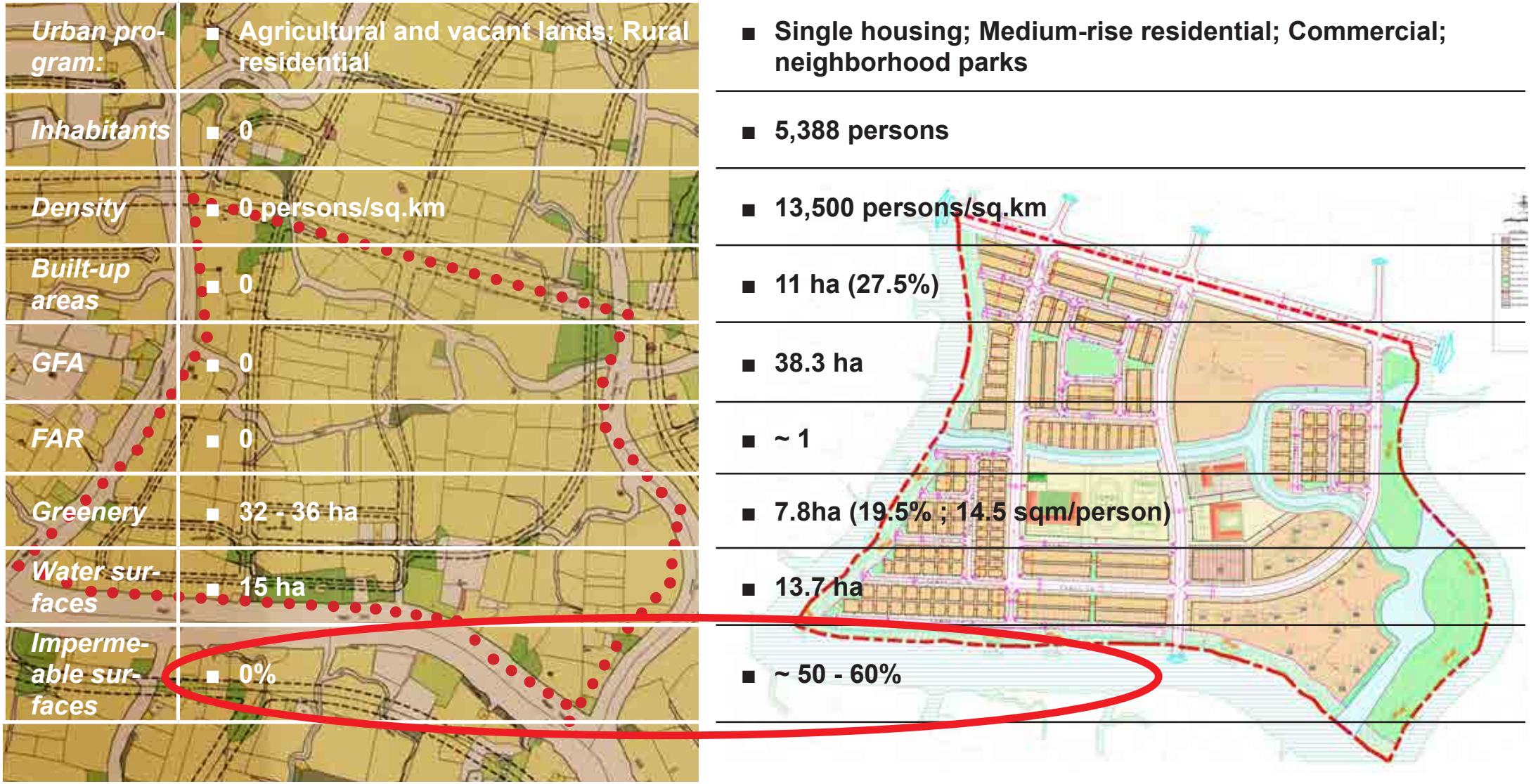
Introduction to the Sites

Site 2: New Housing Development on Flood-prone Areas

Introduction to the Sites

Site 2: New Housing Development on Flood-prone Areas

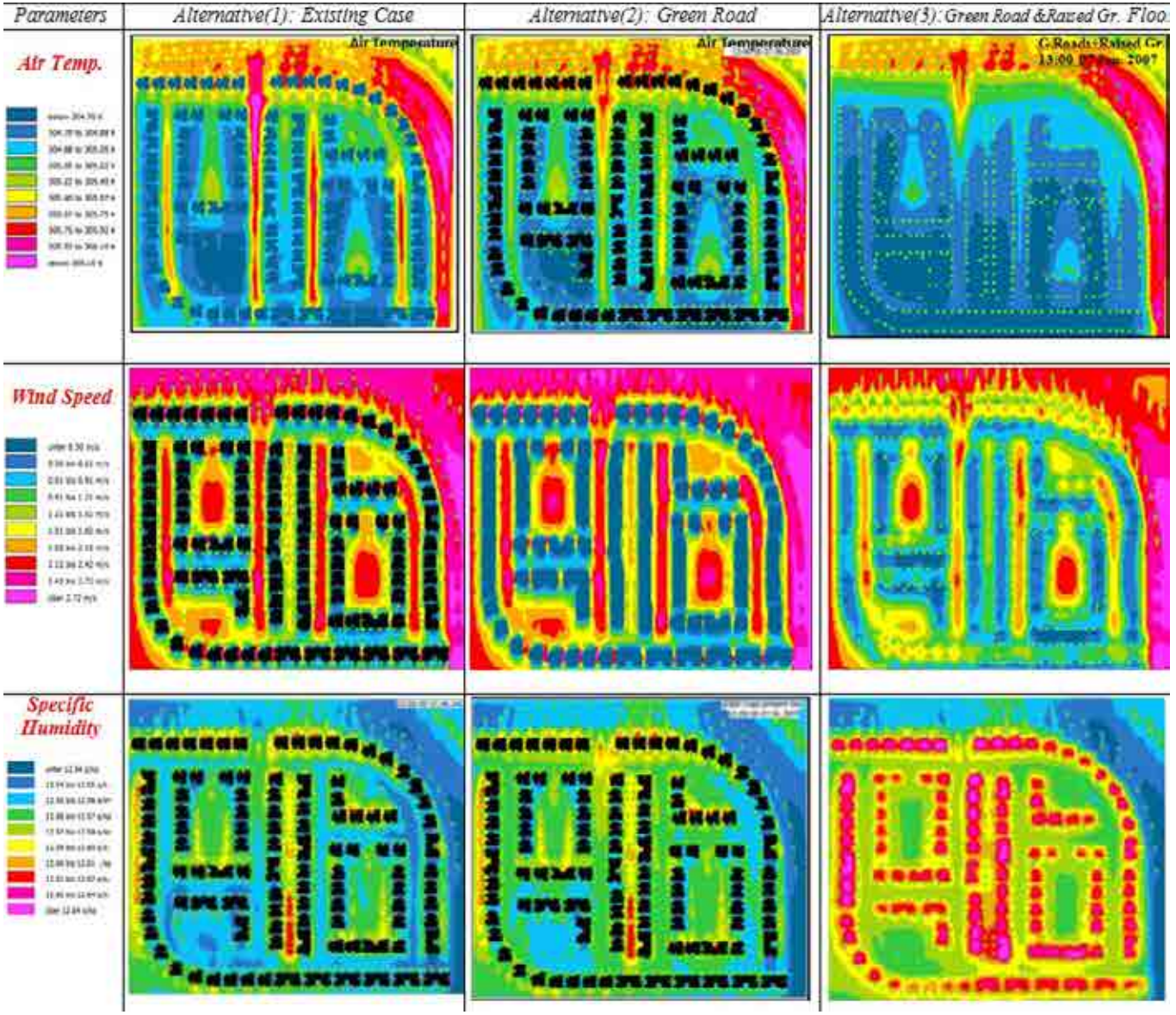
	Existing Plan	Approved Master Plan
Urban program:	■ Agricultural and vacant lands; Rural residential	■ Single housing; Medium-rise residential; Commercial; neighborhood parks
Inhabitants	■ 0	■ 5,388 persons
Density	■ 0 persons/sq.km	■ 13,500 persons/sq.km
Built-up areas	■ 0	■ 11 ha (27.5%)
GFA	■ 0	■ 38.3 ha
FAR	■ 0	■ ~ 1
Greenery	■ 32 - 36 ha	■ 7.8ha (19.5% ; 14.5 sqm/person)
Water surfaces	■ 15 ha	■ 13.7 ha
Impermeable surfaces	■ 0%	■ ~ 50 - 60%



District Nha Be/ Ward Nhon Duc

Interim Planning Studies
Urban Climate / **Introduction to ENVI-met**

- **An engineering software to simulate microclimate models**
- **Applied areas: Urban Climatology, Architecture, Urban design, environmental planning, etc.**
- **Pros: can simulate different scenarios to assess different microclimatic issues**
- **Cons: complex & unstable**



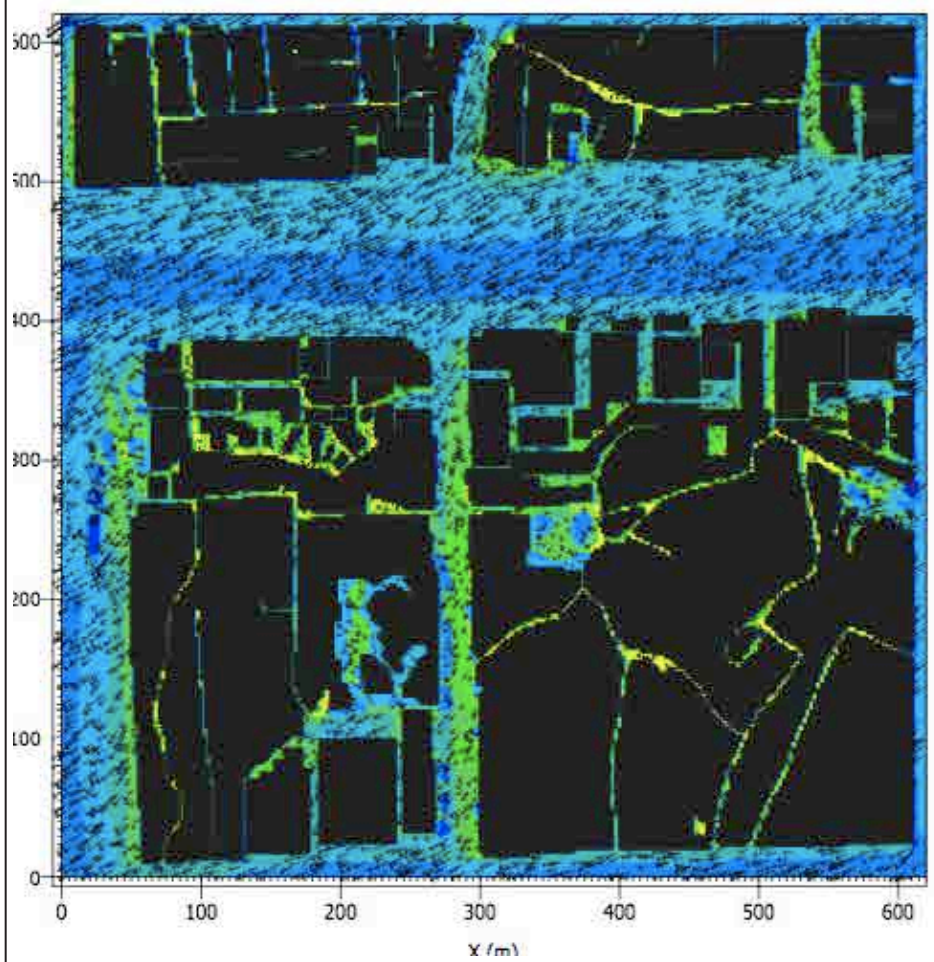
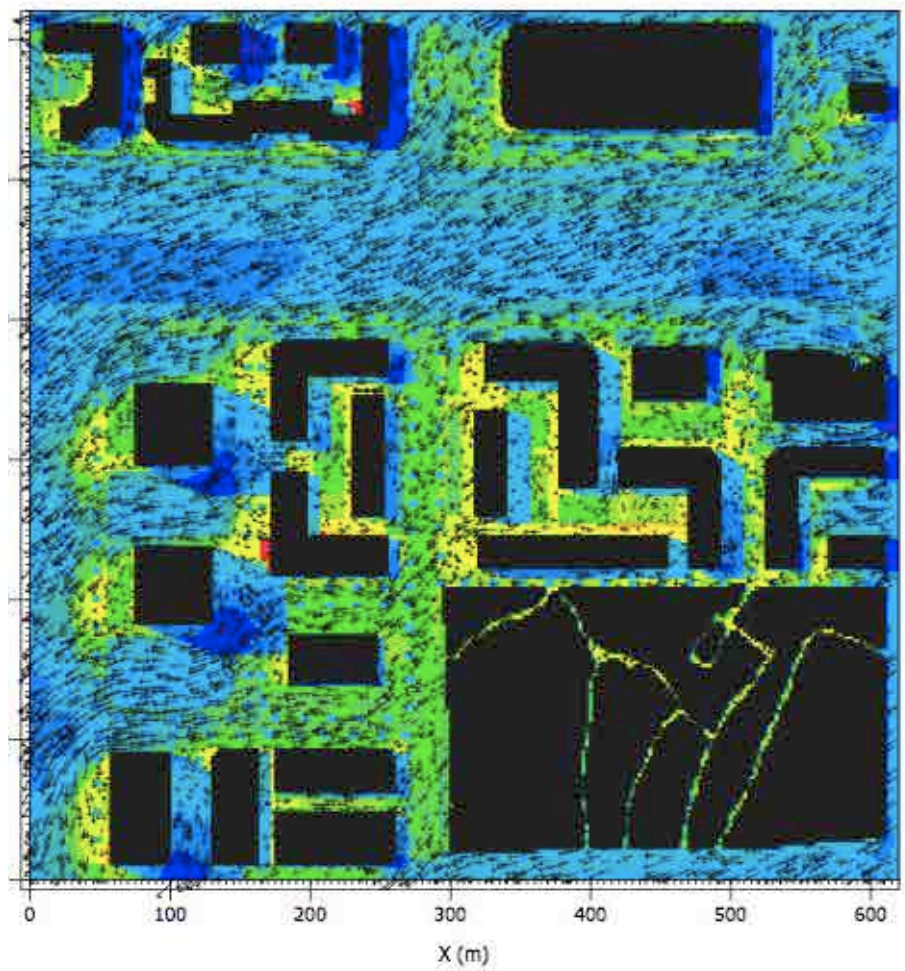
Urban Climate
Climatic parameters for the case studies

Parameters	Site 1	Site 2
Simulated Time	■ 01-03 Aprile 05.00am – 05.00am (48 hours, dry season)	■ 01-03 Aprile 05.00am – 05.00am (48 hours, dry season)
Wind speed	■ 2 m/s (influenced by the densed built-up)	■ 4 m/s (not influenced)
Wind direction	■ 30°, from North-East (parallel to canal)	■ 135°, from South-East (wind flow not influenced)
Roughness	■ 0.8 (scale 0-1, 0.1 flat lands, 1.0 densed urban areas)	■ 0.3 for existing/ 0.7 for planning scenario
Initial temperature	■ 24°C (average minimum in April at 5 am just before sunrise)	■ 24°C (average minimum in April at 5am just before sunrise)
Relative Humidity	■ 75% (average value for April)	■ 75% (average value for April)
Specific Humidity	■ 17.0 g/ kg	■ 17.0 g/ kg
Adj. Solar Radiation	■ 0.5	■ 0.5

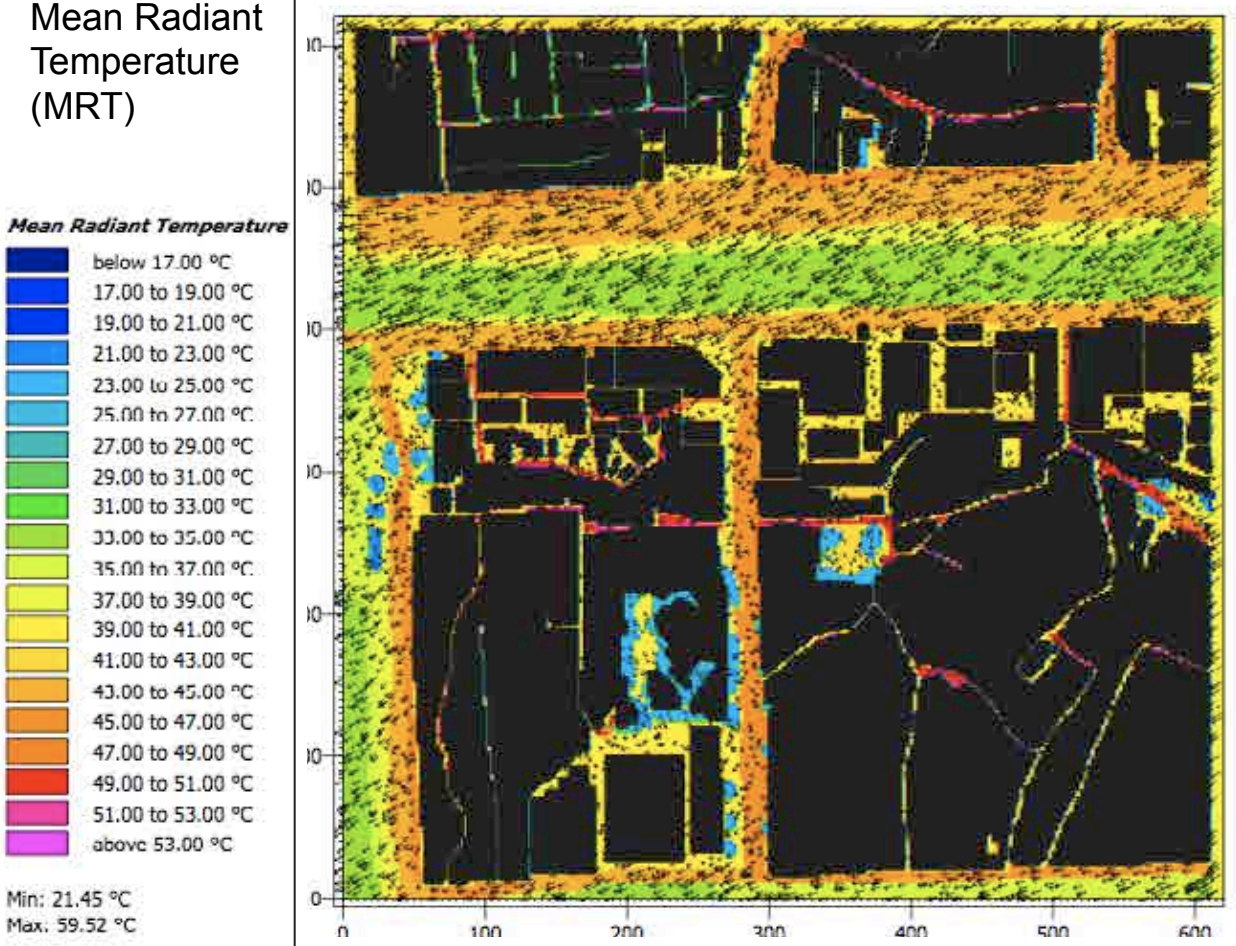
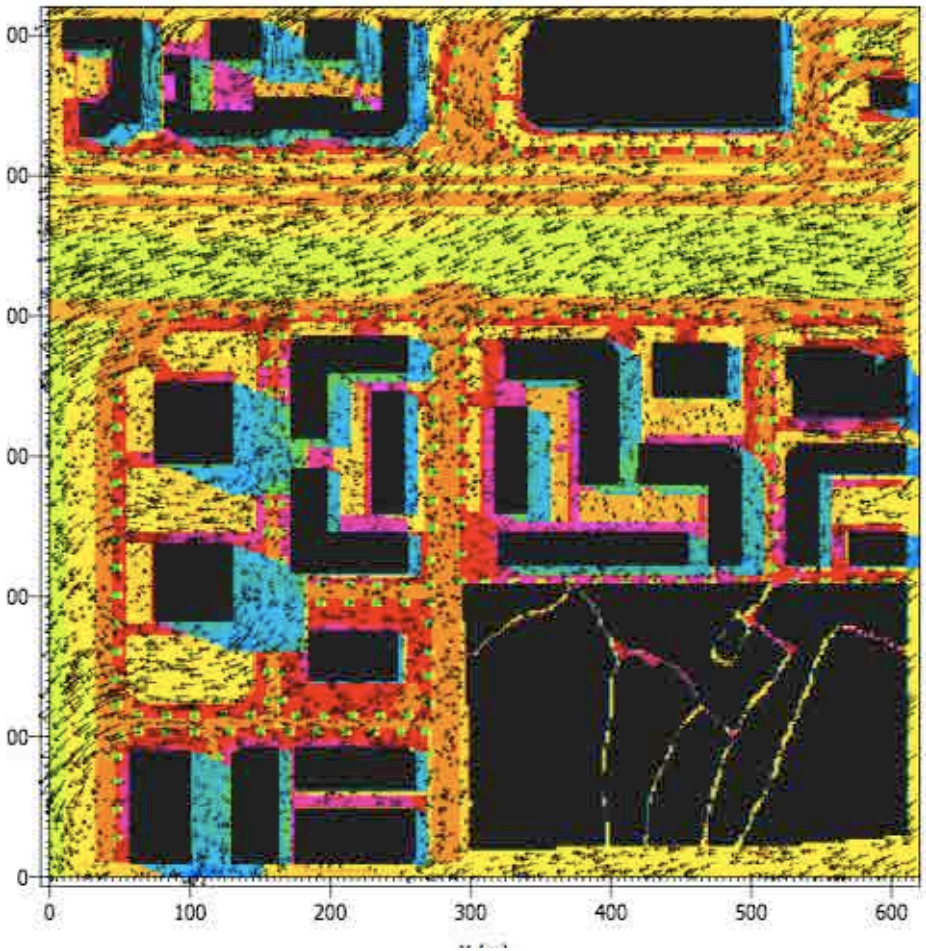
Urban Climate

Climate assessment during one day (start at 5.00am 01.04.2012)

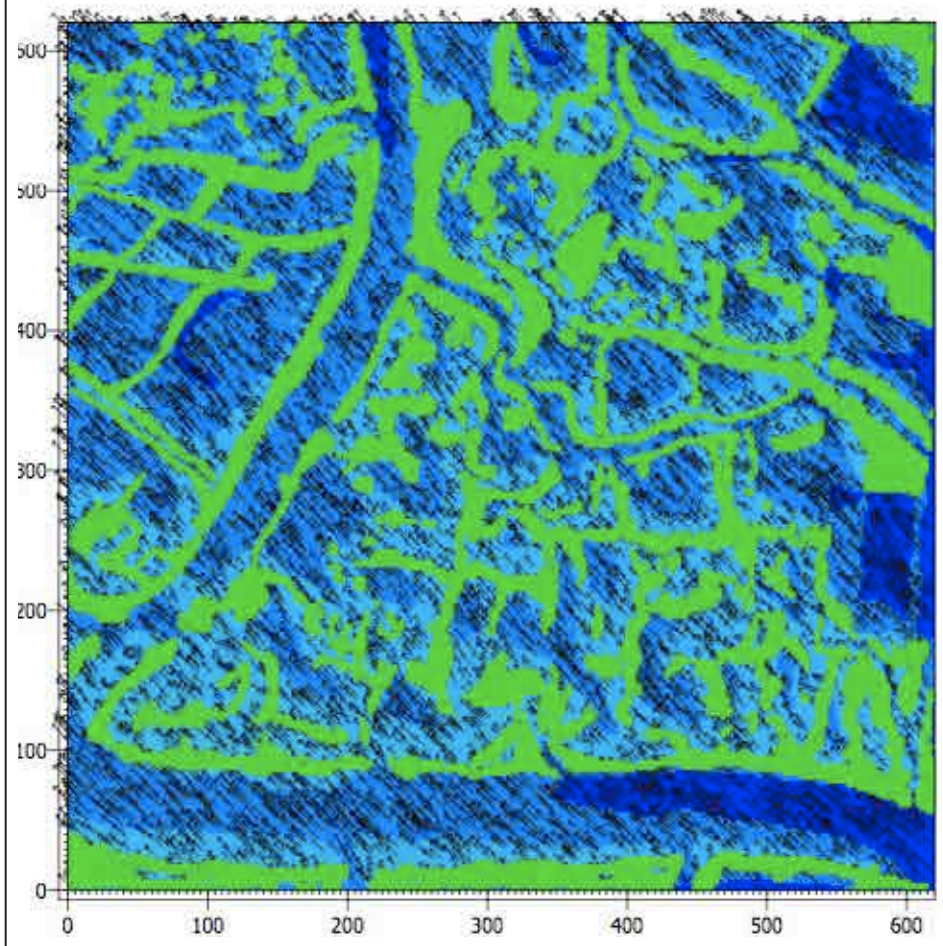
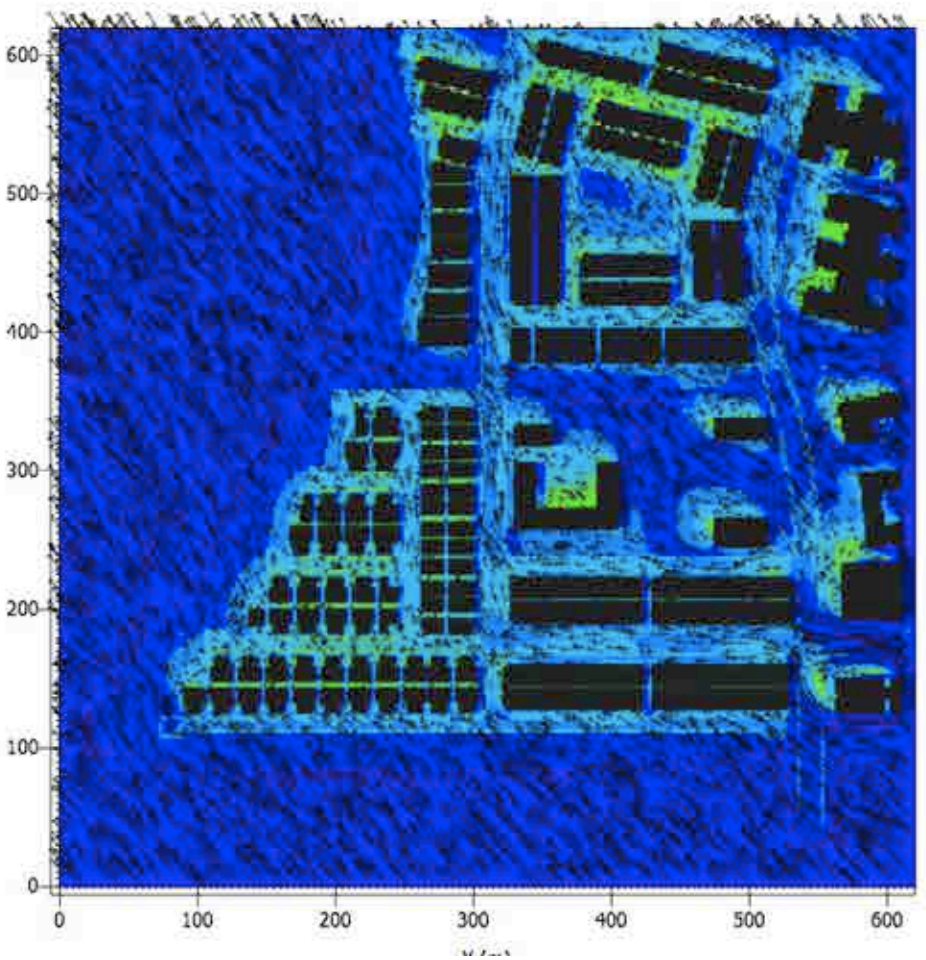
Urban Climate
SITE 1: Comparision

at 2.00 pm	Existing situation	Planning scenario
Physiological Equivalent Temperature (PET)		

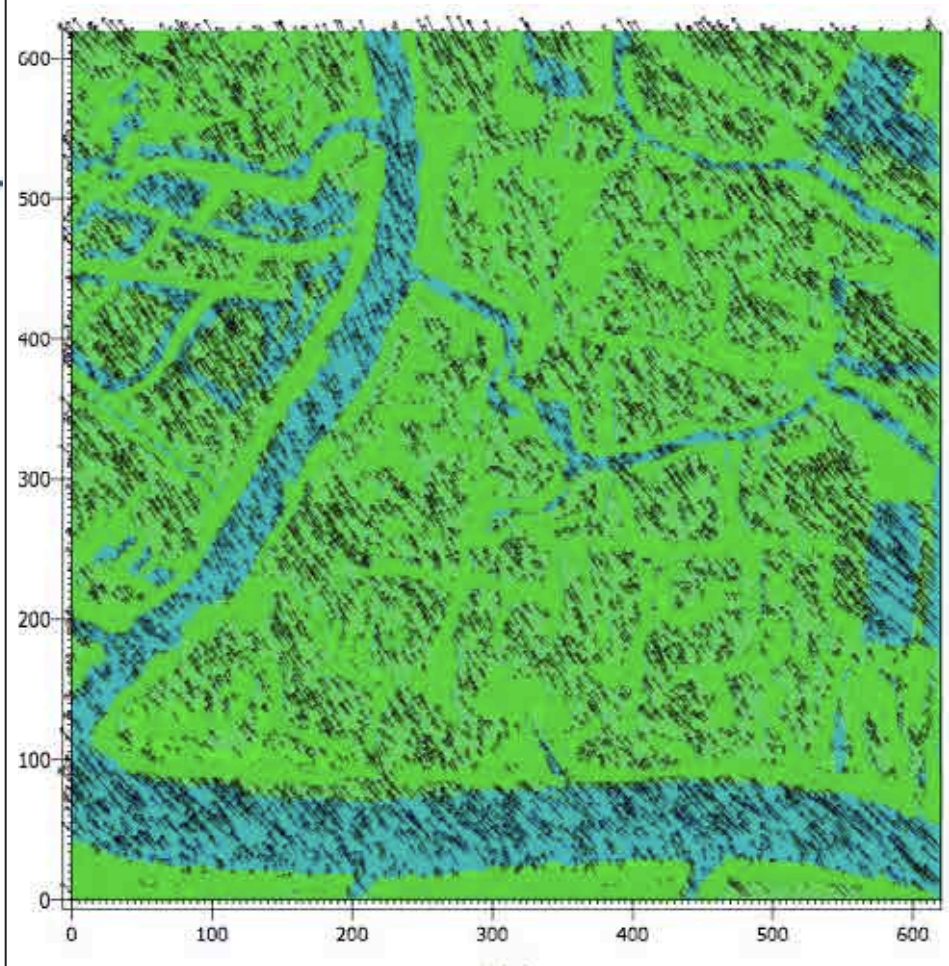
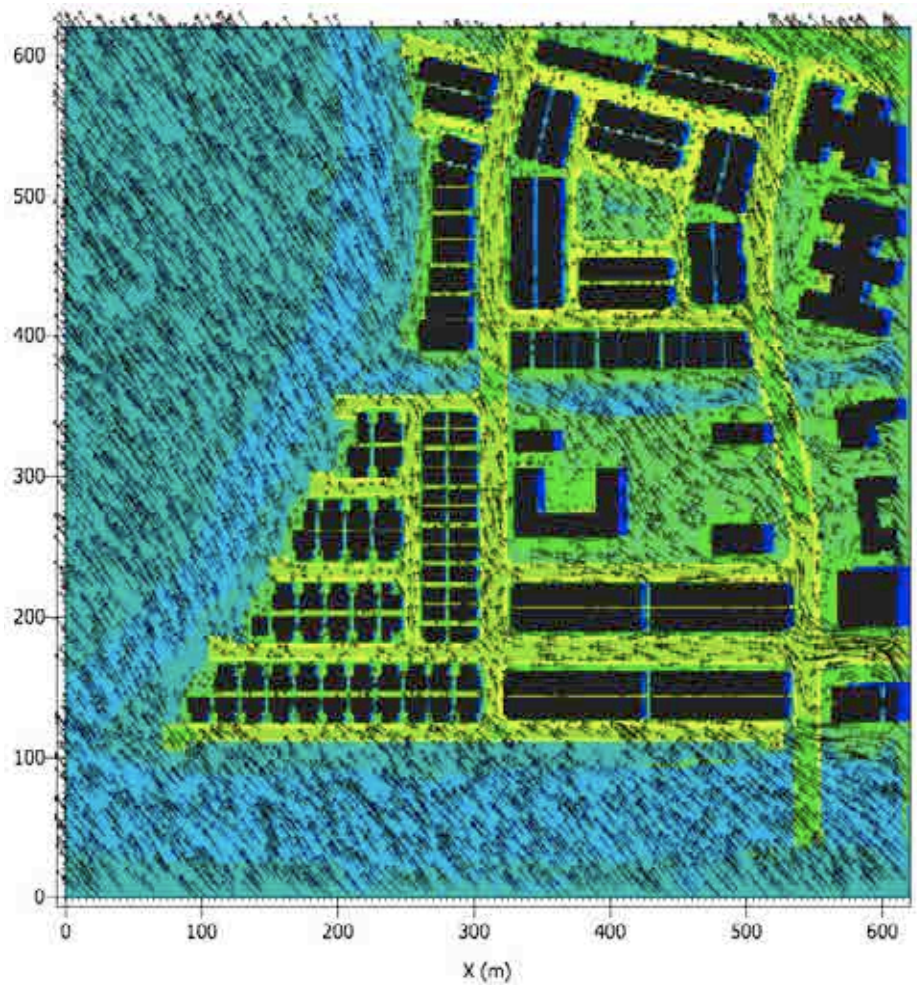
Urban Climate
SITE 1: Comparision

at 2.00 pm	Existing situation	Planning scenario
Mean Radiant Temperature (MRT)		

Urban Climate
SITE 2: Comparision

at 2.00 pm	Existing situation	Planning scenario
PET Temperature		

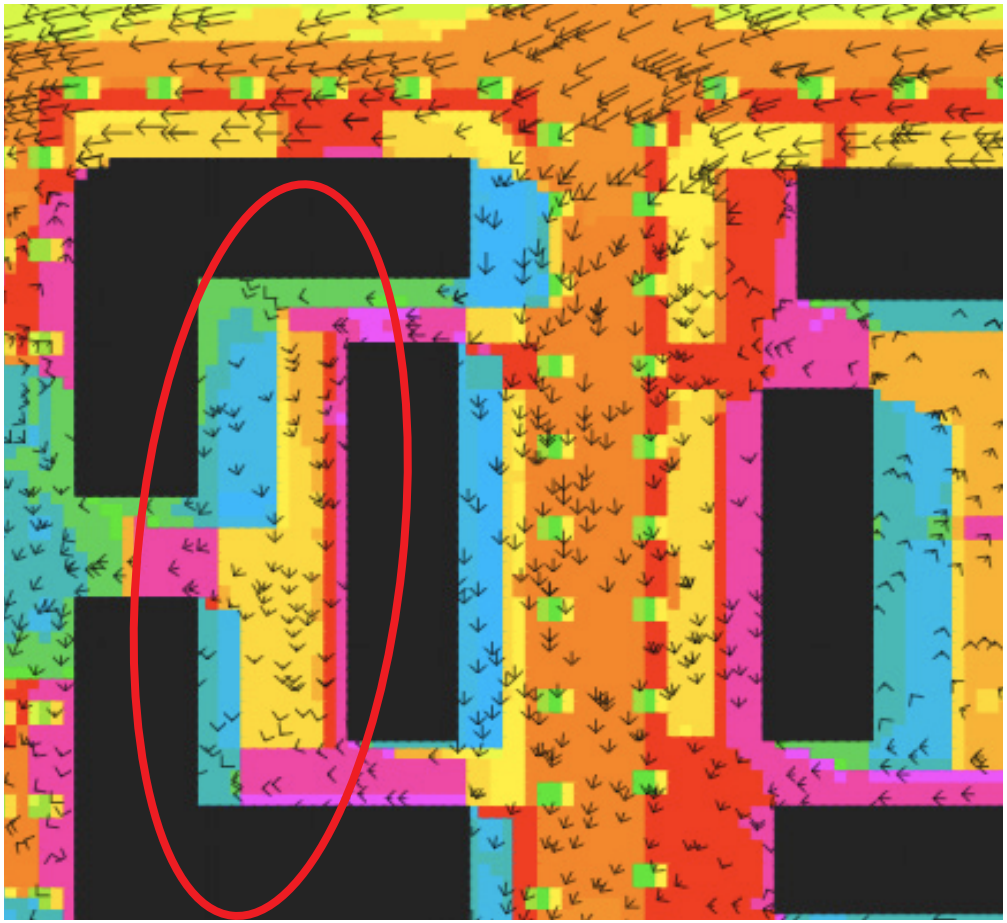
Urban Climate
SITE 2: Comparision

at 2.00 pm	Existing situation	Planning scenario
Mean Radiant Temperature (MRT)		

Urban Climate
Main Findings & Recommendations

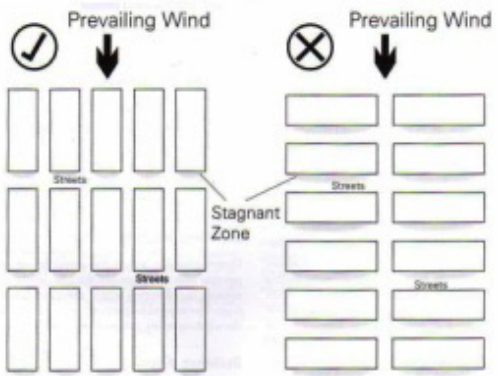
Problem

- Low ventilation/ Blocking of winds

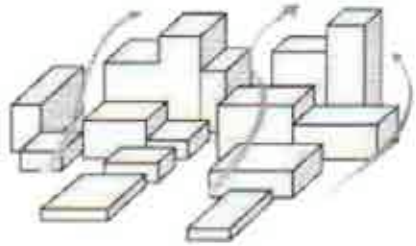


Solutions

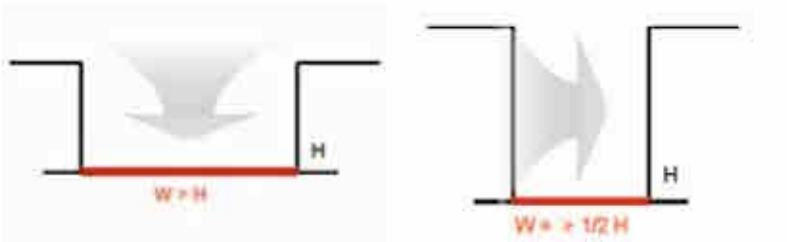
- Adjust the orientations of buildings and streets



- Varify building heights



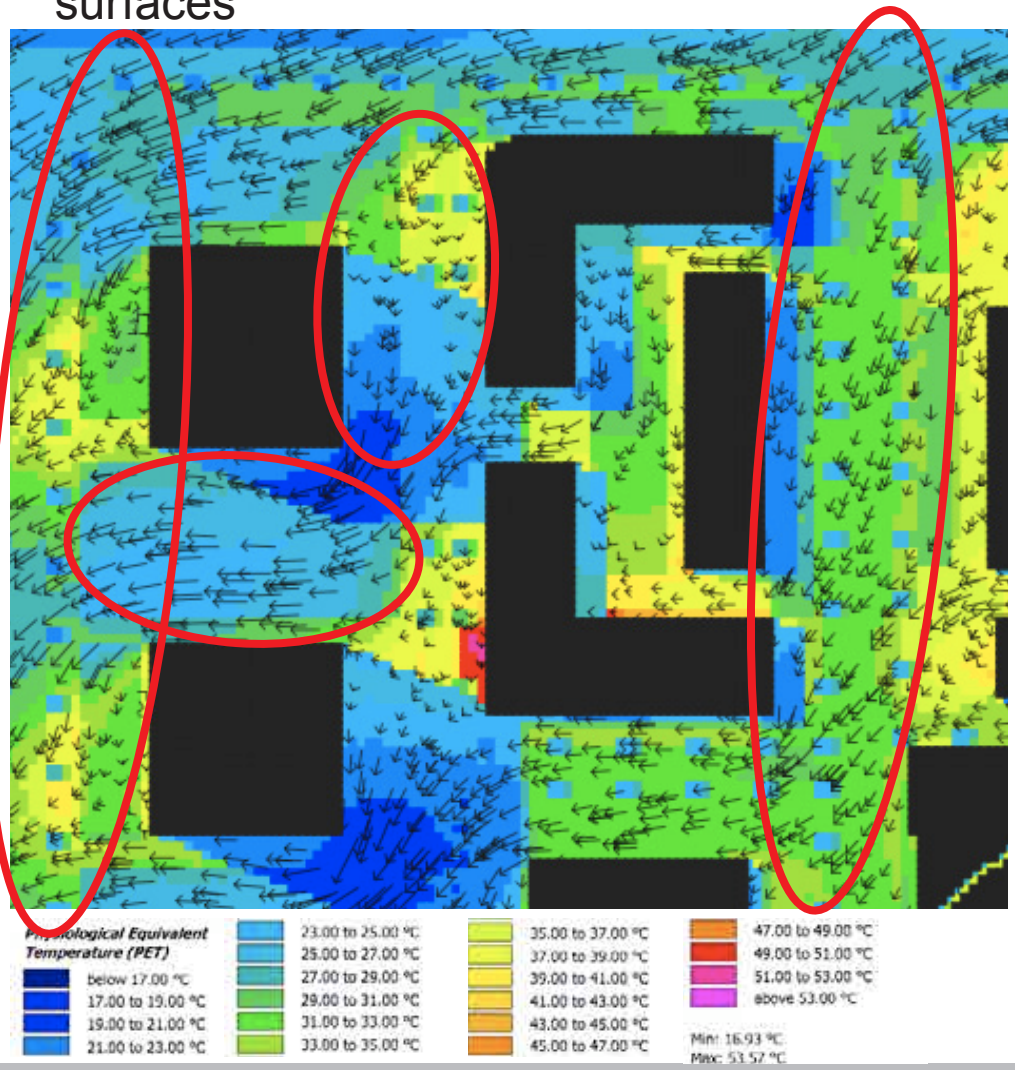
- Adjust distances between buildings



Urban Climate
Main Findings & Recommendations

Problem

- Influences of vegetation, shadows and water surfaces



Solutions

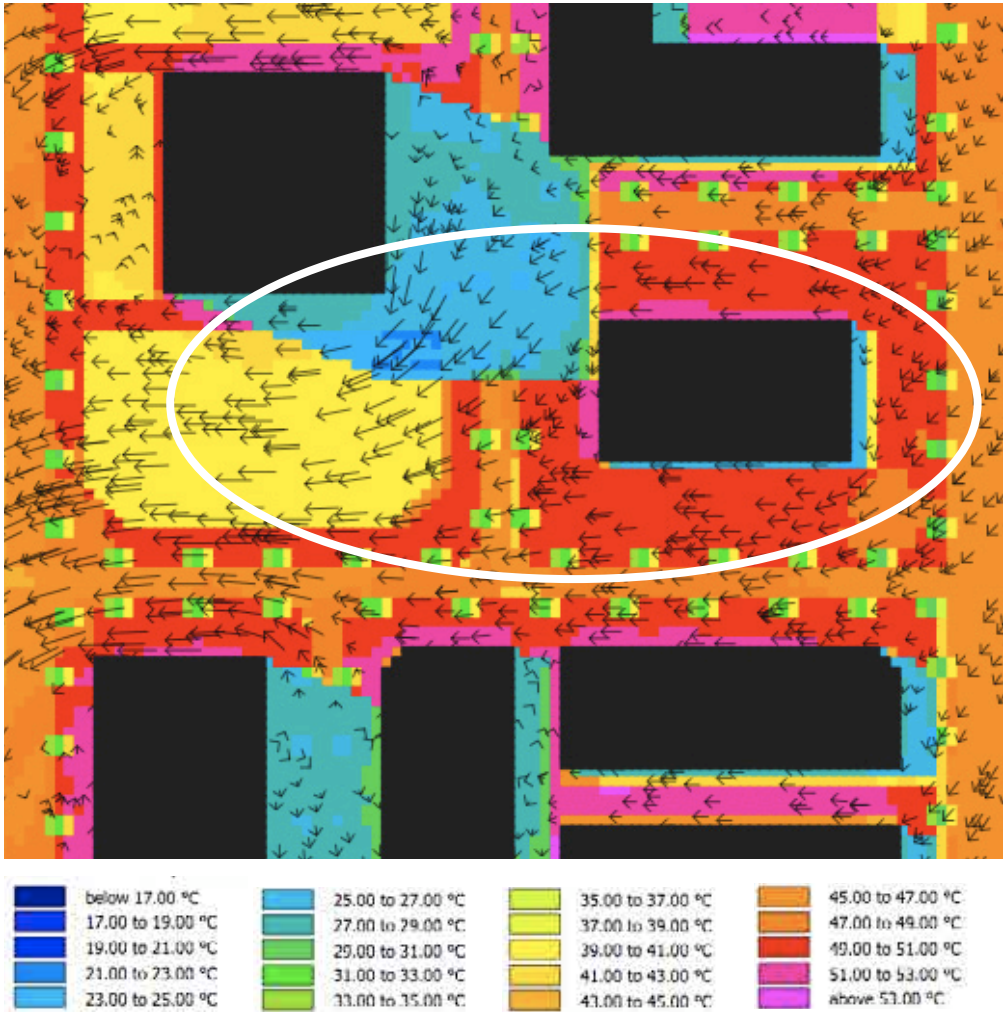
- Plant more trees in the inner streets

- Green roof

Urban Climate
Main Findings & Recommendations

Problem

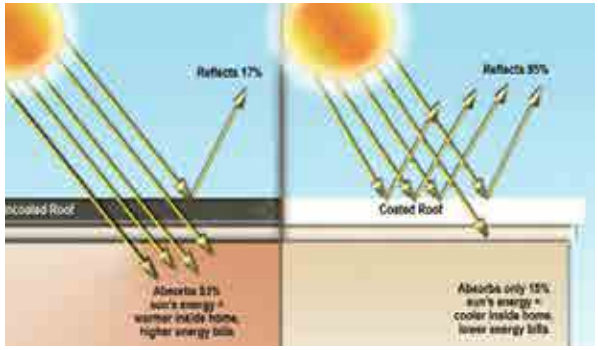
- Uses of materials (building and pavement materials)



Solutions

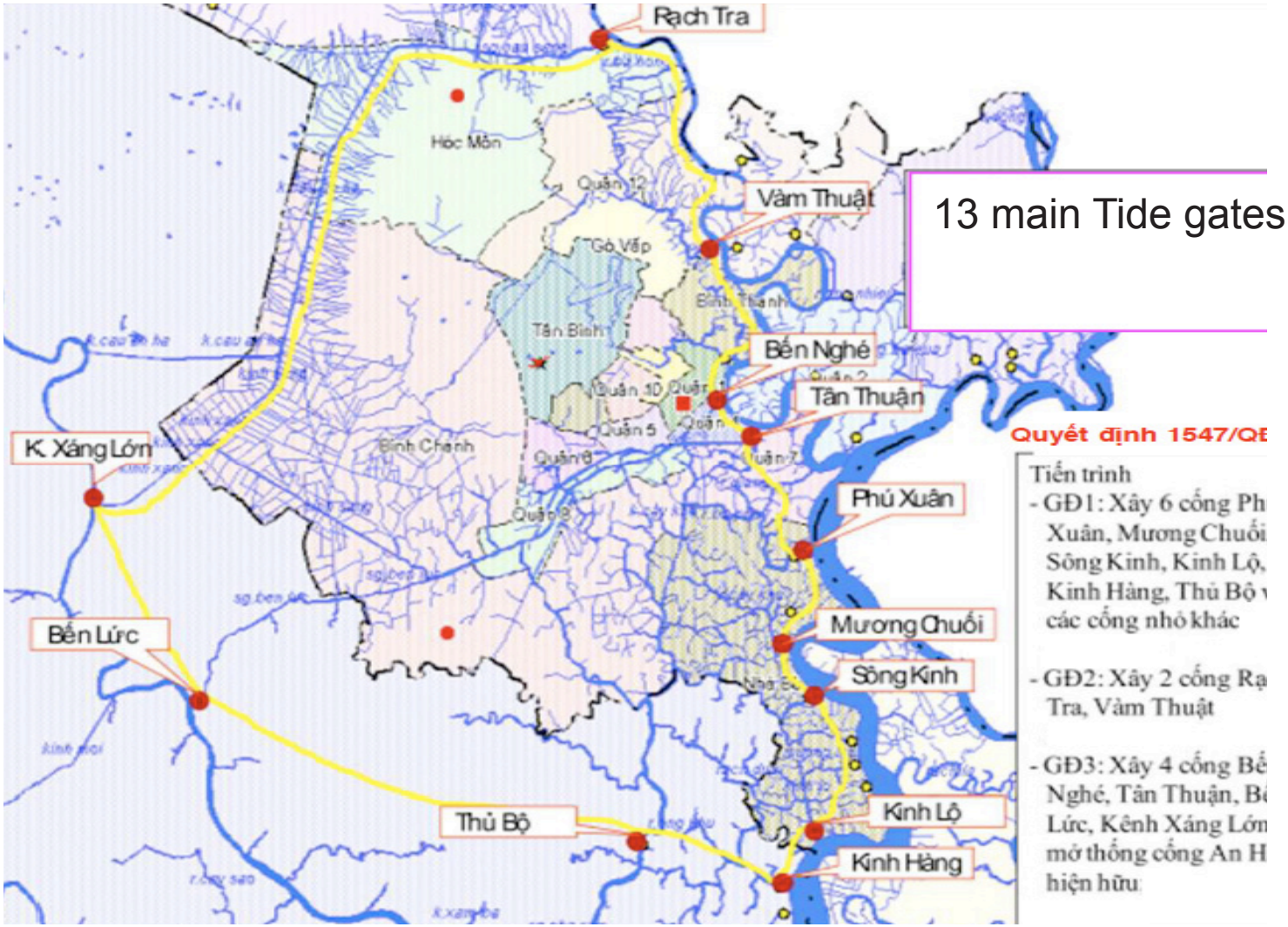
- Use bright and permeable pavements

- Use reflective roofs

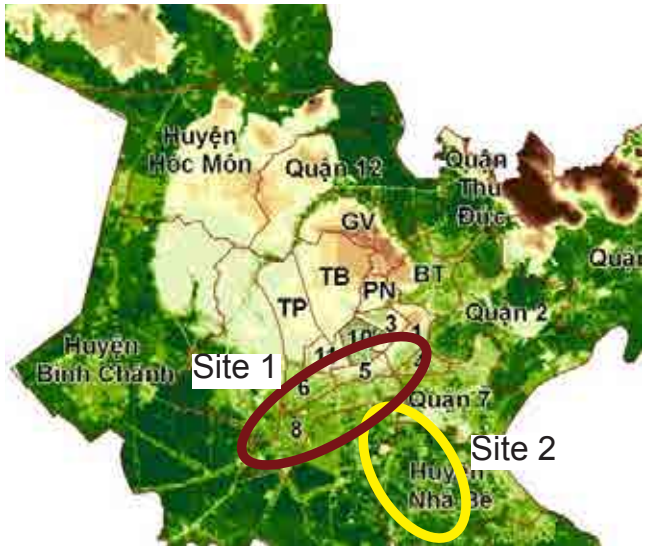


- Limit glass on façade

Urban Flooding
Current Flood Protection Approaches



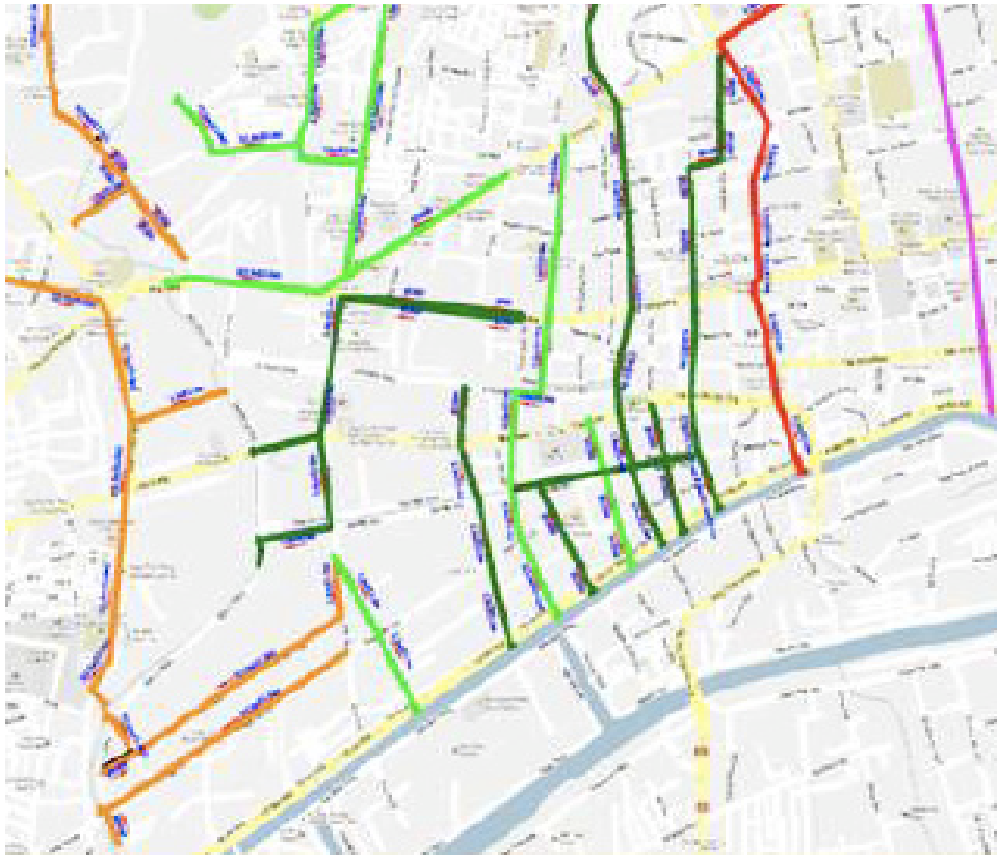
Approved Hydrological Planning



HCMC‘s Elevation

Urban Flooding
Current Flood Protection Approaches

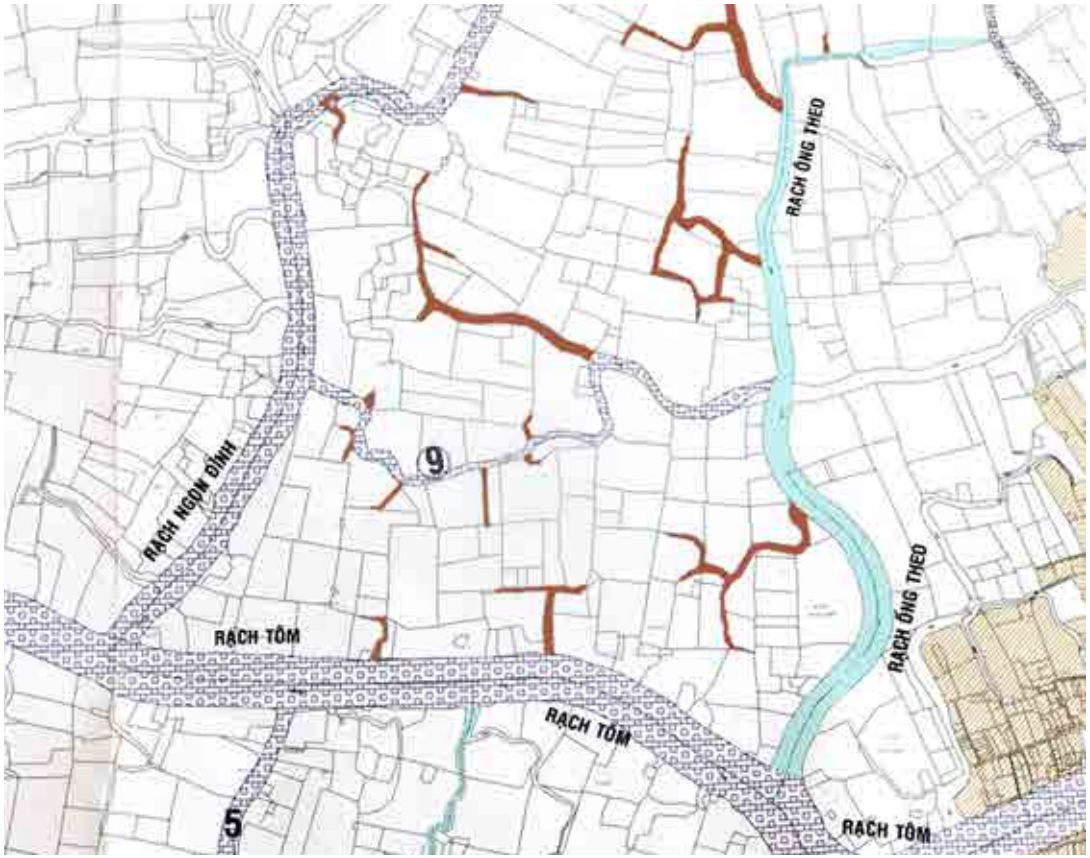
SITE 1



Drainage projects from ODA fundings
(SCFC 2011)

- Water Environment Upgrading projects
- Improving sanitation projects
- Hang Bang basin project
- Urban upgrading projects

SITE 2



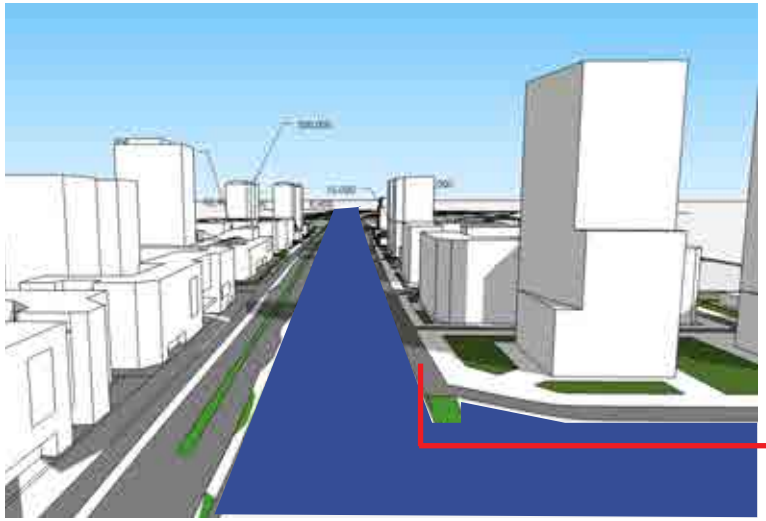
Approved hydrological planning in Nha Be district
(People Committee Ward Nhon Duc)

- Canals can be covered
- Canals to be reserved
- Canals to be dredged
- Drainage network
- Sluice gates

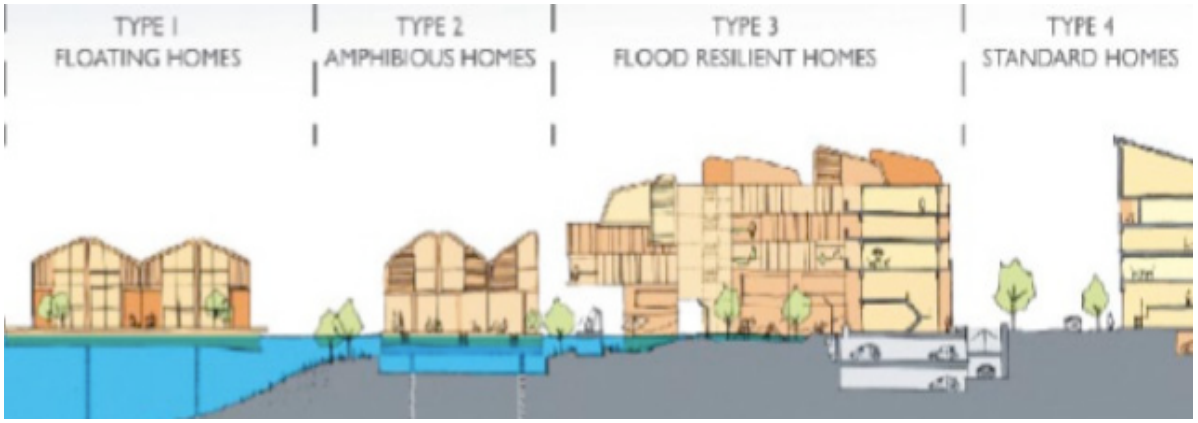
Urban Flooding
Links between Urban Design and Flooding Adaptation

Current Urban Design

RIVERSIDE



Possibilities to link with Flooding adaptation



Buildings near the riverside may need to be resilient to floods

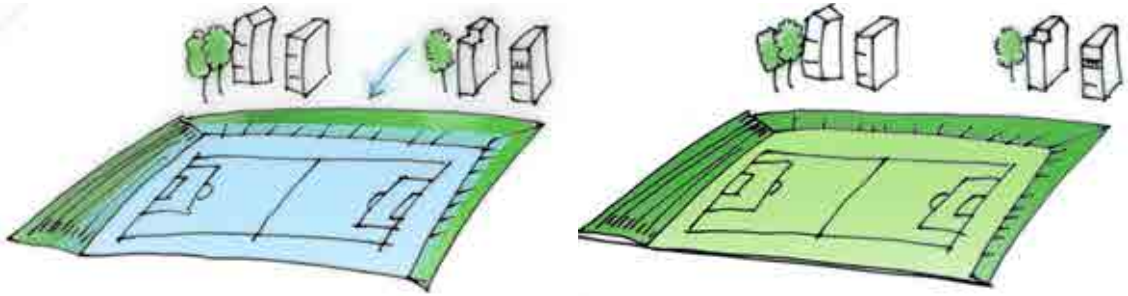
Setback required
Roads should be elevated above flood levels for accessibility

Urban Flooding
Links between Urban Design and Flooding Adaptation

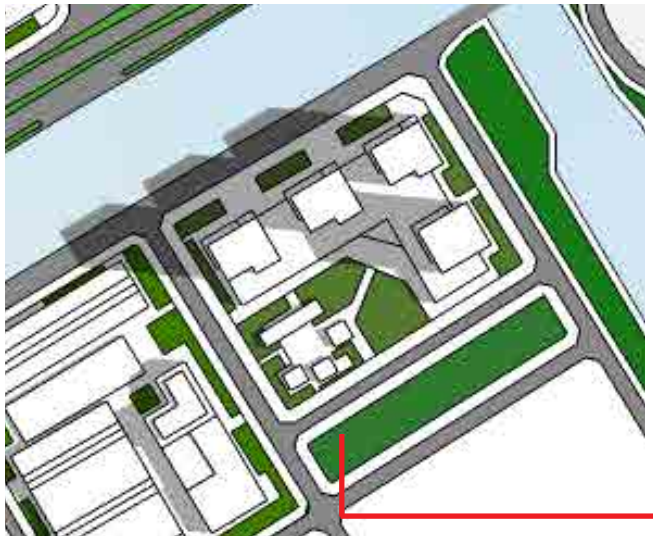
Current Urban Design

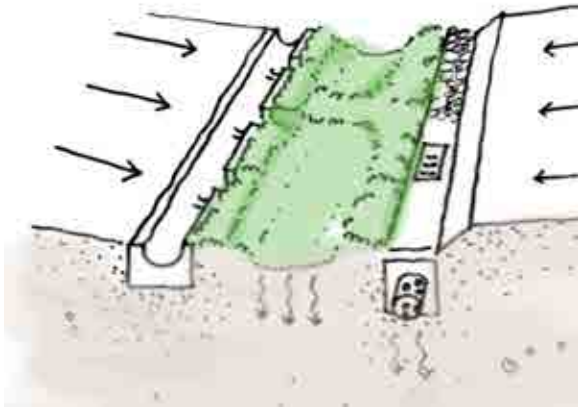
PUBLIC SPACES

Possibilities to link with Flooding adaptation



Public spaces can be used for temporary flood rentention





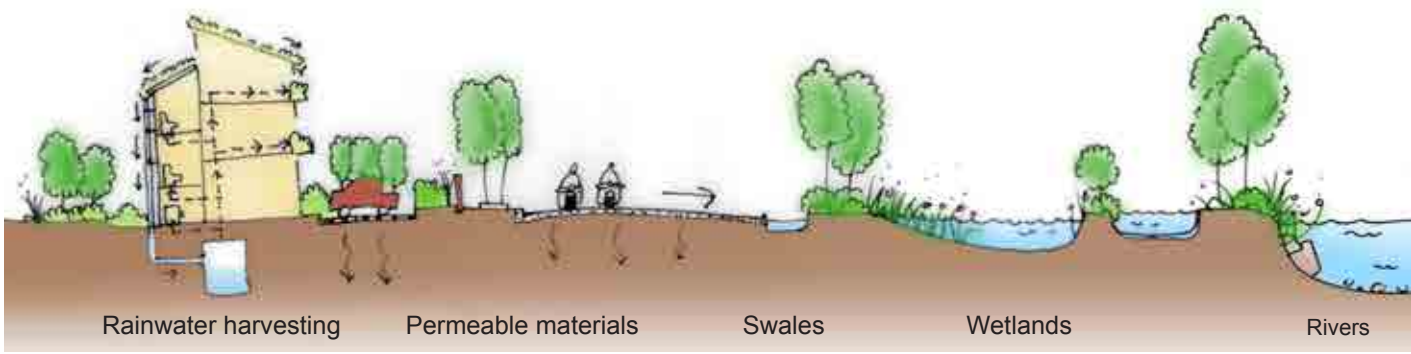
Linear parks can be integrated with swales

Urban Stormwater Management

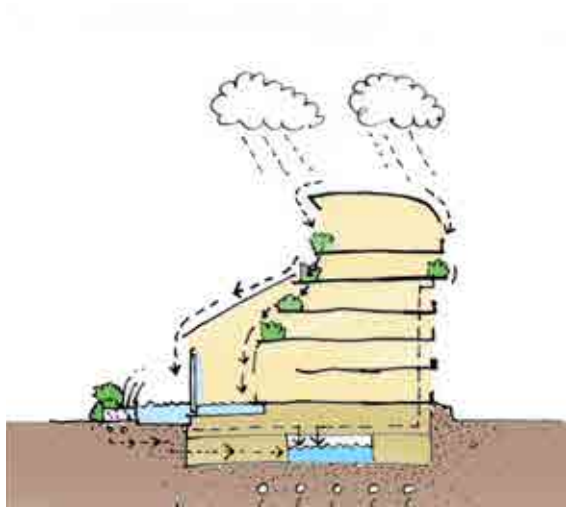
Links between Urban design and Stormwater Management

Current Urban Design

Possibilities to link with Sustainable Stormwater management



Typical section of a sustainable stormwater management neighborhood



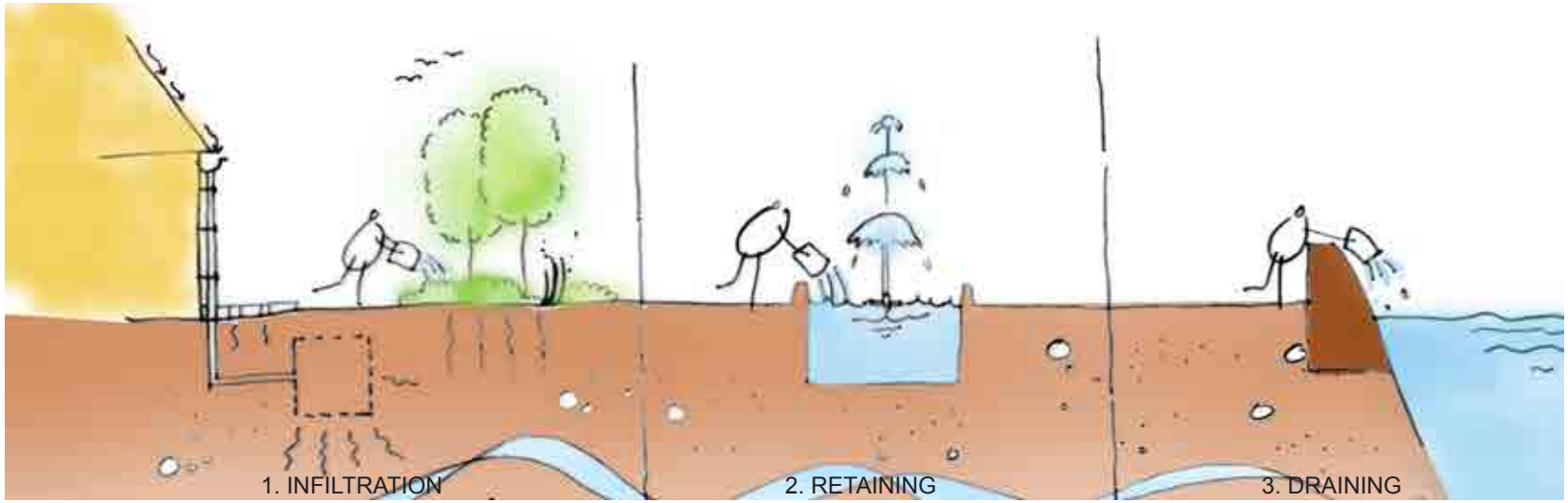
Rainwater harvesting

Green roofs

Urban Stormwater Management
General remarks on Stormwater Management

- **Involment of Atelier Dreiseitl in the conceptual sustainable stormwater design**

ATELIER DREISEITL
UEBERLINGEN SINGAPORE BEIJING PORTLAND



General techniques of stormwater management

Urban Stormwater Management
General remarks on Stormwater Management

ATELIER DREISEITL
UEBERLINGEN SINGAPORE BEIJING PORTLAND

Scope of Work:

1. Simulation, evaluation and comparison of two different urban design scenario (existing and planned situations) for two exemplary case study sites (District 6/ 8 and District Nha Be) in terms of water management.

2. Recommendation of single storm water management solutions/ strategies and elaboration of an integrative storm water management concept for both sites (including proposals for an optimization of the planned urban design, if recommended).

3. Comparison of the planned urban design scheme and the optimized urban design scheme for both case study sites in terms of water management.

4. Survey of additional data (if required for the above mentioned services; most of the necessary data will be provided by the Megacity Project: basic maps of the site, planned urban design scheme, meteorological data, etc.)

5. Presentation of results (June/ July 2012) and interim results (March 2012) to a selected audience of HCMC's authorities in the framework of workshops organized by the Megacity Project.

6. Documentation of the services and delivery as hard and soft copy.

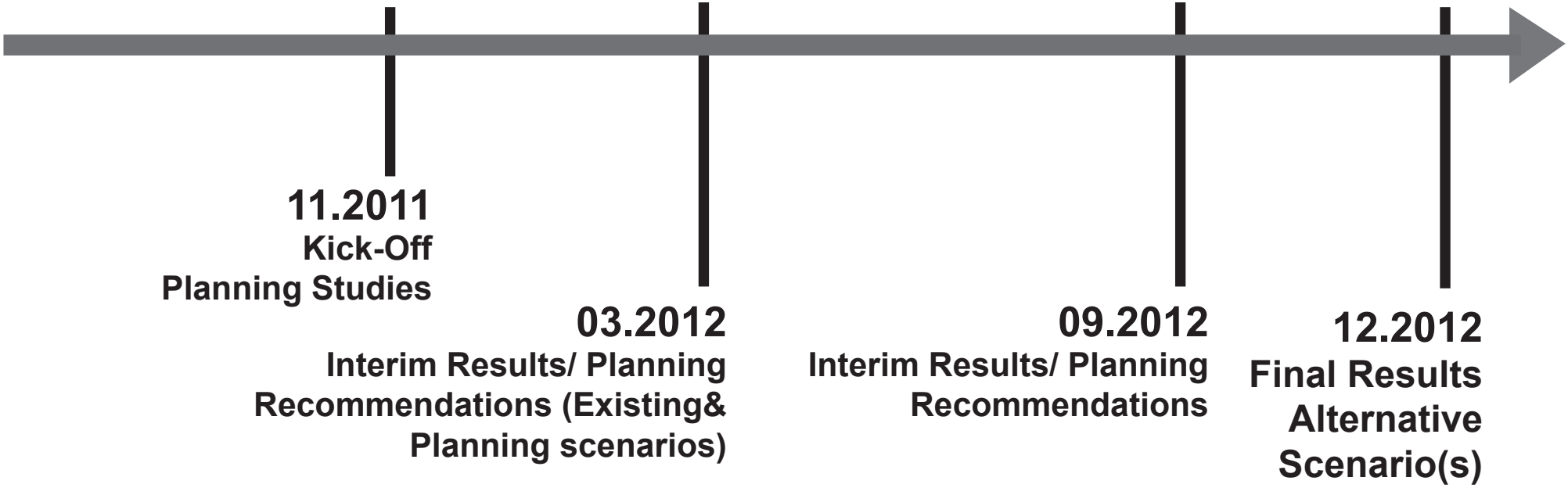
Land Use in term of Urban Energy and Urban Transportation Efficiencies

Opportunities for Mixed-use neighborhoods

GHI CHÚ
- Renewal residential
- New residential
- Commercial and Service
- Public amenities
- Cultural and Educational
- Religious
- Health care
- Green spaces & Sport facilities
- Reserved areas
- Mixed use
- Storage

Inhabitants' responses
Climate Change Awareness & Behaviour and Consequences /Recommendations for Urban Design

Further Steps
Planned Schedule



Study focus	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Climate														
Water management														
Flooding														

Further Steps

Handbook on “Climate Change Adapted Urban Planning & Design”

Introduction

Purpose of Handbook
Content & Structure of Handbook
Target Group
Link to Megacity Research Project

I Understanding Climate Change

Climate Variability & Change
Climate Projections for Vietnam & HCMC
Climate Change Impacts on the Urban System

II Climate Change Adaptation

Concept of Adaptation & Mitigation
Adaptation in Urban Planning & Design
Adaptation Initiatives & Policies in Vietnam & HCMC

III Urban Planning & Design Adaptation

III.1 Managing Flood Risks

Problem Background
Overview on Adaptation Strategies
Exemplary Urban Design Scheme
Selected Adaptation Strategies
Case Studies
Adaptation Checklist
References & Resources

III.2 Managing Surface Water

Problem Background
Overview on Adaptation Strategies
Exemplary Urban Design Scheme
Selected Adaptation Strategies
Case Studies
Adaptation Checklist
References & Resources

III.3 Managing High Temperatures

Problem Background
Overview on Adaptation Strategies
Exemplary Urban Design Scheme
Selected Adaptation Strategies
Case Studies
Adaptation Checklist
References & Resources

IV Tools & Instruments
(Intended Handbook Part 2)

Tools for Implementing Adaptation into Legal Proce dures/ Project Approval Procedures (Guidelines)
Tools for Implementing Adaptation into Planning
Tools for Mainstreaming/ Capacity Building

Additional Resources

Literature, Links, etc.

Thank You for Your Attention and Your Statements!

Urban Climate
SITE 1: Comparision

at 2.00 pm	Existing situation	Planning scenario
POT