

# DEVELOPING STRATEGIES

## Planning cities affected by Coastal Erosion

*Southeast England's Coastline*



## 0.1 PERSONAL FASCINATION





## 0.2 LOCATION



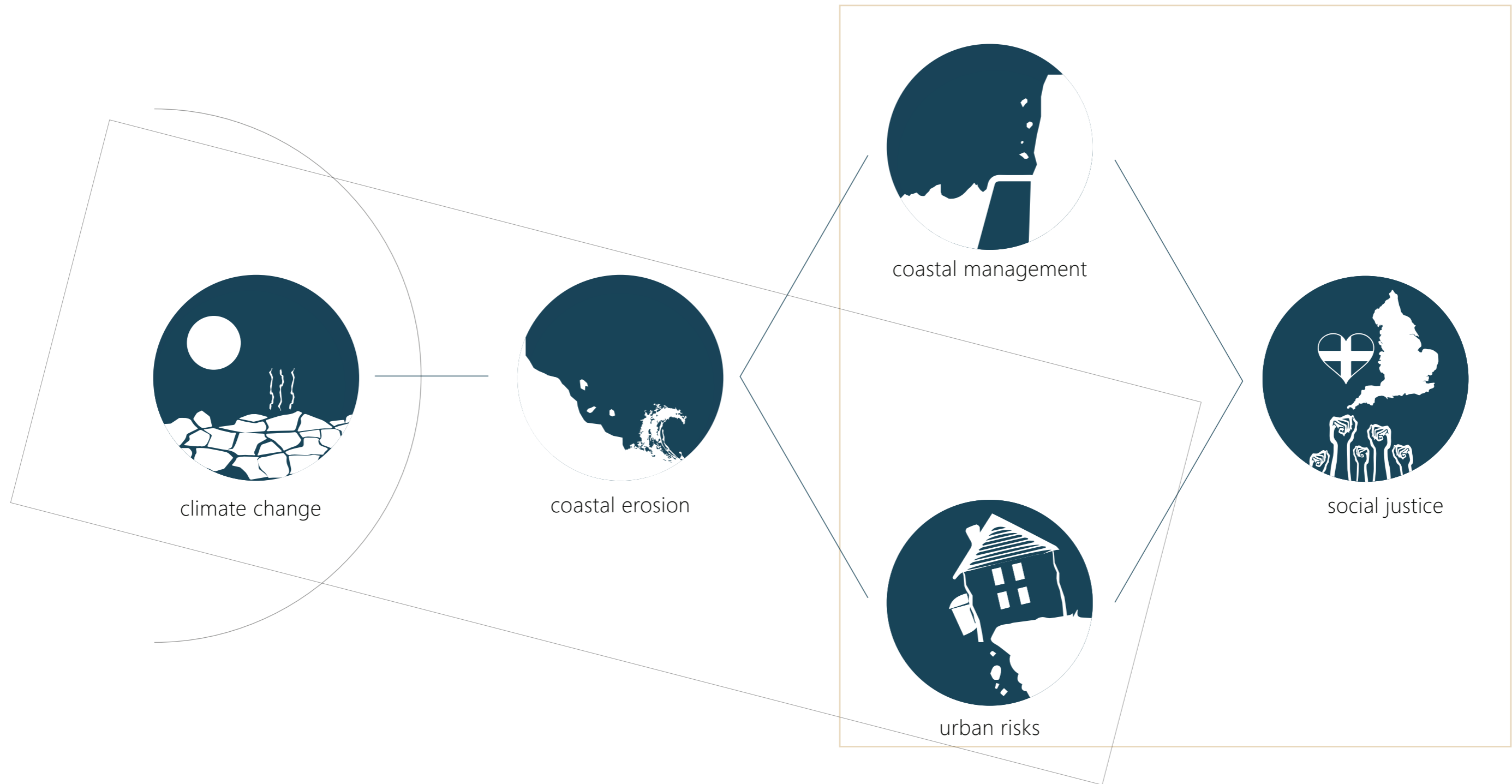
NATIONAL SCALE

REGIONAL SCALE

# METHODOLOGY

# 1

## 1.1 PROBLEM STATEMENT



### RESEARCH QUESTION

What aspects should an **Urban Planning Strategy** for vulnerable English coastal cities include to create a **Sustainable Urban Environment** that adapts to **(accelerated) Coastal Erosion**?

*A+B*

What are Climate Change effects and how do they impact **Spatial Planning** and Erosion Management in cities aiming for **Sustainability**?

*A+C*

What are current **Urban Planning Strategies** and how do they influence **Coastal Erosion** Management?

*B+C*

How can an **Urban Environment** adapt to the effects of **Coastal Erosion** and the impact on the Socio-Environmental System?

*B*

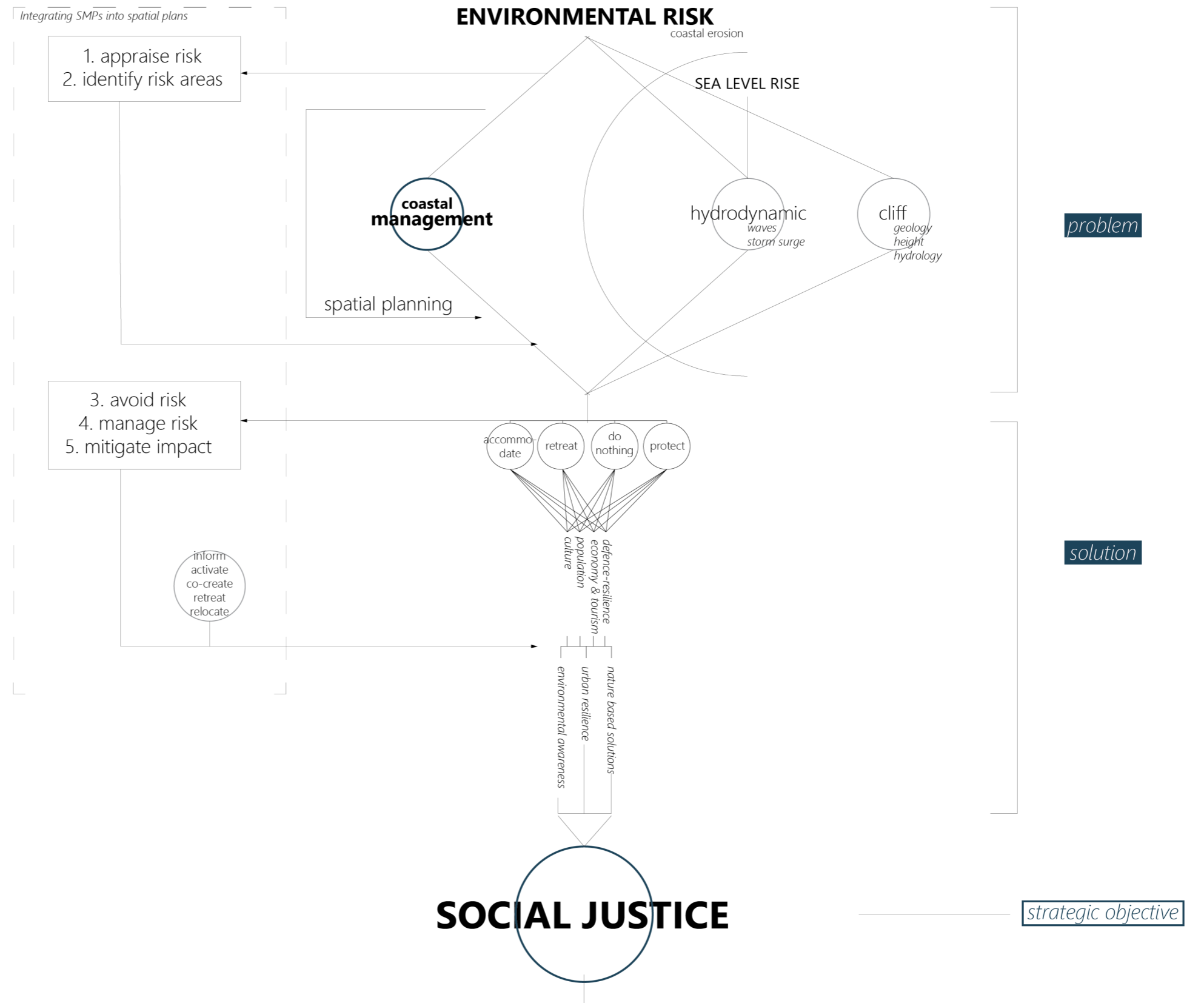
Can a **Sustainable Urban Environment** be explained through the theoretical framework?

## 1.2 PROJECT GOALS

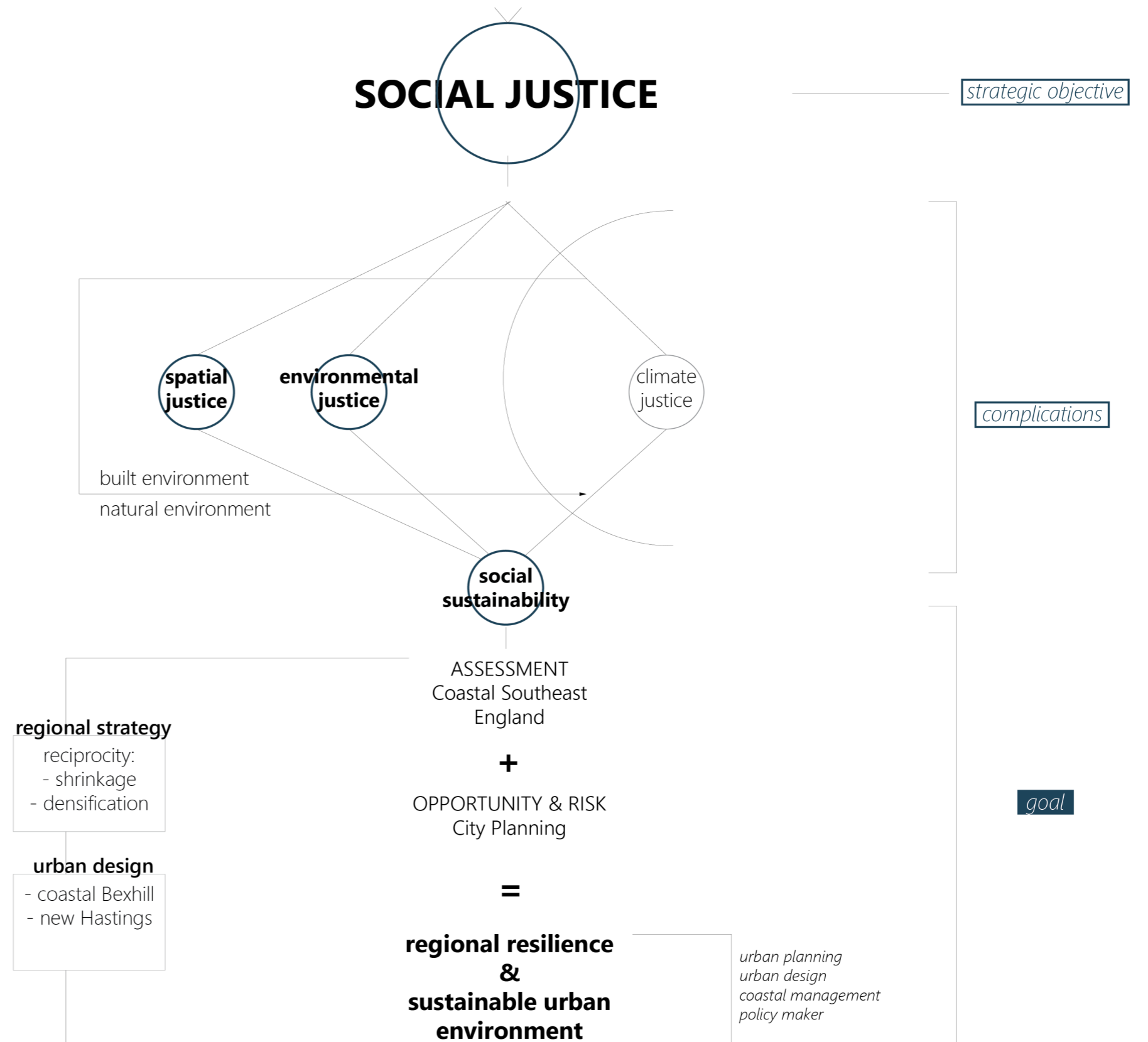
- Long term Spatial Plans to achieve an Sustainable Urban Environment
- Regional Resilience through collaboration between stakeholders in different scales

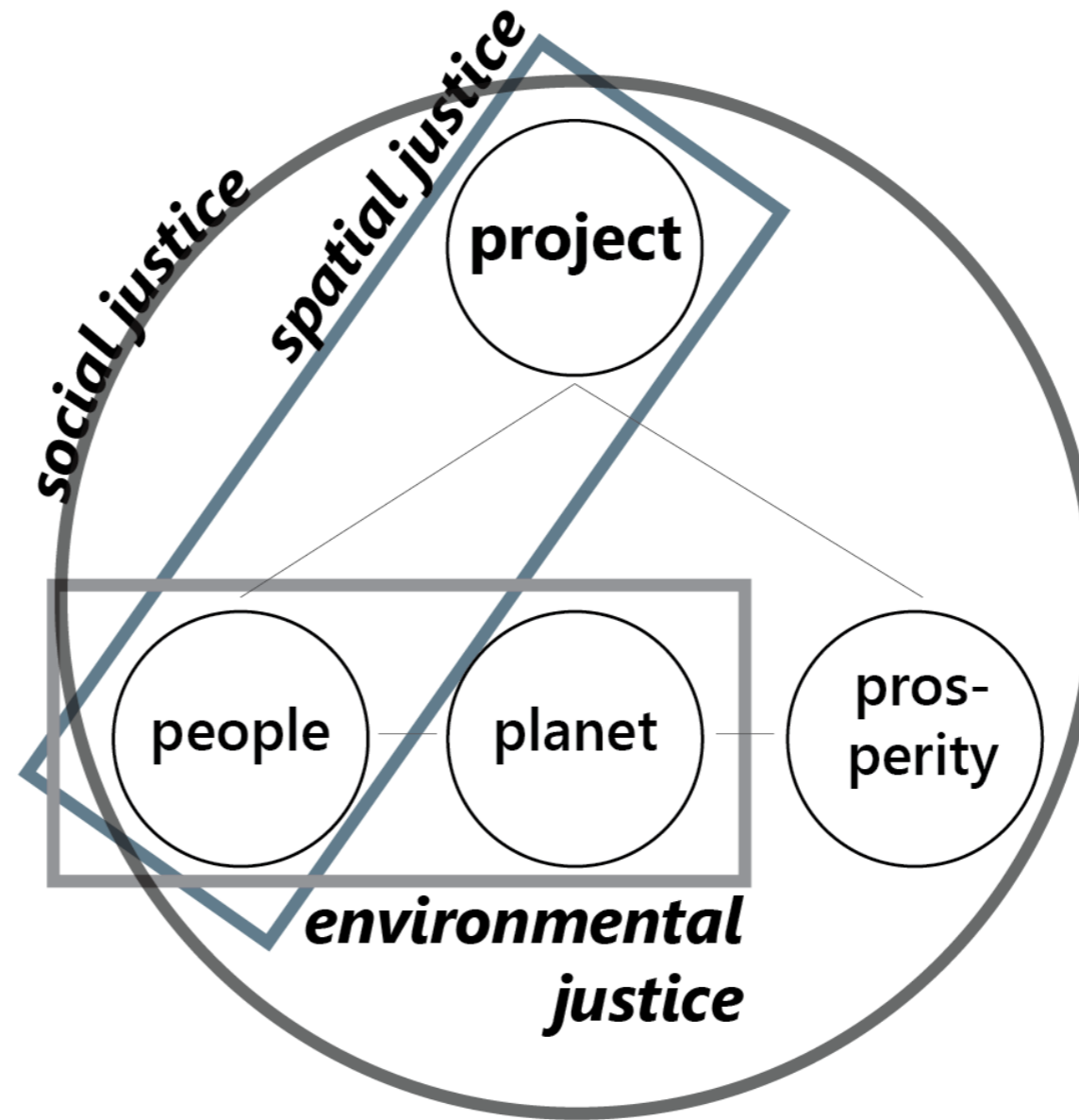


# 1.3 CONCEPTUAL FRAMEWORK

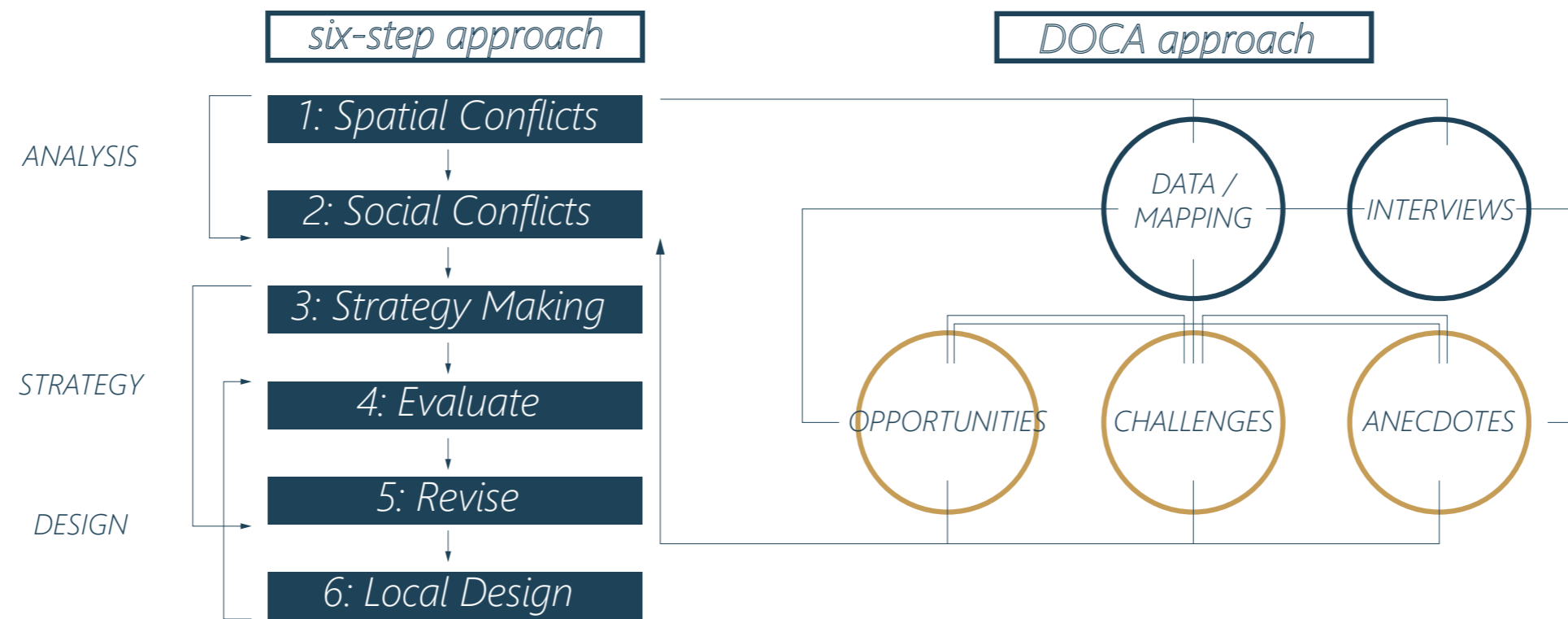


### 1.3 CONCEPTUAL FRAMEWORK





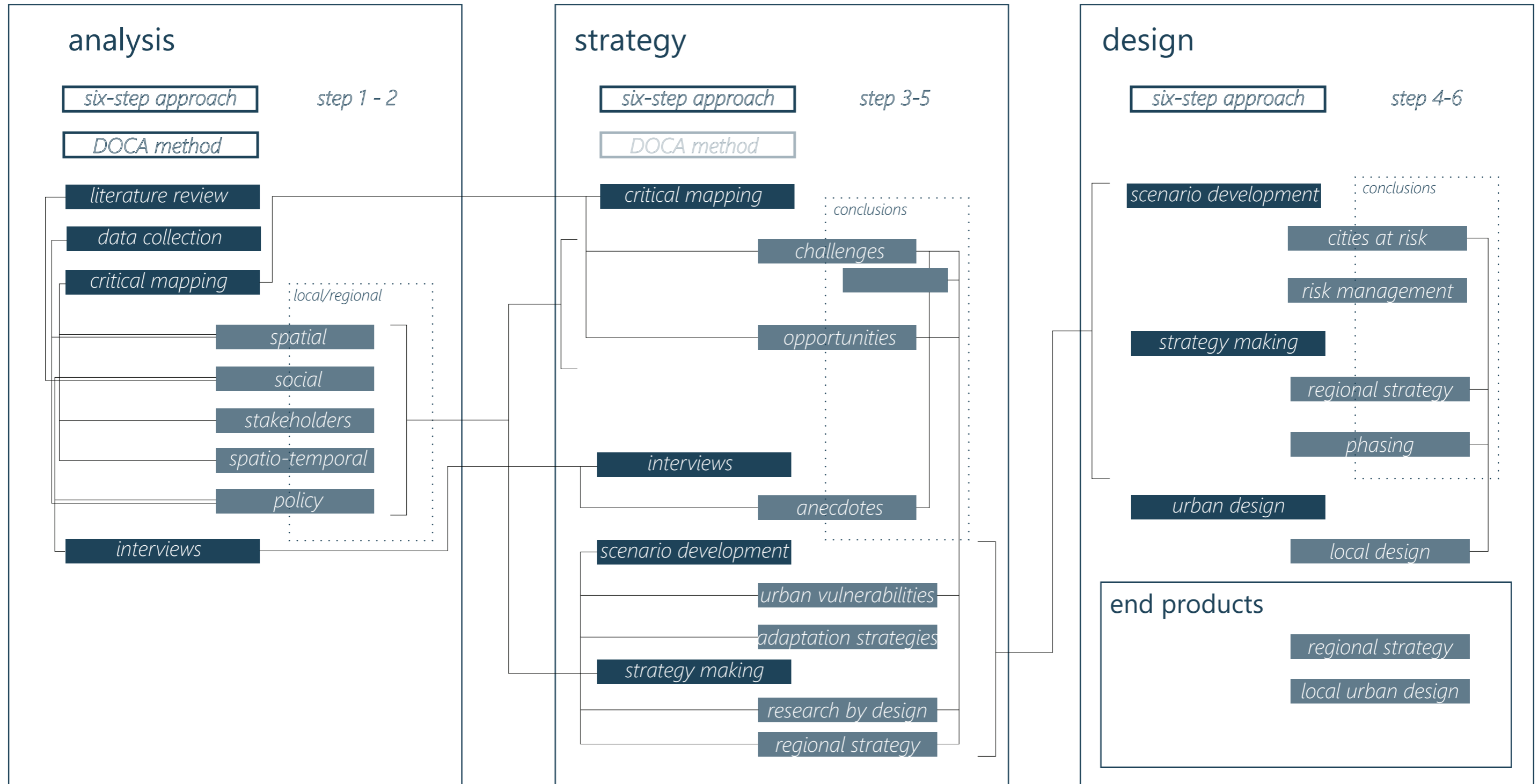
## 1.5 ANALYTICAL & DESIGN FRAMEWORK



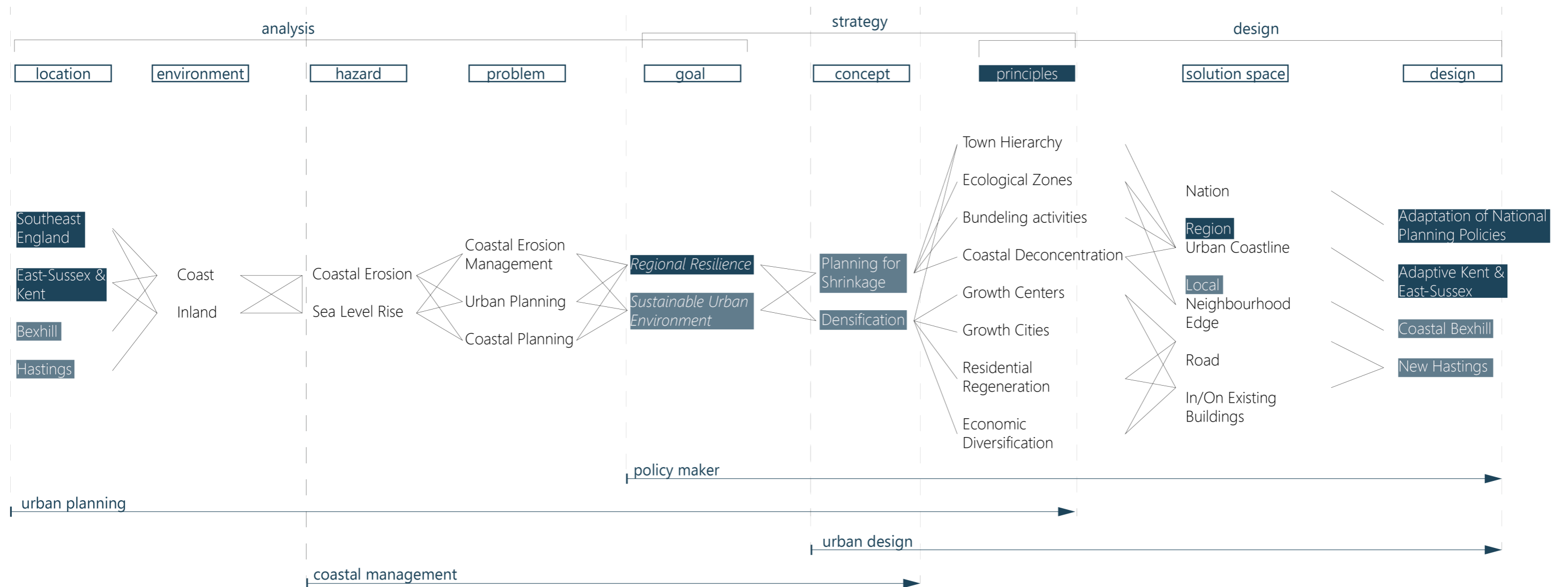
# ANALYSIS

# 2

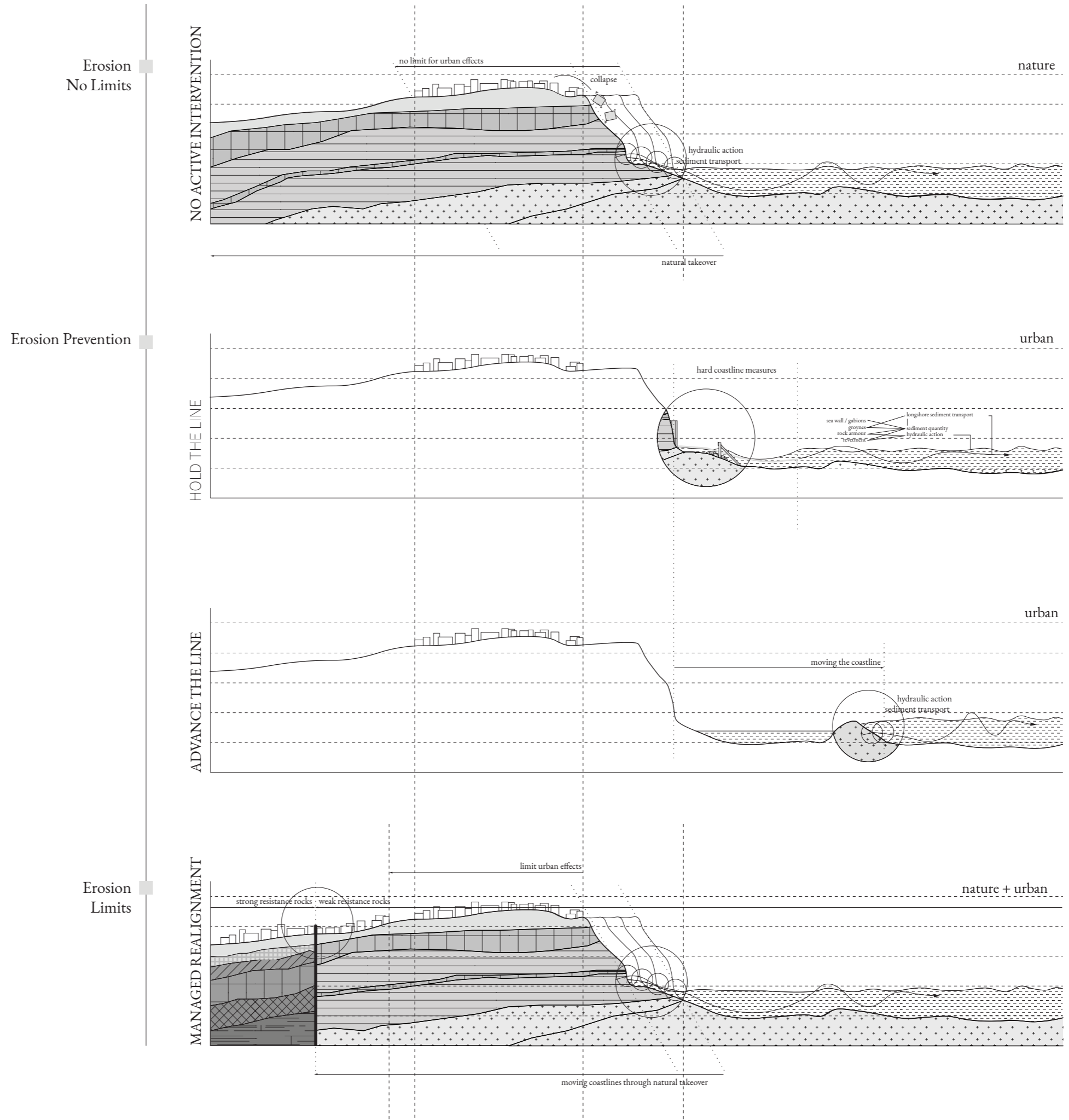
## 2.0 ANALYSIS AND DESIGN METHODS



## 2.0 ANALYSIS AND DESIGN METHODS

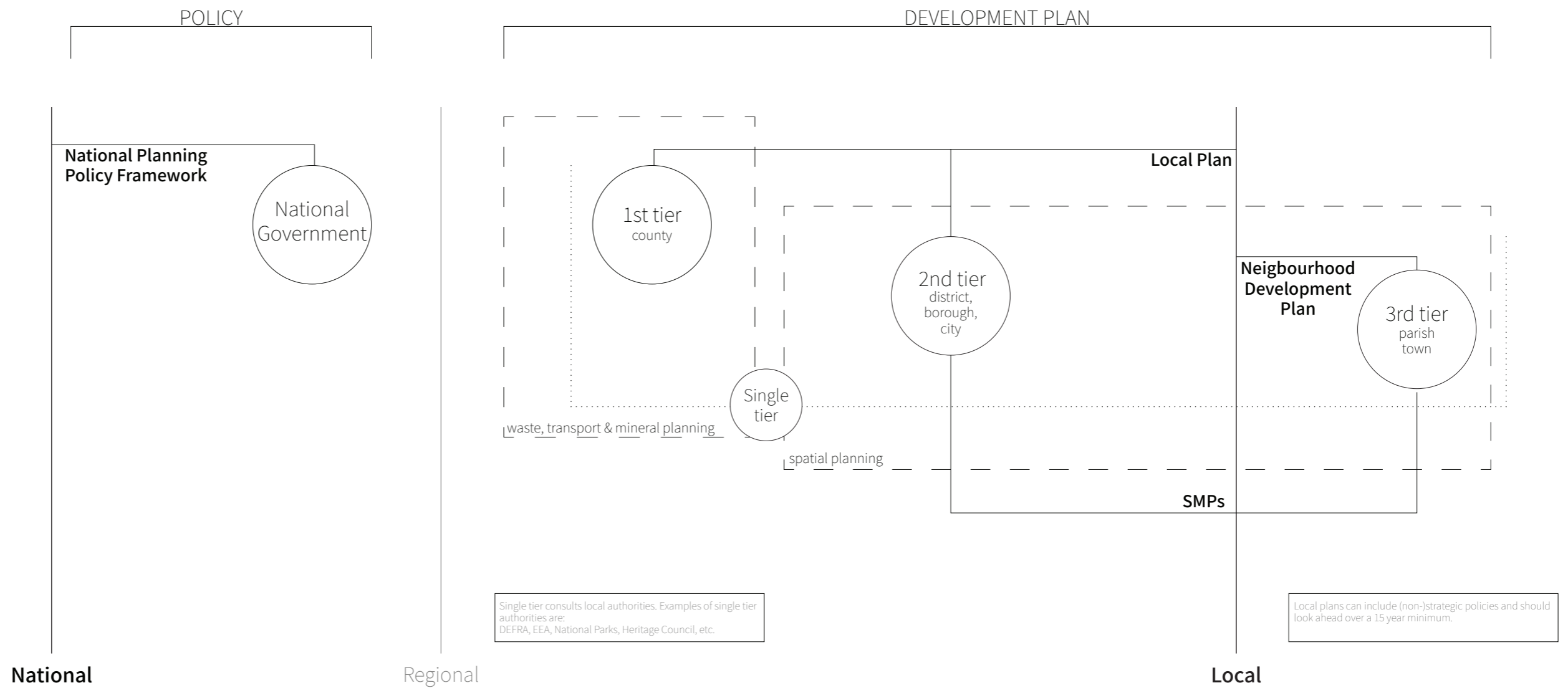
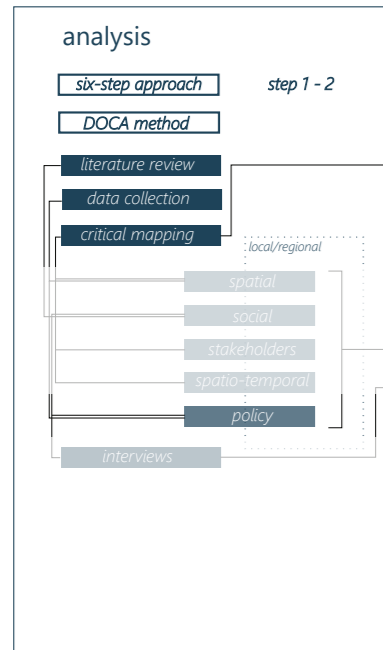


## 2.1 ENGLISH PLANNING SYSTEM SHORELINE MANAGEMENT PLANS

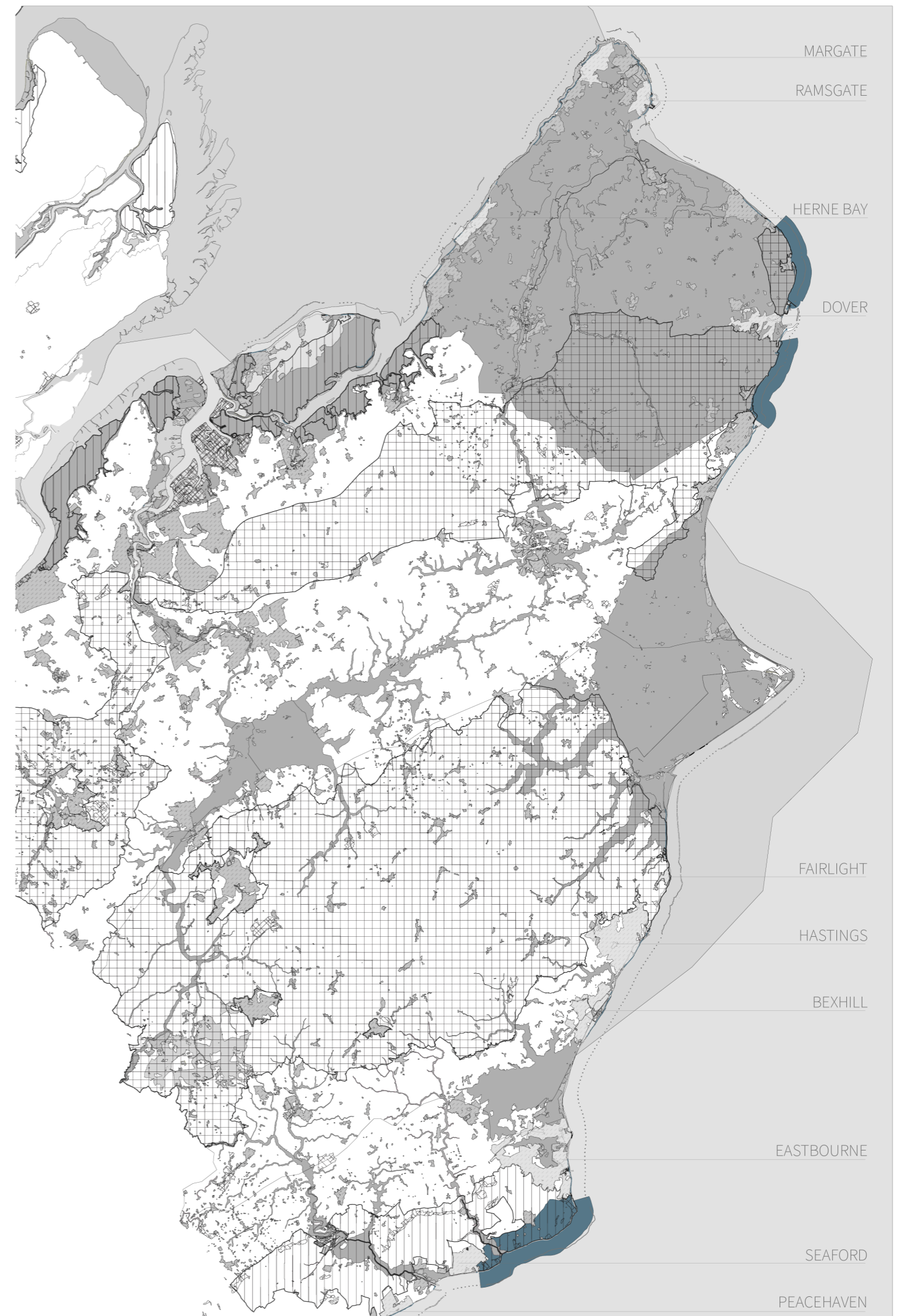
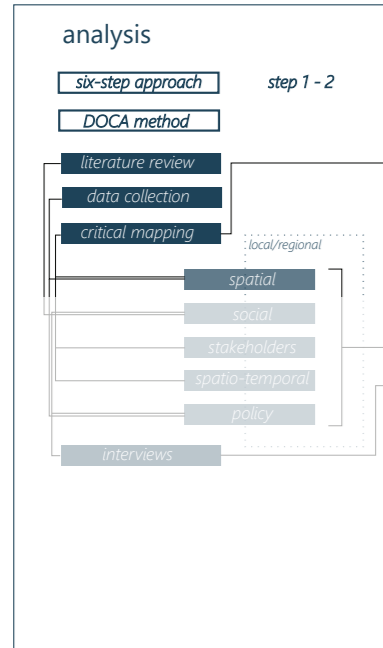




## 2.1 SPATIAL PLANNING SYSTEM



## 2.2 SPATIAL CONFLICTS



### Conclusion

Data from Data.gov.uk (2019) and Maritime Archeology Trust (2020), Natura 2000 (2020) Ruffell et al (1996), Environment Agency (2019) & The Crown Estate (2020).

- Urban Areas
- Environmentally sensitive areas
- Areas of outstanding beauty
- Heritage coasts
- Special protection areas
- Flood Prone Areas

- Shoreline Management
- No Active Intervention
  - Managed Realignment
  - Hold the Line

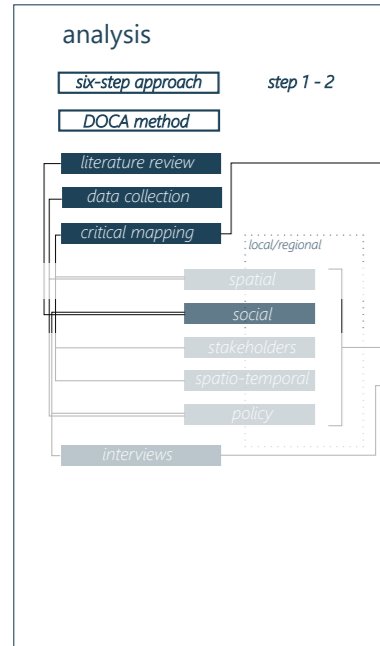
- Coastal Measures
- Natural
  - Sea Wall
  - Embankment
  - Timber

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## 2.4 SOCIAL CONFLICTS



# Coastal Erosion

## The Socio-Environmental Impacts of Spatial Planning resulting from Shoreline Management in England

### problem

“**Implementation of protection measures** only leads to the postponement and **increase of social issues** as more coastal development will take place and, therefore, coastal urban areas will have an increasing population. The risk management will only become more difficult with this increased development along the temporal scale.”

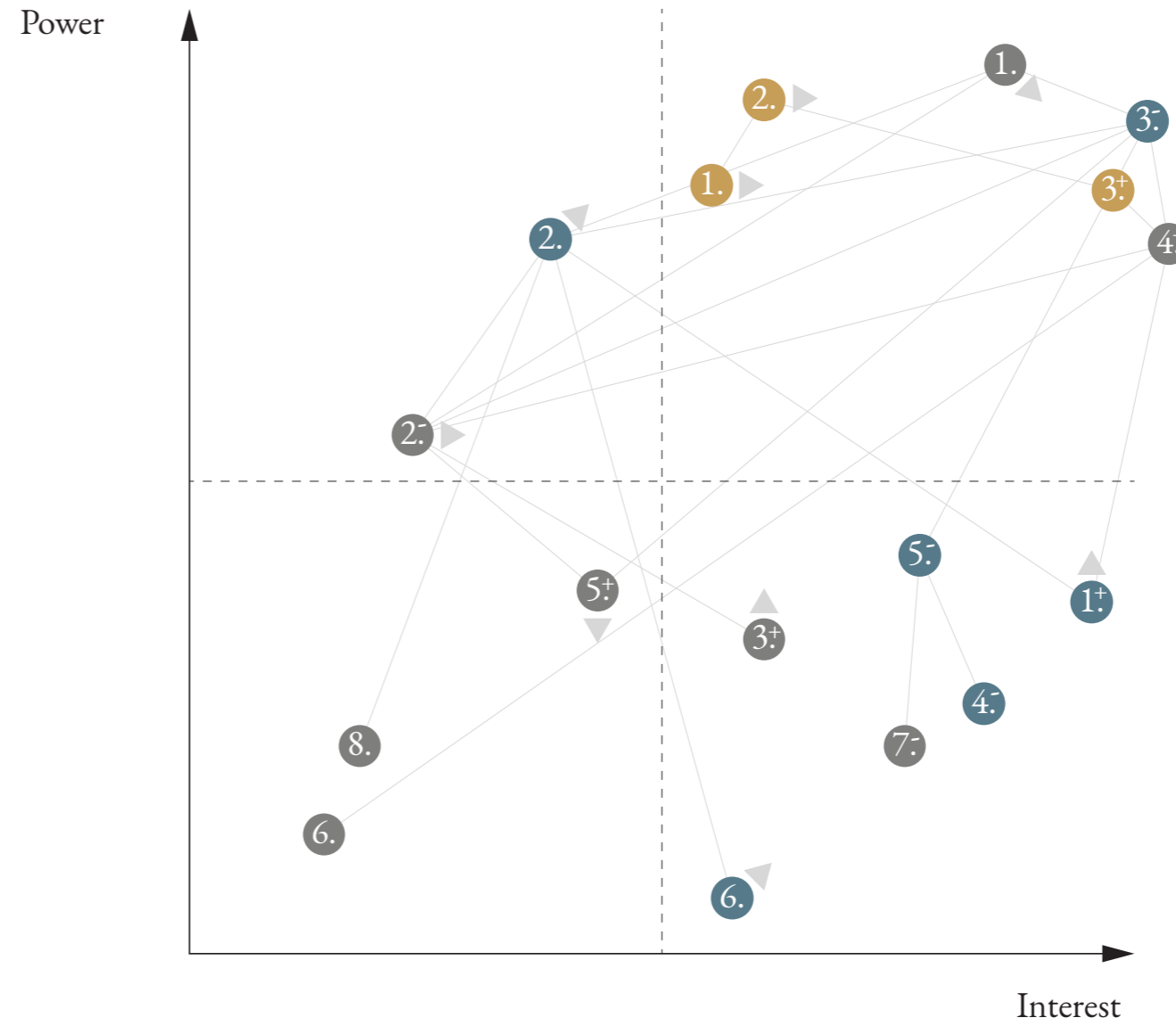
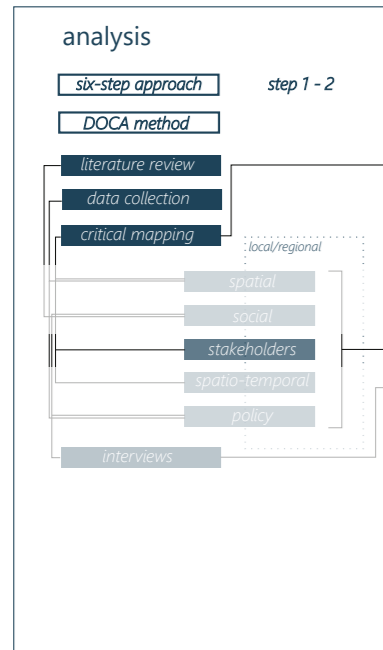
### short-term

“The current shift to managed realignment plans in the UK, is used by the UK government to shift the responsibility of payment towards the residents of the coastal villages and not the UK government. But without encouragement by the UK government with the use of financial compensation, **managed realignment is for most residents unaffordable.**”

### long-term

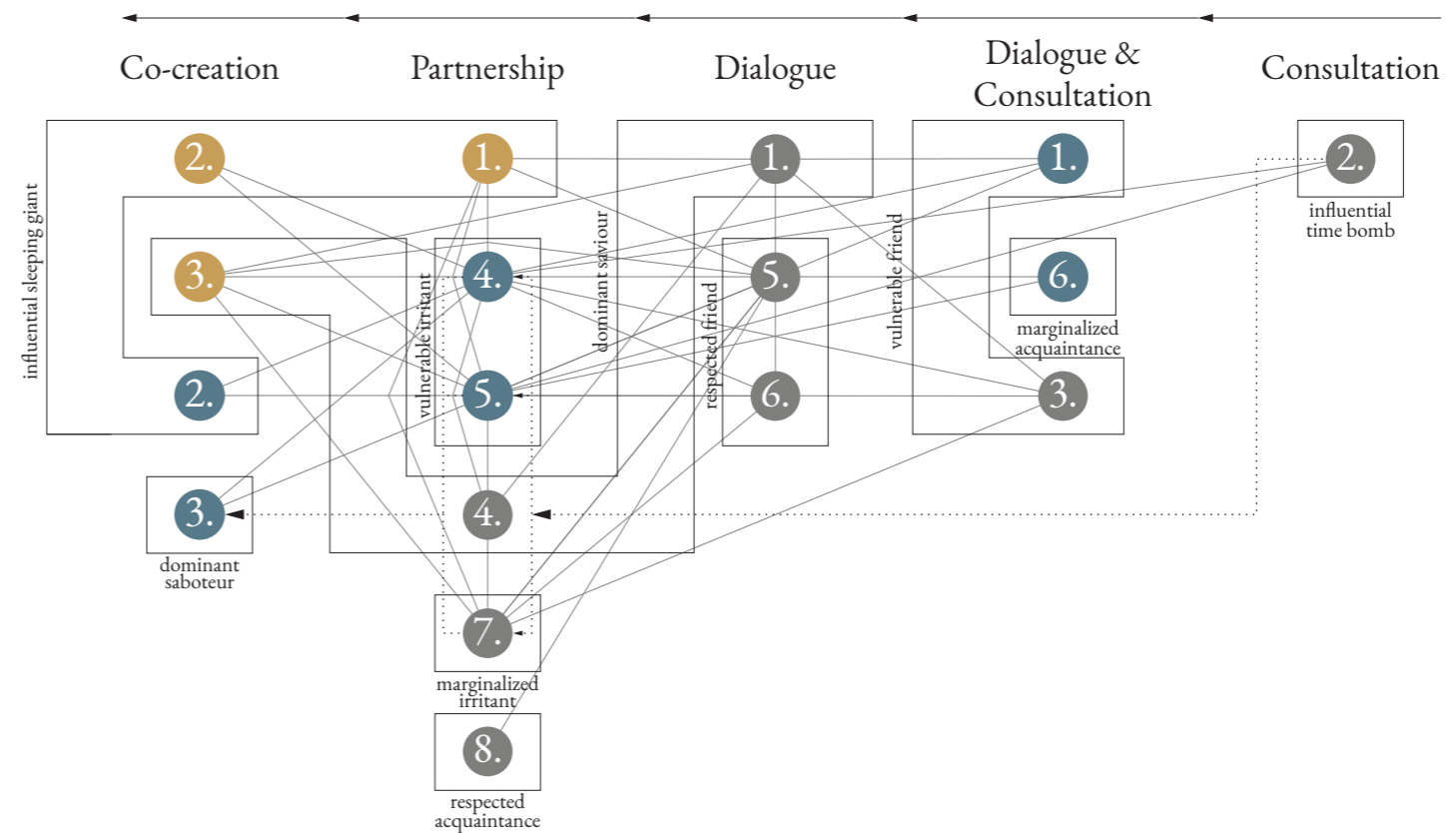
“Planning developments such as managed retreat need a **gradual transition** to inform and convince society about vulnerabilities and risk management including the consequences should be more frequently addressed. **Including the public** in the planning process of adaptation measures can **raise awareness** for individuals at risk. Currently, individuals at risk may not be aware of the possible strategies that are involved when dealing with hazards, with more **knowledge and participation** they will be able to make more informed and possibly better choices and not limiting the options to only one strategy.”

## 2.5 STAKEHOLDER CONFLICTS

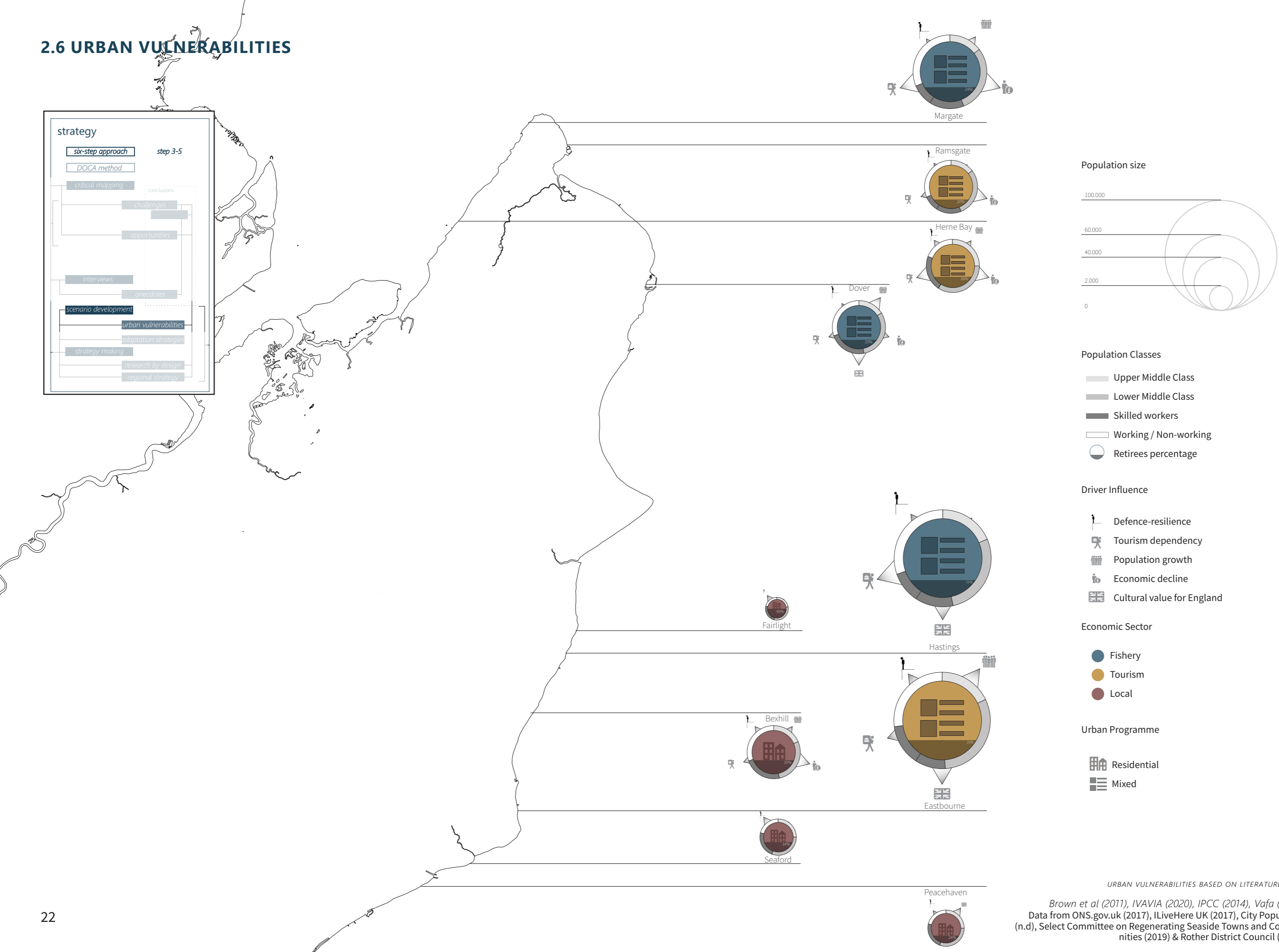
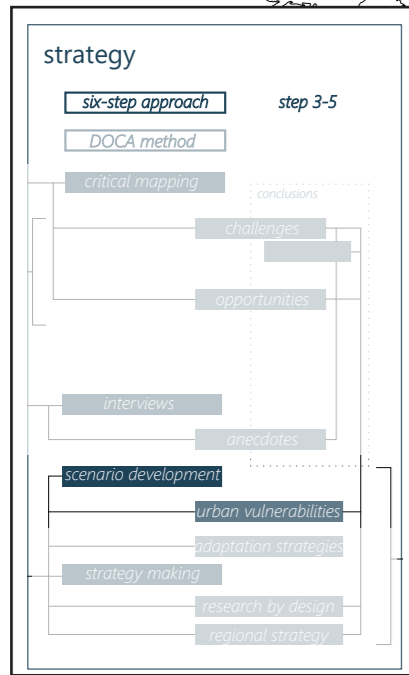


### Stakeholders' Powers and Interests, Attitude Desired Shifts and Collaboration

- 1 Managing Authorities of Coastal Erosion
- 2 Planning Committee Spatial Planning
- 3 Public Authorities Coastal Planning
- 1 Knowledge Providers - Scientists
- 2 County Council Planning Authority
- 3 Local Planning Authorities
- 4 Business Sector
- 5 Landowners & Developers
- 6 Service Providers
- 1 Ministry of Housing, Communities and Local Government
- 2 National & EU Policy Makers
- 3 Directorate General Environment European Commission
- 4 DEFRA & EA
- 5 English Heritage Trust
- 6 Marine Management Organisation
- 7 British Property Federation
- 8 Infrastructure and Projects Authority
- + Positive attitude
- Negative attitude



## 2.6 URBAN VULNERABILITIES



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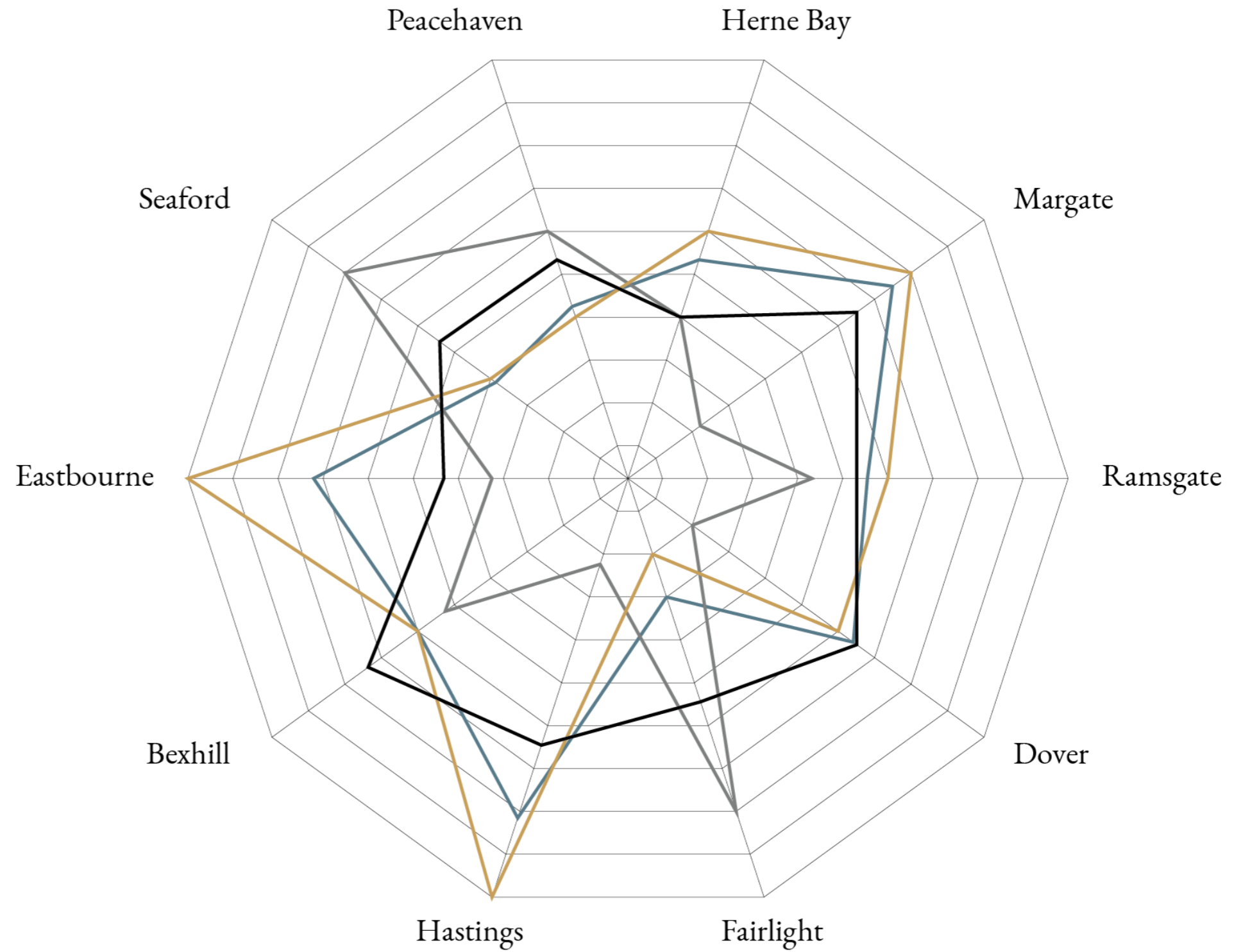
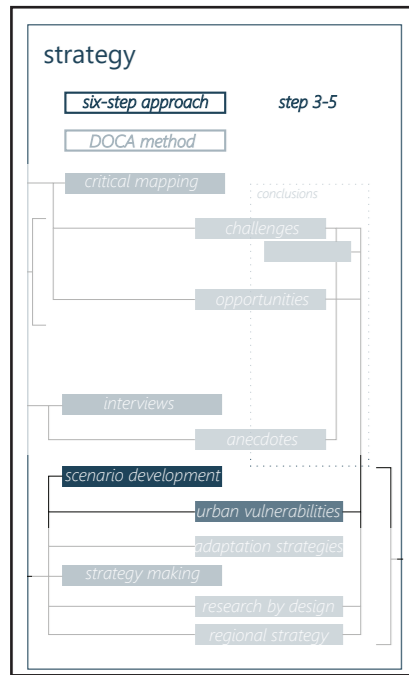
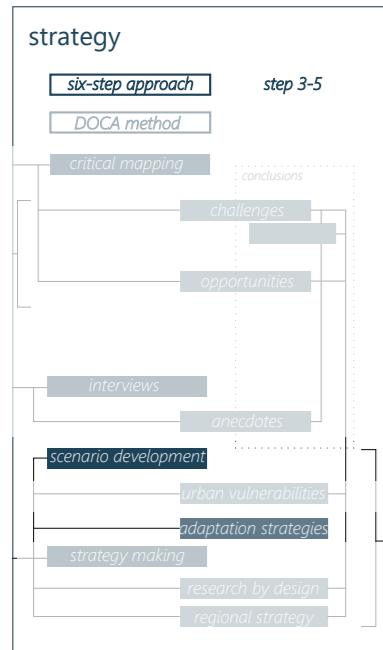


FIGURE 24

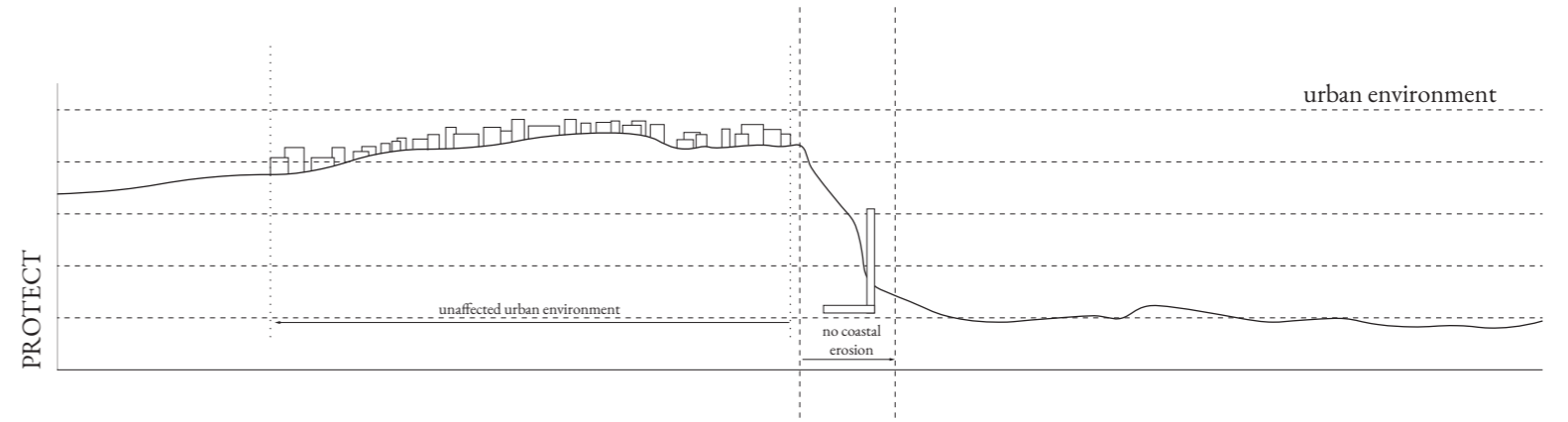
### Presenting Risk for Coastal Cities

- Adaptivity
- Sensitivity
- Exposure
- Vulnerability

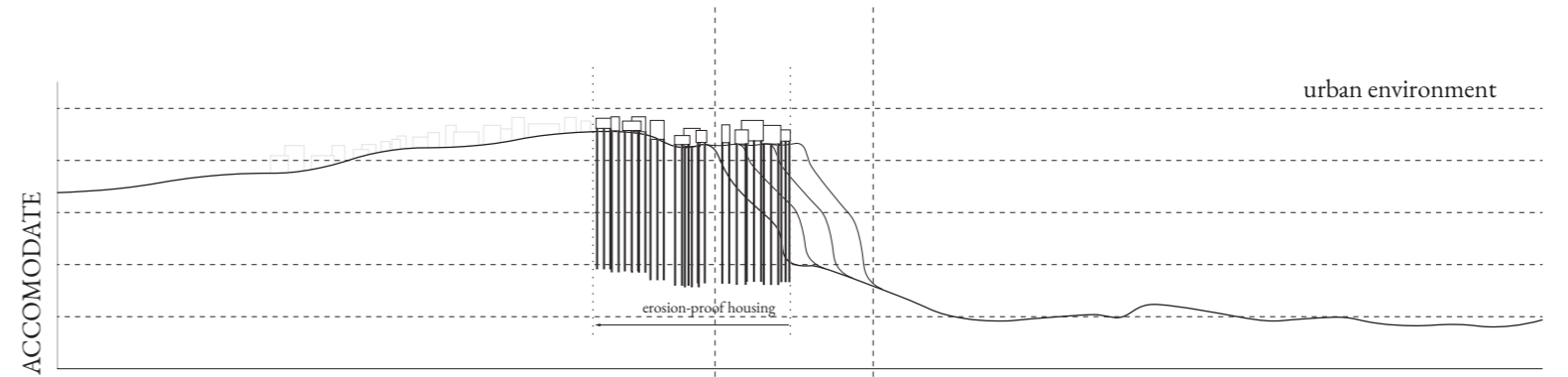
## 2.7 ADAPTATION STRATEGIES



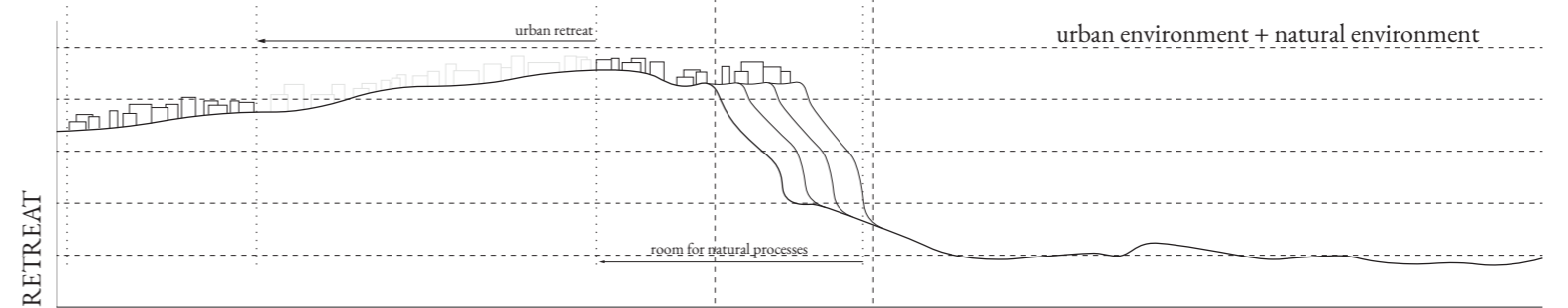
Prevent



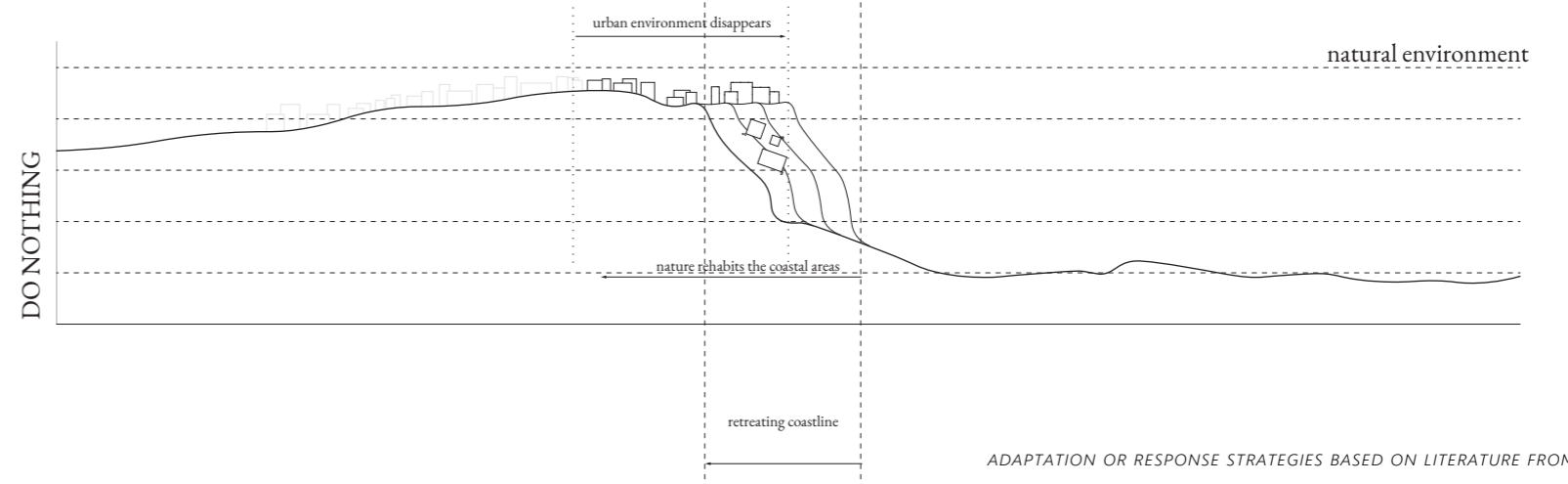
Adapt



Embrace



DO NOTHING



ADAPTATION OR RESPONSE STRATEGIES BASED ON LITERATURE FROM

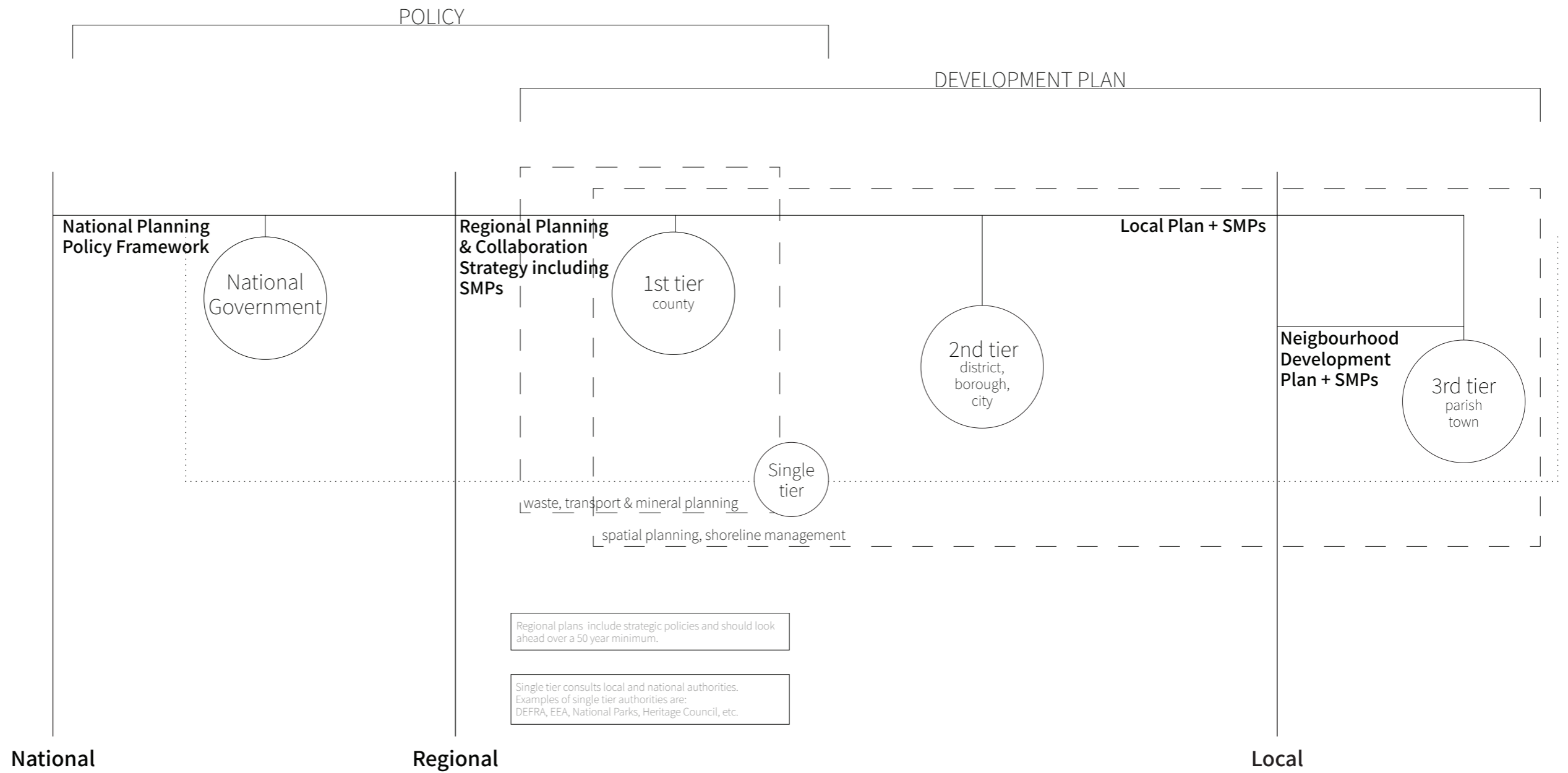
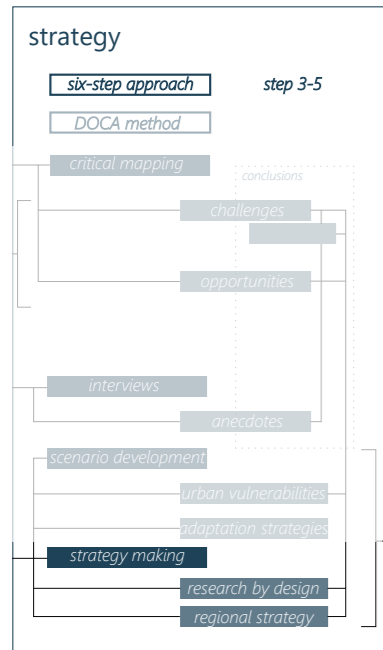
Dronkers et al (1990)



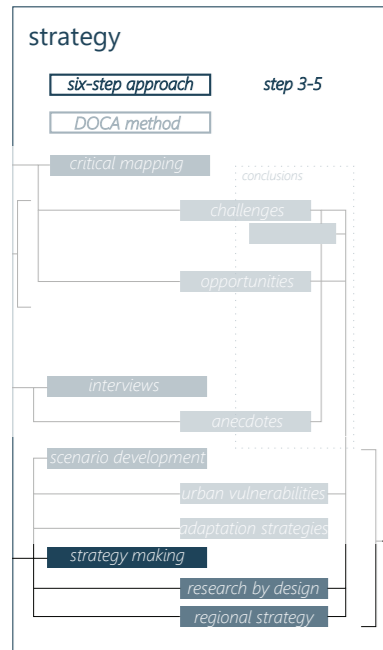
STRATEGY

3

### 3.0 STRATEGY DEVELOPMENT - POLICY CHANGE IN SPATIAL PLANNING SYSTEM



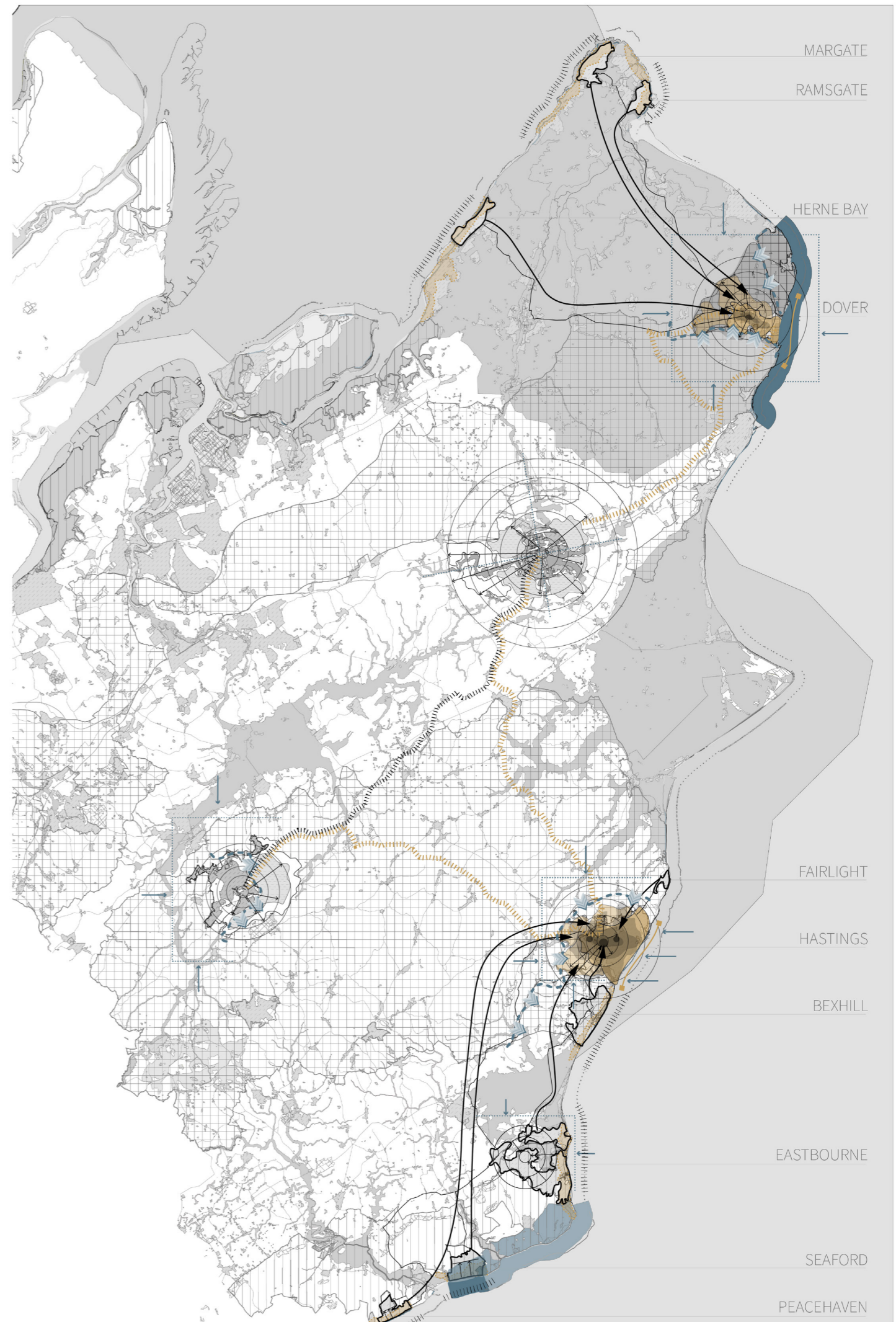
### 3.1 STRATEGY DEVELOPMENT - REGIONAL STRATEGY



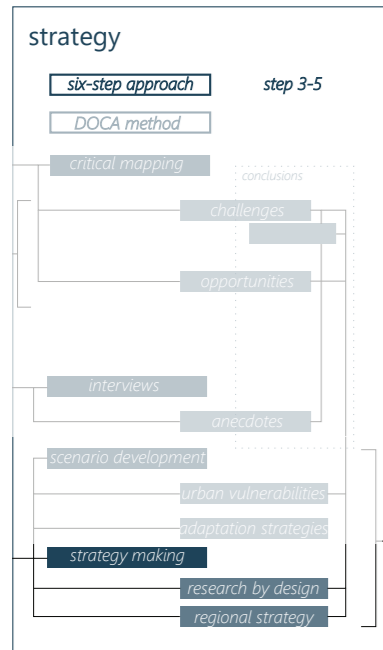
#### Regional Adaptive Spatial Planning Strategy for Southeast England

- Migration flows
- |||| Managed Realignment strategy
- Hold the Line strategy
- - - Geopolitical boundaries
- Pressure by geopolitical boundaries
- Pressure by natural processes
- ⋯ Limits of natural pressure
- |||| Secondary migration flows
- |||| Tertiary migration flows
- ⊙ Direction of shrinkage / growth
- ⊠ Urban environment
- Densification locations
- Coastal Change Management Areas
- Heritage coasts
- Cities planning for shrinkage

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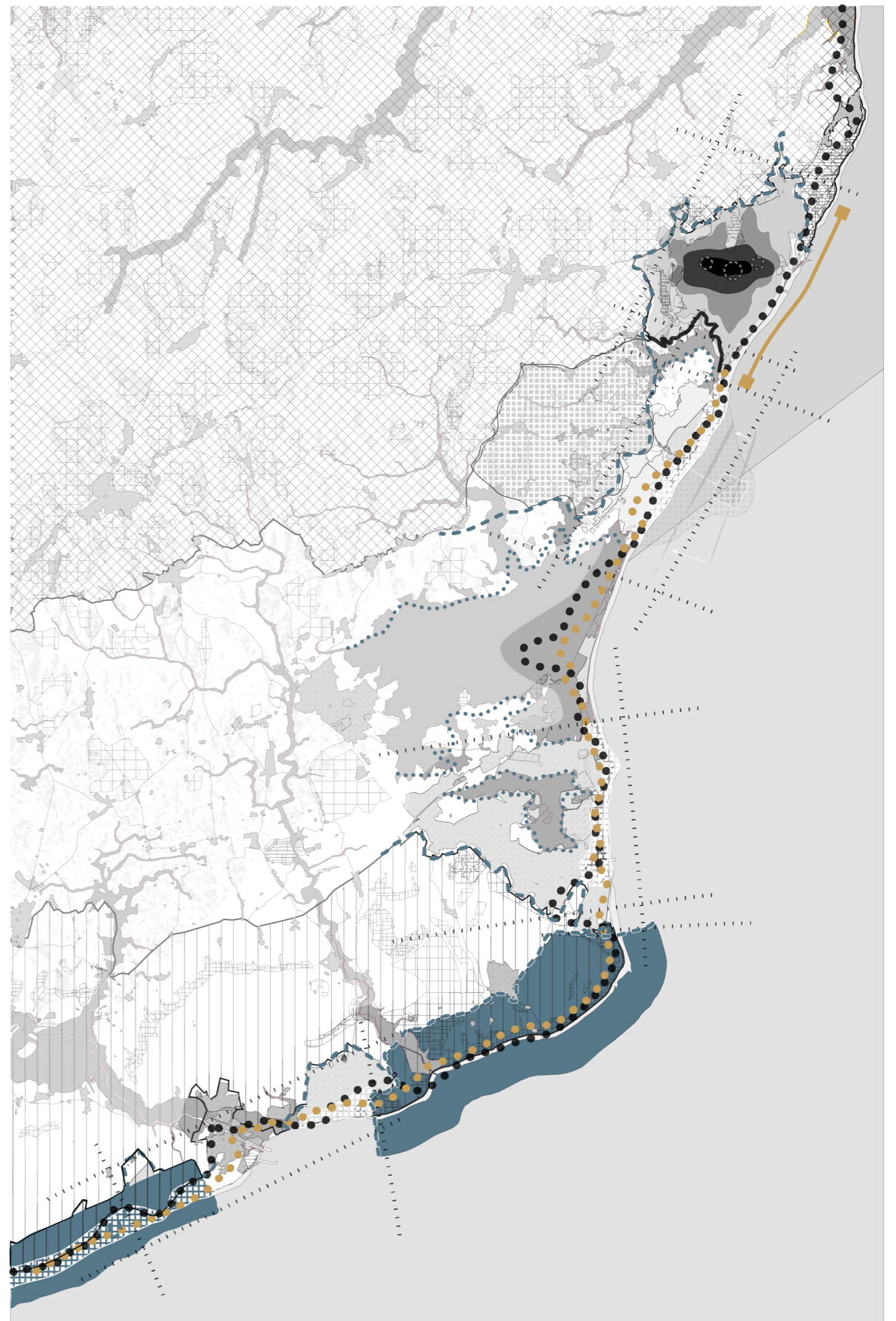
### 3.2 STRATEGY DEVELOPMENT - QUALITATIVE STRATEGY



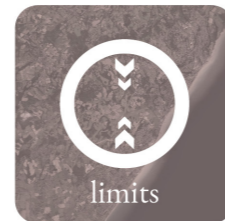
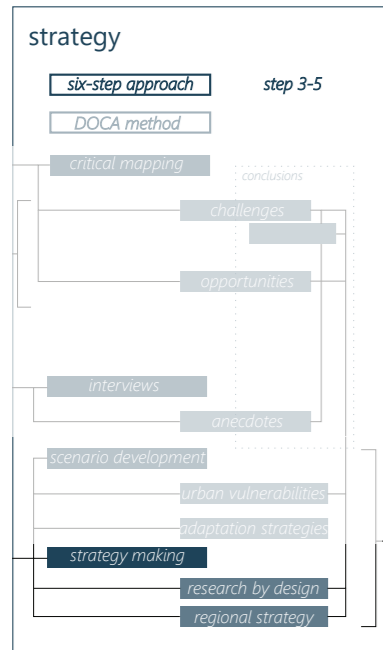
#### Regional Adaptive Spatial Planning Strategy for Southeast England

- Seascape identity
- Ecological zones
- Heritage coasts
- Flood prone coast
- Densification
- Retreating coastline
- Coastal path
- Pressure geopolitical boundaries
- Limits of pressure
- Pressure natural boundaries
- Pressure urban boundaries
- Hold the Line strategy
- Densification centres

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### 3.3 STRATEGY DEVELOPMENT - LOCAL STRATEGY

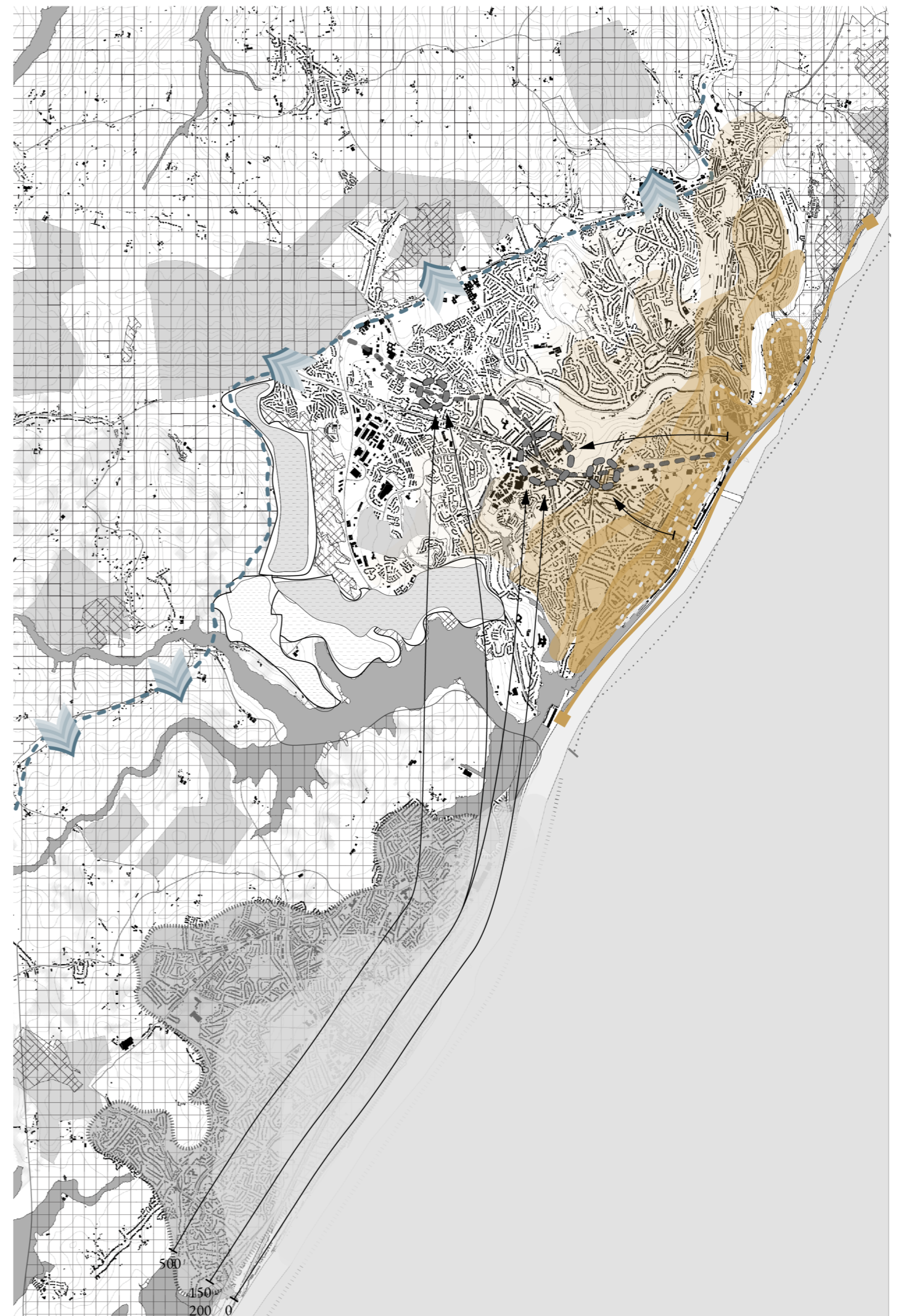


#### Local Adaptive Spatial Planning Strategy for Bexhill-on-Sea and Hastings

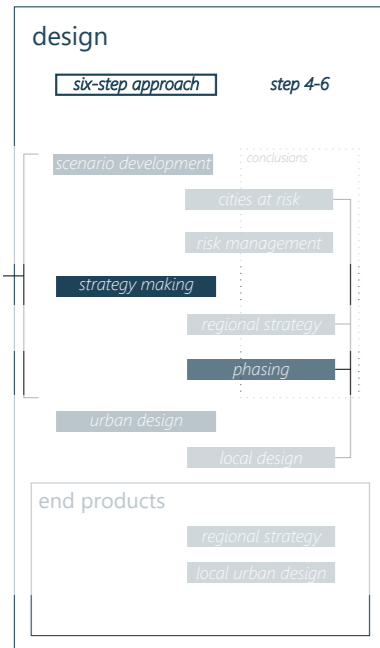
- Migration flows
- ||||| Managed Realignment strategy
- Hold the Line strategy
- - - Geopolitical boundaries
- Pressure by geopolitical boundaries
- Areas of potential growth
- Potential future retreat
- Densification centres

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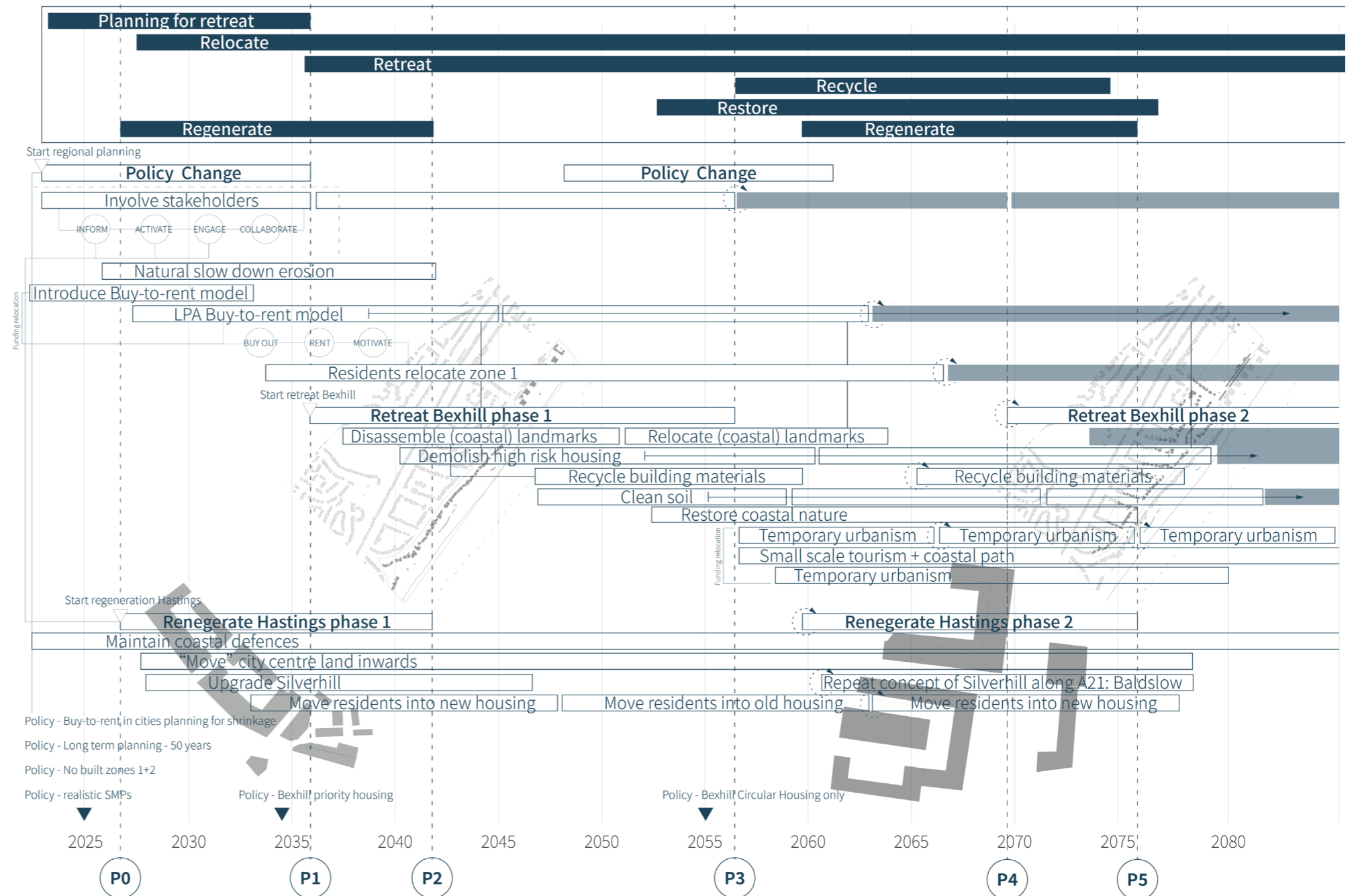
| 5 km



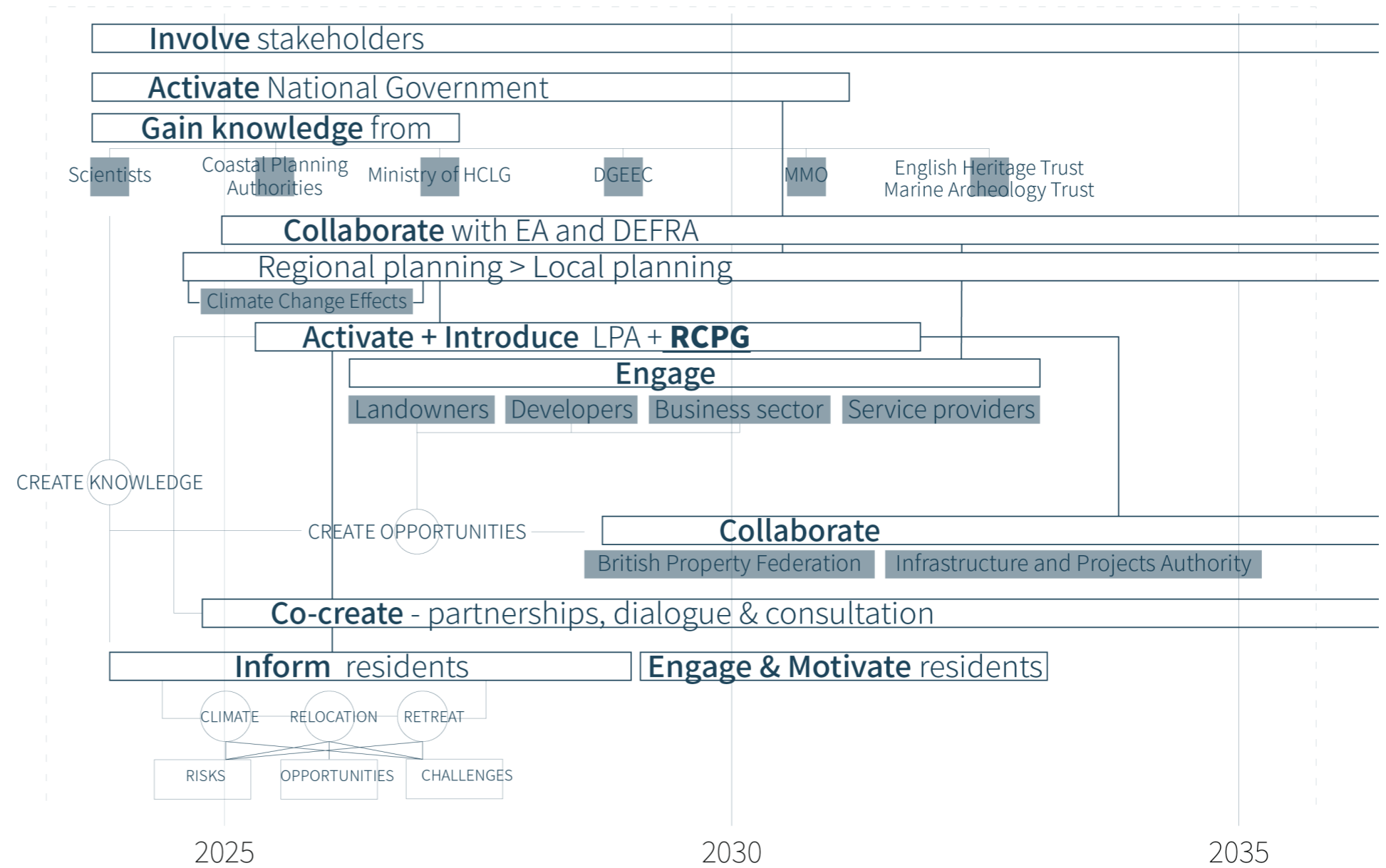
### 3.4 STRATEGY DEVELOPMENT - PHASING



1. Reintroduce regional scale with the **REGIONAL COASTAL PLANNING GROUP** as planning authority to the english planning system
2. Revise **SHORELINE MANAGEMENT PLANS** (smps) to realistic plans
3. Introduce a **BUY-TO-RENT** scheme to the cities planning for shrinkage
4. Define an **HIERARCHY** between cities
5. Extend long-term planning from a minimum of 15 years to a minimum of **50 YEARS**
6. Enforce **NO-BUILT ZONES** in cities planning for shrinkage
7. **PRIORITIZE RESIDENTS** of cities planning for shrinkage for relocation to densification cities
8. **RESTRICTIONS** on building, renovations and building materials enforcing circular urban development



### 3.5 STRATEGY DEVELOPMENT - STAKEHOLDER ENGAGEMENT



# 4 DESIGN

*BEXHILL-ON-SEA*

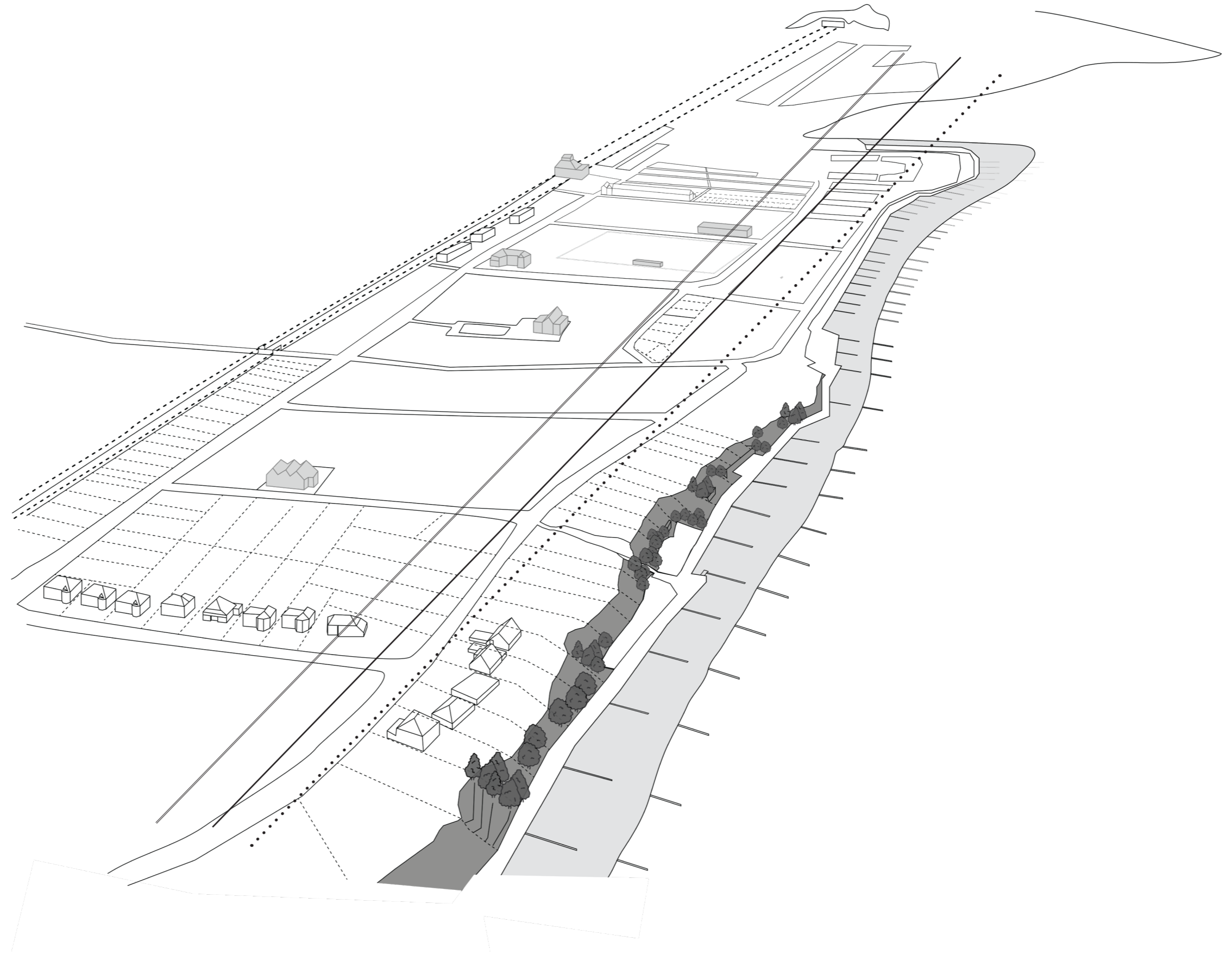


## 4.0 PLANNING FOR SHRINKAGE - BEXHILL-ON-SEA



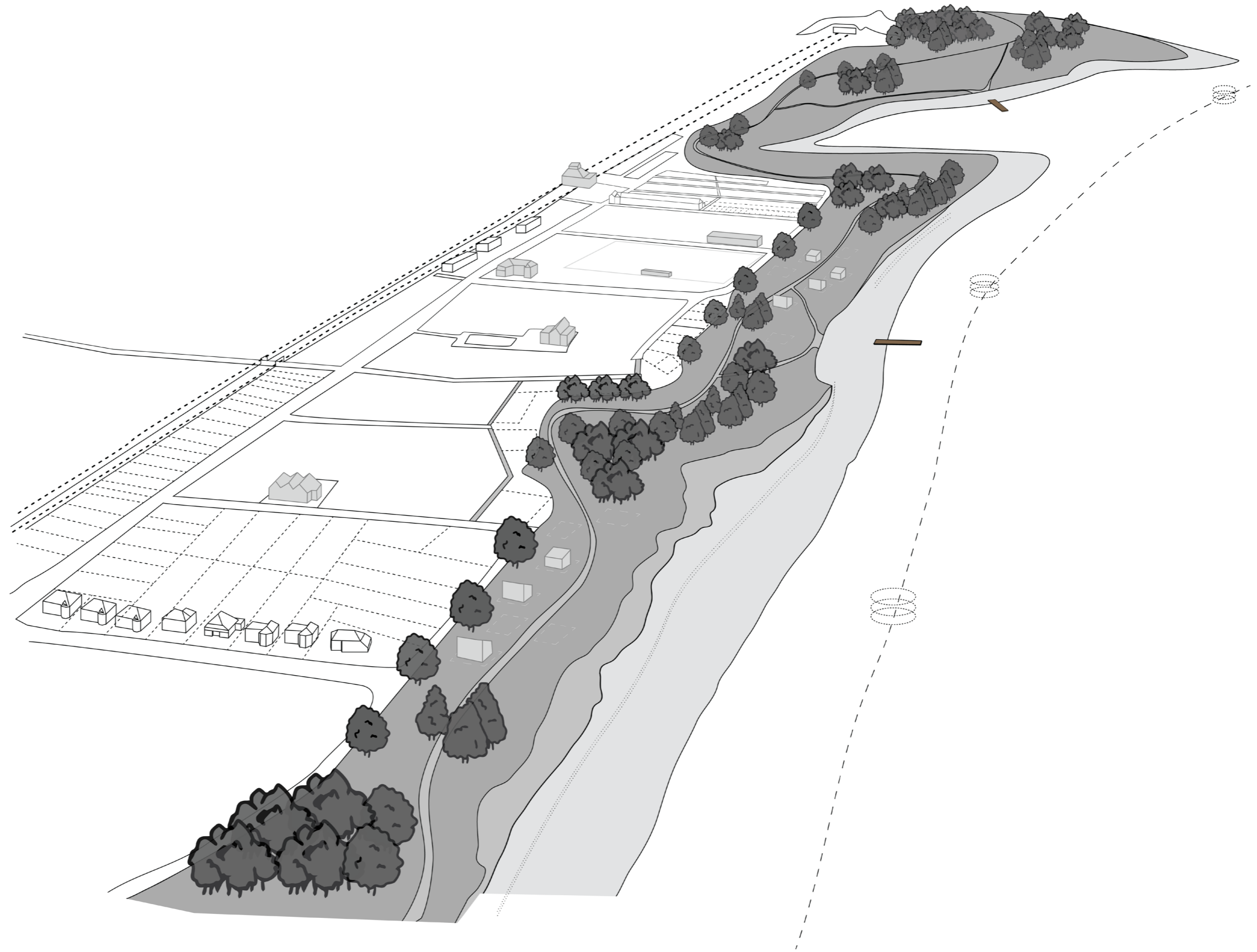
FRONTVIEW OF BEXHILL-ON-SEA COASTLINE INCLUDING CLIFFS IN THE URBAN ENVIRONMENT (BSTATIC, N.D)

## 4.0 PLANNING FOR SHRINKAGE - BEXHILL-ON-SEA



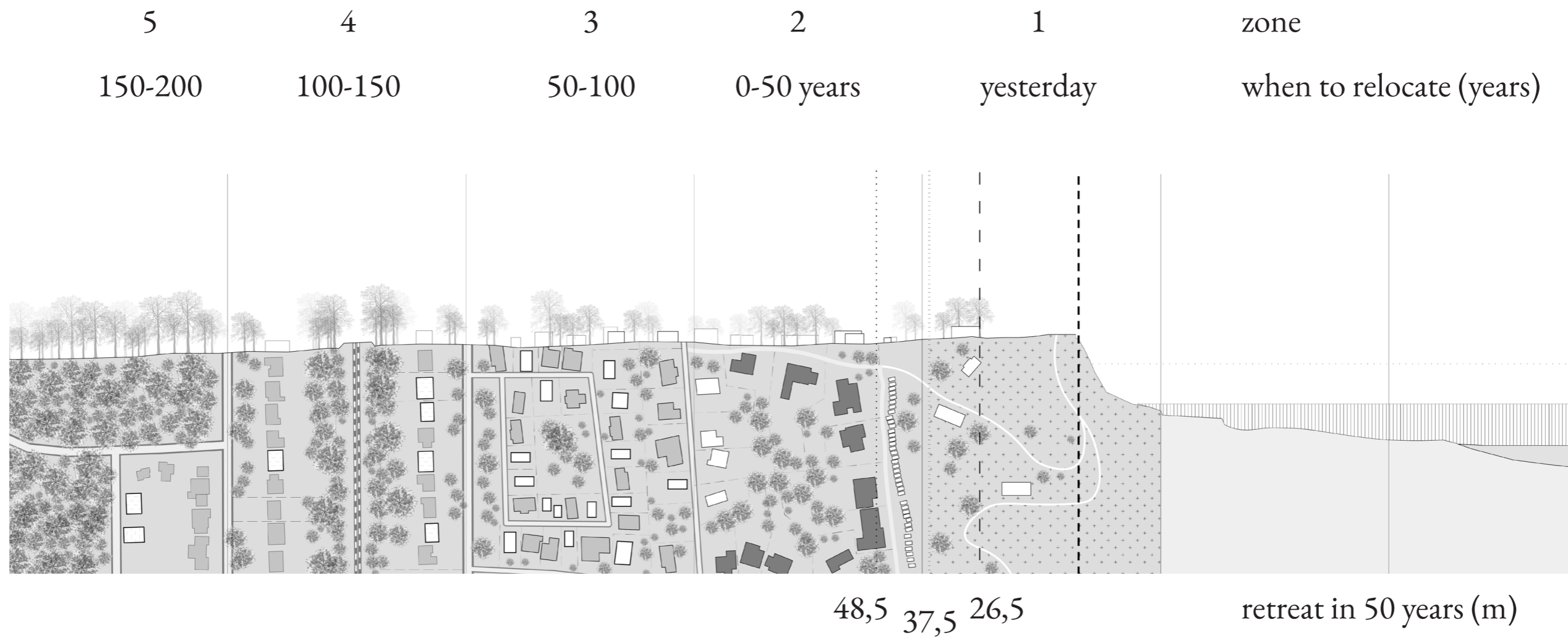
BIRD-EYE VIEW / PALMBOUT DRAWING OF COASTAL BEXHILL INCLUDING EXPECTED MINIMAL, AVERAGE AND MAXIMAL COASTAL RETREAT IN 50 YEARS BASED ON DATA FROM Environment Agency (2019), Google (2021)

## 4.0 PLANNING FOR SHRINKAGE - BEXHILL-ON-SEA



ADAPTATION OF COASTAL BEXHILL TO COASTAL EROSION WITH ECOLOGICAL REGENERATION, NATURAL EROSION DELAY  
COASTAL LANDMARKS AND TEMPORARY URBANISM

## 4.1 ZONES OF RETREAT





IMPRESSION OF COASTAL BEXHILL AFTER THE RETREAT OF ZONE 1+2 AS A NATURAL COASTLINE FOR ECOLOGICAL REGENERATION AND SMALL SCALE TOURISM THROUGH TEMPORARY URBANISM IN THE FORM OF TINY HOUSES



IMPRESSION OF COASTAL BEXHILL AFTER THE RETREAT OF ZONE 1+2 AS LOCATION FOR ECOLOGICAL REGENERATION AND TSMALL SCALE TOURISM THOURHG TEMPORARY URBANISM IN THE FORM OF TINY HOUSES

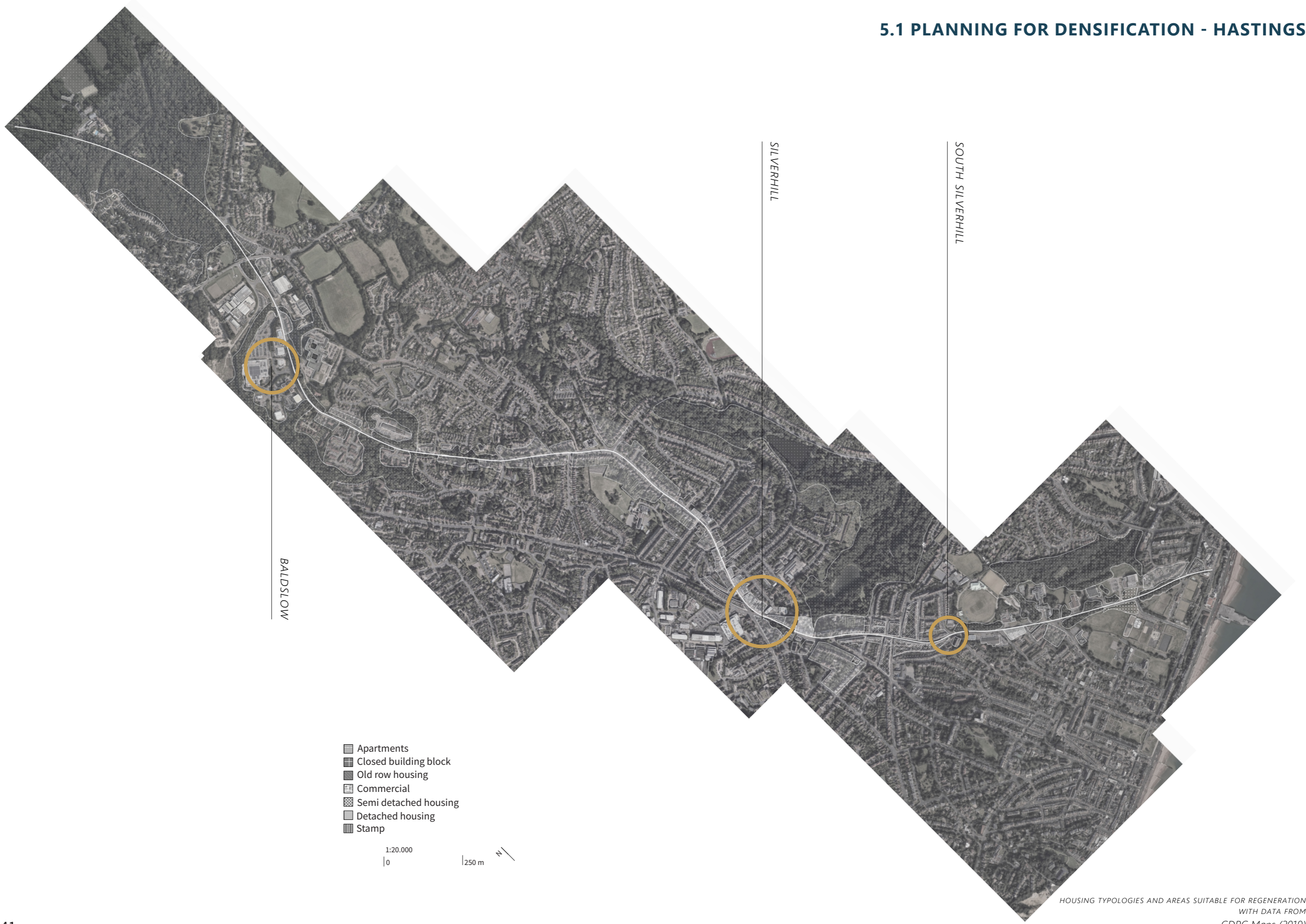


*IMPRESSION OF COASTAL BEXHILL AFTER THE RETREAT OF ZONE 1+2 AS LOCATION FOR ECOLOGICAL REGENERATION AND TSMALL SCALE TOURISM THOURHG TEMPORARY URBANISM IN THE FORM OF TINY HOUSES*

**5** DESIGN  
*HASTINGS* N



# 5.1 PLANNING FOR DENSIFICATION - HASTINGS

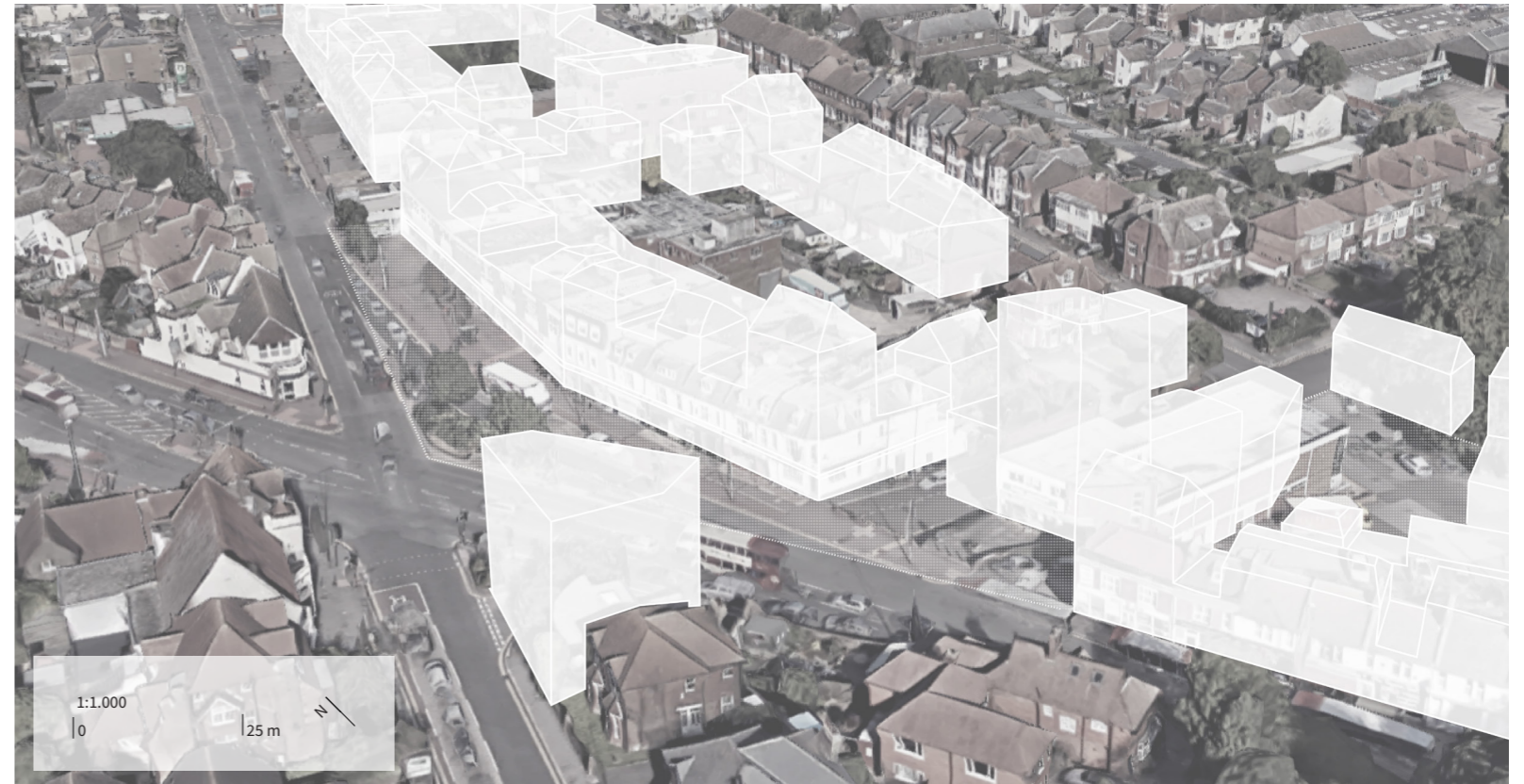


HOUSING TYPOLOGIES AND AREAS SUITABLE FOR REGENERATION  
WITH DATA FROM  
CDRC Maps (2019)

## 5.2 PLANNING FOR DENSIFICATION



### 5.3 REGENERATION OF SILVERHILL



3D VIEW AND MAP OF SILVERHILL'S REGENERATION PLAN INCLUDING THE IMPLEMENTATION OF THE TERRACED ROOF TYPOLOGY



TOP VIEW IMPRESSION OF SILVERHILL'S TERRACED ROOFSCAPE AND THE RELATION TO THE PUBLIC SPACE AT STREET-LEVEL



IMPRESSION OF THE STREET-LEVEL INCLUDING PUBLIC SPACE, GREENERY, ACCESSIBILITY AND THE RELATION BETWEEN THE RESIDENTIAL AND COMMERCIAL PROGRAM

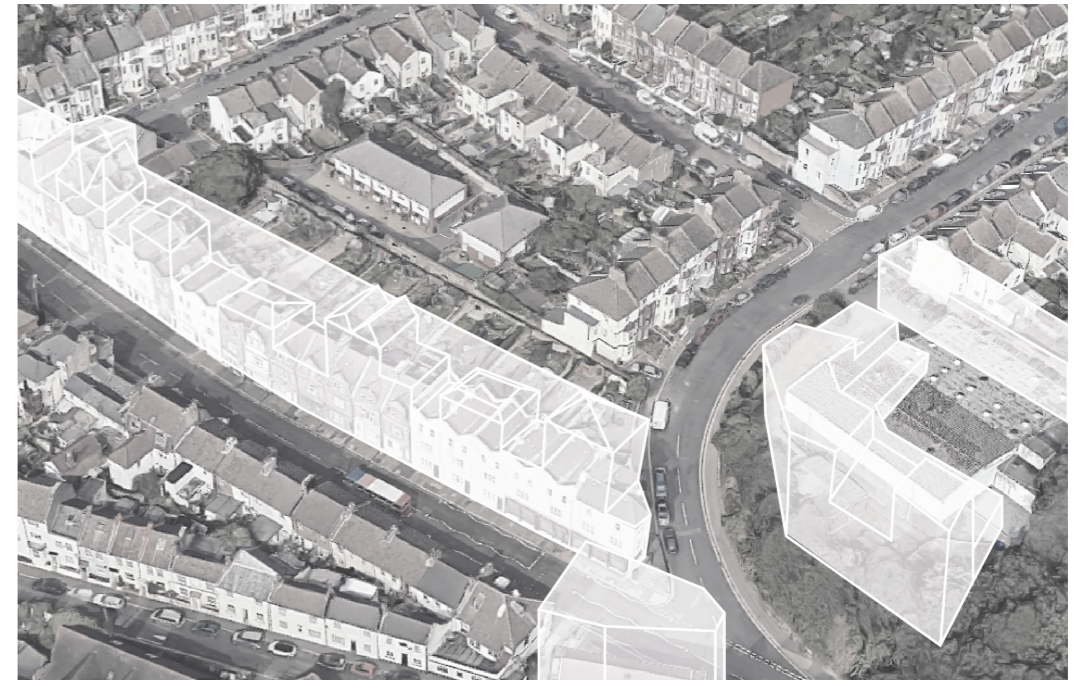


TOP VIEW IMPRESSION OF SILVERHILL'S TERRACED ROOFSCAPE AND THE RELATION TO THE PUBLIC SPACE AT STREET-LEVEL

## 5.2 DESIGN TRANSFERABILITY - BALDSLOW & SOUTH SILVERHILL



BALDSLOW

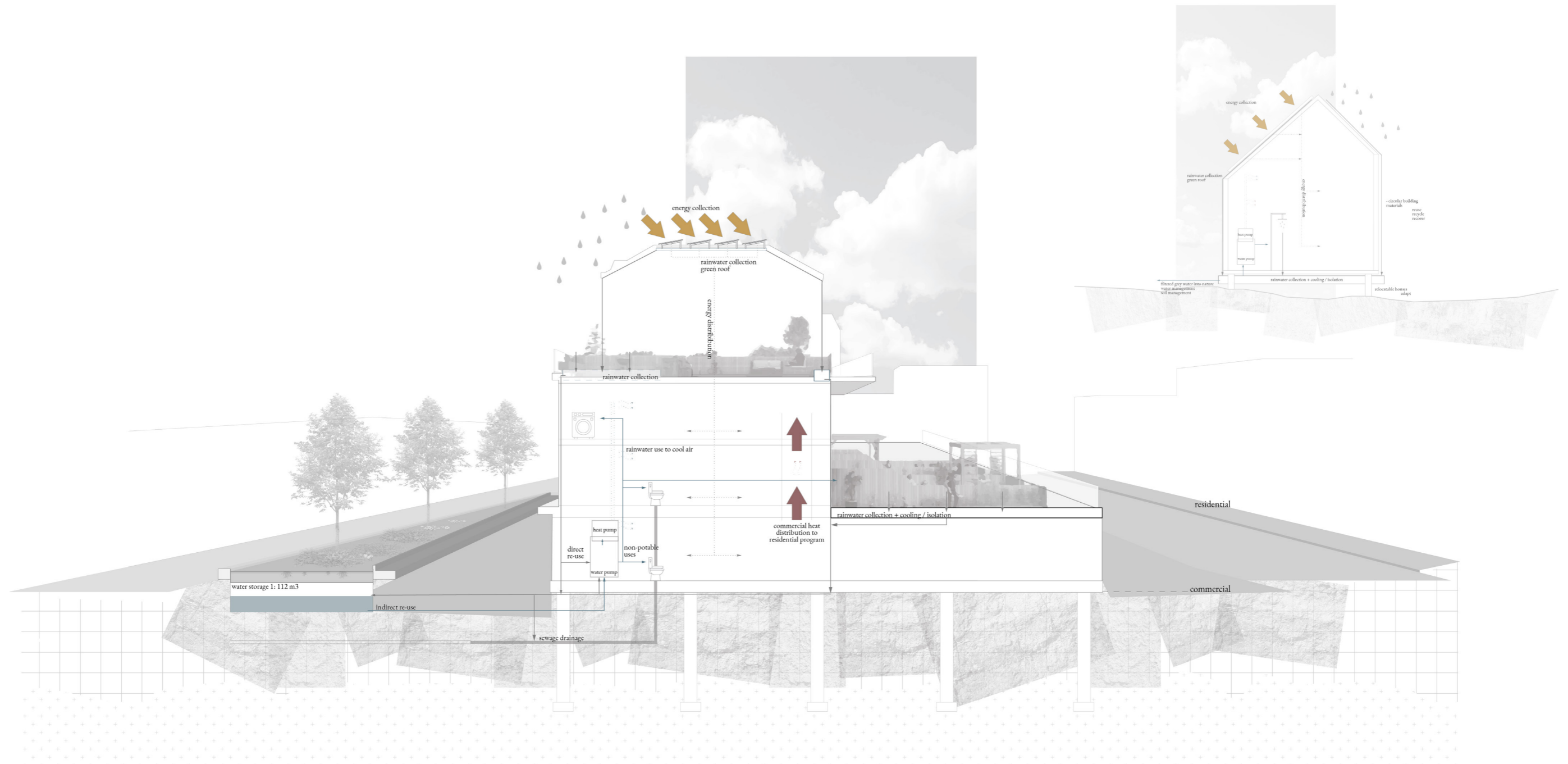


SOUTH SILVERHILL

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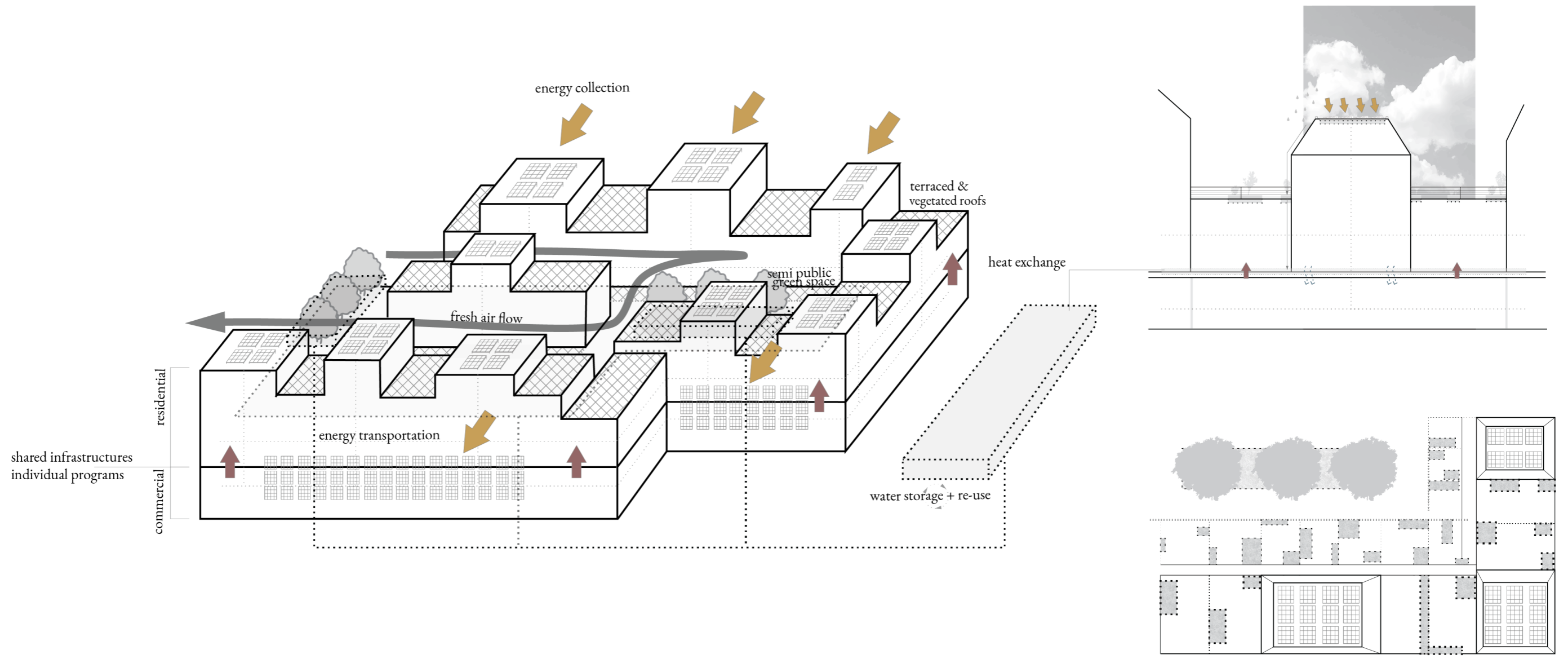
TRANSFERABILITY OF THE MAIN DESIGN TO OTHER DISTRICTS IN HASTINGS INCLUDING DIFFERENT SCALES THAN THE ORIGINAL DESIGN: BALDSLOW AND SOUTH-SILVERHILL

## 5.3 SUSTAINABILITY





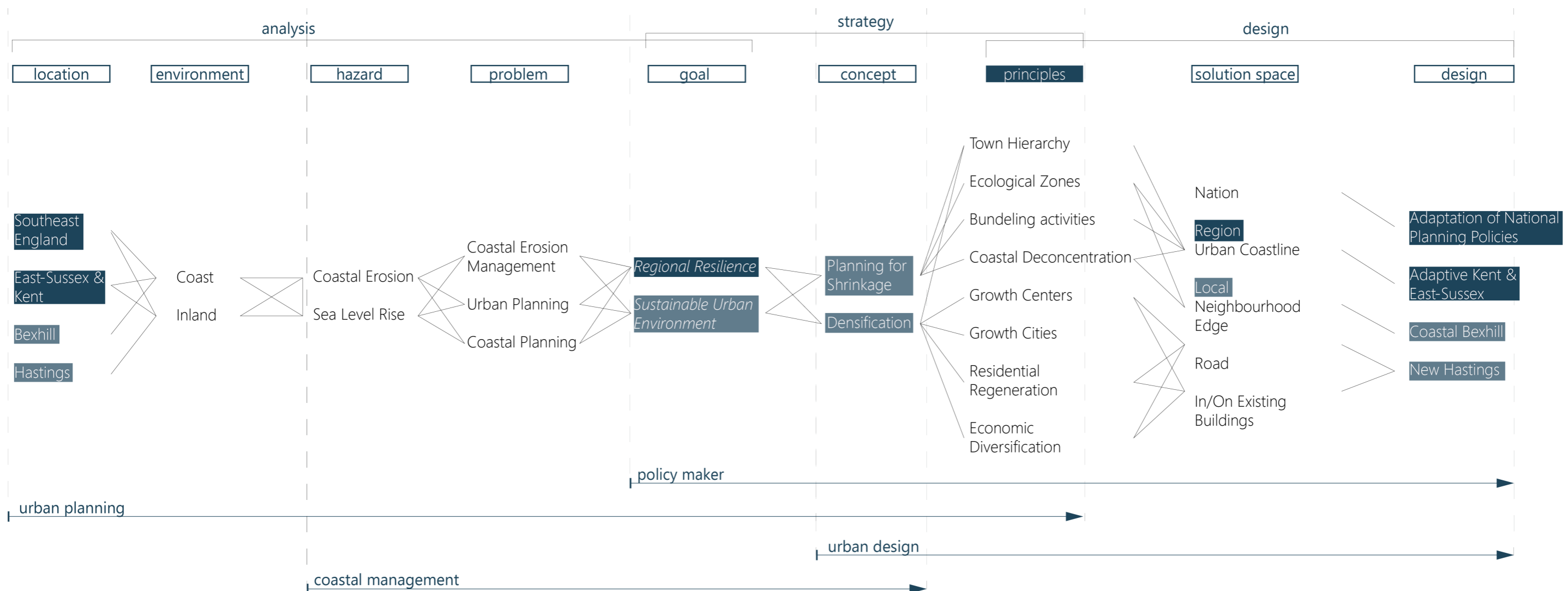
## 5.4 TRANSFERABILITY SUSTAINABILITY



# 6 CONCLUSION

RESEARCH QUESTION

What aspects should an **Urban Planning Strategy** for vulnerable English coastal cities include to create a **Sustainable Urban Environment** that adapts to (accelerated) Coastal Erosion?



ANALYSIS AND DESIGN METHODS BASED ON POLICIES AND PRINCIPLES FROM

Ministry of Housing, Communities & Local Government (2019) -NPPF , Ministerie van Volkshuisvesting en Ruimtelijke Ordening (MVRO) (1977) - Verstedelijkingsnota

- Regional scale
- Collaboration between disciplines
  - Social justice

Ethical dilemmas

Contribution to the literature

