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Cities' Climate Change Adaptation: lost in transition? ***The Waterfronts***

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From the City to the Civitas

Taking care of the City
and giving it back
to its inhabitants

The “taking care of the City” Agenda:

Do we all agree on its terms?

How to measure priorities?

Do we have “societal” conditions to implement it?

Let's look at 1 Agenda: CLIMATE CHANGE ADAPTATION

Summary:

- 1. Premise: there is strong evidence of anthropogenic climate change**
- 2. Climate change adaptation took its time to become an effective Agenda**
- 3. The emergence of the Climate Change Adaptation Agenda in the late 2000's**
- 4. Urban planning and climate change adaptation: the new challenges at the 2010's**
- 5. Is climate change adaptation lost in transition?**

Framework for the discussion:

The study of samples, types or parts of the urban phenomenon as a way of contributing to the understanding of its whole:

The waterfronts => The territory

(on the study of urban morphology)

*Without going into discussions about the concept of the city, we can say that it represents a dynamic reality;
in the study of the city, we cannot do more than group the questions into organized problems,
with an internal aspect and logic.*

ROSSI, Aldo (s/d); Consideraciones sobre la Morfología Urbana y la Tipología de la Edificación; Barcelona; documento policopiado, ETSAB-UPC (author's translation).

1. PREMISE: THERE IS STRONG EVIDENCE OF ANTHROPOGENIC CLIMATE CHANGE



I DON'T BELIEVE IN
GLOBAL WARMING

2. CLIMATE CHANGE ADAPTATION TOOK ITS TIME TO BECOME AN EFFECTIVE AGENDA

Revisiting the climate change agenda:

- **Declaration of the United Nations Conference on the Human Environment**, Stockholm, 1972;
- **Convention for the Protection of the Ozone Layer**, Vienna, 1985;
- **United Nations Framework Convention on Climate Change**, Rio de Janeiro, 1992:
 - “*Noting that there are many uncertainties in predictions of climate change (...)*”;
 - “*Recognizing that States should enact effective environmental legislation (...)*”;
 - “*Article 2 – Objective: The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, (...) stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*”;
 - “*Article 3 – Principles: 3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects (...)*”.

Revisiting the climate change agenda:

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- United Nations Framework Convention on Climate Change, Rio de Janeiro, 1992:
 - “Noting that there are many uncertainties in predictions of climate change (...)”;
 - “Recognizing that States should enact effective environmental legislation (...)”;
 - “Article 2 – Objective: The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, (...) stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”;
 - “Article 3 – Principles: 3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.
 - **Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost**”.

Urbanism and climate change:

(Peter Calthorpe, 2010)

- It has focused essentially on mitigation perspectives, namely:
 - The debate between the compact city, with its "carbon diet", and the "carbon-obese" metropolitan regions;
 - The different forms of "sustainable communities":
 - * Sustainable city;
 - * The sustainable neighbourhood - ecourbanismo (Miguel Ruano, 1999);
 - * The building (micro-generation, solar, passive solar);
 - * The orientation of energy efficiency;
 - "Green cities", reinforcing sinks.



Concurso internacional *Re:Vision Dallas*, solução vencedora
Data + MOOV, 2009



Placa Solar Fotovoltaica do Fórum Universal das Culturas
Barcelona, 2004

Adaptation to climate change::

- Since the IPCC 3rd Assessment Report (2001), data on possible territorial impacts have been put forward, motivating disaggregated studies:
 - In Portugal, this was the first report of the SIAM Project (Santos, Forbes, Moita, 2002).
- Conjugation of events precipitated the emergence of this agenda:
 - The shock waves of Hurricane Katrina in New Orleans (August 2005);
 - The IPCC 4th Assessment Report (2007);
 - The Bali Action Plan (December 2007), reinforced by the "shared vision for long-term cooperative action" (Cancun Agreement, December 2010);
 - The Dutch National Adaptation Strategy (NAS), 2007 + report "Working together with water. A living land builds for its future", 2008, by the Dutch Delta Commission.

Working together with water

A living land builds for its future

Findings of the Deltacommissie 2008

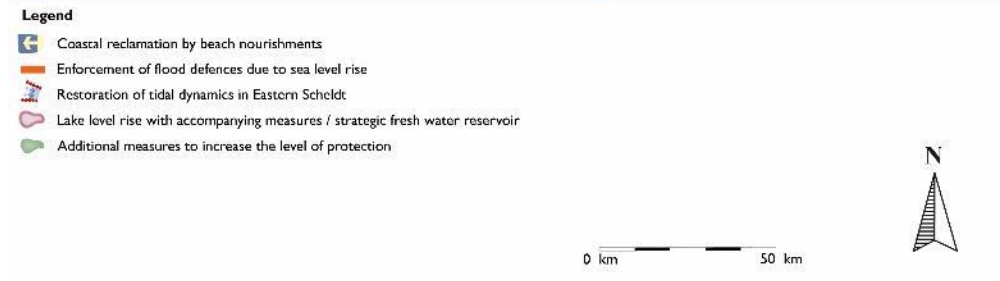


New Orleans, depois da passagem do Katrina (29 Agosto 2005)
Deltares, 2010

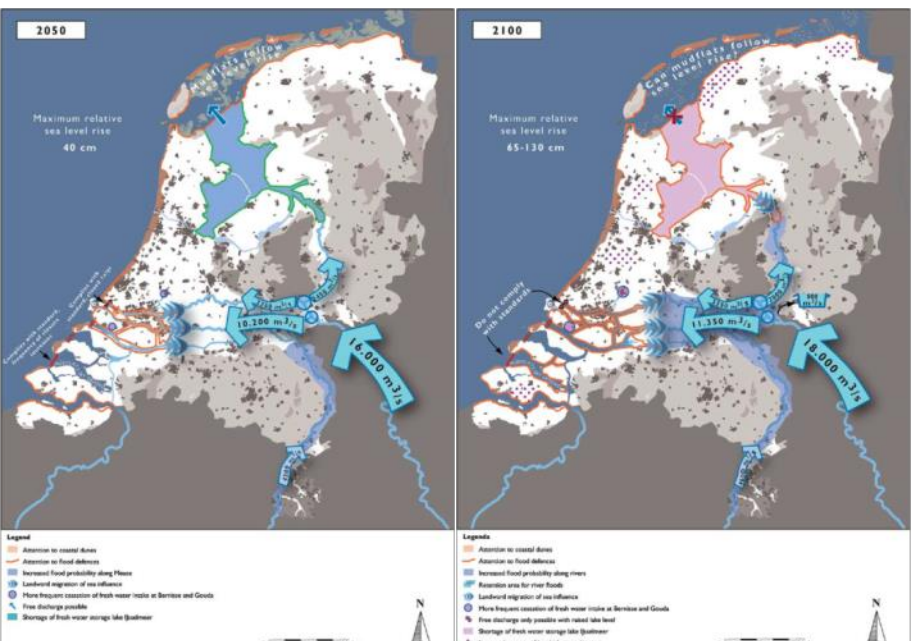
3. THE EMERGENCE OF THE CLIMATE CHANGE ADAPTATION AGENDA IN THE LATE 2000'S

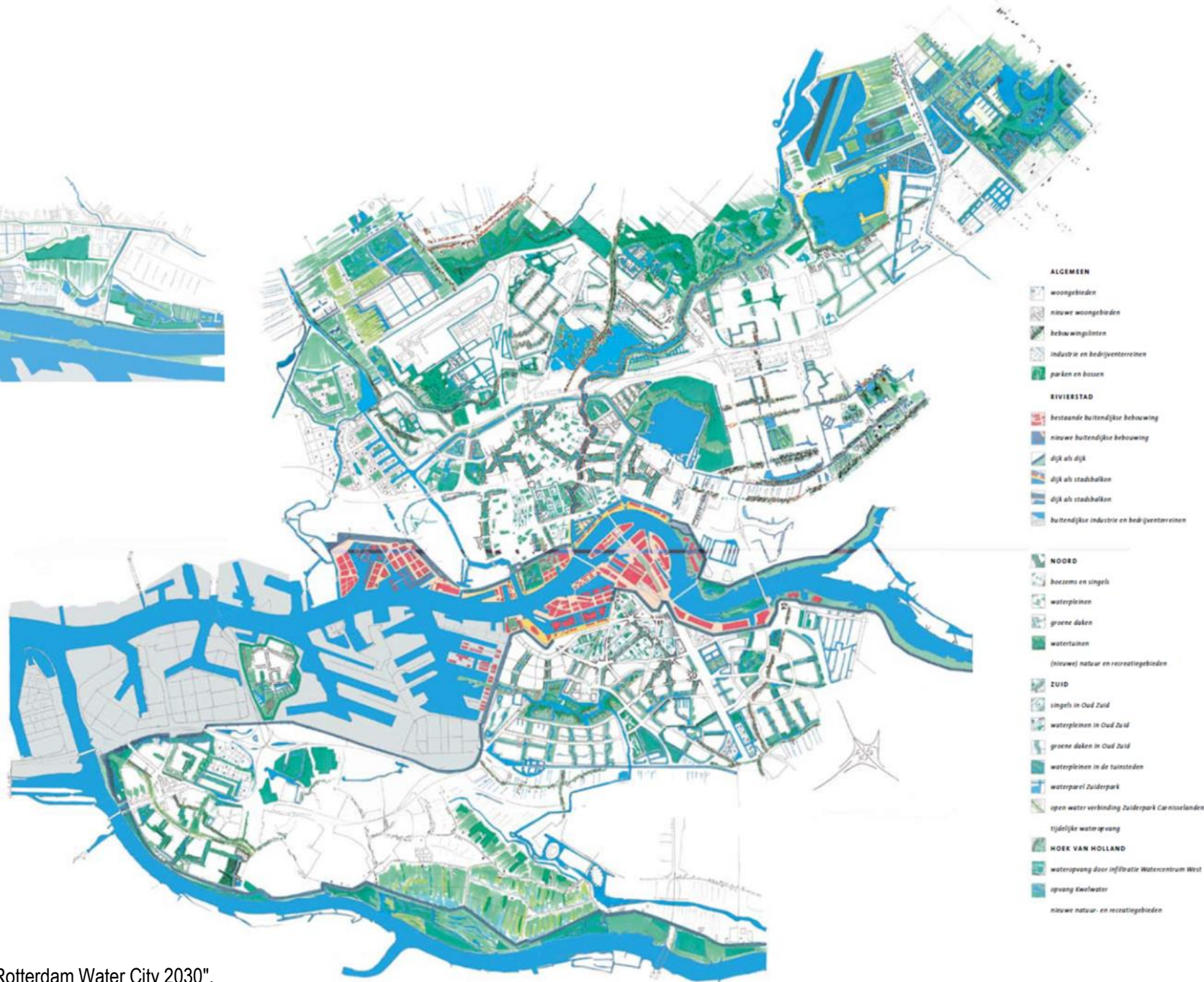
3.1 REPRESENTATIVE CASES: THE NETHERLANDS, ROTTERDAM

Territorial outline of the national actions of the Delta Programme
Deltacommissie, 2008



Territorial scheme of the estimated impact of climate change in the Netherlands at the horizons 2050 and 2100
Deltacommissie, 2008





Summary plan of "Rotterdam Water City 2030".
Rotterdam Climate Initiative, 2010



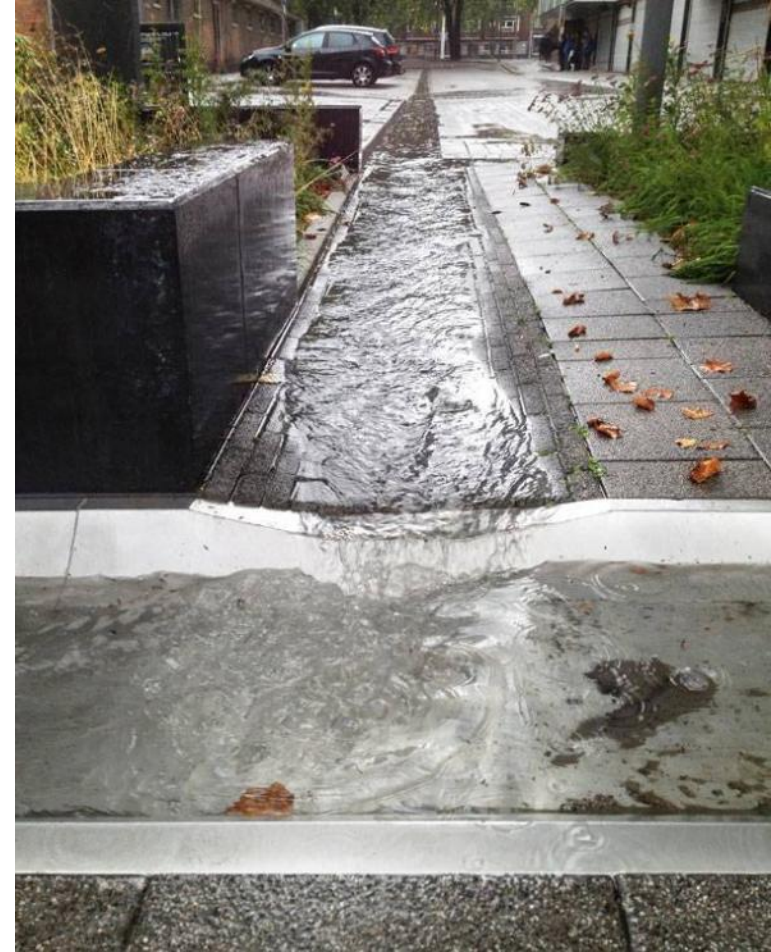
Water plaza, De Urbanisten, 2009



Benthemplein Square , Rotterdam, The Netherlands. *Jurgen Bals, 2014.*



Bentheplein Square , Rotterdam, The Netherlands. *Maria Matos Silva, Johannes Odé, 2014.*



Bentheplein Square , Rotterdam, The Netherlands. *Maria Matos Silva, Jurgen Bals, 2014.*

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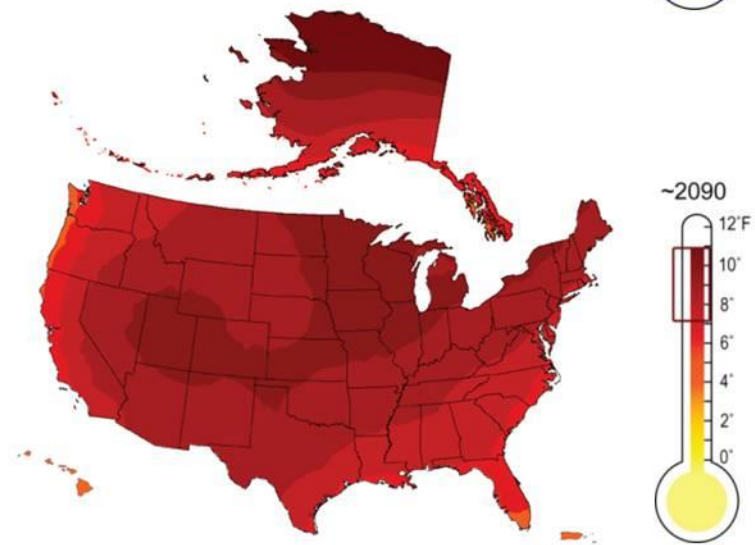
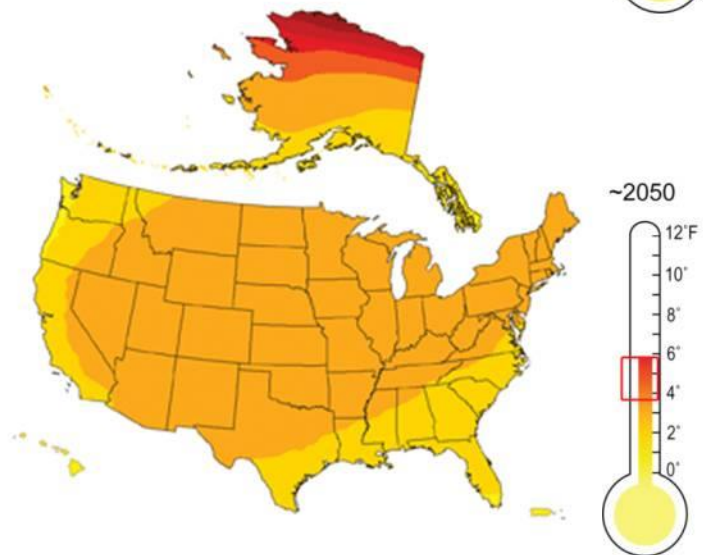
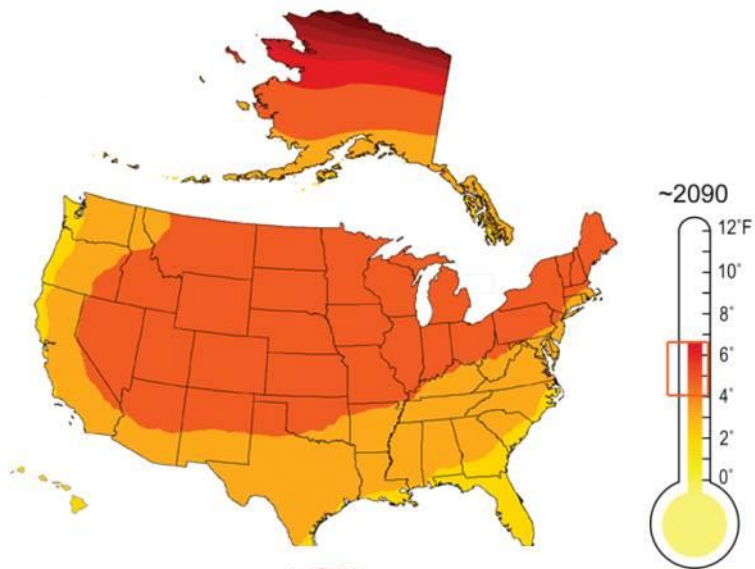
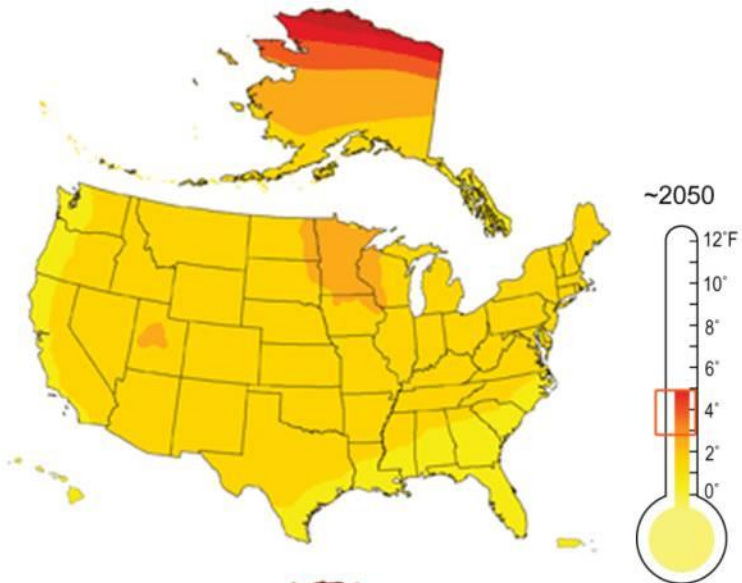
Rotterdam, Westersingel en Eendrachtsweg.



3.2 REPRESENTATIVE CASES: UNITED STATES, SAN FRANCISCO AND NEW YORK

Mid-Century (2041-2059)

End-of-Century (2080-2099)



Lower Emissions

Higher Emissions

Rising Temperature Projections in the USA for the less favourable scenarios.
Global Climate Change Impact in the USA Report, 2009



Climate change adaptation: simulations

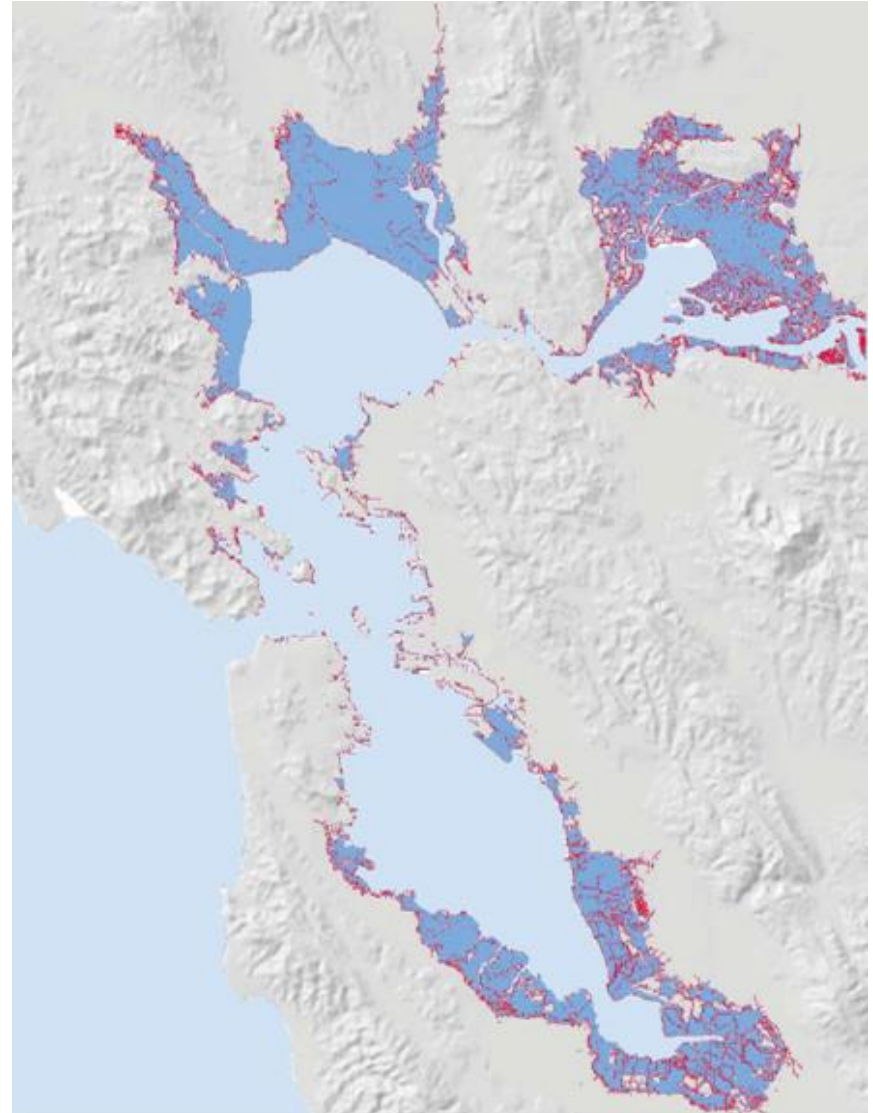
San Francisco Bay US (2008)

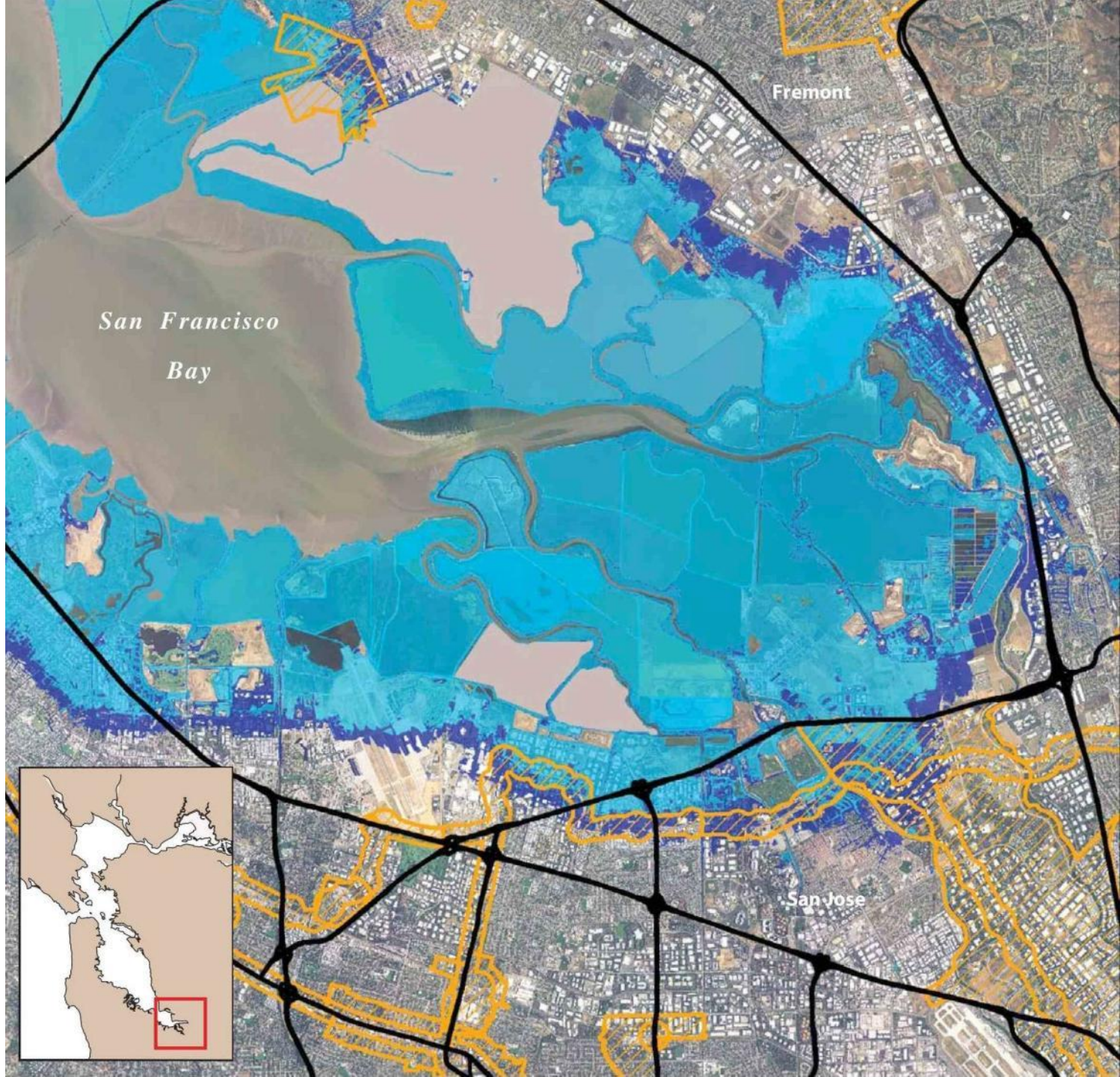
San Francisco Bay (2008):

- => San Francisco observed sea level with trend of 19.3 cm last century
(California Climate Action Team Report, 2006)
- => SFB projected temperature warming scenarios:
 - Lower emissions scenario: 3.5 – 5.0 °C
 - Medium emissions scenario: 5.5 – 8.0 °C
 - High emissions scenario: 8.0 – 10.0 °C
- => SFB projected 2100 sea level rise, reviewing IPCC4AS:
(California Climate Action Team Report, 2009)
 - B1 scenario: 0.6 – 1.0 m
 - A1f1 scenario: 1.0 – 1.4 m
- => 30 cm increase in sea level rise would shift the 100-year storm surge-induced flood event to once every 10 years
- => Rising Tides Design Ideas Competition, 2008:
www.risingtidescompetition.com

San Francisco Bay, 0.4 m sea level rise simulation
Source: Travis, Will (2010)

-  Area subject to high tide with 0.4m of sea level rise
-  Current 100-year flood plain







San Francisco Bay

Fremont

San Jose

San Francisco, South Bay (Silicon Valley), projection of mean sea level rise

-  0,4m, at horizon 2050
-  1,4m, at horizon 2100

Travis, Will, 2010







South
San Francisco

Millbrae

*San Francisco
Bay*



San Francisco, Central Bay, projected mean
sea level rise

-  0,4m, at horizon 2050
-  1.4m, at horizon 2100

Travis, Will, 2010

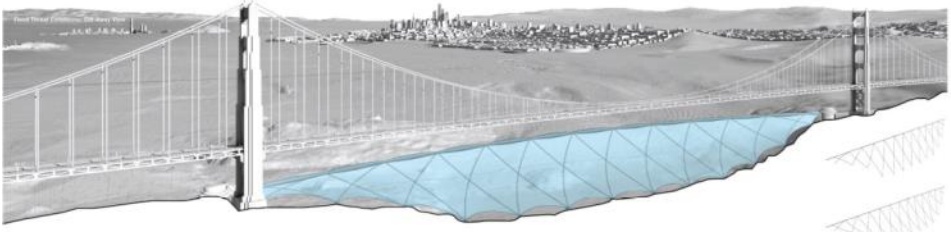


San Francisco, Central Bay,
projection of mean sea level
rise, showing major
infrastructure and parks

- 0,4m, on the 205horizon
- 1,4m, on the 2100horizon

Travis, Will, 2010

BAYARC: A Tidal Responsive Barrier



The BayArc is a minimal, lightweight and environmentally sensitive system designed to protect the San Francisco Bay Area from periodic high water levels associated with sea level rise. It operates on unique principles of buoyancy and the structural efficiency associated with net membranes and tension. It is a concept that has the potential to eliminate billions of dollars in permanent levees and localized Bay Area flood protection without compromising the Bay's system of ecology and commerce.

Typically low-lying areas around the Bay are protected from tidal flooding. FEMA has established extreme high water guidelines and scientific communities that are primarily in danger. In fact, the principle threat of flooding in the next century is not from the rise in the sea level itself, but from the increase in extreme high tides which create breaches of existing flood defenses for multiple tidal periods.

The objective of the BayArc is to prevent the peak of extreme tide events while maintaining a natural tidal exchange between the ocean and the bay.

The BayArc consists of a submerged, cable-reinforced membrane anchored to the seabed that utilizes a bladder embedded in its leading edge balanced to structural rigidity of the water's weight. When deployed, the BayArc floats to the surface and its flexible membrane creates a barrier separating from the water's edge to the sea floor. When it is not needed, the bladder is deflated, the BayArc sinks and rests on the sea floor.

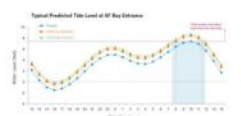
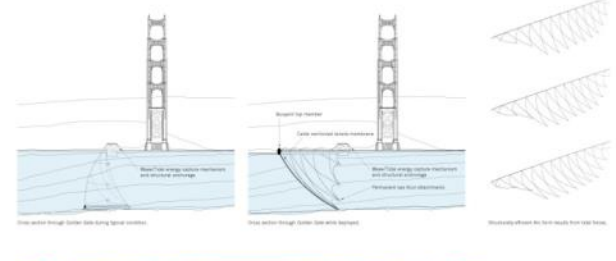
The top cable of the BayArc is connected to anchors on each side of the Golden Gate Bridge—locking the membrane in place. A small amount of tidal or wave energy is captured by rotation devices at each anchor. This energy is used to compress air over time and is released suddenly when the BayArc is deployed. The pressure forces on the membrane result from drag during deployment as well as the hydrostatic resistance due to the differential water level between the ocean and bay. The resulting guide air is a direct consequence of these forces. The air's curvature is also directly within the arc of the Golden Gate Bridge's primary cables. The curvature is derived from the bay's depth, the air's inelastic expansion and gain.

When the peak tide is projected to rise above a fixed level, the BayArc is deployed. It remains deployed only until the high-tide peak has passed, "floating off" the sea into the bay. As the falling ocean tide approaches the bay, the BayArc drops and rests on the sea floor as the currents begin to reverse flow. As wind waves, projections for sea level rise by 2050 would require deployment for only a few hours per day and only a few times per year.

Change in Total Levee Requirement for Various Sea Level Rise Scenarios of the Project

Sea Level Rise Scenario	Sea Level Rise (ft)	Peak No. Year High Tide (per year)	Peak No. Year High Tide (per year)	Average No. Year High Tide (per year)
Present	0.00	0	0	0
1.0m SLR	3.28	10	10	1.7
2.0m SLR	6.56	20	20	3.4
3.0m SLR	9.84	30	30	5.1

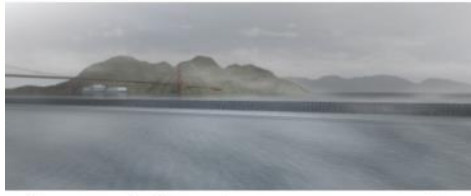
© U.S. Army Corps of Engineers San Francisco District, San Francisco Bay Tidal Response Program Study, October 2008
 U.S. Army Corps of Engineers San Francisco District, San Francisco Bay Tidal Response Program Study, October 2008



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FOLDING WATER: A VENTILATED LEVEE FOR A LIVING ESTUARY



FOLDING WATER is a new "ventilated" levee that protects shorelines by regulating both sides—rising sea levels and the delta and bay waters—mechanically managing tides to create micro-bay estuaries for the shoreline of San Francisco and other key areas within the Bay. Responding to dramatic global and climatic transformations, this dynamic levee system meets specific shoreline conditions to preserve waterfront property, activities such as recreation and tourism, and the estuarine ecology dependent on tidal action. It departs from the conventional, static levee—or dam—by exchanging waters through a perforated pump wall to artificially manage tides and to create micro-bay estuaries. These BAY AVATARS essentially maintain the current estuary's levels, activity, and ecology, sustaining the relationship between the estuary and its inhabitants. This mega-scaled civic project provides a vital portal for the cultural and environmental future of the region in the form of a monumental FOLD of water.

WATER LEVEL MANAGEMENT: THE FOLD

- FOLDING WATER is a levee mitigation system that maintains water elevations for existing shorelines that are susceptible to flooding and manages rising ocean waters through the design of a bifurcated water surface strategy.
- This stealth infrastructural system manages water—and is made of water—artificially preserving the interface of culture and ecology by reforming the bay surface.
- Without a divisive barrier, it extends the natural ecology of the bay and maintains vistas and visual connections that characterize its unique estuarine beauty.

TIDAL MANAGEMENT: THE VENTILATOR

- Tidal cycles are artificially managed through a perforated wall of pump "ventilator," located at key sections along its full height, to allow the transport of the entire water column between the shoreline and ocean waters, creating BAY AVATARS.
- By ventilating the regulated body of water, it recycles the ecological exchanges of sediment, salinity, and biota promoted by the tides.
- The perforations are composed of dual-functioning tubes that exploit the high pressure of the ocean to permit the water to enter the BAY AVATAR and reverse this pressure by pumping the mixed water out.
- BAY AVATARS can be specifically/locally tuned to accommodate the variety of shoreline conditions of its estuary, thus it can be universally applied in other estuaries to regulate flow, salinity and volume.

SELF-SUSTAINING ENERGY: GEOTHERMAL AND TIDAL

- The aquatic infrastructure could operate its system from the energy extracted from tidal turbines and/or geo-thermal energy plants.
- Additionally, desalination facilities and waste water disposal could be incorporated within the mass of this levee structure.

REGISTRATION #: 220864

Planned green infrastructure system

Opportunity: proposed green infrastructure system

Utilizing the edge: combining economic, cultural and environmental systems for a sustainable future

Proposed ecological system existing park system & dense city fabric

Estuaries and sea level rise

Causing industrial land-use/transportation urban behaviors

Strategic watersheds and shoreline edge of San Francisco

Planned green infrastructure system
Planned green infrastructure system (see also p. 10) is a network of green infrastructure that is designed to be resilient to climate change. It includes a network of green infrastructure that is designed to be resilient to climate change. It includes a network of green infrastructure that is designed to be resilient to climate change.

Opportunity: proposed green infrastructure system
A diverse, multi-use edge along San Francisco's waterfront is a key element of the proposed green infrastructure system. This area is an opportunity to create a vibrant, multi-use edge that is resilient to climate change. It includes a network of green infrastructure that is designed to be resilient to climate change.

Utilizing the edge: combining economic, cultural and environmental systems for a sustainable future
The waterfront location of existing and proposed green infrastructure is a key element of the proposed green infrastructure system. This area is an opportunity to create a vibrant, multi-use edge that is resilient to climate change. It includes a network of green infrastructure that is designed to be resilient to climate change.

Proposed ecological system existing park system & dense city fabric
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Strategic watersheds and shoreline edge of San Francisco
The waterfront location of existing and proposed green infrastructure is a key element of the proposed green infrastructure system. This area is an opportunity to create a vibrant, multi-use edge that is resilient to climate change. It includes a network of green infrastructure that is designed to be resilient to climate change.

TOPOGRAPHICAL SHIFTS AT THE URBAN WATERFRONT

TOPOGRAPHICAL SHIFTS AT THE URBAN WATERFRONT
This map illustrates the topographical shifts at the urban waterfront of San Francisco. It shows the proposed RAYdike system, which is a network of green infrastructure designed to be resilient to climate change. The map includes various labels for different areas and features, and several inset images provide a closer look at the proposed infrastructure and its integration with the existing urban fabric.

RAYdike
Representing the Real:
Creating public awareness by
delineating a possible future

RAYdike is a temporary laser light marker system that accurately maps a hypothetical barrier network required to protect Bay Area cities from rising waters caused by climate change.

The RAYdike proposal is a bold and necessary next step towards raising public capital and public awareness to the impact that an estimated 50 inch water level rise will have on the San Francisco Bay in 100 years. The extreme logistical complexity, extensive negotiation costs, and the simultaneous need to protect existing ecosystems and infrastructure with a continuous dike system would be a massive undertaking involving public involvement at multiple levels, but it would reveal serious how a negative outcome to the bay's life and development, and a dike must be publicly initiated to address a range of possible solutions.

To confirm the significance of these realities, the RAYdike system is created to engage a cause for action today rather than tomorrow. By mapping directly upon the bay from a large, standard weather dike system (which the coast would appear, complete with accurate elevation heights and geographic locations, RAYdike is a real time knowledge and awareness system. Additionally, once deployed its presence would begin to stem the flow of new urban development into affected low-lying areas, and would reduce the process for total zone land restoration.

VIEW OF RAYdike LASER LIGHT BARRIER DEPICTS A POTENTIALLY SIFT TALL DIKE ENCOMPASSING SAN FRANCISCO

The RAYdike NETWORK CLOSELY FOLLOWS THE SHORELINE

RAYdike EMITTER NODE
RAYdike LIGHT PATH
EXTENDED FLOOD ZONE EMITTERS
EXTENDED FLOOD ZONE LIGHT PATH
POPULATION CENTERS
TIDAL FLOOD AREA (as defined by FEMA 1988)
SHIPPING LANE
PIPES BURIED
RESTRICTED AREA

BAY AREA FLOOD RUNDRECHT

RAYdike EMITTER NODE SECTION

LASER POLE HEIGHT
Indicates future height at dike
>300 above sea level

LASER LIGHT TYPE
SMA with green laser
Anti-backscatter
Projects not also a risk
Polarized barrier with fog

POLE STRUCTURE
Based on CaCO₃ molecule
Pore size 0.1 micrometers
Depth values from 2 ft to 8 ft

SEA FAUNA ACCUMULATION
Pacific Herring
Oyler Shell
Soft Shell
Striped Bass
Pungent Crab
Mussel

TIDAL POWER
Tidal Power generator for marine
Infrastructure power grid
Generation 15000

DEFICTIONS ILLUSTRATE PROBLEMATIC IMPACTS ASSOCIATED WITH A STAGNANT DIKE SYSTEM

REQUIRED SAN FRANCISCO BAY DIKE SECTION

Maximum Tidal Surge
High tide
Low tide
Sea level rise
Maximum Tidal Surge

RAYdike system can be deployed in segmented phases or in its entirety, and might be financed as a public campaign through donor philanthropy. Light emitter nodes are self-powering using existing wave-generation technology, and the open frame vertical emitter nodes offer proven methods for rearing fish and shellfish farms underwater. Global warming is not a regional issue alone, and RAYdike can be deployed to other cities around the world, where an atmosphere of water, mud, and fog are often present, further aiding in the cause for global action.

DIAGRAM SHOWING PROPOSED LOCATIONS FOR RAYdike BARRIERS (LIGHT BLUE DEPICTS ZONES OF FLOODING)

TOPOGRAPHICAL SHIFTS AT THE URBAN WATERFRONT

OPPORTUNITIES FOR DIVERSIFICATION ALONG THE EDGE

2025/23

TOPOGRAPHICAL SHIFTS AT THE URBAN WATERFRONT
This map shows the proposed locations for RAYdike barriers. Light blue areas indicate zones of flooding, and green lines represent the proposed infrastructure. The map is overlaid on a topographical map of San Francisco, showing the relationship between the proposed infrastructure and the existing urban fabric.


ZONAS DE EVACUACIÓN ANTE HURACANES DE LA CIUDAD DE NUEVA YORK


Cómo utilizar este mapa*


1. Determine si usted vive en una zona de evacuación utilizando el Servicio Buscador de Zonas de Evacuación ante Huracanes (Hurricane Evacuation Zone Finder) visitando NYC.gov/hurricanezones en Internet, llamando al 311 (TTY para problemas auditivos: 212-504-4155) o consultando este mapa. Si su domicilio está dentro de los límites de una de las zonas de evacuación ante huracanes, qué tan temprano evacuar durante un huracán.
2. La Ciudad recomienda encarecidamente que los evacuados primero busquen refugio con amigos o familiares que vivan fuera de las zonas de evacuación.
3. Si no le es posible alojarse con amigos o familiares, utilice el Servicio Buscador, llame al 311 (TTY para problemas auditivos: 212-504-4155) o utilice este mapa para identificar qué centro de evacuación es más apropiado para usted. NOTA: no se puede acceder a todos los centros de recepción por todos los medios de transporte. Visite el sitio Web de la MTA en www.mta.info o llame al 718-330-3244 para obtener la información más reciente sobre transportes.


*La información de evacuación está sujeta a cambios. Para ver la información más reciente, visite NYC.gov/hurricanezones o llame al 311 (TTY para problemas auditivos: 212-504-4155).





Zonas de evacuación ante huracanes

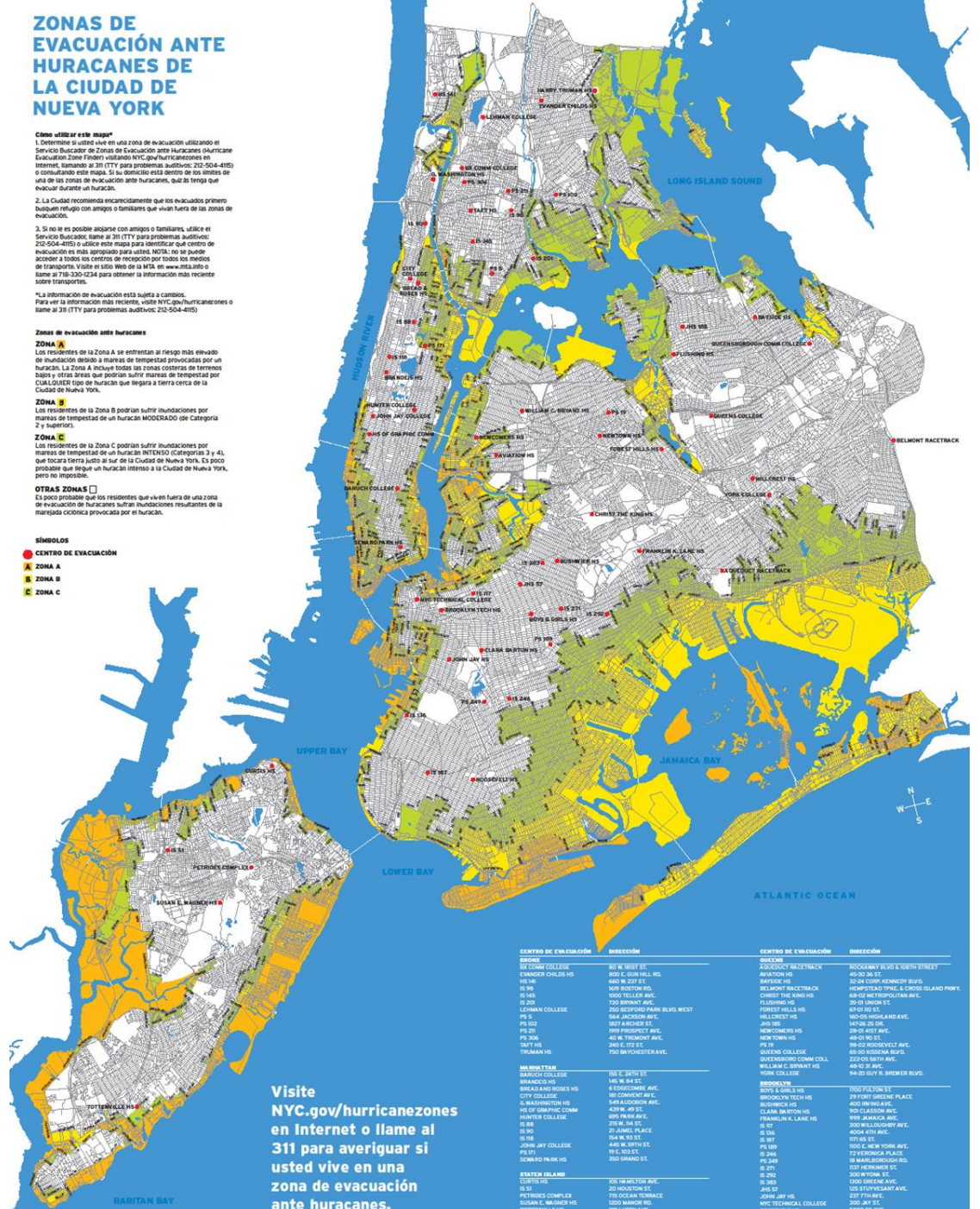
ZONA A  Los residentes de la Zona A se enfrentan al riesgo más elevado de inundación debido a mareas de tempestad provocadas por un huracán. La Zona A incluye todas las zonas costeras de terrenos bajos y otras áreas que podrían sufrir mareas de tempestad por CUA LOUVER tipo de huracán que llega a tierra cerca de la Ciudad de Nueva York.

ZONA B  Los residentes de la Zona B podrían sufrir inundaciones por mareas de tempestad de un huracán MODERADO (de Categoría 2 y superiores).

ZONA C  Los residentes de la Zona C podrían sufrir inundaciones por mareas de tempestad de un huracán INTENSO (Categorías 3 y 4), que toca tierra justo al sur de la Ciudad de Nueva York. Es poco probable que llegue un huracán intenso a la Ciudad de Nueva York, pero no imposible.

OTRAS ZONAS  Es poco probable que los residentes que viven fuera de una zona de evacuación de huracanes sufran inundaciones resultantes de la marejada ciclónica provocada por el huracán.

- SÍMBOLOS**
-  CENTRO DE EVACUACIÓN
 -  ZONA A
 -  ZONA B
 -  ZONA C



New York: areas potentially affected by the greatest 100-year flood, incorporating IPCC criteria (2007)
Grady, Maroko, Patrick, Solecki, 2009

Visite NYC.gov/hurricanezones en Internet o llame al 311 para averiguar si usted vive en una zona de evacuación ante huracanes.

CENTRO DE EVACUACIÓN	DIRECCIÓN	CENTRO DE EVACUACIÓN	DIRECCIÓN
BROOME	80 W. 100TH ST.	QUEENS	ROOSEVELT BLVD. E. 107TH STREET
UNIVERSITY COLLEGE	100 E. 50TH ST.	AVENUE H	45-20 36 ST.
EVANDER COLLEGE HS	400 E. 50TH ST.	BARCLAY HS	30-20 109TH STREET
IS 94	100 W. BOSTON RD.	BELMONT RACETRACK	NEWSPAPER TOWER, 6 CROSS ISLAND PARK
IS 94	730 BROADWAY	CHRIST THE KING HS	90-01 INDEN ST.
IS 92	730 BROADWAY	FLUSHING HS	90-01 INDEN ST.
LOHMAN COLLEGE	200 HUNTER PARK BLVD. WEST	FOURTH FIELDS HS	80-05 104TH AVE.
PS 51	34 JACOBSON AVE.	HILLCREST HS	80-05 104TH AVE.
PS 102	1027 ARCHER ST.	JHS 85	140-25 25 ST.
PS 201	700 PROSPECT AVE.	NEWCOMERS HS	29-02 42ND AVE.
PS 206	40 W. TIDWANT AVE.	NEWTON HS	48-02 90 ST.
TRUMAN HS	200 E. 103 ST.	PS 19	88-02 BOGUSLAW ST.
	750 BAYCHESTER AVE.	QUEENS COLLEGE	322-20 34TH AVE.
		WILLIAM C. BRANT HS	48-02 39 AVE.
		YORK COLLEGE	94-20 80TH & BREWER BLVD.
MANHATTAN	105 E. 30TH ST.	BRONXVILLE	100TH STREET
BARUCH COLLEGE	145 W. 84 ST.	BRONXVILLE TECH HS	29 FORT GREENE PLACE
BRANDERIS HS	4 EGGERS AVE.	BROWNS BK	400-100 AVE.
CITY COLLEGE	185 CONVENT AVE. E.	CLAREN BARTON HS	901 CLAYTON AVE.
W. BARNHART HS	620 CONVENT AVE.	FRANKLIN N. LANE HS	197 BARBARA AVE.
HS OF GRAPHIC COMM	439 W. 49 ST.	IS 67	300 WILLOUGHBY AVE.
HUNTER COLLEGE	655 PARK PLACE	IS 68	400-100 AVE.
IS 68	25 JAMES PLACE	IS 69	107 65 ST.
IS 67	94 W. 74 ST.	IS 70	102 E. NEW YORK AVE.
IS 10	440 W. 89TH ST.	IS 71	72 WENONA PLACE
IS 10	78 E. 103 ST.	IS 72	18 MANHATTAN RD.
IS 19	300 ORLAND ST.	IS 73	103 NEWMANS ST.
IS 20		IS 74	304 YORK ST.
IS 21		IS 75	1000 GREENE AVE.
IS 22		IS 76	125 FLOYDLAND AVE.
IS 23		IS 77	237 174 AVE.
IS 24		IS 78	300 44 ST.
IS 25		IS 79	300-10 AVE.
IS 26			
IS 27			
IS 28			
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IS 100			

1-in-100 Yr Flood Zones for New York City

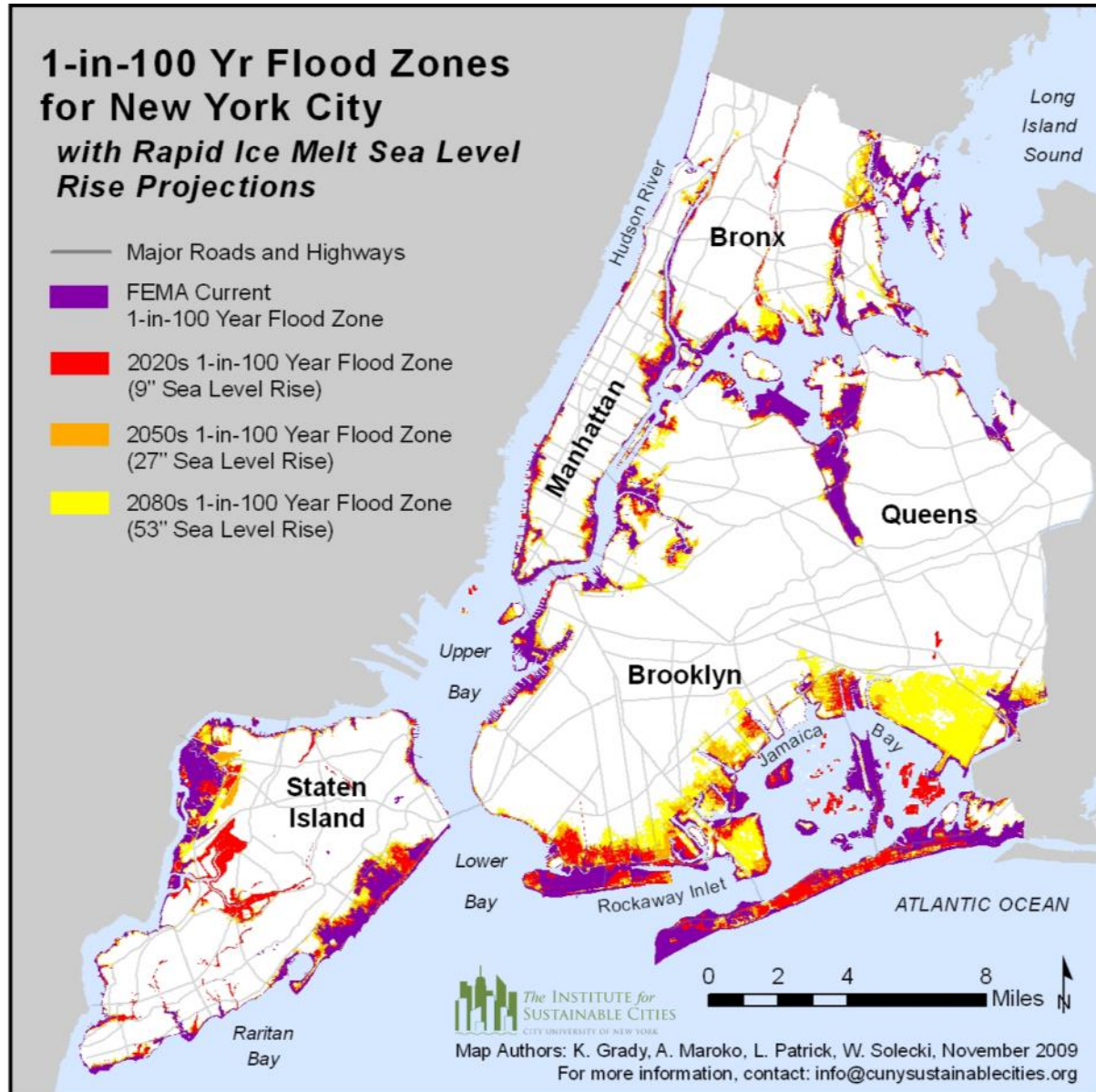
with Rapid Ice Melt Sea Level Rise Projections

0.23 m, 2020

0.69 m, 2050

1.35 m, 2080

- Major Roads and Highways
-  FEMA Current 1-in-100 Year Flood Zone
-  2020s 1-in-100 Year Flood Zone (9" Sea Level Rise)
-  2050s 1-in-100 Year Flood Zone (27" Sea Level Rise)
-  2080s 1-in-100 Year Flood Zone (53" Sea Level Rise)



New York: areas potentially affected by the largest flood in 100 years, incorporating observations of melting ice into sea level rise
Grady, Maroko, Patrick, Solecki, 2009

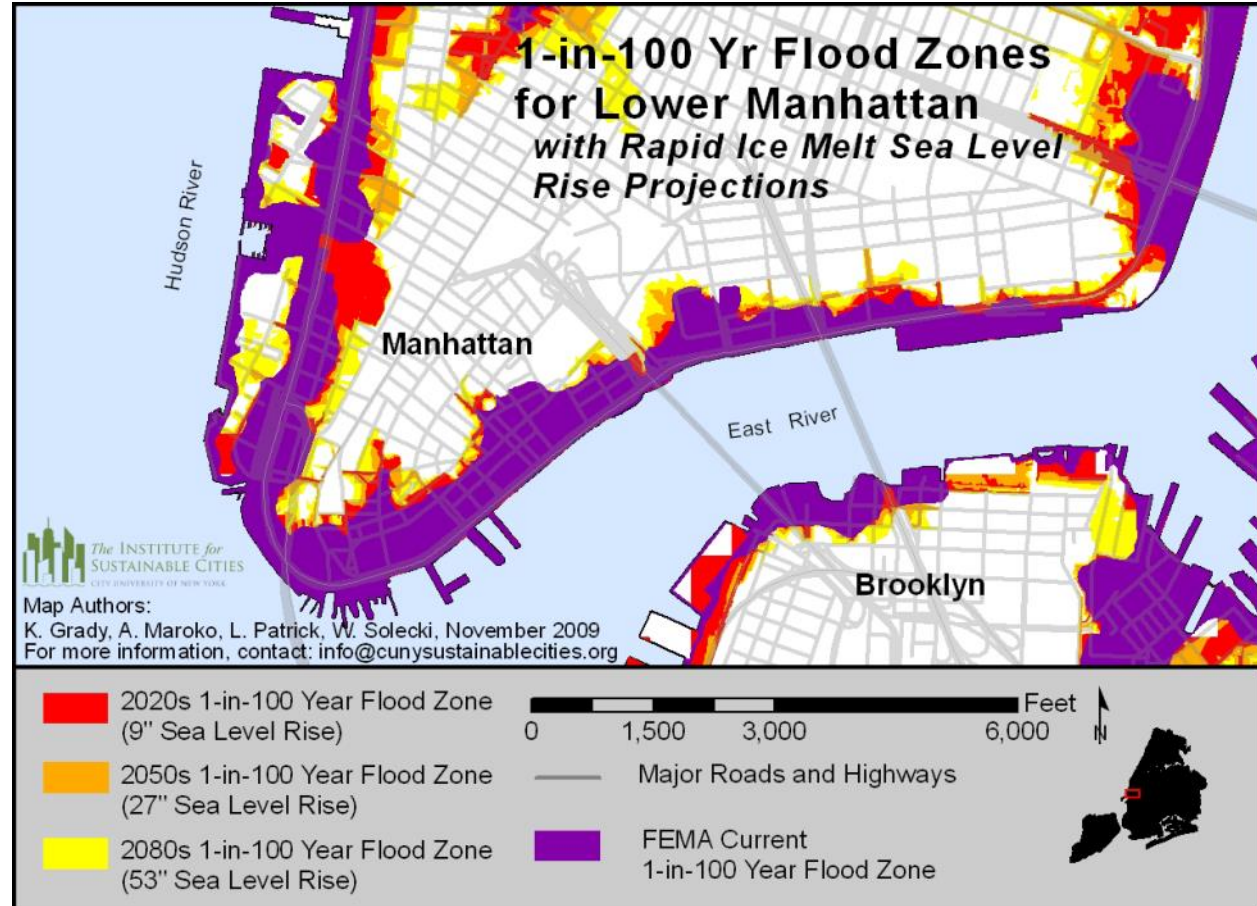
 The INSTITUTE for SUSTAINABLE CITIES
CITY UNIVERSITY OF NEW YORK

Map Authors: K. Grady, A. Maroko, L. Patrick, W. Solecki, November 2009
For more information, contact: info@cnysustainablecities.org

Note. This map is subject to limitations in accuracy as a result of the quantitative models, datasets, and methodology used in its development. The map and data should not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by FEMA.

Interpretation. The floodplains delineated above in no way represent precise flood boundaries but rather illustrate three distinct areas of interest: 1) areas currently subject to the 1-in-100 year flood that will continue to be subject to flooding in the future, 2) areas that do not currently flood but are expected to potentially experience the 1-in-100 year flood in the future, and 3) areas that do not currently flood and are unlikely to do so in the timeline of the climate projection scenarios used in this research (end of the current century).

New York City, Lower Manhattan: areas potentially affected by the largest flood in 100 years, incorporating observations of melting ice into sea level rise
 Grady, Maroko, Patrick, Solecki, 2009



Note. This map is subject to limitations in accuracy as a result of the quantitative models, datasets, and methodology used in its development. The map and data should not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by FEMA.

Interpretation. The floodplains delineated above in no way represent precise flood boundaries but rather illustrate three distinct areas of interest: 1) areas currently subject to the 1-in-100 year flood that will continue to be subject to flooding in the future, 2) areas that do not currently flood but are expected to potentially experience the 1-in-100 year flood in the future, and 3) areas that do not currently flood and are unlikely to do so in the timeline of the climate projection scenarios used in this research (end of the current century).

Lower Manhattan

Jurisdictions, Selected Critical Infrastructure, and Government Controlled Land



Nova Iorque, Manhattan (sul) e Brooklyn (norte):
jurisdições, solo de controlo governamental e infra-
estruturas críticas
Grady, Maroko, Patrick, Solecki, 2009

Map Authors: K. Grady, M. Brady, November 2009

For more information, contact: info@cunysustainablecities.org

Jurisdictional Features

- County Boundary
- NYS DOS: LWRP (NYC; NYS; U.S.)
- NYC Hydrography (USACE; NYS GSA)
- 1% Flood Zone (NYC DOB)

Selected Critical Infrastructure

- Rail Bridge (NYC MTA)
- Road Bridge (NYC DOT)
- Utility Structure
- Jetty, Pier, or Seawall (NYS DEC; NYS GSA; USACE)

Land Controlling Entity

- Federal Land
- NYC Land
- State
- NYC DEP
- NYC DOT
- NYC MTA
- NYC Parks
- NY/NJ Port Authority

0 1,400 2,800 Feet



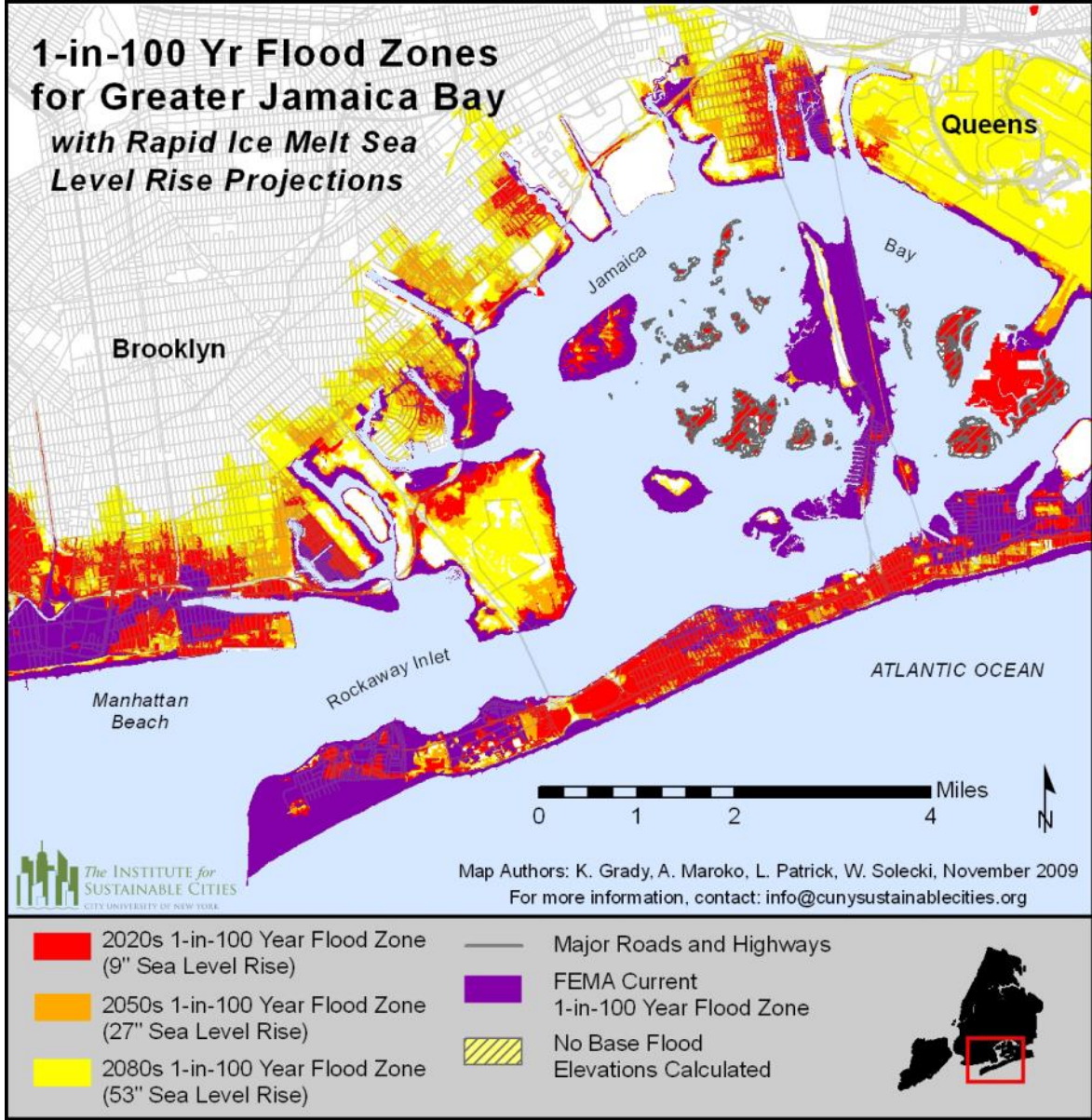
Acronyms:

USACE (Army Corps of Engineers); LWRP (Local Waterfront Revitalization Program); NYC DEP (Dept. of Environmental Protection); NYC DOB (Dept. of Buildings); NYC DOT (Dept. of Transportation); NYC MTA (Metro Transit Authority); NYS DEC (Dept. of Environmental Conservation); NYS DOS (Dept. of State); NYS GSA (General Services Administration)

Notes:

Data Sources: NYC Planimetric Data – Dept. of Information Technology and Telecommunications (DoITT); DFIRM of NYC (FEMA Digital Flood Insurance Rate Map); PLUTO Data (BYTES of the BIG APPLE); New York State Department of State (Coastal Zone Boundary).

New York, Jamaica Bay: areas potentially affected by the largest flood in 100 years, incorporating observations of melting ice into sea level rise
 Grady, Maroko, Patrick, Solecki, 2009



Note. This map is subject to limitations in accuracy as a result of the quantitative models, datasets, and methodology used in its development. The map and data should not be used to assess actual coastal hazards, insurance requirements, or property values or be used in lieu of Flood Insurance Rate Maps issued by FEMA.

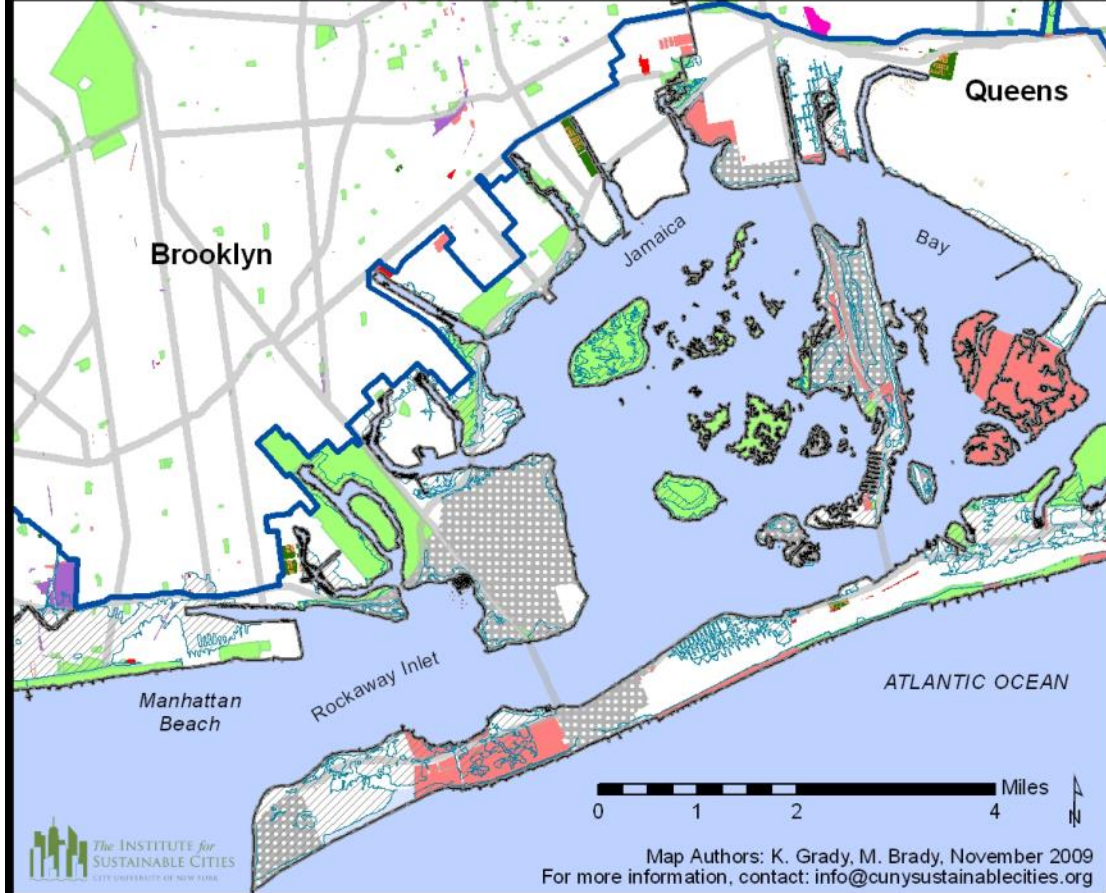
Interpretation. The floodplains delineated above in no way represent precise flood boundaries but rather illustrate three distinct areas of interest: 1) areas currently subject to the 1-in-100 year flood that will continue to be subject to flooding in the future, 2) areas that do not currently flood but are expected to potentially experience the 1-in-100 year flood in the future, and 3) areas that do not currently flood and are unlikely to do so in the timeline of the climate projection scenarios used in this research (end of the current century).

Greater Jamaica Bay

Jurisdictions, Selected Critical Infrastructure, and Government Controlled Land



New York, Jamaica Bay: jurisdictions, government control soil and critical infrastructure
 Grady, Maroko, Patrick, Solecki, 2009



The INSTITUTE for SUSTAINABLE CITIES
 CITY UNIVERSITY OF NEW YORK

Map Authors: K. Grady, M. Brady, November 2009
 For more information, contact: info@cusustainablecities.org

Jurisdictional Features

- County Boundary
- NYS DOS: LWRP (NYC: NYS; U.S.)
- NYC Hydrography (USACE; NYS GSA)
- 1% Flood Zone (NYC DOB)

Selected Critical Infrastructure

- Rail Bridge (NYC MTA)
- Road Bridge (NYC DOT)
- Utility Structure
- Jetty, Pier, or Seawall (NYS DEC; NYS GSA; USACE)

Land Controlling Entity

- Federal Land
- NYC Land
- State
- NYC DEP
- NYC DOT
- NYC MTA
- NYC Parks
- NY/NJ Port Authority
- Major Roads

Acronyms:

USACE (Army Corps of Engineers); LWRP (Local Waterfront Revitalization Program); NYC DEP (Dept. of Environmental Protection); NYC DOB (Dept. of Buildings); NYC DOT (Dept. of Transportation); NYC MTA (Metro Transit Authority); NYS DEC (Dept. of Environmental Conservation) NYS DOS (Dept. of State); NYS GSA (General Services Administration)

Notes:

Data Sources: NYC Planimetric Data – Dept. of Information Technology and Telecommunications (DoITT), DFIRM of NYC (FEMA Digital Flood Insurance Rate Map); PLUTO Data (BYTES of the BIG APPLE); New York State Department of State (Coastal Zone Boundary).



New York, proposed light infrastructure to transform the "Upper Bay" into a "Palisade Bay" under scenarios of rising mean sea level.
Nordenson, Seavitt, Yarinsky, 2010



SEA-LEVEL RISE ACTION PLAN—KEY RECOMMENDATIONS

- Take action now to protect human habitat and infrastructure from future risks.**
Require the integration of coastal erosion, coastal storm, and sea-level rise adaptation and response planning strategies into existing state and local policies and programs. *Develop* and *implement* state and local adaptation policies (i.e., protect, retreat, abandon) for vulnerable infrastructure. *Strengthen* building codes and construction techniques for new infrastructure and buildings in vulnerable coastal areas.
- Minimize risks and shift to sustainable economies and investments.**
Develop and *implement* long-range plans to minimize the economic impacts of sea-level rise to natural resource-based industries. *Establish* an Advisory Committee to advise the state of the risks that climate change poses to the availability and affordability of insurance. *Develop* a *Maryland Sea-Level Rise Disclosure and Advisory Statement* to inform prospective coastal property purchasers of the potential impacts of climate change. *Recruit, foster,* and *promote* market opportunities related to climate change adaptation and response.
- Guarantee the safety and well-being of Maryland's citizens in times of foreseen and unforeseen risk.**
Strengthen coordination and management across agencies responsible for human health and safety. *Conduct* health impact assessments to evaluate the public health consequences of climate change and sea-level rise-related projects and/or policies. *Develop* a coordinated plan to assure adequacy of vector-borne surveillance and control programs.
- Retain and expand forests, wetlands, and beaches to protect us from coastal flooding.**
Identify high priority protection areas and strategically and cost-effectively direct protection and restoration actions. *Develop* and *implement* a package of appropriate regulations, financial incentives, and educational, outreach, and enforcement approaches to retain and expand forests and wetlands in areas suitable for long-term survival. *Promote* and *support* sustainable shoreline and buffer area management practices.
- Give state and local governments the right tools to anticipate and plan for sea-level rise and climate change.**
Strengthen federal, state, local, and regional observation systems to improve the detection of biological, physical, and chemical responses to climate change and sea-level rise. *Update* and *maintain* state-wide mapping, modeling, and monitoring products. *Utilize* new and existing educational, outreach, training, and capacity-building programs to disseminate information and resources related to climate change and sea-level rise.
- State and local governments must commit resources and time to assure progress.**
Develop state-wide sea-level rise planning guidance to advise adaptation and response planning at the local level. *Develop* and *implement* a system of performance measures to track Maryland's success at reducing its vulnerability to climate change and sea-level rise.



REFERENCES

- Johnson, Z. R., Barlow, I., Clark, C., Larsen, & K. Miller. 2006. Worcester County Sea Level Rise Inundation Model. Technical report. Maryland Department of Natural Resources, Annapolis, Maryland.
- Carls, A., C. Conn, & S. Fabjanski. 2006. Dorchester Inundation Study: Identifying natural resources vulnerable to sea level rise over the next 50 years? Towson University Center for GIS, Towson, Maryland.

MARYLAND
 DEPARTMENT OF NATURAL RESOURCES
 Martin O'Malley, Governor | John R. Griffin, Secretary

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 Toll-free in Maryland: 1-877-620-BONR EXT. 8741
 www.dnr.maryland.gov

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FURTHER INFORMATION
 For more information, visit
www.mde.state.md.us/Air/climatechange

MARYLAND
 DEPARTMENT OF NATURAL RESOURCES
MDE
MDP
 Maryland Department of Planning

SCIENCE COMMUNICATION
 Integration & Application Network,
 University of Maryland Center for Environmental Science
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www.jan.umces.edu

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Edited by Zoë Johnson
 Office for a Sustainable Future
 Maryland Department of Natural Resources

MARYLAND AT RISK

SEA-LEVEL RISE ADAPTATION & RESPONSE

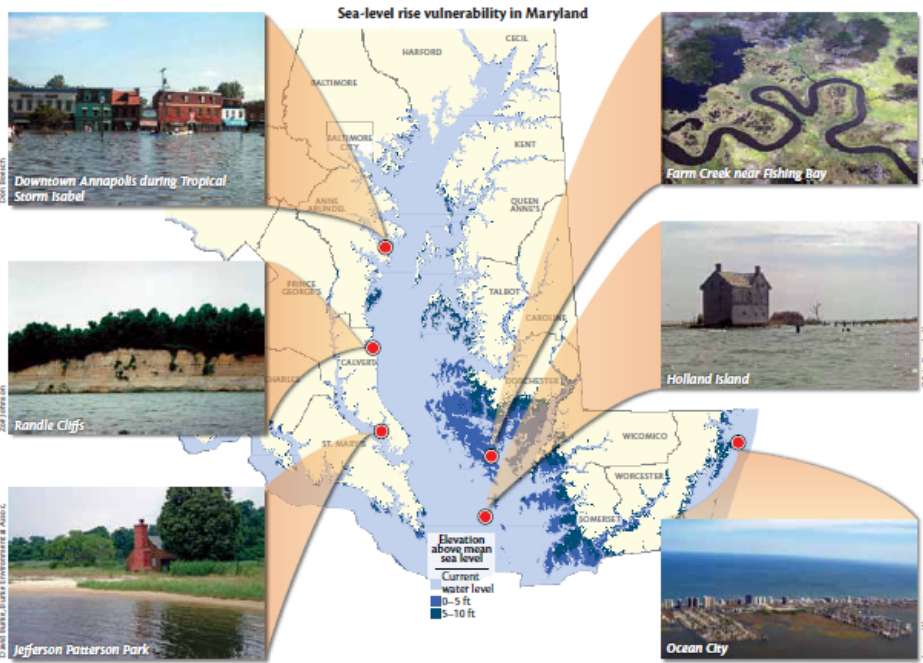
September, 2008

WE MUST TAKE ACTION NOW TO PREPARE FOR THE IMPACTS OF CLIMATE CHANGE

Action is needed now to stem not only the drivers of climate change but also to prepare for the inevitable consequences. Maryland is extremely vulnerable to the impacts of climate change. Historic tide-gauge records show that sea levels are rising along Maryland's coast and, due to a combination of global sea-level rise and land subsidence, have risen approximately one foot within state waters over the last 100 years. As our climate changes, sea levels are expected to continue to rise—potentially twice as fast as they did during the 20th century. Maryland is at risk of experiencing another two-foot of sea-level rise by 2050 and as much as four feet of rise by 2100.

The Comprehensive Strategy to Reduce Maryland's Vulnerability to Climate Change, a key component of Maryland's Climate Action Plan (August, 2008; www.mde.state.md.us/Air/climatechange), sets forth the actions necessary to protect Maryland's people, property, natural resources, and public investments from the impacts of climate change. The vision for future preparedness is targeted at: 1) reducing impact to existing built environments, as well as to future growth and development; 2) shifting to sustainable investments and avoiding financial and economic impact; 3) enhancing preparedness to protect human health, safety, and welfare; and 4) restoring and protecting Maryland's natural resources and resource-based industries.

MARYLAND'S PEOPLE, PROPERTY, NATURAL RESOURCES, AND PUBLIC INVESTMENTS ARE AT RISK



3.3 REPRESENTATIVE CASES: UNITED KINGDOM, KINGSTON UPON-HULL AND LONDON

WHO TALKS TO WHO?

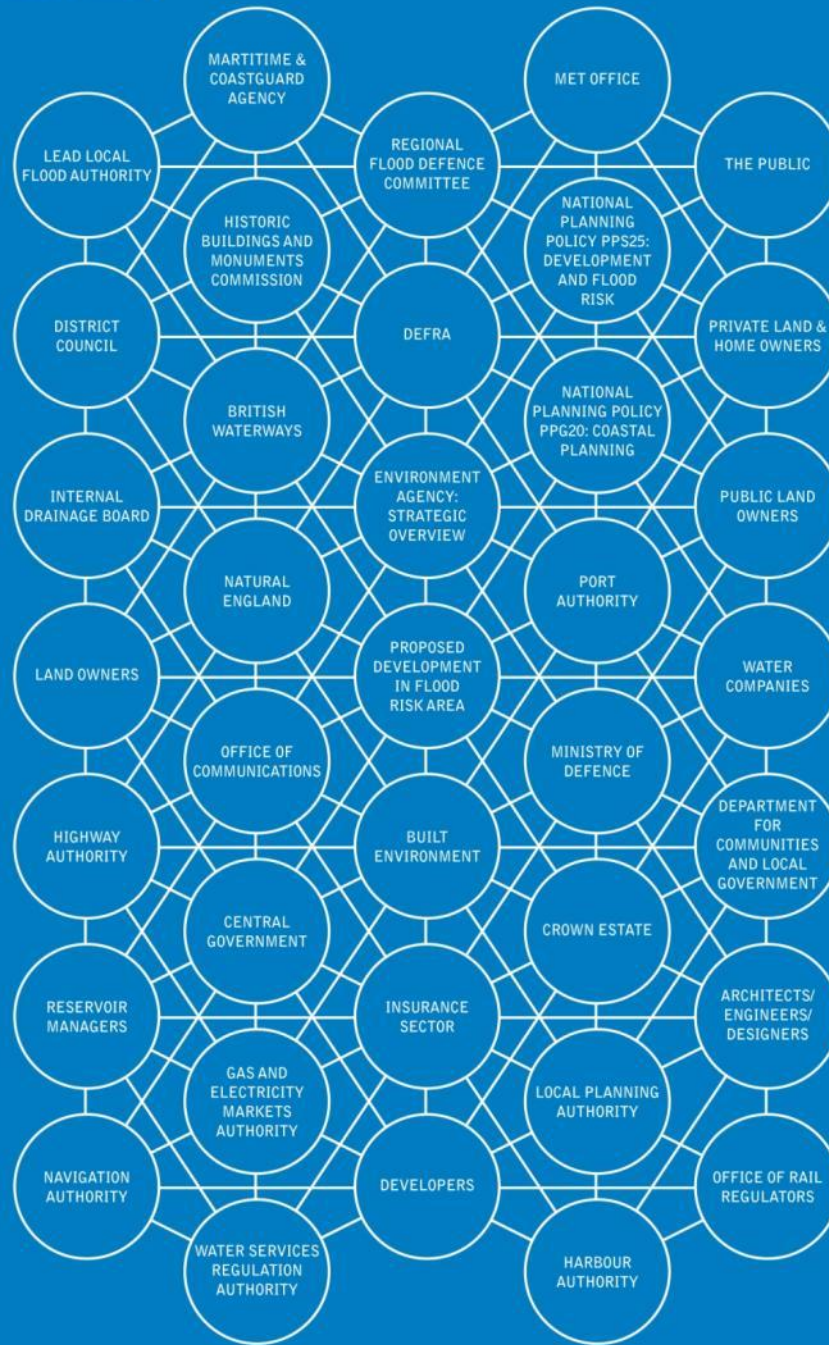
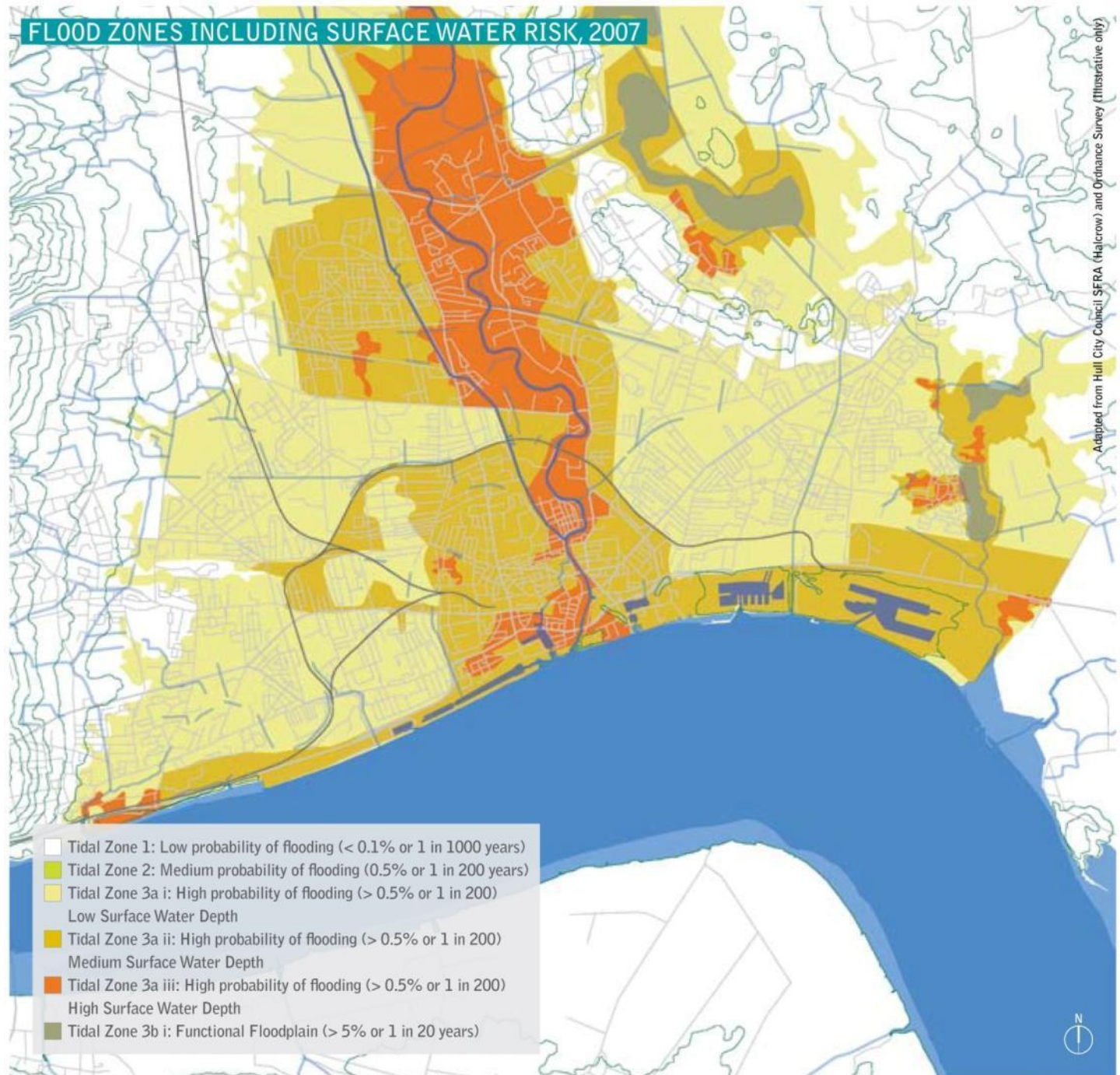
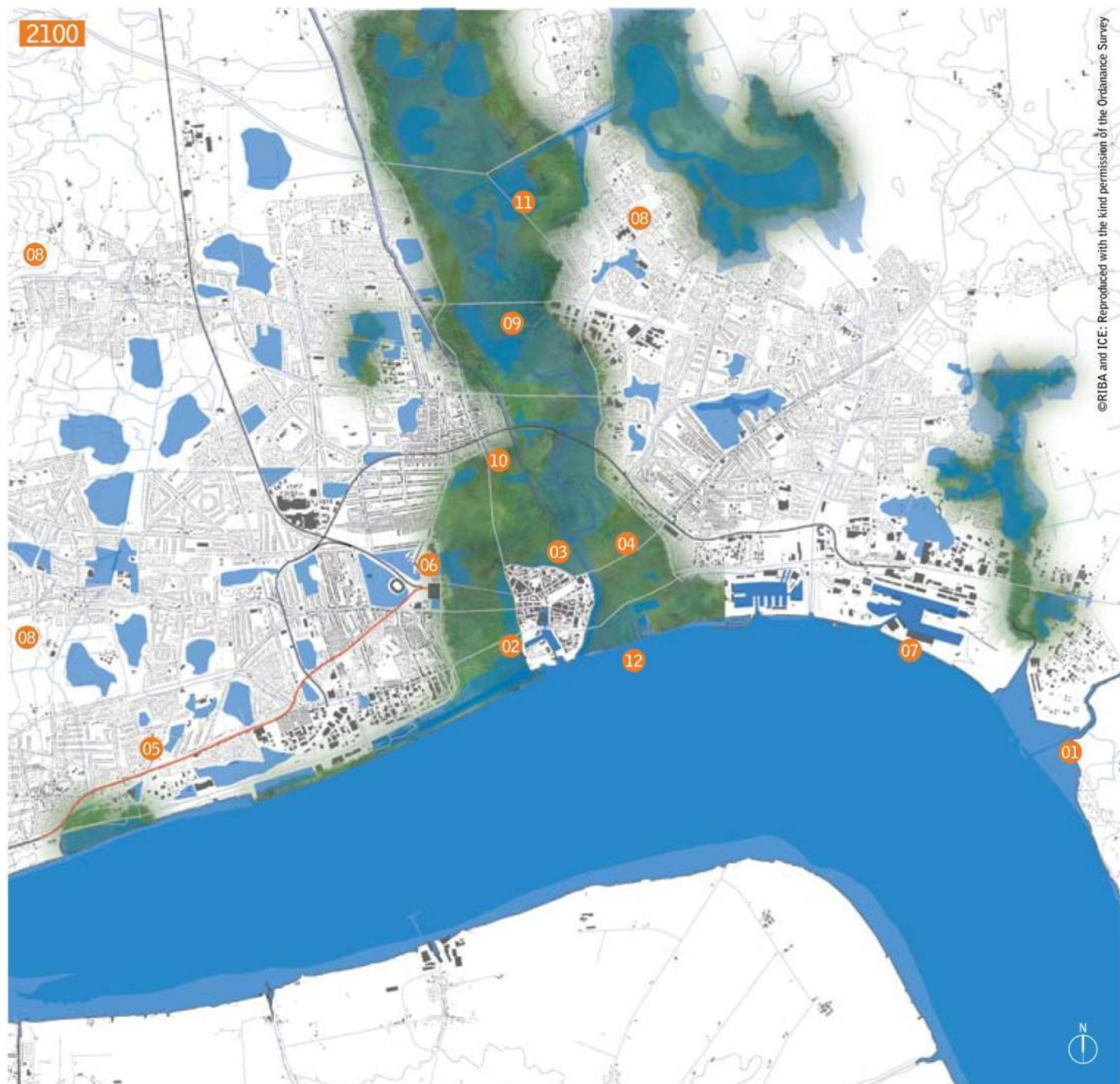


Diagrama de governabilidade para as frentes de água britânicas
Robinson, Hamer, 2009

FLOOD ZONES INCLUDING SURFACE WATER RISK, 2007

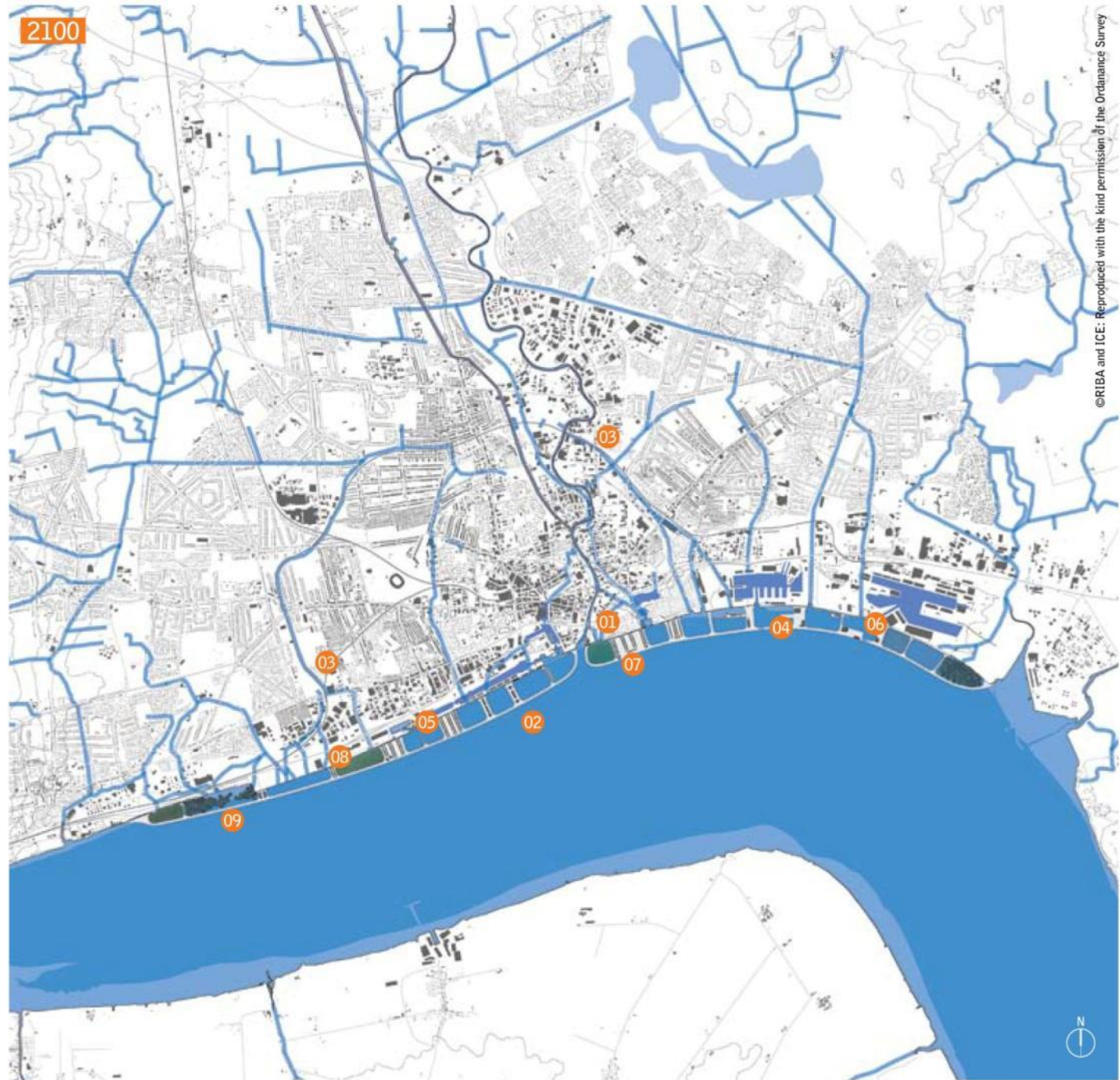


- Tidal Zone 1: Low probability of flooding (< 0.1% or 1 in 1000 years)
- Tidal Zone 2: Medium probability of flooding (0.5% or 1 in 200 years)
- Tidal Zone 3a i: High probability of flooding (> 0.5% or 1 in 200)
Low Surface Water Depth
- Tidal Zone 3a ii: High probability of flooding (> 0.5% or 1 in 200)
Medium Surface Water Depth
- Tidal Zone 3a iii: High probability of flooding (> 0.5% or 1 in 200)
High Surface Water Depth
- Tidal Zone 3b i: Functional Floodplain (> 5% or 1 in 20 years)

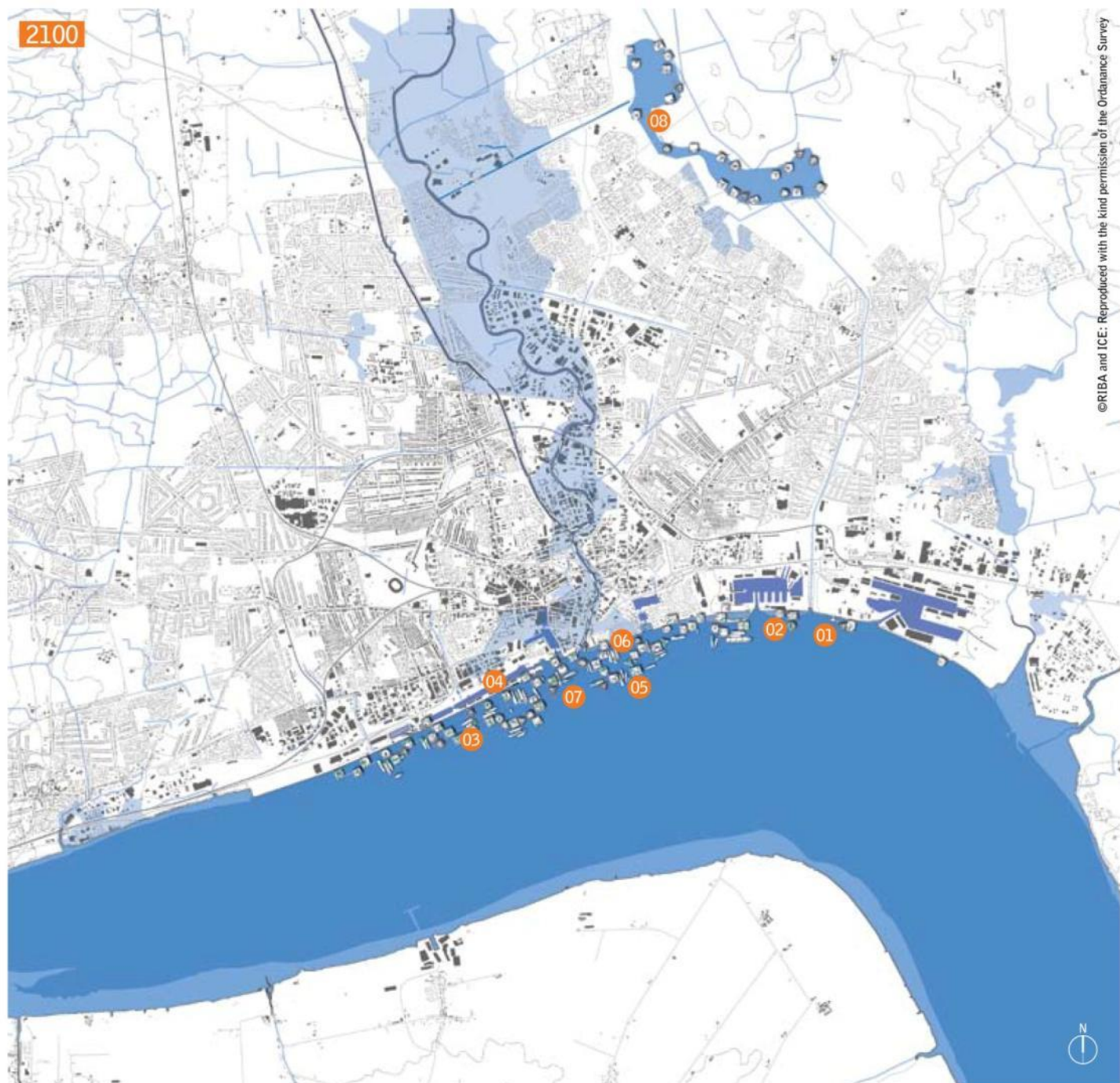


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Kingston Upon Hull, estratégia "Retreat" num cenário de subida do nível médio do mar de 2,0 m para o horizonte 2100. *Robinson, Hamer, 2009*



Kingston Upon Hull, estratégia "Defend" num cenário de subida do nível médio do mar de 2,0 m para o horizonte 2100. *Robinson, Hamer, 2009*



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Kingston Upon Hull, estratégia "Attack" num cenário de subida do nível médio do mar de 2,0 m para o horizonte 2100. *Robinson, Hamer, 2009*

Retreat



Defend



Attack

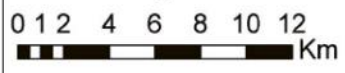
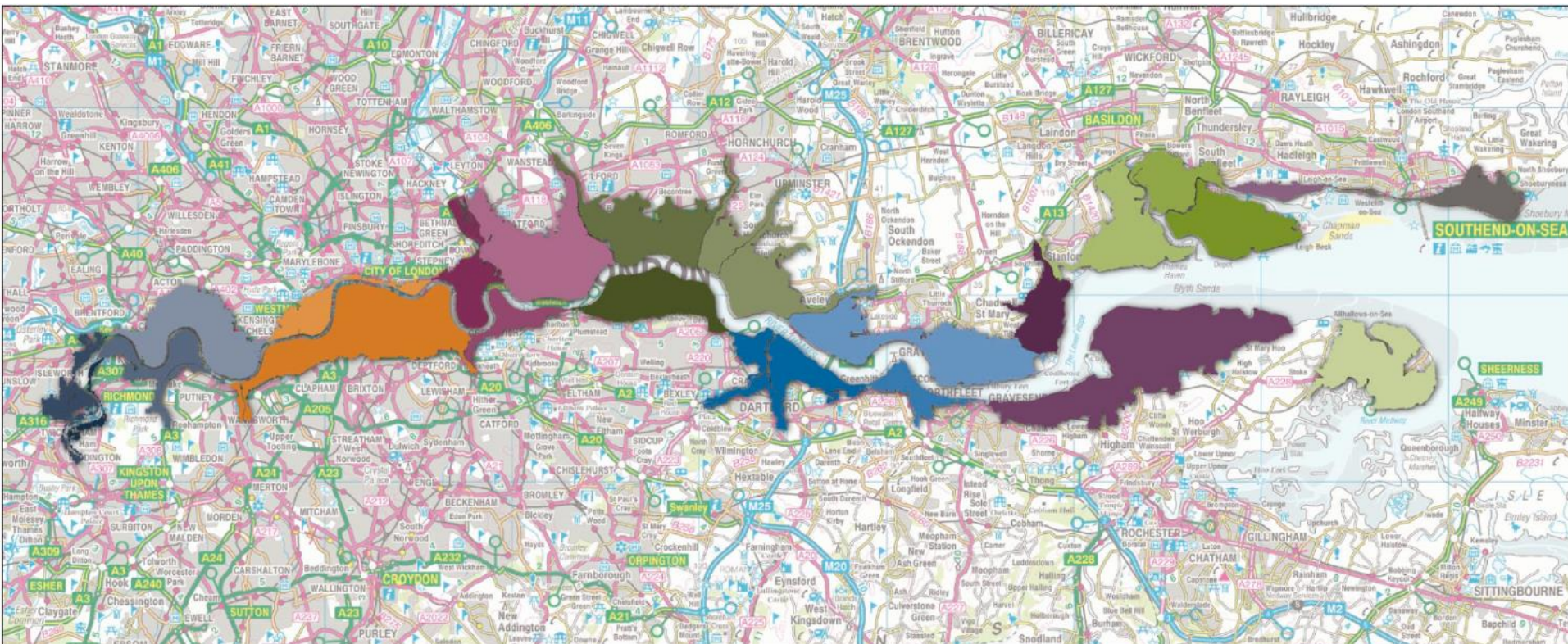


Kingston Upon Hull, pormenor planimétrico e simulação tridimensional para as três estratégias, no horizonte 2100. *Robinson, Hamer, 2009*

Thames Estuary 2100 Plan (2009):

- => Climate change could lead to increases in sea level, storm surge height and peak river flows but the question is by how much
- => SLR in the Thames over the next century due to thermal expansion of the oceans, melting glaciers and polar ice is likely 0.2 – 0.9 m
- => There remains a lot of uncertainty over the contribution of polar ice melt to increasing SLR. At the extreme, SLR may be up to 2.0 m, although this is thought to be highly unlikely
- => Storm surge height and frequency in the North Sea is unlikely to change
- => Peak freshwater flows for the Thames, e.g. at Kingston, could increase by around 40% by 2080
- => Without effective mitigation future generations in London and the Thames estuary may have to deal with climate change which exceeds 2.7 m extreme scenario by 2100





Thames Estuary 2100 Action Zones



Thames Estuary 2100

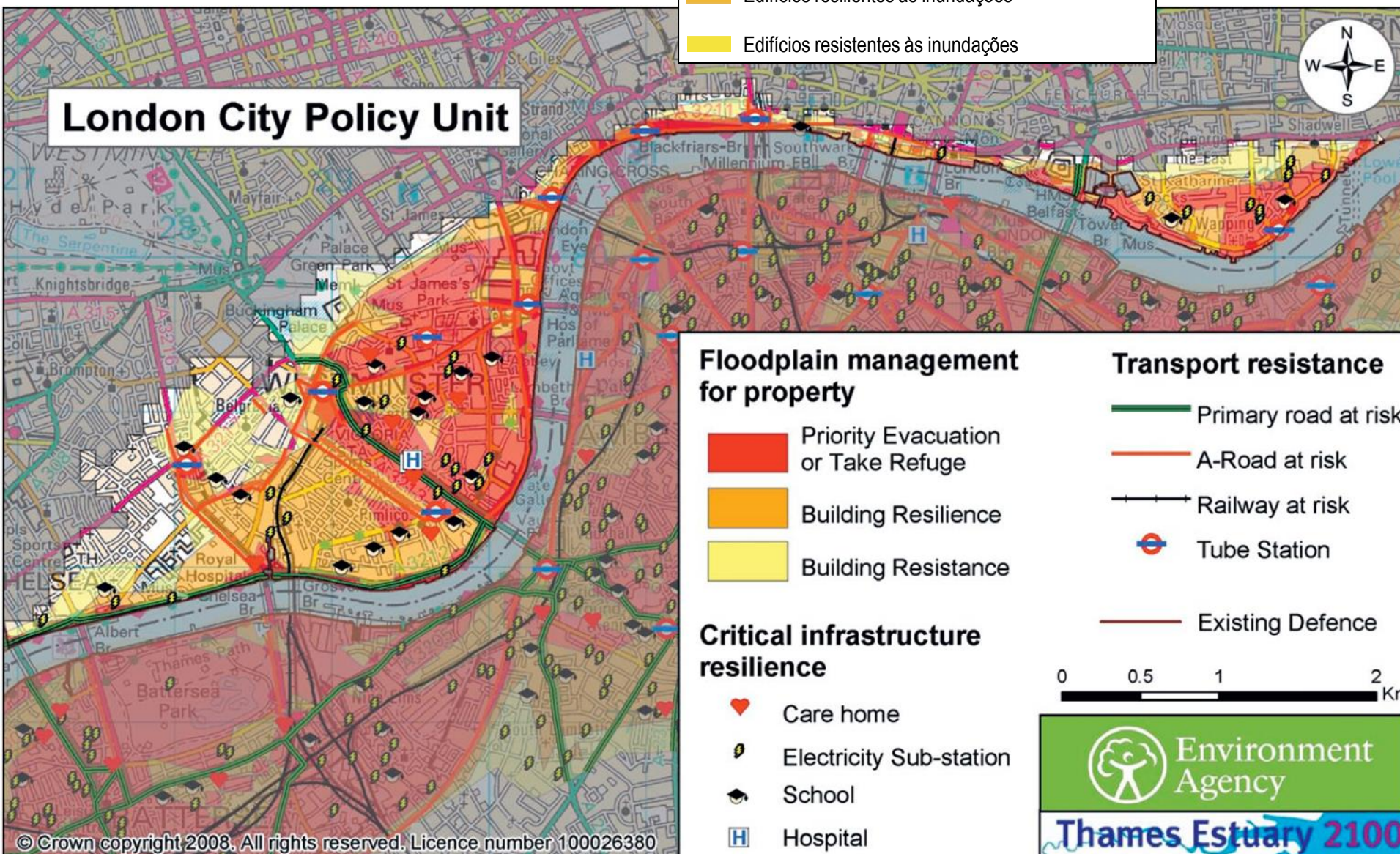
© Crown copyright 2009. All rights reserved. Licence number 100026380

Londres, “Zonas de ação no Estuário do Tamisa”, no horizonte 2100, identificando a laranja a zona 2 – Londres Central, incluindo as subunidades “London City” e “Wandsworth to Deptford”. *Thames Estuary 2100 Plan, 2009*

Londres, “unidades territoriais na gestão do risco de inundações”, no horizonte 2100. Zona 2 – Londres Central, subunidade “London City”
Thames Estuary 2100 Plan, 2009

- Áreas prioritárias para evacuar e oferecer refugio
- Edifícios resilientes às inundações
- Edifícios resistentes às inundações

London City Policy Unit



Floodplain management for property

- Priority Evacuation or Take Refuge
- Building Resilience
- Building Resistance

Transport resistance

- Primary road at risk
- A-Road at risk
- Railway at risk
- Tube Station
- Existing Defence

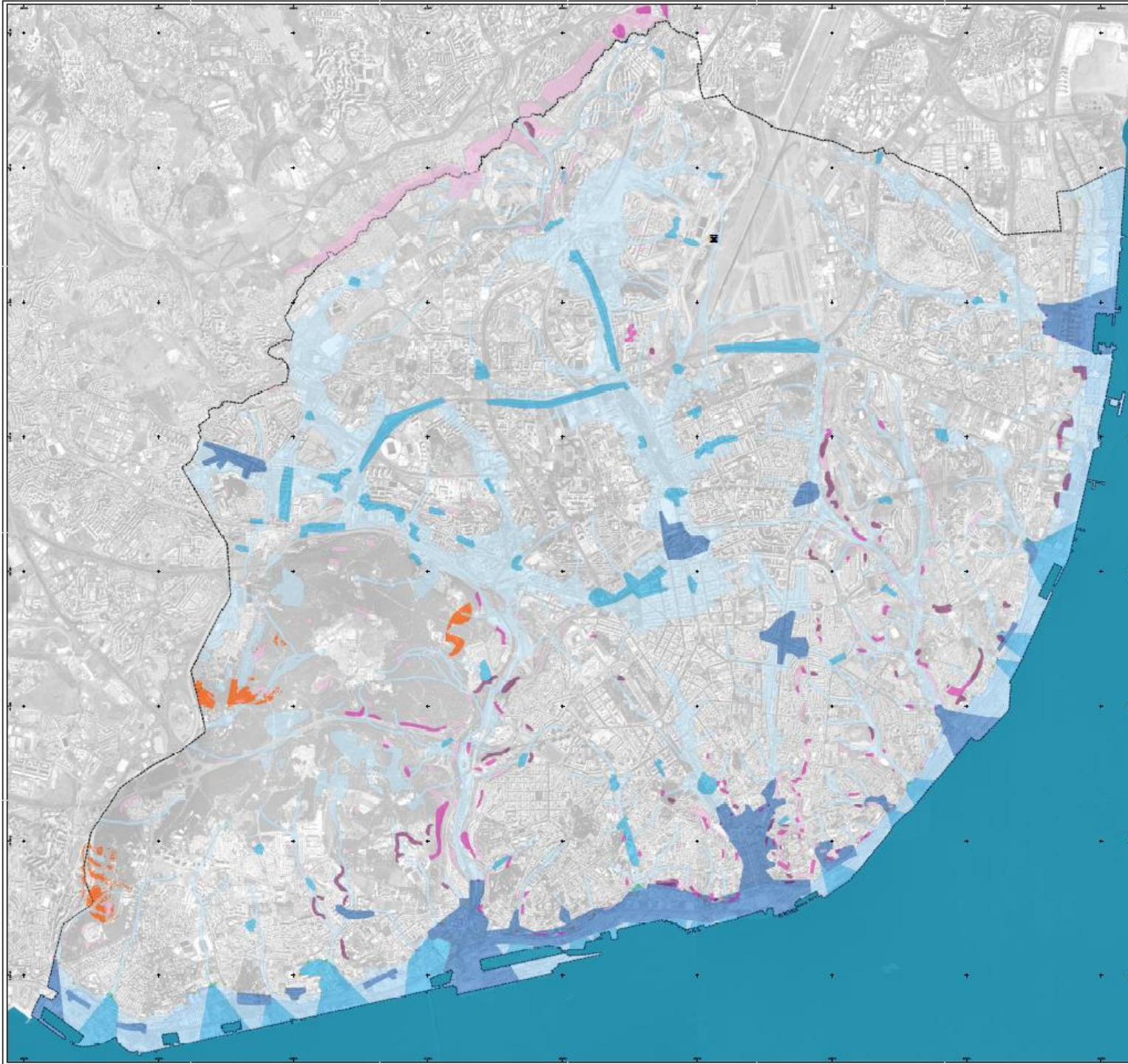
Critical infrastructure resilience

- Care home
- Electricity Sub-station
- School
- Hospital



3.4 REPRESENTATIVE CASES: PORTUGAL, LISBON

Revisão do PDM de Lisboa,
 Carta de Riscos Naturais I e
 Antrópicos no Município de
 Lisboa.
 Câmara Municipal de Lisboa,
 2011



- Ponto de Máxima Acumulação**
- Baixa 10^6
 - Baixa entre 10^7 e 10^8
 - Baixa entre 10^8 e 10^9
 - Baixa >10^9
 - Baixa elevada para Tachos
- Vulnerabilidade às Inundações**
- Baixa
 - Média
 - Alta
- Susceptibilidade ao Efeito de Mare Directo**
- Baixa
- Susceptibilidade de Ocorrência de Movimento de Massa em Vertentes**
- Baixa
 - Média
 - Alta
- Risco Incêndio Florestal**
- Baixa
 - Média
 - Alta
- X SDC (Direção-geral do SBC) 10 de Julho
 Linha Costeira
 Baixa



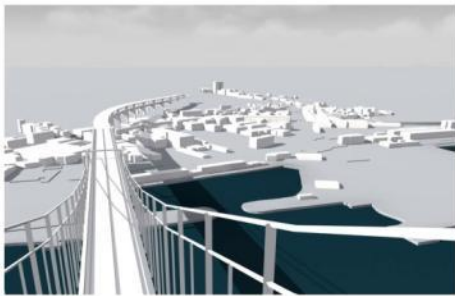
Registo de inundaç o na ribeira de Lisboa, com a Praa do Com rcio durante a inundaç o de 1945. Arquivo Fotogr fico da C mara Municipal de Lisboa, *Judah Benoliel*

**Quadro n.º 7: Fatores de cálculo de inundação na ribeira de Lisboa, no horizonte 2100
(incremento relativamente à cota 0,00 da cartografia de terra)**

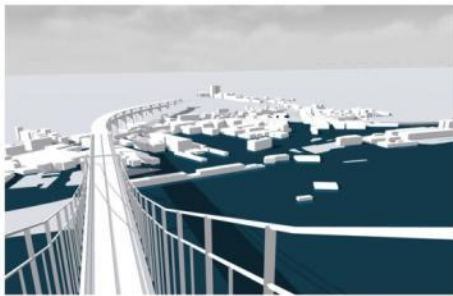
Cenários para 2100	Subida do Nível do Mar	Correcção Cartográfica	Incremento de Maré (corrigido)	Ondulação	Elevação por Cheias	Sobre-elevação Meteorológica
IPCC (2007) cenário A1						
Rahmstorf (2007) cenário B1	0.6					
CCIAM - Portugal (2010) cenário B1						
Rahmstorf (2007) cenário A1						
CCIAM - Portugal (2010) cenário A1	1.0		1.92 m		0,15 m	0,40 m
North Carolina SLR AR (2010) cenário recomendado			(62 eventos em 2011)	~ 0.20 m (ondulação frequente)	(cheias progressivas do Tejo)	(1 evento em 5 anos)
Vellinga et al (2009) pior cenário	1.2					
Defra (2006) cenário recomendado						
Climate Rotterdam (2010) pior cenário			2.12 m			0,50 m
Comissão Delta Holandesa (2008) pior cenário	1.3		(21 eventos em 2011)	a	+	(1 evento em 25 anos)
Rahmstorf (2007) pior cenário		0,16 m (Antunes, 2011a)				
California CATR (2009) A1f1	1.4			~0.40 m	0,45 m	
North Carolina SLR AR (2010) pior cenário			2,22 m	(eventos extremos)	("flash flood" nas ribeiras urbanas)	0,58 m
Rahmstorf (2010) cenário recomendado			(4 eventos em 2011)			(1 evento em 100 anos)
Defra (2006) pior cenário	1.6					
New York CPCC (2009) pior cenário						
Hansen (2007)						
Pfeffer et al (2008) cenário extremo	2.0					
Thames Estuary Plan (2009) cenário elevado ++						
Defra, Londres (2010) cenário extremo						



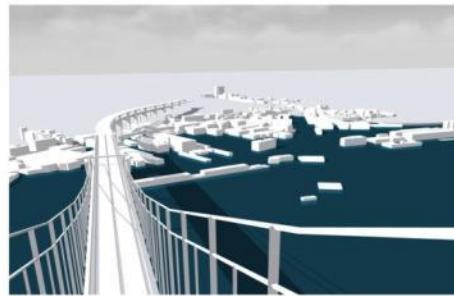
Alcântara 1967



3D Rendering 1998



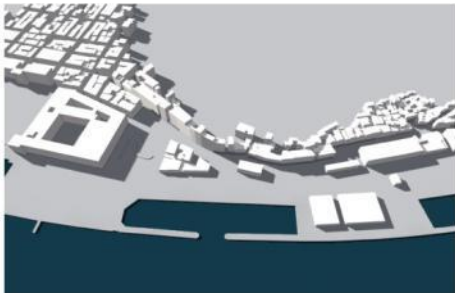
Tipping Point 4m



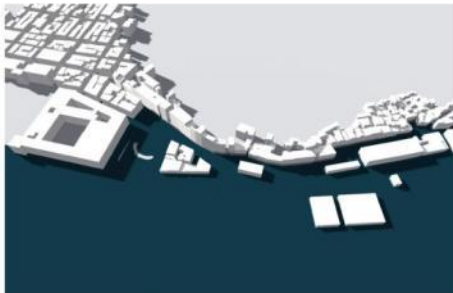
Tipping Point 4.5m



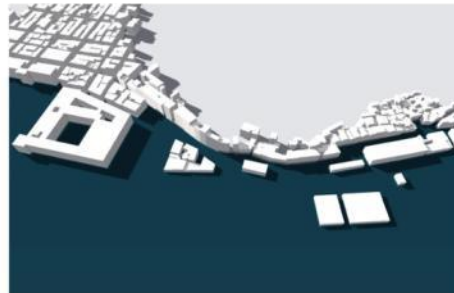
Campo das Cebolas 1932



3D Rendering 1998



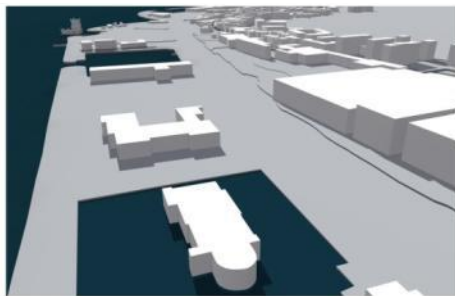
Tipping Point 4m



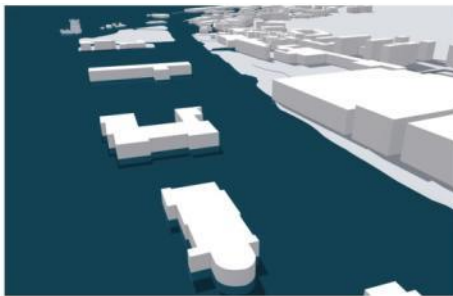
Tipping Point 4.5m



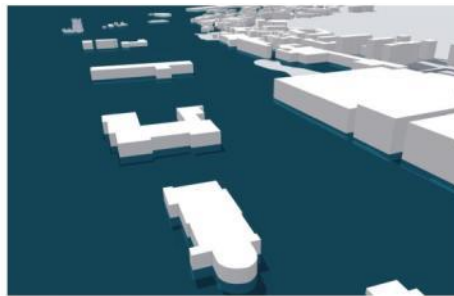
Belém 1940



3D Rendering 1998



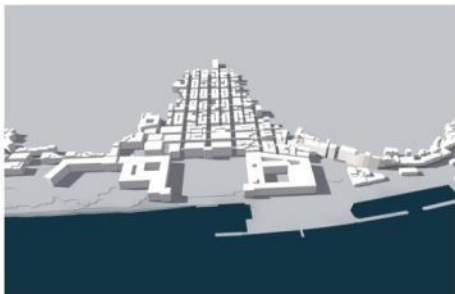
Tipping Point 4m



Tipping Point 4.5m



Terreiro do Paço 1932



3D Rendering 1998



Tipping Point 4m



Tipping Point 4.5m

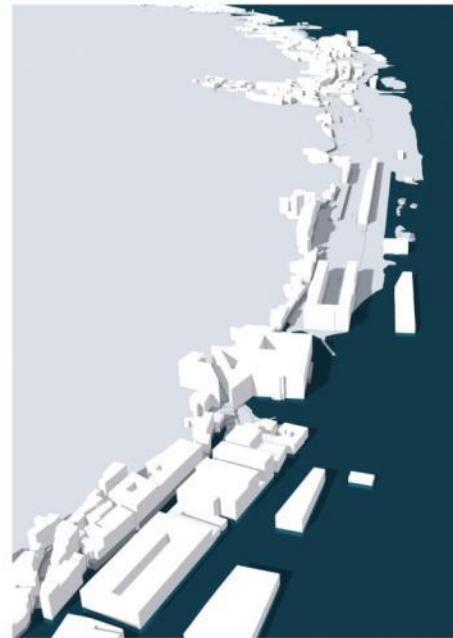
Projecto FCT "Urbanised Estuaries and Deltas" (Arquivo Fotográfico de Lisboa: Artur Inácio Bastos; Paulo Guedes; fotógrafo não identificado. Modelação tridimensional de Luiza Barone, Saul Sieiro, Ana Raquel Ferrão, Ruben Guerreiro, Ivo Nascimento, Duarte Gameiro, Mónica Fernandes, Joana Almeida)



Santa Apolónia 1950



3D Rendering 1998



Tipping Point 4m



Tipping Point 4.5m



Poço do Bispo 1950



3D Rendering 1998

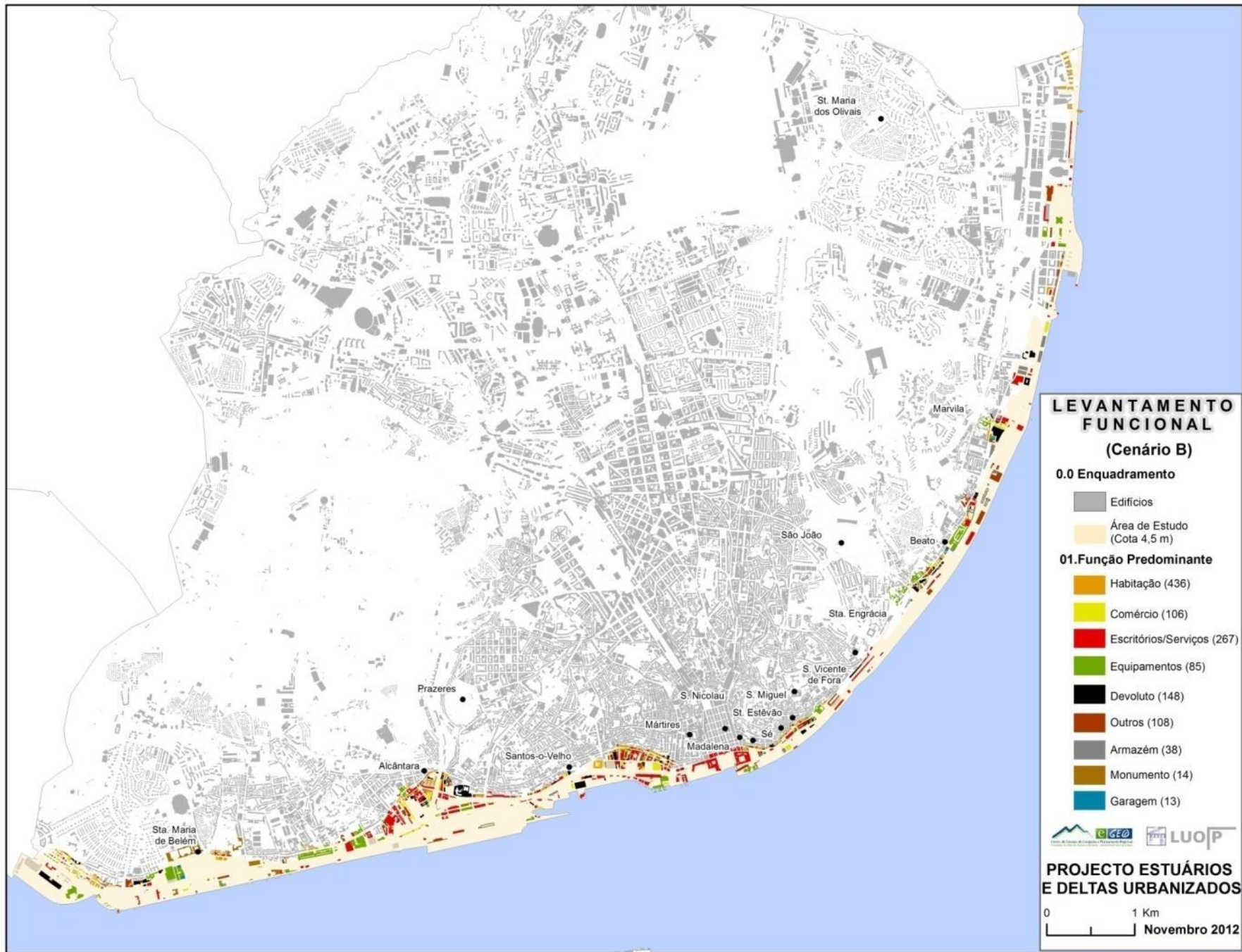


Tipping Point 4m

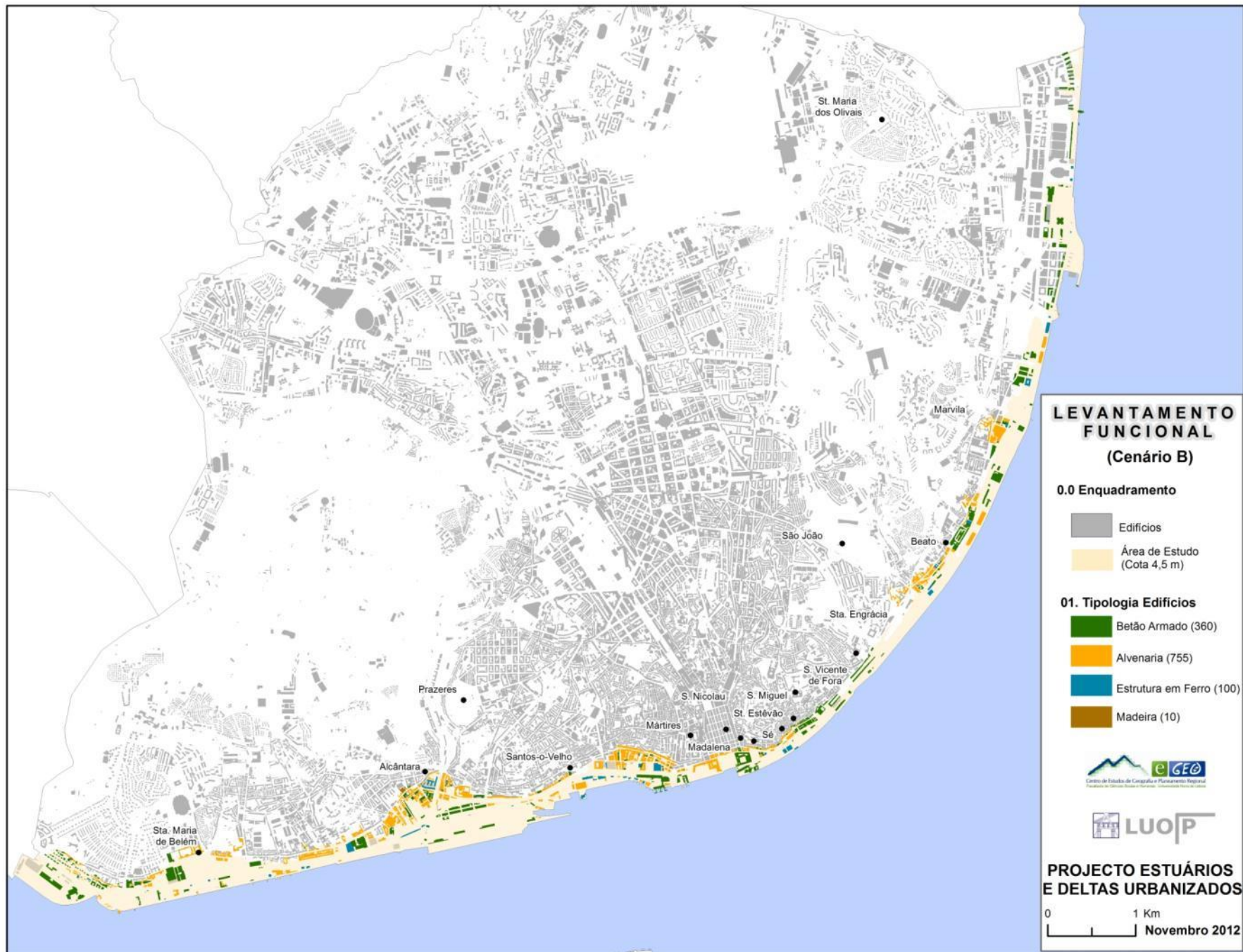


Tipping Point 4.5m

Projecto FCT "Urbanised Estuaries and Deltas" (Arquivo Fotográfico de Lisboa: fotógrafo não. Modelação tridimensional de Luiza Barone, Deolinda Farinha, Sueli d'Avó, Ana Catarina Cordeiro)



Levantamento funcional do edificado afetado por uma inundaç o ribeirinha ao atingir o tipping point da cota 4,5m. Projeto FCT Estu rios e Deltas Urbanizados, 2012



Levantamento da tipologia construtiva edificado afetado por uma inundaç o ribeirinha ao atingir o tipping point da cota 4,5m. Projeto FCT Estu rios e Deltas Urbanizados, 2012

4. URBAN PLANNING AND CLIMATE CHANGE ADAPTATION: THE NEW CHALLENGES AT THE 2010'S

Urbanism and Climate Change Adaptation, new challenges (2013):

- **To build a close relationship between the two areas of knowledge**

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- **New time horizons for Urbanism**

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- Recovering lessons concerning the design of the city
- Develop innovative and creative solutions in Urbanism
- **Finding new forms of governance**

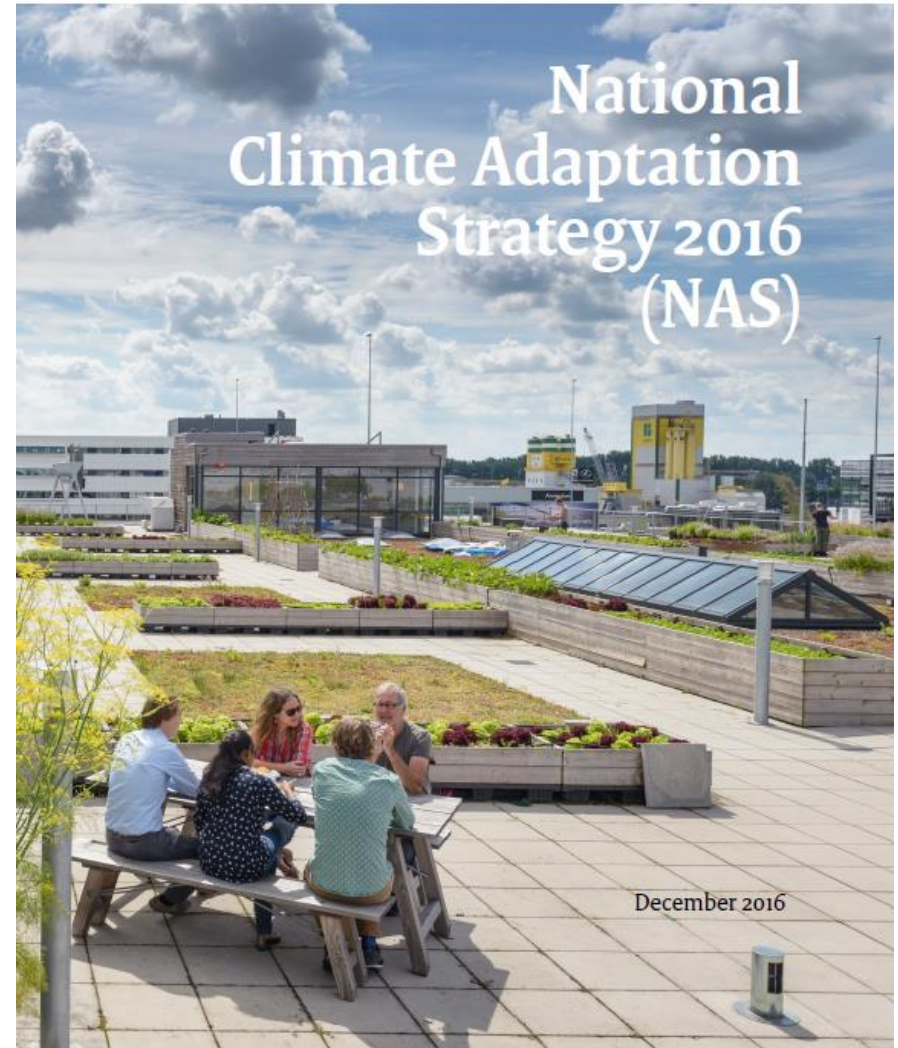
5. IS CLIMATE CHANGE ADAPTATION LOST IN TRANSITION?

5.1 A QUICK OVERVIEW OF THE RECENT NATIONAL CLIMATE CHANGE ADAPTATION PLANING

Dutch National Adaptation Strategy (NAS):

- NAS 2007 has undergone several updates, the recent one in 2016.
- “Adapting with Ambition”:
 - Outlines the major climate risks about economy, people, nature and the environment;
 - Identifies a number of key climate risks, including flooding, heatwaves, and water shortages;
 - Provides a plan for addressing these risks through a combination of short-term and long-term actions.
- NAS 2016 continues increasing the awareness for climate adaptation and implementation of adaptation measures. It innovates by replacing a sector orientated approach by an intersectoral / cross-sectoral and integrated approach to adaptation, including local and regional projects, programs and partnerships.

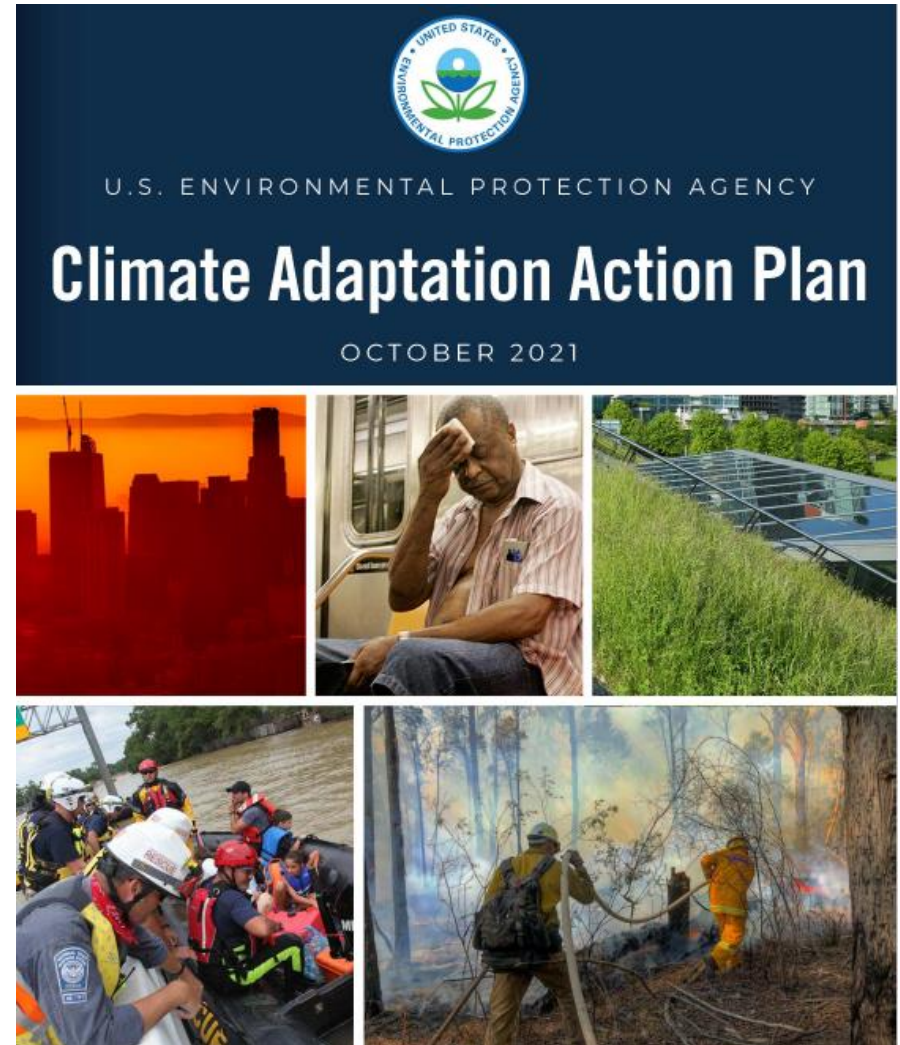
Adapting with ambition

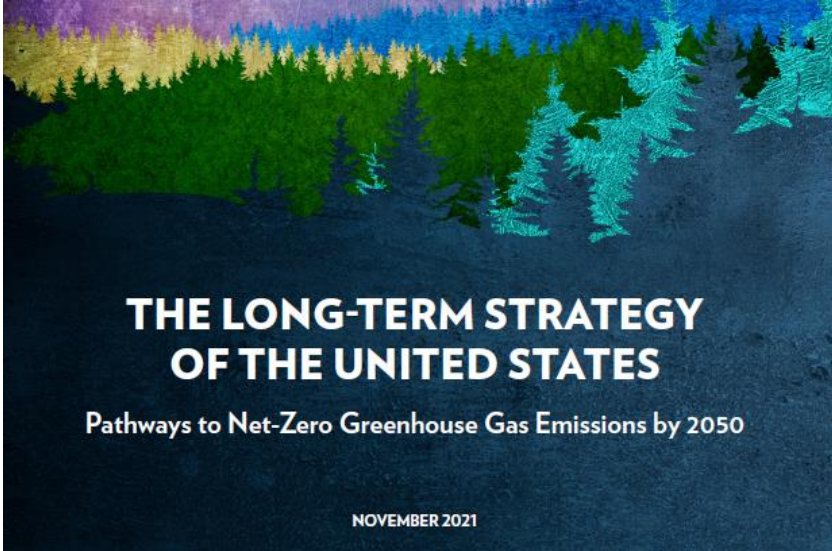


National Adaptation Strategy (NAS), The Netherlands, 2016.
Gamze Kazanci, 2023.

USA National Climate Change Adaptation Plan:

- NCCAP was released in 2020-21:
 - Main goal: achieve a sustainable economic growth, reduce conflict and improve the quality of life, achieving net-zero society;
 - Identifies climate-related risks and projections;
 - Proposes strategies on federally-led investment in clean and renewable energy, transport- advancing low-emission and fuel-efficient cars, trucks, and heavy-duty vehicles, agriculture and waste;
 - Provides a plan for addressing these risks through a combination of short-term and long-term actions.
- NCCAP 2021 follows a sectoral/thematic approach and provides guidance on how to address climate change impacts in various sectors, addressing the impacts of climate change at national, regional, and local levels.





Department of Defense Climate Adaptation Plan

September 1, 2021



DEPARTMENT OF THE INTERIOR CLIMATE ACTION PLAN

2021

UK National Adaptation Programme (NAP):

- NAP 2013, update, 2018, “Making the country resilient to a changing climate”:
 - Identifies key risks to the natural environment, infrastructure, people and built environment, business and industry, and local government;
 - Defines specific themes, visions, objectives, and key actions for adapting to climate change;
 - Outlines the actions that the government and other stakeholders will take over the next 5 years.
- NAP 2018 highlights the importance of raising awareness about the need for adaptation, improving the evidence base, and taking timely action to increase resilience to identified risks. It identifies a range of policies and actions to help the country successfully adapt to future weather conditions, making the case for action, and involving local authorities and cities in the adaptation process.



Department
for Environment
Food & Rural Affairs

The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting

Making the country resilient to a changing climate

July 2018



National Adaptation Programme (NAS), UK, 2018.
Gamze Kazanci, 2023.

Portugal National Energy and Climate Plan 2021/2030 (NECP):

- NECP 2019 (flowing the National Strategy for Adaptation to Climate Change, 2010):
 - Defines sectors for the national and regional levels: energy, agriculture and forestry, mobility and transport, research and innovation, and finance;
 - Sets out goals for 2030: decarbonizing, energy efficiency, renewable energy sources, supply security, sustainable mobility, sustainable agriculture and forestry, and carbon capture.

- NAP 2018 emphasizes the need to raise awareness on adaptation, focusing on decarbonizing the city and economy. It takes a sectoral approach and focuses on specific themes, outlining climate-related risks and objectives.

PORTUGAL

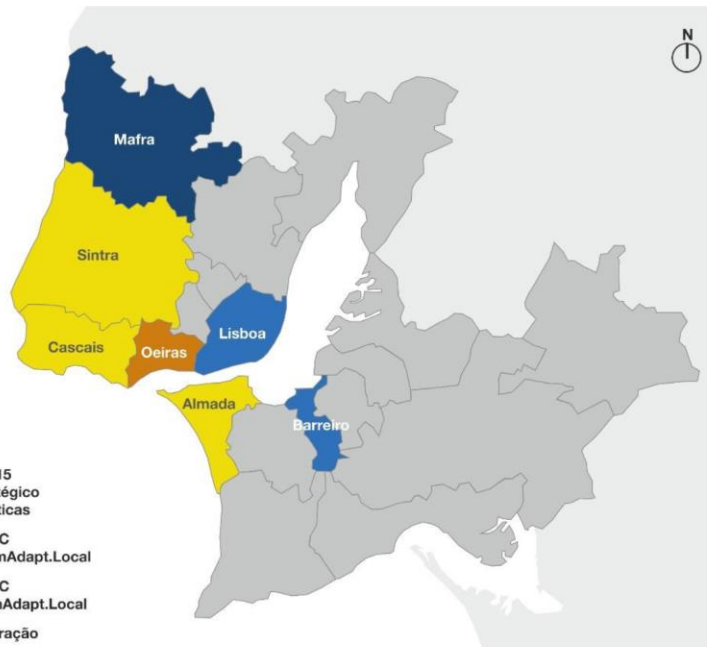
NATIONAL ENERGY AND CLIMATE PLAN 2021-2030 (NECP 2030)

Portugal, December 2019

Climate Change Adaptation in the Lisbon Metropolitan Area:

- The ClimAdaPT.Local project, 2015.
- Lisbon's Climate Adaptation Metropolitan Plan (CAMP), 2018.

a. . . .
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plano metropolitano de adaptação às alterações climáticas



Volume I Definição do cenário base de adaptação para a AML

P021 | 31.07.2018



On The Edge for A Second Generation of National Climate Change Adaptation Policies? The Cases of The Netherlands, UK, USA, Turkey and Portugal

Gamze Kazancı Altınok & João Pedro Costa, 2023

	Qualities	1 st PLAN (2010's)					2 nd PLAN (2020's)				
		Netherlands	USA	UK	Turkey	Portugal	Netherlands	USA	UK	Turkey	Portugal
ID	Name	Make Space For Climate!	Global Climate Change Impacts in the United States, Progress Report Of The Interagency Climate Change Adaptation Task Force	Adapting to climate change in England- A framework for Action	Climate Change Strategy 2010-2023, National Climate Change Adaptation Strategy and Action Plan	National Strategy for Adaptation to Climate Change	Adapting with ambition	National Climate Change Adaptation Plan	Making the country resilient to a changing climate	NO DOCUMENT YET	The National Energy and Climate Plan
	Date	2007	2009, 2010	2008	2010,2011	2010	2016	2020-21	2018		2019
Main climate risks	Flooding-waterlogging-sea level rise	++	++	++	++	++	++	++	++		++
	Heat waves/ Drought	++	++	++	++	++	++	++	++		++
Priority	Scenario-priority	+	+	+	+	+	+	+	+		+
	Action-priority	++	-	-	-	-	++	++	++		-
Vision	Awareness	+	+	+	+	+	+	+	+		+
	Action-oriented	++	-	-	++	++	++	++	++		++
	Cross-sectoral	-	-	-	-	-	++	-	++		-
	Resilience	++	++	++	++	++	++	++	++		++
Key approach	Hazards-based approach	+	+	+	+	+	+	+	+	+	
	Complex-integrative approach	++	-	++	-	-	++	++	++	++	
Content	Water	++	++	++	++	++	++	++	++	-	
	Agriculture	++	++	++	++	++	++	++	++	++	
	Infrastructure	-	-	++	-	-	++	++	++	-	
	Transportation	++	++	++	++	++	++	++	++	++	
	Built-environment	-	-	++	++	++	++	++	++	-	
	Natural environment	++	++	++	++	++	++	++	++	-	
	Energy	++	++	-	++	++	++	++	++	++	
	Waste	-	-	-	++	-	++	++	-	++	
	Governance	-	-	++	++	-	++	++	++	++	
	Public-Society	++	++	++	++	++	++	++	++	++	
	Business	-	-	++	-	-	++	++	++	++	
Industry	++	-	++	++	++	++	++	++	++		
Scale of effect	National strategies	+	+	+	+	+	+	+	+	+	
	National and Local strategies	++	-	++	-	-	++	++	++	++	
TOTAL		32	22	34	32	28?	44	42	42		32

On The Edge for A Second Generation of National Climate Change Adaptation Policies?

- **To raise the awareness for climate adaptation and encourage the adoption of concrete measures**

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On The Edge for A Second Generation of National Climate Change Adaptation Policies?

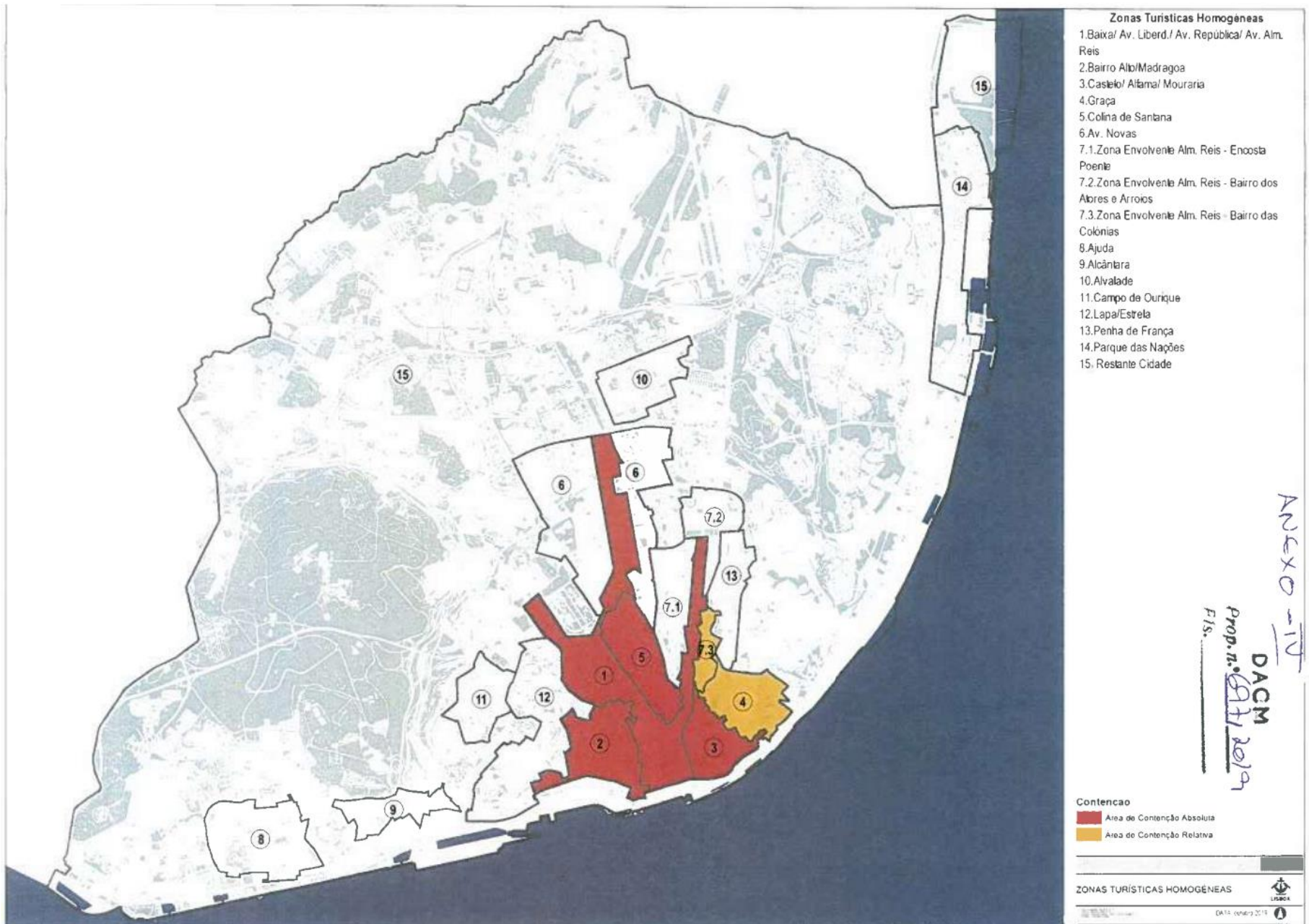
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- Getting away from the “climate change bubble” and integrate the action in the policies
- **Ballancing the risks and the risks perception for climate action**

5.2 THE RAISE OF NEW EMERGENCY AGENDAS

The City's Adaptation to the Digital Platforms Agenda:



The COVID-19 Adaptation Agenda:



The Housing Agenda:

HABITAÇÃO

Habitação. Costa defende que Estado “pode arrendar” casas devolutas mas não fala em coercivo

Numa sessão do PS em Matosinhos sobre habitação, Costa não especificou se esse arrendamento pode acontecer de forma coerciva, ou seja, contra a livre vontade do proprietário.

Lusa e PÚBLICO

1 de Março de 2023, 10:46

🔔 Receber alertas



HABITAÇÃO E URBANISMO

Isaltino Morais diz que pacote do Governo na habitação "não mexe no essencial"

Isaltino Morais defende que programa "Mais Habitação" "não mexe no essencial". Reconhece que ninguém fala em custos de terrenos, que considera ser fator de maior encarecimento das casas".

Hoje, por Agência Lusa



Costa esteve numa sessão do PS sobre habitação em Matosinhos JOSÉ COELHO/LUSA

O primeiro-ministro, António Costa, afirmou nesta terça-feira à noite que o [programa Mais Habitação](#) permitirá ter "soluções transitórias" para dar resposta a casos de "emergência" e enquanto se constroem as "soluções definitivas" com recurso ao Plano de Recuperação e Resiliência (PRR).

O presidente da Câmara Municipal de Oeiras defendeu esta quinta-feira que o pacote de medidas do Governo para a habitação “não mexe no essencial”, referindo-se ao custo de terrenos para construção de casas e à lei do ordenamento do território.

The Nuclear Agenda:



Opinion

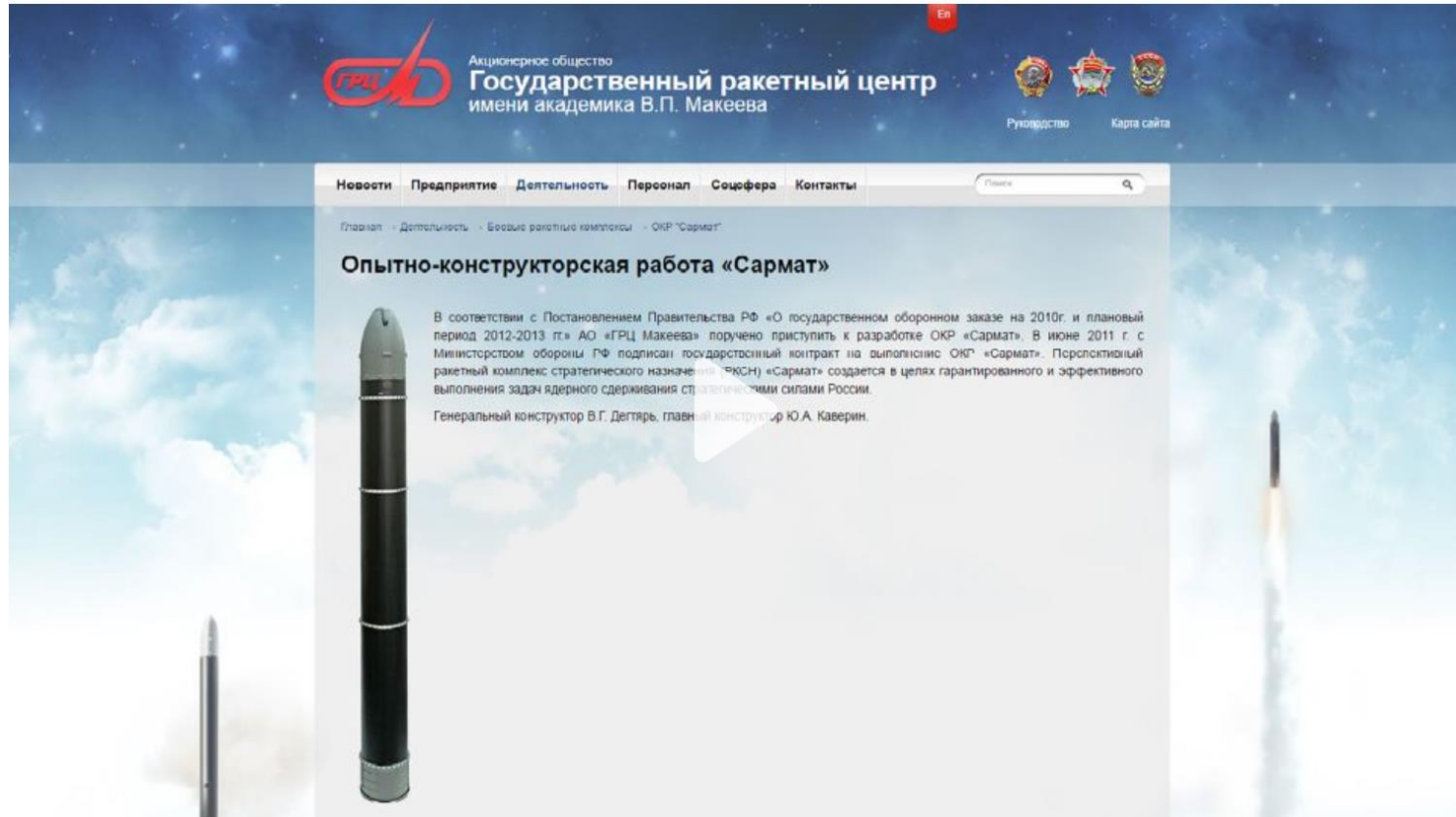
Political Op-Eds

Social Commentary

A reawakening nuclear nightmare

By Peter Zwack

Published 6:12 PM EDT, Fri October 28, 2016



Video Ad Feedback

The Everyday Life Remembering Us:



5.3 DISCUSSION

Urbanism and Climate Change Adaptation, new challenges (2023):

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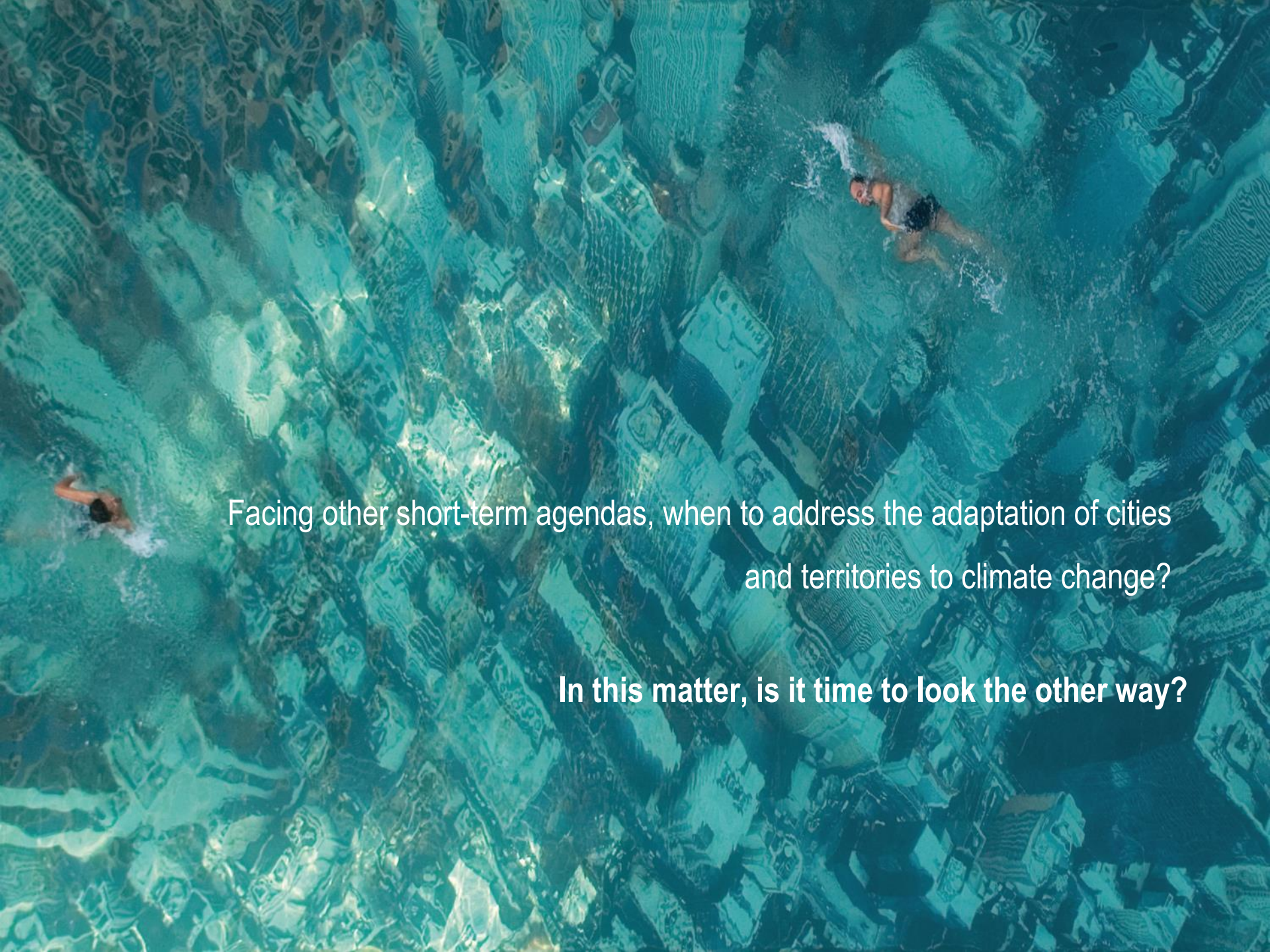
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- How to address climate change adaptation, if the actions don't need to come from a climate change plan?
- **How to address the ethics, ballancing the risks and the perception of the risks, to justify the climate action?**



Facing other short-term agendas, when to address the adaptation of cities and territories to climate change?

An aerial photograph of a city, likely Venice, with its characteristic canal network and buildings. The image is overlaid with a semi-transparent teal color. Two people are swimming in the water, one in the upper right and one in the lower left. The text is centered in the middle of the image.

Facing other short-term agendas, when to address the adaptation of cities
and territories to climate change?

In this matter, is it time to look the other way?

An aerial photograph of a swimming pool. The pool's bottom is covered in a dense, repeating pattern of a cityscape, likely Mumbai, India, with various buildings and streets visible. The water is a clear, light blue-green color. Two people are swimming in the pool, one in the upper right and one in the lower left, both creating small splashes. The overall scene is a visual metaphor for climate change, suggesting that the city is being submerged in water.

Thank you!

jpc@fa.ulisboa.pt