Cumberland Basin, Bristol, UK

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Country / City	Cheltenham, UK
University / School	University of Gloucestershire (UoG)
Academic year	2017 / 2018
Title of the project	Performative Nature - Cumberland Basin 'Let The Tide In'
Authors	Louise Thomson

PERFORMATIVE NATURE

Barcelona International Landscape Architecture Biennial

September 2018 Barcelona

SCHOOL PRIZE

X International Landscape Architecture Biennial

Máster d'Arquitectura del Paisatge -DUOT - UPC
ETSAB- Escola Tècnica Superior
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TECHNICAL DOSSIER

Title of the project: Performative Nature - Cumberland Basin, 'Let The Tide In'

Authors: Louise Thomson
Title of the course: Landscape Architecture (MA / PGDip)
Academic year: 2017 / 2018
Teaching Staff: Dr. David Buck
Department/Section/Program of belonging: Faculty of Landscape Architecture, School of Art and Design
University/School: University of Gloucestershire, UK

Written statement, short description of the project in English, no more than 250 words

Located in the city of Bristol, UK, Cumberland Basin (approx. 20ha) lies to the west of Bristol's Historic 'Floating Harbour', where tidal and fluvial waters of the Avon Estuary meet. Largely a mix of natural and manmade water systems, segregated by a central spur of land, it is dominated by industrial infrastructure, complex arrangement of multi-levelled traversing highways, carparking, historic warehouses and hardlandscaping. A strong sense of disconnect and visual impermeability is felt, segregating Bristol's urban hub from its valuable estuarine habitats. At great risk of flooding (currently flooding at high spring tide) and given global sea levels are predicted to be at least 2m higher by the year 2100, the Landscape Architect proposes a design response where we do not design to hold back sea waters from the landform, but allow the landform to be submerged by rising waters, reverting to nature. Tidal salt marsh zones will be propagated across newly excavated inlets, providing a biodiverse wildlife habitat, natural flood absorption, natural water treatment at the urban/marine interface, and increased natural carbon absorption. The design will also provide a functional and accessible new neighbourhood area where reliance on the private car is removed. Humans and nature will co-exist in close proximity in a healthy, sustainable and stimulating environment, where the forces of nature are nurtured and respected, through a performative nature approach.
Urban design resilience for our estuarine cities, where they can adapt and 'breathe' with fluctuations in tidal waters, must be key to their future sustainability.

For further information
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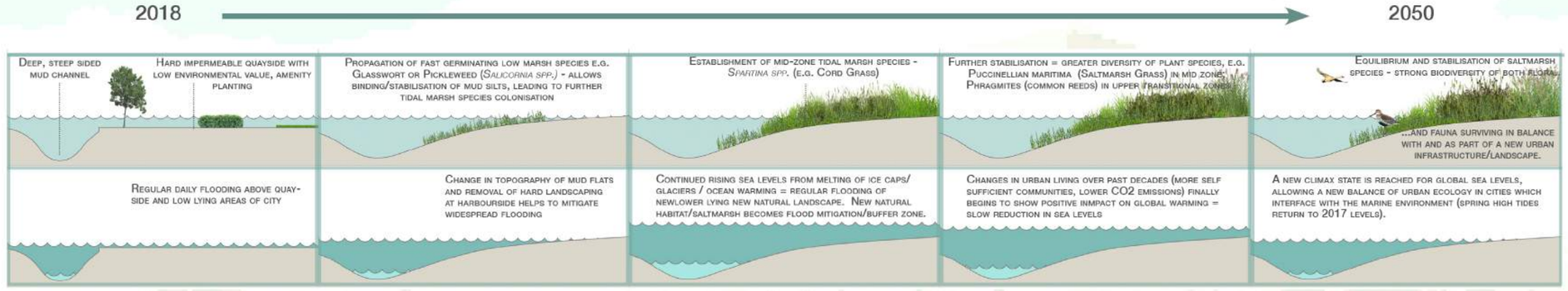
‘LET THE TIDE IN’

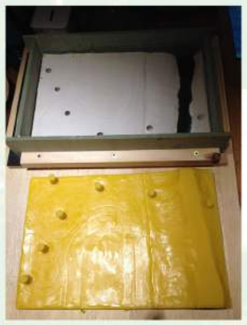
With growing initiatives to bring the ‘wild’ back into our urban areas it is proposed that the boundaries between land and water / green and blue infrastructure at Cumberland Basin should merge bringing the **RAMSAR** designation of the Severn Estuary saltmarsh habitats into the city.

Benefits of increased saltmarsh include:

- natural flood absorbtion/protection for higher reaches of the urban setting,
- natural water treatment at the urban/marine interface,
- increased natural carbon absorbtion,
- bring biodiversity (migratory wading birds and aquatic life) into close contact with human habitation (offering numerous health and well being benefits).



Testing theories of mud flat/land redistribution to manage rising high tides



Desalination Plant utilising Graphine Oxide Sieves at each daily high tide, providing a sustainable potable water supply for Bristol.

Visitor interpretation points installed across lockside area, encouraging footfall/tourism and increase understanding of site’s historical and modern day relationship with its tidal water.

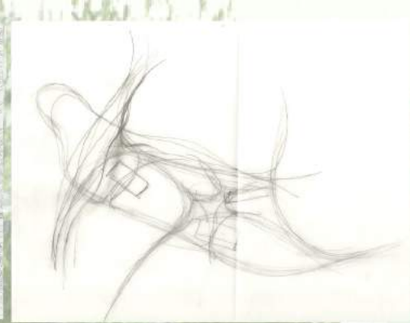
Hard impermeable landscape replaced by a series of newly excavated and carefully sculpted tidal inlets

Elevated parks from repurposed/remodelled existing aerial highways, will adopt intensive ‘green-roof’ technology with diverse and visually interesting plant species.

Rainwater runoff (incl. from transport loop), will slowly percolate through the planted layer to a subterranean drainage reservoir mat, leading to a central cascading rill. Sections of natural reeds and casades within rills will remove pollutants and sediments, allowing water exiting rills to be piped to site infrastructure as recycled greywater supply.

Combined with potable water suppied from the Desalination Plant, the whole site

Evolution of site design and form



Elevated Parks to be brought through the centre of the two renovated warehouse buildings (providing access and Japanese style inner courtyards for mental wellbeing and naturally cleansed recycled rainwater supply)

Cumberland Basin - Saltmarsh Park

Strategic Concept:

Designing the tide into the landscape NOT the landscape against the tide.

Creating a unique tidal saltmarsh park at the aquatic gateway to Bristol. An environmentally healthy and species rich site benefiting wildlife, residents and visitors alike. A new destination point; a place 'to be' whilst tackling the ever pressing issue of global rising tides.

Design Theme:

The converging of currents.
Where saline and freshwaters intertwine

Express Bristol's inextricable links to the forces of nature; where estuarine and fluvial waters meet. The removal of a reliance on the private car, frees up land and space to generate this aquatic theme.

Harbourside wall raised by further 1.5 m as Floating Harbour flood defense. Topped with low maintenance coastal seaspray tolerent succulents, such as *Sempervivum tomentosum*.

Transitional saltmarsh vegetational zone, built up by 1.5m from existing, using spoil from saltmarsh inlet excavations. Provides new habitat typology, and natural flood defense against exterme storm surge.

Colour-palette
Key accent colours throughout the design reflect exisiting iconic painted houses of the Bristol Harbour skyline, (viewed from various vantage points throughout the site).

Green Infrastructure

- Saltmarsh (saline-brackish waters)
- Transitional Vegetation (storm surge waters only)
- Elevated Parkland (active travel routes)
- Non-intensive Green Roofs (with photovaltaics)
- Mixed seed wild flower grassland banks
- Elder, *Sambucus nigra*
- Hazel, *Corylus avellana*
- Crab Apple, *Malus sylvestris*
- Urban Agriculture - floating community food production

Transport and Movement

- Elevated Automated Public Transport Loop (incl. driverless hire car network)
- Metrobus route (existing)
- Active travel corridors (Green Infrastructure with easy access provision for cyclists, pedestrians, runners...)
- Shared Streetscape (20 mph speed limit)
- Floating (anchored) pontoons - pedestrian and cycle access, with emergency vehicle access only.

Habitation

- H Tidal Floating Homes - anchored to riverbed and pontoon structures. Smal tidal turbines beneath hull of each home, generate electricity, creating off grid living.
- I Inland Houseboat Homes - moored at harbour quayside, making use of this part redundant expanse of water.
- J Exisitng terraced housing retained - private parking removed to embrace the 'car-less' city initiative of the redevelopment site.
- K Residential flats of mixed size and tenure - (no residential dwellings located beneath 2nd floor due to extreme flood event risk).

Social Provision and Amenity

- L Multi-functional community resource hub (school, nursery, doctors surgery, dentist, community centre etc.)
- M Innovation and virtual office centre
- N 'The Marsh Market' - Green grocers/butchers/bakers/fishmongers - locally sourced/grown product.
- O Outdoor eduction/public wildlife viewing platform beneath elevated parkway, fully wheelchair accessible by DDA compliant sloped walkway.
- D Public open air saline wild swimming pools
- P 'Brunel's Other Bridge' - repurposed as a Floating Productive Garden (Community urban agriculture).
- Q Create Centre sustainable living information and visitor centre retained (linked by pontoon access)

Sustainable Landscape

- A Rainwater runoff collection pool - subtle changes in levels direct runoff from transport infrastructure and elevated park to this point, before passing out to the radiating rills.
- B Cascading water rills planted sections of wetland reed species, for natural water cleansing (reuse as non-potable supply to site amenities) and interactive art installation.
- C Halophytic water cascade reed system to cleanse saline waters feeding wild swimming pools.
- D Self cleansing, saline public swimming pools fed by water pumped up from the tidal waters and cleansed through Halophytic Cascade.
- E Low light/energy, movement sensitive LED lighting - ground level channels along all circulation routes and within water rills. Self-powered by micro-solar pannels running in parallel.
- F Inductive Roadways - charging automated transportation as it moves. Electricity sustainably supplied by photo-cetals embedded within road's surface.
- G Water Desalination Plant - brackish waters at high tides pass through Graphine Oxide Sieves (a revolutionary new technology), reinforcing Bristol's place as one of the 100 Resilient Global Cities, creating a new potable water supply for the city.

Art Installations

- R 'Currents of the Tide' sculpture: Commissioned with a local artist. Metal sculpture as key focal point tying built landscape to natural aquatic environment. Series of arching and ebbing curves, rising into the air from elevated parkway, down to low tide zone. Represents powerful forces of nature within the estuary. One arch conceals saline waters pumped to the marsh natural cleansing cascade, feeding the 'Wild Swimming Pools'.

Scale 1:500 @ A0
0 10 20 30 40 50m
N

CROSS-SECTION MODEL TO DEMONSTRATE RANGE OF LEVELS THROUGH THE SITE AND CLOSE PROXIMITY OF HUMAN INTERACTION WITH SALTMARSH HABITAT

AN EVER GROWING HUMAN POPULATION LIVING IN HARMONY WITH AN EVER CHANGING CLIMATE

HUMAN HABITAT + NATURAL HABITAT = ONE ECOSYSTEM

ENVIRONMENTAL RESILIENCE FOR OUR FUTURE CITIES