NEW URBAN SHORES

Bernd Gundermann

+ **NEW** URBAN SHORES

Ever since their establishment thousands of years ago, cities have been the built representation of their society's culture, values, and economy. As a result of Climate Change we are becoming increasingly aware of the natural environment, thus how we respond to this challenge will shape our cities for the future. As the most rapidly growing urban metropolises are situated along the world's coasts, the new paradigm of Adaptive Urbanism must begin with the shores.

Urban shores, like the cities that they envelop, are dynamically shaped by historic and present conditions. Here is where city meets sea; a unique expression of the individuality and distinct character of a place.

In 2007 the global population shifted from being predominantly rural to more urbanized. Therefore it is important that initiatives are applied to our cities in order to achieve significant change. Around the world we are blessed with beautiful and diverse environments but our cities are no complement to this natural benchmark; designed almost exclusively to meet ba-

sic functional requirements with minimal investment, they are a representation of increasingly outdated models. Our city coasts are lined with roads, ports, and sea walls; in general, we have barricaded nature with concrete.

In lieu of any innovative approaches of coping with sea level rise, cities around the world are continuing to construct hard-engineering defenses. We suggest that by aligning with nature instead of fortressing against it our urban design paradigm can shift to be far more integrated with the natural environment, taking advantage of nature's own adaptive resilience. As coasts are the most threatened by climate change they should lead a new way of thinking.

New Urban Shores defines "shore" as not merely the shoreline (where land and water meet) but rather the land along the edge of a sea.

Our proposal is to soften the edge, blurring boundaries between land and sea, reintroducing natural landscape back into the city to enhance lifestyles, protect the coast, and place our cities among the most attractive in the world.

+ **CHARGE** THE CITY WITH LANDSCAPE

Our cities nestle within unique and diverse natural landscapes, however these landscapes stop at the edge of the cities and give way to highly engineered, characterless urban environments.

The generic facades of the buildings are surrounded by concrete footpaths merging into concrete roads, dividing the city in all directions. Single trees are boxed in and organized along a grid. The water, though just on our doorstep, is untouchable. By bringing the appeal of nature into the city, we are adding a new dimension and sensual experience to a currently sterile urban environment.

Nature is characterised by endless variety. Each place in the world has a unique natural environment; even within short distances there can be changes in climate and ecosystems. Referencing nature is an opportunity for cities to develop their unique identity. We believe cities need to get away from the templated sameness of commercialised modernism, creating their own identity to give people a sense of place, a context for their story, something to connect with and feel passionate about.

Softening the edges of the shores will play a fundamental role in introducing

landscape into the city. Instead of hard engineering solid concrete walls that act as a barricade between sea and city, we will use permeable surfaces, introduce a substantial increase in plantings, and incorporate wetlands that will naturally absorb the power of tides and storm surges. Permeable paving, 100% recyclable with high load-bearing capacity and easy to maintain, can replace most hard surfaces. It absorbs and retains rainwater, reducing pressure on infrastructure, and is a far more attractive surface than concrete.

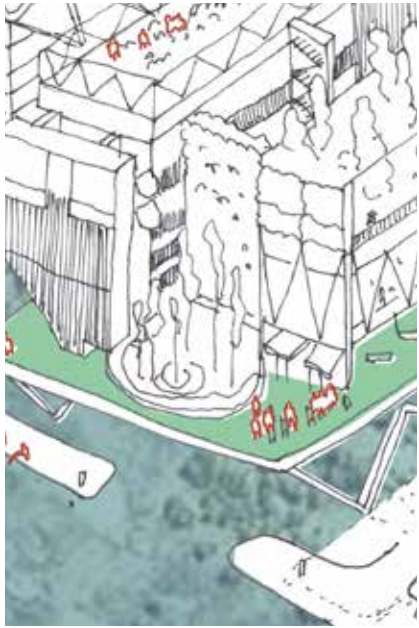
The reduction of asphalt allows more space for indigenous planting including grasses, flaxes, trees and mangroves and the introduction of mass plantings will stabilize the soil and slow water run-off, filtering pollutants before they reach the sea. Green roofs will work in the same way, absorbing excess water and utilising space otherwise lost by the footprint of the building, while providing enjoyable outdoor spaces.

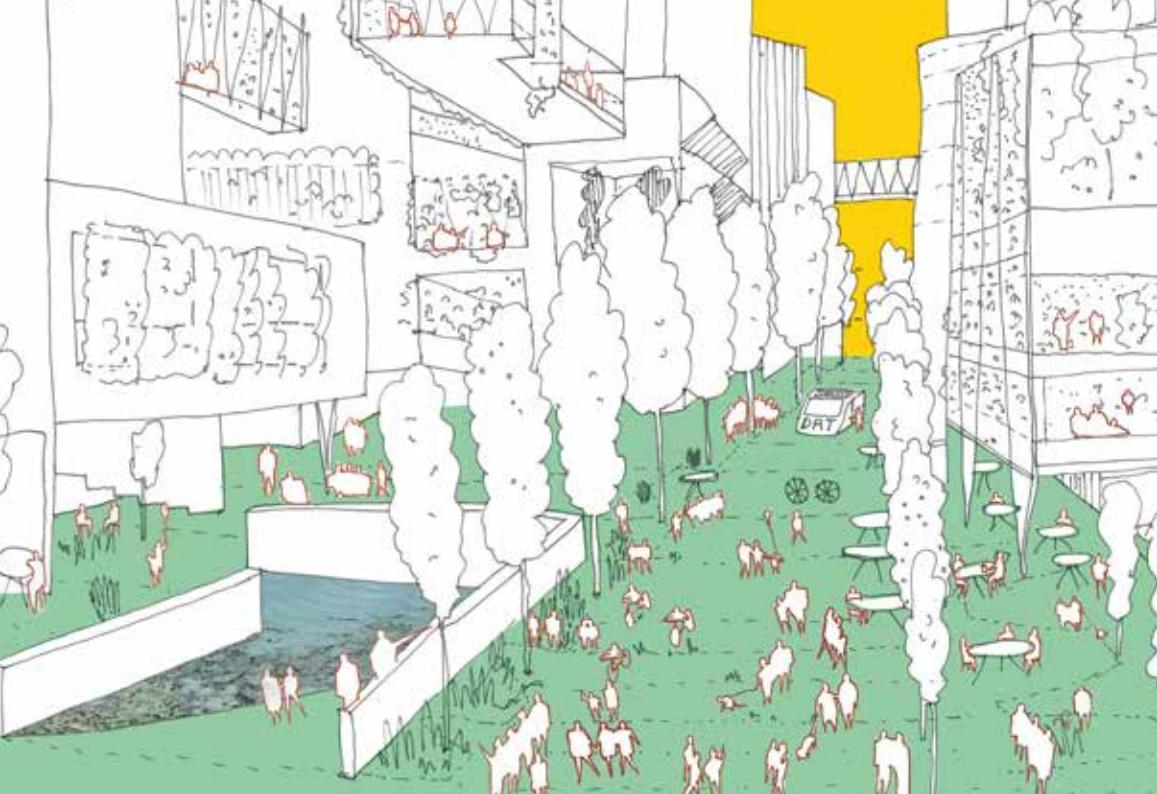
The re-introduction of nature into the city will aid in mitigating the urban-heat island effect, which is when temperatures increase by a few degrees relative to the surrounding area as a result of large areas of impervious surfaces. The warm air rises, creating clouds and increased rainfall downwind of the city.

These strategies will also have flow-on effects of increased bird-life and marine activity as a result of more food sources

and habitats. Established oyster reefs, for example, have the additional benefit of purifying tens of thousands of litres of water a day. Encouraging biodiversity will not just vitalize urban lifestyle, but will replace our currently artificial environments with the harmonizing power of nature.

By charging the city with landscape and eliminating the boundaries between the natural and built environments, we can establish measures and principles that can be applied throughout the city to boost both the environment and the occupants' perception of it.




DAT

+ **HUMANIZE** THE PUBLIC SPACE

It is no coincidence that waterfronts are often totally cut off from the cities which they surround. The boom of the private motorcar occurred after the establishment of most cities, leaving the waterfront as the only remaining state-owned land available to develop transport infrastructure.

Today these multi-lane roads are a wide and dangerous barrier between pedestrians and the water, discouraging any interaction. It is an uninviting welcome to the city to arrive from the water and be immediately confronted with loud, fast and polluting traffic; an experience of thousands of cruise passengers. The vehicle-dominated infrastructure with its air pollution, visual intrusion, noise, and vibration makes for an unpleasant pedestrian experience and represent a superseded understanding of what city-life is all about.

New Urban Shores proposes a shift from vehicle-dominance to an environment that promotes pedestrian importance. Ensuring all cities give pedestrians the right-of-way would be an almost cost-free measure towards this. Commuting will reduce significantly as mobile technologies enable "Remoting".

Another complementing innovation is the implementation of smart tolling controls for vehicles accessing the city centre. Barrier free control points are equipped with cameras to avoid queues, billing users later varying amounts depending on the time of day they are within the CBD area. This concept was piloted in Stockholm in 2006, causing a reduction in road traffic of 25% and pollution by 14% and resulting in the trial being implemented permanently. Consequently, Stockholm is recognized as one the top twenty of the world's most livable cities.[1]

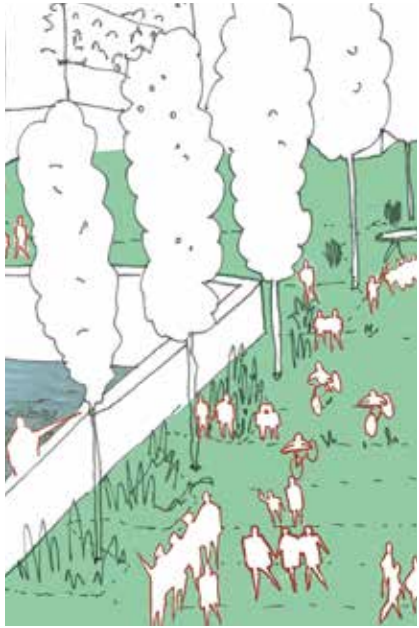
Demand Responsive Transit (DRT) and interconnected, multi-modal transport clusters will replace private transport over time. These systems are integral to fostering a pedestrian-orientated environment and will need to be developed to provide real-time updates ensuring that the system is appealing enough to lure people away from private vehicles. New shared streets will allow permitted vehicles, bicycles and pedestrian access.

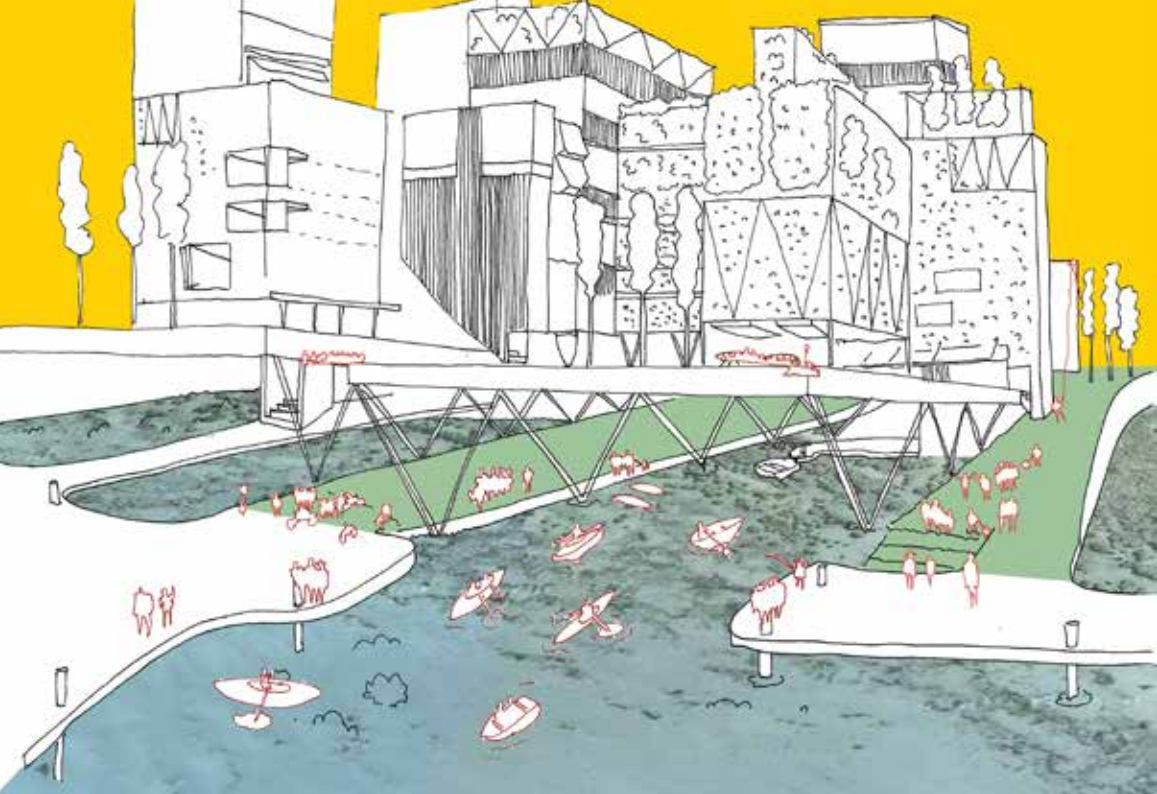
The majority of remaining vehicle traffic will be channeled into motorways that circumvent the inner city. The reduction of private transportation that occupies a large portion of our CBDs (including roads, car-parks, petrol stations and garages) will become the development resources to shift towards nature-aligned cities.

The removal of the majority of vehicles and infrastructure from the inner city

would reintroduce a human scale and allow the urban space to be used by a greater number of people for beneficial activities. Furthermore there will be a number of advantages of a healthy, active population in addition to the rising value of the surrounding property.

An example of this was the removal of the turnpike in South Boston in 1986. The project removed the elevated highway that disconnected the waterfront from the city and led to an increase in property values between 1986 and 2005 in the surrounding areas of Copley Square and Back Bay of over USD$9.5 billion in 2005.[2]





+ **ALIGN** WITH NATURAL RHYTHMS

As cities become more sophisticated, they start to get out of touch with natural rhythms. Artificial lighting disconnects people from the time of day. Inoperable windows and air conditioning create interior conditions that are totally isolated from the seasons. The uniform conditions become mundane, resulting in a dull, lifeless atmosphere which has led to people suffering from Sick Building Syndrome (SBS) which costs the American economy $60 billion annually[3].

When leaving the office and stepping outside, we are shocked at light or the climatic conditions of the real world after coming from an indoor environment with no consideration of this. It is impossible to be aware of the environmental crisis that we are currently facing when it is totally excluded from our day-to-day life.

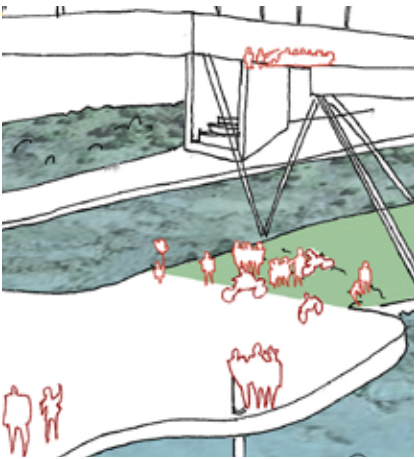
All this has happened as a result of the 'Cartesian Split' that began centuries ago focusing us on the solely economically-measurable aspects of life, to the neglect of everything else. Ultimately this is why our cities are about functionality rather than the quality of life.

Breaking down this unnatural segregation through reverse engineering will help to align with the natural environment, opening buildings up to the outside and

inviting citizens to enjoy simple connections with the outdoors.

The landscaped city will help orientate us to the rhythms of nature. Large bodies of water encroaching up the shore will create a healthy micro-climate beneath the city to create a temperate heat sink at an urban scale. Furthermore this water will create adiabatic cooling in the naturally-ventilated surrounding buildings.

Changing seasons will become apparent through planting and harvesting, along with the migration of birds and the fluctuation of tides as the softened shoreline invites the sea further inland; all will contribute to the temporal awareness which is part of our intrinsic being. High tide will render some areas of the city inaccessible at certain times of the day, while public activities will be determined by seasonal variation. Daily commuters will witness and experience seasonal changes that align them with place and time.



+ **ADAPT** TO CLIMATE CHANGE

A century ago, Frederic Law Olmsted introduced the interconnected park-system (termed the 'emerald necklace') throughout the USA. *New Urban Shores* aims to further his idea of public and recreational enhancement by adding an extra layer of both social and environmental resilience. Social resilience requires a community orientated approach as opposed to an individualistic society. Connections and relationships between people create networks that lead to faster responses and more improved outcomes. It is also applicable in a physical sense when considering the ability of the environment to overcome a natural disaster.

As Climate Change advances, the frequency and intensity of these extreme weather events will add to increased erosion by Sea-Level Rise and storm surges. The future of our coasts depends on our investing them with far greater levels of resilience. Without intervention, flooding and inundation of low lying areas will become a regular occurrence; significant amounts of valuable land will be washed away, and coastal infrastructure and architecture will be under threat, especially those parts built on reclaimed land that is the most vulnerable to erosion.

Further inland, extreme rainfall events will lead to frequent flooding in dense, urban areas. Our current mode of stormwater systems will not be able to cope the with the intensity of these events and thus another system is required. Copenhagen has recently approved the Cloudburst Management Plan which is a system designed to use the overflow of water for recreational and beautifying purposes. Waste water will be separated from stormwater and flow directly to the sea. Increased permeable surfaces will slow the rate at which water would reach drainage systems and if overflow is to occur then canals and basins have the capability to store this while simultaneously providing natural, leisure spaces.

Although we instinctively want to respond with hard engineering (as that has been the historical approach), the natural environment has a much greater capacity for resilience than anything man-made. Adaptive Urbanism is an alternative approach integrating soft-engineering and natural methods to respond to the changing natural environment.

Mangroves and wetlands can be introduced to become a natural buffer system. Their ability to absorb and retain water will reduce the chance of flooding in the city and their root systems will help defend the city against coastal erosion. Not only are they more effective than concrete sea-walls, they are cheaper and require less maintenance. Other less intrusive measures such as oyster reefs, pile fields and archipelagos can also be used to break up wave energy and interrupt wave paths.

+ **VITALIZE** THE URBAN CULTURE

Over millennia cityscapes have fascinated people by their contrasts; tiny lanes and spacious squares, hilly and flat, brick and bamboo. People perceive life through contrasts because it is the differences that make things unique.

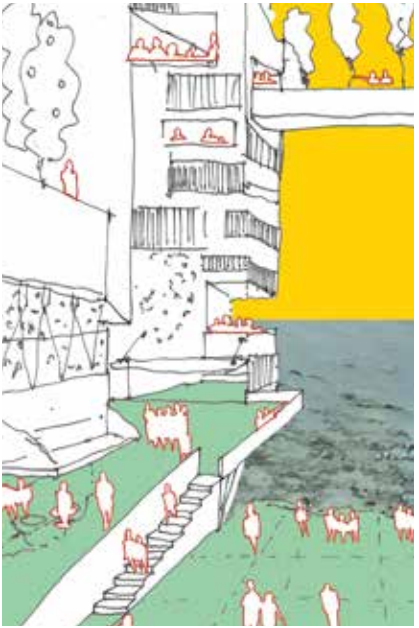
Contemporary cities also aim for a distinct identity. However instead of emphasising unique natural elements, they choose disconnected, 'iconic' architecture to represent their place. Putting the expense of this aside, iconic architecture is typically indifferent to local ecosystems, climate, culture, and natural landscape. As it could equally exist anywhere in the world, most iconic architecture is an arbitrary construct of identity and misses the real elements that make a city unique.

In 1968, protesting Parisian students unearthed pavers to discover "Under the pavement – the beach!" The true city is hidden, sealed by asphalt and concrete and we need to dig deeper to find the real value. In reconnecting with the land we can retrieve our urban shores and integrate them into the urban tissue, improving our quality of life in the city.

It is not a coincidence that the majority of the world's population lives in close proximity to the water. It is becoming increasingly understood that water pro-

vides calming, harmonizing, healthy and vitalising energy. A holistic approach to New Urban Shores will enliven all aspects of life; we imagine a massive increase in plantings, using natural materials for urban and building design, ready access to the outdoors, urban farming and local markets. Social meetings will become an invigorating outdoor experience and workspaces will have a new energy.

The result of this approach is a new urban culture. The word culture is devised from the Latin word "cultura" meaning to care. By caring for the city and the natural environment, it will, in return take care of the citizens by revitalizing lifestyles, improving health and providing resilience for the future.



+ **BOOST** THE ECONOMY

In order for economies to be successful they must be able to withstand the volatile and unpredictable nature of business. This can only be achieved by aligning to new standards, integrating innovative technologies, adapting to environmental conditions and endorsing people-centred values. By investing now and shifting the focus from short term gain to considering the longer term and multiple life cycles, the economy will become more resilient in preparation for times of significant change – financially, socially and environmentally.

Jonah Lehrer wrote an article discussing the relationship between cognitive functions and inner city living[4]. He concludes that by "Just being in an urban environment, they have found, impairs our basic mental processes. After spending a few minutes on a crowded city street, the brain is less able to hold things in memory, and suffers from reduced self-control...The mind needs nature, and even a little bit can be a big help...When a park is properly designed, it can improve the function of the brain within minutes."

In the same article, Jonah Lehrer states that "the crowded streets, the crushing density of people -- also correlate with measures of innovation, as strangers interact with one another in unpredictable

ways. It is the "concentration of social interactions" that is largely responsible for urban creativity, according to the scientists." These are the conditions in which the sought after, high-performers of an advanced economy thrive. *New Urban Shores* provides countless opportunities for social interactions. Communal spaces will be designed to encourage engaging contact, to stimulate discussion and the exchange of ideas which will have a profound effect on communities and individuals. Cities will become centred on their citizens rather than on their CBDs.

The value of biodiversity remains totally disconnected from economies around the world. Pavan Sukhdev, an international banker for Deutsche Bank for over fourteen years, estimates the cost of business activities of the world's 3000 largest corporations in loss or damage to nature and the environment now [2008] is approximately US$2.2 trillion annually[5]. Currently this has no repercussions for businesses but as carbon emissions will begin to cost corporations more and laws will become more strict, being environmentally conscious will be a fundamental part of business.

Furthermore, with the development of remote technology, mobile and cloud-connected devices the division between working and living will become blurred. Kerstin Bund published an article in Die Zeit in August 2013 comparing our current mode of work with working remotely online[6]. Recruitment time is 92 days on average, compared to 3 days with

online work and the growth of turnover from online work will increase from USD$1 billion in 2012 to USD$5 billion in 2018. It is also predicted that in a few years, one third of the workforce will no longer work from an office. Future employment will be far more flexible in regards to work hours, contracts and environments. The removal of zone distinction will see a merging of working life with leisure activities. By overcoming the functional separation between commercial, residential and recreational realms, we will gain a new understanding of cities as steadily changing zones of human activity that are aligned to the rhythm of nature resulting in cities that are no longer just places of work, but places to enjoy living.

There is also the cost of not investing in protection from the effects of climate change. Over the last ten years the cost of natural disasters has caused USD $1.6 trillion in damage worldwide, and recent studies estimate that the cost of climate change could climb as high as USD$1 trillion annually by 2050[7]. A recent study conducted by the European Union compares the cost of hard-engineering such as sea walls with natural methods, in this case the preservation of a natural reef in the Maldives[8].

The case study offsets the cost of maintaining the reef with the money generated from the local tourism and fishery industries and concludes that the reef is more than 200 times more cost effective than a hard sea-wall.

+ REFLECTIONS

New Urban Shores will be a visible, life-enhancing new vision for coastal cities around the world. By rethinking our approach we can supersede an outdated typology and pioneer a new future for our urban spaces. The removal of shore 'lines' and abrupt demarcation between city and sea will change to a total fusion between the built and natural environments, resulting in reinvigorated, resilient cities.

It's the same city – I recognise those streets, that sky – but having shrugged off its heavy concrete shell, it breathes with a new vitality. The people are different to before...huddling against the elements... screening the city fumes, the grey paths spotted with chewing gum, the racket of cars and echoing voices as best they can and escaping with relief into the next office silo. The people that now walk these streets don't have the same desperation; they are relaxed in the present reality. There's no need for penetrating voices; conversation doesn't have to compete with traffic and urban sounds are gentled by soft surfaces. They enjoy the light, the textures, breathing lungfuls of real air.

This is a real city, the urban expression of our time. Healing. Restful. Safe. Natural. And breathtakingly beautiful.


existing

+ FURTHER READING

[1] Michael J. Dixon, *How Smart Cities Save Money (and the Planet)*, Harvard Business Review 29 October 2012 at www.blogs.hbr.org/2012/10/tech-savvy-cities-are-saving-m/, visited 02-10-2013.

[2] *Economic Impact of the Massachusetts Turnpike Authority & Related Projects Volume II*: The Metropolitan Highway System & Urban Transformation Economic Development Research Group Inc February 2006.

[3] *Public Health Consequences and Cost of Climate Change Impacts on Indoor Environments*. David Mudarri – The Cadmus Group Inc. 2010.

[4] *The Boston Globe*. How The City Hurts your Brain. Lehrer, Jonah. 2009.

[5] *The Economics of Ecosystems & Biodiversity (TEEB)*. Pavan Sukhdev. 2009

[6] Kerstin Bund, *Die Arbeit kommt zu Ihnen, in Die Zeit online Beruf*, 29 August 2013, www.pdf.zeit.de/2013/36/online-jobvermittlung-odesk-gary-swart.pdf, visited 02-10-2013

[7] *Nature Climate Change Magazine*. Future flood losses in major coastal cities. Hallegatte, S., Green, C., Nicholls, R., Corfee-Morlot, J. Future flood losses in major coastal cities. 18 August 2013.

[8] *Climate Change and Ecosystem-based Adaptation: a new pragmatic approach to buffering climate change impacts*. Munang, R., Thiaw, I., Alverson, K., Mumba, M et al. 2013

Adaptive Urbanism is an advisory service that uses multidisciplinary teams to address coastal development and the effects of Climate Change, using a collaborative approach to create truly sustainable, all-encompassing solutions.

For more information, please contact:

BERND GUNDERMANN

+64 9 914 6093

bgundermann
@stephensonturner.com

152 Fanshawe St,
Level 2, Auckland, 1140,
New Zealand

www.stephensonturner.com/services/coastal-design

This publication was made possible with a grant from Stephenson & Turner NZ Ltd.