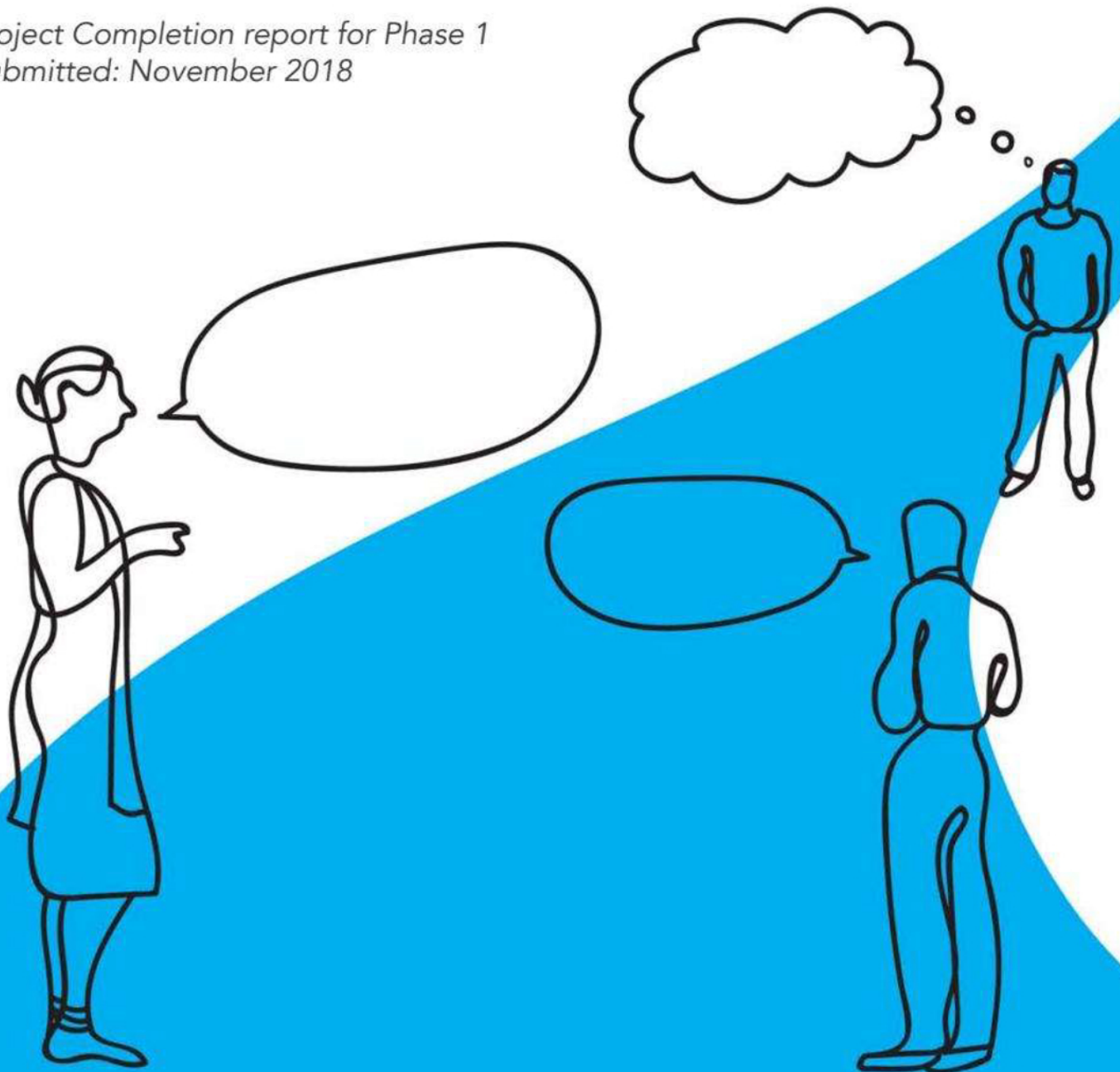




PARTICIPATORY APPROACH FOR REIMAGINING CHENNAI'S BUCKINGHAM CANAL INTO A LIVEABLE SPACE AND A MODEL FOR CLIMATE-PROOF URBAN DEVELOPMENT

*Project Completion report for Phase 1
Submitted: November 2018*



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ABOUT THE PROJECT

The Buckingham Canal is a manmade, saltwater, navigation canal that runs parallel to the Coromandel Coast in the north-south direction. It was built in phases from 1800 till 1882 and measures approximately 800 km in length from Vijayawada to Marakkanam. Within the Chennai metropolitan area, the canal connects the three rivers - Kosasthalaiyar, Cooum, and Adyar - that cut across Chennai. Though primarily constructed to transport goods from Vijayawada to Madras, the canal also helps manage floodwaters. Archival photographs show the canal to be an idyllic setting with lush green edges and wooden catamarans cruising its course. Today, however, the canal is faced with severe pollution woes with untreated sewage and solid waste finding their way into its waters. The numerous encroachments too have severely compromised its width and carrying capacity over long stretches within the Chennai Metropolitan area. Over the years, various governmental agencies have struggled to revive the canal but continue to do so even to this date.

In light of this situation, EYES ON THE CANAL is an initiative focused on reimagining the Buckingham Canal in Chennai as part of the Cities Fit for Climate Change project.

EYES ON THE CANAL is an exercise in participatory planning to make the canal a livable place for the residents of Chennai. The initiative involves various activities such as awareness walks, community engagement meetings and an open-ideas competition to generate interest and ownership for the canal which has suffered from our collective abandonment.

Cities Fit for Climate Change is a global project implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and its International Climate Initiative (IKI). The selected cities – Chennai in India, Santiago in Chile and Durban (eThekweni) in South Africa – are supported in developing their climate-sensitive strategies and their own sources of financing.

This project is in coordination with the Greater Chennai Corporation.

Implemented by



On behalf of:

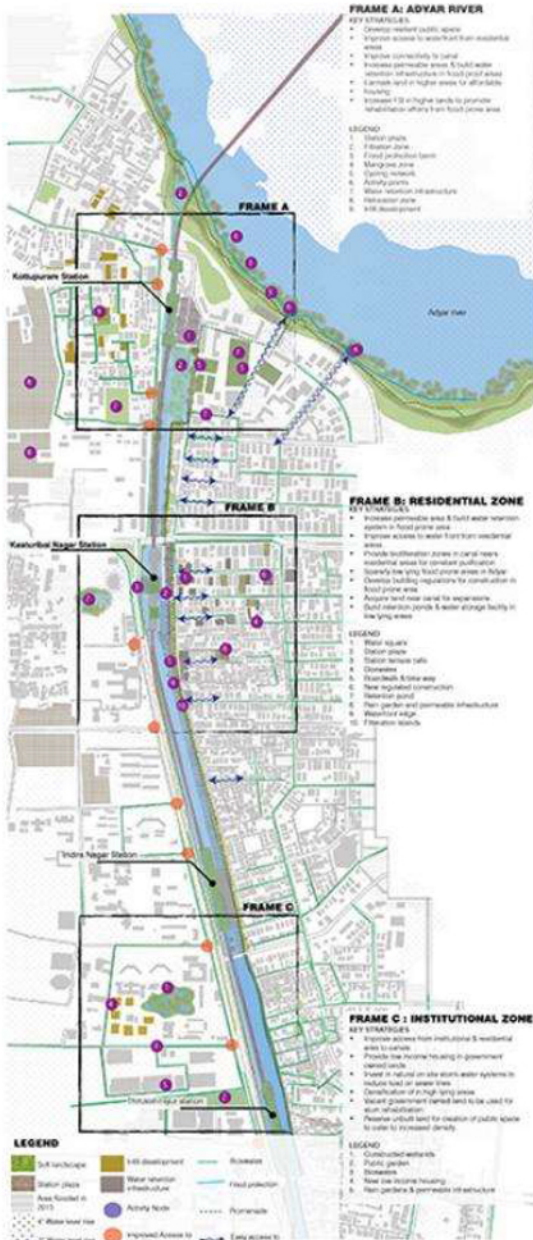


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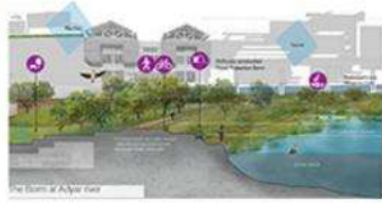
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All content related to this project can also be accessed at <https://eyesonthecanal.wordpress.com/>



FRAME A
 A flood protection berm at the canal where it meets Adyar river will help in keeping the water out of the city while providing a vertical protection from future storm surge and rising sea levels. The berm also offers pleasant, accessible routes into the park, with many programmed spots for resting, socializing, and enjoying views of the park and river. The berm is planted with a dense vegetation and mangroves for ecological protection. The retention zone at the mouth of the canal constantly purifies the water as it flows down from an industrial zone. The frame also demonstrates how retention zones in higher lying areas can clear the encroachments near the canal and provide needed land for its widening. Cycling networks connect the landscaped berm with the canal.



FRAME B
 Residential areas can be revitalized with water resilient infrastructure and strive to close water cycles. Bioswales on most frequently flooded roads, retention ponds, water squares which store water during rainfall along with micro water harvesting and on-site sewage treatment help reduce the load on Chennai's overloaded treatment plants. Door-backs and bio-way increase connectivity and provide residents with access to the canal which emerges as a new public space. A re-located station plaza with green roof strives to reduce the storage done in the canal due to the construction of the Metro and provides space for resting, socializing and helps reduce runoff.



FRAME C
 Institutions with large chunks of urban land can density to create room for new development on high grounds. Constructed Wetlands on vacant government and institutional lands can begin to treat sewage currently being dumped into the Buckingham Canal. By increasing FSI in this area, spaces can be generated for rehabilitation of vulnerable communities affected by floods. Public gardens, rain gardens etc need to be built to cater to increased protected densities and provide permeable areas. Land needs to be reserved for affordable housing on high-lying lands to protect the needs of low income communities in the future.



COMMUNITY PARTICIPATION
 The project envisions community participation of all stakeholders living near Buckingham canal. Citizens of Chennai as well as all communities affected by floods and climate change. Stakeholders need to be included in all stages of the project: creating awareness about the issue, in the pre-design process and evolution as well as monitoring the project on a regular basis. Using crowd-sourcing mapping, public art, participatory planning workshops, innovative technology to make the design more relevant as well as drives conducted in school, viral social media challenges and campaigns. This project suggests different ways in which all stakeholders across all demographics irrespective of age and income can be a part of Buckingham Canal's design.



COMMUNITY PARTICIPATION
 • Awareness & issue identification
 • Pre-design consultation & evolution
 • Post design monitoring

LEVERAGING BUCKINGHAM CANAL TO BE CHENNAI'S SHOCK ABSORBER - A TOOLKIT OF WATER SENSITIVE INTERVENTIONS

Our proposal is to re-imagine the Buckingham Canal as a means of making the city of Chennai climate proof and an example of the kind of pro-active and collaborative steps that are urgently needed to address the challenges arising out of unpredictable climate, rising sea levels, future storm surges and possible inundation of the coastal areas of Chennai.

The proposal broadly looks at the different industrial, residential and ecological landscapes that the canal runs through in Chennai and based on land use suggests strategies to combat the perils of climate change at a regional level including Protecting Critical Infrastructure, Flood proofing vulnerable communities and Planned water sensitive future development . If maintained well, desilted and widened Buckingham canal has tremendous potential to protect Chennai from excessive flooding. The project studies future shocks and stresses that could affect the city and identifies Buckingham Canal as an asset that has already providing resilience and is need of strengthening to future-proof Chennai.

The proposal offers a series of strategies and a kit of interventions that are to be applied based on the existing local conditions instead of an over-arching broad master plan. Rather, through the use of macro, local and community strategies we propose various interventions that can be understood in themselves or applied as a comprehensive urban / landscape strategy.

At a local scale we look at three frames - At Adyar River, a residential and an institutional frame and suggest how a cohesive approach of developing the canal and surrounding area can help protect the vulnerable low lying coastal area. The canal is revitalised on the strategy of 'Delay, retain, store and reuse, drain when necessary' approach. There is a toolbox of physical measures that have been illustrated below; these display the water sensitive intervention measures that respond to the varying challenges arising in the three frames selected along the canal. Proposed strategies like natural berms and planted mangroves

3rd PRIZE

Leveraging Buckingham Canal to be Chennai's Shock Absorber

A Toolkit Of Water Sensitive Intervention

Our proposal is to re-imagine the Buckingham Canal as a means of making the city of Chennai climate proof by taking pro-active and collaborative steps that are urgently needed to address the challenges arising out of unpredictable climate, rising sea levels, future storm surges and possible inundation of the coastal areas of Chennai.

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NORTH CHENNAI

This zone houses Chennai's critical infrastructure and industries that keep it running. Almost all of Chennai's power plants, water treatment facilities, industries, dumping yards, water supply and ports are located here. With sea levels rising in the coming decades, unless steps are taken to protect critical infrastructure, Chennai will come to a stand still.

STRATEGIES:

- Absolute stop to illegal fly ash dumping in the canal
- Promote wastewater and sewage reuse in industries
- Heavy investment in flood proofing critical infrastructure
- Extensive purification and dredging of canal

CENTRAL CHENNAI

As Buckingham canal cuts through the heart of the city, it can help in climate proofing low lying area near rivers and neighborhoods that constantly suffer from flooding during heavy rains as well as which are at a risk from increasing sea level due to polluted water channels and insufficient sewage systems.

STRATEGIES:

- Create neighborhood level flood defense plans
- Build decentralized natural wastewater treatment systems such as constructed wetlands
- Soft flood protection edges along rivers
- Develop micro water management solutions for informal settlements
- Develop building regulations for construction in flood prone areas
- Increase FSI in high lying areas to promote speculation from vulnerable neighborhoods
- Constant biofiltration in canal
- Retrofit flood infrastructure as social infrastructure



CITY LEVEL INTERVENTION

Berm	Limit Urbanization	No Infrastructural Waste
<p>A berm wall will help in blocking the water from overflowing into the city during a period of flood or storm surge.</p>	<p>By limiting urbanization, green spaces around Chennai can be preserved and help in absorbing the excess rainwater.</p>	<p>Promoting reuse of wastewater in industries and regulating waste dumping.</p>
<p>Constructed wetlands can complement inefficient sewage treatment plants.</p>	<p>Waste Water Treatment Plant</p>	<p>Reduction of Paved Areas</p>
<p>Expansion of Flood Area will decrease the risk of flooding by increasing the capacity of water to be absorbed.</p>	<p>Helophytes Filters have a large quantity of biomass to treat polluted water in water bodies.</p>	<p>Water based denitrification helps in reducing FGI for structures according to their slabbing on level.</p>

NEIGHBORHOOD LEVEL INTERVENTION

<p>Natural Vegetation Buffer helps protect the quality of water & also stabilizes the shoreline & reduces erosion.</p>	<p>Retention Ponds collect rainwater for the longer period of year.</p>	<p>Mangrove structures near the river and protect the shoreline from storms and help with purification of runoff water.</p>
<p>Green Buffer Zones will help in reducing the temperature and improving the quality of air and life in the city.</p>	<p>Rainwater collected from roofs and permeable hard surface will help in using the rain water for daily household use.</p>	<p>Wetlands function as water retention tanks, sediment traps & waste water treatment areas by filtration and immobilizing harmful micro-organisms.</p>

STREET LEVEL INTERVENTION

<p>Vegetation on streetscape reduces the impact of street runoff effects such as silt and debris, as well as creating public parks.</p>	<p>Employing water as a functional aspect to heritage or prominent buildings helps in creating aesthetics.</p>	<p>Rain gardens are a garden of native shrubs and perennials that are planted in a small depression. They will temporarily hold and absorb water from roofs and roads.</p>
<p>Bioswales can treat surface water from the street and slow down flooding of drains and waterbodies.</p>	<p>Floating filtration island help in up taking nutrients in aquatic systems and making them unavailable or edible to aquatic weeds.</p>	<p>Water Squares are a combination of water storage with an improvement of the quality of urban spaces. It also gives an identity to spaces in the city.</p>
<p>Porous Pavements are created with a range of sustainable materials. That allow movement of water through the surface.</p>	<p>These filters help in trapping waste from water and help improving the quality of water.</p>	<p>Constructing buildings on stilts will help in preventing flooding in buildings.</p>

BLOCK LEVEL INTERVENTION

<p>Rainwater collected from roofs and rain made hard surface should help in storing water for dry periods.</p>	<p>Green roofing systems will later to making buildings a temperature increase and reduced habitat.</p>	<p>A greater percentage of soft scape in construction to both reduce soil loss and help with increasing ground water table.</p>
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3rd PRIZE

Team members

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along Adyar river to neighbourhood level constructed wetlands for local sewage treatment, bio filtration islands in the canal, retention ponds and flood proof public spaces capable of transforming into storage areas strive to create a refined balance maximizing the closing of local water cycles and optimizing two flows of public money into one integral investment. Along with water sensitive strategies, we propose land use regulations, increasing FSI in higher lying areas to help shifting of vulnerable communities as well as building guidelines with which we can begin to mitigate and protect communities of Chennai. By integrating Chennai's different urban layers and land-uses, this proposal enhances and broadens the relevance of the historical and social values present there, and at the same time raising the quality and attractiveness of the canal by converting it into an adaptive waterfront development. The innovative and inclusive urban solutions offered here convert a current liability for the city to which it has turned its back on into a social asset which not only protects the ecology, but honours the cultural traditions, local identity and also enhances the economic returns for the city, thereby providing a comprehensive resilience from nature and man induced challenges of the future.

JURY STATEMENT

The entry takes a kit of interventions approach and offers tools to make many of its ideas applicable. This toolkit approach is innovatively applied to the proposal and demonstrates how to transform the canal into being Chennai's shock absorber.

The entry offers multiple proposals that cater to different sections and target groups and its detailed design for the demonstration stretch is sensitive to the different land use patterns along the canal. Further, the proposal enhances the ability of the demonstration stretch to respond to extreme events (cloudburst, storm surge, etc.)

This is achieved by connecting the solutions for the canal with the larger canal system. In addition, it explores the possibility of increasing affordable housing stock at suitable selected areas.

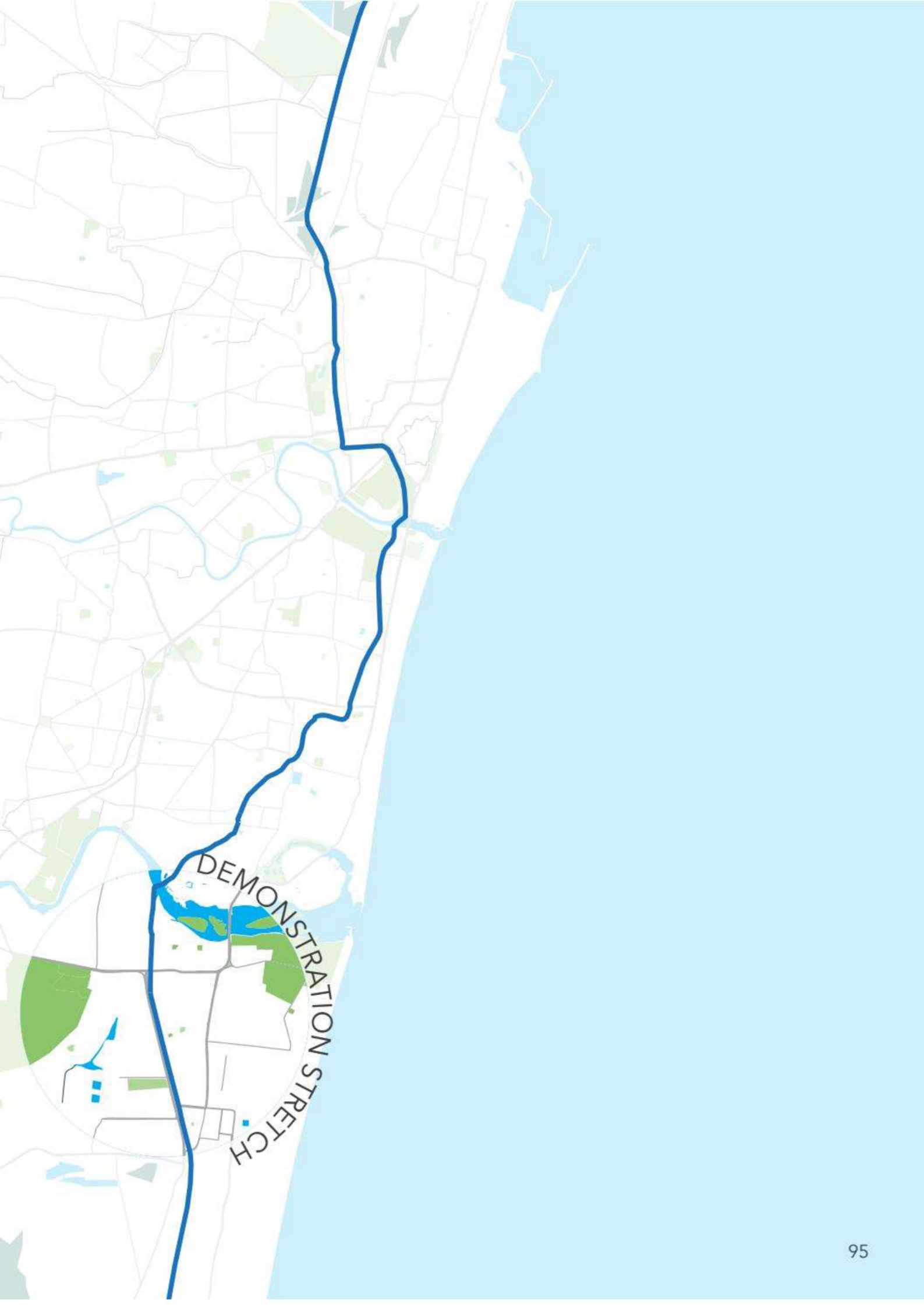
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NEXT STEPS

Based on the feedback from the visitors to the public events organized as part of the Eyes on the Canal project, the next steps must be oriented towards implementation.

The 3 winning teams will need to further develop their ideas to a point where it can be implemented. Stakeholder workshops will need to be organized with various government agencies, local experts, corporate sector firms and residents to collaboratively develop the 3 proposals in the same participatory spirit of the project.

If this can be achieved, Eyes on the Canal will not only be a model project for climate-proof urban development but also a paradigm shift in the way public projects can be conceived and executed.



DEMONSTRATION STRETCH

