

# DS18

## 2017 MONSOON ASSEMBLAGES CHENNAI

### First Year

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Rob Fernandes-Dwyer  
Rosanna Rolfe  
Ben Street  
Georgia Trower

### Second Year

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Monica Cristu  
Jeronimo Garcia  
Seetul Ghataora  
Emma Hilton-Grange  
Sebastien Monceaux  
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Cid Schuler  
Calvin Sin  
Charles Weston Smith

### Studio Tutors

Lindsay Bremner  
Roberto Bottazzi

### Thanks to

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Ranee Vadamuthu, Jayshree Venkatesan and Michele Vianello for studio inputs in London and Chennai.  
Quintin Hogg Trust.

Laura Allen (Smout Allen Architects, The Bartlett UCL)  
Karl Beelen (University of Karlsruhe)  
Harshvardhan Bhat (University of Westminster)  
Nerea Calvillo (University of Warwick, AA)  
Beth Cullen (University of Westminster)  
Zac Fluker (The Bartlett UCL)  
Richard Difford (University of Westminster)  
Francois Girardin (University of Westminster)  
Susannah Hagan (University of Westminster)  
Jane MacAllister (London Metropolitan University)  
Oscar McDonald (Wilkinson Eyre Architects)  
Michael O'Hanlon (DSDHA Architects)  
Sowmya Parthasarathy (ARUP)  
Lorenzo Pezzani (Goldsmiths College)  
Ben Pollock (Fletcher Priest Architects)  
Anthony Powis (University of Westminster)  
Alfredo Ramirez (AA, Groundlab)  
Alice Thompson (Dan Marks Studio)  
Alex Watts (Eric Perry Architects)

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### Introduction to the Studio:

Concluding the first year of the Five year Monsoon Assemblages research project, DS18 are proud to present their final year show. Based in Chennai, their research covers a wide range of issues encountered in the city all revolving around the monsoon, and their projects have addressed them in unique and innovative ways. All projects have been carefully overseen by Lindsay Bremner, architect and director of architectural research, and Roberto Bottazzi, architect and senior lecturer, both based at the University of Westminster.

The projects are just the first year of fascinating research embarked on by DS18, and over the following five years the European Research Council funded project will be based in three South Asian Cities: Chennai, Dhaka and Delhi. The projects this year in Chennai take a radically different approach to the monsoon. The studio views the monsoon not as a thing, but a vast meteorological system which drives the climate system across half of our planet, and students have explored the multiple ways in which it is woven into the fabric of urban life and the infrastructures that have been built up around it. The agenda which DS18 has this year endeavoured to advanced is summed up in the following quote from Lindsay, the principal investigator of the project:

"In the context of urban and architectural processes driven almost exclusively by economic and political interests and concerns, what might it mean to develop urban and architectural strategies for and with the monsoon, a global system massively dispersed in space and time, yet with profoundly local consequences and cultures?"  
Lindsay Bremner

DS18 this year has produced thesis' which discuss issues from the relationship between the sacred Indian Cow and the Monsoon (Georgia Trower, Year 1), to the bio remediation of marshland crucial to the cities ability to cope with the rains (Tom Benson, Year, 2). These fascinating investigations have allowed for a different insight into both human and animal interaction with the seasonal monsoon rains in Chennai, using data to simulate, understand and map the interactions.

### The Site:

Chennai is located on a flat coastal plain. It depends for its water on annual monsoon rainfall feeding its surface water bodies (lakes, tanks, reservoirs and ponds) and replenishing its aquifer. What is evident from maps over its 350-year history is that, as the city has developed, its seasonal water bodies have been soft targets and been filled in or encroached upon to make way for construction or infrastructure. The IT Corridor development, a six-lane 18-kilometer tolled expressway, was no exception. Running parallel to the coastline and the Buckingham Canal (a colonial infrastructural project), the corridor has been built on coastal sand dunes and backwaters, including the Pallikaranai Marsh, a vital conduit for rainwater into the city's groundwater reserves and part of an excess water discharge system to the Bay of Bengal. The corridor was constructed after the introduction of a national neoliberal agenda in the 1990s, and world city imaginaries were adopted to attract foreign investment, particularly in the IT industry. Speculative building practices transformed peripheral urban landscapes and impacted monsoonal ecologies. When Chennai suffered devastating flooding in 2015, the cumulative effect of these policies and practices were blamed.

### Structure of the Year:

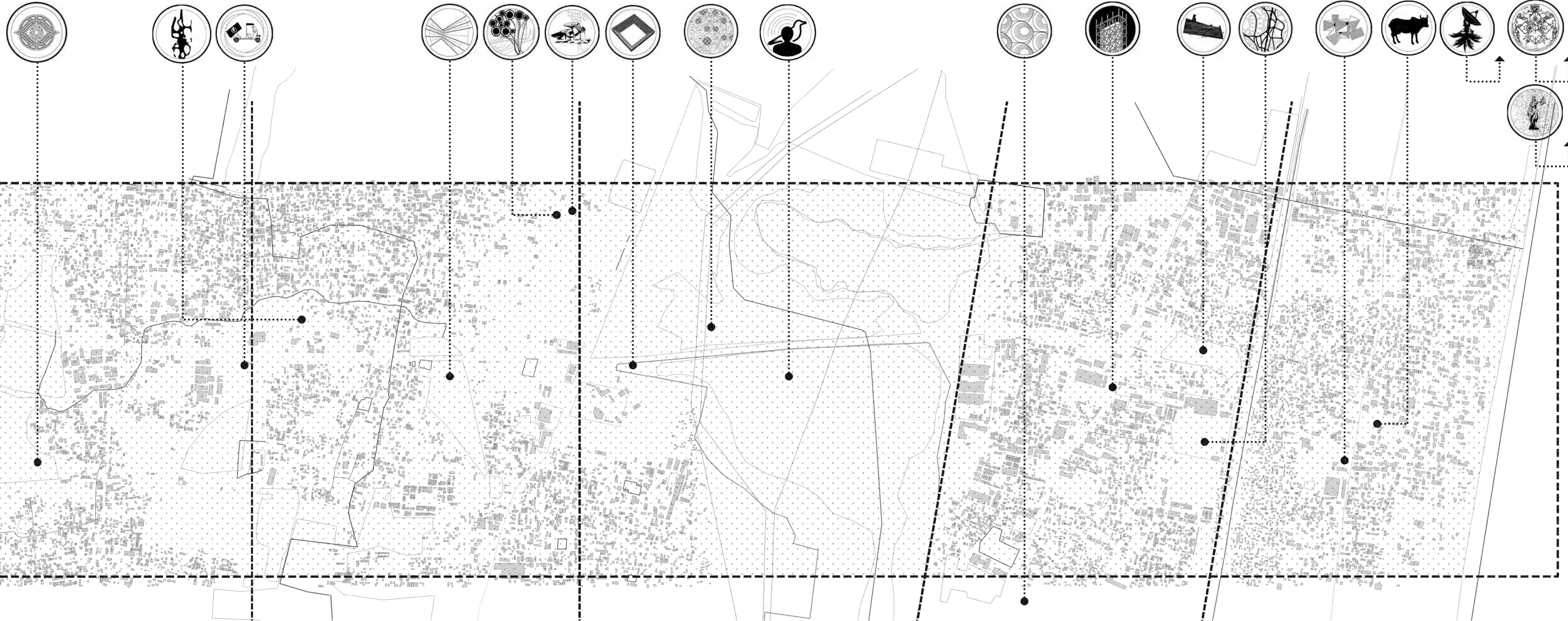
With this background in mind, the year began with the studio simulating the behaviours of monsoon rain as a way to develop a program and aesthetic. Investigations were carried out using both the software Realflo and physical experiments, and produced exciting results, with studies focusing on absorption, flow and splash among other behaviours.

Following this initial exercise, DS18 began to collate information on the site chosen in Chennai. A 9km transect through the Pallikaranai Marsh, was the basis of investigations, and each student identified a 'zone' on this transect to engage with the studio's research questions and methods. The transect used, passes through the Pallikaranai Marsh which has been encroached on by an IT corridor, in the center of zone four. Research was undertaken in groups per zone and each team produced an archive of information to aid them as the year progressed. These archives included base maps used on site during the visit in early December.

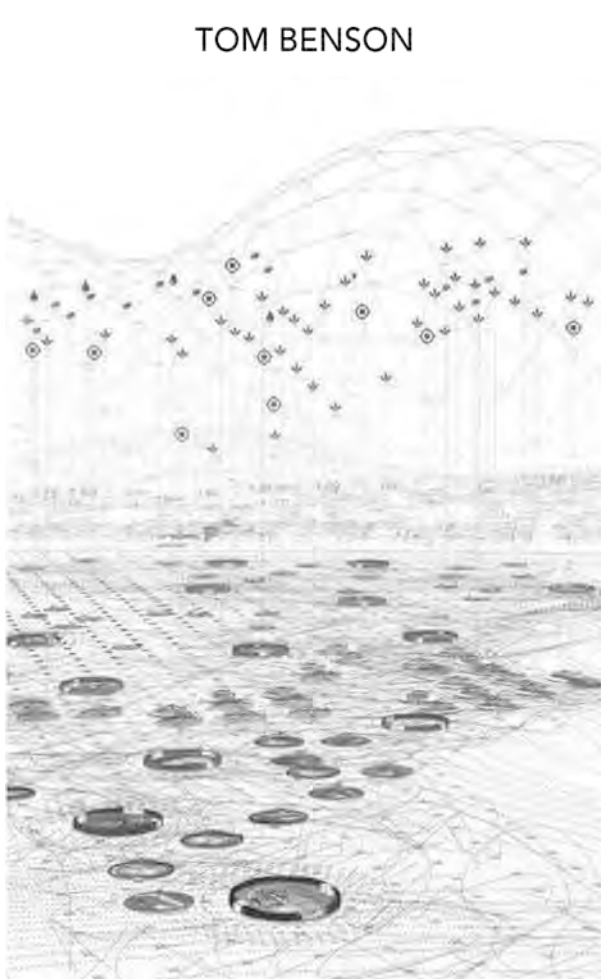
Hosted by The School of Architecture and Planning at Anna University, DS18 undertook a week of field work and design workshops. The trip was intended to coincide with the onset of the north-east monsoon, or the retreating monsoon, which Chennai relies on for the majority of its rainfall. In contrast with the devastating floods of 2015 the monsoon was delayed this year, with some anticipating its complete failure. Residents of the city were anxiously awaiting the advent of the rains, many in a state of "mortal fear" due to their experiences the previous year. Although the rains arrived they did not fall with intensity so the transect walk, and subsequent fieldwork, was much drier than expected. In the days following the walk the students focused on identifying monsoonal matters of concern in specific sections of the transect as well as their causes and effects and opportunities for design interventions. Presentations by Sekhar Raghavan, Director of the Rain Centre, Priti Narayan from Transparent Chennai/Urban Inform and Jayshree from Care Earth provided rich information. A number of unforeseen events affected plans. Midway through the trip Jayalalitha, the Chief Minister of Tamil Nadu, passed away. As a powerful and controversial politician, referred to as the "goddess" of Tamil Nadu politics, her death was a major event. An official period of state mourning was declared and the group were restricted to the hotel for a day or so due to fears of public unrest. Despite the disruption the trip, it provided a fantastic opportunity to interact with local people and gather a huge amount of useful insights into the site and monsoon.

Following the trip students continued to research the issues they encountered on site and projects began to emerge. Each student declared their intentions for the second semester by way of a declaratory drawing. From these drawings detailed briefs emerged, each project interacting with an element of the monsoon and a monsoon related challenge revolving around a prototypical public forum. Projects decided on an urban strategy, deciding where their interventions would occur and how they would interact with the site conditions and context. Based on this urban strategy students then designed an architectural prototype, which could be repeated and deployed. Each project was heavily influenced by research and data, informing the design process and spaces created.

As the year draws to a close, this exhibition show cases DS18's final work, a culmination of a years research and design, each student forming a relationship with a specific issue encountered in Chennai.



MONSOON ASSEMBLAGES UNIVERSITY OF WESTMINSTER



**Datascape: Instrumental Marshland**



The past two decades have witnessed a resurgence of ecological ideas and ecological thinking in discussions of urbanism, society, culture and design and about restoring polluted wetlands. Ecosystems are now understood to be open systems that behave in ways that are self-organising and that are to some extent unpredictable. In effect, change is built into living systems; they are characterized in part by uncertainty and dynamism. With restoring an ecology, there is one promising tool, in itself an ecological disaster: algal blooms. The project will research how to design with and for a material within the cyclical system of lie: birth, growth and death. Integral to this is the design and projected implementation of a series of instruments throughout the Pallikaranai Marshland which will allow this thesis to become a 'responsive landscape'.  
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**Peri-Marsh Project**



The project begins as a reinterpretation of the term peri-urbanism. It creates a space in-between urban and marshland fabric. It firstly belongs to water and the wetland ecology and only secondly allows human habitation. The scheme is located on an empty plot adjacent to the Pallikaranai Marsh. This created the possibility of approaching the site as peri-marsh land. Research has shown that although the site is no longer part of the Pallikaranai Marsh, the water and nature of the marsh occasionally resurfaces in the area. The project will firstly take measures to rehabilitate the site as a marshland and following that it will propose a housing typology which intervenes with the marsh ecology as little as possible. The project will not only benefit the marsh and its human inhabitants.  
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**Lego-Lacus Water Harvester**



The Lego-Lacus Water Harvester is a system of urban infrastructure connecting 5 train stations in central Chennai. It provides a circulation platform at an upper level that provides citizens dry passage and shelter during extreme monsoon events. At the same time it collects and filters water and transfers its excess directly into the aquifer during seasonal monsoon rains. This infrastructure is placed at this location as it is highly trafficked and experiences the most dramatic floods in the city.  
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**Neelankarai Monsoonal Refuge**



The Neelankarai Monsoonal Refuge is a place of safety and a place to collect aid in the form of water, medicine and food during times of flooding and extreme weather conditions. The architecture responds to the monsoon by a series of tall tower like tanks which can be seen from throughout the town of Neelankarai, they act as a symbol within the landscape and a monsoonal indicator. To maximise rainwater collection the roofs on the building collect water and the runoff is drained into internal tanks, these immediately provide clean drinking water. Its everyday function for the community is a medical facility which undertakes research about water borne disease, this transforms during crisis mode, where the space opens up to allow an influx of people who have become displaced or seek aid.  
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**The Link MSME & Cottage Industry Hub**



The Link MSME & Cottage industry hub aims to help alleviate the issues of flooding and social disparities between the rich and poor visible along the IT corridor in Chennai. It provides low skilled employment opportunities as an alternative to the IT industry which has been pushed by the nation in recent years for economic growth. The intervention is a work space and retail hub for cottage industries at three strategic locations along the corridor. It provides a collaborative working environment with work spaces, retail units and social opportunities all centered on the buildings hydrological functions of slowing, channeling and redistributing the monsoon rain. The intervention aims to be both socially and physically porous, linking the rain to the aquifer, and the disadvantaged to employment opportunities which are currently unavailable.  
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**The Water Converter**



The Water Converter is an urban device that aims to value the ery system and recreate links between people and the water cycle by dispatching filtered water into the city. This urban device will spread from the system core at the old irrigation channel to different strategic points in the city. In the system core there will be the filters, new social spaces around water and a bridge. It is the architectural device of the system. It will be replicated a few times to regenerate different ery's groups. The Amphibious Bridge is an architectural device, acting as a filter that aims to enhance the wetland ecosystem, and to create different man-activities according to the quality of water at each step of the filtering process.  
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**Hybrid Hydrology**



The scheme aims to encourage a self-sufficient approach to living within a layered infrastructure dealing with the acute water shortage in Chennai. The proposed system works similarly to a vertical ery network, an elevated Water Farm that slows down the movement of rainwater for better recharge of the aquifer and prevention of flooding; by spilling out excess water, managing its flow direction and finally directing it to the marsh area. Delivered from the fragility of a water droplet whose surface tension, deformations & break-ups reveal an active interface of fluctuations, the concept resembles a biological cell-division in the face of the monsoon instability and unpredictability. Each catchment bowl acts as a wet social node for the local community to collect fresh water and create different spatial 'liquid' episodes.  
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**The Water Syndicate**



Access to drinking water, or lack of it, is an enormous problem in India's dry season, and even with excessive downpour, the city of Chennai still wains with the struggle of water shortages. Climate change may have made the monsoon rain less reliable, but with alternative methods such as desalination available, some argue that the problem is driven more by local availability, disconnections between people and providers; and transport. So therefore, the Water Syndicate aims to connect the people effected by water scarcity, with stakeholders of water and the government, using a representative plateau, with an aim to politicise and balance the power of the monsoon; in a way that is both cooperative, equitable and mutually beneficial.  
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**Monsoon Bio-Doppler**



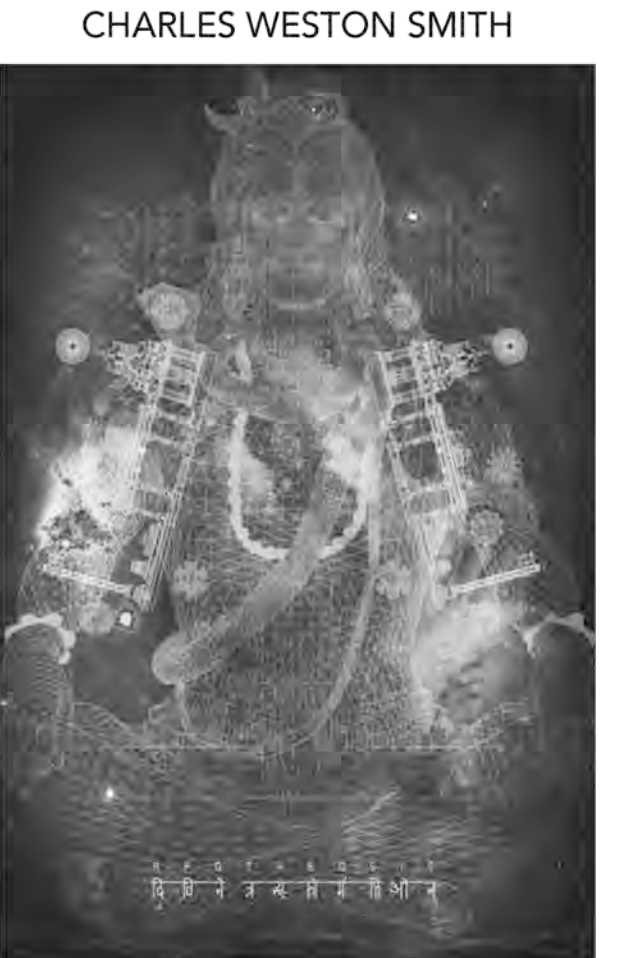
In reaction to recent pressures to explore the impact of the monsoon as a natural meteorological system, this project develops the idea of creating an intervening scientific and biological weather forecasting system. The structure is visible to all of the city stretching up high before disappearing in the clouds. The carefully allocated linear spaces house various weather predicting instruments, both scientific and biological. Each horizontal datum acts as a guide to understanding the various sectional heights throughout the atmosphere, helping to scale down and represent where clouds, rain and other various meteorological phenomena take place. Using the datum heights at a scale of 1:10 or 1:100 we can begin to comprehend the enormity of our weather system.  
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**The Forgotten Marsh**



For the last 15 years, Chennai has been undergoing drastic urban changes following the initiative of the Tamil Nadu government to develop a world-class IT industry especially along the IT Corridor. The once thrived ery system (connected water bodies irrigation system) is being replaced by concrete-built, metal clad high-rises. Young people from other parts of India have flooded in to Chennai for opportunities thus increasing the demands on affordable housing. The Forgotten Marsh looks into this social issue with considerations of Chennai's water bodies topography, monsoonal wind characters and propose an alternative urban housing prototypes that reconnect the locals to a life style with the marsh. The investigation takes place at the Chalkundu Marsh in the IT Corridor zone and 1km from the Pallikaranai Marsh.  
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**Apotheosis**



Using the seven primary chakras of Hinduism alongside the holy elements of water and void integral to the worship of Shiva, Apotheosis aims to deconstruct and interrogate the definition, realisation and manifestation of spiritual architectural space as a system of internal energy within the body and mind. Using RealFlow, physical modeling techniques and diagrammatic drawing to simulate the relationship between the Shaivistic (worship of Shiva) elements of water and void and their interactions within the architectural void of the divine, a series of enigmatic and unknowable spatial abstractions are generated. This helps to explore and perhaps redefine our definition of what architecture was, is and can be, using the infinite catalytic potential of the human mind. This is the process of a divine spatial genesis: this is Apotheosis.  
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**Unfolding the Buckingham Canal**



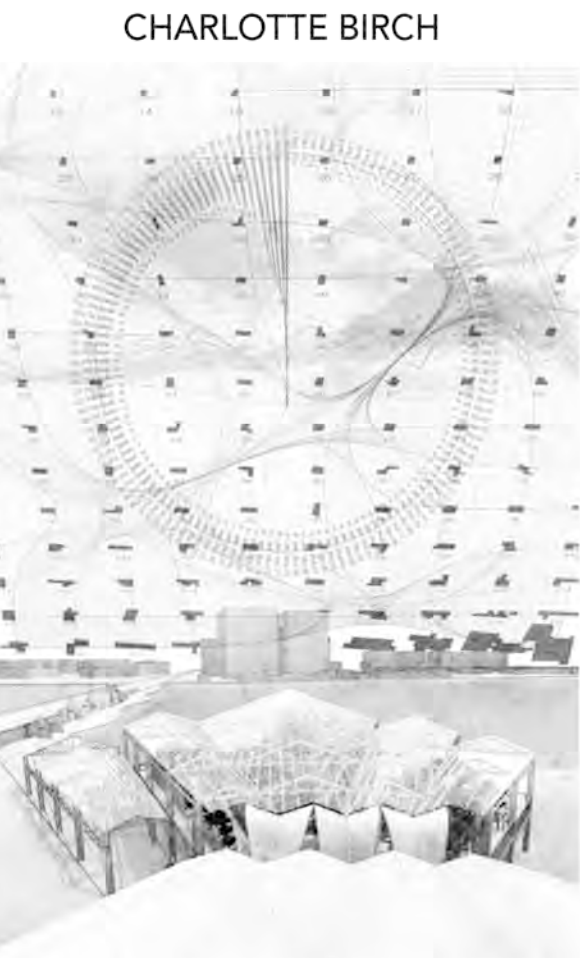
The Project responds to the deterioration of the Buckingham Canal, as a utilised arterial infrastructure along the Coromandel Coast in India. Focusing on Chennai in detail, the issue of flooding of informal settlements along the canal banks is raised. A series of navigation canals branching out of the current course into the surrounding floodplain is proposed, following the land morphology and flow of water on its surface. The proposal suggests a new way of utilising the canal while minimising flooding for the informal settlements along its course. The project is focused in South Chennai as a prototypical implementation. The same strategy can be applied in additional locations along its course, where informal settlements are in risk of flooding. Housing communities are also proposed in a bottom up approach.  
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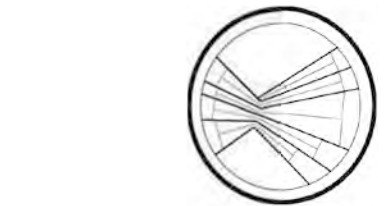
**A Walk Through Wetland Habitats**



The Pallikaranai marshland, is the largest wetland found on the southern border of the city of Chennai. Considered by many to be one of the most important wetlands throughout India, due to its unique hydrology and the habitual conditions that it provides for 133 species of birds, 10 species of mammals and many other living creatures. A significant number of them rare or endangered. A changing urban landscape and lack of awareness about the importance of the wetland has led to its server miss treatment across many layers of society. My project facilitates a greater understanding of the wetlands ecological importance on a local, and national level. A walk placed around the perimeter of the marsh provides a platform for exploration and research.  
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**The Narayanapuram Community Land Trust and Agricultural Initiative**



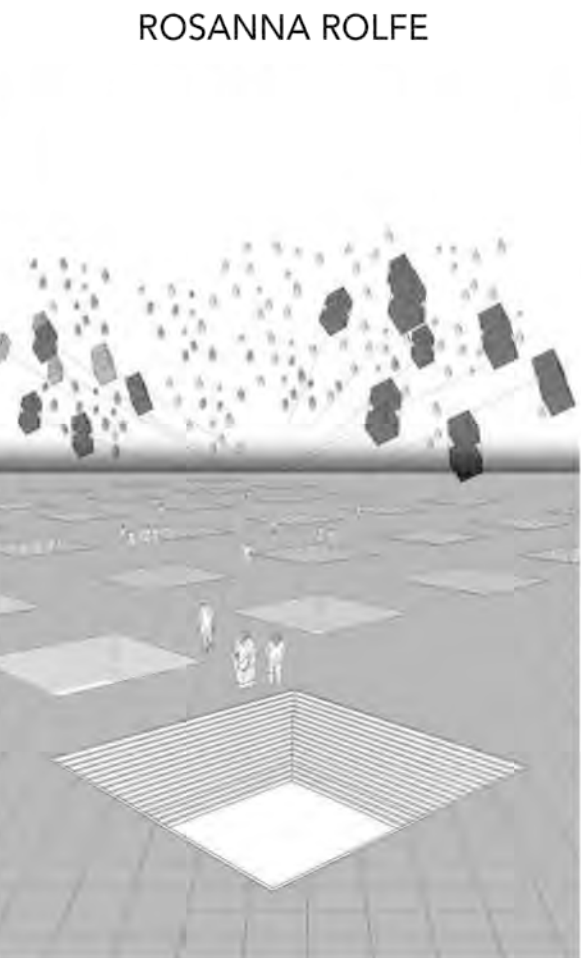
My project is sited next to the Narayanapuram Lake, a vital water body suffering from encroachments and over development leading to heightened vulnerability during monsoon rains. The Community Land Trust will turn the remaining empty plots of land in the area to agricultural sites. The sites forms an agricultural network, totaling 60 acres of land, which can absorb over 8000 tonnes of water and feed over 7000 people per year. The centre of the agricultural network will house crop nursery and Seed Bank; a fundamental safeguard for successful agriculture in a climate prone to both flood and drought. The centre provides a flexible space that will mainly be used as a market selling produce cultivated from the plots but also for community meetings and hosting events such as Pongal, the Harvest Festival.  
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**The Matter of Waste**



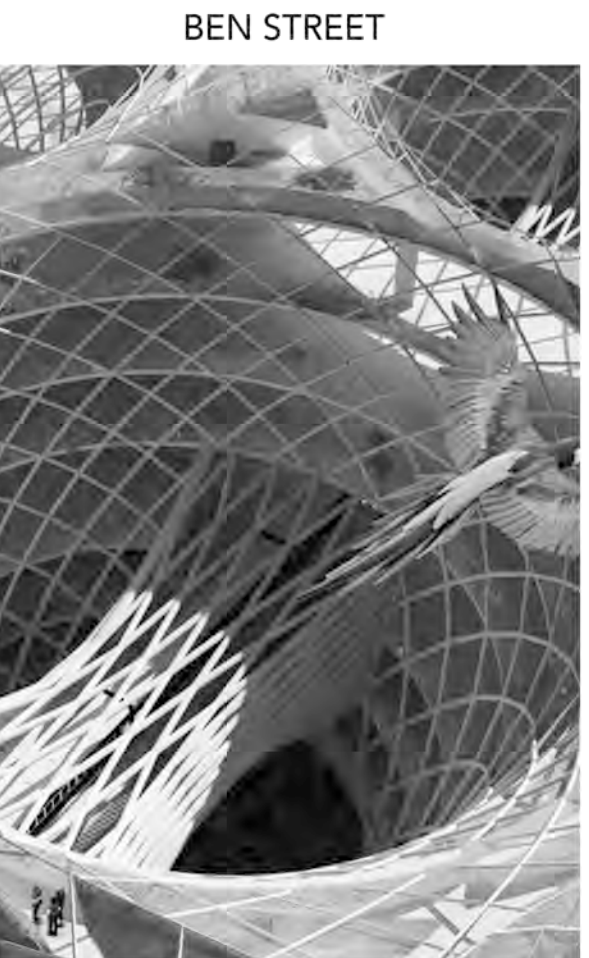
Rapid urbanisation and industrialisation over the recent decades has resulted in amplified waste generation in Chennai. The vast majority of waste finds its way into water bodies and across the land without any treatment as the current refuse collection system has been pushed beyond its means, leading to severe water and air pollution. The current situation is not only causing health hazards; it has created flood risks around Chennai through obstructing the passage of water between the erys. 'A Matter of Waste' aims to mitigate these issues with the aid of waste-to-energy technologies, acting as a catalyst for both environmental and social transformation. Through a reduction of waste, Chennai's system of erys will be able to return to how they were intended to be, averting future flooding when the monsoon arrives.  
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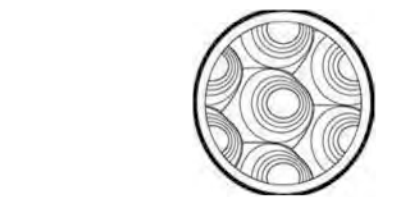
**Festivals of the Monsoon**



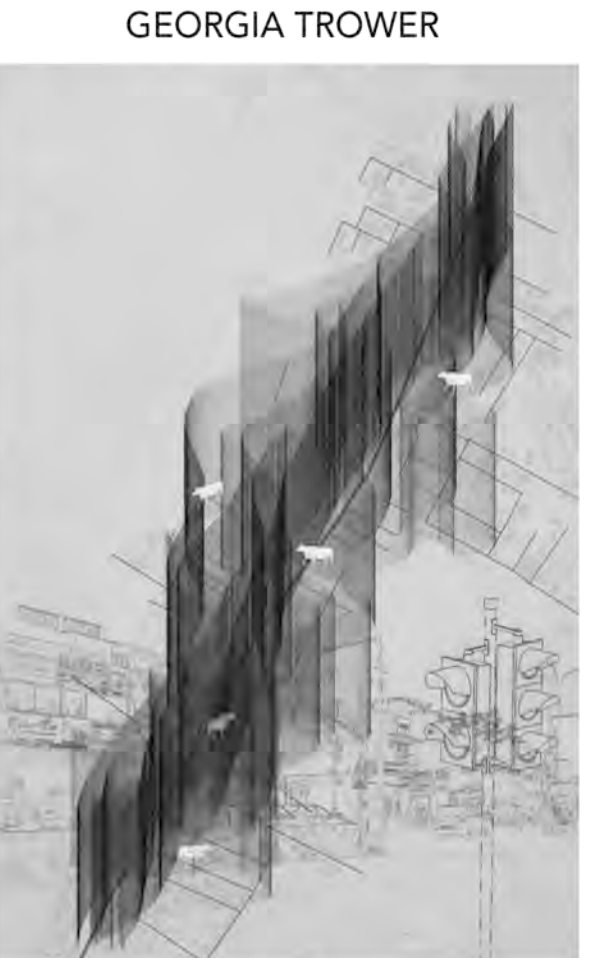
This project joins the monsoon with the community in highlighting the change in water levels throughout the monsoon calendar year. The space puts emphasis on the ever-changing climate in Chennai and creates an open area that provides an opportunity for the locals to learn of the environmental changes that they experience. The space is run by the locals, used by the locals and focused around how the monsoon effects the locals. The monsoon calendar offers uses for the building all year round. The space is designed to facilitate the different festivals that celebrate the monsoon, offering a public area for formal and informal performances and gatherings, including dance, plays, music events and practice spaces, encouraging the local community to come together in a shared space that is open to all.  
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**Monsoon Resilient Urban Prototype**



Flooding too often prevents all activity in Chennai. This project responds by imagining the future of the city as a network connected above ground level by a raised circulation floor and the existing elevated railway system. Designing the buildings together in this way allows life to carry on as normal throughout periods of flooding. These connected buildings are considered as a continuous multi storey slab, with computationally optimised light wells excavated out from it. This urban scale geometry is then split into two prototypical typologies, which can be incrementally added piecemeal over time, growing out from the new MRTS stations planned for the IT corridor, making the city ever more resilient to the negative impacts of Chennai's specific meteorological circumstances.  
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**The Cow's Way**



The Cow's Way is an urban proposal that aims to improve the quality of life for urban cattle. Cows are sacred creatures in Indian culture and play a central part in agriculture and festivities. Their sensitive nature and routines can be severely disrupted by seasonal monsoons and the extreme weather events increasingly associated with them. This project explores the relationships between humans and cattle in an urban context and the consequences of flooding on this relationship. It provides a preferential route for cows through the city, a cow shed for milking and bio-mass collection and a space for humans and cattle in times of crisis.  
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