

LANDSCAPE LENS

Reading Environment through Landscape Architecture

SPECIAL EDITION

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Landscape Lens

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Landscape Architects in India are a small fraternity of people who came together to form a professional body - Indian Society of Landscape Architects (ISOLA) in May, 2003. The mission of ISOLA is to nurture and enhance the profession of landscape architecture and aims to promote and conserve natural resources along with recognizing their responsibilities to the community as a whole, both for the present and succeeding generations. Currently, it has over 800 members and 10 Chapters across India with the head office in Ahmedabad. ISOLA has been accorded a member status of the International Federation of Landscape Architects (IFLA).



The recently formed Maharashtra Chapter of ISOLA (started in Mid 2018) with an intent to cherish and celebrate the wondrous Landscape of Maharashtra apart from connecting Landscape Architects from all Regions the state, aspires to

discover more about the regional variations through interactions across multidisciplinary fields and by disseminating learned experiences hopes to nurture the profession holistically. This chapter thus intends to sensitize and widen the vision about Environmental understanding, appreciation of Art, Architecture, Nature, Importance of Ecological Landscapes and Sustainable Development by spreading awareness at various levels towards a search for ideal Man-nature Relationship.

Worldwide, the month of April is celebrated as the World Landscape Architecture Month (WLAM). As part of this month-long celebration, the ISOLA Maharashtra chapter attempts to strengthen its bond with the Ecological Society, Pune and increase their outreach by contributing this themed April 2021 edition of the newsletter, highlighting certain common beliefs and concerns.

Small is beautiful. A billion stories. India Pavilion | London Design Biennale

- Prachi Chopade Wakley

"Small Is Beautiful. A Billion Stories" assembles a labyrinth of radical ideas developed to combat the pollution of India's natural environment for The London Design Biennale to be held in June 2021 and thereafter travel across India.

This mapping of seminal sustainable ideas across knowledge domains showcases the traction between Ecology and Design in India. The India Pavilion is being curated by Bangalore based architect, Nisha Mathew Ghosh. Talking about the motivation behind this project, she says:

"All across the landscape of India are IDEAS - isolated beacons of light that hold keys to a FUTURE of IDEAS for an ECOLOGICALLY RESILIENT India. Be it forests, clean energy, restored brownfields and clean air - a blueprint of this tapestry of ideas creates exciting possibilities of building much needed ECOSYSTEMS of innovation and solutions for the future".

Content was called from architectural, infrastructural, LANDSCAPE & product ideas that enable conceptual or concrete ways via built or unbuilt projects to think about OCEANthoughts (WATER), BREATH freedom (AIR), POWER shower (ENERGY), TREE rest (FOREST), TERRAbridge (EARTH & Brownfield) to gain an insight on this.

The Indian Pavilion will showcase the story of India's landmark experiments, ideas, and acts of resistance in support of urban and environmental sustainability. These pioneering experiments include the iconic forest conservation movement "Chipko", innovations by activists and thinkers to restore the water ecology of an entire city, and a design project to restore a brownfield site poisoned by the Union Carbide gas tragedy in India, among others.

Out of 23 selected entries for the landscape pavilion, two are by Pune based landscape architects, also alumni of Ecological Society. Sonali Dahotres' two projects VILLA270, Harne,

Konkan and FORGANICS farm, Khopoli, Maharashtra and Prachi Wakaley's, - Story of Fish, two Participatory Art Installations on distinct citizen-adopted-stretches on Mula River bank; a collaborative Initiative with Jeevitnadi, living river foundation will be a part of the exhibition.

The research-led project considers disciplines that bridge Design and Ecology. From scientific research to architecture, textiles to cleaning brownfields, community movements to state-of-

the-art manufacturing, upcycled waste to conceptual design – the myriad ideas that form the ethos and design language of the India Pavilion, slice across time and spatial domains to coalesce into a body of collective knowledge that represents our blueprint going forward from 2020. It is hoped that this exhibition will be a catalyst to build ecosystems of collaborative design expertise that harnesses the power of design in order to address the critical needs of India and the world today.

A multi-sensory installation titled "Small Is Beautiful. A Billion Stories" pays homage to historical grassroots initiatives by communities and individuals in India and signals the hope these community-based movements can provide in challenging the current ecological crises of India's booming cities.

At the heart of the installation is a two-winged kinetic structure inspired by the modern form of a windmill blade and the traditional Indian Punkha, a manually operated fan. Bringing together art, craft, design, music, and technology.

The India Pavilion represents India's story to the world (and to ourselves!) with a plea for a sustainable, ecological shift across domains. With a belief that the sharing of ideas will help to inspire, advocate, and collaborate to build an ecologically resilient India of the future, where design thinking is the key.



Making second homes contextual: VILLA 270°, Harne, Dapoli, Maharashtra

- Sonali Dahotre

Second homes have always been a popular concept with city dwellers. For Mumbai-Pune residents, Mahabaleshwar-Pachgani, Konkan, Lonavala-Khandala-Karjat areas, owing to their climate, scenic beauty and pace of life, have been much sought-after locations. However, in most instances, during the construction and site development of the farmhouses/ weekend houses, the essence of the place gets lost. The home starts looking like any other urban house, making the finished project lose context.

Through this weekend house project, located in Harne, Dapoli, we have attempted to stay true to the site and surroundings, conserve and restore the existing resources, contribute to the local biodiversity without compromising on the

aesthetics. Site admeasuring 1.5 acres is on a hill top with bird's eye view of the surrounding rich natural landscape, historic fort of *Suvarnadurg*, an equally old fishing settlement of *Harne* and the vast Arabian Sea.

The site is on the windward side of the hill facing the sea and due to strong sea winds, uncontrolled cattle grazing for many years and mischief fires, was bare. On leeward side of the site is a forest, leading down to mangroves in an estuary. Being at an elevation, the site is seen from all the popular tourist places for 3 kms along the coast. Considering this, it was decided that the built and the landscape should merge. Area being ecologically rich and sensitive, the landscape was forest.

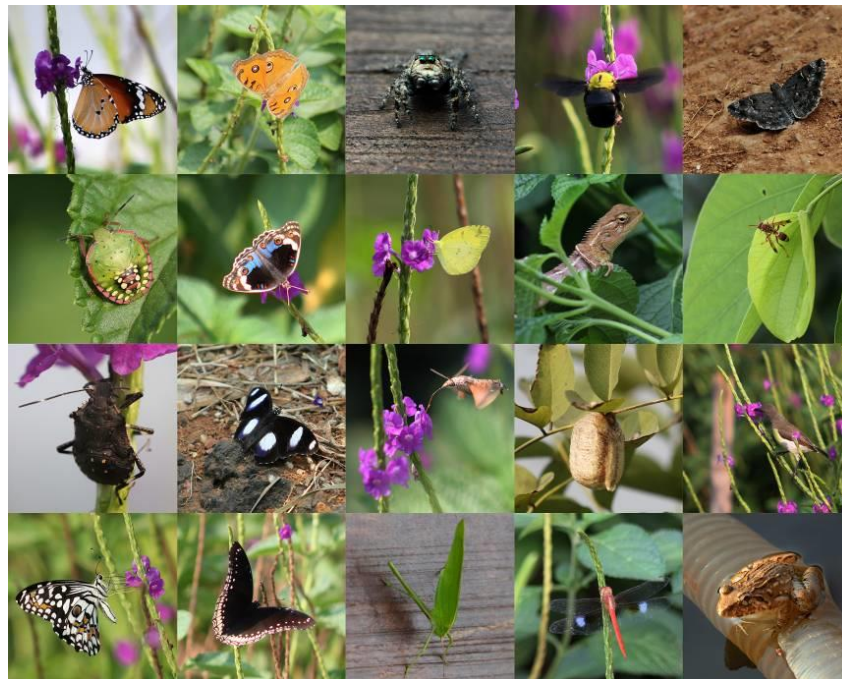


Before



After 4 years

The mangroves in the estuary are in a healthy state and one can easily spot apex species of the ecosystem like jackals, civet cats, raptors like White bellied sea eagle, Marsh harrier, Honey buzzard, in healthy numbers from and nearby the site. Other birds like Indian roller, Green bee-eater, Kingfisher, Swallows and plenty of butterflies are common. During winters flocks of migratory birds are seen. The landscape plan evolved after considering the local manmade character of the region and the ecology of the immediate surroundings- randomness in planning on hill slopes, groves of coconut and areca nut plantations, the use of local red laterite stone to name a few. Site has a steep slope of 1:5 with thin layer of soil, plenty of rocky outcrops, boulders and few existing clusters of native vegetation; all of this was preserved. The pathways in local laterite stone were planned randomly, considering the existing gradient. Cement was used only for the riser joints, the landing joints were done in mud. All construction work was done manually, JCB machine was not allowed on site. All waste water is treated using



modified septic tank. The site had to visually continue being a part of the landscape rather than stand out, so a live fence was planned in place of a compound wall. The existing vegetation clusters were protected and they along with the grasses,

flourished after the live fencing was done. This has helped in stopping soil erosion and improving the soil texture. The vegetation clusters have become islands of mixed vegetation attracting many birds and insects. A variety of native trees, grasses, ground cover have been planted on the site.

The landscape was designed with the aim to restore the site which is a hill slope, initially to a wilderness and eventually to a forest and hence is more experiential than articulate. This project has made a contribution to the local biodiversity, thus becoming a part of the bigger natural landscape.

Project profile:

Client: Varma family

Architecture: Bharat Baheti, GABHA Architects

Landscape architecture:

Sonali Dahotre,

SPARROW Landscape initiative

Art is but a reflection of the times - A powerful tool to connect with society. While the environment and natural resources amidst the global 'developmental' challenges are at stake, there is a need for social awakening at various levels.

In November 2019, a one of a kind *participatory art installation* was conceived and collaborated with citizens for the first time as a way of *celebrating* the River Festival on the Banks of Mula River in the city of Pune. An event propagated under the 'ADOPT A STRETCH'

initiative by Jeevitnadi, Living River Foundation in collaboration with Studio roots. An *ecologically sensitive approach* was planned to express this idea using material that came from the site and immediate surrounding as the medium.

FOR THE RIVER ...BY THE RIVER
(नदीकाठी....नदीसाठी...)

With the dependence on water supply from the uphill dams, the city has overtime turned its back to the river banks which have faced tremendous vandalism and developmental stresses over time turning them merely into effluent carrying drains.

In recent years many citizens have voluntarily taken upon themselves to voice out this plight of the river. The clean-up drives have given a fairly good insight into the variety of waste that was littered on the banks from endless trash of alcohol bottles, disposable food containers, wrappers, plastic bags and bottles, broken idols, religious waste etc. Two citizen adopted stretches were identified to express this idea:

Installation 1:

Waghacha Ghat at Aundh: A CULTURAL EDGE of socio-religious and culturally active Heritage Ghat along old village settlement of Aundh. The plentiful of TRASHED ALCOHOL GLASS BOTTLES on GHATS collected during weekly clean-up drives were an obvious choice for the socio-

cultural edge, a material that made a satirical commentary on the city beautification activities over the underlying issues of degrading environment -loss of fundamental value systems due to an addiction of ignorant 'development' that is overpowering our society.



Installation 2:

Confluence of Ram & Mula River, Baner: A *natural edge* with a verdant landscape and unique riparian ecosystem, a green relic in dire need of conservation. The installation had to

justify the selfless nature of the fragile stretch, attempting to be 'Transient' and as harmless as possible by itself.

This stretch is surrounded by uptown residential gated communities. Ample restaurants in the vicinity bring along large disposable food containers as well as packaging waste. Hence, this underexplored material waste of *coconut shells*, collected from nearby restaurants was a conscious choice for this installation.

The FISH is a slapstick remark towards the activities that are demeaning to the river but also a symbolic manifestation of the living beings who cannot speak for themselves. The fish is an embodiment of this multidimensional entity of the river - be it religious, socio-cultural, recreational and ecologically relevant even today.

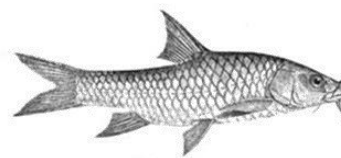




NUT- FACTS:

Coconut shells: A survey of 8-10 large and small eateries in the vicinity showed that average 25-30,000 shells were disposed of monthly from Aundh-Baner locality i.e. in a radius of 2.0 km. These shells do not have a proper disposal system - sometimes they go in Wet waste, at times in Dry and rarely used as fuel wood.

Advantages: The shelf life of coconut shell is equivalent to timber. It is waterproof, hard, durable with a peculiar form with hard & strong, has an unexplored potential ranging from becoming (non) disposable food containers up to even Activated Carbon. If applied locally, integrating activated carbon in Effluent treatment and segregation at STP plant could contribute to a locally sustainable cyclic model - yet unventured.



FISH FATE:



The Mahseer fish seen as earrings of Lord Vitthal was a symbolic way to communicate the upstream migration of fish during Monsoons along with the annual pilgrimage WARI that takes place in Pune region. The extinction of Mahseer from the Pune river basin, along with an alarming decline rate (93 %) of other varieties Singhara, Kachaki, Chilapi and Punties is an indicator enough to understand the dire state of River..

The untreated effluent being discharged directly into the river is life threatening to all the dependant flora and fauna of the riparian ecosystem. Not only with solid sewage waste but the untreated chemical waste that travels along with the water damages the overall health of the ecology along the banks and environment downstream. The fragments of biodiversity hotspots now left in the city demand serious attention.



Organic farming has caught up with the new age health conscious city dwellers very quickly. However practicing organic farming alone is not often an economically sustainable model. Moreover if the site is in the Western Ghats, an ecologically important area, it becomes morally and economically challenging. This project attempted to bridge the gap between ecology and farming, while trying to retain the ethos of the place.

The site lies in the Khopoli region of the Western Ghats, adjacent to a river, in the quiet village of Parali.

Parts of the land parcel were traditionally cultivated for rice and the clients purchased several bits and pieces from various land owners to form around 21.5 acres (8.7 hectares) for farming.

During the initial phase of the project, clients and I both had plenty of aspirations for the site, but were differently oriented. Clients are professionals in the software field from Mumbai, and had plans to make retirement/ holiday homes on the land along with hi-tech farming, equipped with remote cameras, solar power etc. I was in the midst of reading 'One straw revolution' by Masanobu Fukuoka and was convinced that the traditional farming methods cause harm to the ecosystem. In short, I felt that whatever is best for the ecology of that region needs to be done on the site whereas clients, having travelled abroad, wanted to execute the best technology based practices that are prevalent in the world. We did an ecological survey of the site, which revealed few endemic, uncommon, rare, IUCN red listed,

protected species of fauna, in addition to 110 varieties of plant species.

Table of additional activities and approximate income that can be generated: (*Refer Table below*)

The master plan evolved after the overlaying of the slope analysis, ecological survey and the thought of generating extra income to compensate for doing organic farming and not cutting down trees to increase the farming area. We began with doing a live fence for the land. There was a patch of almost 7 acres, with dense dry deciduous type tree cover, nesting of few bird

species; this patch was retained as forest. With the help of an organic agriculture consultant, soil quality of the site was improved; no soil was brought from outside of the site. Cattle shed, is

NO	ACTIVITY	DETAILS	INCOME
1	Native trees	Fruits of trees like <i>hirda</i> , <i>beheda</i> , <i>reetha</i> , <i>shikekai</i> etc find use in ayurvedic medicine	Rs 10000/ year / tree
2	Coconut plantation	100 trees planted along river	Rs 5000/ year/ tree
3	Areca nut	200 trees planted along river	Rs 2500/year /tree
4	Fruit trees	Banana, Papaya grown on kitchen water	Rs 3000/ year/plant
5	Aquaculture	Fishing of <i>rohu</i> , <i>katla</i> , <i>tilapia</i> fish from lake	Rs 3000/ day
6	Seasonals	Flowers like marigold and plants like lemongrass, tulsi etc	Rs 5000/ year/each type
7	Cowmilk	Sent to Mumbai twice a day	Rs 2500/ day
8	School day trips	Children from Mumbai come for field visits	Rs 25000/ day/ 80 students
9	Weekend tourists	2 cottages for homestays & adventure sports	Rs 8000/ day
10	Star gazing activity	Group of enthusiasts from Mumbai	Rs15000/ day

helping make manure other than the dairy farming. Commercial fishing, star gazing and adventure sports have been different activities.

In the second monsoon, there was an incident which was an eye opener for all of us. Rain water had collected in the lake for 2 seasons and clients had introduced fish hatchlings in the lake. The season is also the breeding season of the checkered keel back snakes, commonly found there. Several new born snakes were seen around the lake. From the fear that these snakes would eat up all the fish, a villager was employed by the overseer to kill these snakes! When the misunderstood snake and its importance to the ecosystem were explained to everyone, there was plenty of remorse and the activity was stopped immediately. The same day we saw a nearly 3m long python, a very rare sighting, barely 50m away from the lake. This reinforced the need to

conserve. Clients themselves took courses in organic farming and are hands on farmers now. It has been a learning curve for all of us involved.

Project Profile:

Client: Forganics, Sanjay Agrawal, Girish Kulkarni
Architecture: Bharat Baheti, GABHA Architects,
Landscape Architecture: Sonali Dahotre, SPARROW
Landscape initiative



Landscape Design Thinking with Permaculture

- Anushree Chitnis

Imagine stepping into a landscape where you are greeted by birds, bees and butterflies. Where instead of admiring the greens from a distance, you walk up to the plants, decide what you want to harvest from the garden for a meal of the day. Where you admire the flowers and eat them too! A landscape where you are interacting with every element of the design and it becomes truly sensory and inclusive. Every sense is engaged - touch, smell, taste, sound, sight - as the user is actively participating in the working of this space.

As a landscape architect, creating the essence of a sense of space with a palette of elements - softscape or hardscape - has always been a design forward. Respecting the inherent ecology of this space simultaneously is another crucial layer in the process. Often, these ideas conflict each other given the scale of the project, timelines and most important, the interests and awareness of the stakeholders.

In this framework however, the key ingredient i.e. our target end user - the human being - often

remains a simple observer, manoeuvring through the



Permaculture Design Ethics : Care of Earth,
Care of people, Fair share

landscape, appreciating the beauty from a distance or sometimes observing the local ecosystem closely, if the design allows so.

A passive but rarely an active element of the design system itself. A quest for a design philosophy to bridge this gap between our human centric designs, ecology oriented at the same time, but having human beings as active

custodians in the process is what eventually led to the permaculture way of thinking.

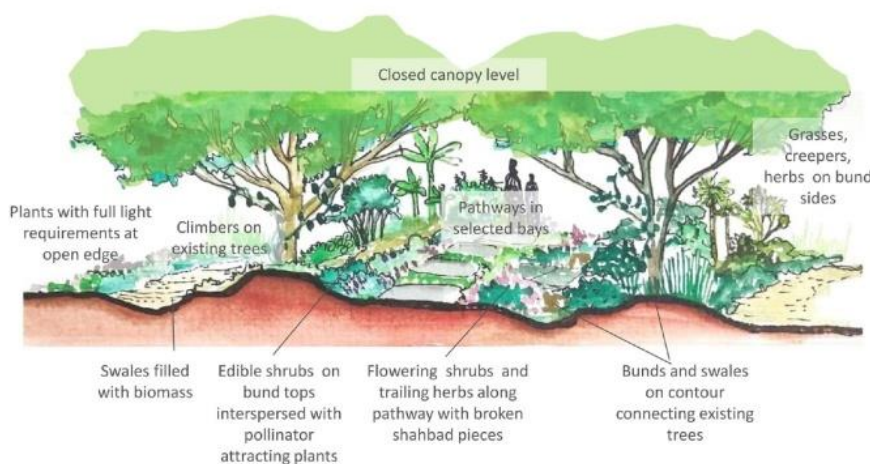
Permaculture is a science of applied ecological design. It uses a set of principles and practices to design sustainable human settlements. The word, a contraction of both "permanent culture" and "permanent agriculture" was coined by two Australians - Bill Mollison and David Holmgren. Bill's

observations of the indigenous cultures and ecosystems, led him to envision and build systems that were abundant and richly interconnected with its indigenous peoples. Both he and Holmgren (his student) began to identify the principles that made those systems rich and sustainable. The hope was to apply these principles to designing ecologically sound, productive landscapes with the logic that if indigenous peoples have lived for millennia harmoniously with their environment, the systems can be replicated to re-evaluate and design our food systems. (Reference: Gaia's Garden - A Guide to Homescale Permaculture by Toby Hemenway)

As a design philosophy, the most appealing aspect of this science, was the opportunity it presented to re-evaluate and re-think the current landscape

practices - first as introspection, then as action. To simply put, it inculcated a sense of inquiry where a questionable one persisted. Example, in a conventional landscape design project, how would permaculture help? The answer lied in the way we design the most utilitarian spaces. Make the landscape productive for "all". The core of permaculture design are its three ethics - care of earth, care of its people and fair share of all that's

abundant. Start with the soil - water - climate - vegetation - life which the land can support; instead of superimposing a vision, build one with time. The palette of elements changes here but being a landscape architect, space making and visualization of an evolving landscape across different timelines is a skill that truly helps. We learn to look at the land more respectfully, design for energy and time-efficiency, reducing our dependency of resources outside the site. The extent of interventions possible may vary across projects, but the intent and the action is the need of the day for a truly sustainable landscape design.



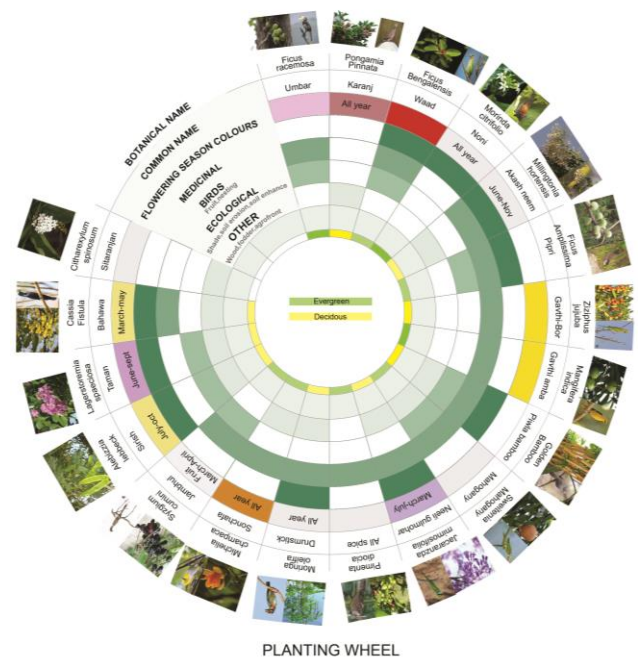
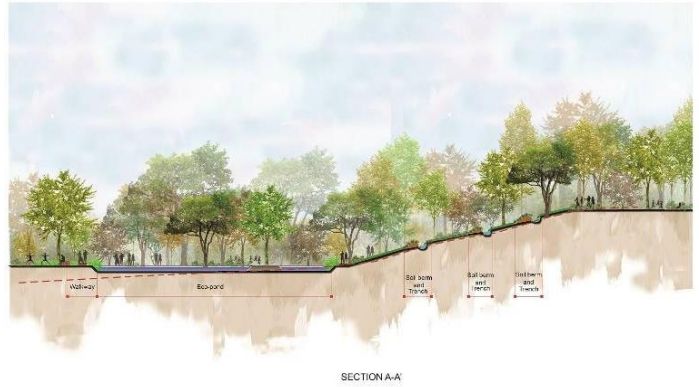
Element in Productive Landscapes : Food Forest

resources outside the site. The extent of interventions possible may vary across projects, but the intent and the action is the need of the day for a truly sustainable landscape design.

An example of a successful social initiative where some people from a housing society came together to 'ecologically green' a parcel of land in their visual backyard. Though a part of a much larger part of Taljai Hill area in Pune, this is a small parcel of land around 8 acres in area.

A naturally sloping terrain with a few trees scattered across, this land was devoid of large shade giving trees and vegetation. The basic design brief was to afforest this land. After visiting the site, it was felt that a lot more could be achieved there with very minimum intervention. The brief was hence expanded to accommodate a natural path, an eco-pond at the lowermost level and vegetation.

Firstly, we identified places for contour trenching. Trenches were dug and the soil stacked on the downhill side just before the onset of monsoon. The locations for the larger trees were identified and kept ready. An eco-pond was dug out at site



in the lowermost flatter area. Once it started raining, all the trenches and tree pits started filling up with water and arrested the runoff. Soil



was thus prevented from flowing down with the runoff. It also helped in building up the much needed moisture content in the soil. Once sufficient water was allowed to percolate, the trees were planted. Indigenous trees of many

varieties with medicinal properties were procured from many nurseries. The eco-pond also filled up eventually. Care was taken to include shrubs and grasses that arrested soil erosion, gave a seasonal variation, were host plants for butterflies and were bird attracting.

The project is a demonstrative example of the will of citizens. Citizens were called upon to do the planting on site and the response was overwhelming. It is a brilliant initiative which teaches by example that the onus is on us - *Be the change you want to see!*

Landscape Consultant: SAMA Landscape Architects
Status: Completed in 2016
Client: Mr. Prakash Patwardhan
Collaboration: Group Phi Architects

In a fast-growing city, the place of nature is very challenging. On one hand, it forms the city's natural framework while on the other hand, it faces deterioration due to ecologically insensitive development. While it is nearly impossible to bring back the original ecological fabric, it is possible to conserve what remains by sensitizing both the citizens and authorities to the importance of our ecological heritage and its contribution to creating healthy, green and livable cities.. LA Foundation (New Delhi) with the help of local Landscape Architects has taken up this initiative to map the nature in cities. Three maps (Delhi, Pune and Bengaluru) have been released till date and more are in the making.

The Pune map attempts to highlight the role and value of nature in the city and to create awareness about its natural hotspots. It also hopes to inspire its readers to actively participate in the protection and conservation of the city's green spaces.

The map looks at the city's transformation over centuries vis-a-vis its natural surroundings. A sequence of important landmark events is established which helps one understand the changing relationship of the city with its natural fabric.



The present status of nature in the city – hills and rivers, natural and man-made water bodies, gardens and other open spaces, flora and fauna, is documented through maps, sketches and photographs, supported by information acquired from literary sources and interactions with experts in the field.



Several issues and concerns related to ecology are highlighted, as also the positive steps taken towards conservation and ecologically sensitive development.

Ecology lovers and students will find the map to be a good resource of information presented in an interesting, easy to read, graphically rich format. The bilingual map (in English and Marathi) is available for sale for Rs 150/- each

Do get in touch and order your copy

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411038

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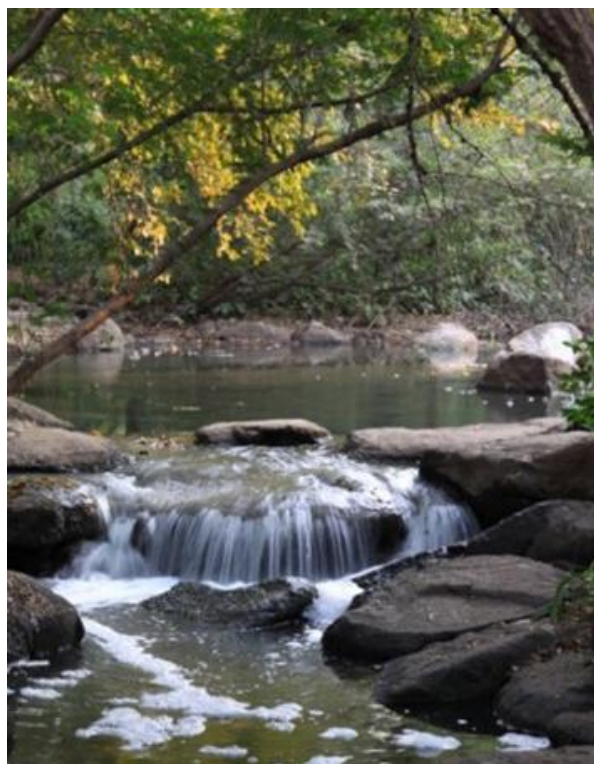
Email: banyan@ravivarsha.com /
gavandi@gmail.com

Contact person: Vikas N.



The Osho Teerth Park is one of the earliest examples of implementing Restorative Urban Landscape strategies in India. Set in an area of 75m x 850m, it has been transformed from a decrepit nullah into an exuberant landscape pocket park, and is now a green lung for the city.

There are several such nullah landscapes running through the city. Though many of them have now been converted into pocket parks and serve as jogging and walking tracks, we do not see a similar approach in terms of water-treatment. Most of the nullahs have either been covered over with concrete slabs, or have been 'canalized' into linear water drains, with the natural water edge and related ecology completely destroyed. In addition, no water filtration and purification strategies are implemented along the course of these nullahs, thereby compounding the water pollution issue and putting added pressure on the water-filtration plants for the city's Rivers (Mula-Mutha).



This article hopes to throw light on the restorative strategies implemented in Osho Teerth Park so as to re-iterate the importance of this approach and pave the way for future urban landscape restorations in the process of making 'Ecologically Smart' Indian cities.

Located downstream of a slum of 5,000 people, the Park is designed to handle a normal flow of 21,000 – 24,000 gallons per hour, as well as peak monsoon flows of 100 times that volume without damage to the biological community of flora and fauna that naturally feed on stream pollutants along the length of the park.



THE FILTRATION SYSTEM:

At the south end of the park, the nullah is first systematically guided through a steel gate with an iron mesh, to separate the floating garbage from the water. It is then passed through a series of four ponds, created on natural bedrock, which serve as settling tanks and filtration tanks for sludge. A level difference of about 300mm between each cascading pond encourages natural aeration of the flowing water. These ponds are constructed off-stream in a serpentine fashion for optimum use of valuable space and to eliminate stagnant pockets. Every pond is stocked with a wide variety of flora and fauna to feed on remaining pollutants, through the system of natural root zone filtration, which is activated by means of plants like water hyacinths, bulrushes and alocascias. 'Gambusia' or Mosquito fish have been introduced into the ponds to clean the water of mosquito larvae.

THE AERATION SYSTEM:

Aeration is accomplished through in-pond fountains and tiny waterfalls with a level drop of just 200-300 mm. In addition, these waterfalls

function as aesthetic focal points and contribute to the musical quality of the stream.

HANDLING MONSOON INFLOW:

A system of back-up wetland zones has been created that run parallel to the 3rd and 4th ponds, to hold extra volume of water, during monsoons. These wetland zones help the cultivated ponds to retain their unique eco-culture.

REJOINING THE NULLAH-STREAM: After this process, the filtered water thus re-joins the nullah stream, odour-less and relatively clear and

a sand filter is installed at this point of re-entry. This allows for the now clean water to be utilized for irrigating the banks of the stream, by means of sprinkler irrigation.

The water, which at the source of entry was an unclean stream with oil waste dumped by a neighbouring railway yard, continues to be cleaned by this natural filter process and is now 80% purified after having passed through this course. The proof of success lies in the fact that it is now inhabited by fish, kingfishers, herons, lapwings and sunbirds that have made the park their permanent abode.



Before



After

Ecological Society Education Program

Sustainable Management of Natural Resources and Nature Conservation

Admissions open for 2021-22

Classroom Program admission– for those who can attend in person, every Saturday

Online Program admission – for those who cannot attend in person

Please note – until government orders are relaxed both Programs will be online only. No classroom sessions, no field camps unless permitted by administration and reasonably safe to travel.

For program curriculum, dates, field camps, visit

<https://www.ecological-society.com/education>

Admissions and payment of fees are online, on the same link

The land is blessed with natural features such as rock outcrops, plant guilds, grass lands, gullies. It has a consistent gradient of average 1:50 from East to West boundary. The surface water drains into a natural system of a seasonal stream that runs along the low lying Western edge.

The Master planning process identifies these existing site features inscribing them within the designated open spaces with an intent to preserve them. Street Planning framework has emerged with the thorough understanding of landform and the gradient. Majority of plot access streets run parallel to the contours so that plots have mostly uniform slopes upwards or downwards. It is keeping the land cut/fill at its minimal also helps in retaining the top soil of the plotted units.

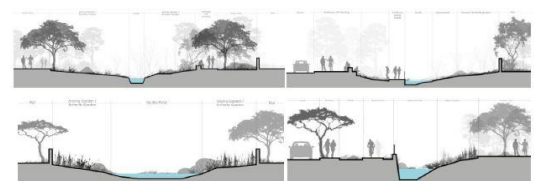
The response to the environment and rain water conveyance has been the generator of the landscape planning & landscape design detailing. As an open space system, two green corridors run across the site contours connecting the East and West extents. Important neighbourhood parks are interwoven along with them. Along these Linear Parks runs a series of percolation ponds and a connecting bio-swale system. This gently sloping ecological device detains, cleans, filters and infiltrates part of the run-off from parks as well

as streets and release it into a large harvesting pond at the western end and finally into the existing natural stream. Multiple rain water recharge chambers and recharge wells are located along this system.

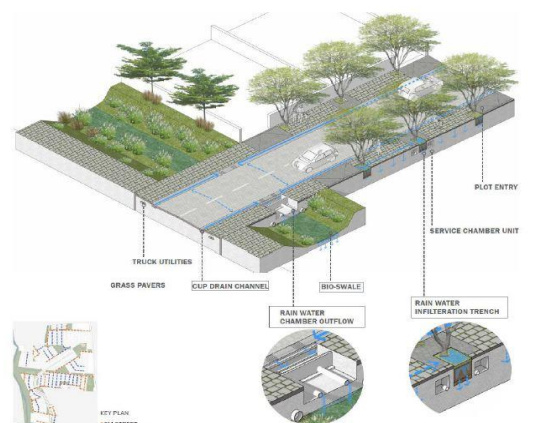
Most of the Streets are designed with Low Impact Development (LID) guidelines. Surface drains replaced the underground pipe-chamber system. Streets are integrated with pathways, tree pits, rain planters and pervious pavers. This helps to capture train water, reducing run off. Gradients are planned to help surface run-off flows towards the open spaces and further into bio swale-percolation ponds system.

A Forest buffer (6.5 acres) is planned along the stream edge at the West. It acts like a sponge and holds a large amount of surface water within also checks the soil erosion. It is densely planted on Miyawaki principles, with all the three tiers of vegetation. The plant palette is a mix of native cultivated and wild species. It has created significant changes in the microclimate within the soil and also in the vicinity. It has become a habitat for birds and small animals.

Few of the important species are: *Terminalia arjuna*, *Careya arborea*, *Terminalia bellarica*, *Vateria indica*, *Artocarpus lakoocha*, *Holoptelia*



Swale sections at various stages



LID road Details - Chamber outflow and Rainwater infiltration Trench

integrifolia, Ficus racemosa, Acacia ferruginea, Adenanthera pavonina

The neighbourhood parks offer outdoor recreation activities underneath tree canopies with minimum footprint of civil work. With activities like walking trails, bicycle tracks, outdoor gymnasiums, sandpits and natural play zones, meditation decks, these parks are the inviting places for an active life with Nature for all age groups.

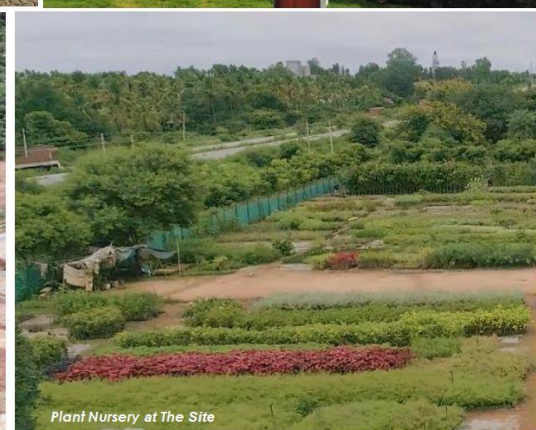
Plant palette in parks comprises of indigenous and naturalised species, a mix of evergreen shade giving, flowering deciduous, fruit and berries producing, nitrogen fixing species.

Few of the prominent species are: *Dalbergia sisoo, Pongamia pinnata, Lagerstromea indica, syzygium cumini, Madhuca indica, crateva nurvala, Cordia dichotoma, Mimusops elengi, and Morus alba.*

Project Plant palette: 320 plus plant species
Tree Count: 30,000

These species are propagated and nurtured in the Site Nursery which was built since the early phase of the work. These parks and the Forest together have become a Robust backdrop for a Nature centric community life. The goal has been to minimize impact developing a regenerative semi urban landscape, continually supporting the functioning of ecosystem.

Project Area: 102 Acres
Status: Ongoing
Location: Bengaluru, Karnataka
Landscape Consultant: Landart Designs, Pune

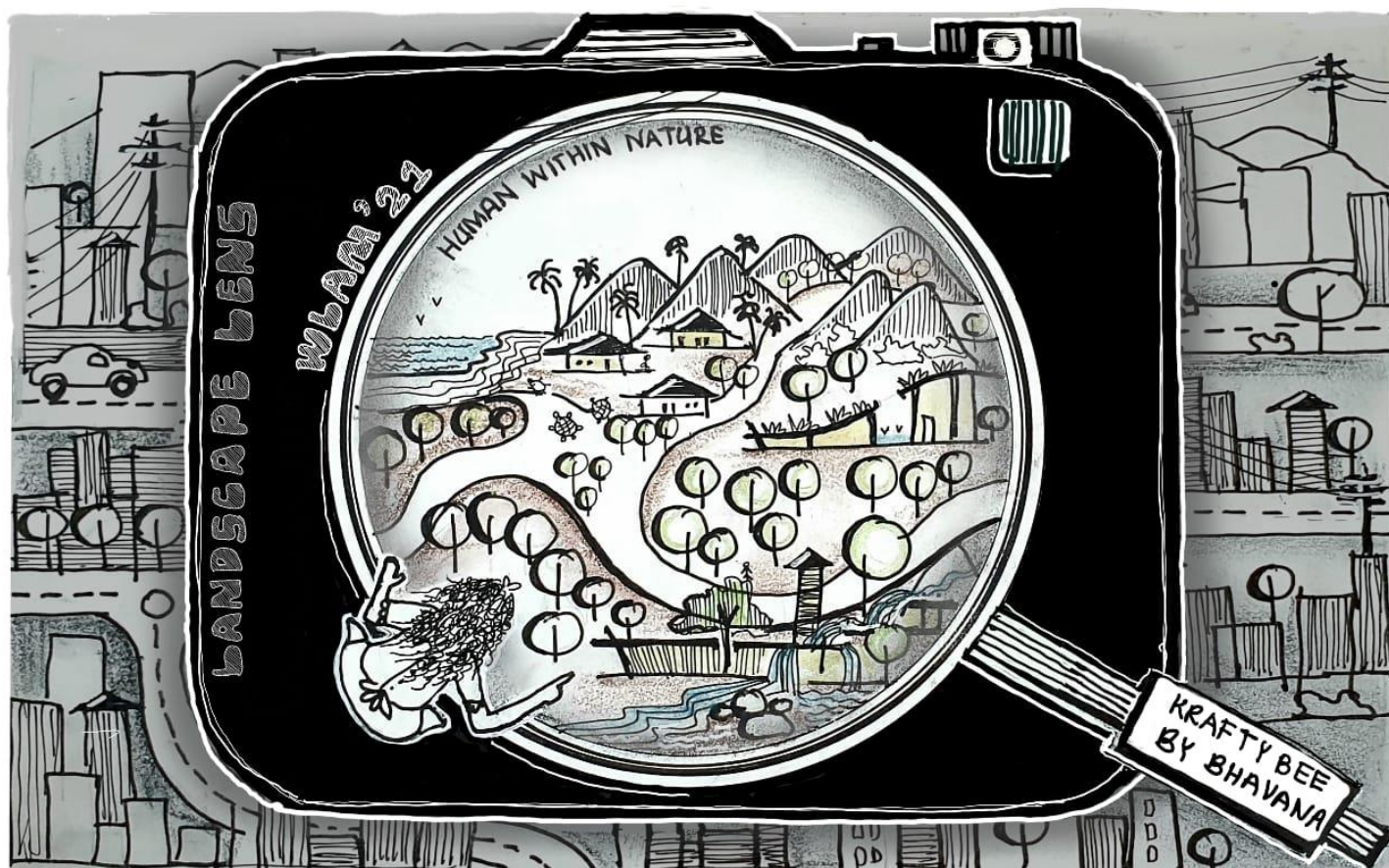


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