

3.5 Monitoring Plan:

This initiative is targeted to reduce select climate risks and to bring about social, environmental, and economic benefits. Hence, a robust monitoring process is required to assess the effectiveness of the solution across different weather conditions and timelines of the project.

This will allow identification of challenges and shortfall in terms of outcome and impact, and accordingly appropriate measures for course correction can be taken. This will also generate evidence, provide knowledge and inform the planning and design of further urban greening projects that can deliver high value impact for the community and environment. To this end, the following monitoring plan has been suggested for the project:

A. Community Benefits and livelihood impact:

- The Urban Forest will bring about improved access to green and recreational space which can be determined through robust on-ground surveys. This will involve measuring the change in green space per capita for Marol area and through demographic surveys, visitor footfall analysis and determining the radius of influence spatially.
- Improved knowledge & awareness on environment through assessing the change in awareness levels across different stakeholder groups before and after capacity and awareness building sessions.
- Change in perception by stakeholders, particularly the local neighborhood communities about climate risks, safety, inclusiveness and accessibility of the space.
- Local livelihood created through implementation and maintenance of the Urban Forest.

B. Reduction in climate risks and improvement in environment sustainability:

- Flood resilience: measure the surface absorption capacity of stormwater run off at site before and after implementation
- Water circularity: measure the volume of wastewater being treated daily at the site and how much of it is being directed to aquifer recharge. Also, measure the change in aquifer levels by using a piezometer.
- Heat mitigation: measure reduction in heat at the site through change in Land Surface Temperature (LST) and ambient air temperature.
- Enhancement in biodiversity: measure the impact on biodiversity by assessing the change in no. of species (flora and fauna) before and after implementation.
- Improvement in soil health: measure the soil health improvement through assessing the changes in soil temperature/pH/moisture levels before and after the implementation.

Table 08 : Implementation monitoring

Parameters	Baseline (before Implementation)	During Implementation	Post Implementation
Climate Risk Reduction			
Heat Reduction (Ambient and Land Surface Temperature)			
Improvement in Permeability			
Change in Groundwater Levels			
Water Circularity (Recycling of water)			
Ecological Benefits			
Biodiversity (Flora and Fauna)			
Soil Health			
Green Space Availability			
Social and Economic Benefits			
Community Perception			
Knowledge and Awareness improvement			
Livelihood			

As shown in the table above, most of the parameters will be monitored in a before project (baseline) and after project (post-implementation) scenarios. The monitoring will also take the different weather into consideration, particularly for climate risk reduction parameters stated above.

Students and the local neighbourhood community will be engaged in tree planting activities during the implementation phase, which will also include an awareness session. The awareness and tree planting session will involve baseline and post-session surveys to determine the change in knowledge and awareness levels. Similar surveys will be carried out in the post-implementation phase with visitors.

Baseline assessments for biodiversity, soil health, and groundwater levels have been conducted on-site already. The results of the same are shared in [Annexure 4.2](#). The impact for these parameters will be measured once the project implementation is completed.

3.5 Stakeholder Engagement:

As part of this initiative, community engagement is a critical necessity right from design to post-implementation stage, given that the urban forest is being developed as an inclusive space for the public for not only social recreation but also for bridging the gap between nature and residents, and to gain awareness about the environment.

Stakeholders to inform design, accessibility and inclusivity: Inputs from multiple stakeholders including Brihanmumbai Municipal Corporation (BMC), technical experts and civil society organizations on phase 3, were taken through a preliminary workshop that was held on 14 May 2024. The inputs have been taken into consideration through this proposal for phase 3. The details about the inputs from stakeholder are covered in [Annexure 4.3](#).

As part of enabling social recreation through the project, there are spaces designated for multi-purpose open space, playground and a public plaza within the concept design. Community engagement activities such as workshops and focus groups discussions will be conducted to seek inputs from women, children, and elderly to prepare the detailed design and execution of these public spaces. The workshops will also include sensitization of communities about the larger purpose of this park and gauge the willingness to be involved for community-based maintenance of the park.

Environmental and Social Awareness sensitization: Local neighborhood community members including school students will be engaged in an awareness training session on native plant species and guidance on planting through a tree planting activity.

A nature trail will be created across the forest with information board displays educating visitors about the forest including its flora and fauna, and the purpose behind its development. This will also include Behavioral Change Communication (BCC) to inculcate a sense of ownership to take care of the forest as a citizen. Guided nature-trail tours will be designed for students and youth to impart environmental education and awareness. Sensitization of the community about the composting approach and its necessity will also be covered.

3.6 Roadmap:

Table 09 : Roadmap

Primary Actors	Pre Implementation	Implementation	Maintenance and monitoring		Institutionalization
	1st Year	2nd and 3rd Year	4th, 5th & 6th Year	7th Year onwards	
Knowledge Partner/ Technical Advisor	DPR preparation	Knowledge partner	Periodic documentation - every three months	Documentation @ 5 year intervals	Yearly MUFO meetup
	Tender guidelines and special conditions				Visit of global partners
	Coordination with all stakeholders				
	Baseline monitoring	Baseline awareness survey of target stakeholders (mainly students and local residents)	Continuous monitoring of climate risk reduction parameters across different weather, ecological, and social impact parameters as well.		
Governance	NOC and Approvals	Supervision	Supervision and handing overs to local body/ community/ organisation	Monitoring	Quarterly meeting for updates, issue solving etc.
	Funding Arrangements	Periodic Record checking			Renewal of Maintenance contract by local body /garden department
	Tender procedures	Timely fund arrangements			
		Procurements if any			
PMC	Onboarding all consultants through PMC appointment		Monthly site visit and update report	Quarterly site visit and update report	-----
	Preparation and approvals of GFC drawings for concerned departments				
	Detailed BOQ for tendering				
	Project plan and work schedule post tender				
	Risk identification and analysis				

Contractor	After tendering: Onboarding of Contractor		Repair/Rework in DLP period	-----	-----
	Necessary MOUs, NOCs and permissions				
	Water provision through temporary bore well				
	Electricity provision for implementation				
	Arrangement and schedule of raw material and labour as per project plan				
Community / Marol Urban Forest Organisation	Active participation in stakeholder meetings	Necessary support for composting unit	Formation of MUFO Marol/Mithi Urban Forest Organisation	Organising meetings, workshops, nature walks etc.	
	Necessary support for composting unit		Organising meetings, workshops, nature walks etc	Coordination for compost unit	
			Coordination for compost unit and plant nursery	Coordination for plant nursery	
			Monitoring		