

Lake Dommasandra  
Restoration Project – FY  
2022-24 supported by  
Mphasis F1 Foundation

Impact Assessment Report

*SoStakes*  
Driving Social Value

SoStakes Services Private Limited

# Contents

1. Executive Summary	2
2. Introduction:	
2.1. Background:	
2.2. Corporate Social Responsibility of Mphasis:	
2.3. United Way Bengaluru (UWBe):	
2.4. About the project:	
3. Approach and Methodology:	6
3.1. Objective:	
3.2. Research design:	
3.3. Sources of data:	
3.4. Data collection and sampling:	
3.5. Framework for the study:	
3.6. Profile of sample and study area:	
4. Findings	8
4.1. Relevance:	
4.2. Coherence:	
4.3. Effectiveness:	
4.4. Efficiency	
4.5. Impact	
4.6. Sustainability	
5. Insights/Takeaways:	14
Annexures	15

# Disclaimer

This report has been prepared solely for our Client, M/s Mphasis Limited acting through its non-profit foundation M/s Mphasis F1 Foundation (hereinafter referred to as the “F1 Foundation”) for the purpose set out in our Agreement / MOU dated 06 December 2023, and is not to be used for any other purpose without the prior written consent of SoStakes Services Pvt Ltd. SoStakes does not accept or assume any liability, responsibility, or duty of care for any use of or reliance on this report by anyone, other than (i) our Client, to the extent agreed in the relevant contract for the matter to which this report relates (if any), or (ii) as expressly agreed by SoStakes at its sole discretion in writing in advance. Any person who chooses to rely on the report shall do so at their own risk.

This report is confidential and is not to be copied, disclosed, circulated or referred to in whole or part to any other person and or entity other than those permitted by SoStakes.

SoStakes has not performed an audit and comments in our report are not intended to be, nor should they be interpreted to be, legal advice or opinion.

SoStakes does not make any representation or warranty, express or implied, with respect to the information contained in this report which is selective and is subject to updating, expansion, revision, and amendment. It does not purport to contain all the information that a recipient may require. SoStakes assumes no responsibility for the accuracy and completeness of the information and will not be held liable for it under any circumstances; and further shall not be liable in tort, contract or otherwise for any loss, damage or injury resulting from the use of this information, even if caused by SoStakes's negligence.

In preparing this report, SoStakes

- has gathered material through the internet, research reports, and discussions with personnel on which SoStakes has no control; and
- has used and relied on data from the identified partner/s and associates, including the Non-profit entity, and has not independently verified such information.

By reading the report the reader shall be deemed to have noted and accepted the disclaimers mentioned hereinabove

# 1. Executive Summary

Mphasis F1 Foundation, as part of its CSR, supported United Way Bengaluru's (UWBe) 'Wake the Lake' campaign in FY 2022-23. UWBe is working to restore dying lakes in and around Bengaluru. Mphasis granted INR 1.89 Crore to restore Lake Dommasandra in Anekal taluk, Bengaluru Urban district.

As in many other lakes in Bengaluru Dommasandra Lake was faced with challenges of unchecked waste dumping, sewage water flow into the lake, and encroachment around the lake area, making it severely polluted and threatening the community's well-being.

Lakes support groundwater recharge and flood mitigation, and provide habitats for diverse flora and fauna. Karnataka, an agricultural state, is highly dependent on groundwater for irrigation. Almost 50% of the population of Dommasandra village is dependent on agriculture for irrigation. The area has witnessed a steep decline in groundwater levels in recent years. The lake also serves as a religious and recreational space. However, the unchecked jungle growth, increasing encroachment, and waste dumping prevented residents from visiting it.

UWBe's overall objective is to improve the groundwater table by conserving catchment area, while the short to medium-term outcomes include -

- i. Restoring the quality of water in the lake (cleaning the garbage, effluents and other pollutants),
- ii. Revival of the ecosystem in and around the lake by creating a micro-climate for aquatic flora and fauna and
- iii. To bring about community ownership.

SoStakes has undertaken this Impact study to assess the achievement of targets as agreed in the MoU, verify the contributions made by the project towards the community, and provide critical insights and learnings. The study used a mixed-method approach, relying on quantitative and qualitative data from beneficiaries and key stakeholders. Direct observation was undertaken on-site to verify the reported completion of desilting and other civil works. We surveyed 52 community members to collect primary data, and conducted in-depth interviews and FGDs with key stakeholders for qualitative data. We have analysed and presented our findings using the DAC-OECD framework, which includes relevance, coherence, effectiveness, efficiency, impact, and sustainability.

Restoration of Dommasandra Lake was necessary to address the more significant issue of biodiversity degradation and reduced groundwater tables while also addressing the immediate problems of inaccessibility of the lake, growing waste dumping, and encroachment. The project has been effective to the extent of meeting its target activities. We have observed the desilted and de-weeded lake bed, completed stormwater inlets, main bund, new waste weir, walking path, fencing, gates and benches. The construction efforts have focused on protecting the lake from soil erosion while enhancing its aesthetic appeal. Community members have identified the construction of a walking path, garbage disposal reduction, encroachment removal, and increase in groundwater level as the top positive outcomes post-restoration. Water quality has improved, as per the lab test reports. The team has planted 25000 saplings of native species to enhance local flora. A lake association has been set up for lake monitoring and maintenance. The new lake bed, however, did not fill to its potential in the monsoon of 2023 due to a weak monsoon, and proper inflow of stormwater and outflow from the waste weir is yet to be observed. Also, the two sewage drains continue to enter the lake, and this is a cause for concern amongst the community. During our FGDs with panchayat members, they expressed concern that the sewage inflow in the northeast (next to the entrance) is located next to the BBMP water tank that distributes water to the village. Hence, a piped inlet and sewage treatment plant must be considered to address the issue.

The UWBe team has worked closely with the Panchayat, the electricity department, politicians, and the area Member of the Legislative Assembly (MLA) during the restoration process, especially while dealing with the challenges of boundary marking, encroachment removal, and removal of electricity poles from within the lake area. The team used a robust monitoring mechanism—' the lake scorecard'—to track progress against the abovementioned parameters.

The short-term impact of the restoration can be listed as under-

- Restoration of lake's water holding capacity - increase from 13.81 Cr litres to 18.72 Cr litres.
- Improvement in the groundwater table - **56%** of respondents are already seeing a slight improvement in the water table. Community members have shared that now they can find water in the borewell by digging 20 meters, while earlier, they had to dig almost 30 – 40 meters to find water.
- The lake is more accessible—villagers, especially women and the elderly, can access it now that there is a clear walking path around it.

Takeaways/Recommendations -

- UWBe has based its restoration work on scientific evaluation via a Biodiversity Assessment and has undertaken a thorough needs assessment. This has enabled the project to focus on the ecological and hydrological aspects of the restoration rather than just the recreational aspects.
- All target activities around the lake, except the gazebo and play area construction, have been completed (incomplete works was due to fund constraints owing to higher than budgeted spend in desiltation and fencing). Installation of Board with the donor's name and instructions for visitors has been planned done by March 2024 end.
- A critical area that requires attention is the continued inflow of sewage water into the lake. The UWBe team could not address this issue as the diversion of the inlet outside the lake is outside its scope. A Sewage Treatment Plant needs to be installed to treat this water.
- UWBe has facilitated the formation of the lake association to continue monitoring the lake. However, there is a need to identify a grant source, either from the Panchayat or community members, for the upkeep of the lake.

## 2. Introduction

### 2.1. Background:

Most of Bengaluru's lakes were built in the 16<sup>th</sup> century mainly for drinking water and irrigation, with additional uses like washing, fishing, and other domestic requirements. The lake's freshwater resources positively impacted the microclimate of the city and was a source for recharging the groundwater.<sup>1</sup> However, in recent times, rapid urbanisation has led to severe pollution, biodiversity loss and encroachment of these lakes. The Institute for Social and Economic Change (ISEC), in its study of 40 lakes within the city, found that 95 per cent of them had been encroached upon, 85 per cent had experienced solid waste dumping, and sewage was discovered freely flowing into 80 per cent of the water bodies.<sup>2</sup>

One of the earliest reports highlighting the failure of lake maintenance in Bengaluru was contained in the Lakshman Rau Committee Report of 1986. Since then, various efforts have been made to conserve lakes by the Bruhat Bengaluru Mahanagara Palike (BBMP), Bangalore Development Authority (BDA), Lake Development Authority, the panchayats or the Minor Irrigation and Ground Water Development Authority. However, this governance structure, with multiple bodies and varying responsibilities where local community participation is absent, has been cited as one of the causes of lake degradation. Environmentalists and civil society organisations believe that partnerships between government, NGOs and local communities are essential in restoring and conserving lakes. UWBe's 'Wake the Lake' campaign is thus a partnership between the NGO, the local government – the Panchayat- and the community members to restore the lake and reclaim stewardship over its sustainability.

### 2.2. Corporate Social Responsibility of Mphasis:

Mphasis Ltd. carries out its Corporate Social Responsibility through Mphasis F1 Foundation - an independent charitable trust established in 1998 to support innovative programs that work towards the inclusive development of society. The Foundation focuses on four key areas –

- i. Education,
- ii. Livelihood,
- iii. Inclusion, and
- iv. Sustainability.

The Foundation's sustainability projects include rainwater conservation, lake rejuvenation and conservation, and afforestation initiatives to increase green cover and bio-diversity in and around Bangalore.

In FY22-23, F1 Foundation supported UWBe's initiative to restore Lake Dommasandra in Bengaluru Urban district as part of their 'Wake the Lake' campaign.

### 2.3. United Way Bengaluru (UWBe):

UWBe, part of United Way Worldwide, is a non-governmental organisation (NGO) that works in environmental sustainability, education among children, public healthcare and livelihood. Their flagship campaigns include - 'Born Learning' to provide nutrition and education to very young

children, 'Rural Rising' to empower rural communities, and 'Wake the Lake' to protect Bengaluru's lakes. The organisation is registered under the Karnataka Societies Registration Act, 1960 and is governed by a voluntary Board of Trustees.

United Way Worldwide (UWW) is a 133 years old organisation, making it the oldest charity organisation. They are present in 47 countries with 1800 chapters and raise up to \$6 billion globally annually.

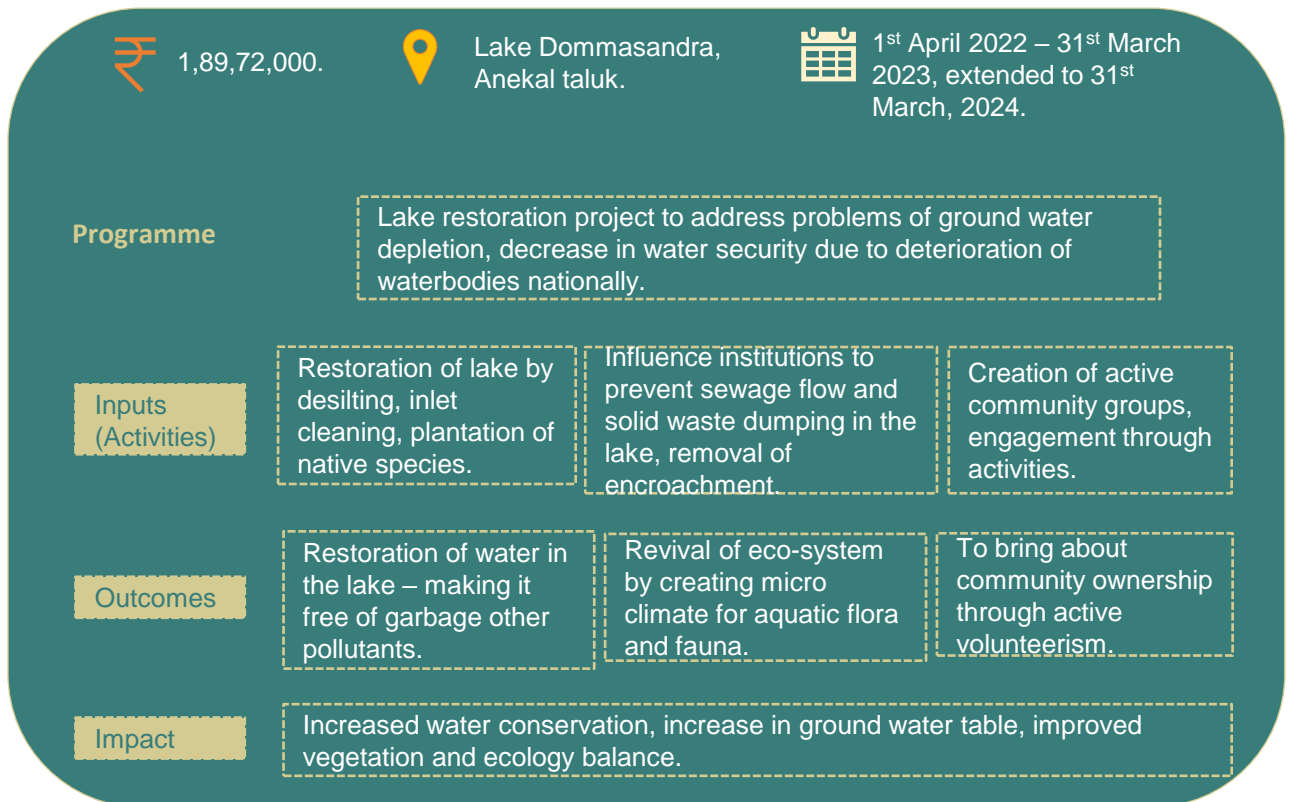
## 2.4. About the project:

### 2.4.i. Restoration of Lake Dommasandra

UWBe launched its campaign in 2011 in collaboration with Bruhat Bengaluru Mahanagara Palike (BBMP) and Gram Panchayats to jointly restore dying lakes in and around Bengaluru. The organisation has restored 41 lakes in the city. Restoration efforts include clearing sewage, improving water quality and green cover, and turning the lakes into active community spaces.

Dommasandra Lake is 39 acres, with around 20 acres of lake body and 19 acres of forested area. It is a man-made lake that is part of a system of interconnected canals that receives the stormwater runoff from the gently sloping terrain around it. The lake has, in recent years, become a dumping space for non-biodegradable waste and untreated sewage from the village has polluted the lake.

Lake Dommasandra Restoration project FY22-23



# Lake Restoration Activities



**Desilting and solid waste removal to increase capacity of the lake.**



**Main bund with 550m toe wall and 18 templates constructed.**



**1700m chain link fencing with 2 coats of synthetic enamel paint set up.**



**Waste weir with new culvert and stone pitching constructed.**



**Wetland (sedimentation pond) constructed at 2 inlets.**



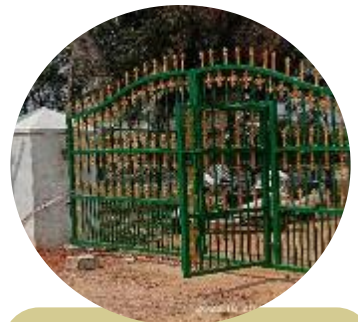
**2 existing Inlets cleaned, pipe culverts built for efficient storm water flow.**



**Walking path constructed with hosakote gravel.**



**4 storm water pipes installed to alleviate issue of waterlogging in nearby areas.**



**Gates installed at 2 entry/exit points, 6 stone benches set up.**





## Approach and Methodology

## 3. Approach and Methodology

### 3.1. Objective:

The IA study objectives are:

- To assess the project outcomes in view of the targets identified in the MoU;
- To determine the contribution towards targeted beneficiaries and community;
- To provide critical insights and learnings that can support future programme implementation.

### 3.2. Research design:

SoStakes has adopted a descriptive study design to capture the project's implementation, outcomes and impact from key stakeholders and beneficiaries.

### 3.3. Sources of data:

Primary Data	Secondary data
Survey (In-person)	Detailed Project Report (DPR)
In-depth Interviews	Biodiversity Survey (Sept, 2022)
On-site observation	Programme Reports/Closure Report
	Soil and Water Test Reports

### 3.4. Data collection and sampling:

We used a mixed-methods approach to collect quantitative and qualitative data from beneficiaries and key stakeholders.

Quantitative data was collected from 52 beneficiaries – community members using a questionnaire survey (QS) method. The QS was semi-structured, and data was collected through face-to-face interviews with community persons in Dommasandra village. Respondents were identified using a random selection method.

Qualitative data was collected from key respondents through In-depth interviews and Focus Group discussions at the field site.

A visit to Dommasandra Lake was undertaken to physically verify the lake's post-restoration condition and the civil works completed under the project.

Sl. No.	Stakeholders	Nos.	Mode of collection
1.	Dommasandra village residents	50	Questionnaire Survey
2.	Dommasandra panchayat members	6	Focus Group Discussion
3.	Lake Association members	4	Focus Group Discussion
4.	United Way Bengaluru staff	2	In-depth interview

### 3.5. Framework for the study:

We have relied on the DAC/OECD standards of Relevance, Effectiveness, Efficiency, Sustainability, and Impact for this evaluation. The OECD (Organisation for Economic Co-operation and Development) standards aim to improve the quality of and strengthen the evaluation process. Evaluation practitioners widely use them to enhance development outcomes.

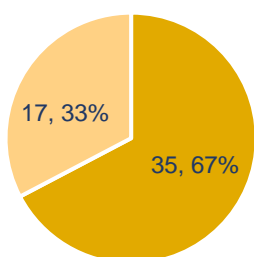
Development) standards aim to improve the quality of and strengthen the evaluation process. Evaluation practitioners widely use them to enhance development outcomes.

OECD criteria	Description	Indicators
<b>Relevance</b>	Is the project adequately responding to the environmental needs of the area?	<ul style="list-style-type: none"> <li>• Pre-restoration condition of the lake,</li> <li>• Need for protection of the lake as per beneficiaries and key stakeholders.</li> <li>• Findings of Needs Assessment Report</li> </ul>
<b>Coherence</b>	Does the intervention fit with other interventions/policies in the sector?	<ul style="list-style-type: none"> <li>• Cohesion of the project with existing policies and trends in urban sustainability efforts.</li> </ul>
<b>Effectiveness</b>	Have the target outputs and outcomes been achieved, and to what extent?	<ul style="list-style-type: none"> <li>• Completion of target activities -desilting and de-weeding, and completion of all civil works.</li> <li>• Achievement of target outputs and outcomes including - restoration of water quality in the lake; revival of the ecosystem; and to bring about community ownership of the lake.</li> </ul>
<b>Efficiency</b>	How efficiently have the projects been managed and resources utilised?	<ul style="list-style-type: none"> <li>• Following standard and established protocols;</li> <li>• Efficient progress monitoring mechanism;</li> <li>• Partnerships with Government stakeholders to achieve objectives.</li> </ul>
<b>Impact</b>	What are the contributions of the beneficiaries in terms of social value?	<ul style="list-style-type: none"> <li>• Improvement of lake storage capacity,</li> <li>• Improvement in ground water levels,</li> <li>• Enhanced biodiversity.</li> </ul>
<b>Sustainability</b>	Will the net benefits of the intervention continue post restoration?	<ul style="list-style-type: none"> <li>• Setting up mechanisms for maintenance of the lake, and protecting it from degradation.</li> </ul>

### 3.6. Profile of sample and study area:

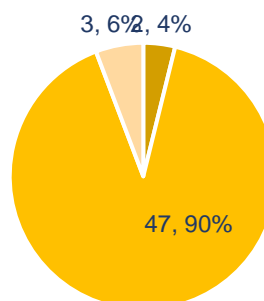
A total of 50 respondents were part of the survey undertaken.

Gender distribution of sample



■ Male ■ Female

Age profile of beneficiaries



■ Adolescent (10 -19 yrs) ■ Adults (20 – 59 yrs)  
 ■ Senior citizens (60 yrs above)

Dommasandra lake is in Dommasandra Gram Panchayat (GP), Anekal Taluk, Bangalore Urban District in East Bengaluru (GPS Latitude 12°52'23"N and Longitude 77°44'57"E). The lake is part of a system of interconnected canals receiving surface runoff. It flows and connects to Sarjapura Lake and the Dakshin Pinakini River. The catchment area is estimated at 4.12 sq. km, and the project area is about 39 acres. The GP

has one village and 13 wards. The GP has 32 elected gram panchayat members. Dommasandra census town currently has a population of 44260 (Census 2011). The population consists mainly of agricultural labourers (growing millet, garden crops), artisan families (silk weaving), and business-dependent families.

The dominant industries are Tarun textiles, Pavan silks and sarees, and Varalakshmi textiles ((DPR report).



Aerial view of lake Dommasandra, Anekal Taluk, Bengaluru Urban District.

**The table below shows the one time water potential of the Dommasandra lake:**

<b>Dommasandra Lake Water Storage Capacity</b>							
S.No.	Name of Water harvesting Structure	Average Length of Water Storage (Meter)	Average Width of Water Storage (Meter)	Average Depth of Water (Meter)	Number of Fillings	Water Harvested (TCM)	Litres (Crores)
1	Dommasandra Lake	519	227.333	3	1	354	35
<b>Total</b>							<b>35</b>



# Findings

# 4. Findings

## 4.1. Relevance:

The residents of Dommasandra village are not directly dependent on the lake for their drinking or other needs, but the lake is of significant cultural and ecological importance to the community. The

**54%** of respondents said they rely on borewell water for irrigation

lake area houses religious shrines and temples that is considered sacred and provides a space for recreation and walks. However, the primary service of the lake, which was brought forth during our focus group discussions (FGDs) with the Panchayat and community members, was its role in ensuring stable groundwater levels. All members talked about the drastic decrease in groundwater levels in recent years. 54% of our survey respondents said they rely on borewell water for irrigation. 33% of the population is dependent on agriculture as

a primary source of income, while another 21% relies on farming as a secondary source of income.

As per the 'Dynamic Ground Water Resources of India-2022 report,<sup>3</sup> the groundwater dependence of agrarian states like Karnataka is high (between 60-100%). Bengaluru Urban, including Anekal taluk, is also one of the over-exploited districts.

Survey respondents highlighted the issue of the absence of walking path and waste dumping in and around the lake. The growth of jungle in the walking areas deterred residents from visiting the lake. Also, dumping plastic and non-biodegradable waste led to heavy pollution. During our FGDs, community members shared that truckloads of waste were being dumped, sometimes even by BBMP waste trucks.

Encroachment of the lake by adjacent resident farmers was another common cause for concern. There was no boundary fence around the lake, making it vulnerable to entry and encroachment. The Lake Association President, Mr. Umesh Babu, shared that around 3 acres of the lake had been encroached upon, with the potential threat of more lake area being lost to other encroachers. Therefore, proper demarcation and fencing around the lake were necessary to protect the lake area.

The community members discussed the loss of biodiversity and the need to enhance flora and fauna, especially local fruit tree species, and flower-bearing trees.

“

*There have been instances when the Panchayat had to spend INR 31 lakhs on water. Now that the lake has been restored, which will help recharge the groundwater, such costs can be avoided!*

“

– Prasanna, Panchayat member.

“

*'Encroachment has always been a serious issue here. After these fences are made around the lake, I foresee the lake's encroachment stopping.'*

– Ambuja, a resident and Politician..

## 4.2. Coherence:

The project is in line with Schedule VII of the Companies Act 2013 -

*(iv) Ensuring environmental sustainability, ecological balance, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining the quality of soil, air and water.*

The initiative also aligns with SDG Goal 6 – Clean water and sanitation for all; Goal 13 – Urgent action to combat climate change and its impacts; Goal 15- protect, restore and promote sustainable use of terrestrial ecosystems.

The Government of Karnataka has mandated the regeneration, monitoring, and conservation of lakes in and around Bangalore city via the Karnataka Lake Conservation and Development Authority (KCLDA) of 2015, which has been superseded by the Karnataka Tank Conservation and Development Authority (KTCD) of 2018 under the Minor Irrigation Department

## 4.3. Effectiveness:

Project activities were planned to achieve the following outcomes and outputs-

### **4.3.1. Restoration of water quality in the lake – making it free of garbage, effluents and other pollutants.**

- Output i. Non-disrupted rainwater flow into the lake.
- Output ii. No dumping of wastes, debris/pollutants into the lake body
- Output iii. Water Body free from floating waste or weeds
- Output iv. Availability of healthy water in the lake

#### **i. Non-disrupted rainwater flow into the lake:**

The lake's two storm water inlets (inlets 1 and 2, located at the western and northwestern borders of the lake, respectively), which are located along a 500-meter stretch, were thoroughly cleaned of silt, weeds, and plastic waste. The team has also constructed four 4-meter-long, 7.5-meter-wide pipe culverts for efficient stormwater flow into the lake.

There are two other inlets (preexisting) in the northeast and northwestern border of the lake, Inlet 4 and 3), which carry sewage water into the lake. The UWBe team has constructed pipe culverts to control this water flow and added sedimentation ponds to arrest the entry of floating debris and fresh sediments/silt into the lake.



*Layout of the lake, Detailed Project Report.*

This sedimentation pond or wetland will also promote flora and fauna, act as a natural filter to cleanse the sewage water entering the lake and improve the water quality.

The diversion of this sewage water is outside the scope of UWBe's project. However, during our discussions, the team, the community, and panchayat members shared a strong need for a sewage treatment plant (STP). This is even more critical where inlet number 4 (northeastern boundary) is located right next to a BBMP water tank that distributes drinking water to the village.

Apart from desilting and cleaning the lake, several civil works have been undertaken to improve the lake's water-holding capacity, stability, and resilience towards soil erosion (see Annexure 1 for detailed list). A boulder stone revetment has been constructed across the Lake bund, island, and critical stretches to strengthen the lake boundaries. A waste weir and box culvert has been built in the southern border to enable outflow of excess water, development of waste weir and Box culvert construction



*Stone built around sedimentation pond.*



*Completed inlet construction.*

**ii. No dumping of wastes, debris/pollutants into the lake body:** During our survey, waste dumping in and around the lake was the second-most cited problem by the village residents. During our FGDs with the Panchayat and community members, the dumping of waste was a critical issue of concern.

The lake bed was desilted using Hitachi transport machinery, and the bed was levelled into a bowl shape of 15 acres. Cleaning and de-weeding were done in this area to ensure unobstructed water flow in the lake. The accumulated waste, including soil, was estimated to be 100 trucks, each carrying 1200 cubic meters of waste.



*Clearing of waste from the lake area.*

Top 3 outcomes post restoration:

- ✓ **100%** of respondents found the newly constructed walking path useful for accessing the lake.
- ✓ **88%** of respondents shared that waste dumping has reduced post-fencing and gate construction.
- ✓ **54%** of beneficiaries felt optimistic about future groundwater recharge and an increase in water level in their wells post-restoration of the lake.



## Outputs/Outcomes



**Water is cleaner** post cleaning and desilting as per pre and post lab test report.

**86%** respondents agree that the lake has been **desilted and weeded well.**



**Waste dumping has decreased**

**considerably.**  
**100%** respondents felt that waste dumping had decreased drastically post-restoration of lake



**100%** respondents believe that **walking pathway built around the lake is very useful .**



**A lake association**

comprising of 13 members has been formed to promote community ownership

**100%** respondents that **the new fencing will prevent encroachment** of the lake area.



The team also meticulously sorted excavated soil to separate organic material from waste. This high-quality organic soil was redistributed to nearby farmers, promoting healthier crop yields. During SoStakes' visit, the lake was clear of weeds in most parts.

UWBe has installed a 6-foot high (and 2 feet into the foundation) barbed wire fence across the lake's periphery (approximately 1700 meters) to protect it. Gates have also been installed at both the lake's entrances and exits.

“

*Encroachment has always been a serious issue here. After these fencings are made around the lake, I foresee the lake's encroachment stopping.*

“

- Ambuja, resident and Politician.

### iii. Availability of healthy water in the lake:

UWBe sent water samples to the laboratory for testing before starting the project and upon completion (Water test reports in Annexure 2 & 3).

Sl. No.	Parameters	Units	Before	After	KSPCB water quality criteria	Remarks
1	pH Value	mg/L	7.62	7.74	6 - 9 for drinking water source after disinfection. 6.5 - 8.5 - propagation of wild life and fisheries. 6.0 - 8.5 for irrigation.	pH level measures the acidic or alkaline level of the water. The pH level has improved making the water less acidic.
2	Biochemical Oxygen Demand	mg/L	9	1	2 or less for drinking water source after disinfecting but without treatment. 3 or less for drinking water source after treatment and disinfection.	BOD represents organic pollution. The test report shows significant improvement, with a decrease from 9 to 1 mg/L.
3	Chemical Oxygen Demand	mg/L	32	8	30 or less, increases with increasing concentration of organic matter.	COD is the measure of oxygen required for the oxidation of all the substance present in water. The report indicates a decrease from 32 to 8 mg/L.
4	Dissolved Oxygen	mg/L	8.3	4.8	6 or more for drinking water source without conventional treatment but with disinfection. 4 or more for drinking water source with treatment and disinfection.	The amount of Oxygen available to living aquatic organisms, has decreased. The UWBe team has explained this as a temporary effect due to reduced water post-cleaning and desiltation, will recover after normal water level in lake is restored.

### **4.3.2. Revival of the ecosystem in and around the lake by creating a microclimate for aquatic flora and fauna.**

UWBE has undertaken a biodiversity survey to document the existing flora and fauna and identify possible intervention areas. The assessment highlighted the lake's condition before the restoration and provided recommendations for enhancing the lake's biodiversity. Based on this, the team has undertaken the plantation of 2500 saplings of native species on all sides of the lake to protect the soil and mud bunds from erosion. These will also provide shade & habitat for bats and birds. The neem and palm tree north of the lake will serve as a pollinator garden for attracting butterflies and honey bees.

The team has also planted water plants such as Cyanodon, Southern Cattail, Cyperus, and Antemanthera in the wetlands near the two inlets to filter and help keep the lake clean and maintain aquatic biodiversity.

### **4.3.3. To bring about community ownership through active volunteerism.**

Public participation in taking ownership of the lake is critical. UWBe has facilitated the formation of The Lake Association comprising of 13 members to liaise with the Panchayat for issues related to lake maintenance, and the association is actively engaged with UWBe to see the completion of the project. However, engagement with the wider community has been limited. 56% of our survey respondents were not aware of UWBe's lake restoration efforts.

During our FGDs, we were informed that community engagement is a continuous process, likely to be actively pursued post-restoration. The lake association intends to organise biodiversity awareness activities for community members and school and college students around the lake premises.

## **4.4. Efficiency**

### **4.4.i. Baseline study:**

The team has undertaken the DPR, biodiversity study and soil test, keeping in mind the need to understand lake topography and local flora and fauna. The biodiversity study will serve as a guide to plantation activities around the lake.

A soil analysis was undertaken to see if the desilted soil could be used in bund construction and if it was fertile for farmers. The soil's silt and clay composition of 26.93% is ideal for horticulture/commercial crops, and it was distributed to nearby farmers for use. Its high sand percentage of 64.61 was also ideal for bund construction, and it was used accordingly.

### **4.4. ii. Monitoring:**

UWBe has created and used a lake scorecard (see Annexure 5) to monitor restoration progress. The scorecard includes scores and remarks against specific parameters categorised under basic civil works, other civic amenities, biodiversity enrichment, and community engagement. At the time of this assessment, the team had logged in three visits – one in July 2022 before the restoration, one in November 2022 at the start of the project, and one in October 2023 after the completion of the project. The scorecard shows a gradual but consistent improvement in actual weighted score % from 9.0 in July 2022 to 30.4 in October 2023.

#### 4.4.iii. Govt. as stakeholder:

The Panchayat was involved from an early stage as a key stakeholder. The Panchayat's support was crucial on issues related to marking the lake boundary and removing encroachments.

The team required Panchayat's approval to remove the electrical poles located in the lake bed.

Partnering with the Panchayat is crucial for projects such as lake restoration.



Meeting with Panchayat officials.

#### 4.5. Impact

**4.5.i. Environmental:** 100% of surveyed respondents felt that the lake's storage capacity and water quality have improved significantly. The restoration efforts have increased the water holding capacity by 4.9 Cr. Litres (from 13.81 Cr. Litres pre-restoration to 18.72 Cr. Litres post restoration). The lake has a maximum capacity of 35 Cr. However, the forested land and island within the lake area could not be cleared for the project.

56% of respondents feel that the rejuvenated lake is already impacting groundwater levels, while 44% feel confident that the project will positively impact groundwater levels. Community members have shared that now they can find water in the borewell by digging 20 meters, while earlier, they had to dig almost 30 – 40 meters to find water.

Lake restoration is intended to lead to carbon sequestration, estimated at 30,000 kg. Plantation efforts (2500 saplings of native species) are calculated to contribute to the absorption of carbon dioxide (52,500 kg) and the production of Oxygen (2,95,000 kg per annum).

*“ Nobody used to come near the lake before. But now, after walking paths are made, around 300 people come for a walk both in the morning and evening. The good thing is that 95% of them are women.*

”

– Palanetra, a resident.

“

*Before the restoration, there was no water even at 30-40 meters under the ground, now we can find water in the borewell by digging 20 meters.*

”

– community member.

**4.5. ii. Social:** The restoration has helped create a space where residents can enjoy nature, partake in recreational activities, and take pride in their surroundings.

44260 people (population of Dommasandra) have benefitted from the restoration project. 100% of survey respondents said they would visit the lake for walking and relaxing.

## 4.6. Sustainability

The UWBe team will officially hand over the completed lake to the Gram Panchayat in April 2024 which will be in charge of its management and maintenance.

The Lake Association, comprising six community members, has also been formed to monitor the lake's everyday affairs. The association members hope to receive an annual maintenance grant from the panchayat body so that activities like weed removal and other small works will be taken care of. During our FGD, the panchayat members expressed a keen enthusiasm for taking ownership of the lake and ensuring that it continues to stay clean and have healthy water.

They also have a plan for regulating visitors' entry to the park by having visiting hours. They believe that the entry gates will keep miscreants and garbage dumpers away.

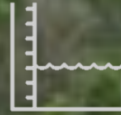
However, community members doubt Panchayat's commitment. 54% of our survey respondents thought the lake would not be maintained in its current condition after its handover to the Panchayat. Additionally, 50% of the survey respondents believe the Panchayat will not allot funds for the lake's maintenance. The lake association members feel that small voluntary contributions from visitors can also go toward the lake's maintenance.

## IMPACT:



Lake storage capacity increased from

**13.81 Cr litres to 18.72 Cr litres.**



**56%** respondents are already seeing a slight improvement in water table.



**Villagers, especially women,** can access the lake now that there is a clear walking path.

**carbon sequestration estimated at 30,000 kg.**



**2500 saplings estimated to contribute in absorption of carbon dioxide (52,500 kgs), production of oxygen (2,95,000 kgs per annum).**

## 5. Insights/Takeaways:

- UWBe has followed established protocols for undertaking a scientific evaluation of the lake through a Biodiversity Assessment and a DPR/needs assessment. This has provided an understanding of the ecological and hydrological aspects of the lake, as well as its many recreational aspects. Therefore, the team's focus has been on both civil works and ecological restoration.
- Activities like building a gazebo, playing area, and gym listed in the MoU could not be completed due to fund constraints caused by higher spending in desilting and fencing. However, these are ornamental additions that do not affect the lake's function. The panchayat/Minor water irrigation can take up these later.
- Branding (Board with the donor's name and instructions for visitors) was a planned activity as per the MoU but has yet to be completed. The team has shared that this will be done by March 2024 end.
- A critical aspect that has remained unattended is the continued inflow of sewage water. Sewage inlets should not be connected to the lake directly without treatment; otherwise, they will deposit silt and waste in the lake's bottom and pollute it again soon. Discussions with key stakeholders have highlighted the need to install a sewage treatment plant for this sewage water.
- Monitoring and maintaining the lake is critical to prevent solid waste dumping and ensure regular weeding and cleaning. Community members do not have faith in the Panchayat to protect the lake. Although UWBe has facilitated the formation of the lake association, it needs the support of the local governance bodies – the Panchayat to sustain the restored lake. UWBe needs to advocate for a resource commitment from the Panchayat/MLA funds for maintenance of Dommasandra lake.