2022-23 IKS SAMVARDHINI YOJANA PROPOSAL

"*Revival of Water Body: An Ecological Reconnection with The Community at Ghamroj Village, Haryana"*

Overview of the project (250 words):

The village of Ghamroj, Sohna Gurugram is one of the many urban villages affected by or expected to be affected by the rapid urbanization and growth of hubs like Gurgaon, Badshahpur, and Sohna. It is one of the several urban villages located in the Sohna tehsil of the Gurgaon district, at the base of the Aravalli hills.

The settlement of Ghamroj Village originally started around the **water body** and then expanded on all sides. However, over the centuries, as the village expanded and urbanized, the community got disconnected from the natural features especially the water body, ***Johd.***

This disconnect was further emphasized when a high wall was built around it and the old trees and the ***chabutras*** and other seating arrangement that encompasses the water body were disconnected physically and visually from the water body. This disconnect expedited the neglect of the pond. The natural slope of the land that brought rainwater from the mountain range into the pond now brings dirty water from the drains. The shallow edges of the water body meant for human interface is now used by cattle to bathe. Plastic bottles and other garbage can be seen floating on the surface.
Through this project, we would like to revive and reconnect ecology, natural land features, contours, and their role in human settlement.

Contribution to the IKS Mission (250 words):

The Indian Knowledge Systems mission is an important initiative that seeks to increase the use of Indian knowledge systems in everyday life. Its primary aim is to promote the use of traditional knowledge systems, such as ayurveda, siddha, naturopathy and other forms of traditional medicine, astrology, music, folklore, and other forms of traditional cultural practices, in order to improve overall health and wellbeing.

The proposed project "***Revival of Water Body: An Ecological Reconnection with The Community at Ghamroj Village, Haryana"*** can contribute to the **IKS Mission** as it is both academic and practical in nature. At academic level the students of school of Architecture and Design of K R Mangalam University can contribute to this project by undertaking preliminary research of the conditions of Jodh of Ghamroj village and do the data collection of the on-ground conditions. This can include research on the history, cultural context, and current practices, as well as how they interact with each other and relate to modern-day life. Such research is vital to understanding how traditional knowledge systems can be properly implemented and used in everyday life.

On the practical level, this project can focus on developing **base case example and a toolkit** for the similar projects that can be taken up in Gurugram region dotted with seasonal and non-seasonal *Jodhs*. Through these interventions the proposed project focuses on education and outreach that help spread awareness about the importance of water and waste management and conservation of resources.

Justification (500 words)

Rapid urbanization characterized by rural urban migration and radical expansion of urban built-up areas has produced a new type of urban neighborhoods called Urban Village. Rapid expansion of

cities encroaching these villages has transformed their rural character and layers of changes due to urbanization and modernity have given them strange Urban-Rural duality.

It is one of the many urban villages that are situated in the foothills of Aravallis in Sohna tehsil in Gurgaon district. It was established in 1198 and has a population of approx. 5000 people with around 842 houses. The completed Gurugram Sohna highway and partially completed Mumbai expressway that transverses the area has improved mobility of the region and several housing condominiums have emerged on the two sides of the highway. The agricultural lands are being procured from the villagers and being developed into residential and commercial hub. **This strange Urban-Rural duality has created a disconnect between nature and the inhabitants of these villages.**

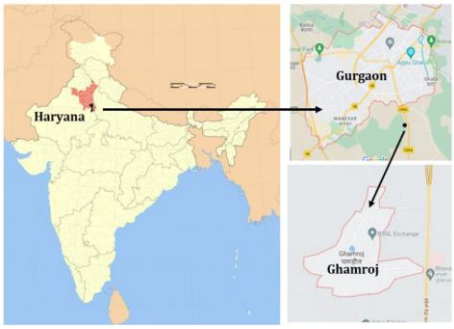


Fig 1: Location of Ghamroj Village

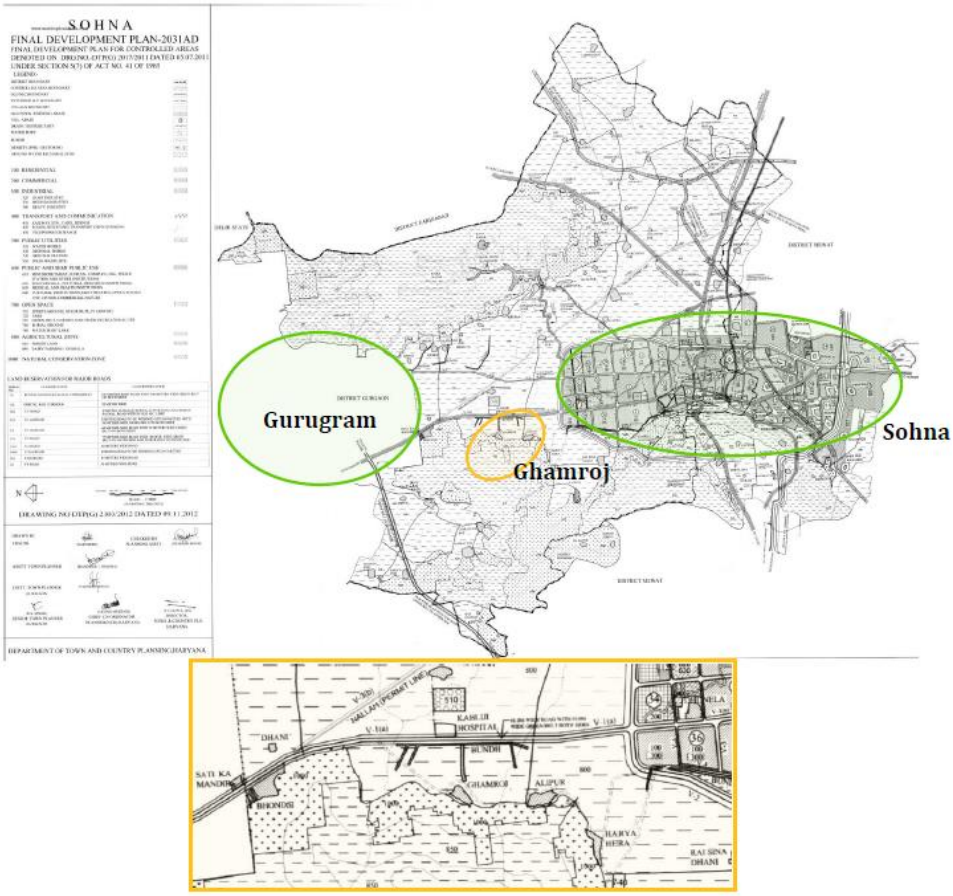


Fig 2: Ghamroj Village in Sohna Master Plan 2031 showing proximity to Gurgaon and Sohna

The settlement of Ghamroj originally started around the water body and then expanded on all sides. However, over the centuries, as the village expanded and urbanized, the community got disconnected from the natural features especially the water body, *Johd.*

The current situation of the Jodh is as such that it is totally disconnected from the civilization and the village population does not care about its existence. They have built a high wall around it the old trees and the chabutras and other seating arrangement that encompasses the water body are disconnected physically and visually from the water body. The pond is neglected to the extent that it now acts as a collection point of the sewage and rainwater runoffs through the drains and the natural slope of the region respectively. The edges of the water body which should have been the part of human habitat is now being used by the cattle to bathe. Plastic bottles and other garbage is causing severe impact on the flora and fauna of the Jodh, which could have otherwise flourished.



Figure 3,4 & 5: Existing condition of the Jodh

Objectives:
To conserve the natural landforms and resources by emphasizing their importance in human settlement and integrating them with human needs like social, visual, functional, economic, and environmental factors.

- To develop an understanding of the natural geographical features and slope of the land and revive them through strategic intervention using natural ways and minimum cost.
- To address the mindset of the rapidly urbanizing and growing population of the villagers and help them re-establish their connection with the water body.
- To enable reconnection of the water body with the inhabitants in a way that **visual, social, functional, environmental, and economic factors are considered while proposing a strategic intervention.**
- **To come up with design proposals in phases to facilitate this reconnection and revival of *Johd* with the community at Ghamroj.**
- **Moving towards sustainable ecological transformation of rural-urban development.**

Project Intellectual merit (250 words):

This project proposes the revival of a water body in order to restore its ecological functions and regenerate its capacity to support natural ecosystems. The revival of a water body would help protect aquatic biodiversity, provide habitat for fish, replenish groundwater supply, improve water quality and reduce erosion and flooding. This project seeks to use an integrated approach, combining

physical restoration techniques with ecologically sustainable management practices. This approach is focused on restoring natural functions, such as hydrology, sediment transport, and nutrient cycling, which have been compromised due to the rapid urbanization.

The project has the potential to make a significant contribution to the field of ecological restoration and reconnecting the community engagement. By restoring the water body to a more natural state, the project could serve as a model for other potential restoration projects. Furthermore, the project will provide extensive community engagement and educational opportunities, raising public awareness of the importance of aquatic conservation and restoration

Project broader impacts (250 words):

Short Term Outcomes:

1. Once cleaned and visually connected with the villagers, the importance of the pond is re-established as the central social hub.
2. Once the importance is realized, the people will cooperate with the local panchayat to keep the pond clean and support all efforts for its maintenance.
3. The garbage disposal points and disposal around the area will also help in conserving the water body and keeping the surroundings clean.
4. Widening of water channels will stop the area from flooding and introduction of filters in the system will keep the water clean in the pond.
5. Additional channel diverting the drain water to the segregated part of the tank will keep the remaining tank clean.
6. The repaving and enhancement of chabutras will help create a better social setting for the community to interact.
7. Plants added for purification of water and enhancement of sitting and walking spaces will also help in keeping the environment clean and green.

Long Term Outcomes:

Over a period, the water body will have an impact on regeneration of the area, better micro climate, enhanced flora and fauna, cleaner environment and eventually integration of the natural resource into the lives of people. The enhanced greenery in the area will uplift the quality of the surroundings of the JODH. By these interventions, the project can help in protection of Aravallis, the oldest mountain range in the region.

Outputs and outcomes of the proposal (250 words): Output/Deliverables:

A. A clean water tank
B. Separate Water Channels for the drains
C. Partitioned part of the water tank for drain water collection.
D. Fenced peripheral partition along roadside.
E. Paving for walkways along the road.
F. Plants introduced along the fence and along the water periphery.
G. Garbage bins- garbage to be recycled
H. *Chabutras* with renewed seating and terracotta paving

Procedures (1000 words): Methodology (Activity/ Tasks)

Stage 1:

1. Survey of the Ghamroj Village through drone-
    a. Slope, terrain, topography, vegetation, and organic growth
    b. Nolli map for population density- real time survey
2. Soil bearing capacity

3. Water testing- PH Testing to measures the acidity of water, Chloride test to check for minerals dissolving and industrial pollution, Pesticides test to measure whether any pesticides are present and their concentration levels.

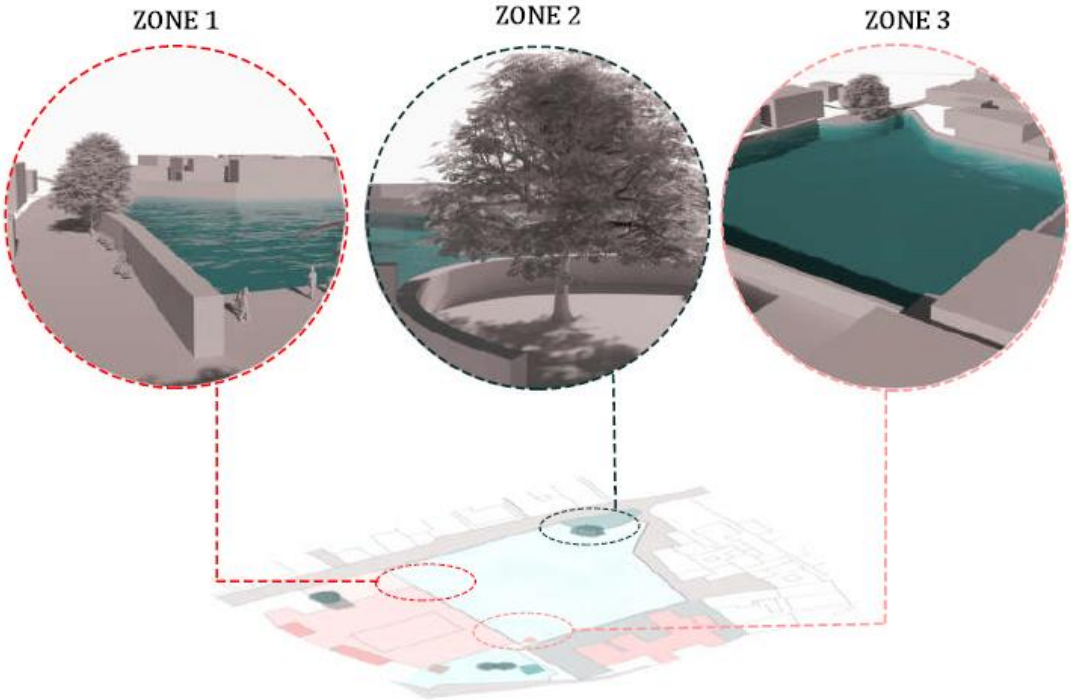
Stage 2:

1. Cleaning up the water body, *Johd* in Ghamroj Village with the help of local community. Introducing aquatic plants and fish in and around the pond to naturally clean and maintain the water in the pond.
2. Creating partition in the water tank for cattle. Making a channel for the drains and leading it to the partitioned part of the pond where water will be treated.
3. Creating visual connection with all *chabutras* and trees in the vicinity by replacing the solid wall with fences in strategic locations.
4. Repaving of the *chabutras* and some walking paths in terracotta blocks around the pond. Widening of water channels and covering them with paving and plantations.
5. Garbage Collection points and their suitable disposal.

Stage 3:

1. Setting up of water filtration units for the water body. (Depending upon the testing of the water, appropriate filtration units can be installed ranging from low-cost technological unit).
2. Installation of solar panels for power generation.
3. Water supply and drainage to be sorted for the entire village of Ghamroj.

DIVISION OF PROBLEMS IN THREE ZONES



ZONE 1	ZONE 2	ZONE 3
1. Drainage system 2. No proper area alloted for parking and cattles sheds. 3. Encroachment of garbage/waste solids along the street.	1. Neglected Chabutras (seating area) 2. Water Ramp populated by solid wastes and drainage 3. water. 3. Disconnection of communities with the pond.	1. Water body is used by cattles to bath hence the impurities in water. 2. No proper dumpyards 3. Pond accumulated by algae formation and polluted with garbages. 4. No maintainance of water pump.

ABOUT THE SITE : JOHD (POND)
Area:
1. Earlier - 5 acres (20,200 sq.m)
2. Now - 1.5 acre (6000 sq.m)
Depth of the pond : 12-14 feet (3.6-4.2 metre)
Population catering around the pond : 3000-4500

North-East : Residential Areas
South-East : Temple Area & War Memorial
South-West : Government School for girls & Parking Area
North-West : Streets & Residential Areas


CHABUTRA
GATHERING SPACE

JOHD (POND)

CHABUTRAS
(*circular seating space*)

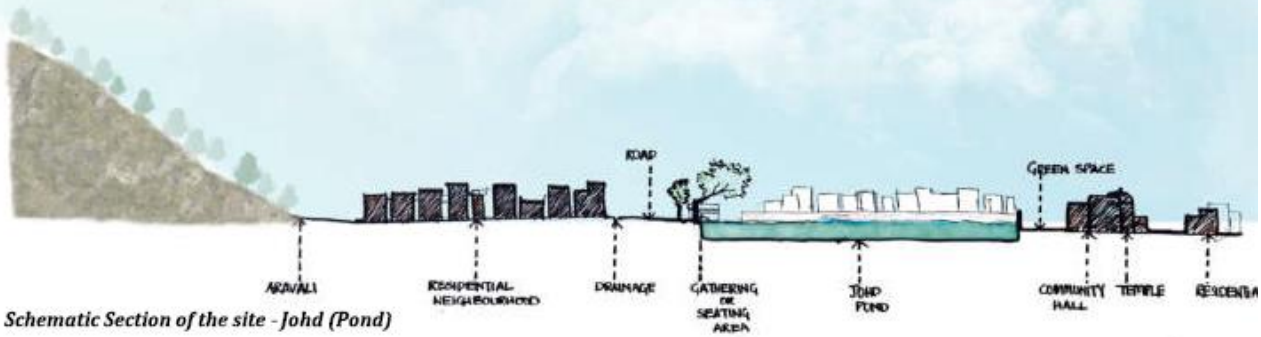
COMMUNITY
WATER CENTER


PARKING / CATTLE
AREA


CHABUTRAS
(*circular seating space*)

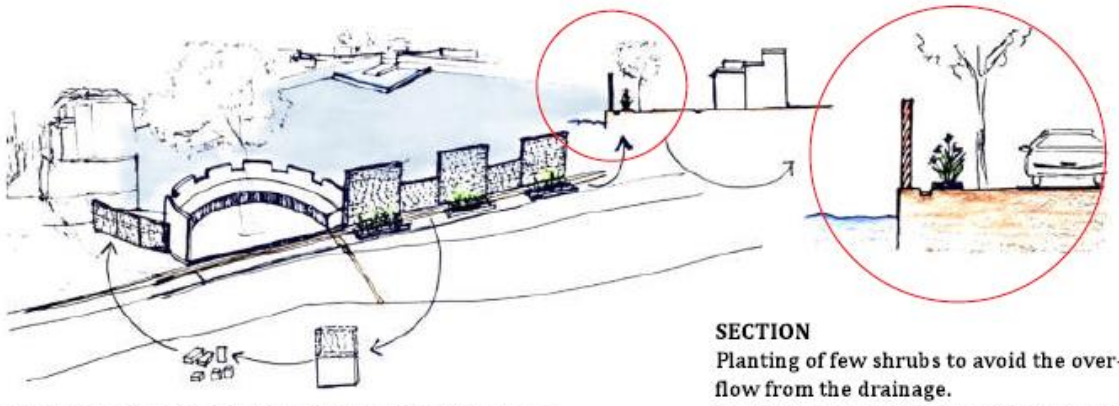

GOVERNMENT
SCHOOL FOR GIRLS


WAR
MEMORIAL



Schematic Section of the site - Johd (Pond)

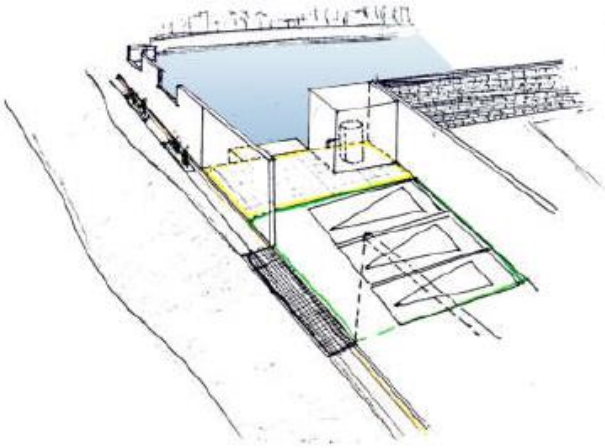
CONCEPT AND DESIGN DEVELOPMENT

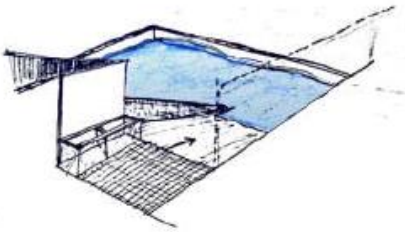


SECTION
Planting of few shrubs to avoid the over-flow from the drainage.
CANNA LILLY -It absorbs potassium and grows

1 Renovating the seating area by making openings so that people can enjoy the view through it .

2 Reusing of the bricks to build a fencing on the existing ramp next to the seating area(chabutra) for prevention of garbage

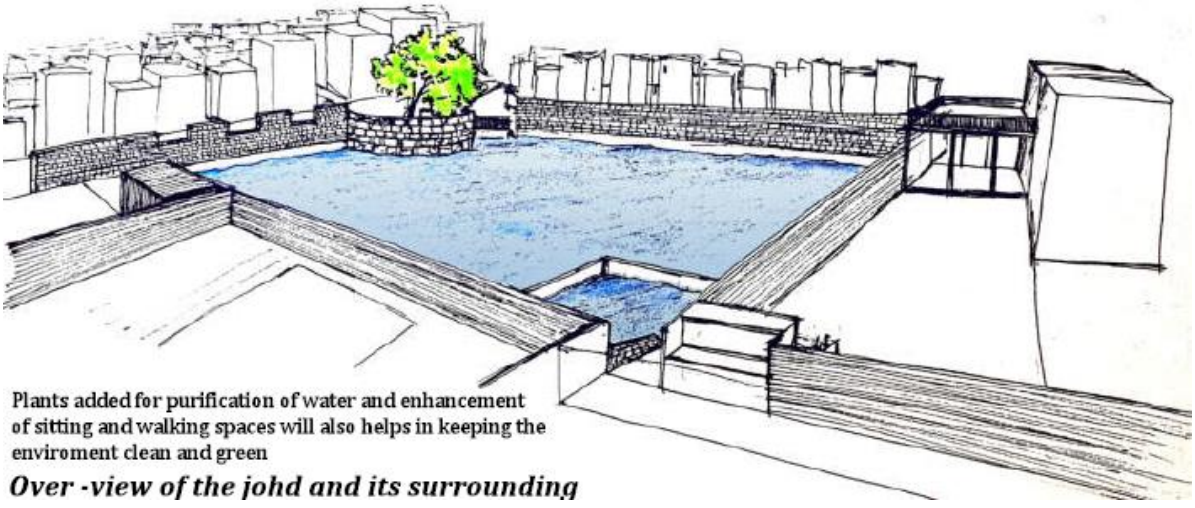




1 Partitioned part of the water tank for drain water collection.

2 Separation of biodegaradable and non biodegaradable garbage.

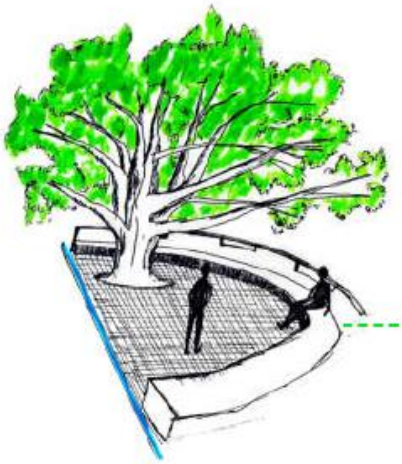
1 Segregating the filtration area from the parking area.
2 cleaning the garbage area.



Plants added for purification of water and enhancement of sitting and walking spaces will also helps in keeping the enviroment clean and green

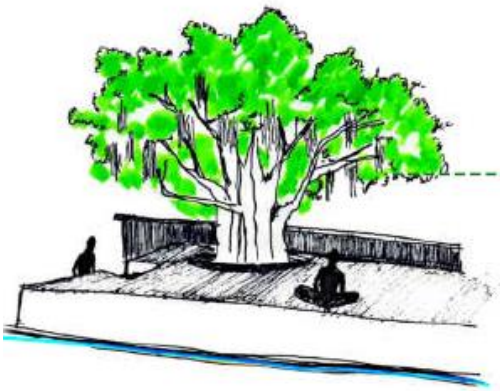
Over -view of the johd and its surrounding

CHABUTRAS - *Reconnecting elements for the communities*



Chabutras with renewed seating and terracotta paving

Chabutra word is a Gujrati word meaning "Pigeon-Tower" or "Pigeon-hole-tower" influenced from the word kabutar (pigeon). In earlier times gurus (teacher) believed that chabutra provides the positive environment which help students to concentrate and keep their mind calm.



It is a structure made up of bricks and stone around a big tree. the purpose of building it is to provide sitting area for villagers and feeding area for birds.

Project team expertise (250 words):

In connection to the fulfillment of the project "***Revival of Water Body: An Ecological Reconnection with The Community at Ghamroj Village, Haryana"*** it shall be taken into consideration that the PI and Co PI of the proposed project are faculty members K R Mangalam University. Being in the proximity of the proposed site of the project the team members have good accessibility to do real time research and monitoring work required for the project. The huge and sound infrastructure such a labs and workshops of K R Mangalam university are at the team member disposal

The Principal Investigator (PI) has extensive experience in conducting projects of architecture and design. She has spent substantial time on working on the Aanganwadi project of Ghamroj village and has proposed promisable solutions for the issues identified in the area. The Co-PIs are an experienced team that have multiple years of experience in both research and teaching. They have co-authored multiple publications in the proposed area and each hold faculty positions in the institution, where they have access to the necessary resources and personnel. They also have experience mentoring students in conducting research, which will be beneficial to the proposed project.

The team has access to facilities and equipment necessary to conduct the research. The PI has access to a computer lab, with the necessary computer infrastructure and storage capabilities. Additionally, the Co-PIs have access to resources of K R Mangalam University, allowing them to conduct research at multiple locations.

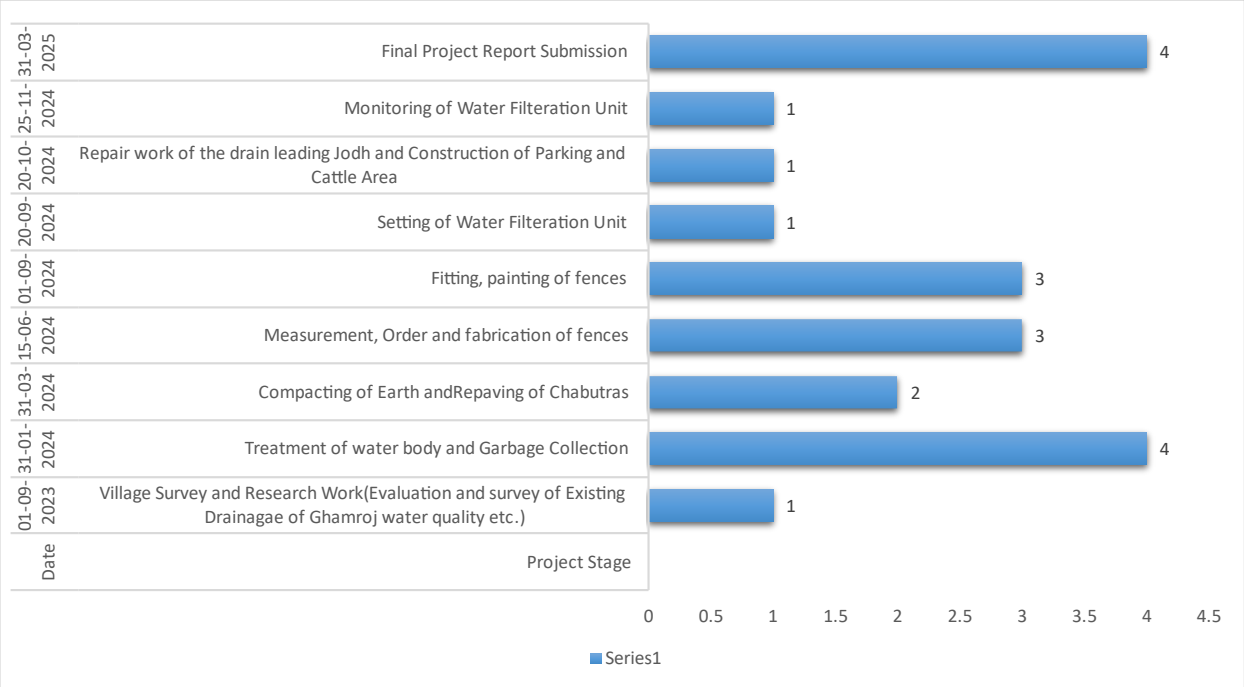
Specific roles of Co-PI(s) and Cooperator(s) (250 words):

Prof. Hemani Singh- Urbanism and community involvement
Prof. Hemani has worked and studied in multicultural environment in India, Dubai and The Netherlands. She has worked on an Urban Development Project that was undertaken for Village Alipur in Haryana where an active interaction was established with the community to understand the social, political, economic, and geographical context of the village. Based on documentation and analysis, proposals were prepared along the lines of protecting the environment through revitalizing the local waterbody (Jhod), understanding the slopes, enhancing community spaces for women and children, establishing gaps in the growing needs of the people, and proposing urban interventions.

Prof. Pankaj Agarwal- Technical and Drone mapping expert
Prof. Pankaj has a good practical exposure & expertise in data analytics, machine learning, computer vision, natural language processing, deep learning technologies. He has completed a similar kind of project as principal investigator in 2020 where we successfully developed multipurpose drone equipped with onboard water & air sampling along with its quality analysis, Agriculture crop surveillance using high definition go-pro camera and Object detection using lidar technology

Ar. Akanksha Singh- Site Execution
Ar. Akanksha has excellent interpersonal skill and knowledge of several 2D and 3D software like Autocad, Sketchup, 3ds MAX and Photoshop etc. She has worked as conservation architect with different reputed agencies like ASI and Wepcos limited. She worked individually with these agencies for site execution as well as in drawing and drafting stages as a team member with other architects too.

Timelines



Project Time Line		
Date	**Project Stage**	**Months**
01-09-2023	Village Survey and Research Work (Evaluation and survey of Existing Drainage of Ghamroj water quality etc.)	1
31-01-2024	Treatment of water body and Garbage Collection	4
31-03-2024	Compacting of Earth and Repaving of Chabutras	2
15-06-2024	Measurement, Order and fabrication of fences	3
01-09-2024	Fitting, painting of fences	3
20-09-2024	Setting of Water Filtration Unit	1
20-10-2024	Repair work of the drain leading Jodh and Construction of Parking and Cattle Area	1
25-11-2024	Monitoring of Water Filtration Unit	1
31-03-2025	Final Project Report Submission	4

References cited *(not included in the page limit)*:

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