

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW
DELHI**

IN THE MATTER OF:

OA No. 391 of 2022

Brigadier Paramjit Singh and Other

...Petitioner

Vs

State of Haryana and Others

...Respondents

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Place: Gurugram
Dated: .03.2023


**Respondent No.5
Deputy Commissioner cum
Chairman Gurujal Society, Gurugram.**

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW
DELHI

IN THE MATTER OF:

OA No. 391 of 2022

Brigadier Paramjit Singh and Other

...Petitioner

Vs

State of Haryana and Others

...Respondents

REPLY OF NISHANT KUMAR YADAV, IAS, DEPUTY
COMMISSIONER CUM CHAIRMAN GURUJAL SOCIETY,
GURUGRAM FOR AND ON BEHALF OF RESPONDENT NO.
5

MOST RESPECTFULLY SHOWETH:

1. That the above titled OA has been filed primarily against the proposed construction of a commercial complex in respect of which, a notification was published by the Respondent No.3 i.e. Haryana Shehri Vikas Pradhikaran (hereinafter in short HSVP) for e-auction to be held on 29.05.2022. Further, it has been prayed for restoration of water body on the land under ownership and control of Respondent No. 3 i.e. HSVP. Thus, grievance of the applicant is mainly against the Respondent No. 3 i.e. HSVP.
2. That the present reply is being filed by the answering respondent in compliance of the order dated 17.01.2023 passed by this Hon'ble Tribunal and the relevant portion of the said order is being reproduced herein below:

"6. The Registry is directed to make requisite amendments in the memo of parties and issue notice to the CEO, Gurugram Metropolitan Development Authority and the Chairman, Gurujal, Haryana requiring them to file their reply/response within six weeks by email at judicialngt@gov.in preferably in the form of searchable PDF/OCR Supported PDF and not in the form of Image PDF."

3. That as per information, the land to be restored as water body falls under the ownership of the respondent No.3 and any work over the land in question is to be carried out by the respondent no. 3 for which the answering respondent is ready and willing to provide its full assistance as and when required by the respondent no. 3.
4. That vide letter no. 5968 dated 09.01.2023, HSVP requested the Gurujal Society to prepare a Detailed Project Report (hereinafter in short DPR) for the development of water body/pond in Sector 41, Gurugram and accordingly, a DPR was submitted by Gurujal Society vide letter no. 31/Gurujal dated 15.03.2023. Copy of the letters dated 09.01.2023 and 15.03.2023 and DPR dated 15.03.2023 are annexed as **Annexures R-5/1 to R-5/3**, respectively.
5. That apart from the above, it is humbly submitted that if Respondent No.3 requires any more assistance from the answering respondent, the same will be provided at the earliest.

In view of the submissions made herein above, it is humbly prayed that present reply may kindly be taken on record. Further, any other direction(s) passed by this Hon'ble Tribunal shall be complied with by the answering respondent in letter and spirit.


Respondent No. 5
Deputy Commissioner cum
Chairman Gurujal Society,
Gurugram.

Verification:

Verified at Gurugram on this day of March, 2023 that the contents of the above reply are correct to the best of my knowledge based on information derived from the office record which I believe to be true. No part of it is false and nothing material has been concealed therein.


Respondent No. 5
Deputy Commissioner cum
Chairman Gurujal Society,
Gurugram.

201

OFFICE OF THE EXECUTIVE ENGINEER, HSVP, DIVISION NO. VI, GURUGRAM
M Block, South City-I, Near Plot No. M-217
Tel:-0124-4255128 Email xenhsvp6ggm@gmail.com

To
The Chairman Cum Deputy Commissioner,
Gurujal,
Gurujal Society, First Floor,
Mini Secretariat, Near Rajiv Chowk,
Gurugram-122001.

Memo No. 5968

Dated. 9/1/23

Sub: - Development of Water body/pond in sector 41, Gurugram.

Ref:- The case held at the NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH AT NEW DELHI O.A. No. 391/2022 in the matter of BRIGADIER PARAMJIT SINGH & Ors. VS. STATE OF HARYANA & Ors.

Kindly refer to the Chief Administrator, HSVP, Panchkula letter Memo No. LR/ADA(M)/2022/202444 dated 02.12.2022 vide which it has been directed to Administrator, HSVP, Gurugram to get the work of development of water body and other infrastructure of the sector concerned started in next 07 days positively. In this regard, guidance/specification/drawing of the development of pond are required. A copy of plan in which pond is to be developed is attached herewith(Total area 4.04 acres).

It is also added that the matter is listed for hearing on 17.01.2023 & the latest status report has to be filed by 11.01.2023.

Therefore, it is requested to guide/instruct or supply particular drawing/specification/DPR for developing of pond so that higher authority can be apprised accordingly.

DA/As Above

o/c
Executive Engineer,
HSVP, Division No. VI,
Gurugram.

Endst. No. 5969, 71, 73

Dated 09/01/23

A copy of the above is forwarded to the following for information and necessary action:-

1. The Administrator, HSVP, Gurugram.
2. The Chief Engineer-I, HSVP, Panchkula.
3. The Superintending Engineer, HSVP, Circle No. II, Gurugram.

o/c
Executive Engineer,
HSVP, Division No. VI,
Gurugram.

HARYANA SHEHRI
VIKAS PRADHIKARAN

REGD NO. 12/2022
12/2022

To

Administrator,
HSVP, Gurugram

502(M)
502(M)
AG(A)

Memo No. LR/ADA(M)/2022

Date: 15.11.2022

Subject: Original Application No. 391 of 2022 titled as Brigadier/IL
Paramjit Singh and ors vs State of Haryana and ors.
(Sector-41, Gurugram)

Refer on subject cited above.

It is intimated that the petitioner has disputed that the water body has not been restored and has impugned the action of HSVP for auction of the plots on the said land. The land is said to be situated in Sector-41, Gurugram. The petitioner has submitted that he has purchased the plot in the area developed by Unitech in South City-1. He has relied on the letter dated 22.04.2018 of Deputy Commissioner Gurugram whereby he asked the Commissioner M.C, Gurugram to prepare the design and estimate for the project of construction of water body/park with constructed portion of community centre of area 3.89 acres in Sector-41, Gurugram.

As per the comments of the Senior Town Planner, the layout plan of the area in question situated in Sector-41, Gurugram was amended vide memo No. CTP/AM/213853 dated 26.10.2018. As per the approved plan of the land in question, there was planned for 02 nos commercial complex site measuring 6751.85 sq mtrs. and 4325 sq mtr. and 1 number multiplex GH site measuring 4000 sq mtrs. HSVP amended its layout plan of the land in question vide memo No. 47921 dated 28.03.2022 wherein 5 numbers showroom (15 x30 m), 4 number showroom (20 x 30 m) and 1 number commercial complex site measuring 6740.58 sq mtrs was planned in lieu of earlier planned commercial area. The reply in the matter has accordingly been filed. Ms. Noopur Singhal, Advocate vide email dated 23.11.2022 has informed that NGT expressed displeasure on late filing of the reply. The reply does not address all the issues raised in the OA and that the NGT has directed:

- a. The concerned officer should attend the hearing with relevant record on the next date.
- b. NGT has directed to file detailed reply in the matter dealing with

esni le se panchkula city - and Hukuk for 2022

planning to do with the said area, whether to revive/restore the water body and green belt or not? If yes, what is the roadmap?

The counsel has requested to provide the details so that detailed reply be filed atleast a week before the next date of hearing.

The Chief Administrator, HSVP has directed that Administrator, HSVP, Gurugram to get the work of development of water body and other infrastructure of the sector concerned started in next 07 days.

Case is listed on 03.01.2023.

(Mukesh)
Assistant District Attorney,
For: Chief Administrator,
HSVP, Panchkula.

Endst No. LR/ADA(M)/2022 202444 Dated: 02/12/22

A copy of the above is forwarded to Chief Engineer, HSVP for information and necessary action.

(Mukesh)
Assistant District Attorney,
For: Chief Administrator,
HSVP, Panchkula.

OFFICE OF THE CHIEF ENGINEER-1, HSVP C-3, SECTOR-6, PANCHKULA
Endst No. CE-1/SE(W)/EE(M)/SDE(W)/HDM(G)/2022/202 Dated: 19/12/2022

A copy of the above is forwarded to the Administrator, HSVP, Gurugram/Superintending Engineer, HSVP, Circle-II, Gurugram/Executive Engineer, HSVP, Division No. VI, Gurugram for information & taking necessary action as per directions of Worthy Chief Administrator, HSVP.

Sh For
Executive Engineer (M),
Chief Engineer-1, HSVP,
Panchkula.
19.12.2022
(SDE/W)

From,
Manager Technical,
GuruJal, Gurugram
To,
Executive Engineer,
HSVP. Division No. VI,
Gurugram

Letter No.: 31 /GuruJal

Date: 15 March 2023

Subject: Preparation of Detailed Project Report for Revival of Pond in Sector 41, Gurugram

This letter is in reference to the Memo No. 5968 dated January 9th, 2023 regarding guidance, specification, drawing of the Development of Water body/pond in Sector 41, Gurugram. For the same revised DPR as per last discussion with Executive Engineer Division No. VI, has been submitted on 15/March/2023.



Manager Technical,
GuruJal, Gurugram

DETAILED PROJECT REPORT

RESTORATION & REJUVENATION OF

SILOKHARA POND

CAPEX: 259.45 LAKHS



GURUJAL, MINI SECRETARIAT, RAJIV CHOWK, GURUGRAM

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Abbreviation

| | |
|--------|--|
| BOD | Biochemical Oxygen Demand |
| CGWB | Central Ground Water Board |
| COD | Chemical Oxygen Demand |
| CPCB | Central Pollution |
| CPHEEO | Central Public Health and Environmental Engineering Organization |
| NGT | National Green Tribunal |
| GMDA | Gurugram Metropolitan Development Authority |
| GoI | Government of India |
| HPWWMA | Haryana Pond and Waste Water Management Authority |
| HSPCB | Haryana State Pollution Control Board |
| HSR | Haryana Schedule of Rates |
| IEC | Information, Education and Awareness |
| KLD | Kiloliter per Day |
| LPCD | Liter per capita per day |
| MCG | Municipal Corporation of Gurugram |
| O&M | Operation and Maintenance |
| SoI | Survey of India |
| SS | Settleable Solids |
| STP | Sewage Treatment Plant |
| TS | Total Solids |

1. Project Background

Restoration and rejuvenation of ponds is one of the biggest challenges in urban and rural areas all over the world with India being no exception in this regard. Restoration and rejuvenation of ponds, though is an essential need for ecological and biodiversity balance point of view, however it has been given low priority compared to other civic amenities such as water supply. This coupled with a lack of financial resources, poor institutional capacity and rapid urbanization have increased the challenges for government agencies, thus creating serious environmental and health problems.

1.1 Restoration and Rejuvenation of Pond

Ponds can be natural or man-made water bodies, which are constructed to store rainwater during the rainy season. Ponds are constructed or naturally depressing area in the villages according to the slopes/gradient where water naturally flows into these, the main reason for the construction of the pond is to collect all the rainwater which falls in the village and use rainwater in the summer season for various purposes like bathing, washing of cloths, drinking water for animals and also for recreational and spiritual rituals of the village.

Restoration and rejuvenation of ponds is a complete process which includes identifying the type of water inflows into the pond, dewatering and desilting of pond, treatment of wastewater (if any) in a natural or a scientific manner with landscaping of pond.

1.2 Need of the Project

Gurugram is one of the fastest growing urban areas in India, the pace at which it is growing causes a lot of degradation to its natural resources. One of the major natural resources which degrade rapidly is its surface water source (lakes/ponds) and groundwater resources. In accordance with different sources, the number of water bodies reported varies from 647 as per Revenue Record of 1956 to 487 as per SoI Report of 1976 and further to 557 as per the World View satellite imagery of 2011-12; which

has drastically reduced to 123 by the year 2018 as per GMDA. The reason for this declining number of water bodies, is not natural. as large number of water bodies are encroached on by the public, in few pond site constructions take place and, in some areas, due to infrastructure development. In some areas, rainwater from the catchment area will not able to find its way to these water bodies and the remaining water bodies receive wastewater from the nearby areas which ultimately degrades the quality of the water body and the aesthetic of the area.

1.3 Aim of the Project

The aim of restoration and rejuvenation of pond is to prevent their further degradation and ensure their wise use for the benefit of environment and local communities for recreational purposes. Water bodies will function as spaces for development of open space greenery which provide for a range of micro natural habitats for flora and fauna.

1.4 Objective of the Project

- ✓ Restoration and rejuvenation of degraded pond for recharging aquifers of the area;
- ✓ Control of pollution of pond and uncontrolled discharge of wastewater and dumping of solid waste;
- ✓ Conservation of flora and fauna;
- ✓ Development of surrounding areas of pond with suitable flowering plants/medicinal plants/shrubs/ climbers;
- ✓ Enhancing natural beauty and providing a green space for enriching the spiritual, aesthetic and social life of villagers.

1.5 Project Deliverables

The project deliverables will include establishing project rationale, estimating project cost, financial structuring, phasing, O&M framework and planning, determining financially viable & suitable model and establishing institutional framework. These project deliverables will ultimately achieve the following goals:

- ✓ 100% treatment of wastewater falls into the pond;
- ✓ Creating and sustaining a supply chain for treated wastewater;
- ✓ Sustainable model and institutional framework;
- ✓ Measures for the involvement of all stakeholders;
- ✓ Information, Education and Communication (IEC) campaign models and enforcement plans.

1.6 CPCB Guidelines

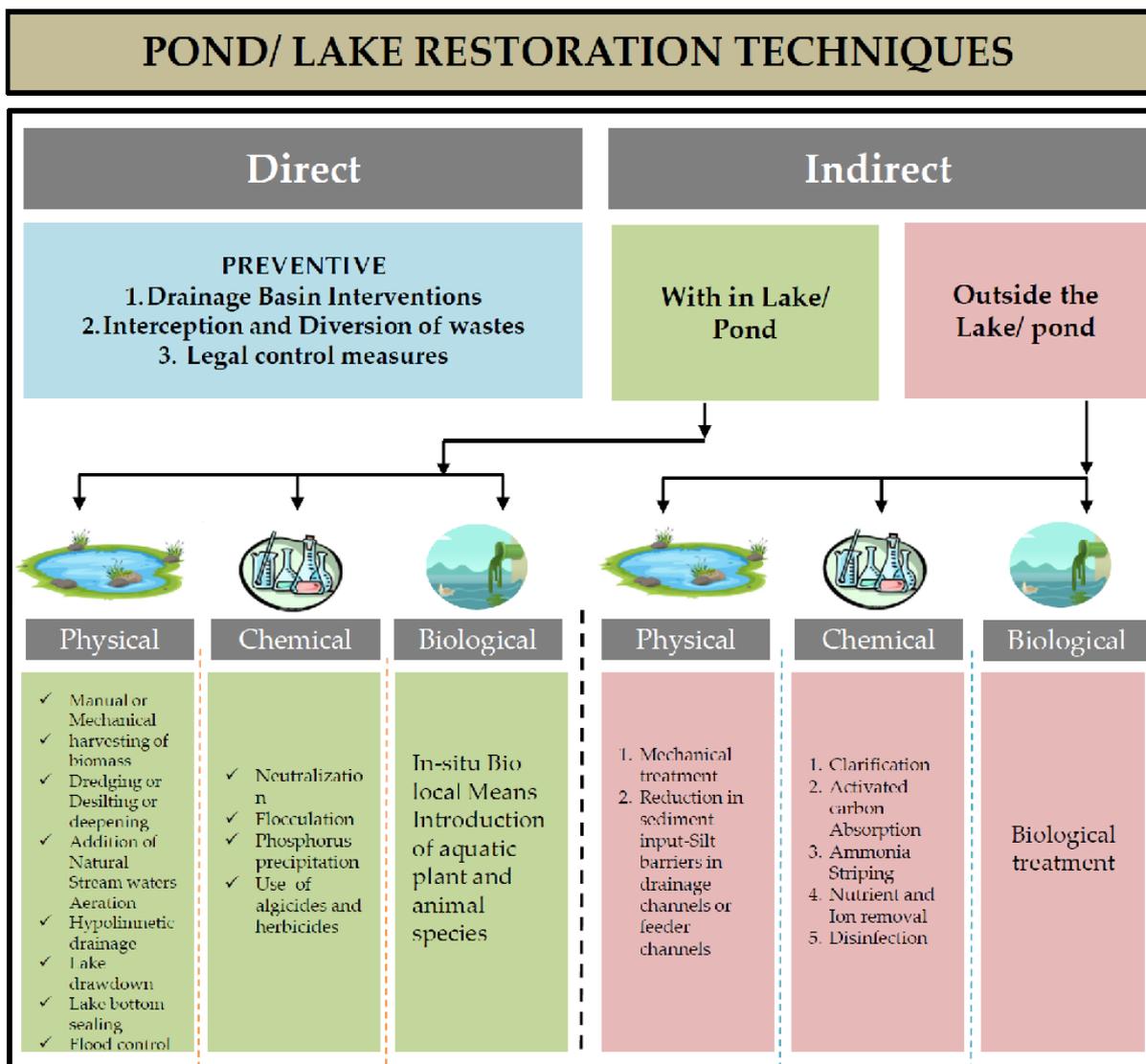


Figure 1: Process for restoration & rejuvenation of waterbody as per CPCB guidelines

1.7 Project Methodology

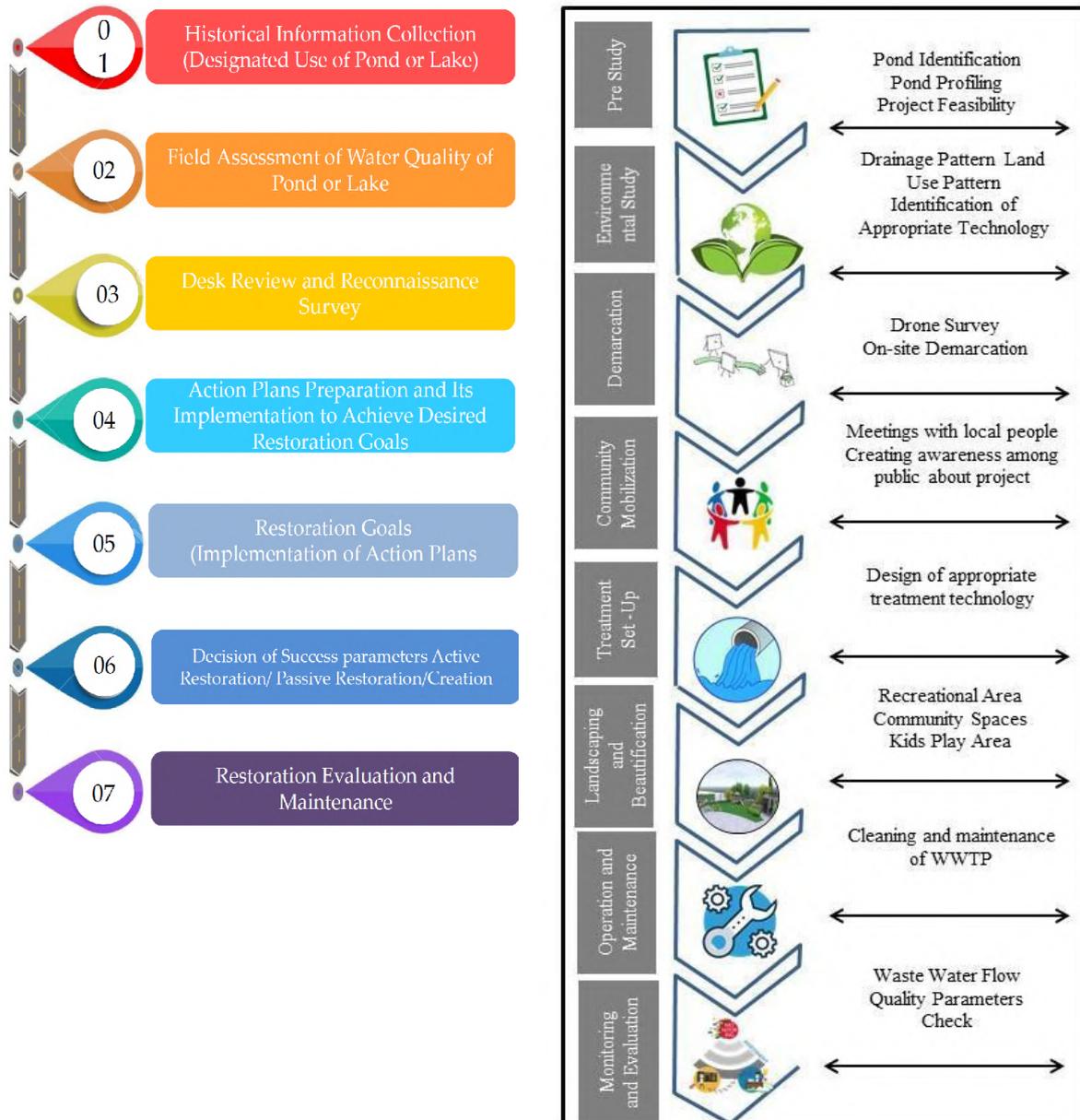


Figure 2: Methodology adopted for Silokhra pond

2. Introduction to Project

2.1 District at a glance

Gurugram district is in the Indian state of Haryana. Gurugram district is adjacent to the National Capital Delhi surrounded by Faridabad, Rewari, Mevat, Jhajjar and Palwal districts of Haryana. It lies between 27°39'00" North and 28°32'25" North latitudes and between 76°39'30" East and 77°20'45" East longitudes. It has a geographical area of 1258.00 square kilometres containing 976.65 square kilometres of rural areas and 281.35 square kilometres of urban areas as per Census 2011.

The district is located in the south-eastern bulge of the State and is having common borders with Delhi State in the North. Jhajjar district lies to its West, Rewari district to its South-West, Mevat district in South, Palwal district in South-East and Faridabad district makes Eastern boundary with the district. Gurugram district is divided into the four administrative blocks namely Gurugram, Sohna, Farrukh Nagar and Pataudi.

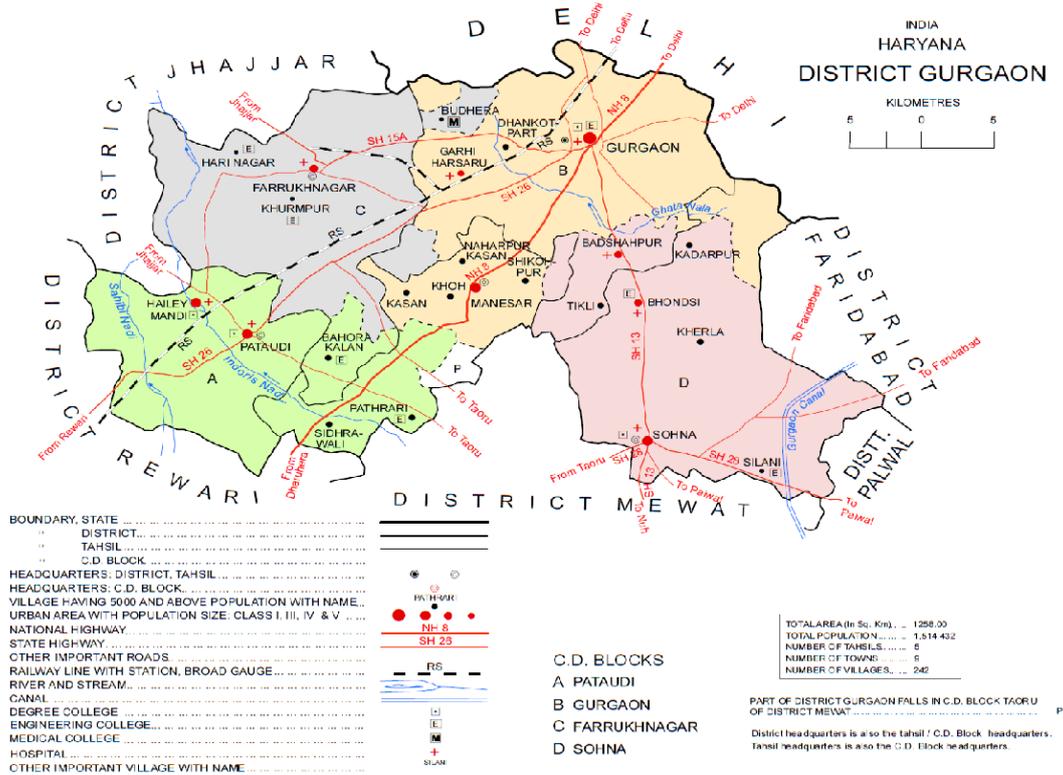


Figure 3: Gurugram District Map

There is a total of 6 urban areas in the district which consists of 2 Municipal Corporations (Gurugram and Manesar), 1 Municipal Council (Municipal Council Sohna) and 3 Municipal Committees i.e., Hailey Mandi, Pataudi and Farrukh Nagar and a total 158 Gram Panchayats. Gurugram is conveniently located with boundaries touching Delhi, Rajasthan and Uttar Pradesh, and enjoys excellent connectivity with other states via Delhi-Jaipur-Ahmedabad broad gauge rail network and National Highway-8 (Delhi-Jaipur Highway). Gurugram is one of the fastest growing urban area in the State, due to its phenomenal growth in all sectors of developments specially in industry and urbanization. Today, it has become hub of multinational companies, industries giants, helpline centres, software companies, shopping malls and skyscrapers. Gurugram is also the home of India's largest to automobile companies namely Maruti Suzuki and Hero Moto Corp. Due to rapid urbanization, industrial development and growing population lead to pressure on the natural resources and existing infrastructure of the district.

To meet the water demand of the people of Gurugram and its floating population new infrastructure has been developed quite significantly, which is very good in term of economic opportunities and revenue generation. But in terms of natural environment most of its green cover, ridges and water bodies of the district decreased drastically. In Gurugram district there is no perennial river, only two seasonal rivers flowing in the district namely Sahibi and Indori river. Both the rivers receive the water during the monsoon from the Aravalli Hills. But in current scenario both these rivers have been diminished due to encroachment by residence living in the catchment area of the river. As no fresh water source for water supply in Gurugram, Gurugram is totally depends on groundwater and Yamuna Canal for fresh water supply.

2.2 Importance of Ponds

Ponds are natural and man-made water bodies, which are constructed to store the rainwater during the rainy season. ponds are constructed or naturally depressing area in the villages according the slopes/gradient where water naturally flows into these,

| PHYSICAL DESCRIPTION | |
|---|--|
| Name of Pond | Silokhra pond |
| Location & Landmark | Near Peer Baba ki Mazar |
| Block | Gurugram |
| Tehsil | Gurugram |
| Distance from Gurugram | Approx. 7 KM |
| Latitude & Longitude | 28.461870 & 77.062546 |
| Area of Pond in acres | Approx. 4.07 acres |
| Area of free space in acres | Nil (Area is plain) |
| Mean depth in meter | Nil |
| Type of pond a) Wastewater b) Freshwater | None |
| Current status of pond a) Polluted b) Dry c) Encroached | a) Backfilled |
| Source of water (inflow) a) Rain fall / Runoff b) River / Canal c) Wastewater drains d) Treated water from WWTP | a) Rainfall / Runoff Recycled water from GMDA |
| Is there any outflow from the pond (Yes/No.? If yes, describe) | No |
| Groundwater Level | Approx. 35 mbgl |
| Are there any river/canal/ major open drain passes within a radius of 2-5 km of the water | No |
| Does pond dry out completely? (frequency) a) Throughout the year b) During summer season only c) Rarely/Never | a) Throughout the year |
| Catchment area of the pond in sq.km. a) Hilly area | a) Plain (approx. 0.5 sq.km.) |

| | |
|--|---|
| b) Plain | |
| Land use of the catchment area a) Residential b) Agriculture c) Commercial d) Industry e) Forest f) Mining | a) Residential b) Commercial |
| Total Population (as per Census and if possible, provide current population of village) | 7715 + |
| No. of household whose waste water goes to the pond | Nil |
| Is the pond used by animals for drinking and bathing? | No |
| Type of flora and fauna around the pond | Keekar, Bargad, Neem |
| Picture of the pond from different angles (to cover entire pond) |  |
| Ownership of the land a) MCG b) MCM c) HSVP d) Panchayat e) Private | a) HSVP |
| Khasra number covered in the land | 0//26 |
| Source of water at village/nearby of settlement a) Tube well / Submersible b) Wells c) Canal water d) Piped water supply | a) Piped water supply b) Water Supply Tanker |

| | |
|--|---|
| e) Water Supply Tanker | |
| Landscaping around the pond | Currently, there is no landscaping around the pond |
| Can pond be used as active urban and public space? (Yes/No. If yes, describe) | Yes, after restoration and rejuvenation |
| Are there any construction activities going on near the pond | No |
| FUNCTIONS OF THE POND | |
| Is the pond used for any of these? a) Agriculture b) Horticulture c) Water for construction activities d) Fisheries e) No use | a) No use |
| Function of the pond a) Groundwater recharge b) Flood mitigation c) Tourism d) Support biodiversity e) Influence micro – climate f) Socio – cultural g) Aesthetic | a) Groundwater recharge b) Support biodiversity c) Socio – cultural d) Aesthetic |
| SOURCE OF POLLUTION & PROBLEM | |
| Does solid waste dumping take place near the pond? Yes/No. If yes, a) Biodegradable b) Non-Biodegradable c) Construction and Demolition Waste d) Electronic waste e) Hazardous Waste f) Religious idols | a) Non – Biodegradable b) Construction and Demolition waste c) religious idols |
| Source of pollution in the pond a) Domestic sewage b) Industrial effluent c) Agriculture runoff d) Open defecation e) Cattle wading | Currently there is no source of pollution |
| Major Problems | a) Encroachment |

| | |
|---|--|
| <ul style="list-style-type: none"> a) Reduction in area b) Encroachment c) Deposition of silt d) Solid waste e) Aquatic weeds f) Decline or loss of fisheries g) Eutrophication h) Organic pollution i) Toxic pollution | b) Solid waste |
| REMEDIAL MEASURES | |
| Are local communities aware of the problems of the pond? | Yes |
| Are local communities interested in the restoration of the pond? | Yes |
| Are there active local conservation groups or NGOs that are interested in the pond? | No |
| Any measures taken in the past to restore the pond? | No |
| Is it possible to source good quantum of rainwater/treated water throughout the year? | Yes |
| Restoration activities required <ul style="list-style-type: none"> a) Improvement of water quality by in- situ treatment b) Diversion and treatment of sewage c) De-siltation for removal of organic/toxic sediments d) Weed removal (Water hyacinth) e) Catchment area treatment for runoff | b) Catchment area treatment for runoff |

2.4 Current Situation of Pond

During the primary site visit at the pond site, it was observed that currently there is no water body present at that particular area, i.e. pond is completely backfilled by construction and demolition waste or by filling of sand. Currently, pond area is flat land, and lot of invasive species of plants surrounding the area. There are three

worship place which falls under the site area. Also, there is small pond excavated near the temple for worship which is being filled by fresh water; currently there is no water in it.



Figure 5: Current situation of pond



Figure 6: Worship place within the boundary



Figure 7: Solid waste dumping within the boundary



Figure 8: Invasive species within the boundary



Figure 9: Creation of small pond for worship

2.5 Source of water

There will be the treated water from GMDA recycled wastewater supply pipeline. For the revival of the pond water will be diverted from external sources to maintain the water in the pond.

3. Project Proposal

For restoration and rejuvenation of pond at Silokhara village, it is important to divert the rainwater from the surrounding areas in addition to this treated water from GMDA recycled water network will also be needed to maintain the water balance of the pond.

3.1 Proposed Intervention

For restoration & rejuvenation of water body in Silokhara village, first parameter will be the identifying the source of water for the pond which will be rainwater and treated water. Rainwater from the catchment will be diverted to the pond but it will not be sufficient for the entire year as it will percolate into the ground which will be helpful in recharging the aquifers of the areas. To make the water in pond perennial treated water from the GMDA water supply line. Treated water will be flowing through the 3 consecutive bio swales which will act as natural ways to treat the water.

The water flow scheme has briefly been outlined below-

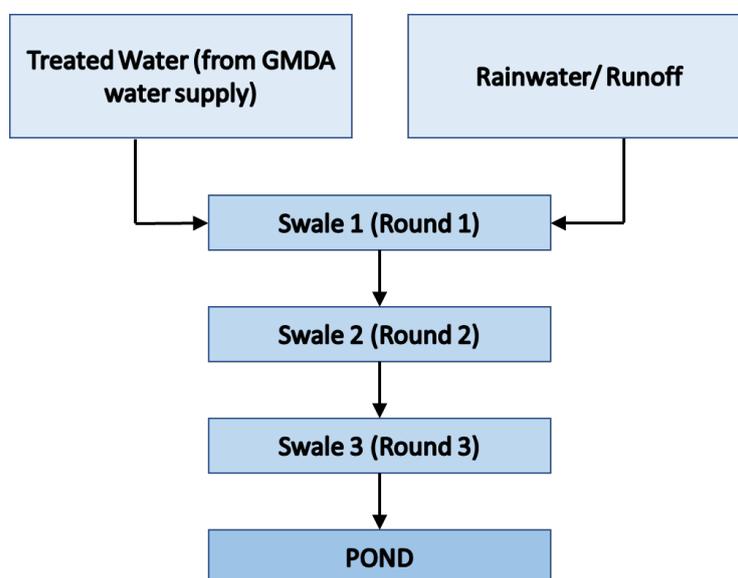


Figure 10: Water Flow Diagram

Continuous monitoring will be carried out on a periodic basis to check the quality of inlet and outlet water that it will be meeting the designed guidelines. Before discharging the treated water, pond will be excavated and invasive species will be

removed from the site and native species will be secured on sites. To avoid the soil erosion at site majorly the pond embankment area, geo coir will be placed on the embankment. This will help in reducing the soil erosion and maintain the aquatic life in the pond. In addition to this fountain will be proposed for proper aeration into the pond which will avoid the eutrophication into the pond. After this fencing will be done to secure the pond area and avoid further encroachment at site.

3.2 Landscaping of the Pond

Landscaping and beautification are the last work which must be executed on the ground under the restoration and rejuvenation of pond. Landscaping and beautification are not only planting the flora but is also creating a Biodiversity zone around the pond area. Major reason of biodiversity loss in any area is Habitat destruction, overexploitation of natural resources like water, Climate Change, Pollution and invasive species. So, to maintain the biodiversity/species richness we must focus on these issues.

In pond site we leave as many native plants undisturbed as possible, and landscape using native trees and vegetation. Native plants are well adapted to local conditions and provide a low maintenance and have positive impact on fauna population. Landscape and garden planning were the most essential features of the town planning of ancient Indians. Our ancestors were worshippers of nature. Water and trees, therefore, had unique importance in ancient Indian architecture. A well laid out garden formed an inseparable aspect of a temple since Hindu Gods loved the proximity of water and flower-bearing trees/plants. Several varieties were held sacred because of their aesthetic and sanitary potential. One of the design team's main goals was to connect the life of the village to the growing recreational use of the pond itself and to revive the importance of water and nature from ancient India to the present and future.

The main purpose of landscaping is to create a joyful environment around the pond and give the residents a healthy atmosphere, good appearance, and natural beauty but also adopting the sustainable measures to use our resources efficiently, to maximize the rainwater retention and to reduce the heat island effect further reducing the overall energy consumption plays an important role. Another important goal of the landscape is to rejuvenate the spaces, or water bodies which were then treated as a dump yard or an unsafe site to transform into socially active public spaces.

3.2.1 Aim of the Landscaping

- ✓ To create a biodiversity zone around the pond area to sustain local natural life.
- ✓ To maintain the Cultural and Aesthetic values of villages.
- ✓ To improve the quality of water by using natural ways like a plantation, aeration can be done or by channelizing the water to increase the retention time of water.
- ✓ To educate or provide knowledge to the local community.

3.2.2 Benefits of the Landscaping

- ✓ It decreases the concretization of the land.
- ✓ Decrease soil erosion.
- ✓ Capture the suspended solid present in the atmosphere.
- ✓ It reduces the noise level.
- ✓ A good landscaping of an area improves the micro-climatic condition of that area; during the summer season the temperature of the area where large number of trees are planted have cooler temperature than the ambient temperature of that area.

3.3 Work Execution Plan

The design started with the background research about the site, surrounding of the pond, local activities, kind of open spaces already present. Rejuvenation of the pond started with the idea of providing different kind of spaces to host all kind of people

and also having flexible spaces which can be transformed for festival fairs, events etc. In our country, water has always been a social space and the prime focus was to provide the walkway and cycle path to maintain the healthy lifestyle and create play areas for the kids. The project focuses on perfecting functions with a limited cost. It mainly solves those problem existing contradictions between people and pond, reducing the dust and noise and activating the potential charm of the venue.

Through the design method of landscape natural creation, the site will be open, active, ecological, and healthy. It conveys the message of human care, which is both a practical place to stay and to encourage dialogue and healing space to help patients recover. The aim of Silokhara pond landscaping design has been to transform an anonymous pond into a place of significance, a place in which, and from which, to enjoy the grandeur of the surrounding landscape. It is a place to gaze at the pond and enjoy its flow and reflections through the variations of all four seasons.

Aim is to provide spaces for different kind of users, like social and cultural space, Kids play area, to attract more and more people choose to stay here. It has become a place to provide emotional, social, and practical support for neighbourhood. It is like an open park for everyone. Let people improve emotional discomfort, get maximum relaxation, and cure.

For some it's a space to play, for some a place to contemplate, a place to find solitude or a place to be in community. For others it's a means of access or a place to exercise. A new market, concerts, yoga classes, boot camps, meeting friends to eat together, all occupy this space. Sitting down in the park and overhearing both young and old as they discover it for the first time is a real joy. As an architect, these projects built for the pleasure and enjoyment of the public, prove especially satisfying to contribute to the society and nature.

Fauna population is not in any area is majorly depends on what type of plants is present in a particular area like, in case of butterflies for their survival they need two

types of plants first, in which they lay their egg and second any flowering plant from which they take nectar (food). we have also tried to make pond an important focal point, and an amalgamation of different activities including social, cultural and play zone. Where the pond becomes the social piazza as a multi-functional space which is able to host local fairs, markets, and events, to the enclosed green cultural space with seating leading to the kids play area and open gym.

Flora of any area play is also playing an important role to improve the environment quality of the particular area and even the adjoining areas. Flora not only gives us the pleasant and aesthetic pleasure but also removes the particulate and suspended matters present in the atmosphere and gives us the fresh air free from pollutants. Flora also attracts directly and in directly many species of the birds and reptiles even the native as well as the migratory species. Master plan layout of Silokhara is shown in the figure and detailed drawings along with list of plants are attached.

3.4 Information, Education and Communication

Information, education and communication is an approach which attempts to change or reinforce a set of behaviour in a target audience regarding a specific problem in a predefined period of time.

Community participation is the one of the major tasks for the success of any project, through the community participation any project can be successes and without their participation it will fail.

In Silokhara pond IEC activities have been planned for the villagers to educate them about water and wastewater management, importance of rainwater harvesting, impact of solid waste dumping in the water body, impact of ground water extraction, importance of pond and their function in the surrounding areas.

3.4.1 Process

- ✓ Select any topic of interest in water management, solid waste management, or any environment related by the community and nearby school college according to their age.
- ✓ Form a small group and make a small presentation or any innovative video.
- ✓ Coordination with HSVP, MCG and GuruJal, regarding any further suggestion.
- ✓ Coordination with teachers and RWA with respect to time and topic of the planned activities.

3.4.2 Topics

- ✓ Water conservation
- ✓ Where the water comes
- ✓ Solid waste management
- ✓ WASH
- ✓ Story telling
- ✓ Environment conservation
- ✓ Case study
- ✓ Saving water on day to day basis
- ✓ Water chart (use of water in the entire day)

3.5 Project Sustainability

In India treated sewage is being used for a variety of applications such as farm forestry, horticulture, toilet flushing, industrial use as in non-human contact cooling towers, fish culture and indirect and incidental uses (CPHEEO manual).

Sustainability of the restoration and rejuvenation of pond project is very big task. Because of budget constraints, O&M of the project is quite difficult to overcome this project should be self-sustainable so that O&M cost can be easily recovered by the project itself. The project can be self-sustainable in many ways depends upon which type of technology is used for the treatment of wastewater and also overall maintenance of green area. In this case, we are taking treated wastewater and

continuous monitoring will be done to oversee the quality of incoming water and water in the pond. Beside the technical intervention all the restoration and rejuvenation of pond project must prepare a water utilisation plan of the pond.

3.5.1 Water Utilisation Pond

At present pond does not receive any runoff during the monsoon season and waste water from the surrounding catchment area (pond is backfilled). After analysing the current situation and interview with locals to restore the pond following points needs to considered:

- ✓ **Creation of the pond:** Excavation will be done at pond site within an area of 6130 sq.m. Capacity of the pond will be approx. 18,390 cum.
- ✓ **Levelling of the Pond:** Levelling will be required at the pond site and also drainage system will be preparing along the pond to carry the runoff from the catchment to the pond.
- ✓ **Creation of Bio-Swales:** The treated water will flow through the 3 consecutive rounds along the pond which will increase the travel time of water and make the impurities settle down when it flow through gravels/ boulders.
- ✓ **Diversion of Treated Wastewater:** Minimum 150 KLD of treated wastewater will be diverted to the pond to maintain the pond ecology.

Pond water utilisation plan is prepared to highlight the quantum of treated water that can be utilised in different-different ways:

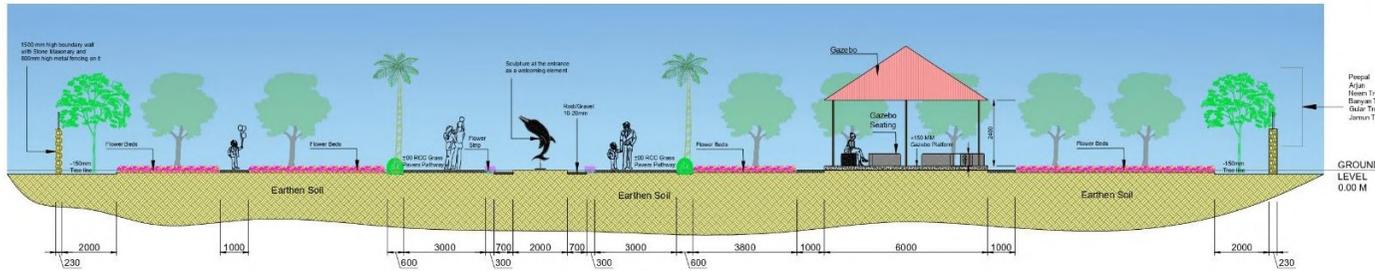
- ✓ Quantum of water percolated into the ground (helps in increasing the ground water table of the area);
- ✓ Evaporation loss;
- ✓ Usage of pond water in other activities (like horticulture, construction, industrial purpose etc.)

- ✓ The importance of water utilisation plan is that it gives an idea of how much revenue can be generated by selling the treated water in various streams of water usage.

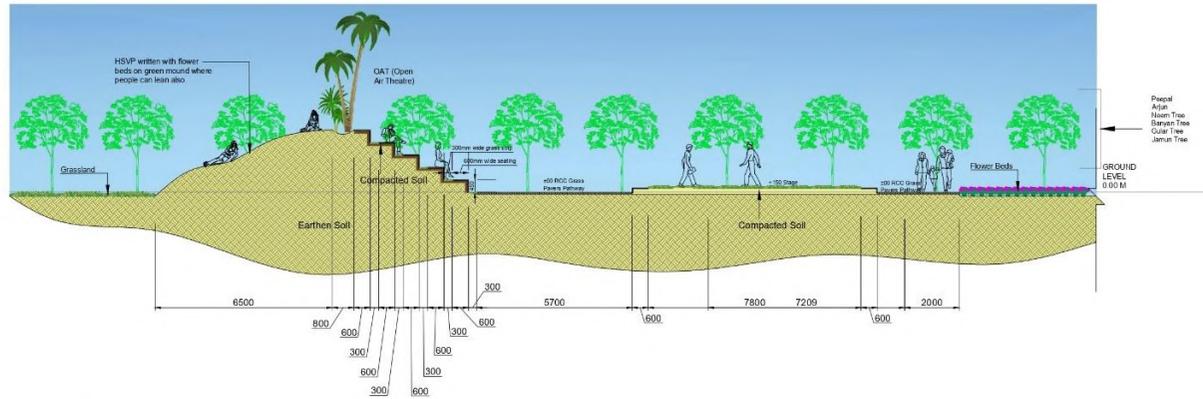
4. ESTIMATE

Estimate is prepared for restoration and rejuvenation of pond as per HSR 2021. Detailed bill of quantities for restoration and rejuvenation of pond are attached in *Annexure-III*.

Annexure 2 : Cross Sections



SECTION AT AA'



SECTION AT BB'

TITLE
REJUVENATION AND
LANDSCAPING OF POND :
SILOKHRA, Sector-41 Gurugram

DWG NO :
REV:
DWG STATUS : Construction
SIZE : A4

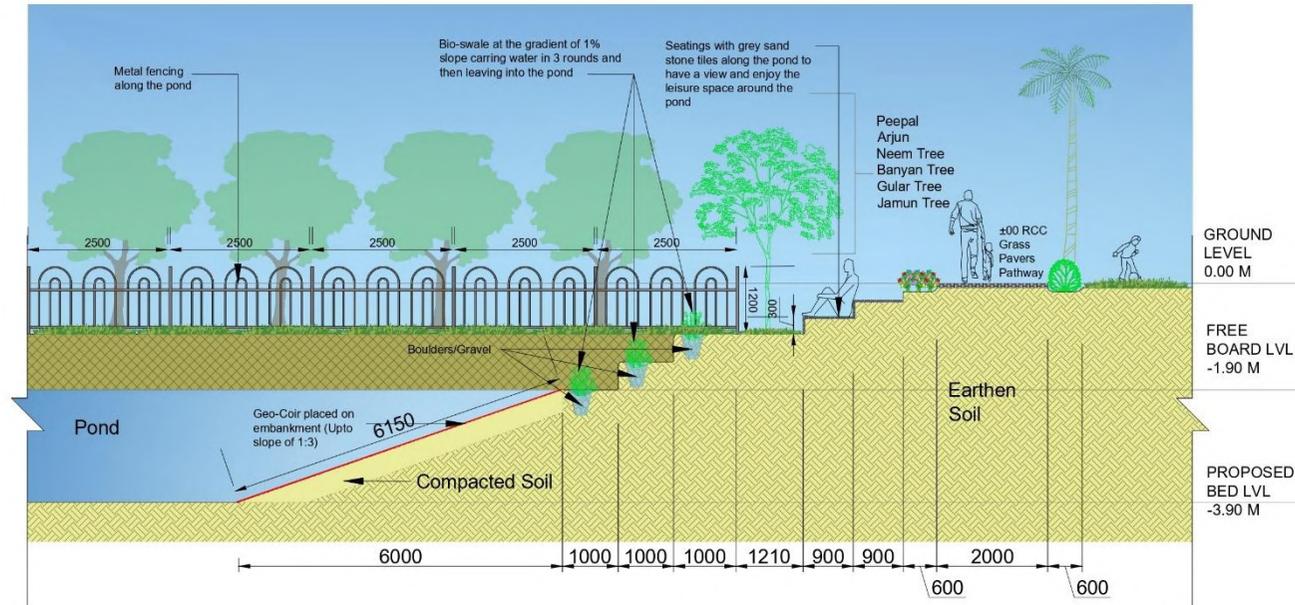
REVISIONS

| Rev No. | Change name | Date |
|---------|-------------|------|
| Rev 01 | | |
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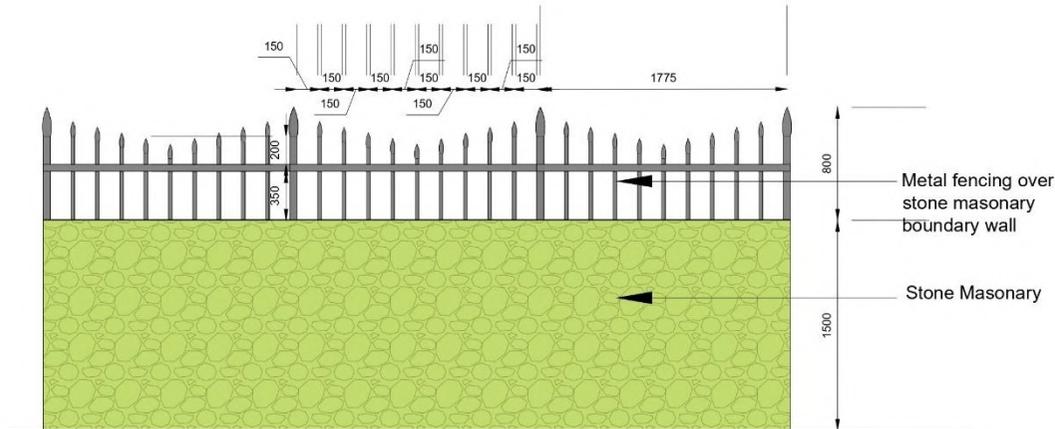
DATE :-
SCALE :- 1:200
All dimensions are in mm.



ADDRESS :-Silokhra, Sector-41,
Gurugram



SECTION AT CC'
Scale- 1:100



Boundary Wall Detail
Scale- 1:40

TITLE
REJUVENATION AND
LANDSCAPING OF POND :
SILOKHRA, Sector-41 Gurugram

DWG NO :
REV:
DWG STATUS : Construction
SIZE : A4

REVISIONS
Rev No. Change name Date

| Rev No. | Change name | Date |
|---------|-------------|------|
| Rev 01 | | |
| | | |
| | | |

DATE :-
SCALE :- 1:100
All dimensions are in mm.



ADDRESS :-Silokhra, Sector-41,
Gurugram

Annexure 3: Detailed Estimate

| S.No. | HSR Item No. | DESCRIPTION OF ITEMS | Nos. | AMOUNT |
|-------|--------------|---|------|---------|
| 1 | 4.4.1 | <p>Surface dressing of the ground including removing vegetation and in-equalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m. All kinds of soil. Area of Grassland = 2800 Sqm Area of flower bed = 1610 Sqm Area of pathway = 540m x 2m = 1080 sqm Area of pond = 6130 sqm Total = 11620 sqm 11620 sqm @ 12 per sqm</p> | | 139440 |
| 2 | 4.32 | <p>Filling available excavated earth (excluding rock) in trenches, cum plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m. Area for Green Grassland = 2800 Sqm Proposed filling of Grassland area = 0.5 m Volume of filling = 2800 x 0.5 m = 1400 Cum 1400 cum @ 52 per Cum</p> | | 72800 |
| 3 | 4.12.1 | <p>Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of</p> | | 1945581 |

| | | | | |
|---|--------|--|--|---------|
| | | <p>excavated earth lead up to 50 m and lift up to 1.5 m, as directed by Engineer-in-charge.</p> <p>Pond - Area of Water body as per Architect Drawing - 6130 Sqm Proposed Depth of water Body - 3.5 meters Volume of Excavated Earth = 6130 x 3.5 m = 21455</p> <p>Inner Pond fencing Perimeter of Pond - 310 meters Volume of excavated earth = 310m x 0.46m x 0.5m = 71.3 cum</p> <p>Outer Boundary wall 760 x 1.10 x 1 = 836 Total = 22362.3 cum Say 22363 cum @ Rs. 87/- per cum</p> | | |
| 4 | 6.1.6 | <p>1 :4: 8 (1 Cement : 4 coarse sand (zone-III) : 8 graded cum stone aggregate 40 mm nominal size)</p> <p>For fencing 1 x 310 x 0.34 x 0.15 = 15.81</p> <p>For Ramp – 30 x 5 x 0.15 = 22.5 cum</p> <p>For Boundary wall – 760 x 0.91 x 0.15 = 103.74 Total = 142 cum Say 142 cum @ Rs.2735 /- per cum</p> | | 388086 |
| 5 | 6.33.3 | <p>Steel reinforcement for R.C.C. work, where not included in the complete rate of RCC, including straightening,</p> | | 1159808 |

| | | | | |
|---|--|---|--|---------|
| | | <p>cutting, bending, placing in position, binding, wastage, overlaps, welded joints, spacer bars, chairs, stays, hangers and annealed steel wire etc. complete in all respect below plinth level</p> <p>Pond – Column 12mm dia = $103 \times 4 \times 2 \times 0.89 = 734 \text{ Kg}$ Beam 12 mm Dia = $310 \times 6 \times 0.89 = 1656 \text{ Kg}$ Rings 8 mm dia = $103 \times 14 \times 0.90 \times 0.358 = 1298 \text{ Kg}$ Rings 8 mm dia = $2067 \times 0.90 \times 0.358 = 666 \text{ Kg}$</p> <p>For Ramp 12 mm dia = $200 \times 8 \times 0.89 = 1424 \text{ kg}$ 10 mm dia = $54 \times 31 \times 0.62 = 1037.88 \text{ kg}$</p> <p>For Boundary wall Column 12mm dia = $306 \times 4 \times 2.5 \times 0.89 = 2723.4 \text{ Kg}$ Beam 12 mm Dia = $780 \times 6 \times 0.89 = 4165.2 \text{ Kg}$ Rings 8 mm dia = $5200 \times 0.90 \times 0.358 = 1675.40 \text{ Kg}$ Rings 8 mm dia = $306 \times 17 \times 0.9 \times .358 = 1676 \text{ kg}$ Total = 17055.8 Kg Say 17056 Kg @ 68/- per Kg</p> | | |
| 6 | | <p>Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve</p> | | 3509649 |

| | | | | |
|---|---------|---|--|---------|
| | | <p>workability without impairing strength and durability as per direction of Engineer-in-charge.</p> <p>Column = $103 \times 2 \times 0.23 \times 0.23 = 10.89 \text{ cum}$</p> <p>Beam = $310 \times 0.34 \times 0.34 = 35.83 \text{ cum}$</p> <p>For Ramp</p> <p>$30 \times 5 \times 0.15 = 22.5 \text{ cum}$</p> <p>$2 \times 1.5 \times 30 \times 0.2 = 18 \text{ cum}$</p> <p>For outer Boundary</p> <p>Beam = $760 \times 0.34 \times 0.34 = 87.8 \text{ cum}$</p> <p>Coloumn = $306 \times 2.5 \times 0.23 = 175.9 \text{ cum}$</p> <p>Total = 350.9 cum</p> <p>Say 351 cum @ Rs.4999/- per cum</p> | | |
| 7 | 7.20.2 | <p>Brick work with common burnt clay non- modular bricks of class designation 7.5 in foundation and plinth in:</p> <p>Pond inner fencing –</p> <p>$310 \times 0.34 \times 0.34 \times 0.4 = 14.33 \text{ cum}$</p> <p>Say 15 cum @ Rs. 4183/- per cum</p> | | 62745 |
| 8 | 13.29.2 | <p>Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required</p> <p>Railing fencing of Pond</p> <p>Angle = $50 \times 50 \times 6 \text{ mm}$</p> <p>$124 \times 2.5 \times 2 \times 4.5 = 2790 \text{ kg}$</p> <p>16 mm square bars</p> | | 2196753 |

| | | | | |
|---|--------|---|--|--------|
| | | <p> $124 \times 3 \times 6 \times 2.2 = 4910.4 \text{ Kg}$ Hold fast – $124 \times 4 \times 0.25 \times 2.4 = 298 \text{ kg}$ Outer Boundary wall Angle 50x50x6mm $2 \times 760 \times 0.8 \times 4.5 = 5472$ 16mm square bar $5066 \times 0.8 \times 2.40 = 9726.72$ Main Gate 2 Nos. Angle = 50x50x6mm $2 \times 2 \times 2.40 \times 4.5 = 43.2$ $2 \times 2 \times 1.80 \times 4.5 = 32.4$ $50 \times 6 \text{ flat} = 2 \times 1 \times 2.40 \times 2.40 = 11.52 \text{ Kg}$ $2 \times 32 \times 1.80 \times 2.40 = 276.48 \text{ kg}$ Hold fast , kundi etc (L.S)= 60 kg Total = 23620.72 Say 23621 kg @ Rs. 93/- per kg </p> | | |
| 9 | 6.30.1 | <p> Centering and shuttering including strutting, propping etc. and removal of form for Foundations, footings, bases of columns, etc. for sqm mass concrete. For column = $103 \times 2 \times 0.92 = 189.52 \text{ sqm}$ For Beam = $310 \times 0.68 = 210.8 \text{ sqm}$ For ramp = $4 \times 1.8 \times 30 = 216 \text{ sqm}$ For Outer wall $= 306 \times 0.92 \times 2.5 = 703.8 \text{ Sqm}$ $= 760 \times 2 = 1520 \text{ Sqm}$ </p> | | 897756 |

| | | | | |
|----|----------------------|---|--|-------|
| | | Total = 2840.12 sqm Say 2841 sqm @ Rs. 316/- per sqm | | |
| 10 | 11.6.1 | 15 mm cement plaster on the rough side of single or half brick wall of mix : Fencing wall - $310 \times 0.4 \times 2 = 248$ sqm 248 sqm @Rs. 114/- per Sqm | | 28272 |
| 11 | 6.8.2 | Providing and laying damp-proof course with cement concrete 1 :2:4 (1 cement : 2 coarse sand (zone-III): 4 graded stone aggregate 12.5mm nominal size) $282 \times 0.34 = 95.88$ sqm Say 96 Sqm @Rs. 149/- per sqm | | 14304 |
| 12 | 11.94.1 | Finishing walls with textured exterior paint of required shade new work (Two or more coats applied @ 3.28 liter/1 O sqm) over. $2 \times 310 \times 0.7 = 434$ sqm 434 sqm @ Rs.152/- per sqm | | 65968 |
| 13 | 11.68.3 + 11.82.1 | Applying priming coat: & painting the wooden I metal surface with synthetic enamel paint of approved brand and manufacture to give an even shade $2 \times 124 \times 3 \times 1.2 = 892.8$ sqm Say 893 sqm @Rs. 77/- per sqm (22 per sqm + 55 Per sqm) | | 68761 |
| 14 | 4.16.1.3 | Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, | | 86400 |

| | | | | |
|----|-----------|---|---------|--------|
| | | ramming of bottoms, depth up to 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m. Pipes, cables etc. exceeding 300 mm metre dia but not exceeding 600 mm. For 400mm i/d Rcc pipe total length = 900 mtr 900 mtr @Rs. 96/-per meter | | |
| 15 | 21.89.1.2 | Construction of rectangular standard brick masonry manhole chambers to standard drawings on new. egg-shaped sewers up to the required depth in 1 :5 cement sand mortar, lime concrete 40 percent lime mortar with 19-20 mm gauge brick ballast in haunches above the arch ring where the depth of cover in traffic streets is less than 1.5 metres, 12mm thick water tight 1 :2 cement sand plaster with a floating coat of neat cement and finished with two coats of sodium silicate on interior surface where required, reinforced cement concrete slab 180mm thick fixing 560 mm internal diameter C.I. manhole frame and cover weight not less than 2.5 quintal painted with 3 coats of black bitumen paint, fixing galvanised malleable iron steps embedded in 1 :2 cement sand mortar etc., complete. the rate also covers the cost of M.S. steel for R.C.C. slab labour for fixing and carriage of C.I. manhole frame and cover and malleable iron steps from the stores of the | 35 nos. | 451465 |

| | | | | |
|----|----------|--|--|---------|
| | | <p>engineer-in-charge of the works to site of works. The rate further includes cost of accurately planned and fitted centring, supports for all works, as well as for all curves and specials work cleaning out their beds, etc. sodium silicate shall be supplied free of cost at the stores of Engineer-incharge.</p> <p>For pipeline – 35 Nos. of manhole for pipeline 35 Nos. @ Rs.12899 /- per Manholes</p> | | |
| 16 | 22.169.1 | <p>Providing lowering cutting jointing and testing RCC pipe class NP 3 as per 18-458-2003 with spigot & socketed joints manufactured with ISi marked sulphate resistance cement as per ISi 12330 with rubber rings ISi marked antitermite as required at site in to trenches for all depths and laying out the same to correct alignment gradients and levels including dressing and trimming and cutting of concrete beds and side of trenches, if required jointing with rubber rings in trenches and jointing with 1 :3/2 cement sand mortar and with end dowels filled with 1 :3/2. cement sand mortar and finishing the joints at an angle of 45 degree with faces of spigot of socket joints cutting and finishing the cut surface to a uniform finish etc. as fully described in item No . 21.38, item 21.44, item 21.45, & item 21.46 including cartage loading and unloading complete in all respects.</p> <p>the internal diametric of the sewer being 400 mm i/d RCC pipe = 900 meters Length = 900 Rnmtr</p> | | 1274400 |

| | | | | |
|----|--------|---|--|---------|
| | | 900 runmtr @ Rs.1416/- per meter | | |
| 17 | 7.87.1 | <p>Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level and up to floor four level.</p> <p>7.89.1 Masonry work (first sort), in cement mortar 1 :6 (1 cement : 6 coarse sand)</p> <p>$760 \times 0.46 \times 0.75 = 262.2$ Cum Say 263 cum @Rs. 4339/- per cum</p> | | 1141157 |
| 18 | 7.88.1 | <p>Coursed rubble masonry with hard stone (first or second sort) in superstructure above plinth level Masonry work (second sort), in cement mortar 1:6 (1 cement: 6 coarse sand)</p> <p>$760 \times 0.34 \times 0.75 = 193.8$ Cum Say 194 cum @Rs. 4106 /- per cum</p> | | 796564 |
| 19 | 33.12 | <p>Supplying, filling, spreading & levelling stone boulders of size cum range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-incharge</p> <p>Swales = $894 \times 0.3 \times 0.3 = 80.46$ cum 81 cum @ Rs. 1164/- per cum</p> | | 94284 |

| | | | | |
|----|----------|--|-----------|---------|
| 20 | 33.13 | <p>Supplying, filling, spreading & levelling gravels of size range 5 cum mm to 1 O mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge</p> <p>Swales = $894 \times 0.3 \times 0.2 = 53.64$ cum</p> <p>54 cum @ Rs. 1164/- per cum</p> | | 62856 |
| 21 | N.S Item | <p>Supplying and planting all type of plants, in filter bed (constructed wetland) plants till completion of project , plantation includes (Red canna,phagmities,typha angustifolia,lily & cyperus species)with all complete work as per engineer in charge</p> <p>268 x 9 = 2415 Nos.</p> <p>2415 Nos. @ Rs. 65/- per plant</p> | 2415 Nos. | 156975 |
| 22 | 10.98 | <p>Providing and fixing Grass paver block of required strength and thickness on 25 mm thick compacted bed of sand and filling the joint with sand complete in all respect.</p> <p>$540 \times 2 = 1080$ Sqm</p> <p>1080 sqm @ Rs. 1342/- per sqm</p> | | 1449360 |
| 23 | 6.3.1 | <p>Cast in Situ .Cement Concrete M20 Kerb Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on</p> | | 263520 |

| | | | | |
|----|--------|--|--|--------|
| | | M-1 O grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408 Pathway = 2x 540 = 1080 meters 1080 meters @ Rs.244/- per meter | | |
| 24 | 26.52 | Preparation of mounds of various size and shapes including supply of cum good earth, in layers not exceeding 20 cm in depth, breaking of clods, watering each layer, dressing etc, lead up to 50 m and lift up to 1.5 m complete as per directions (excluding cost of good earth and manure which will be supplied separately.) Mounds 1 = 7.2 x 10 x 3.8 = 273 .6 cum Mounds 2 = 8 x 10 x 3.8 = 304 cum Mound = 6 x 5x 8 x 1.2 = 288 cum Total = 865.6 cum Say 866 cum @ Rs. 220/- per cum | | 190520 |
| 25 | 26.9.4 | Turfing lawns with fine grassing (selection no.1/ Bermuda and Mexican/Neelgiri grass)including ploughing, dressing including breaking of clods, removal of rubbish, dressing and supplying of selection no. 1 / Bermuda doob grass and Mexican/Neelgiri grass roots, including supplying and spreading of farmyard manure at the rate of 0.60 cum per 100 sqm, maintenance till weed free turf is formed. Total area of grass = 2800 sqm 2800 sqm @ Rs. 112/- per Sqm | | 313600 |

| | | | | |
|----|-----------------|---|----------|--------|
| 26 | N.S Item | Supplying and planting all type of plants, in pit of appropriate depth with manure and watering plants atleast 3 months from plantation includes (Neem,champa,ashok ,hibiscus,jamun,banyan , flower includes marigold,bogan villa , native species)with all complete work as per engineer in charge 524 Nos. of Plant 524 Nos. @ Rs.220/- each plant | 524 Nos. | 115280 |
| 27 | 26.63.6 | M.S. Flat iron tree guard 45 cm square and 0.8 metres. each height above ground level formed of 4 Nos. of angle irons of 25 x 25 x 3 mm 1.1 m long, 2 Nos. 25mm x 3mm horizontal MS flats welded to verticals on each side. Tree guard in two halves bolted together with 8mm dia & 30 mm long bolts, fixed in ground with 1 :2:4 cement concrete, complete in all respects. Minimum weight 7.63 kg. 524 Nos. 524 no. @ 778 | 524 Nos. | 407672 |
| 28 | 26.70.5 | Supply and installation of drip irrigation lines with external emitters/ m icro-spri nklers/bubblers Total length = 650 meters 650 meter @ Rs.167/- per meter | | 108550 |
| 29 | 26.72.1 | Rain Gun of Aluminium with brass inlet size 32mm each 26.72.2 26.72.3 internal diametre with throw radius of 14-22 m, with interchangeable nozzles and arc adjustment and all accessories complete as per BIS standards | 10 nos. | 109170 |

| | | | | |
|----|-------|---|--|---------|
| | | 10 Nos. @ Rs 10917/- each | | |
| 30 | 26.32 | Planting permanent edging plants around beds, lawn or along paths metre including of digging of trench 45 cm wide to 15 cm depth, refilling the excavated earth, mixed with farm-yard manure, supplied at the rate of 0.9 cum per sqm and supplying and planting hedge/ edge at 20 cm apart in one or two rows @11 no. well trimmed bushy ,multi branched ,30 cm to 45 cm in height plants to be supplied in 15 cm x 15 cm poly bags per sqm Along inner fencing = 2 x 310 = 620 meter Along pathway = 2 x 540 = 1080 meter Total = 1700 meters 1700 meters @Rs. 109/- per meters | | 185300 |
| 31 | 26.33 | Maintaining the permanent edging plants for the one year including metre application of FYM @ 0.0289 cum ,chlorpyriphos 9ml, urea and DAP 40gm each per year ,watering, hoeing weeding trimming and shaping ,replacement of casualty as and when noticed 1700 meters @ Rs.73/- per meter | | 124100 |
| 32 | 35.11 | Laying of a geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching. On slope of pond = 310 x 25 = 7750 sqm 7750 sqm @Rs. 151 per sqm | | 1170250 |

| | | | | |
|----|---------|--|--------|--------|
| 33 | 10.37.1 | <p>Providing and fixing of Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) : 25 mm thick</p> <p>5 x 0.9 x 0.45x 317 = 634 sqm 11x .15x .3 x 317 = 156.9 Sqm 2 x 0.9 x0.3 x 330 = 178.2 Sqm Total = 969.1 Sqm Say 970 Sqm @</p> | | 858450 |
| 34 | 26.76 | <p>Providing and fixing pair of Plastic dustbins 100 litre volume each, of each set two different colours, for dry and wet waste, made of virgin plastic to be mounted on MS rectangular hollow section 50 x 25 x 3 mm frames pivoted on 3 MS square hollow section verticals, 1 m above ground, one 35 cm RHS welded to each vertical member at base and grouted in 180 x 40 x 30 cm 1 :2:4 cement concrete.</p> <p>6 Nos. of Garden benches 6 Nos. @ Rs.11944</p> | 6 nos. | 71664 |
| 35 | 26.58.1 | <p>Chair type garden bench with L-shaped sides made of each 57 5334 5391 reinforced concrete (M30), thickness 100 mm, overall height 1000 mm, base width 620 mm. Back and seat shall consist of 5 Nos. reinforced concrete planks</p> | 8 nos. | 43128 |

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| | | 1500 mm x 100 mm x 50 mm one plank 1500 mm x 200 mm x 50 mm. Seating height of the bench shall be 450 mm. The bench shall be fixed with nuts on concrete mount, all holes sealed after assembly and installation. All materials required to be as per BIS specifications. 8 Nos. of Garden benches 8 Nos. @ Rs.5391/- each | | |
| 36 | 26.58.2 | Rectangular garden bench with h-shaped sides made of each 84 3943 4027 reinforced concrete (M30), thickness 100 mm, back height 750 mm, base width 450 mm. Back and seat shall consist of rectangular reinforced concrete planks 1500 mm x 350 mm x 50 mm. Seating height of the bench shall be 450 mm. The bench shall be fixed with nuts on concrete mount, all holes sealed after assembly and installation. All materials required to be as per BIS specifications 8 Nos. of Garden benches 8 Nos. @ Rs.4027 /- | 8 nos. | 32216 |
| 37 | N.S Item | Providing Installation of LED lithium ion Street lights 25-30 watt includes MS pole of minimum 15 ft height above G.L and foundation for fixing the light . 12 Nos. of Street light 12 nos. @ Rs.35000/- per piece | 12 nos. | 420000 |
| 39 | | Seated chest press: Providing designing and fixing of seated chest press in a pair of size 1800 x 700 x2000 mm fabricated with main post of 114mm dia and 2.5mm thick and rest of the pipes 40mm dia and 2.5 mm thick. All | 1 nos. | 49000 |

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| | | <p>pipes made up of hot rolled tubular steel and hot dipped galvanized and powder coated using Akzo Nobel or equivalent of 80-120 micron thick. All joints of pipe are robotic welded with joints scalloped as necessary and dressed off removing sharp edges and burrs. Zinc primer paint to be applied at all welding points prior to finishing. Handle bars are to be provided with high quality grip rubber. Pedals shall be made up of Nylon alloy with rounded edges to prevent any impact or injury. Seats and base plate cover to be made up from virgin LLDPE manufactured by rotational moulding with minimum thickness of plastic as 3mm colorful and UV resistant and environmental friendly. Bearing used shall be maintenance free, duly oil sealed and self lubricated made by reputed company to be approved by Engineer in charge. Equipment to be fitted with inbuilt limiters to prevent unwanted movement. All open ends of pipe to be closed by GI/ LLDPE caps for user safety. The equipment to be fixed on ground with concrete or minimum strength M-25 and J shape welded bolt and once</p> <p>1 Nos. 1 Nos. @ Rs. 49000/- each</p> | | |
| 40 | | <p>Leg Press: Providing designing and fixing of leg press of size 2000x550x1600 mm fabricated with main post of 114mm dia and 2.5mm thick and rest of the pipes 40mm dia and 2.5mm thick. All pipes made up of hot rolled</p> | 1 nos. | 30100 |

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| | | <p>tubular steel and hot dipped galvanized and powder coated using Akzo Nobel or equivalent of 80-120 micror thick. All joints of pipe are robotic welded with joints scalloped as necessary and dressed off removing sharp edges and burrs. Zinc primer paint to be applied at all welding points prior to finishing. Handle bars to be provided with high quality grip rubber on top end Pedals shall be made up of Nylon alloy with rounded edges to prevent any impact of injury Seat and base plate cover to be made up from virgin LLDPE manufactured by rotational moulding with minimum thickness of plastic as 3mm colorful and UV resistant and environmental friendly. Bearing used shall be maintenance free duly oil sealed and selt lubricated made by reputed company to be approved by Engineer in charge. Equipment to be fitted with in inbuilt limiters to prevent unwanted movements. All open ends of pipe to be closed by GI/ LLDPE caps for user safety. The equipments to be fixed on ground with concrete of minimum strength M-25 and J shape welded bolts and once the concrete is set fi</p> <p>1 Nos. 1 Nos. @ Rs. 30100/- each</p> | | |
| 41 | | <p>Elliptica exerciser: Providing designing and fixing elliptical exercise of size 1200 x 540 x 1600 mm fabricated with main post of 114mm dia and 2.5mm thick and rest of the pipes 40mm dia and 2.5 mm thick. All pipes made up of hot rolled tubular steel and hot dipped galvanized and</p> | 1 nos. | 38000 |

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| | | <p>powder coated using Akzo Nobel or equivalent of 80-120 micron thick. All joints of pipe are robotic welded with joints scalloped as necessary and dressed off removing sharp edges and burrs. Zinc primer paint to be applied at all welding points prior to finishing. Handle bars are to be provided with high quality grip rubber. Pedals shall be made up of Nylon alloy with rounded edges to prevent any impact or injury. Seats and base plate cover to be made up from virgin LLDPE manufactured by rotational moulding with minimum thickness of plastic as 3mm colorful and UV resistant and environmental friendly. Bearing used shall be maintenance free, duly oil sealed and self lubricated made by reputed company to be approved by Engineer in charge. Equipment to be fitted with inbuilt limiters to prevent unwanted movement. All open ends of pipe to be closed by GI/ LLDPE caps for user safety. The equipment to be fixed on ground with concrete or minimum strength M-25 and J shape welded bolt and once</p> <p>1 Nos. 1 Nos. @ Rs.38000/- each</p> | | |
| 42 | | <p>Double Cross Walker/ Cross trainer double:- Providing, and fixing Double Cross Walker of size 1600 X600 X 1600 mm make of Green Gym or Equivalent fabricated with main post of 140 mm dia and 3.0 mm thick rest of the pipes are 40 mm dia</p> | 1 nos. | 32400 |

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| | | <p>and 2.5 mm thick all pipes made up of hot rolled tubular steel and hot dipped galvanized, and powder coated using Akzo Nobel or equivalent of 80-120 micron thick. All welding joints of pipe are robotic welded with joints scalloped as necessary and dressed off removing sharp edges and burrs. Zinc primer paint to be applied at all welding points prior to finishing. Padals shall be made up of Nylon alloy with rounded edge</p> <p>of prevent any impact of injury and seat to be made from virgin LLDPE manufactured by rotational moulding with minimum thickness of plastic 4.00mm, colourful and U V resistant environmental friendly. Bearing used shall be maintenance free, duly oiled sealed and self lubricated made by reputed company to be approved by Officer -in-Charge. Equipment to be fitted within built limiters to prevent unwanted movements. All open ends of pipe to be coloured by GI/LLDPE caps for user safety. The equipment to be fixed on ground with concrete of minimum strength N425 and J shaped welded bolts and once the concrete is set, fix the equipment on to it and cover nuts and bolts with the base plate cover, all complete as per direction and approval of Engineer-in-Charge regarding material, shape of equipment, colour on metal, seat and base cover plate and fixing of equipment etc.</p> | | |
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| | | 1 Nos. 1 Nos. @ Rs.32400/- each | | |
| 43 | | Sea-Saw (4 seater): 8' L x 5'.5 W x 15" high. Frame is of m.s pipe 2" x 12gauge. Sitting planks is of m.s pipe 2" x 12 gauge and its cantilever & handles is of m.s pipe 3/4" x 12 Guage .Sitting seats-4nos is of molded FRP material in 3mm thick with suitable PU Primer & PU Paints. Complete item with GST, Transportation, Installation with C.C & labor at site. (Including fixing at site and supervision & transportation & all type taxes) 1 Nos. 1 Nos. @ Rs.12700/- each | 1 nos. | 12700 |
| 44 | | Wave Slide: 9'.5 L x 5'H. Wave slide is of molded Fiberglass Reinforced Plastic (FRP) of 6mm thick and climbing ladder is of m.s pipe 1" x 12 gauge & m.s rectangular pipe 65 x 25 mm box X 16 gauge as climbing steps which support with 1".25 sq. pipe x 14 Guage with suitable PU Primer & PU Paints. Complete item with GST, Transportation, Installation with C.C & labor at site. 1 Nos. 1 Nos. @ Rs.27300/- each | 1 nos. | 27300 |
| 45 | | Bridge Ladder: 10'L x 2'W x 6'H. Horizontal ladder is of m.s pipe 2", 3/4" & vertical ladder is of same material of 12 gauge ISI mark with suitable PU Primer & PU Paints. | 1 nos. | 23800 |

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| | | Complete item with GST, Transportation, Installation with C.C & labor at site. 1 Nos. 1 Nos. @ Rs.23800/- each | | |
| 46 | Market Rates | Gazebos 3X3 meters with MS structure along with foundation, with flooring and mangalore roof tiles (As per Architect's Design) 3 Nos. of Gazebos 3nos. @ Rs.155000 lakhs Each Gazzebo | 3 Nos. | 465000 |
| 47 | N.S item | Maintenance of over Pond with One chowkidar and Gardener with over all maintenance trimming of grass , watering tree and maintenance of overall Chowkidar = 14900 x 12 = 178800 for one year Gardener = 2 x 1500 x 12 = 360000 for one year Total = 538800 For Three yaer @ 538800/ each year | 3 years | 1616400 |
| 48 | 26.22.1 | 26.22.2 Planting flower beds including digging 30 cm deep bed sqm and refilling of beds with excavated soil and FYM 0.0508 cum per sqm , Fertilizer DAP 50 gms and insecticides chlorpyriphos 10ml per sqm , planting of F1 hybrid well bloomed flower saplings to be supplied in polybags at 25cm distance from plant to plant and row to row minimum 15 no . plants per sqm Total area = 1610 Sqm 1610 sqm @ Rs.238 / per sq | | 383180 |

| | |
|--|---------------------|
| Total | 23374684 |
| Add 10 % price escalation charges | 2337468 |
| Add 1 % Contingency | 233747 |
| Grand Total | Rs. 25945899 |

Annexure 4: Project Timeline

| S.No. | Activity Name | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 |
|-------|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----------|
| 1 | Draft DPR Submission | | | | | | | | | | | | |
| 2 | Final DPR Submission | | | | | | | | | | | | |
| 3 | Flotation of Tender | | | | | | | | | | | | |
| 4 | Tender Allotment | | | | | | | | | | | | |
| 5 | Cleaning & Removal of Rank Vegetation | | | | | | | | | | | | |
| 6 | Excavation of Pond | | | | | | | | | | | | |
| 7 | Excavation for WWTP | | | | | | | | | | | | |
| 8 | WWTP RCC Work | | | | | | | | | | | | |
| 9 | Waste water drain inlet | | | | | | | | | | | | |
| 10 | Installation of WWTP | | | | | | | | | | | | |
| 11 | Electrical work | | | | | | | | | | | | |
| 12 | Levelling, compaction of land surface | | | | | | | | | | | | |
| 13 | Geo coir at embankment | | | | | | | | | | | | |
| 14 | Development of Pavement | | | | | | | | | | | | |
| 15 | Development of Bio Swales | | | | | | | | | | | | |

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| 16 | Development of Open space and sitting area | | | | | | | | | | | | |
| 17 | Installation of AWLR | | | | | | | | | | | | |
| 18 | Development of Kids Play Area | | | | | | | | | | | | |
| 19 | Fencing and boundary wall | | | | | | | | | | | | |
| 20 | Plantation | | | | | | | | | | | | |
| 21 | Miscellaneous and last finish | | | | | | | | | | | | |
| 22 | IEC Activities | | | | | | | | | | | | |