Pune River Rejuvenation Project

Detailed Project Report – Draft

Pune Municipal Corporation, Pune

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HCP Design, Planning & Management Pvt. Ltd., Ahmedabad

Contents

- 1. Project and Study Area
- 2. State of Pune's Rivers
- 3. Objectives
- 4. Master Plan
- 5. Project Implementation
- 6. Next Steps



Project Chronology

•	Work order to consultant	30 Jan		
•	Kick off Meeting	03 Feb		
•	Signing of Agreement	21 Mar		
•	Meeting with Stakeholders	27 Apr		
•	Geotechnical Investigation Report	09 Jun		
•	Area assessment Report	04 Jul	2016	
•	Topographic Survey	16 Aug		
•	Concept Master Plan	24 Aug		
•	Hydrology and Hydraulics Report	12 Sep		
•	Preliminary Base Map	05 Dec		
•	Application for EIA	20 Apr	2047	
•	Draft Master Plan	12 May	2017	
•	Detailed Project Report – Draft	25 Jan	2018	

1. Project and Study Area

Project area – along 44kms of Mula, Mutha and Mula-Mutha

Pawana Dam

Mulshi Dam

Temghar Dam

Warasgaon Dam

Panshet Dam



Mutha River 10.4Km

Mula-Mutha River

11.8Km

Khadakwasla Dam

Study area – entire catchment upstream of Pune and impacted downstream areas

Mula River 22.2Km

Khadakwasla Dam

Pawana Dam

Mulshi Dam

Temghar Dam

Warasgaon Dam

m

Panshet Dam

Mula-Mutha River

Mutha River 10.4Km

Topographical Survey





Final Survey Map



The various details that were mapped in topographical survey have been enlisted below-

River bed

- Spot levels
- Contours
- River bottom and top edge
- Location and details of piped outfalls, drainage pipelines and manholes
- Culverts
- Bridge- column details, bridge top level, soffit level

- Check dam
- Weir
- BarrageGhats & steps
- Temple, Visarjan tanks and Otlas

Surrounding area

- Spot Levels
- Contours
- Building HeightPermanent structures/ buildings/otla /shed
- Permanent structures/ but
 Fences
- Retaining walls/ embankment wall
- Compound walls
- Footpath
- Location of nallas

- Location of manholes
- Trees type and diameter of trunk
- Light poles
- Electric poles
- Sub station
- · High tension lines
- Road
- Railway Tracks

Geo Technical Investigation - Bore Hole Locations



Geo Technical Investigation - Sample Collection and Analysis



Checking of Bore Log Samples

Specific Gravity Test

Geo Technical Investigation - Report

Riverfront Development for Mula, Mutha & Mula-Mutha River

Pune, Maharashtra



Technical Report of Geotechnical Investigation For Proposed Structure

Client: Pune Municipal Corporation

Date: 11th June 2016

Consultant: MCP Design Planning & Management Pvt. Ltd Paritush, Usmanpura, Ahmedabad

Ges technical Consultant K.C.T. Consultancy Services® KABL, Accredited, XCC House, Sayona Silver Estate-Part 2, Bh Sever Oak College of Engineering, Oota, Americaso

Pune Municipal Corporation HCP Design, Plan

HCP Design, Planning and Management Pvt. 138 K.C.T. Consultancy Servicen®

7.0 Conclusions

- General stratifications are as described in section 5.0 and as shown in respective bore loos.
- 2) In case of their front development, disphragm wall is crucial structure. Wall is required to be socketed into massive and moderately strong rock. Socketing shall be adequate to ensure adability of wall under expected earth pressums of reclamation on banks.
- Potential for scour in negligible in weathered tractured rock while the same in massive rock is rel.
- Ground water table is encountered at around ter in March to April, 2016m depth during investigation.
- 5) Permeability results show very poor drainage property in case of rock and clays of high to intermediate planticity.
- 6) The excavated sol except top layer of clays of high plasticity solid can be used in the foundation trenches, in plotth of the structure and in sub base of pasimeters. Fill natefield subtability should be determined by the testing. Materialis for filling shall not contain nocks or hard lamps greater than 75 mm is maximum dimension and should have at least 80 percent passing the 9.5mm siewa and at least 5 percent passing the 0.075 mm siewa. The fill materials should be free of organics, debris, or other deleterious materials. Any imported materials shall have exter-soluble sulfate and chloride contents that are less than 1000 parts per million and 500 parts per million, respectively, pH greater than 7.0 and Expansion. Index less than 20. Back filling shall be done in layers with compacted thekness not exceeding 300 mm. The exclavation may remain vertical for shorter duration during construction therefore it is desirable to keep the side slops in excavation to be atleast 1V.0.5H and with berms of about 1m width at vertical spacing not exceeding 3m for deep excervations.
- 7) It may please be noted that, suitable support shall be provided and used to prevent, so far as is reasonably practicable and as early as is practicable in the course of the foundation work in excavation, which may be danger to any person or adjacent property or materials from dialodgement of earth or any other material forming the side of excavation.

Dr. K K Thaker

Prof. (Dr.) K C Thaker

Page to 5 of 55

The investigation data, findings and recommendations have been incorporated in the report submitted on June 11, 2016.

Hydrology and Hydraulics Study - Meeting with Irrigation Department and CWPRS Officials



Meeting with CWPRS and Irrigation Department on 15 June, 2016





Meeting with CWPRS on 1st February, 2017



Meeting with CWPRS on 13th February, 2017

Hydrology and Hydraulics Study – Approval by CWPRS, Pune



CONSULTANT: MCP Design, Pinning and Management Per, Ltd. Alamedaland

TECHNICAL CONSULTANT: Advance Engineering Coundinat



भागत प्रान्थग/ Government of India वाल सीम्प्राज, भरी विशेषन संक्रमण प्रात्मा प्रात्मा प्रात्मा Ministry of Water Readuress, River Development & Garga Representation केल्फ्रि का प्रात्म त्रात्मुं के स्वार **Central Water and Power Research Station** साल्यानगण, गुणे - 411024 / Khadatewaata, Pure 411024 Tel: +81120 2410 3878, 2410 3200, Fair +91 30 2428 1004 E-mail: 1011,50()ovprisign: in: Website: www.petra gov.st

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मेचर में,

Shri Sonivas Bonala Chief Engineer Pune Municipal Corporation Sevarizar Bhavan Shivajinagar, Pune – 411 005

- Itru: Vetting of Bludies on Hydrology and Hydraulics of Mula-Mutha River for River Front Development Project of PMC at Pune
- Ref. 1. PMC letter No.: NI dated 29:09.2017 2. Letter from PMC No. PMC(2399 dated 05 December 2017

SPT. .

CWPRS have examined the hydrology and hydrolos report on Mule-Mutha river in contast of River Front. Development (RFD) planning as requested by PRC. The observations and suggestions of CWPRS downg the course of interaction in the requisite algorith. GWPRS being the principle, the report has taken into consideration the requisite algorith. GWPRS being the principle, the report has taken into consideration the requisite algorith. GWPRS being the principle algorithm in the requisite algorithm in water resources development and water born transport has also made an observation not the liver accledge as the issue to be function of the post RFD assession and the same was communicated to PMC. It appears that this issue is also being addressed by PMC in a comprehensive mame under the unbriefla of JICA report to Mula-Mutha.

In light of the above facts, GWPRS clears the report on hydrology and hydraulics of Mula-Mutha as regards RFD project.

This issues with the approval of Director, CWPRS.

ਜ਼ਬਲੋਵ सहरित्त-ः (त.स.छ.)

Baseline Monitoring



Image showing collection of water samples

Image showing air monitoring

Opinion Survey – Survey Locations







Public Consultation

Meetings held with various stakeholders



Meeting on 9 March, 2016 with SE, Irrigation Dept.



Meeting on 11 June, 2016 with MLA



Meeting on 11 June, 2016 with Press Media



Meeting on 18 Aug, 2016 with NGOs



Meeting on 5 July, 2017 with Standing Committee



Meeting on 31 July, 2017 with NGO

Public Consultation

Meetings held with various stakeholders

List of key stakeholder meetings for Mula, Mutha, and Mula-Mutha River Development Project, Pune

Date	Action	Details
3-Feb-16	Kick off meeting with PMC, Insigation department, PCPMC	Regarding brief of project, project timeline and deliverables
29-Feb-16	Meeting with PCMC	Regarding brief of project, project timeline and deliverables, regarding permission letter in PCMC area
9-Mar-16	Meeting with Superintending Engineer (WRD), Irrigation Department	Regarding brief of project and data needed for feasibility study
21-Mar-16	Meeting with Commandant, KEB - Bombay Engineer Group	Regarding brief of project, project timeline and deliverables
12-Apr-16	Meeting with PMC-Mr. Srinivas Bonala along with EIA consultant	Regarding submission of forms-1,1A for review
27-Apr-16	Meeting with Commissioner, Collector Office, Imgation Department, CWPRS and PCMC officials	To get a status update, discuss regarding the topographic surveys and approvals for environment.
11-Am-16	Meeting with Members of Parliament and Members of Legislative Assembly and Commissioner	To discuss the Concept Master Plan and get suggestions
11-Jun-16	Meeting with Press Media	To discuss the Concept Master Plan and get suggestions
15-Jun-16	Meeting with CWPRS and CEO, Irrigation Department	To discuss and review the methodology adopted for preparation of hydrology and hydraulics scenario
18-Aug-16	Meeting with NGO representatives and HCPDPM	To discuss the project brief, its need and the objectives
1-5ep-16	Meeting with Municipal Commissioner, PMC and Settlement Commissioner, Land Records Dept	Regarding preparation of base map and land records with Geographis
14-Sep-16	Meeting with Slum Rehabilitation Authority (SRA)	Regarding data collection and to understand the process of rehabilitation of the slums in Maharahta
5-Dec-16	Meeting with Irrigation Department	For discussion of Hydrology and Draft Hydraulics Report

Date	Action	Details
7-0ec-16	Meeting with Municipal Commissioner, PMC and Settlement Commissioner, Land Records Dept	To discuss the draft preliminary base map and further process for finalization of the base map.
9-Jan-17	Meeting of CWPRS, PMC and HCPDPM	For discussion of Hydrology and Draft Hydraulics Report and their inputs
1-Feb-17	Meeting of Director, CWPRS, PMC and HCPDPM	For technical vetting to be carried out by CWPRS
13-Feb-17	Meeting of CWPRS, PMC and HCPOPM	Regarding their observations and issues about the study of the Hydrology and Draft Hydraulics
1-Mar-17	Meeting with Deputy Director, Land Records Dept.	Regarding further steps for Mojani Procedure
8-Mar-17	Meeting with Hon. Municipal Commissioner, PMC	Regarding Cost of Project, Priority Projects, Implementation strategies, Funding mechanism for the project
9-Mar-17	Meeting with CWPRS	Regarding discussion of observations and issues about the study of the Hydrology and Draft Hydraulics for the Pune Riverfront Project
17-Mar-17	Meeting with PMC, Hon. Municipal Commissioner, DP Cell	Regarding status update, revenue generation, further steps for ground truthing, finance mechanism
29-Jun-17	Meeting with Expert Appraisal Committee, MOEFCC	A presentation to committee for seeking Terms of Reference (TOR) for EIA procedure
4-Jul-17	Meeting with Members of Standing Committee of PMC and PCMC	To give a discuss the Draft Master Plan and get suggestions
5-Jul-17	Meeting with Mayor, PMC and PCMC and the Members of Legislative Assembly	To discuss the Draft Master Plan and get suggestions
31-Jul-17	Meeting with Parineeta Dandekar, NGO representative	To discuss the Draft Master Plan and get suggestions
29-Aug-17	Meeting with DSLR, Land Records dept	Regarding the status of Final base map
7-Sep-17	Meeting with Director, CWPRS	For the approval of the draft hydrology and hydraulics

report



The combined approved base map prepared by HCPDPM and submitted to Departments of Land Records for review, verification and approval.

Base Map Preparation



Base Map Preparation



Meeting with Land Record Department Officials on 1st September, 2016

Discussion with Mr. M.B. Patil, District Superintendent of Land Records on December 28, 2016 for next steps of finalization of base map

2. State of Pune's Rivers

Pune's rivers – a place for dumping garbage



Pune's rivers – fed by sewage and garbage from nallas

Pune's rivers - around 252 MLD of untreated sewage

Pune's rivers – piecemeal, haphazard infrastructure

Pune's rivers – a place for dumping construction debris







Pune's rivers – where the edges are private and the banks are inaccessible

Pune's rivers – a barrier that divides Pune

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Pune's rivers – dry most of the year





Pune's rivers – a neglected asset that the city has turned its back to



Problems and Causes

1. Pollution and flooding

- i. The river is polluted because of incomplete sewerage network and inadequate sewage treatment.
- ii. The river floods because of inadequate flood protection measures

Completion of sewage, sewage treatment and flood protection works is urgently needed

Problems and Causes

2. Garbage/ debris dumping and encroachment

- i. Lack of public access along the entire length of the rivers makes it easy to misuse the rivers garbage dumping, encroachment, crime, parking, etc.
- ii. Lack of clear boundaries makes it difficult to monitor the rivers

For a well managed river, creating a public realm along the river is absolutely essential
City has expanded into areas not inundated by the normal monsoon flow



Periodic threat of flooding



Understanding the threat of flooding



Understanding the threat of flooding



Threat of flooding



River land boundary as per revenue records



100 year and 25 year inundation lines



Land owner's do not agree – they accept the flood risk and want flood protection measures



Problems and Causes

4. 1238 Ha. privately owned land (351 Ha. of it developed) within red/blue inundation boundaries

- i. Land that will be inundated in a 100yr peak flood is in many places privately owned (1238 Ha.)
- ii. Some people want all such land to remain undeveloped or to be acquired
- iii. Land owner's do not agree they accept the flood risk and want flood protection measures
- iv. Dismantling existing developments in inundation areas is very difficult
- v. Acquiring all private properties within inundation lines is a huge financial and governance challenge

The overlap of privately owned land and land within inundation boundaries should be removed without the use of acquisition and without lowering the flood carrying capacity of Pune's rivers

Problems and Causes

5. Piecemeal approach to river development

- i. Uncoordinated, piecemeal bridge, weir, check-dam and embankment building has reduced the flood carrying capacity of the river
- ii. Un-thoughtful channelization in Mutha river has marred Pune's rivers
- iii. Exposed interceptor sewage lines and manholes obstruct floods, appear unhygienic and are easily damaged
- iv. Uncoordinated piecemeal development of ghats and gardens have done little to improve the condition of Pune's rivers
- v. Un-thoughtful use of river banks for streets/ parking have marred Pune's rivers

Development of Pune's rivers requires a comprehensive planning approach that :

- Tackles causes not symptoms
- Is phased and financially viable

3. Objectives

Objectives

1. Clean the River and make it pollution free

- 2. Reduce risk of flooding
- 3. Create a continuous public realm along the river
- 4. Retain water
- 5. Improve city's access to the riverfront
- 6. Integrate heritage structures, current activities, parks and gardens

1. Complete sewerage network – existing nallas and piped outfalls connecting to the river

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- Piped outfalls- 88

- Nallas- 50

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1. Complete sewerage network – existing sewer lines





1. Complete sewerage network – proposed sewer line to curb the outfalls

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Piped outfalls
Curbed outfalls

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Proposed trunk line

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Approximately 23 km of Trunk lines need to be constructed along the river to curb the existing piped outfalls.

2. Improve interceptor sewer – multiple sewer lines along the river

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2. Improve interceptor sewer – existing condition



2. Improve interceptor sewer – shift sewer lines closer to the edge of river land



3. Augment treatment capacity – untreated sewage discharged into the river





3. Augment treatment capacity – existing sewage treatment plants



3. Augment treatment capacity – proposed STP under JICA and NRCD

18 MLD 8 MLD 32 MLD 20 MLD 16MLD **30 MLD** 4 MLD 40 MLD 17 MLD 130 MLD 70 MLD **16 MLD** • 115 MLD 45 MLD 125MLD 45 MLD 50 MLD Proposed STP under 32 MLD **Riverfront Development** 27 MLD Existing STP Proposed STP under JICA and NRCD 30 MLD 18 MLD (\mathbf{T}) 0 0.5 2 30 MLD

3. Augment treatment capacity – proposed STP under riverfront development



3. Augment treatment capacity – tertiary treatment - phytorid beds

Schematic diagram of the Phytorid system



Phytorid beds at Rainbow Drive, Sarjapura Road, Bangalore

3. Augment treatment capacity – location of tertiary treatment facility for STPs



3. Augment treatment capacity – treatment locations of major nallas



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Normal monsoon flow



Area inundated under peak flood



Area inundated under peak flood – obstructions to the flow of water



Area inundated under peak flood – obstructions to the flow of water



Obstructions to the flow of water (as identified in the Final Hydrology and Hydraulics Report approved by CWPRS, Pune)-

- Water Retention structures- weirs, check dams
- Low level bridges
- Structures like visarjan tanks
- Infrastructure elements like manholes, pipelines, etc.
- Rocky protrusions
- Silt and construction debris
- Low lying roads within the river bed

Removal of obstructions- reducing HFL



Proposed HFL



Defining Embankment Types

- A. Sparsely developed areas Rural Riparian Embankment
- **B. Moderately developed areas Urban Riparian Embankment**
- C. Intensely developed areas Engineered Embankment

Sparsely developed surrounding areas
Rural Riparian Embankment – Existing



Rural Riparian Embankment – Proposed



Rural Riparian Embankment – Examples





Moderately developed surrounding areas

CQAE office

Spicer Adventist College

Blue Line

Red Line

Urban Riparian Embankment – Existing



Urban Riparian Embankment – Proposed



Urban Riparian Embankment – Examples



Urban Riparian Embankment Type II – Proposed



Urban Riparian Embankment Type III – Proposed





Mhatre Bridge

Parvati Hill

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Pu La Deshpande Udyan

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Urban Section – Existing



Urban Section – Proposed Lower Interceptor Sewer Upper Promenade Private Property Access Points Promenade Clean and retained water

Urban Section – Examples





Landscape Strategy



- 1. Tall grass near the river bed
- 2. Grass on the pitching



1. Tall Grass near the river bed: Saccharum Spontaneum



2. Grass on the pitching: Vetiver Grass in just 90 days after planting



- Trees on the pitching (slope- 1:3) preferably along trails 1.
- 2. Shrubs at the junction of promenade and pitching



Bougainvillea Yellow California Gold

1. Trees on the pitching (slope- 1:3) preferably along trails



2. Shrubs at the junction of promenade and pitching



- 1. Trees on Upper Promenade
- 2. Trees on Lower Promenade



1. Trees on Upper Promenade

Mangifera IndicaTree Canopy height 10-12 mts Canopy dia. 6-8mts



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Neglected banks





Continuous public realm







Existing condition



Continuous public realm – proposed



Continuous public realm – proposed



Continuous public realm – example



Seine, Paris

Paris Plages

Visarjan tanks - existing



Visarjan Tank at Mahtoba Garden, Mula



Visarjan Tank near Aundh Ravet bridge, Mula



Visarjan Tanks near Bund Garden bridge, Mula-Mutha



Visarjan Tanks near S.M Joshi Bridge

Visarjan tanks - existing





Visarjan tanks – proposed



Existing condition

Existing Road

Visarjan tanks- proposed

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Upper Level Promenade

Clean retained water

Ghats – existing



Dnyaneshwar Ghat, Khadki cantonment- Mula river



Ghats near Alka Talkies- Mutha River



Ahilyabai Holkar Ghat, Sangam- Mutha River



Ghat near Z Bridge, Mutha river

Ghats – existing



Ganpati Visarjan near Baba Bhide bridge- Mutha, September 2016

Visarjan ghat near Kharadi





Ghats


Dnyaneshwar ghat – existing



Dnyaneshwar ghat – Ganesh visarjan activity







Access – existing



Access steps near Shinde bridge, Mutha river



Access near Z Bridge, Mutha river



Access steps near Dengale bridge, Mutha river



Access ramp near Dengale bridge, Mutha river





Proposed Access PointsExisting Access Points

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Access – proposed



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Dry – Mutha river looking towards Z bridge

Dry - Mula-Mutha River from Kalyaninagar bridge









Longitudinal section – existing Mula, Mutha and Mula-Mutha river





Longitudinal section – proposed Mula, Mutha and Mula-Mutha river





Boating facilities – existing



Annual Regatta Boating Festival organized at Royal Connaught Boat Club, Sangamvadi, Pune by COEP Students Source: http://www.coep.org.in/sites/default/lies/1%26P%20trochur%220%2016-17_3pd . http://restook.in/wp-content/uploads/2010/03/COEP_Regata_Serior_batch_1970s.jpg, http://www.coep.org.in/sites/default/lies/1%26P%20trochur%220%2016-17_3pd . http://restook.in/wp-content/uploads/2010/03/COEP_Regata_Serior_batch_1970s.jpg. http://www.coep.org.in/sites/default/lies/1%26P%20trochur%220%2016-17_3pd . http://restook.in/wp-content/uploads/2010/03/COEP_Regata_Serior_batch_1970s.jpg. htt

Boating facilities – existing





Cleaning, Aeration and Maintenance



Example - Trash Skimmer, Example – Yamuna river

Figure 4.80: Images showing examples for cleaning, aeration and maintenance

Boating facilities – proposed



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Objectives

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6. Integrate heritage structures, current activities, parks and gardens

Bridges



Kakasaheb Gadgil Bridge (Z Bridge)- Mutha River

New Yerwada Bridge- Mula Mutha River







Roads to be removed and alternative roads to be strengthened



Low-lying River side road along Mutha River



Low-lying Road along Mutha River (August, 2016)



Low-lying road getting submerged during monsoon along Mutha River near Omkareshwar Temple (August, 2016)

Roads to be removed and alternative roads to be strengthened

Roads to be Removed
Roads to be Strengthened
Existing Road network
Roads outside
Project Boundary

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Heritage structures – existing





Holkar Bridge on Mula River



Nanasaheb Peshwa Samadhi on Mutha River



Shivaji Bridge

Heritage structures – existing



Ghorpade ghat – existing



Ghorpade ghat – morning view with yoga and jogging activity







Green areas Cycle track

Clean retained water

Ghats

Boating

Boating facilities Pitching

Lower level Promenade

Access steps

Integration of Historic wall

Existing Heritage wall

Huge manholes

Narrow polluted water channel

24

Green areas

Cycle track

Ghats

Clean retained water

Boating facilities
Integrating heritage structures – view of historic wall from Dengale bridge

Neglected banks

Existing Ramp



A DESCRIPTION OF THE REAL OF



Gardens – existing



Nana Nani Udyan along Mutha river

-

Bund Garden along Mula-Mutha River



Pawana

MUNICO

Mula- Mutha

Existing Parks

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Mula



Integrating existing gardens with the riverfront project

Mula River

Rural Riparian

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Botanical garden

Integrating gardens – existing



Integrating gardens – proposed



Sambhaji udyan – existing

Sambhaji udyan - extended garden up to river



Religious places – existing



Vriddheswar Temple-Mutha River



Vitthalwadi Temple-Mutha River





Temple near Rajiv Gandhi bridge, Mula River

Religious places - existing



Omkareshwar Temple – existing



Omkareshwar Temple – morning activities along the proposed ghat and temple access



Crematoriums and burial grounds - existing



Crematorium near Mumbai Pune Bypass- Mutha River



Burial Ground, Khadki cantonment- Mula River



Crematorium near Shivaji Maharaj Bridge- Mula River



Crematorium Near Wakad ByPass Mula River

Crematoriums and burial grounds – existing Pawana Mula Mula- Mutha Millio Crematoriums and burial grounds км 🕕 0 0.5 2 1 Existing crematoriums and burial ground: 18 TTT-BAHAJAN

Crematoriums and burial grounds – existing



Crematoriums and burial grounds – existing







ATT - BARANA

Eateries – proposed



Z Bridge – existing eateries



Z Bridge – organized eateries



Eateries – existing



Eateries – proposed

Clean retained water

Lower Level Promenade

Plantation

Pitching with Green cover Upper level promenade

Accessible banks

4. Master Plan











There is not much land available for further development...





Proposed greens – Gardens, Urban forests, Open grounds

74 %

Garden – 66% Urban forest – 28%

0 0.5 1

Open ground - 6%

2

Percentage of remaining land under proposed greens – gardens, urban forests, open ground

Strategy for Urban Forests





Example of urban forest in Portland, Oregon

Strategy for Parks and Gardens





Example of riverfront park: Georgetown Waterfront Park Washington DC, United States

Strategy for Open Grounds



Example of open grounds: Corregidor Island, Philippines
Proposed amenities - temple ghats, visarjan, parking facility, public plaza, food courts



5. Project Implementation

Status of Work



DETAILED DESIGN AND IMPLEMENTATION OF PROJECT

PART 2

Priority Project Stretches

Project Stretch – 1 Aundh Baner Smart City Area- 6.32 km Cost- 153Cr.

Project Stretch – 4 Bund Garden Area – 6.54 km Cost- 119Cr.

Project Stretch – 2 Kharadi Area – 7.2 Km Cost-290Cr.

Project Stretch – 3 Sangam to Lakadi Pul Area – 5.3 km Cost-80Cr.



Summary of Project Cost

Sr No.	Particular	Amount (in Rs. Crores)	% of Total Cost	Urban Roads and Infrastructure
А	River-Edge Protection	1,245	48	Bridges
В	Interceptor Sewage Network	98	4	Landscape
С	Water Replenishment	287	11	
D	Promenade Finishing Works	377	14	and Ghats
Е	Public Access and Ghats	93	4	River-Edge
F	Landscape	114	4	Protection
G	Public Amenities	117	4	
Н	Roads and Bridges	117	4	Finishing Works
I	Urban Infrastructure	91	3	
J	Sub Total of A to I	2,533	97	Water Replenishment
К	Considering 3% Contingencies over J	87	3	Interceptor Sewage Network
L	Total Cost	2,619	100.00%	

Cost break up for rivers

Sr No.	Portioular	Amount	% of Total	Amount (in Rs. Crores)				
	Faluculai	(in Rs. Crores)	Cost	Mula	Mutha	Mula-Mutha		
А	River-Edge Protection	1,245	48	670	355	221		
В	Interceptor Sewage Network	98	4	19	62	17		
С	Water Replenishment	287	11	52.9	99.6	133.8		
D	Promenade Finishing Works	377	14	177	102	98		
Е	Public Access and Ghats	93	4	34	34	26		
F	Landscape	114	4	30	23	61		
G	Public Amenities	117	4	33	30	56		
Н	Roads and Bridges	117	4	65	29	24		
Ι	Urban Infrastructure	91	3	30	30	30		
J	Sub Total of A to I	2,533	97	1,107	763	663		
к	Considering 3% Contingencies over J	87	3	38	26	23		
L	Total Cost	2,619	100%	1,145	789	686		

Cost break up for rivers

Sr No.	Portioulor	Amount	% of Total	Amount (in Rs. Crores)				
	Particular	(in Rs. Crores)	Cost	PMC	PCMC	Defense		
А	River-Edge Protection	1,245	48					
В	Interceptor Sewage Network	98	4					
С	Water Replenishment	287	11					
D	Promenade Finishing Works	377	14					
Е	Public Access and Ghats	93	4					
F	Landscape	114	4					
G	Public Amenities	117	4					
Н	Roads and Bridges	117	4					
I	Urban Infrastructure	91	3					
J	Sub Total of A to I	2,533	97					
К	Considering 3% Contingencies over J	87	3					
L	Total Cost	2,619	100%	74%	11%	15%		

- To asses the possibility of the project being self sustained
- To explore the various components for generating the finance



Meeting with Municipal Commissioner on 5 July, 2017 for project finance

Meeting with Municipal Commissioner on 5 July, 2017 for project finance

Revenue Sources

Components	By statutory classification			By Status of development		By ownership			
	Within blue line	Between blue and red line	Outside Red Line between Influence line	Change of Restrictive Zone / use	Developed land	Undeveloped land	PMC Land	PCMC land	Cantonment land
Impact Fee	×	×	×	×	×	×	×	×	×
Planning Fee	\checkmark	✓	×	\checkmark	×	✓	\checkmark	\checkmark	×
FSI/ TDR Import	\checkmark	✓	×	\checkmark	×	\checkmark	\checkmark	\checkmark	×
Change of restrictive zones / use	×	×	×	✓	×	✓	√	×	×
Property Tax	\checkmark	✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	×	×
Land Development73 Ha that is available has been taken evenRightsthough about 50% of it is Government land									

Above is based on preliminary assessment – indicative only

Expenditure

- The total time line for the project is envisaged for 10 years
- Three phases for capital expenditure, starting in Year 1, Year 4 and Year 7 respectively
- First two phases (Year 1 & Year 4) are three years each. Last phase (Year 7) is four years
- 10% of the capital cost is incurred in each year of the capital expenditure
- 1% per year is incurred on maintenance expenditure
- Annual escalation of 4% on the cost of capital expenditure and O & M expenditure

Approach

- Phase I to be financed by PMC+PCMC and borrowing
- Project completion will increase attractiveness of land sale and drive up the rates
- Land development right from Year 4 will finance Phase II expenditure
- Revenues from levies will meet operating costs and start generating surplus to finance
- Phase III; any borrowing for Phase III can be repaid through future surplus
- Guiding Principle PMC + PCMC support is less than 100 crores per year

Financing

- PMC & PCMC support the project in proportion to the capital cost and potential revenue share in their respective areas
- Equity contribution in proportion to share of urban infrastructure, bridges, access and ghat works (common areas and facilities for whole city)
- Contribution of land proceeds as equity ULB/ Govt land will be provided as equity
- Annual grant Rs 100 crores per year from year 4 for eight years. If land proceeds or revenue growth is better than assumed, this support will not be necessary.
- Interest rate assumed at 10% p.a

6. Next Steps

Status of Work



DETAILED DESIGN AND IMPLEMENTATION OF PROJECT

PART 2

Next Steps

- 1. Clearance from Irrigation department
- 2. Final base map
- 3. Final EIA
- 4. SPV formation
- 5. Land transfer

SPV formation

Formation and Structure

Following are the steps for formation of the SPV

- 1. Identification of Board of Directors
- 2. Application for Director's Identification Number(DIN)
- 3. Application for name of Company
- 4. Memorandum of Association and Articles Association
- 5. Registration for various taxes
- 6. Obtaining the Certificate of Incorporation

SPV formation

Formation and Structure



Example organization chart identifying selected board of directors for Special Purpose Vehicle for Sabarmati Riverfront Development Project.



Example organization chart identifying selected board of directors for Special Purpose Vehicle for Sabarmati Riverfront Development Project.

Suggested sample organization chart identifying board of directors for Special Purpose Vehicle for Pune Riverfront Development Project.

Approvals required from Hon. Standing Committee, PMC and Hon. General Body, PMC

- 1. Approval of the DPR Draft
- 2. Formation of SPV
- 3. Land Transfer to SPV
- 4. Empowerment of SPV to raise financial capital for execution and maintenance

Thank you