Action Plan on Vishwamitri River

Presented by:
The Mayor
For Vadodara Municipal Corporation
Vadodara, Gujarat
Action Plan

- Challenges
- Causes
- Longlist of Solution
- Priorities for 2017
- Implementation Plan
Vishwamitri River Length

- River Length (Within VUDA boundary)- 27km*
- River Length (Within VMC boundary)- **16.5km**
- River Length with branches (Within VMC boundary)- **23.5km**
- River Width- 60m to 130m*
- River Depth- 8-10m*

* Source : VMSS
Frequent Floods (2005)
Damage to property and lives

Fatehganj Bridge
25th Sept 2013, 11.58 am
Frequent Floods (2005)
Vulnerable to floods

Source: HCP Database

2013 Flood Documentation
Action Plan

- Challenges
Challenges

We have to

1. Increase the flood carrying capacity
2. Clean the river to make it pollution-free
3. Retain and replenish the water
4. Create a safe habitat for crocodiles
5. Integrate with slum redevelopment policy
6. Increase groundwater recharge
7. Create public and recreational spaces
8. Strengthen the river edge
9. Improve accessibility and connectivity
10. Generate resources to pay for all of the foregoing
11. Integrate with city development
Other Challenges

- Due to River is not clean, issue of
  - Mosquito Breeding
  - Prone to public health Disease
    - Malaria
    - Dengue
    - Skin Disease
Action Plan

- Causes
Overall Catchment of Vishwamitri river
Longitudinal section of river through main river (through Sayaji Baug)

River bank levels are from 60m from the centre-line on each side.
Water Surface Elevation – Design Flood Discharge of 2006

- Peaks indicate presence of obstructions in the river way

2005 Flood - 805 cumecs
2006 Flood - 660 cumecs

Average Water velocity - 2.5m/s
• All Infrastructural Bridges & Old Sama Bridge gets totally submerged while Narhari Bridge, Kalaghoda Bridge & Bhimnath Bridge has flood water at soffit level for design flood of 660 cumecs in present natural condition. The required free board below soffit of the bridge is also not met with.
Obstructions – Bridge Structures

Kala Ghoda Bridge
Obstructions – Natural (Vegetation)
Existing Section
Streamlining the River

CITY

8.5 m

10 m

50 m

HFL

CITY

8.5 m

30 m

HFL
Action Plan

- Longlist of Solution
Vision for Vishwamitri Riverfront

- Safer
  - Ensure public safety from crocodiles
- Integrated
  - Strengthen the river edge
  - Integrate with city development
  - Improve access & connectivity
- Cleaner
  - Increase flood carrying capacity
  - Create protected habitat for crocodiles
  - Replenish with treated water
- Inclusive
  - Ensure public safety from crocodiles
  - Improve access & connectivity
  - Provide universally accessible areas
- Diverse
  - Create public places
  - Integrate with improved informal settlements
- Sustainable
  - Make it financially viable
  - Retain water & ground water recharge
  - Remove pollution from the river

Vishwamitri Riverfront Development
Most of the bridges threatened by flooding are well above the HFL.
Existing river edge – Inaccessible
Action Plan

- Priorities for 2017
Area of cross section: 440.75 Sq.M.
Perimeter: 63.20 M.
NIH Proposed Channel Improvement

NIH's proposal for channelized section
The first barrage is proposed near Sayaji Baug and the second one in the downstream of Vadsar Bridge.

The proposed barrages will be mechanically operable and can be kept open during monsoon to have unobstructed flow of water.

The proposed barrages can accommodate a pedestrian bridge on top of the structure thereby improving pedestrian connectivity across the river.
It is proposed to retain rainwater throughout the year by constructing two barrages. Water retained in the river will have many benefits for the city inhabitants and for the natural environment of the river.
River bank protection structures – Retaining Wall Embankment

- Proposed Water Surface Level
- Top of Embankment
- HFL
- Existing Ground Level

- Retaining Wall
- Anchor Slab
- Diaphragm Wall
River bank protection structures – Sloped Embankment

- Dead man Anchor
- Turn Buckle
- Galvanized Reinforcement
- Stone in Wire Crate (Gabions)
- Landscaped Slope
- Proposed Water Surface Level
- Top of Embankment
- Existing Ground Level
- Diaphragm Wall
Action Plan

- Implementation Plan
Embankment Master Plan

Total Length of River – 16.5 Kms
Total Length of the River (Part – 2) – 6.1 Kms
Total Length of Embankments – 11.6 Kms (100%)
Total Length of Sloped Embankment – 8.78 Kms (76%)
Total Length of Retaining Walls – 2.78 Kms (24%)

Sloped Embankment – 76%
Retaining Wall Embankment – 24%
The conceptual master plan and land use plan has been prepared keeping in mind the various objectives of the project.
Conceptual Visualisations

Existing view from Bhimnath Bridge
Conceptual Visualisations

Proposed view from Bhimnath Bridge
Thank You

VMC