MANAGEMENT OF USED WATER FLOWING IN THE DRAINS

INTERCEPTION AND DIVERSION

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USED WATER MANAGEMENT FOR INDIA - CHALLENGES & OPPORTUNITIES

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Therefore, the used water in drains needs to be safely managed

**CONTEXT**

Used water will continue to flow in drains and cannot be ignored

- **Public Health Risk**
  - vector breeding

- **Environment Risk**
  - Pollution of waterbodies

- **Affects the overall SWACHHATA**

Therefore, the used water in drains needs to be safely managed
Q & q OF USED WATER THAT FLOWS IN OUR DRAINS VARIES

Management strategies will vary based on the nature of Used Water Quality & quantity.

Case 1
Only grey water flowing in drains

Case 2
Grey water + Septic tank overflow

Case 3
Black and grey water flowing in drains

Low strength used water

Medium strength used water

High strength used water (grey and black)
KEY DRIVERS OF MANAGEMENT APPROACH

Objective

To mitigate pollution in terminating waterbody and facilitate reuse at local level

...Management approaches are highly contextual

Quality of used water

- Low
- High

Quantity of used water

- Low
- High

Nature of drain

- Crosssection / RoW, open/close, Lined / unlined

Nature of wet season flows

- Variation of Dry and wet season flow

Levels, slopes and drain Hydraulic characteristics

- Town / catchment hydrology

Downstream characteristics

- Point where it joins/terminates,
- Extent of pollution downstream
CHALLENGES

Solid waste

Encroachments

Sewage and Industrial effluent

Illegal effluent discharge from industries

Silt deposit and weed growth

Challenges
- Solid waste
- Industrial effluents
- Sewage outfalls
- Encroachments
Possible for wide drains (>6 m width), low strength used water, and low dry season flows

Difficult with high monsoon flows

More applicable in the Indian context as most drains struggle for RoW and monsoon flows are usually high; & dry season flows are not small

I&D to Abutting sites – put back in drain/locally reuse using decentralized approaches

I&D To faraway site/ large scale STP – involves pumping/centralized approaches
IN LINE TREATMENT

INTERCEPT & DIVERT

Micro screen
Macro screen

Diversion channel
Drain carrying dry weather flow
Wastewater Treatment System (DEWATS)

Floating Wetlands

Intercept & divert

Lake
KEY DESIGN CONSIDERATIONS

✓ Screening of solid wastes

✓ Finding land near I&D site for treatment

✓ If land is located on higher ground than interception point => pumping is required (makes the system susceptible to disruptions)

Screening arrangement in a drain - cbe 8 lakes project
KEY DESIGN CONSIDERATIONS

✓ I&D structure capable of withstanding wet season flows and passing it on without blockage

✓ Output Quality target Regulations, Reuse target

Quality & quantum of flows

✓ Robust, cost effective & easy to operate
SNAPSHOTS OF 8 LAKES RESTORATION COIMBATORE
I & D PLAN - KARUALI

1. Two stage screening at all outfalls
2. Intermediate pumping station for outfall 1
3. Collection chamber with and Screening and Diversion chamber for outfall 2 and 3
4. Diversion arrangement Outfall 4, 5, 6 and 7
5. Terminal Pumping station
6. Wastewater Treatment Plant

Screening arrangement to trap solid waste at all outfalls
Interceptor to divert wastewater from outfalls to the terminal pumping station
Terminal pumping station
Interceptor chambers

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SUCCESSFUL INTEGRATION OF MODULES IN A NEW, DYNAMIC CONTEXT: Snapshot of Mahadevapura lake I & D

An innovative diversion arrangement that is economical and robust

Intake Structure

Solid Waste Screen

Diversion Channel

Sedimentation Tank

DEWATS

Gabions + Floating Wetlands
CONCLUSION

- I&D Scheme are important in the overall Used Water management strategy for another 2 decades at least
- Inline treatment in drains is challenging
- Designing I&D structure is key: highly contextual
- Treatment process should be kept simple
- Output quality standards need to be relaxed (based on reuse/receiving waterbody condition)
Thank you

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