WASTEWATER SECTOR AND WASTEWATER SYSTEMS IN SRI LANKA

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Sri Lanka
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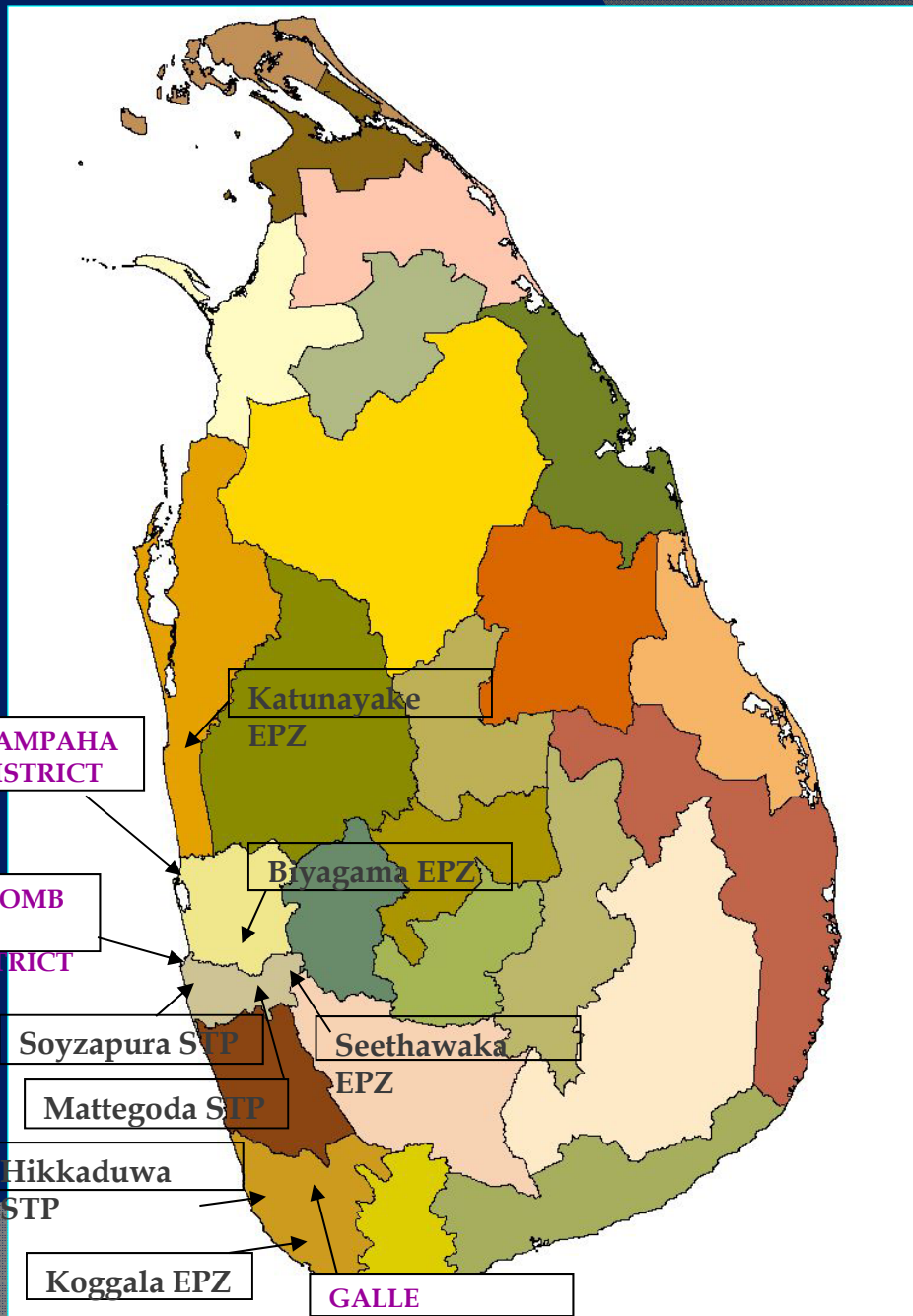
PRESENT STATUS OF SEWERAGE SYSTEMS

	SEWAGE TREATMENT PLANT	WASTEWATER TREATMENT PROCESS	NO. OF TREATMENT PLANTS
1	Colombo City	Course Screen, fine screen, grit removal and sea outfall	2 sea outfalls
2	Biyagama Export Processing Zone (BEPZ)	Extended aeration (oxidation ditch), Aerated Lagoon with solid recycle type followed by polishing ponds	03
3	Katunayaka EPZ	Mechanically Aerated Lagoon	01
4	Seethawaka EPZ	Oxidation Ditch	01
5	Kataragama	Facultative type waste stabilization ponds	01
6	Hikkaduwa	Facultative ponds and polishing ponds	01
7	Mattegoda, Kottawa	Waste Stabilization Ponds	01
8	Soyzapura, Moratuwa	Trickling Filters	01
9	Digana Village	Waste Stabilization Ponds	01
10	Boossa Prison Camp	Oxidation Ditch	01
11	Thellippalai Hospital	Conventional Activated Sludge with Digester	01
12	Raddolugama	Activated Sludge	01
13	Hantana, Kandy	Trickling Filters	01
14	Koggala EPZ	Activated Sludge (Package Plant), Proposed Oxidation Ditch	01
15	Mirigama EPZ	Activated Sludge (Package Plant)	01
16	Matara Hospital	Oxidation Ditch	01
17	Hambantota Hospital	Oxidation Ditch	01
18	Point Pedro Hospital	Conventional Activated Sludge with Digester	01
19	Dental Faculty Hospital, Peradeniya	Activated Sludge (Package Plant)	01
20	Sirimavo Bandaranayake Hospital for Children	Rotating Biological Contactors	01
21	Peradeniya Teaching Hospital	Conventional Activated Sludge with Digester	01
TOTAL NUMBER OF MAJOR SEWAGE TREATMENT PLANTS			22

NWSDB

MAJOR WASTEWATER TREATMENT PLANTS IN SRI LANK

1. Biyagama Export Processing Zone
   Wastewater Treatment Plant - Biyagama
2. Koggala Export Processing Zone
   Wastewater Treatment Plant - Koggala
3. Seethawaka Export Processing Zone
   Wastewater Treatment Plant - Avissawella
4. Hikkaduwa Sewerage Treatment Plant – Hikkaduwa
5. Soyzapura Housing Scheme Sewerage
   Treatment Plant – Moratuwa
6. Mattegoda Housing Scheme
   Sewerage Treatment Plant
7. Raddolugama Housing Scheme Sewerage
   Treatment Plant
8. Katunayake Export Processing Zone Wastewater Treatment Plant



Major Projects

- Ongoing Major Projects (Mobilized)
  - Ja Ela/Ekala – Ratmalan/Moratuwa Wastewater Disposal Project
  - Kandy City Wastewater Management Project
  - GPOBA
  - Greater Colombo Wastewater Management Project (Deh/ Mt La & Kol)
  - Jaffna Municipality Sewerage Project
  - Colombo Sewerage Rehabilitation Project - Southern Catchment : (Completed)
  - Greater Colombo Wastewater Management Project (Managed by CMC)
- Projects in Bidding Stage
  - Jayawardana Pura/ Kotte Wastewater Disposal Project
  - Hambantota Wastewater Disposal Project
  - Kataragama Wastewater Disposal Project
  - Kurunegala Water & Wastewater Project
  - Improvement to WW Disposal System of Cancer Hospital

Global Partnership On Output-based Aid Project (GPOBA PROJECT)

The project will benefit 15,407 poor households (77, 000 people) who currently rely on unsatisfactory pit latrines, nun functioning septic tanks or have no sanitary facilities at all.

Project Area	Expected number of outputs							Total number of outputs per project area
	Output 1: Sewer connections						Output 2: On-site sanitation improve-ments	
	Output 1 a: Direct connections		Output 1 b: Connections to conventional sewer extensions	Output 1 c: Connections to simplified sewer extensions		Output 1 d: Connections to new decentralised networks		
	Output 1 a 1: Full cost Build	Output 1 a 2: Cost within premises		Output 1 c 1: Connections to simplified sewer extensions	Output 1 c 1: Connections to simplified sewer extensions with pumping			
Ratmalana		275	80	200	2100	560	500	3715
Dehiwala	350		70	500	300	100	100	1420
Moratuwa		275	86	500	1100	550	800	3311
Kolonnawa	375		70	300	3500	480	800	5525
Ja-ela/Ekala		200	86	650	300	100	100	1436
Number of outputs	725	750	392	2150	7300	1790	2300	15407

BADOWITA Simplified Extension with Pumping

Detailed Designs, BOQ & Tender Document is in progress

Tendering – April 2013

Project Details

Total Connections – 1400

Network Length 5 km

Pumping Stations – 3 nos

Simplified Sewerage Designs

This is off-site sanitation technology that removes all wastewater from household environment. Its same as conventional sewerage, but deferent in Construction (Layout and shallow depth) and Designs (Changed the hydraulic design basis from minimum self cleansing velocity to minimum tractive tension)

Construction aspects when planning Badowita Decentralized WWS

- Layout : Consider as in-block system – key feature is sewers routed in private land through either back or front yards.
- Shallow depths and small access chambers

Design Considerations

- With past experiences, we are not allow 100 mm dia sewers
- Comply minimum 60 l/p/d and reliable water supply
- Plot size is 2-4 perch, therefore on site is not a option
- Very high population density
- Existing pumping station which is constructed under the Moratuwa / Ratmalana project is available very closely
- Since separate system and expecting low grit and other suspended solids leads low silting and expecting good quality construction, average minimum tractive tension value is assumed.
- Minimum diameter taken as 150 mm

Difficulties faced when Planning and Designing

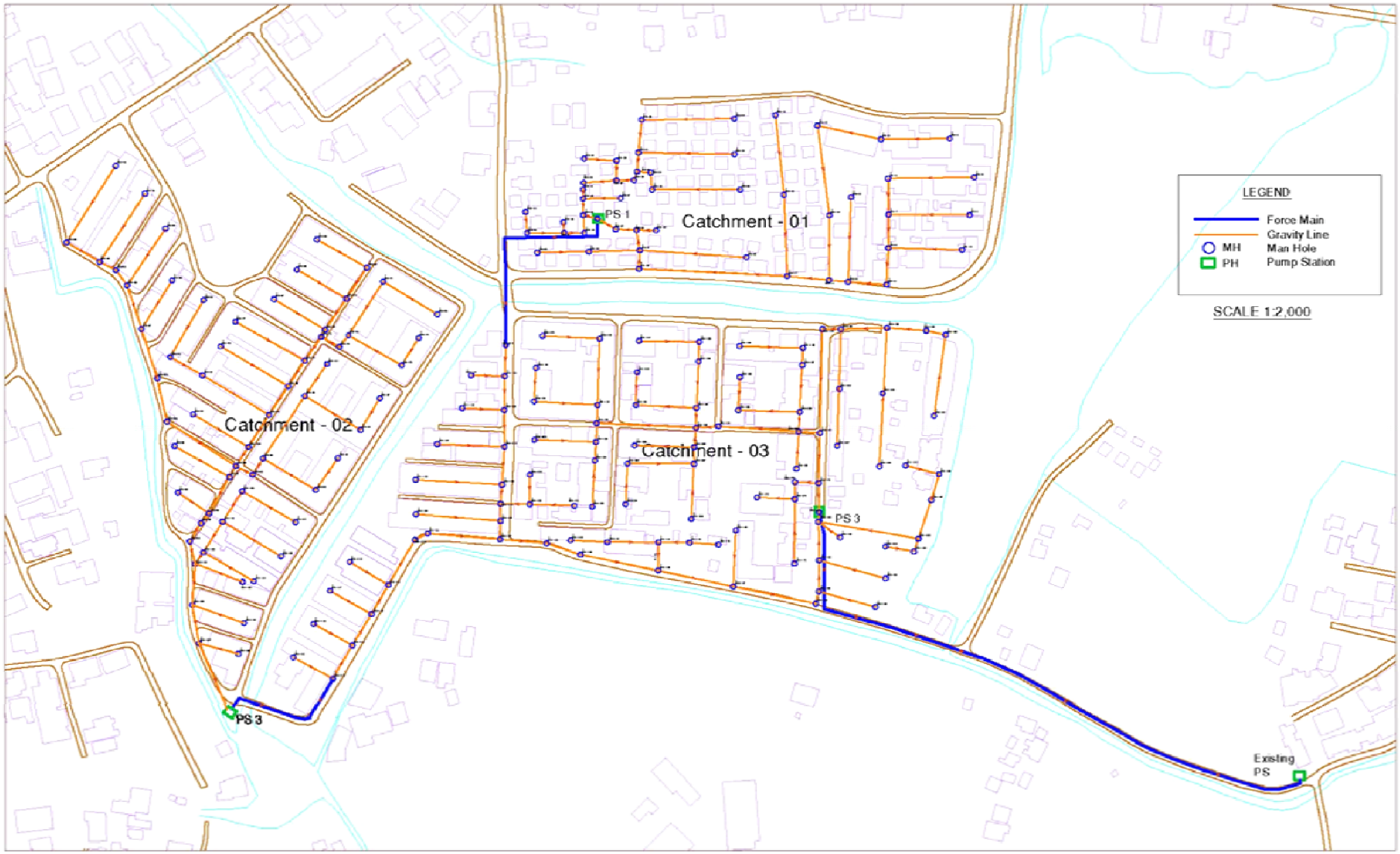
- Some households refused to lay others sewers in front yard
- Some back yard has no space to lay the sewer
- Length limitation due to sewer cleaning vehicles accessibility

Remedial Measures taken;

Sewer routing was re arranged..

- Lane sewers – no need much cover since access ways that are too narrow to allow heavy traffic
- Payment Sewers – laid underneath payments to avoid heavy traffic
- Plot line Sewers – the sewer is laid at shallow depth close to the front boundary of plots
- Conducted awareness program about the importance of the system
- Will include a clause in the connection agreement, that the NWSDB has a authority to inspect / repair backyard or front yard sewer

PROPOSED SEWERAGE SYSTEM - BADOVITA



Our Past Experiences on Simplified Sewers

Soysapura Simplified Sewer System

No. of sewerage connections	-	2250 nos.
No. of Manholes	-	675 nos.
Length of sewers	-	6300m
No. of Pump houses	-	02 nos.
No. of Pumps	-	12 nos.
Pipe material	-	Cast Iron and PVC
Size of pipe	-	100 - 200mm dia

Present Situation

- Sewers not cleaning frequently and frequent overflowing
- Solid waste dump to the system
- Upstream/ upstairs people not concern
- No proper mechanism for collection money for rehabilitation/ cleaning
- Brick manholes blocked and collapsed
- Rainwater entered to the system through damaged pipe and manholes which will create more troubles

Conclusions..

- Establishment and maintain of Condominium Management Authorities, specially if within the premises maintain by them
- Should Maintain Construction Quality and quality of materials
- Proper Agreement should sign to access back yards for cleaning and maintenance
- Awareness campaign should arrange about system operation and maintenance
- Sewer doesn’t know whether they design Conventional or Simplified

Thank You