



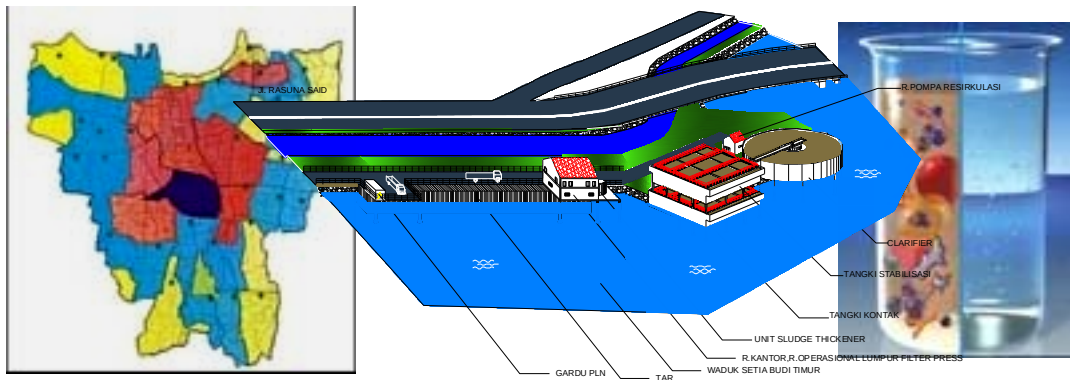
**PEMERINTAH PROVINSI DAERAH KHUSUS IBUKOTA JAKARTA
PERUSAHAAN DAERAH PENGELOLAAN AIR LIMBAH PROVINSI DKI JAKARTA
(PD PAL JAYA)**

Jl. SULTAN AGUNG NO. 1 SETIABUDI, JAKARTA SELATAN 12980

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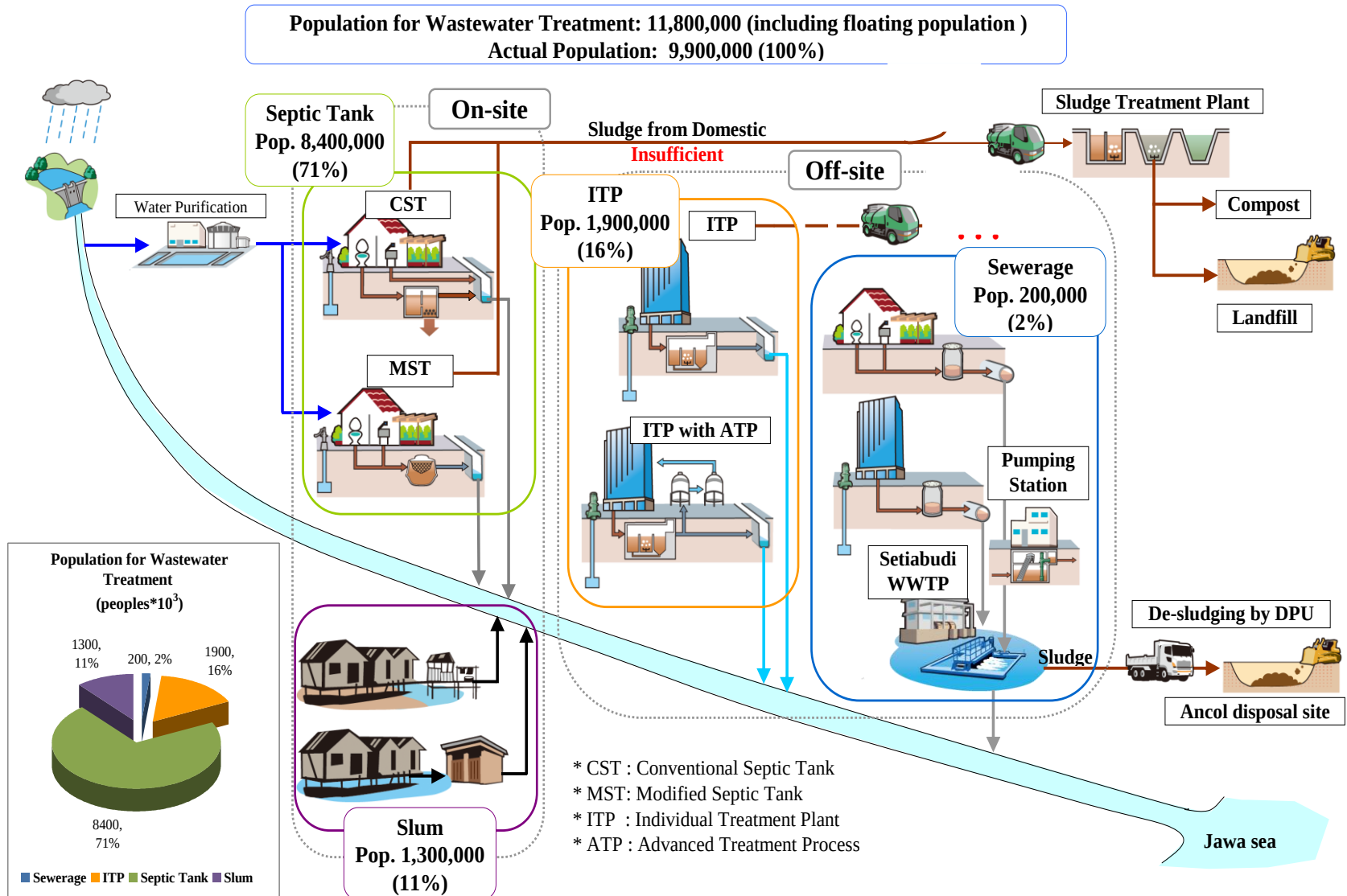
<http://www.paljaya.com>; E-mail: paljaya@paljaya.com

CONCEPT AND STRATEGY FOR WASTEWATER MANAGEMENT OF JAKARTA



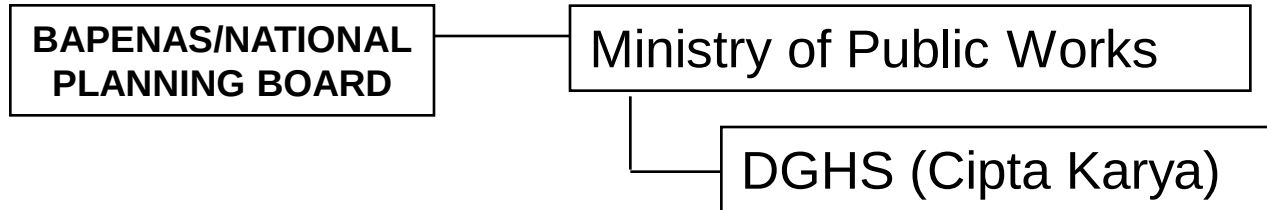
Current Situation of Wastewater Treatment in DKI Jakarta

The current situation of Off-site (sewerage) and On-site Sanitation DKI Jakarta



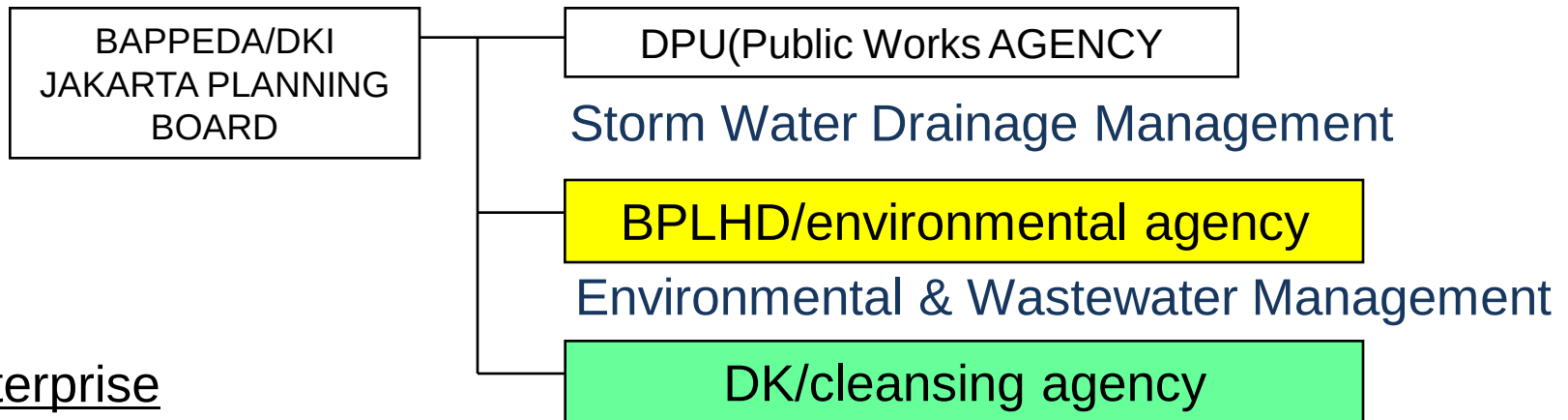
Current Institutions for Wastewater Treatment

Central Government



DKI Jakarta

Sewerage Planning & Construction



Enterprise



MASTERPLAN FOR WASTEWATER MANAGEMENT IN DKI JAKARTA (1991)

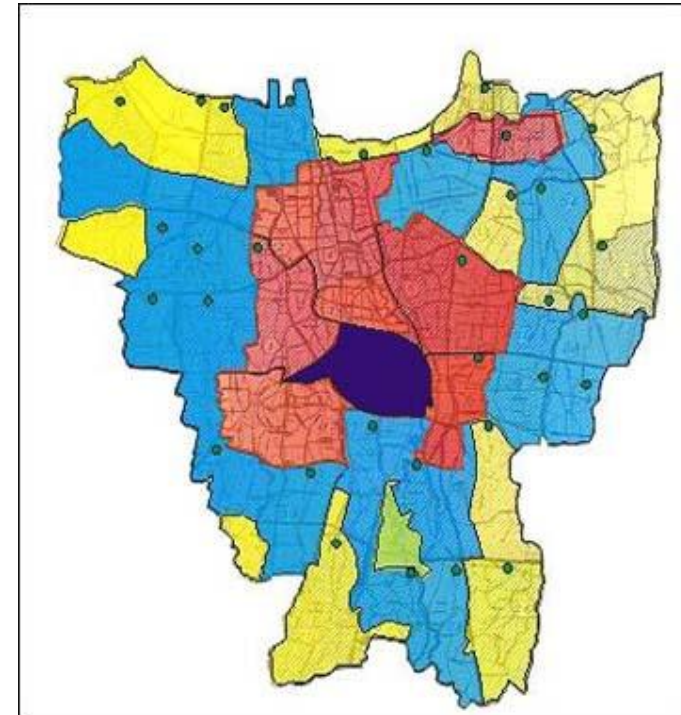
Sewerage Zoning In the MASTER PLAN (1991)

Off-site and on-site areas were divided into 3 categories by the population density as follows:

- Area-A: **Simple on-site treatment** system development
(pop. density <100person/ha)
- Area-B: **High level on-site treatment** system development
(pop. density 100 to 300person/ha)
- Area-C: **Sewerage** development (pop. density more than 300person/ha)

The sewerage development area as Area-C was divided into six (6) zones as shown in the map below:

- Central Zone
- North East Zone
- North West Zone
- South East Zone
- South West Zone
- Tanjung Priok Zone



Existing = 2%

RIVER WATER QUALITY IN DKI JAKARTA

QUALITY STATUS	POLLUTANT INDEX					
	2004	2005	2006	2007	2008	2009
GOOD	0%	0%	3%	0%	0%	0%
LOW POLLUTED	3%	5%	9%	0%	0%	9%
MODERATE POLLUTED	16%	16%	10%	6%	12%	9%
HIGH POLLUTED	81%	79%	78%	94%	88%	82%
TOTAL	100%	100%	100%	100%	100%	100%

SOURCE: BPLHD, 2009

GROUND WATER QUALITY IN DKI JAKARTA

QUALITY STATUS	POLLUTANT INDEX					
	2004	2005	2006	2007	2008	2009
GOOD	18%	16%	7%	25%	23%	23%
LOW POLLUTED	33%	33%	55%	43%	48%	41%
MODERATE POLLUTED	28%	35%	13%	20%	16%	19%
HIGH POLLUTED	21%	16%	25%	12%	13%	17%
TOTAL	100%	100%	100%	100%	100%	100%

SOURCE: BPLHD, 2009

PD PAL JAYA's PROFILE

PD PAL Jaya History

- Year 1977 : Master Plan Study of Wastewater Management and Sanitation of Jakarta
- Year 1983 : Implementation I Master Plan in Setiabudi – Tebet district (Pilot Project).
- Year 1987 : Established BPAL (Wastewater Management Board).
- Year 1991 : PD PAL Jaya (Wastewater Management Enterprise), working area of PD PAL Jaya cover all province of DKI Jakarta



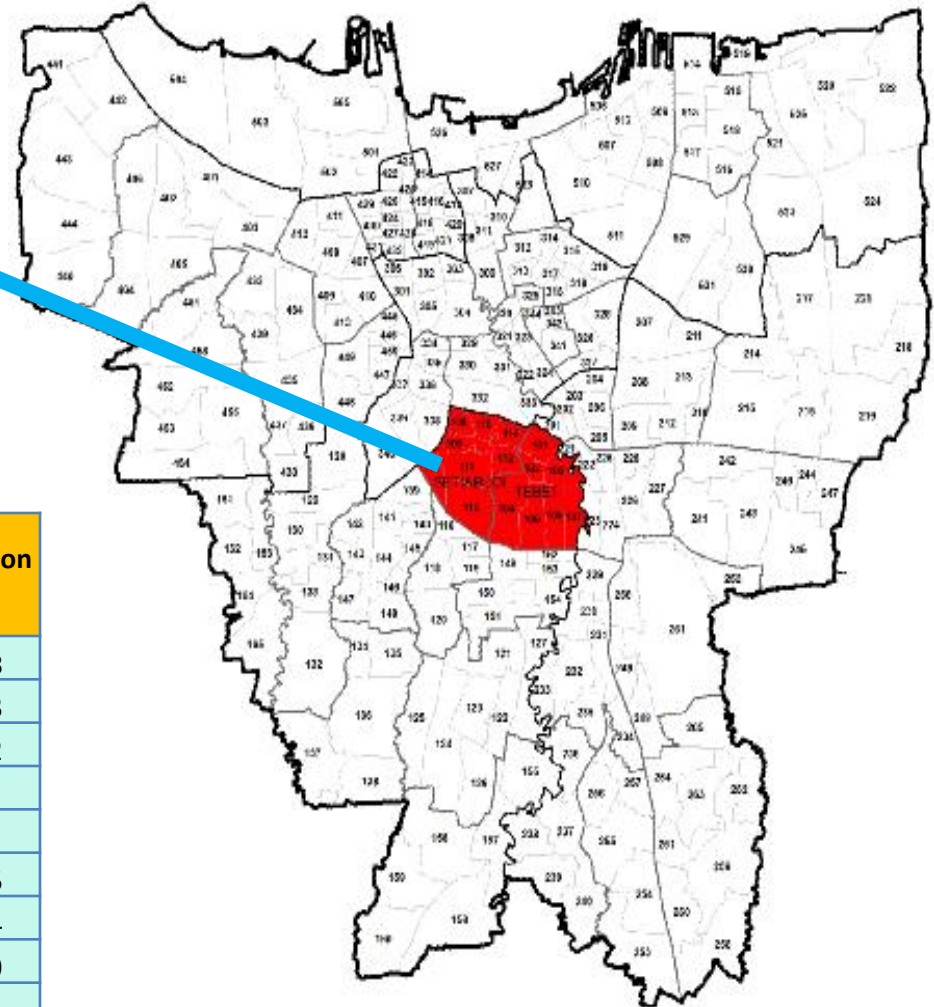
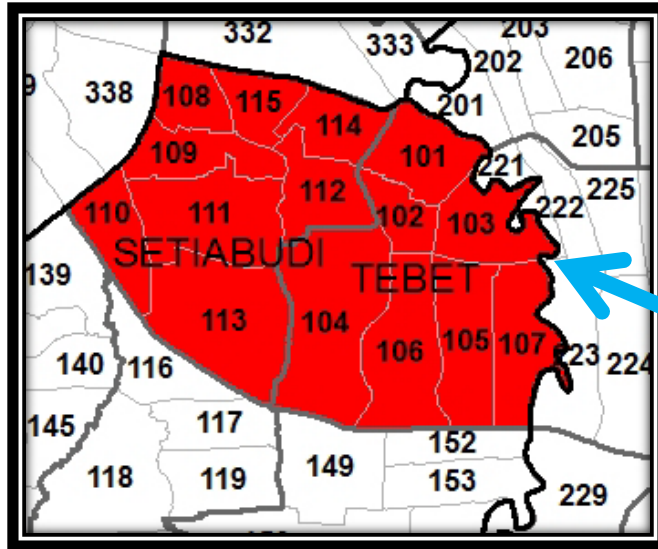
Vision

To become a capable company increasing the quality of physical city against the impact of waste pollution

Mision

Providing wastewater pipeline service and its collection by pipeline system, on site system and its management

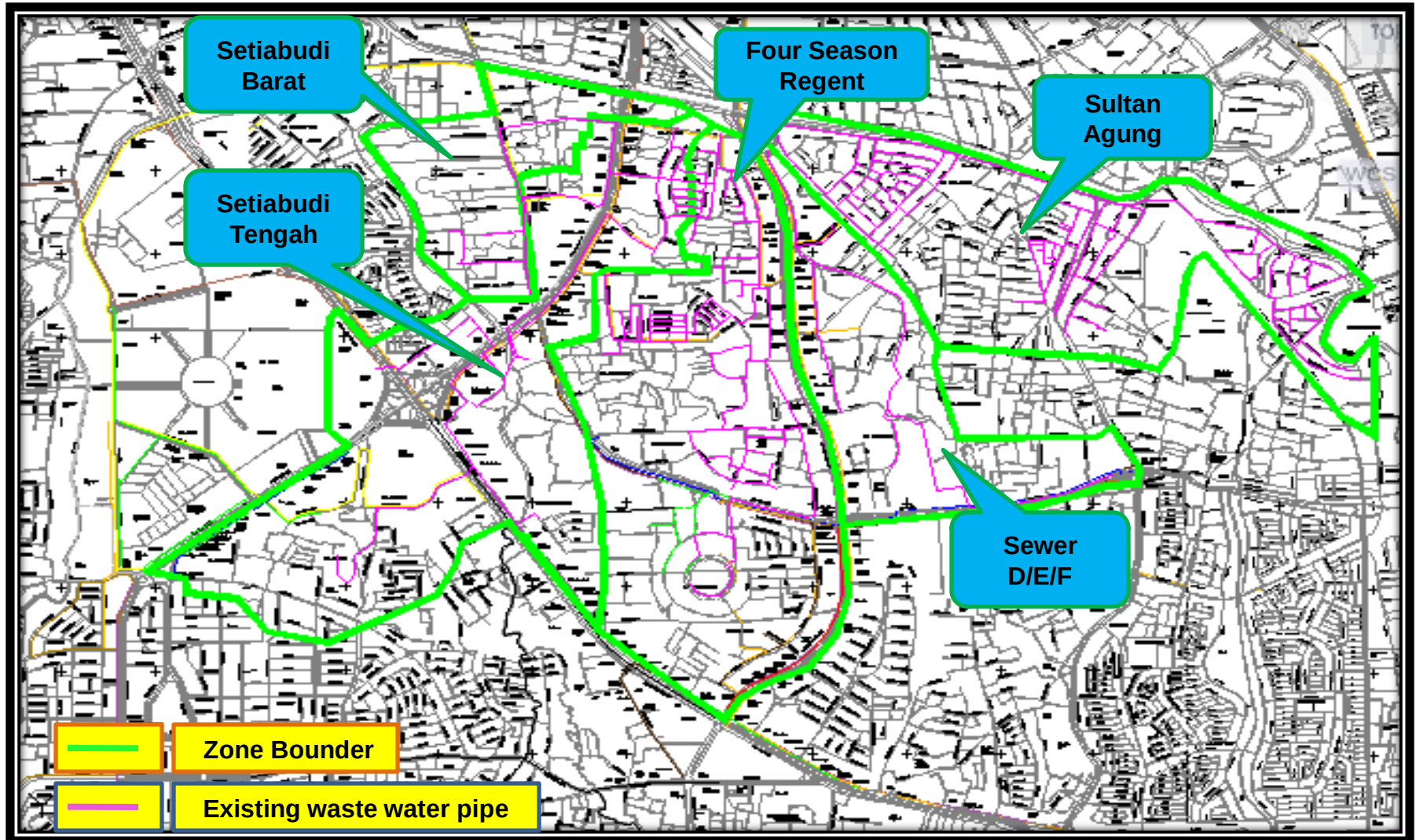
1. CATCHMENT AREA SERVICES



No.	District	Sub District	Code	Population (2010)
1	Tebet	Manggarai	101	43.048
2	Tebet	Manggarai Selatan	102	32.943
3	Tebet	Bukit Duri	103	43.642
4	Setiabudi	Setiabudi	108	4.015
5	Setiabudi	Karet	109	8.749
6	Setiabudi	Karet Kuningan	111	23.855
7	Setiabudi	Menteng Atas	112	37.444
8	Setiabudi	Pasar Manggis	114	28.320
9	Setiabudi	Guntur	115	6.346

 Subdistrict Setiabudi & Tebet

2. Existing Network Of Waste Water Service



Description Of Waste Water Network

1

Items	Krukut Pumping Station	Manggarai Pumping Station
Final destination	West Setiabudi Pond	East Setiabudi Pond
Performance of Pump	365 L/s x 16.7m x 90 KW x 3 Unit (=219 m ³ /min=31.536m ³ /day)	38.9 L/s x 11.7 m x 7.5 kW x 2 Units (2.33 m ³ /min=3,361 m ³ /day)
Type of Pump	Vertical Spiral Pump	Aquatic Pump
Structure of Facility	Manual-Operated	Automatically-operated (by water level)

2

Pond	No	Catchment Area	Pipe (m)	MH (Unit)	Service Pipe (m)	IC (Unit)
East Setiabudi Pond	1	Sultan Agung	19,83	480	9,022	1,432
	2	Sewer D, E, & F	4,648	77	882	40
West Setiabudi Pond	3	Four Season Regent	16,319	487	8,843	1,713
	4	Setiabudi Tengah	10,995	245	3,078	292
	5	Setiabudi Barat	2,184	48	668	10
Total			53,977	1,337	22,493	3,487

3

Category	Total (Unit)	Total area (m ²)
House hold	1.186	131.454
Non Household (highrise building)	221	5.054.668
TOTAL	1.407	5.186.122

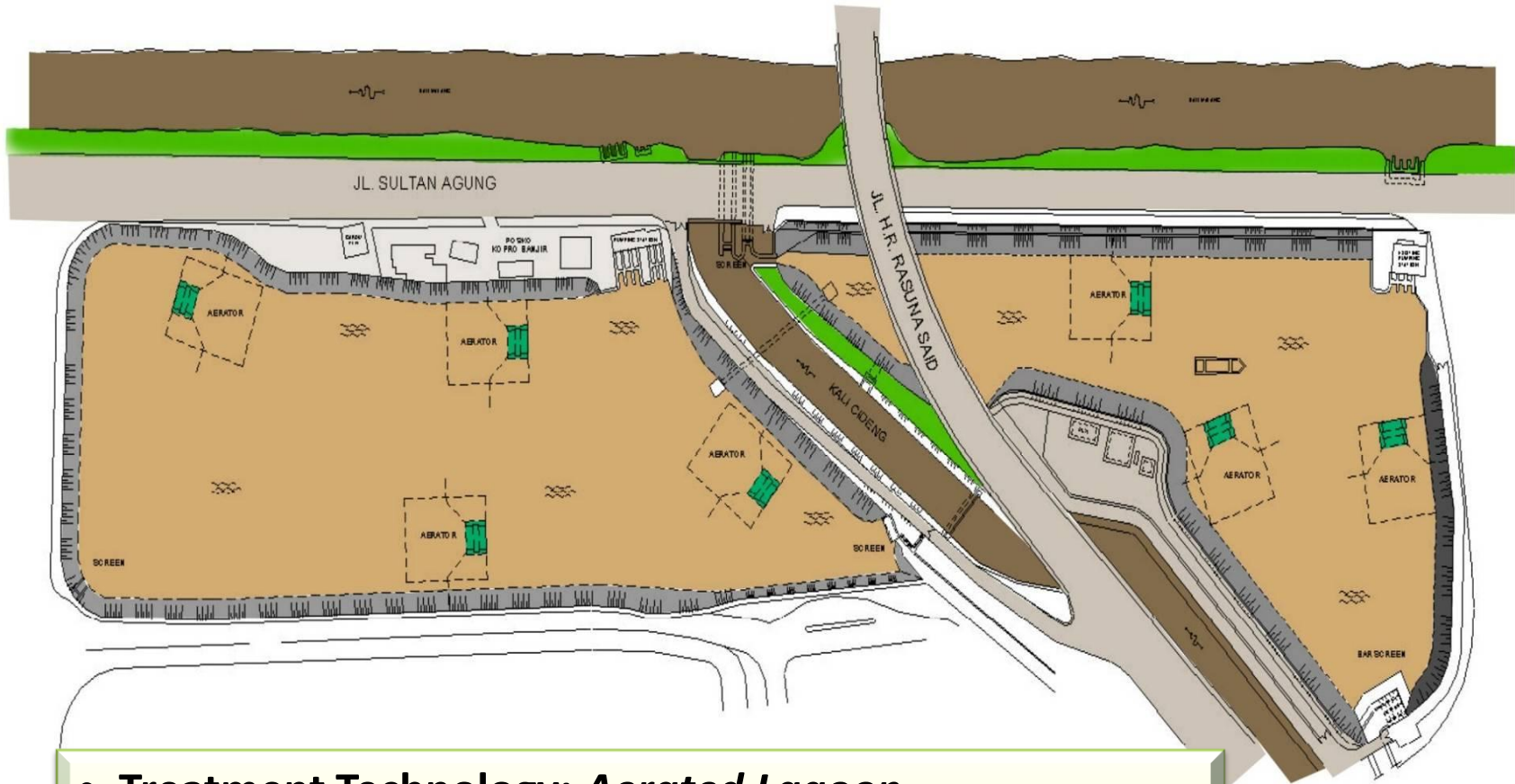
4

SUB DISTRICT COVERAGE

- | | |
|--|---|
| 1. Sub district Guntur
2. Sub district Manggarai
3. Sub district Manggarai Selatan
4. Sub district Bukit Duri
5. Sub district Menteng Atas | 6. Sub district Pasar Manggis
7. Sub district Setiabudi
8. Sub district Karet
9. Sub district Karet Kuningan |
|--|---|

Source: PD PAL Jaya, 2011

3. SETIABUDI WASTEWATER TREATMENT PLANT (WWTP)



- Treatment Technology: *Aerated Lagoon*
- Total capacity 450 L/sec ~38.880 m³/day
- Utilize capacity 19.029 m³/day
- Average BOD effluent = 45-55 mg/l

DESCRIPTION OF SETIABUDI WWTP

Physical		West Pond	East Pond	Total
Surface Area		26.100 m ²	17.400 m ²	43.500 m ²
Water Level	High level condition	4.5 m	4.7 m	-
	Low level condition	1.5 m	1.5 m	-
Elevation depth (effective)		3.00 m	3.20 m	-
Elevation at the bottom of pond		-0.5 m	-0.5 m	-
Pond capacity (effective volume)		78.300 m ³	55.680 m	122.980 m ³
Treatment process		Aerated Lagoon	Aerated Lagoon	-
Inlet	Waste water	3	2	5
	Drainage	6	2	8
Screen (Manual & Mechanical screen)		2 (Manual)	2 (Mechanical)	4
Aerator Unit		4	3	7

Sources: PD PAL Jaya & JICA, 2010

TABLE 1. WEST POND WATER QUALITY IN 2010

No	PARAMETER	JAN	FEB	MRH	APRIL	MEY	JUNE	JULY	AGS	SEPT	OCT	NOV	DES	STD*	
1	pH	7,53	7,47	7,50	7,70	7,50	7,50	7,50	7,25	7,40	7,50	7,30	7,40	6 sd 9	-
2	Suspended Solid	34,00	32,00	34,00	36,00	40,00	32,00	34,00	28,50	17,67	30,00	36,00	32,00	50,00	mg/L
3	BOD (20°C, 5 day)	31,00	30,00	27,00	42,00	33,00	24,00	39,50	59,00	34,33	20,00	22,00	40,00	75,00	mg/L
4	COD	73,33	61,00	70,00	79,00	64,00	69,00	76,50	153,00	73,00	58,00	89,00	75,00	100,00	mg/L
5	Organic Matter	63,33	68,33	64,00	65,00	70,00	72,00	64,00	79,76	48,29	60,00	68,00	66,00	85,00	mg/L
6	Ammonia	1,27	0,88	2,16	1,30	0,90	0,66	2,16	10,50	3,62	0,76	1,18	2,70	10,00	mg-N/L
7	Detergent/M BAS	0,70	0,45	0,72	0,93	0,90	0,34	0,72	0,50	0,21	0,89	0,08	1,10	2,00	mg/L

*) = Governor Decree No.122 / 2005
 Jakarta Wastewater Standard

TABLE 2. EAST POND WATER QUALITY IN 2010

No	PARAMETER	JAN	FEB	MRH	APRIL	MEY	JUNE	JULY	AGS	SEPT	OCT	NOV	DES	STD *	
1	pH	7,60	7,50	7,65	7,80	7,90	7,90	7,90	7,35	7,43	7,50	7,30	7,40	6 sd 9	-
2	Suspended Solid	58,00	37,33	34,00	27,00	40,00	42,00	42,00	48,50	30,33	30,00	36,00	32,00	50,00	mg/L
3	BOD (20°C, 5 days)	81,00	30,00	26,00	26,00	33,00	25,00	25,00	66,75	51,33	20,00	22,00	40,00	75,00	mg/L
4	COD	126,00	68,67	69,50	60,00	74,00	70,00	70,00	132,50	80,67	58,00	89,00	75,00	100,00	mg/L
5	Organic Matter	77,00	70,67	71,50	59,00	79,00	64,00	64,00	63,96	52,61	60,00	68,00	66,00	85,00	mg/L
6	Ammonia	1,60	1,08	2,80	0,78	1,20	1,20	1,20	6,05	5,23	0,76	1,18	2,70	10,00	mg-N/L
7	Detergent/M BAS	0,74	0,32	0,65	0,66	0,67	0,96	0,96	0,37	0,16	0,89	0,08	1,10	2,00	mg/L

*) = Governor Decree No.122 / 2005
 Jakarta Wastewater Standard

DEVELOPMENT PROGRAM OF PD PAL JAYA

- 1. REVIEW MASTER PLAN 2011 (ON GOING PROCESS)**
- 2. CONSTRUCT NEW WASTEWATER TREATMENT PLAN
IN WADUK SETIABUDI**
- 3. SEWERAGE SYSTEM EXPANSION**
- 4. IMPROVEMENT FACILITIES & ON SITE
SYSTEM EXPANSION**

1. REVIEW MASTER PLAN 1991 (proposed NEW MASTER PLAN)

[Vision]

“Create sustainable water cycling society in DKI ”

Improve the current river water quality up to the level that river water can be used as water sources for water supply system in DKI by the year 2050.

Milestones for Off-Site System

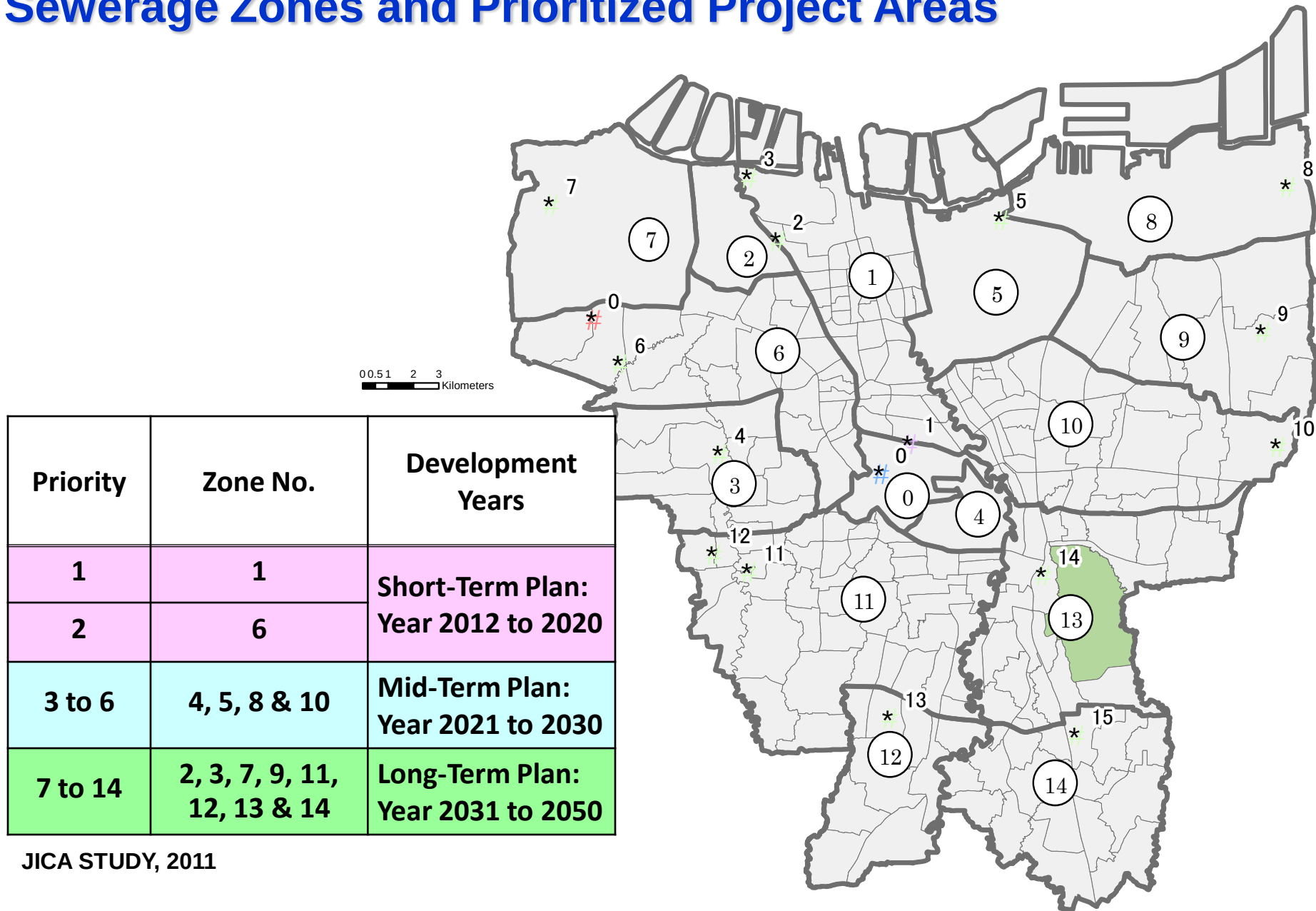
Achieve the facility coverage ratio and service coverage ratio of:

- ✓ 10% up to the year 2020 respectively
- ✓ 40% up to the year 2030 respectively
- ✓ 80% up to the year 2050

Milestones for On-Site System

- ✓ Eliminate open defecation by the year 2014.
- ✓ Achieve 100% coverage of the regular de-sludging of the on-site facilities of the unsewered population by the year 2050.
- ✓ Achieve 100% conversion from the inappropriate on-site facility to the appropriate on-site facility of the unsewered population by the year 2050.

• Sewerage Zones and Prioritized Project Areas



Priority	Zone No.	Development Years
1	1	Short-Term Plan: Year 2012 to 2020
2	6	
3 to 6	4, 5, 8 & 10	Mid-Term Plan: Year 2021 to 2030
7 to 14	2, 3, 7, 9, 11, 12, 13 & 14	Long-Term Plan: Year 2031 to 2050

JICA STUDY, 2011

2. CONSTRUCT NEW WASTEWATER TREATMENT PLAN IN WADUK SETIABUDI

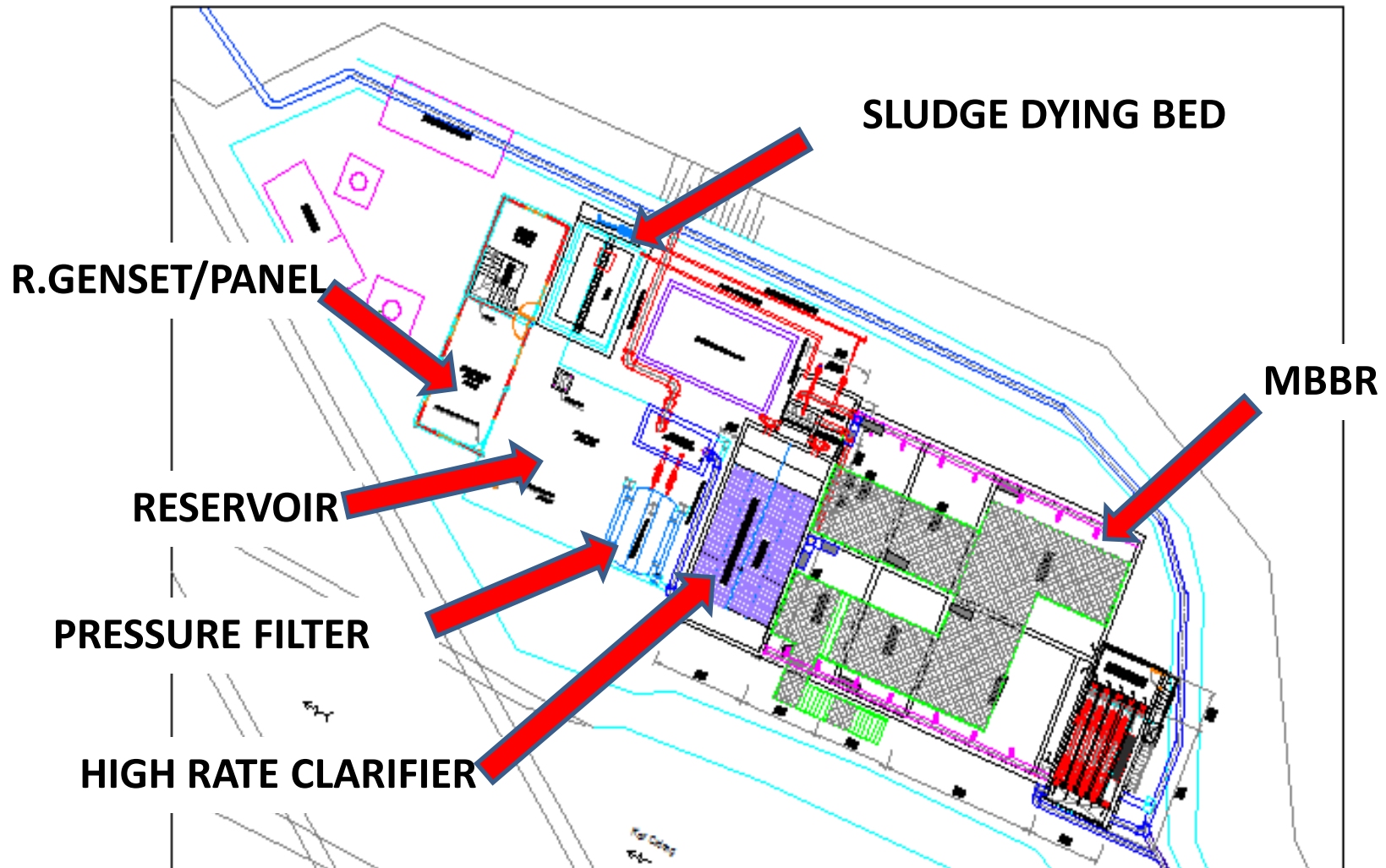
A. DEVELOPMENT OF SETIABUDI WWTP

CONDITION	EAST POND
Surface Area	17.400 m ²
Water level height (High condition)	4,70 m
Water level height (Low condition)	1,50 m
Ponds depth (effective)	3,20 m
Ponds base elevation	-0,50 m
Ponds capacity	55.680 m ³

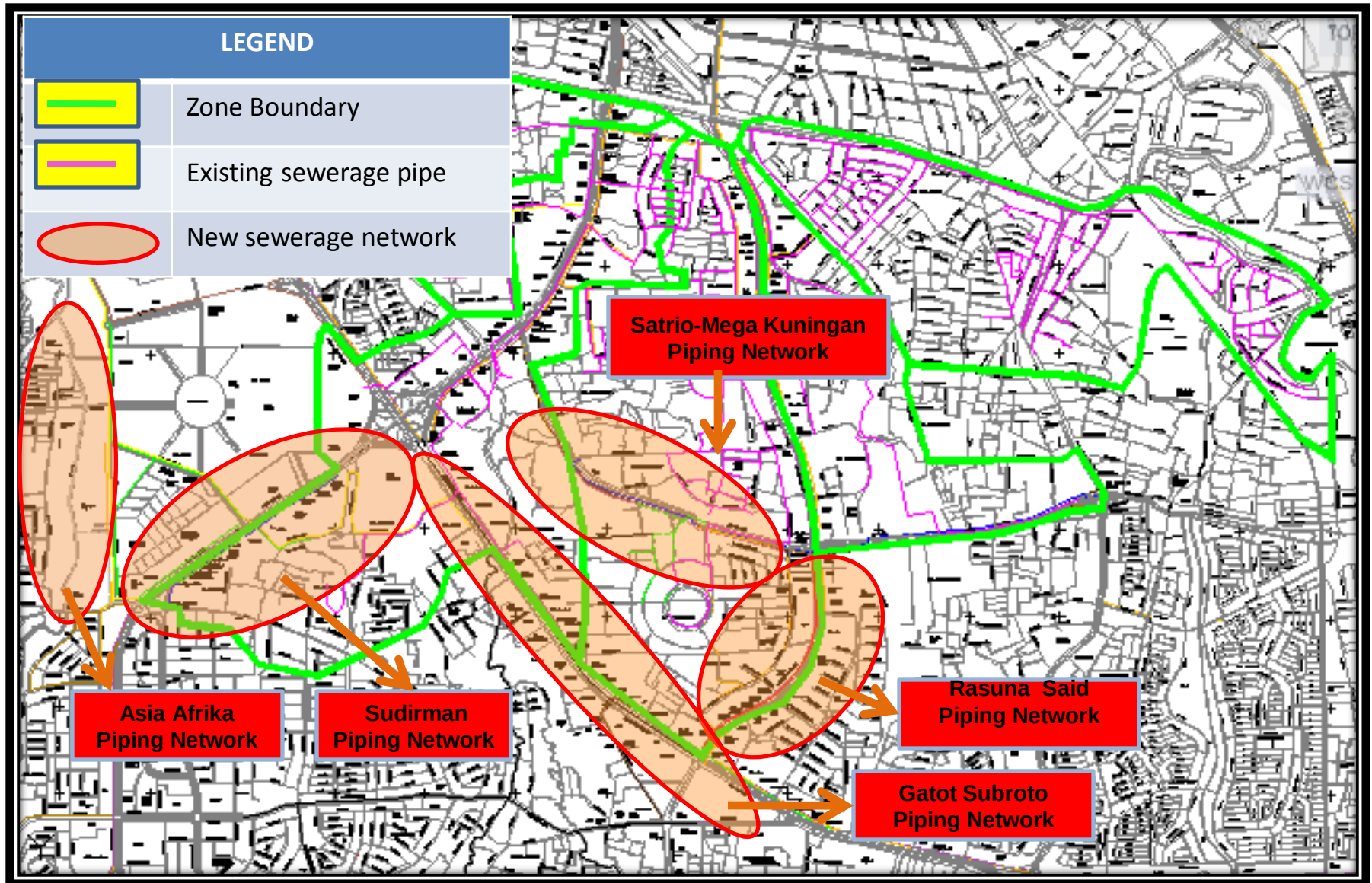
CONDITION	WEST POND
Surface Area	26.100 m ²
Water level height (High condition)	4,50 m
Water level height (Low condition)	1,50 m
Ponds depth (effective)	3,00 m
Ponds base elevation	-0,50 m
Ponds capacity	78.300 m ³



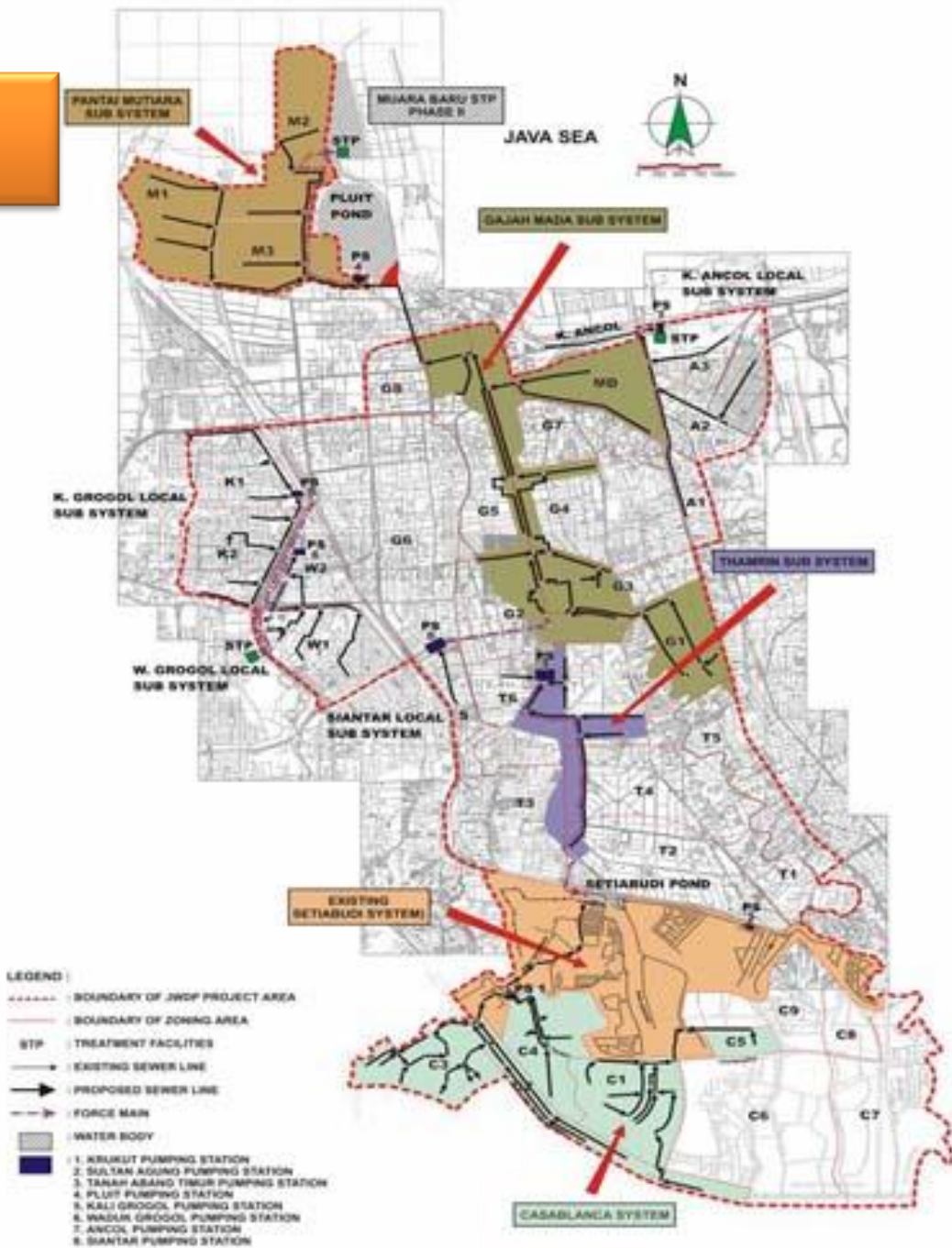
NEW SITE PLAN IPAL SETIABUDI



3. SEWERAGE SYSTEM EXPANSION



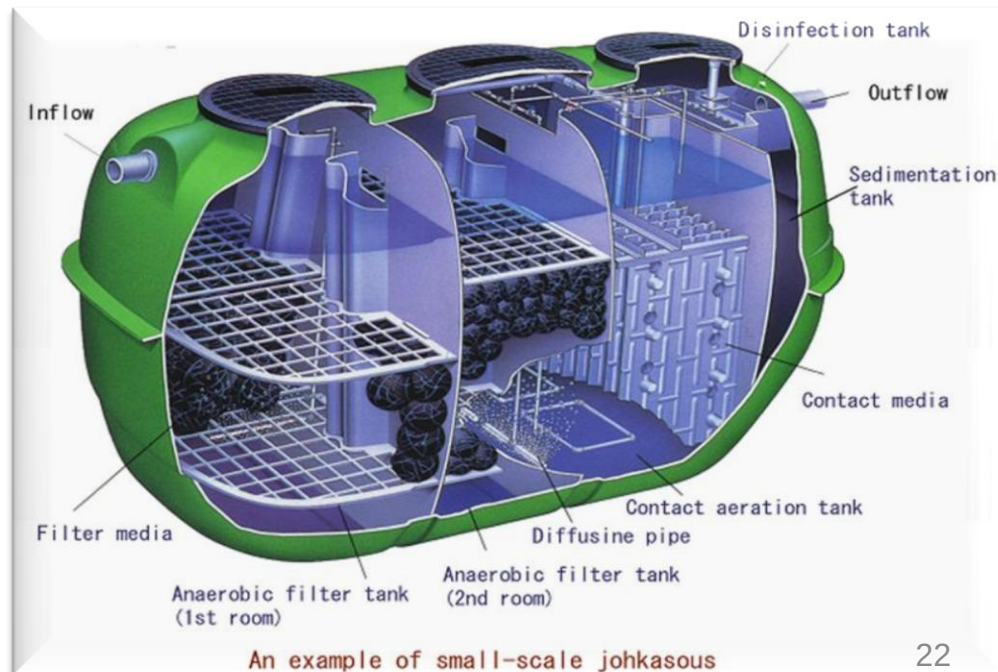
SEWERAGE SYSTEM EXPANSION



4. IMPROVEMENT FACILITIES & ON SITE SYSTEM EXPANSION

- From On Call Basis become Regular Basis
- Step of Regular Basis services:
 1. On site system re-condition
 2. Desludging
 3. Quality Monitoring
 4. Service Charges

MODERN SEPTIC TANK



Four Pillars of the Improvement of On-Site Sanitation

- 1.Replacement of Conventional Septic Tank (CST) to Modified Septic Tank (MST)/Johkasou
- 2.Introduction of the regular de-sludging (Introduction of the regulations, strengthening the institution, encouraging private sector participation)
- 3.Expansion of the sludge treatment capacity
- 4.Promoting the installation of communal individual wastewater treatment plants in the housing development (including the re-development) areas



Thank You