

ANNEX B
AS SAMRA PROCESS FLOW DIAGRAM
SLUDGE LINE JULY-2010

AS-SAMRA - Extension
Process Flow Diagram - Sludge Line

TOTAL SLUDGES P1+P2A		Total Primary sludge	Total Excess sludge
Quantity	kgDS/d	239 688	140 410

SLUDGES P1			Total Primary sludge P1	Total Excess sludge P1
Flow repartition	%		74%	71%
Quantity	kgDS/d		177 557	99 428

PRIMARY SLUDGE THICKENING P1	PRIMARY SLUDGE P1	By-pass to P2A	INLET P1-1	OUTLET P1-2
Quantity	kgDS/d		119 844	113 852

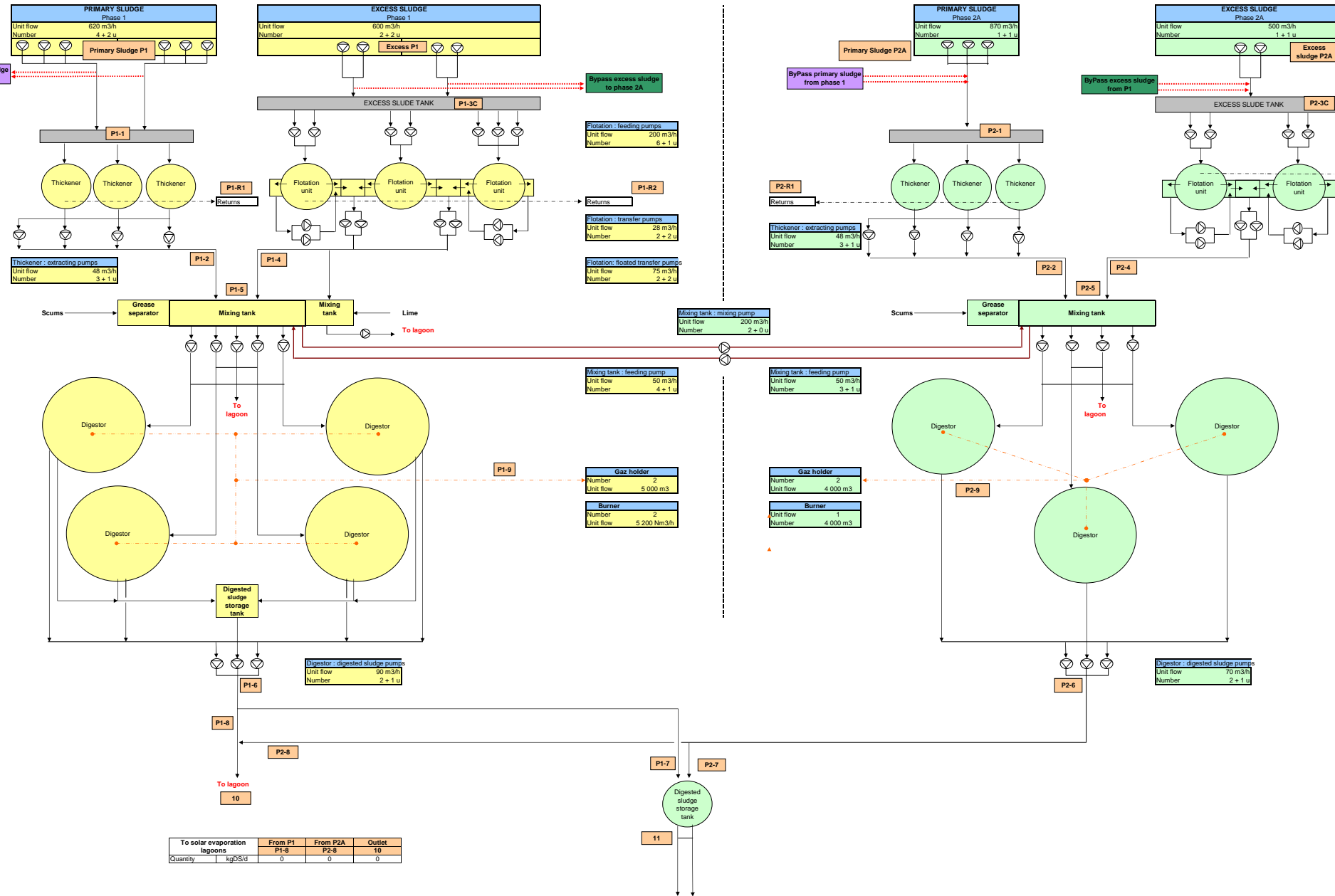
BIOLOGICAL SLUDGE THICKENING P1	EXCESS SLUDGE P1	By-pass to P2A	INLET P1-3C	OUTLET P1-4
Quantity	kgDS/d		84 246	73 294

MIXED SLUDGE DIGESTION THICKENING P1	INLET P1-5	OUTLET P1-6
Quantity	kgDS/d	133 927
Quantity	kgV/d	87 163
TSS conc.	g/l	32.2

BIOGAZ P1-9		OUTLET P1-9
Volatil matter	kgV/d	65 993
Biogas production rate	Nm ³ /kgVS	1.0
Daily biogas production	Nm ³ /d	69 970

TOTAL RETURN ON PRIMARY SETTLING TANK				
From Thickeners P1, P2 and Dewatering				
FROM THICKENING	P1-R1	P2-R1	TOTAL	
Quantity	kgDS/d	20 648	7 743	28 390
Conc. DS	g/l	0.290	0.442	0.320
Flow	m ³ /d	71 241	17 535	88 776
Loads repartition	%	73%	27%	100%

TOTAL RETURN ON AERATION TANK				
From flotation units P1 and P2				
FROM THICKENING	P1-R1	P2-R1	TOTAL	
Quantity	kgDS/d	13 275	4 978	18 253
Conc. DS	g/l	0.498	0.498	0.498
Flow	m ³ /d	26 638	9 989	36 627
Loads repartition	%	73%	27%	100%



SLUDGES P2			Total Primary sludge P2A	Total Excess sludge P2A
Flow repartition	%		26%	29%
Quantity	kgDS/d		62 131	40 982

PRIMARY SLUDGE THICKENING P2	PRIMARY SLUDGE P2A	By-pass from P1	INLET P2-1B	OUTLET P2-2
Quantity	kgDS/d		119 844	113 852

BIOLOGICAL SLUDGE THICKENING P2	EXCESS SLUDGE P2A	By-pass from P1	INLET P2-3C	OUTLET P2-4
Quantity	kgDS/d		56 164	48 982

MIXED SLUDGE DIGESTION THICKENING P2	INLET P2-5	OUTLET P2-6
Quantity	kgDS/d	140 445
Quantity	kgV/d	65 372
TSS conc.	g/l	32.2

BIOGAZ P2-9		OUTLET P2-9
Volatil matter	kgV/d	49 495
Biogas production rate	Nm ³ /kgVS	1.0
Daily biogas production	Nm ³ /d	52 478

To solar evaporation lagoons				
	From P1	From P2A	Inlet 10	Outlet 10
Quantity	kgDS/d	133 927	100 445	234 372

DEWATERING				
	From P1	From P2A	Inlet 11	Outlet 12
Quantity	kgDS/d	133 927	100 445	234 372

GENERAL PROCESS PHILOSOPHY

Concerning the water line, the maximum design load will be treated on the whole plant (phase I + phase IIa). 73% of the inlet flow (285,308 m³/day, hydraulic peak of 20,451 m³/h) will be treated in the existing phase I. The remaining 27% (99,491 m³/day, hydraulic peak of 7,669 m³/h) will be treated on the phase IIa new built plants. Depending of the number of structure in operation, it is possible to modulate of flow sent to the phase I or its up to their respective hydraulic design.

Regarding the sludge line, the sludge repartition is different; in fact we forecast more primary sludge production as a consequence of the TSS inlet load to the plant. Consequently, it is possible to send part (33%) of the primary sludge of the phase I to the thickeners of the phase IIa. Furthermore, it is possible to send part of the biological sludge (15%) produced on the phase I to the phase IIa. The sludge repartition is then homogenous and the existing structures can cope with higher inlet loads.