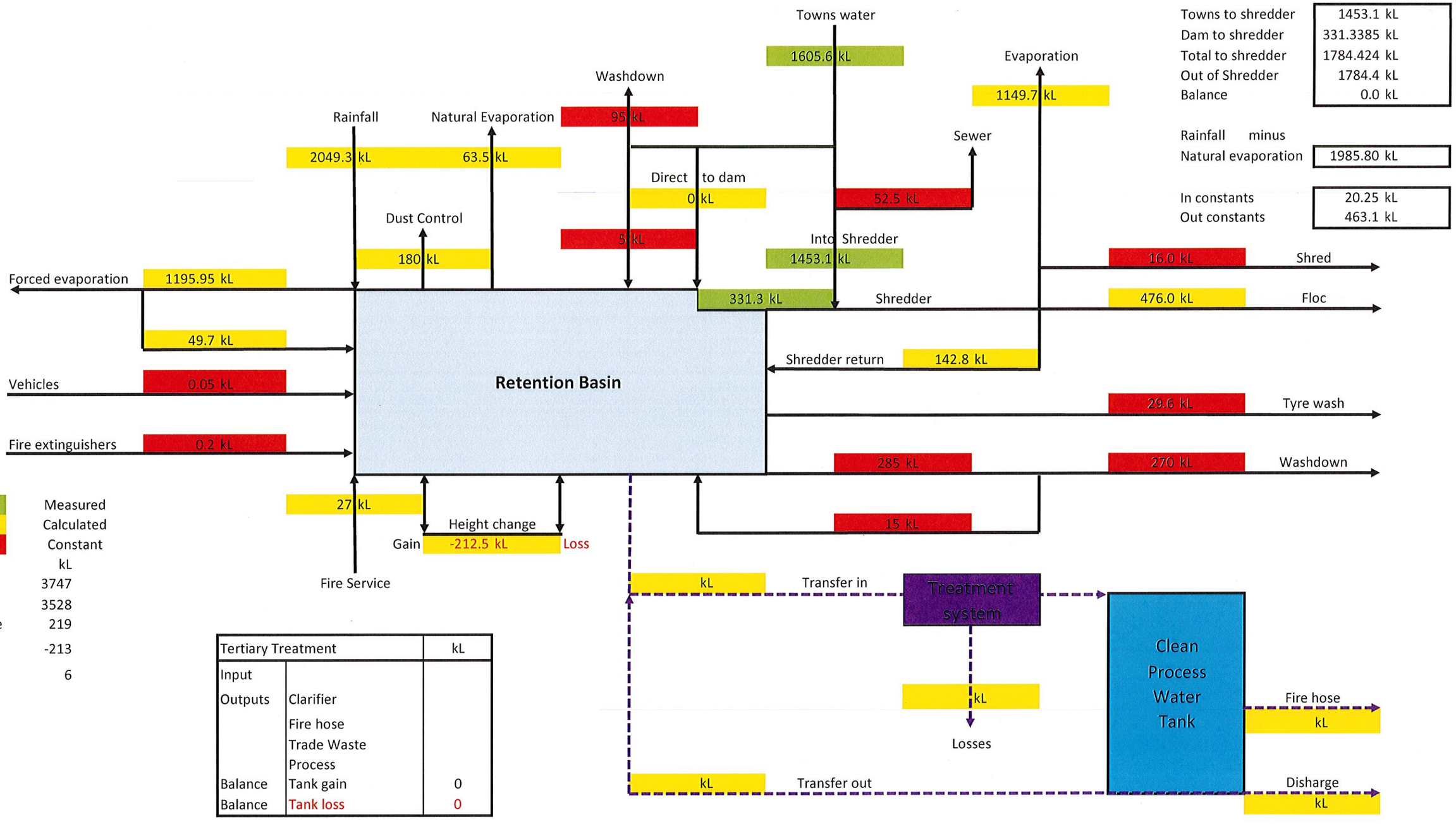
Month Aug 2016

Operational Water Balance



Towns to shredder	1453.1 kL
Dam to shredder	331.3385 kL
Total to shredder	1784.424 kL
Out of Shredder	1784.4 kL
Balance	0.0 kL

Rainfall minus Natural evaporation	1985.80 kL

In constants	20.25 kL
Out constants	463.1 kL

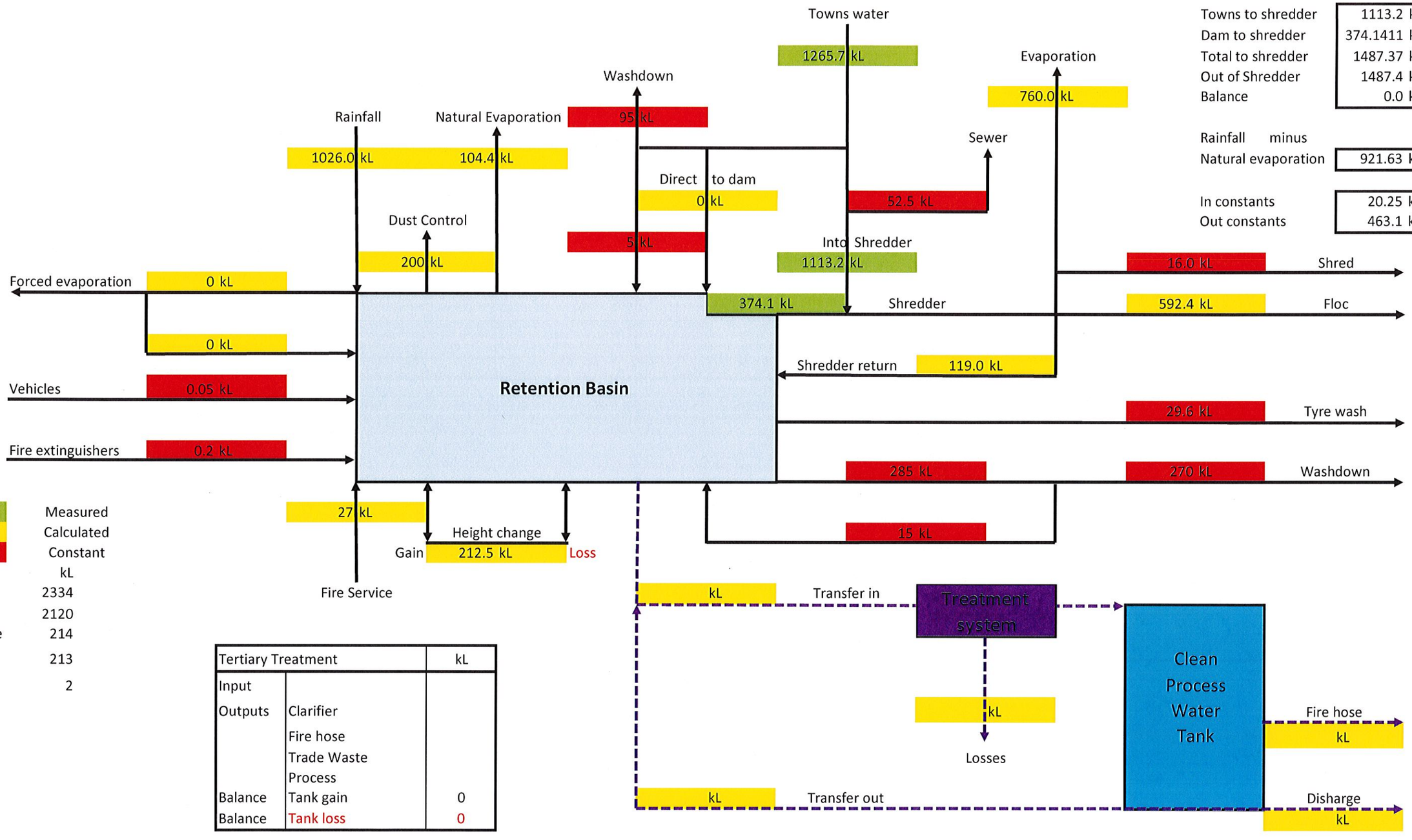
kL	Measured
kL	Calculated
kL	Constant
	kL
Inputs	3747
Outputs	3528
Difference	219
Change	-213
Error	6

Tertiary Treatment		kL
Input		
Outputs	Clarifier	
	Fire hose	
	Trade Waste	
	Process	
Balance	Tank gain	0
Balance	Tank loss	0

BT-ENV-PRO-DWB

Month Sept 2016

Operational Water Balance



Towns to shredder	1113.2 kL
Dam to shredder	374.1411 kL
Total to shredder	1487.37 kL
Out of Shredder	1487.4 kL
Balance	0.0 kL

Rainfall minus Natural evaporation	921.63 kL

In constants	20.25 kL
Out constants	463.1 kL

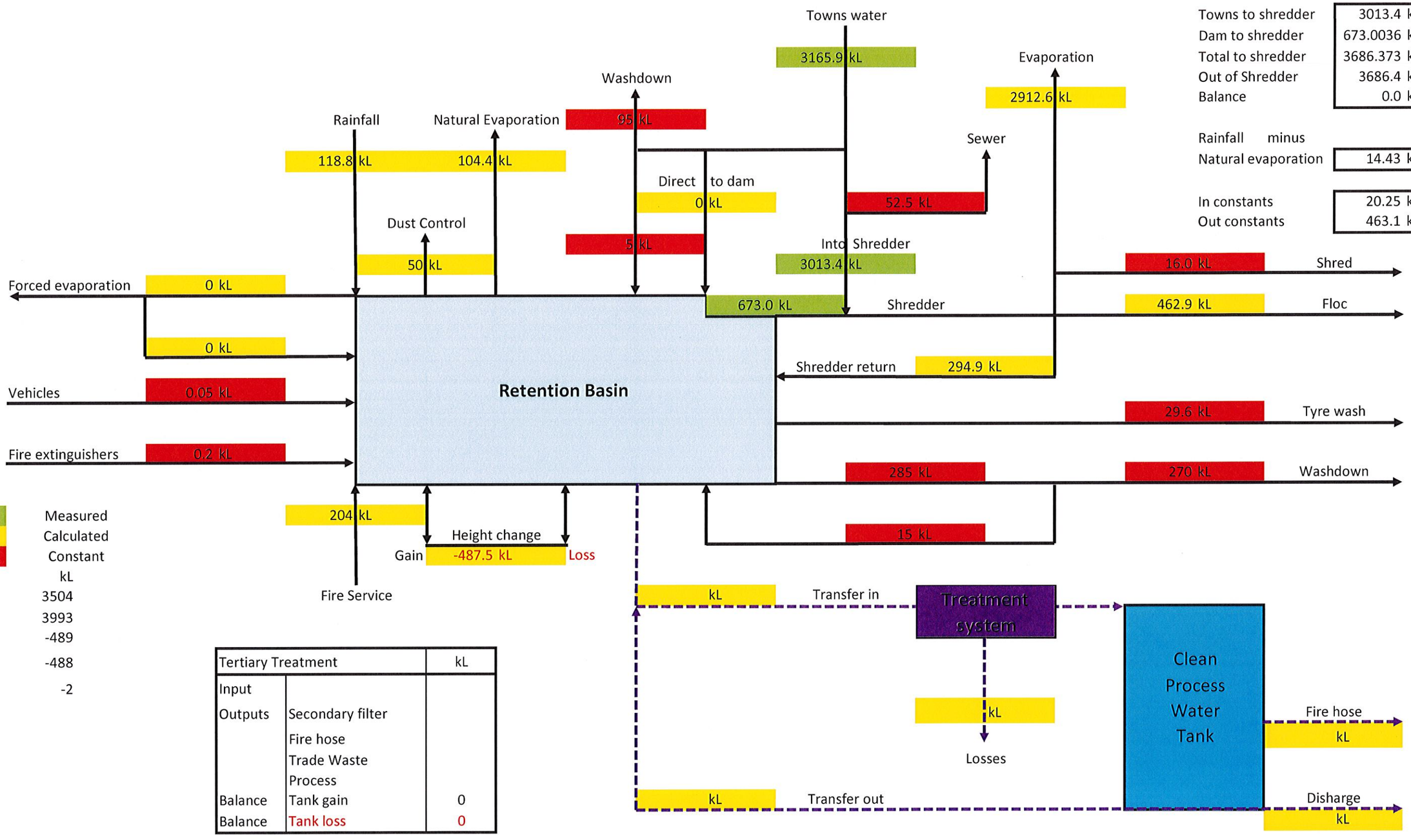
kL	Measured
kL	Calculated
kL	Constant
	kL
Inputs	2334
Outputs	2120
Difference	214
Change	213
Error	2

Tertiary Treatment		kL
Input		
Outputs	Clarifier	
	Fire hose	
	Trade Waste	
	Process	
Balance	Tank gain	0
Balance	Tank loss	0

BT-ENV-PRO-DWB-16B

Month Oct 2016

Operational Water Balance



Towns to shredder	3013.4 kL
Dam to shredder	673.0036 kL
Total to shredder	3686.373 kL
Out of Shredder	3686.4 kL
Balance	0.0 kL

Rainfall minus Natural evaporation	14.43 kL

In constants	20.25 kL
Out constants	463.1 kL

kL	Measured
kL	Calculated
kL	Constant
	kL
Inputs	3504
Outputs	3993
Difference	-489
Change	-488
Error	-2

Tertiary Treatment		kL
Input		
Outputs	Secondary filter	
	Fire hose	
	Trade Waste	
	Process	
Balance	Tank gain	0
Balance	Tank loss	0

BT-ENV-PRO-DWB

375 1811 2186

		Date	1st July	Time	8010	Date	1st August	Time		Date	1st Sept	Time	8:50am	Date	Date	Date
	Month of	June 2016				July 2016				August 2016				September 2016		
		Previous	Current	Volume kL	Total	Previous	Current	Volume kL	Total	Previous	Current	Volume kL	Total	Previous	Current	Volume kL
Towns meter Dexion	Kilolitres	0	7505.723	7505.723	37432.481	7505.723	7681.515	175.792	1405.581	7681.515	7873.056	191.541	1605.585	7873.056	8063.43	190.374
West	Kilolitres	0	29926.758	29926.758		29926.758	2.341	1229.789		2.341	1416.385	1414.044		1416.385	2491.74	1075.355
Forced evaporation	Hours	9079	9625	546	2293.2	9625	9995	370	1320.9	9995	10330	335	1195.95	0	0	0
Dam water - Shredder run	Litres	0	367710	367.71	377.452	367710	501362	133.652	133.8614	501362	832692	331.33	331.3385	832692	1206810	374.118
Total		0	367710			367710	501362	133.652		501362	832692	331.33		832692	1206810	374.118
Dam water - C1 East run	Litres	0	137			137	3104	2.967		3104	3286	0.182		3286	3517	0.231
Total		0	1107			1107	3201	0.2094		3201	3286	0.0085		3286	3517	0.0231
		Total	Days	deduction	Volume kL	Total	Days	deduction	Volume kL	Total	Days	deduction	Volume kL	Total	Days	deduction
Rainfall S&P	mm	299.7	7	211.3	5705.1	72.3	14	14	1574.1	83.9	8	8	2049.3	50	6	12
Rainfall * Dexion				0	0			0	0			0	0			0
					5705.1				1574.1				2049.3			
		Total	Volume kL			Total	Volume kL			Total	Volume kL			Total	Volume kL	
Natural Evaporation	mm	110.5	138.125			43.8	54.75			50.8	63.5			83.5	104.375	
		Previous	Current	Change	Volume kL	Previous	Current	Change	Volume kL	Previous	Current	Change	Volume kL	Previous	Current	Change
Dam height #	mm	0	900	-900	-1125	900	850	50	62.5	850	1020	-170	-212.5	1020	850	170
		Tonnes	Volume kL			Tonnes	Volume kL			Tonnes	Volume kL			Tonnes	Volume kL	
Floc	Kilolitres	5065.8	506.58			5016.3	501.63			4759.5	475.95			5923.9	592.39	

Rainfall calculation

19488 18825 663 Lt

* Only when new shear is operational 4403470 4403980 510

\# Will be + for an increase and - for a decrease

BOM data - prospect reservior

BT-ENV-SPR-DWB-16A

141201 = New meter installed

1024910 = Old meter final

1467389 = Old meter final

Based on Prospect rainfall, therefore inac

East Meter Replacement

East	Old start	old end	Total Lt	Total kL
run	118825	194880	76055	76.055
total	4403470	4403980	510	0.51
	new start	new end	total	
run	15	137	122	0.122
total	985	1107	122	0.122
				0.632

West Meter Total Reset

West	Old start	old end	Total Lt	Total kL
Total	1467389	1476499	9110	9.11
	new start	new end	total	
total	0	367710	367710	367.71
				376.82

Grand total 377.452

West Meter Replacement

West	Old start	Old End	Total kL
Totals	29926.758	31154.206	1227.448
	New Start	New End	total
Total	0	2.341	2.341
			1229.789

Rainfall days

Days < 2.0mm (or equal to)

Rainfall total

Rainfall quantity (<2mm) deductions

Sub total

2mm deductions x qualified rain even

Rainfall volume calculated addition

Evaporation

Date	Date	Date	Date	Date	Date	Time		Date	Time			2016
	October 2016				November 2016			December 2016				TOTALS
Total	Previous	Current	Volume kL	Total	Previous	Current	Volume kL Total	Previous	Current	Volume kL	Total	
		23229.61										
1265.729	7873.056	8309.02	435.964	3165.869	8063.43		-8063.43 -10555.17	0		0	0	31154.206
	1416.385	4146.29	2729.905		2491.74		-2491.74	0		0		
0	0	0	0	0	9041.5		-9041.5 -32278.16	0		0	0	-27468.105
374.1411	832692	1505310	672.618	673.0036	1206810		-1206.81 -1207.162	0		0	0	9.6313
	832692	1505310	672.618		1505310		-1505.31	0		0		
	3286	3941	0.655		3517		-3.517	0		0		
	3286	7142	0.3856		3517		-0.3517	0		0		
Volume kL	Total	Days	deduction	Volume kL	Total	Days	deduction Volume kL	Total	Days	deduction	Volume kL	
1026	14.4	5	10	118.8			0 0			0	0	10354.5
0			0	0			0 0			0	0	0
1026				118.8			0				0	10354.5
	Total	Volume kL			Total	Volume kL		Total	Volume kL			
	139.5	174.375				0			0			360.75
Volume kL	Previous	Current	Change	Volume kL	Previous	Current	Change Volume kL	Previous	Current	Change	Volume kL	
212.5	850	1240	-390	-487.5	850		850 1062.5	0		0	0	0
	Tonnes	Volume kL			Tonnes	Volume kL		Tonnes	Volume kL			
	4628.6	462.86				0			0			2076.55

	Sept	Oct				
	10	7				
	4	5				
	52.8	20.5				
	2.8	6.1				
	50.0	14.4	0.0	0.0	0.0	0.0
t days	12.0	4.0				
(mm)	38.0	10.4	0.0	0.0	0.0	0.0
(mm)	83.5	139.5				

Background Information

Monthly

	Volume kL	
Measured		
Towns water		As per mains meter readings As this includes fire services a special calculation (increased % of return) will have to be factored for in the event of a fire. Particularly the west side meter.
Calculated		
Rainfall		From BOM website. S + P Surface area = 28,600m2 Subtract 1600m2 for landscaped and hill areas. 27,000 lt per mm or 27.0 kL per mm. Subtract 2mm per rainfall event c Dexion Dirty surface area = 6195m2 or 8369m2 including internal driveway 6195lt per mm or 6.2 kL per mm 8369lt per mm or 8.4kL per mm. Subtract 2r
Natural evaporation		From BOM website. 1mm of evaporation is equivalent to 1250 litres or 1.25kL
Forced evaporation		Pump rate of 70 Lt/min Hours as per diesel generator Return rate of 15%
Shredder		Dam water is pumped into the front storage tanks. Two metered pumps transfer this to shredder operations. Shredder pump is the main supply. C1 provides water to final product wash. Evaporation Add both inlets minus sewer, minus washdown evaporation, minus floc, minus wash down return Floc 10% of floc is water. Drying experiments by Howard Richards, February 2016. Will be variations due to stock volumes at start of measuring periods. Return 5% of water use returns to the retention pond
Dam height		Surface area 50 x 25 = 1250m2 1 mm = 1.25 kL add +/- Width*delta height Dam square at height so not to be applied. At lower levels assume 45 degree Length*delta height slope. Also need to deduct for islands at very low levels.
Constant		
Sewer	52.5	Average daily use per person = 35 litres. Average number of people on site per day is 60. 60 x 35 x 25 days per month. 52,500 litres or 52.5 kL Note: personnel there
Fire extinguishers	0.2	Average 30,000 per year. Of these 10% are water type. Of these 10% are charged. Volume is 9 litre. 30,000 /10 =3000. 3000/10 = 300. 300 x 9 = 2700 litres. 2700/12 = 225 litres per month. Evaporat
Vehicles	0.05	9% of vehicles that arrive on site have motors. Of these the majority have been disconneted from the radiator. Therefore 1% have water in them. Average car water content is 5 litres. 1000 x 0.01 = 1(
Tyre wash		Surface area 9.5mtr x 4.0mtr = 38m2 Depth 6cm Volume 38 x 0.06 = 2.28 kL Frequency winter 1 per week, summer 3 times per week Winter month
Wash down	100	Town water Figures calculated from Saturday meter usages when shredder not running. Mains meter minus sewer calculation leaves washdown water and fire service.
	300	Dam water Three times as many dam hoses to town water hoses.

lue to evaporative losses due to differential heat transfer, or rainfall required before runoff begins. Discount rainfall <2mm.
nm per rainfall event due to evaporative losses due to differential heat transfer, or rainfall required before runoff begins.

Note: both measure in litres not kilolitres.

angle for

efore water will increase over time when move to Dexion site.
ive loss is 25 litres.
). 10 x 5 litres = 50 Litres. Assuming other waters in vehicles (rain in wheel wells) is eqivalent to evaporation.
4.33 x 2.28 = 9.87 kL Summer month 4.33 x 6.84 = 29.62 kL Year (9.87 x 6) + (29.62 x 6) = 236.94 kL
Calculation done when fire services not used.