Anexo G

CASOS DE ESTUDO

RESULTADOS DOS DIMENSIONAMENTOS HIDROLÓGICO E HIDRÁULICO OBTIDOS NO PROGRAMA HIDROPAS

Quadro G1 – Auto-Estrada do Norte, sublanço Pombal – Condeixa. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

DIMENSIONAMENTO DE AQUEDUTOS - QUADROS DE RESULTADOS

Dimensionamento hidrológico de aquedutos

PH	Área(ha)	Compr(m)	Desnível(m)	Tc(min)	T(anos)	Intens(mm/h)	Qp(m3/s)
1	8.1	260.0	6.0	6.	50.	136.7	0.7
2	13.7	410.0	7.0	10.	50.	106.9	1.0
3	5.6	260.0	7.0	5.	50.	144.5	0.5
4	18.1	500.0	25.0	7.	50.	124.2	1.4
5	5.6	430.0	17.0	7.	50.	124.2	0.5
6	5.0	280.0	31.0	5.	50.	149.8	0.5
7	1.9	220.0	29.0	5.	50.	149.8	0.2
8	7.5	400.0	46.0	5.	50.	149.8	0.6
9	5.0	300.0	43.0	5.	50.	144.5	0.4
10	4.4	200.0	14.0	6.	50.	136.7	0.4
11	1.9	140.0	19.0	5.	50.	149.8	0.2
12	1043.7	4600.0	110.0	54.	50.	43.2	42.7
13	0.6	60.0	3.0	5.	50.	149.8	0.1
14	19.4	600.0	43.0	7.	50.	124.2	1.5
15	14.4	320.0	13.0	5.	50.	144.5	1.2
16	2.4	150.0	10.0	5.	50.	149.8	0.2
17	4.4	270.0	20.0	5.	50.	149.8	0.4
18	5.0	300.0	22.0	5.	50.	149.8	0.4
19	7.5	380.0	29.0	5.	50.	149.8	0.6
20	95.7	1000.0	25.0	16.	50.	81.2	5.7
21	37.5	1200.0	67.0	14.	50.	88.3	2.6
22	12.5	580.0	47.0	7.	50.	130.0	1.0
23	6.9	300.0	28.0	5.	50.	149.8	0.6
24	0.6	100.0	8.0	5.	50.	149.8	0.1
25	13.1	800.0	55.0	10.	50.	106.9	1.0
26	16.9	700.0	60.0	8.	50.	119.1	1.3
27	6.5	340.0	38.0	5.	50.	149.8	0.5
28	18.9	620.0	57.0	7.	50.	124.2	1.5
29	3.6	250.0	23.0	5.	50.	149.8	0.3
30	6.3	540.0	52.0	6.	50.	136.7	0.5
31	14.4	550.0	30.0	8.	50.	119.1	1.1
32	438.1	4160.0	310.0	32.	50.	56.5	22.7
33	10.0	500.0	24.0	8.	50.	119.1	0.8
34	50.0	1000.0	62.0	11.	50.	97.7	3.6
35	3.8	260.0	16.0	5.	50.	149.8	0.3
36	5.0	160.0	26.0	5.	50.	149.8	0.4
37	5.6	300.0	40.0	5.	50.	149.8	0.5
38	9.4	550.0	42.0	7.	50.	130.0	0.8
39	3.8	300.0	36.0	5.	50.	149.8	0.3
40	25.0	740.0	41.0	10.	50.	106.9	1.9
41	12.5	580.0	82.0	5.	50.	144.5	1.0
42	3.1	240.0	32.0	5.	50.	149.8	0.3
43	26.3	740.0	61.0	8.	50.	114.6	2.0
44	6.3	300.0	22.0	5.	50.	149.8	0.5
45	136.9	2360.0	58.0	32.	50.	57.0	7.1
46	22.5	750.0	27.0	11.	50.	97.7	1.6

Quadro G2 – Auto-Estrada do Norte, sublanço Pombal – Condeixa. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para diferentes períodos de retorno.

Dimensionamento hidrológico de aquedutos

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	8.1	260.0	6.0	6.0	0.4	0.5	0.7	0.8
2	13.7	410.0	7.0	9.6	0.6	0.8	1.0	1.2
3	5.6	260.0	7.0	5.4	0.3	0.4	0.5	0.6
4	18.1	500.0	25.0	7.2	0.9	1.2	1.4	1.7
5	5.6	430.0	17.0	7.2	0.3	0.3	0.4	0.5
6	5.0	280.0	31.0	5.0	0.3	0.3	0.4	0.5
7	1.9	220.0	29.0	5.0	0.1	0.1	0.2	0.2
8	7.5	400.0	46.0	5.0	0.4	0.5	0.6	0.8
9	5.0	300.0	43.0	5.0	0.3	0.3	0.4	0.5
10	4.4	200.0	14.0	5.0	0.2	0.3	0.4	0.5
11	1.9	140.0	19.0	5.0	0.1	0.1	0.2	0.2
12	1043.7	4600.0	110.0	54.0	30.9	40.9	49.2	58.6
13	0.6	60.0	3.0	5.0	0.1	0.1	0.1	0.1
14	19.4	600.0	43.0	7.2	0.9	1.2	1.5	1.8
15	14.4	320.0	13.0	5.4	0.7	1.0	1.2	1.4
16	2.4	150.0	10.0	5.0	0.1	0.2	0.2	0.3
17	4.4	270.0	20.0	5.0	0.2	0.3	0.4	0.5
18	5.0	300.0	22.0	5.0	0.3	0.3	0.4	0.5
19	7.5	380.0	29.0	5.0	0.4	0.5	0.6	0.8
20	95.7	1000.0	25.0	16.2	3.9	5.2	6.4	7.6
21	37.5	1200.0	67.0	13.8	1.6	2.1	2.6	3.1
22	12.5	580.0	47.0	6.6	0.6	0.8	1.0	1.2
23	6.9	300.0	28.0	5.0	0.4	0.5	0.6	0.7
24	0.6	100.0	8.0	5.0	0.1	0.1	0.1	0.1
25	13.1	800.0	55.0	9.6	0.6	0.8	1.0	1.2
26	16.9	700.0	60.0	7.8	0.8	1.1	1.3	1.6
27	6.5	340.0	38.0	5.0	0.3	0.4	0.5	0.7
28	18.9	620.0	57.0	7.2	0.9	1.2	1.5	1.8
29	3.6	250.0	23.0	5.0	0.2	0.2	0.3	0.4
30	6.3	540.0	52.0	6.0	0.3	0.4	0.5	0.6
31	14.4	550.0	30.0	7.8	0.7	0.9	1.1	1.3
32	438.1	4160.0	310.0	32.4	15.1	20.1	24.2	28.8
33	10.0	500.0	24.0	7.8	0.5	0.6	0.8	0.9
34	50.0	1000.0	62.0	11.4	2.2	2.9	3.6	4.3
35	3.8	260.0	16.0	5.0	0.2	0.3	0.3	0.4
36	5.0	160.0	26.0	5.0	0.3	0.3	0.4	0.5
37	5.6	300.0	40.0	5.0	0.3	0.4	0.5	0.6
38	9.4	550.0	42.0	6.6	0.5	0.6	0.8	0.9
39	3.8	300.0	36.0	5.0	0.2	0.3	0.3	0.4
40	25.0	740.0	41.0	9.6	1.1	1.5	1.9	2.2
41	12.5	580.0	82.0	5.4	0.6	0.8	1.0	1.2
42	3.1	240.0	32.0	5.0	0.2	0.2	0.3	0.3
43	26.3	740.0	61.0	8.4	1.2	1.6	2.0	2.4
44	6.3	300.0	22.0	5.0	0.3	0.4	0.5	0.6
45	136.9	2360.0	58.0	32.4	4.7	6.3	7.6	9.0
46	22.5	750.0	27.0	11.4	1.0	1.3	1.6	1.9

Quadro G3 – Auto-Estrada do Norte, sublanço Pombal – Condeixa. Dimensionamento hidráulico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidráulico de aquedutos

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	0.7	Diam - 1.00	61.0	1.0	0.20	0.47	E	0.69	0.36	0.69	2.70
2	1.0	Diam - 1.00	79.0	1.0	0.20	0.57	E	0.85	0.44	0.85	2.98
3	0.5	Diam - 1.00	41.0	1.0	0.20	0.40	E	0.58	0.31	0.58	2.42
4	1.4	Diam - 1.00	77.1	1.0	0.20	0.68	E	1.04	0.54	1.04	3.24
5	0.5	Diam - 1.00	37.0	1.0	0.20	0.40	E	0.58	0.31	0.58	2.40
6	0.5	Diam - 1.00	66.1	1.0	0.20	0.40	E	0.58	0.30	0.58	2.49
7	0.2	Diam - 1.00	49.1	1.0	0.20	0.25	E	0.35	0.19	0.35	1.94
8	0.6	Diam - 1.00	102.0	1.0	0.20	0.44	E	0.64	0.33	0.64	2.64
9	0.4	Diam - 1.00	87.0	1.0	0.20	0.35	E	0.51	0.27	0.51	2.36
10	0.4	Diam - 1.00	79.1	1.0	0.20	0.35	E	0.51	0.27	0.51	2.36
11	0.2	Diam - 1.00	31.0	1.0	0.20	0.25	E	0.35	0.19	0.35	1.89
12	42.7	3.50 x 3.00	49.0	0.5	0.20	2.48	E	3.96	2.23	1.32	5.48
13	0.1	Diam - 1.00	51.0	1.0	0.20	0.17	E	0.25	0.13	0.25	1.59
14	1.5	Diam - 1.00	82.0	1.0	0.20	0.70	E	1.09	0.56	1.09	3.31
15	1.2	Diam - 1.00	44.0	1.0	0.20	0.63	E	0.95	0.50	0.95	3.00
16	0.2	Diam - 1.00	57.0	1.0	0.20	0.25	E	0.35	0.19	0.35	1.93
17	0.4	Diam - 1.00	62.0	1.0	0.20	0.35	E	0.51	0.27	0.51	2.35
18	0.4	Diam - 1.00	50.0	1.0	0.20	0.35	E	0.51	0.27	0.51	2.32
19	0.6	Diam - 1.00	42.0	1.0	0.20	0.44	E	0.64	0.34	0.64	2.54
20	5.7	Diam - 1.50	81.0	1.0	0.20	1.24	E	2.05	1.03	1.37	4.42
21	2.6	Diam - 1.20	64.0	1.0	0.20	0.89	E	1.40	0.72	1.17	3.67
22	1.0	Diam - 1.00	69.0	1.0	0.20	0.57	E	0.85	0.44	0.85	2.98
23	0.6	Diam - 1.00	73.1	1.0	0.20	0.44	E	0.64	0.33	0.64	2.62
24	0.1	Diam - 1.00	38.0	1.0	0.20	0.17	E	0.25	0.13	0.25	1.57
25	1.0	Diam - 1.00	87.0	1.0	0.20	0.57	E	0.85	0.44	0.85	3.01
26	1.3	Diam - 1.00	81.0	1.0	0.20	0.65	E	1.00	0.51	1.00	3.18
27	0.5	Diam - 1.00	62.0	1.0	0.20	0.40	E	0.58	0.30	0.58	2.48
28	1.5	Diam - 1.00	68.0	1.0	0.20	0.70	E	1.09	0.56	1.09	3.28
29	0.3	Diam - 1.00	43.0	1.0	0.20	0.31	E	0.44	0.23	0.44	2.14
30	0.5	Diam - 1.00	47.0	1.0	0.20	0.40	E	0.58	0.31	0.58	2.43
31	1.1	Diam - 1.00	96.0	1.0	0.20	0.60	E	0.90	0.46	0.90	3.08
32	22.7	2.50 x 2.50	64.8	0.5	0.20	2.03	E	3.25	1.88	1.30	4.82
33	0.8	Diam - 1.00	33.0	1.0	0.20	0.51	E	0.75	0.41	0.75	2.66
34	3.6	Diam - 1.50	65.0	1.0	0.20	0.99	E	1.51	0.78	1.01	3.86
35	0.3	Diam - 1.00	51.0	1.0	0.20	0.31	E	0.44	0.23	0.44	2.16
36	0.4	Diam - 1.00	59.0	1.0	0.20	0.35	E	0.51	0.27	0.51	2.34
37	0.5	Diam - 1.00	73.1	1.0	0.20	0.40	E	0.58	0.30	0.58	2.49
38	0.8	Diam - 1.00	75.0	1.0	0.20	0.51	E	0.75	0.39	0.75	2.82
39	0.3	Diam - 1.00	48.0	1.0	0.20	0.31	E	0.44	0.23	0.44	2.15
40	1.9	Diam - 1.00	59.0	1.0	0.20	0.79	E	1.28	0.66	1.28	3.43
41	1.0	Diam - 1.00	52.0	1.0	0.20	0.57	E	0.85	0.45	0.85	2.90
42	0.3	Diam - 1.00	74.0	1.0	0.20	0.31	E	0.44	0.23	0.44	2.17
43	2.0	Diam - 1.00	77.0	1.0	0.20	0.81	E	1.33	0.67	1.33	3.54
44	0.5	Diam - 1.00	52.0	1.0	0.20	0.40	E	0.58	0.30	0.58	2.47
45	7.1	2Diam - 1.50	59.0	1.0	0.20	0.98	E	1.50	0.78	1.00	3.81
46	1.6	Diam - 1.00	44.0	1.0	0.20	0.73	E	1.14	0.60	1.14	3.23

Quadro G4 – Auto-Estrada Marateca / Elvas (A6), sublanço Montemor o Novo – Évora. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidrológico de aquedutos

PH	Área(ha)	Compr(m)	Desnível(m)	Tc(min)	T(anos)	Intens(mm/h)	Qp(m3/s)
1	8.0	300.0	9.0	6.	50.	136.7	0.7
2	45.0	1200.0	67.0	14.	50.	88.3	3.1
3	4.0	300.0	13.0	5.	50.	144.5	0.3
4	44.0	1000.0	49.0	13.	50.	92.7	3.1
5	57.0	1300.0	64.0	16.	50.	82.9	3.8
6	65.0	1320.0	100.0	13.	50.	90.4	4.5
7	15.0	500.0	25.0	7.	50.	124.2	1.2
8	22.0	800.0	92.0	8.	50.	119.1	1.7
9	5.0	240.0	15.0	5.	50.	149.8	0.5
10	39.0	800.0	92.0	8.	50.	119.1	3.0
11	19.0	700.0	87.0	7.	50.	130.0	1.5
12	8.0	260.0	8.0	5.	50.	144.5	0.7
13	21.0	700.0	31.0	10.	50.	103.5	1.5
14	1.0	120.0	15.0	5.	50.	149.8	0.1
15	4.0	300.0	13.0	5.	50.	144.5	0.3
16	19.0	780.0	39.0	10.	50.	103.5	1.4
17	27.0	900.0	42.0	12.	50.	95.1	1.9
18	14.0	660.0	31.0	10.	50.	106.9	1.0
19	18.0	700.0	45.0	9.	50.	110.5	1.4
20	2.0	140.0	10.0	5.	50.	149.8	0.2
21	16.0	760.0	52.0	9.	50.	110.5	1.2
22	128.0	2100.0	85.0	24.	50.	66.1	7.7
23	4.0	240.0	21.0	5.	50.	149.8	0.3
24	50.0	1100.0	52.0	14.	50.	88.3	3.5
25	724.0	5100.0	73.0	71.	50.	37.3	33.2
26	460.0	3700.0	117.0	41.	50.	49.7	24.6
27	7.0	600.0	27.0	9.	50.	110.5	0.5
28	47.0	1600.0	72.0	19.	50.	75.6	3.0
29	8.0	300.0	20.0	5.	50.	149.8	0.7
30	68.0	1100.0	38.0	16.	50.	82.9	4.6
31	9.0	500.0	10.0	11.	50.	100.5	0.7
32	13.0	600.0	14.0	11.	50.	97.7	0.9
33	17.0	1000.0	40.0	14.	50.	88.3	1.2
34	14.0	800.0	30.0	12.	50.	95.1	1.0
35	3.0	200.0	3.0	6.	50.	136.7	0.2
36	225.0	2200.0	60.0	29.	50.	59.4	13.0
37	37.0	1100.0	28.0	17.	50.	78.2	2.4
38	75.0	1500.0	28.0	25.	50.	64.4	4.5
39	16.0	500.0	7.0	12.	50.	95.1	1.1
40	13.0	500.0	12.0	10.	50.	106.9	1.0
41	11.0	400.0	8.0	9.	50.	110.5	0.8
42	9.0	500.0	10.0	11.	50.	100.5	0.7
43	6.0	200.0	7.0	5.	50.	149.8	0.5
44	20.0	500.0	13.0	10.	50.	106.9	1.5
45	6.0	200.0	14.0	5.	50.	149.8	0.5
46	5.0	200.0	7.0	5.	50.	149.8	0.4

Quadro G5 – Auto-Estrada Marateca / Elvas (A6), sublanço Montemor o Novo – Évora. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para diferentes períodos de retorno.

Dimensionamento hidrológico de aquedutos

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	8.0	300.0	9.0	6.0	0.4	0.5	0.6	0.8
2	45.0	1200.0	67.0	13.8	1.9	2.5	3.1	3.7
3	4.0	300.0	13.0	5.4	0.2	0.3	0.3	0.4
4	44.0	1000.0	49.0	12.6	1.9	2.5	3.1	3.7
5	57.0	1300.0	64.0	15.6	2.3	3.1	3.8	4.6
6	65.0	1320.0	100.0	13.2	2.8	3.7	4.5	5.4
7	15.0	500.0	25.0	7.2	0.7	1.0	1.2	1.4
8	22.0	800.0	92.0	7.8	1.0	1.4	1.7	2.0
9	5.0	240.0	15.0	5.0	0.3	0.3	0.4	0.5
10	39.0	800.0	92.0	7.8	1.8	2.5	3.0	3.6
11	19.0	700.0	87.0	6.6	0.9	1.2	1.5	1.8
12	8.0	260.0	8.0	5.4	0.4	0.5	0.7	0.8
13	21.0	700.0	31.0	10.2	0.9	1.3	1.5	1.8
14	1.0	120.0	15.0	5.0	0.1	0.1	0.1	0.1
15	4.0	300.0	13.0	5.4	0.2	0.3	0.3	0.4
16	19.0	780.0	39.0	10.2	0.9	1.1	1.4	1.7
17	27.0	900.0	42.0	12.0	1.2	1.6	1.9	2.3
18	14.0	660.0	31.0	9.6	0.6	0.9	1.0	1.2
19	18.0	700.0	45.0	9.0	0.8	1.1	1.4	1.6
20	2.0	140.0	10.0	5.0	0.1	0.1	0.2	0.2
21	16.0	760.0	52.0	9.0	0.7	1.0	1.2	1.4
22	128.0	2100.0	85.0	24.0	4.8	6.4	7.7	9.2
23	4.0	240.0	21.0	5.0	0.2	0.3	0.3	0.4
24	50.0	1100.0	52.0	13.8	2.1	2.8	3.5	4.1
25	724.0	5100.0	73.0	71.4	21.2	27.7	33.2	39.1
26	460.0	3700.0	117.0	41.4	15.6	20.4	24.6	29.0
27	7.0	600.0	27.0	9.0	0.3	0.4	0.5	0.6
28	47.0	1600.0	72.0	18.6	1.9	2.5	3.0	3.6
29	8.0	300.0	20.0	5.0	0.4	0.5	0.7	0.8
30	68.0	1100.0	38.0	15.6	2.8	3.7	4.6	5.4
31	9.0	500.0	10.0	10.8	0.4	0.5	0.7	0.8
32	13.0	600.0	14.0	11.4	0.6	0.8	0.9	1.1
33	17.0	1000.0	40.0	13.8	0.7	1.0	1.2	1.4
34	14.0	800.0	30.0	12.0	0.6	0.8	1.0	1.2
35	3.0	200.0	3.0	6.0	0.2	0.2	0.2	0.3
36	225.0	2200.0	60.0	29.4	8.0	10.6	13.0	15.4
37	37.0	1100.0	28.0	17.4	1.5	2.0	2.4	2.9
38	75.0	1500.0	28.0	25.2	2.8	3.7	4.5	5.3
39	16.0	500.0	7.0	12.0	0.7	0.9	1.1	1.4
40	13.0	500.0	12.0	9.6	0.6	0.8	1.0	1.2
41	11.0	400.0	8.0	9.0	0.5	0.7	0.8	1.0
42	9.0	500.0	10.0	10.8	0.4	0.5	0.7	0.8
43	6.0	200.0	7.0	5.0	0.3	0.4	0.5	0.6
44	20.0	500.0	13.0	9.6	0.9	1.2	1.5	1.8
45	6.0	200.0	14.0	5.0	0.3	0.4	0.5	0.6
46	5.0	200.0	7.0	5.0	0.3	0.3	0.4	0.5

Quadro G6 – Auto-Estrada Marateca / Elvas (A6), sublanço Montemor o Novo – Évora. Dimensionamento hidráulico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidráulico de aquedutos

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	0.7	Diam - 1.00	62.0	1.0	0.20	0.47	E	0.69	0.36	0.69	2.71
2	3.1	Diam - 1.50	62.0	1.0	0.20	0.91	E	1.38	0.72	0.92	3.68
3	0.4	Diam - 1.00	57.0	2.0	0.20	0.35	E	0.51	0.23	0.51	2.94
4	3.1	Diam - 1.50	63.5	1.0	0.20	0.91	E	1.38	0.72	0.92	3.70
5	3.8	Diam - 1.50	50.0	1.0	0.20	1.02	E	1.56	0.83	1.04	3.80
6	4.5	Diam - 1.50	61.0	0.8	0.20	1.11	E	1.74	0.94	1.16	3.85
7	1.2	Diam - 1.00	84.0	1.0	0.20	0.63	E	0.95	0.49	0.95	3.14
8	1.7	Diam - 1.20	81.0	0.5	0.20	0.72	E	1.07	0.65	0.89	2.71
9	0.6	Diam - 1.00	49.0	2.5	0.20	0.44	E	0.64	0.27	0.64	3.40
10	3.0	Diam - 1.20	95.0	1.2	0.20	0.95	E	1.55	0.74	1.29	4.10
11	1.5	Diam - 1.00	47.0	1.0	0.20	0.70	E	1.09	0.57	1.09	3.20
12	0.7	Diam - 1.00	74.0	1.0	0.20	0.47	E	0.69	0.36	0.69	2.72
13	1.6	Diam - 1.00	60.0	1.0	0.20	0.73	E	1.14	0.59	1.14	3.29
14	0.1	Diam - 1.00	63.0	1.0	0.20	0.17	E	0.25	0.13	0.25	1.58
15	0.3	Diam - 1.00	42.0	0.6	0.20	0.31	E	0.44	0.26	0.44	1.82
16	1.4	Diam - 1.00	48.0	1.0	0.20	0.68	E	1.04	0.55	1.04	3.14
17	1.9	Diam - 1.00	76.0	1.0	0.20	0.79	E	1.28	0.65	1.28	3.48
18	1.0	Diam - 1.00	67.0	1.0	0.20	0.57	E	0.85	0.44	0.85	2.97
19	1.4	Diam - 1.00	50.0	1.0	0.20	0.68	E	1.04	0.55	1.04	3.16
20	0.2	Diam - 1.00	68.0	1.5	0.20	0.25	E	0.35	0.17	0.35	2.23
21	1.2	Diam - 1.00	47.5	1.0	0.20	0.63	E	0.95	0.50	0.95	3.02
22	7.7	2.00 x 2.00	48.0	1.0	0.20	1.15	E	1.84	0.86	0.92	4.47
23	0.4	Diam - 1.00	52.0	1.0	0.20	0.35	E	0.51	0.27	0.51	2.33
24	3.5	Diam - 1.50	93.0	1.0	0.20	0.97	E	1.48	0.75	0.99	3.93
25	31.0	3.50 x 3.00	102.0	0.7	0.20	2.00	E	3.20	1.57	1.07	5.65
26	23.6	3.00 x 2.50	62.0	0.6	0.20	1.85	E	2.96	1.53	1.18	5.13
27	0.5	Diam - 1.00	56.0	2.0	0.20	0.40	E	0.58	0.26	0.58	3.10
28	3.0	Diam - 1.50	59.0	1.0	0.20	0.90	E	1.35	0.71	0.90	3.66
29	0.7	Diam - 1.00	49.5	0.5	0.20	0.47	E	0.69	0.43	0.69	2.16
30	4.6	Diam - 1.50	63.0	1.0	0.20	1.12	E	1.77	0.91	1.18	4.10
31	0.7	Diam - 1.00	57.0	1.8	0.20	0.47	E	0.69	0.32	0.69	3.22
32	0.9	Diam - 1.00	58.0	1.8	0.20	0.54	E	0.80	0.37	0.80	3.40
33	1.2	Diam - 1.00	58.0	1.0	0.20	0.63	E	0.95	0.50	0.95	3.06
34	1.0	Diam - 1.00	76.0	1.0	0.20	0.57	E	0.85	0.44	0.85	2.99
35	0.3	Diam - 1.00	58.0	1.2	0.20	0.31	E	0.44	0.22	0.44	2.30
36	12.8	2.00 x 2.00	68.0	0.6	0.20	1.61	E	2.58	1.43	1.29	4.47
37	2.4	Diam - 1.50	62.0	0.6	0.20	0.80	E	1.18	0.69	0.79	3.05
38	4.5	Diam - 1.50	68.0	0.6	0.20	1.11	E	1.74	1.00	1.16	3.60
39	1.1	Diam - 1.00	86.0	0.5	0.20	0.60	E	0.90	0.56	0.90	2.44
40	1.0	Diam - 1.00	66.0	0.6	0.20	0.57	E	0.85	0.50	0.85	2.53
41	0.8	Diam - 1.00	56.0	1.0	0.20	0.51	E	0.75	0.39	0.75	2.77
42	0.7	Diam - 1.00	60.0	2.0	0.20	0.47	E	0.69	0.31	0.69	3.37
43	0.5	Diam - 1.00	47.0	1.0	0.20	0.40	E	0.58	0.31	0.58	2.43
44	1.5	Diam - 1.00	43.0	1.0	0.20	0.70	E	1.09	0.58	1.09	3.18
45	0.5	Diam - 1.00	53.0	0.5	0.20	0.40	E	0.58	0.36	0.58	1.98
46	0.6	Diam - 1.00	80.0	1.0	0.20	0.44	E	0.64	0.33	0.64	2.62

Quadro G7 – Auto-Estrada Marateca / Elvas (A6), sublanço Estremoz – Borba. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidrológico de passagens hidráulicas

PH	Área(ha)	Compr(m)	Desnível(m)	Tc(min)	T(anos)	Intens(mm/h)	Qp(m3/s)
1	1.7	120.0	4.2	5.	50.	149.8	0.2
2	22.8	780.0	45.5	10.	50.	106.9	2.7
3	0.5	190.0	4.7	5.	50.	149.8	0.1
4	17.2	945.0	41.4	13.	50.	92.7	1.9
5	14.4	840.0	45.4	11.	50.	100.5	1.6
6	14.6	870.0	45.4	11.	50.	97.7	1.6
7	15.0	900.0	46.0	11.	50.	97.7	1.7
8	13.9	730.0	48.0	9.	50.	110.5	1.7
9	11.2	600.0	43.0	7.	50.	130.0	1.5
10	13.2	590.0	42.0	7.	50.	124.2	1.5
11	18.0	670.0	59.9	7.	50.	124.2	2.3
12	8.3	478.0	63.7	5.	50.	149.8	1.1
13	2.1	170.0	36.0	5.	50.	149.8	0.3
14	2.7	190.0	9.0	5.	50.	149.8	0.4
15	2.7	230.0	31.2	5.	50.	149.8	0.4
16	3.9	450.0	9.7	10.	50.	106.9	0.5
17	20.5	550.0	26.5	8.	50.	119.1	2.5
18	12.1	500.0	5.6	13.	50.	90.4	1.3
19	5.0	290.0	2.4	10.	50.	106.9	0.6
20	7.9	316.0	5.2	8.	50.	119.1	1.0
21	1.5	210.0	3.5	6.	50.	136.7	0.2
22	2.4	370.0	22.6	5.	50.	144.5	0.3
23	0.5	10.0	2.0	5.	50.	149.8	0.1
24	5.3	305.0	15.0	5.	50.	149.8	0.7
25	11.1	385.0	18.5	6.	50.	136.7	1.5
26	3.0	200.0	8.3	5.	50.	149.8	0.4
27	18.8	650.0	36.9	8.	50.	114.6	2.3
28	55.3	1325.0	71.4	14.	50.	86.4	5.8
29	56.3	1360.0	71.4	16.	50.	82.9	6.0
30	51.8	1120.0	66.2	13.	50.	92.7	5.8
31	52.0	1140.0	67.0	13.	50.	92.7	5.8
32	27.7	700.0	62.8	8.	50.	119.1	3.5
33	28.0	900.0	65.0	10.	50.	103.5	3.3
34	20.5	440.0	38.0	5.	50.	144.5	2.7
35	21.0	460.0	41.0	5.	50.	144.5	2.8
36	32.7	775.0	7.0	20.	50.	73.1	3.3
37	35.8	815.0	43.8	10.	50.	103.5	4.2
38	38.3	935.0	45.2	12.	50.	95.1	4.3
39	24.5	725.0	57.8	8.	50.	114.6	3.0
40	35.1	790.0	42.4	10.	50.	103.5	4.1
41	81.0	1980.0	88.0	22.	50.	68.9	8.0

Quadro G8 – Auto-Estrada Marateca / Elvas (A6), sublanço Estremoz – Borba. Dimensionamento hidrológico do programa para vários períodos de retorno.

Dimensionamento hidrológico de aquedutos

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	1.7	120.0	4.2	5.0	0.20	0.20	0.23	0.26
2	22.8	780.0	45.5	9.6	1.70	2.21	2.66	3.12
3	0.5	190.0	4.7	5.0	0.05	0.06	0.08	0.09
4	17.2	945.0	41.4	12.6	1.23	1.58	1.91	2.21
5	14.4	840.0	45.4	10.8	1.05	1.36	1.64	1.90
6	14.6	870.0	45.4	11.4	1.06	1.36	1.65	1.92
7	15.0	900.0	46.0	10.8	1.10	1.42	1.72	2.00
8	13.9	730.0	48.0	7.8	1.06	1.41	1.70	1.99
9	11.2	600.0	43.0	6.0	0.92	1.20	1.50	1.70
10	13.2	590.0	42.0	6.6	0.95	1.26	1.53	1.82
11	18.0	670.0	59.9	6.6	1.45	1.90	2.29	2.69
12	8.3	478.0	63.7	5.0	0.70	0.92	1.11	1.31
13	2.1	170.0	36.0	5.0	0.18	0.23	0.28	0.33
14	2.7	190.0	9.0	5.0	0.23	0.30	0.37	0.43
15	2.7	230.0	31.2	5.0	0.23	0.30	0.36	0.42
16	3.9	450.0	9.7	9.6	0.29	0.37	0.45	0.53
17	20.5	550.0	26.5	7.2	1.62	2.12	2.55	3.00
18	12.1	500.0	5.6	12.0	0.85	1.11	1.33	1.57
19	5.0	290.0	2.4	8.4	0.38	0.50	0.60	0.71
20	7.9	316.0	5.2	7.2	0.63	0.82	0.98	1.16
21	1.5	210.0	3.5	5.4	0.12	0.16	0.19	0.23
22	2.4	370.0	22.6	5.0	0.20	27.00	0.32	0.38
23	0.5	10.0	2.0	5.0	0.04	0.06	0.08	0.09
24	5.3	305.0	15.0	5.0	0.45	0.59	0.71	0.84
25	11.1	385.0	18.5	5.4	0.93	1.22	1.47	1.73
26	3.0	200.0	8.3	5.0	0.25	0.33	0.40	0.46
27	18.8	650.0	36.9	7.8	1.46	1.91	2.30	2.70
28	55.3	1325.0	71.4	15.0	3.72	4.95	5.80	6.90
29	56.3	1360.0	71.4	15.0	3.90	5.00	6.03	6.99
30	51.8	1120.0	66.2	12.6	3.70	4.76	5.76	6.70
31	52.0	1140.0	67.0	12.6	3.71	4.77	5.78	6.69
32	27.7	700.0	62.8	7.2	2.19	2.86	3.45	4.05
33	28.0	900.0	65.0	9.6	2.09	2.69	3.27	3.84
34	20.5	440.0	38.0	5.4	1.71	2.24	2.70	3.17
35	21.0	460.0	41.0	5.4	1.76	2.30	2.78	3.26
36	32.7	775.0	7.0	19.2	2.14	2.75	3.31	3.84
37	35.8	815.0	43.8	10.2	2.65	3.44	4.15	4.85
38	38.3	935.0	45.2	11.4	2.78	3.58	4.33	5.04
39	24.5	725.0	57.8	8.4	1.88	2.46	2.96	3.47
40	35.1	790.0	42.4	10.2	2.60	3.36	4.06	4.75
41	81.0	1980.0	88.0	21.6	4.94	6.63	7.96	9.24

Quadro G9 – Auto-Estrada Marateca / Elvas (A6), sublanço Estremoz – Borba. Dimensionamento hidráulico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidráulico de aquedutos

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	0.2	Diam - 1.00	-	3.8	0.20	0.27	E	0.38	0.16	0.38	2.93
2	2.7	Diam - 1.20	-	1.6	0.20	0.90	E	1.42	0.72	1.19	3.78
3	0.1	Diam - 0.80	-	4.0	0.20	0.17	E	0.23	0.09	0.29	2.43
4	1.9	Diam - 1.00	-	2.0	0.20	0.79	E	1.28	0.61	1.28	3.77
5	1.6	Diam - 1.20	-	0.7	0.20	0.70	E	1.05	0.62	0.88	2.81
6	1.6	Diam - 1.00	-	1.8	0.20	0.74	E	1.16	0.57	1.16	3.54
7	1.7	Diam - 1.00	-	1.8	0.20	0.75	E	1.19	0.58	1.19	3.60
8	1.7	Diam - 1.00	-	2.2	0.20	0.75	E	1.18	0.56	1.18	3.74
9	1.5	Diam - 1.00	-	2.5	0.20	0.70	E	1.09	0.50	1.09	3.76
10	1.5	Diam - 1.00	-	2.2	0.20	0.71	E	1.10	0.53	1.10	3.64
11	2.3	Diam - 1.20	-	1.7	0.20	0.83	E	1.29	0.65	1.07	3.65
12	1.1	Diam - 1.00	-	2.5	0.20	0.60	E	0.91	0.42	0.91	3.48
13	0.3	Diam - 1.00	-	3.0	0.20	0.29	E	0.42	0.18	0.42	2.83
14	0.4	Diam - 1.00	-	4.0	0.20	0.34	E	0.49	0.20	0.49	3.31
15	0.4	Diam - 0.80	-	4.0	0.20	0.36	E	0.52	0.21	0.66	3.33
16	0.4	Diam - 0.80	-	1.5	0.20	0.40	E	0.60	0.30	0.74	2.60
17	2.5	Diam - 1.20	-	1.7	0.20	0.88	E	1.38	0.69	1.15	3.76
18	1.3	Diam - 1.00	-	2.5	0.20	0.66	E	1.01	0.47	1.01	3.65
19	0.6	Diam - 1.00	-	1.2	0.20	0.44	E	0.64	0.34	0.64	2.55
20	1.0	Diam - 0.80	-	1.2	0.20	0.60	E	0.96	0.50	1.20	2.97
21	0.2	Diam - 0.80	-	2.5	0.20	0.26	E	0.37	0.17	0.46	2.52
22	0.3	Diam - 0.80	-	1.5	0.20	0.34	E	0.49	0.25	0.61	2.41
23	0.1	Diam - 0.80	-	1.5	0.20	0.17	E	0.23	0.12	0.29	1.72
24	0.7	Diam - 1.00	-	1.5	0.20	0.48	E	0.70	0.36	0.70	2.80
25	1.5	Diam - 1.00	-	1.7	0.20	0.70	E	1.08	0.53	1.08	3.41
26	0.4	Diam - 1.00	-	3.0	0.20	0.35	E	0.51	0.22	0.51	3.03
27	2.3	Diam - 1.20	-	1.7	0.20	0.84	E	1.29	0.65	1.08	3.65
28	5.8	Diam - 1.50	-	0.7	0.20	1.25	E	2.08	1.17	1.39	3.92
29	6.0	2.00 x 2.00	-	0.7	0.20	0.97	E	1.56	0.82	0.78	3.69
30	5.8	Diam - 1.50	-	4.8	0.20	1.24	E	2.07	0.86	1.38	5.47
31	5.8	Diam - 1.50	-	2.5	0.20	1.24	E	2.08	0.96	1.38	4.83
32	3.5	Diam - 1.20	-	2.6	0.20	1.01	E	1.71	0.77	1.43	4.51
33	3.3	Diam - 1.20	-	2.5	0.20	0.99	E	1.65	0.75	1.37	4.37
34	2.7	Diam - 1.20	-	4.0	0.20	0.91	E	1.44	0.62	1.20	4.62
35	2.8	Diam - 1.20	-	4.0	0.20	0.92	E	1.47	0.63	1.23	4.64
36	3.3	Diam - 1.50	-	0.5	0.20	0.95	E	1.43	0.88	0.95	3.08
37	4.2	Diam - 1.50	-	2.0	0.20	1.06	E	1.65	0.82	1.10	4.20
38	4.3	Diam - 1.50	-	1.0	0.20	1.09	E	1.70	0.93	1.13	3.75
39	3.0	Diam - 1.50	-	0.5	0.20	0.89	E	1.34	0.82	0.89	2.98
40	4.1	Diam - 1.50	-	2.0	0.20	1.05	E	1.63	0.81	1.08	4.14
41	8.0	2.00 x 2.00	-	3.0	0.20	1.17	E	1.88	0.72	0.94	5.49

Quadro G10 – CREL Estádio Nacional / Alverca (A9), sublanço Loures - Bucelas. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidrológico de passagens hidráulicas

PH	Área(ha)	Compr(m)	Desnível(m)	Tc(min)	T(anos)	Intens(mm/h)	Qp(m3/s)
1	11.0	240.0	100.8	5.	50.	149.8	0.9
2	23.0	380.0	129.2	5.	50.	149.8	1.9
3	19.0	200.0	40.0	5.	50.	149.8	1.6
4	34.0	360.0	75.6	5.	50.	149.8	2.8
5	18.0	180.0	30.6	5.	50.	149.8	1.5
6	7.0	120.0	30.0	5.	50.	149.8	0.6
7	13.0	240.0	45.6	5.	50.	149.8	1.1
8	19.0	340.0	61.2	5.	50.	149.8	1.6
9	29.0	400.0	72.0	5.	50.	149.8	2.4
10	266.0	1820.0	109.2	19.	50.	75.6	17.1
11	25.0	580.0	40.6	7.	50.	124.2	2.0
12	270.0	1820.0	109.2	19.	50.	75.6	17.3
13	134.0	2700.0	189.0	24.	50.	66.1	8.1

Quadro G11 – CREL Estádio Nacional / Alverca (A9), sublanço Loures - Bucelas. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para diferentes períodos de retorno.

Dimensionamento hidrológico de passagens hidráulicas

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	11.0	240.0	100.8	5.0	0.6	0.7	0.9	1.1
2	23.0	380.0	129.2	5.0	1.2	1.6	1.9	2.3
3	19.0	200.0	40.0	5.0	1.0	1.3	1.6	1.9
4	34.0	360.0	75.6	5.0	1.7	2.3	2.8	3.4
5	18.0	180.0	30.6	5.0	0.9	1.2	1.5	1.8
6	7.0	120.0	30.0	5.0	0.4	0.5	0.6	0.7
7	13.0	240.0	45.6	5.0	0.7	0.9	1.1	1.3
8	19.0	340.0	61.2	5.0	1.0	1.3	1.6	1.9
9	29.0	400.0	72.0	5.0	1.5	2.0	2.4	2.9
10	266.0	1820.0	109.2	18.6	10.6	14.1	17.1	20.3
11	25.0	580.0	40.6	7.2	1.2	1.6	2.0	2.3
12	270.0	1820.0	109.2	18.6	10.7	14.3	17.3	20.7
13	134.0	2700.0	189.0	24.0	5.1	6.7	8.2	9.6

Quadro G12 – CREL Estádio Nacional / Alverca (A9), sublanço Loures - Bucelas. Dimensionamento hidráulico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidráulico de passagens hidráulicas

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	0.9	Diam - 1.00	46.0	2.0	0.20	0.54	E	0.80	0.36	0.80	3.46
2	1.9	Diam - 1.00	52.0	1.5	0.20	0.79	E	1.28	0.60	1.28	3.82
3	1.6	Diam - 1.00	41.0	1.5	0.20	0.73	E	1.14	0.55	1.14	3.55
4	2.8	Diam - 1.20	35.0	1.0	0.20	0.92	E	1.47	0.78	1.23	3.59
5	1.5	Diam - 1.00	33.0	1.5	0.20	0.70	E	1.09	0.54	1.09	3.41
6	0.6	Diam - 1.00	38.0	2.0	0.20	0.44	E	0.64	0.30	0.64	3.07
7	1.1	Diam - 1.00	39.0	2.0	0.20	0.60	E	0.90	0.42	0.90	3.53
8	1.6	Diam - 1.00	53.0	1.0	0.20	0.73	E	1.14	0.59	1.14	3.28
9	2.4	Diam - 1.20	60.0	1.0	0.20	0.85	E	1.33	0.69	1.11	3.57
10	17.1	2.00 x 2.00	220.0	2.1	0.20	1.95	E	4.53	1.12	1.56	7.62
11	2.0	Diam - 1.00	50.0	1.0	0.20	0.81	E	1.33	0.69	1.33	3.45
12	17.3	2.00 x 2.00	100.0	1.0	0.20	1.97	E	5.34	1.53	1.57	5.67
13	8.1	2.00 x 2.00	28.0	0.5	0.20	1.19	E	1.90	1.09	0.95	3.72

Quadro G13 – CREL Estádio Nacional / Alverca (A9), sublanço Loures - Bucelas. Dimensionamento hidráulico efectuado pelo programa HIDROPAS para os caudais de dimensionamento do projecto.

Dimensionamento hidráulico de passagens hidráulicas

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	2.1	Diam - 1.00	46.0	2.0	0.20	0.83	E	1.37	0.61	1.37	4.14
2	3.6	Diam - 1.20	52.0	1.5	0.20	1.03	E	1.77	0.82	1.47	4.35
3	3.6	Diam - 1.20	41.0	1.5	0.20	1.03	E	1.76	0.83	1.46	4.26
4	5.1	Diam - 1.50	35.0	1.0	0.20	1.18	E	1.90	1.01	1.27	4.05
5	3.4	Diam - 1.20	33.0	1.5	0.20	1.01	E	1.70	0.82	1.41	4.13
6	1.7	Diam - 1.00	38.0	2.0	0.20	0.74	E	1.17	0.54	1.17	3.84
7	2.3	Diam - 1.00	39.0	2.0	0.20	0.86	E	1.47	0.66	1.47	4.17
8	2.9	Diam - 1.20	53.0	1.0	0.20	0.94	E	1.51	0.78	1.26	3.73
9	4.1	Diam - 1.20	60.0	1.0	0.20	1.08	E	1.64	0.85	1.10	3.97
10	18.6	2.00 x 2.00	220.0	2.1	0.20	2.07	E	3.31	1.20	1.65	4.28
11	2.8	Diam - 1.00	50.0	1.0	0.20	0.92	E	1.47	0.77	1.23	3.67
12	18.9	2.00 x 2.00	100.0	1.0	0.20	2.09	E	3.34	1.64	1.67	5.78
13	8.1	2.00 x 2.00	28.0	0.5	0.20	1.19	E	1.90	1.09	0.95	3.72

Quadro G14 – Auto-Estrada Setúbal / Montijo (A12). Dimensionamento hidrológico efectuado pelo programa HIDROPAS para diferentes períodos de retorno.

Dimensionamento hidrológico de passagens hidráulicas

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	49.0	1100.0	17.0	21.6	1.9	2.5	3.0	3.6
2	47.0	1200.0	25.0	20.4	1.8	2.4	3.0	3.5
3	5.0	250.0	10.0	5.0	0.3	0.3	0.4	0.5
4	187.0	2250.0	68.0	28.8	6.9	9.0	10.9	12.9
5	4.2	250.0	9.0	5.0	0.2	0.3	0.4	0.4
6	23.0	600.0	10.0	13.2	1.0	1.3	1.6	1.9
7	427.0	4400.0	79.0	58.8	13.2	17.3	20.7	24.4
8	26.0	700.0	9.0	16.2	1.1	1.4	1.7	2.1
9	234.0	2100.0	29.0	36.6	8.2	10.7	12.9	15.2
10	25.0	700.0	12.0	14.4	1.1	1.4	1.7	2.0
11	38.0	750.0	12.0	15.6	1.6	2.1	2.6	3.0
12	35.0	650.0	11.0	13.8	1.5	2.0	2.4	2.9
13	2.9	150.0	4.0	5.0	0.2	0.2	0.2	0.3
14	17.0	400.0	7.0	9.6	0.8	1.0	1.3	1.5
15	6.1	250.0	3.0	7.8	0.3	0.4	0.5	0.6
16	12.0	400.0	10.0	8.4	0.6	0.8	0.9	1.1
17	56.0	900.0	9.0	21.6	2.1	2.9	3.5	4.1
18	83.0	1750.0	16.0	37.2	2.9	3.8	4.6	5.4
19	131.0	2200.0	35.0	36.0	4.6	6.0	7.3	8.6
20	21.0	800.0	20.0	13.8	0.9	1.2	1.5	1.7
21	43.0	1200.0	30.0	19.2	1.7	2.2	2.7	3.3
22	24.0	900.0	24.0	15.0	1.0	1.3	1.6	1.9
23	3.2	200.0	6.0	5.0	0.2	0.2	0.3	0.3
24	109.0	1700.0	29.0	28.8	4.0	5.3	6.4	7.5
25	19.0	1000.0	21.0	17.4	0.8	1.0	1.2	1.5
26	48.0	900.0	22.0	15.6	2.0	2.6	3.2	3.8
27	5.0	300.0	8.0	6.6	0.2	0.3	0.4	0.5
28	20.0	550.0	10.0	12.0	0.9	1.2	1.4	1.7
29	43.0	1100.0	23.0	19.2	1.7	2.3	2.7	3.3
30	5.6	300.0	11.0	5.4	0.3	0.4	0.5	0.6
31	4.0	400.0	8.0	9.0	0.2	0.3	0.3	0.4
32	26.0	650.0	10.0	14.4	1.1	1.5	1.8	2.1
33	5.2	500.0	9.0	10.8	0.2	0.3	0.4	0.5
34	2.0	200.0	6.0	5.0	0.1	0.1	0.2	0.2
35	3.0	300.0	7.0	6.6	0.1	0.2	0.2	0.3
36	1.7	150.0	2.0	5.0	0.1	0.1	0.1	0.2
37	434.0	4350.0	80.0	57.6	13.5	17.7	21.2	25.0
38	4.9	400.0	9.0	8.4	0.2	0.3	0.4	0.5
39	24.0	650.0	10.0	14.4	1.0	1.3	1.6	2.0
40	428.0	4300.0	80.0	57.0	13.4	17.5	21.0	24.7
41	2.5	250.0	7.0	5.4	0.1	0.2	0.2	0.3
42	10.0	400.0	10.0	8.4	0.5	6.0	0.8	0.9
43	18.0	400.0	9.0	8.4	0.8	1.1	1.4	1.6
44	24.0	600.0	11.0	12.6	1.0	1.4	1.7	2.0
45	23.0	500.0	9.0	10.8	1.0	1.4	1.7	2.0

Quadro G15 – Ligação IP3-IP5, variante a Viseu. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para um período de retorno de 50 anos.

Dimensionamento hidrológico de passagens hidráulicas

PH	Área(ha)	Compr(m)	Desnível(m)	Tc(min)	T(anos)	Intens(mm/h)	Qp(m3/s)
1	3.0	200.0	60.0	5.	50.	149.8	0.3
2	2.0	200.0	60.0	5.	50.	149.8	0.2
3	5.0	300.0	60.0	5.	50.	149.8	0.4
4	7.0	350.0	60.0	5.	50.	149.8	0.6
5	7.0	400.0	60.0	5.	50.	149.8	0.6
6	25.0	700.0	90.0	7.	50.	130.0	2.0
7	7.0	700.0	80.0	7.	50.	124.2	0.6
8	15.0	750.0	80.0	8.	50.	119.1	1.2
9	5.0	300.0	40.0	5.	50.	149.8	0.4
10	4.0	250.0	40.0	5.	50.	149.8	0.3
11	205.0	3400.0	150.0	34.	50.	54.9	11.5
12	8.0	350.0	60.0	5.	50.	149.8	0.7
13	8.0	400.0	60.0	5.	50.	149.8	0.7
14	4.0	250.0	60.0	5.	50.	149.8	0.3
15	4.0	250.0	50.0	5.	50.	149.8	0.3
16	2.0	200.0	50.0	5.	50.	149.8	0.2
17	2.0	200.0	40.0	5.	50.	149.8	0.2
18	11.0	400.0	50.0	5.	50.	149.8	0.9
19	225.0	3200.0	85.0	40.	50.	50.9	12.2
20	4.0	200.0	20.0	5.	50.	149.8	0.3
21	2.0	150.0	20.0	5.	50.	149.8	0.2
22	3.0	150.0	20.0	5.	50.	149.8	0.3
23	5.0	250.0	40.0	5.	50.	149.8	0.4
24	1590.0	7000.0	110.0	88.	50.	33.4	68.2
25	69.0	1100.0	60.0	6.	50.	136.7	4.8
26	7.0	500.0	40.0	6.	50.	136.7	0.6
27	5.0	350.0	40.0	5.	50.	149.8	0.4
28	3.0	300.0	35.0	5.	50.	149.8	0.3
29	7.0	450.0	40.0	5.	50.	144.5	0.6
30	12.0	450.0	50.0	5.	50.	149.8	1.0
31	27.0	600.0	50.0	7.	50.	124.2	2.1
32	4.0	300.0	35.0	5.	50.	149.8	0.3
33	5.0	400.0	40.0	5.	50.	149.8	0.4
34	7.0	450.0	40.0	5.	50.	144.5	0.6
35	200.0	2500.0	60.0	34.	50.	55.4	11.3
36	36.0	750.0	35.0	10.	50.	103.5	2.7
37	22.0	700.0	30.0	10.	50.	103.5	1.6
38	24.0	800.0	40.0	11.	50.	100.5	1.7
39	15.0	450.0	30.0	6.	50.	136.7	1.2
40	13.0	400.0	30.0	5.	50.	144.5	1.1

Quadro G16 – Ligação IP3-IP5, variante a Viseu. Dimensionamento hidrológico efectuado pelo programa HIDROPAS para diferentes períodos de retorno.

Dimensionamento hidrológico de passagens hidráulicas

Bacia	Ab(ha)	Lb(m)	Dh(m)	Tc(min)	Q10(m3/s)	Q20(m3/s)	Q50(m3/s)	Q100(m3/s)
1	3.0	200.0	60.0	5.0	0.2	0.2	0.3	0.3
2	2.0	200.0	60.0	5.0	0.1	0.1	0.2	0.2
3	5.0	300.0	60.0	5.0	0.3	0.3	0.4	0.5
4	7.0	350.0	60.0	5.0	0.4	0.5	0.6	0.7
5	7.0	400.0	60.0	5.0	0.4	0.5	0.6	0.7
6	25.0	700.0	90.0	6.6	1.2	1.6	2.0	2.4
7	7.0	700.0	80.0	7.2	0.3	0.5	0.6	0.7
8	15.0	750.0	80.0	7.8	0.7	1.0	1.2	1.4
9	5.0	300.0	40.0	5.0	0.3	0.3	0.4	0.5
10	4.0	250.0	40.0	5.0	0.2	0.3	0.3	0.4
11	205.0	3400.0	150.0	34.2	7.0	9.2	11.5	13.5
12	8.0	350.0	60.0	5.0	0.4	0.5	0.7	0.8
13	8.0	400.0	60.0	5.0	0.4	0.5	0.7	0.8
14	4.0	250.0	60.0	5.0	0.2	0.3	0.3	0.4
15	4.0	250.0	50.0	5.0	0.2	0.3	0.3	0.4
16	2.0	200.0	50.0	5.0	0.1	0.1	0.2	0.2
17	2.0	200.0	40.0	5.0	0.1	0.1	0.2	0.2
18	11.0	400.0	50.0	5.0	0.6	0.7	0.9	1.1
19	225.0	3200.0	85.0	39.6	7.7	10.1	12.2	14.3
20	4.0	200.0	20.0	5.0	0.2	0.3	0.3	0.4
21	2.0	150.0	20.0	5.0	0.1	0.1	0.2	0.2
22	3.0	150.0	20.0	5.0	0.2	0.2	0.3	0.3
23	5.0	250.0	40.0	5.0	0.3	0.3	0.4	0.5
24	1590.0	7000.0	110.0	88.2	43.8	57.1	68.2	80.5
25	69.0	1100.0	60.0	13.2	3.0	3.9	4.8	5.7
26	7.0	500.0	40.0	6.0	0.3	0.5	0.6	0.7
27	5.0	350.0	40.0	5.0	0.3	0.3	0.4	0.5
28	3.0	300.0	35.0	5.0	0.2	0.2	0.3	0.3
29	7.0	450.0	40.0	5.4	0.4	0.5	0.6	0.7
30	12.0	450.0	50.0	5.0	0.6	0.8	1.0	1.2
31	27.0	600.0	50.0	7.2	1.3	1.7	2.1	2.5
32	4.0	300.0	35.0	5.0	0.2	0.3	0.3	0.4
33	5.0	400.0	40.0	5.0	0.3	0.3	0.4	0.5
34	7.0	450.0	40.0	5.4	0.4	0.5	0.6	0.7
35	200.0	2500.0	60.0	33.6	7.1	9.3	11.3	13.3
36	36.0	750.0	35.0	10.2	1.6	2.2	2.7	3.2
37	22.0	700.0	30.0	10.2	1.0	1.3	1.6	1.9
38	24.0	800.0	40.0	10.8	1.1	1.4	1.7	2.1
39	15.0	450.0	30.0	6.0	0.7	1.0	1.2	1.5
40	13.0	400.0	30.0	5.4	0.6	0.9	1.1	1.3

Quadro G17 – Ligação IP3-IP5, variante a Viseu. Dimensionamento hidráulico efectuado pelo programa HIDROPAS.

Dimensionamento hidráulico de passagens hidráulicas

PH	Q(m3/s)	Secção(m)	L(m)	i(%)	Ke	Yc(m)	Contr	HW(m)	TW(m)	HW/D	V(m/s)
1	0.3	Diam - 1.00	27.0	1.7	0.20	0.31	E	0.44	0.21	0.44	2.43
2	0.2	Diam - 1.00	67.0	2.5	0.20	0.25	E	0.35	0.15	0.35	2.65
3	0.4	Diam - 1.00	36.0	2.0	0.20	0.35	E	0.51	0.24	0.51	2.79
4	0.6	Diam - 1.00	90.0	1.6	0.20	0.44	E	0.64	0.29	0.64	3.10
5	0.6	Diam - 1.00	95.0	1.8	0.20	0.44	E	0.64	0.28	0.64	3.26
6	2.0	Diam - 1.00	70.0	1.5	0.20	0.81	E	1.33	0.61	1.33	3.95
7	0.6	Diam - 1.00	46.0	1.5	0.20	0.44	E	0.64	0.31	0.64	2.89
8	1.2	Diam - 1.00	69.0	2.0	0.20	0.63	E	0.95	0.42	0.95	3.83
9	0.4	Diam - 1.00	30.0	2.0	0.20	0.35	E	0.51	0.24	0.51	2.74
10	0.3	Diam - 1.00	43.0	2.0	0.20	0.31	E	0.44	0.20	0.44	2.69
11	11.5	Diam -2×1.50	96.0	1.0	0.20	1.25	E	2.08	1.03	1.39	4.48
12	0.7	Diam - 1.00	59.0	2.0	0.20	0.47	E	0.69	0.31	0.69	3.36
13	0.7	Diam - 1.00	56.0	2.0	0.20	0.47	E	0.69	0.31	0.69	3.32
14	0.3	Diam - 1.00	45.0	1.6	0.20	0.31	E	0.44	0.21	0.44	2.48
15	0.3	Diam - 1.00	52.0	2.0	0.20	0.31	E	0.44	0.20	0.44	2.70
16	0.2	Diam - 1.00	43.0	2.0	0.20	0.25	E	0.35	0.16	0.35	2.42
17	0.2	Diam - 1.00	44.0	2.0	0.20	0.25	E	0.35	0.16	0.35	2.42
18	0.9	Diam - 1.00	70.0	2.0	0.20	0.54	E	0.80	0.35	0.80	3.63
19	6.1	Diam - 1.50	95.0	1.0	0.20	1.27	E	2.16	1.07	1.44	4.53
20	0.3	Diam - 1.00	30.0	2.0	0.20	0.31	E	0.44	0.21	0.44	2.56
21	0.2	Diam - 1.00	44.0	2.0	0.20	0.25	E	0.35	0.16	0.35	2.42
22	0.3	Diam - 1.00	27.0	1.2	0.20	0.31	E	0.44	0.23	0.44	2.18
23	0.4	Diam - 1.00	55.0	2.0	0.20	0.35	E	0.51	0.23	0.51	2.92
24	68.2	2# 3.00x3.00	48.0	0.4	0.20	2.36	E	3.78	2.30	1.26	4.94
25	4.8	Diam - 1.50	46.0	1.5	0.20	1.14	E	1.82	0.89	1.21	4.40
26	0.6	Diam - 1.00	49.0	2.0	0.20	0.44	E	0.64	0.29	0.64	3.19
27	0.4	Diam - 1.00	47.0	2.0	0.20	0.35	E	0.51	0.23	0.51	2.88
28	0.3	Diam - 1.00	28.0	1.5	0.20	0.31	E	0.44	0.22	0.44	2.33
29	0.6	Diam - 1.00	31.0	2.0	0.20	0.44	E	0.64	0.30	0.64	2.99
30	1.0	Diam - 1.00	47.0	1.5	0.20	0.57	E	0.85	0.41	0.85	3.22
31	2.1	Diam - 1.00	43.0	1.7	0.20	0.83	E	1.37	0.63	1.37	3.97
32	0.3	Diam - 1.00	31.0	1.5	0.20	0.31	E	0.44	0.22	0.44	2.35
33	0.4	Diam - 1.00	36.0	1.5	0.20	0.35	E	0.51	0.25	0.51	2.57
34	0.6	Diam - 1.00	43.0	1.6	0.20	0.44	E	0.64	0.31	0.64	2.91
35	5.7	Diam - 1.50	55.0	0.8	0.20	1.24	E	2.05	1.10	1.37	4.10
36	2.7	Diam - 1.20	41.0	1.2	0.20	0.91	E	1.44	0.73	1.20	3.74
37	1.6	Diam - 1.00	29.0	1.0	0.20	0.73	E	1.14	0.61	1.14	3.14
38	1.7	Diam - 1.00	29.0	1.2	0.20	0.75	E	1.18	0.62	1.18	3.32
39	1.2	Diam - 1.00	38.0	1.5	0.20	0.63	E	0.95	0.47	0.95	3.29
40	1.1	Diam - 1.00	45.0	2.0	0.20	0.60	E	0.90	0.41	0.90	3.58