

Appendix B:

Results of the analysis of inundation areas for different scenarios in terms of the depth and duration requirements for wild rice

Table 1: Summary of maximum annual areas inundated for a continuous 25 days for the entire study area

Hydrological year	Maximum area inundated for 25 continuous days (km2)					Percentage of virgin scenario				Percentage of historical scenario		
	Virgin scenario	Historical scenario	Olifantspruit Dam with constant 30l/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario	Historical scenario	Olifantspruit Dam with constant 30l/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario	Olifantspruit Dam with constant 30l/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario
1973/1974	25.00	24.44	22.67	22.68	20.27	98	91	91	81	93	93	83
1974/1975	40.06	39.67	39.03	39.03	35.96	99	97	97	90	98	98	91
1975/1976	36.63	36.44	35.87	35.86	30.84	99	98	98	84	98	98	85
1976/1977	26.39	26.73	25.82	25.83	21.17	101	98	98	80	97	97	79
1977/1978	36.96	36.35	35.72	35.71	31.71	98	97	97	86	98	98	87
1978/1979	7.88	5.64	5.86	5.67	5.56	72	74	72	71	104	100	99
1979/1980	24.61	21.54	18.11	18.10	16.35	88	74	74	66	84	84	76
1980/1981	14.27	13.17	11.13	10.91	10.91	92	78	79	76	85	86	83
1981/1982	9.63	8.43	5.07	5.80	4.87	88	53	60	51	60	69	58
1982/1983	9.01	6.58	6.13	6.05	5.93	73	68	67	66	93	92	90
1983/1984	22.88	20.40	13.26	13.67	12.90	89	58	60	56	65	67	63
1984/1985	16.28	15.15	13.59	12.70	10.87	93	83	78	67	90	84	72
1985/1986	5.95	4.22	4.09	4.03	3.96	71	69	68	67	97	95	94
1986/1987	32.90	30.78	27.05	27.14	26.91	94	82	82	82	88	88	87
1987/1988	22.67	21.86	20.68	20.69	16.45	96	91	91	73	95	95	75
1988/1989	10.26	7.15	7.11	7.06	6.99	70	69	69	68	99	99	98
1989/1990	17.58	15.68	15.64	15.64	15.64	89	89	89	89	100	100	100
1990/1991	27.66	27.50	23.31	No data	21.95	99	84	0	79	85	0	80
1991/1992	5.94	2.51	2.69	No data	2.36	42	45	0	40	107	0	94
1992/1993	15.31	13.38	10.29	No data	10.11	87	67	0	66	77	0	76
1993/1994	18.67	15.85	10.73	No data	10.51	85	57	0	56	68	0	66
1994/1995	13.91	11.91	10.03	No data	9.77	86	72	0	70	84	0	82
1995/1996	48.27	47.26	46.91	No data	42.87	98	97	0	89	99	0	91
1996/1997	25.87	24.80	24.58	No data	24.42	96	95	0	94	99	0	98
1997/1998	14.98	13.60	10.95	No data	10.84	91	73	0	72	81	0	80
1998/1999	27.97	27.65	27.49	No data	27.24	99	98	0	97	99	0	99
1999/2000	35.15	34.85	34.17	No data	29.09	99	97	0	83	98	0	83
2000/2001	17.89	17.30	14.30	No data	14.12	97	80	0	79	83	0	82
% Virgin	-	93	86	54	79							
% Historical	-		91	59	84							
Maximum	48.27	47.26	46.91	39.03	42.87							
Minimum	5.94	2.51	2.69	4.03	2.36							
Average	21.81	20.39	18.65	18.06	17.16							

Table 2: Summary of maximum annual areas inundated for a continuous 25 days for the Middelfontein reach

Hydrological year	Maximum area inundated for 25 continuous days (km2)						Percentage of virgin scenario				Percentage of historical scenario			
	Virgin scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario
1973/1974	5.24	4.88	4.44	4.44	3.00	93	85	85	57	91	91	57	91	61
1974/1975	9.46	9.38	9.15	9.15	7.84	99	97	97	83	98	98	83	98	84
1975/1976	8.67	8.50	8.25	8.25	6.49	98	95	95	75	97	97	75	97	76
1976/1977	5.82	5.57	4.12	4.12	2.65	96	71	71	46	74	74	46	74	48
1977/1978	7.82	7.70	7.38	7.38	6.50	98	94	94	83	96	96	83	96	84
1978/1979	0.48	0.08	0.11	0.06	0.03	17	22	12	5	133	71	5	133	31
1979/1980	5.40	4.25	2.82	2.82	2.01	79	52	52	37	66	66	37	66	47
1980/1981	1.26	0.74	0.41	0.43	0.33	59	32	34	26	55	59	26	55	45
1981/1982	1.04	0.70	0.11	0.37	0.03	67	11	35	3	16	53	4	53	4
1982/1983	1.25	0.52	0.49	0.49	0.49	41	39	39	39	95	95	39	95	95
1983/1984	4.34	3.26	1.16	1.31	1.08	75	27	30	25	36	40	25	36	33
1984/1985	3.15	2.84	2.02	1.84	1.37	90	64	59	43	71	65	43	71	48
1985/1986	0.33	0.01	0.02	0.01	0.01	4	6	4	4	133	100	4	133	100
1986/1987	6.60	6.05	3.59	3.66	3.53	92	54	55	53	59	60	53	59	58
1987/1988	3.74	3.09	2.59	2.59	1.76	83	69	69	47	84	84	47	84	57
1988/1989	1.16	0.46	0.51	0.51	0.43	39	44	44	37	111	111	37	111	94
1989/1990	3.60	2.16	2.13	2.13	2.13	60	59	59	59	99	99	59	99	99
1990/1991	5.73	5.36	5.02	No data	4.66	94	88	88	81	94	0	81	94	87
1991/1992	0.57	0.03	0.08	No data	0.01	5	14	0	2	307	0	0	307	52
1992/1993	2.75	1.92	1.24	No data	1.17	70	45	0	42	65	0	42	65	61
1993/1994	4.20	3.02	1.62	No data	1.54	72	38	0	37	53	0	37	53	51
1994/1995	2.33	1.77	1.36	No data	1.28	76	58	0	55	77	0	55	77	72
1995/1996	11.45	11.37	11.26	No data	9.26	99	98	81	81	99	0	81	99	81
1996/1997	5.85	5.61	5.44	No data	5.39	96	93	0	92	97	0	92	97	96
1997/1998	2.16	1.63	1.10	No data	1.02	75	51	0	47	67	0	47	67	63
1998/1999	4.94	4.43	4.20	No data	4.14	90	85	0	84	95	0	84	95	94
1999/2000	8.88	8.72	7.83	No data	6.74	98	88	0	76	90	0	76	90	77
2000/2001	3.39	3.14	1.97	No data	1.90	93	58	0	56	63	0	56	63	61
% Virgin	100	88	74	46	63									
% Historical	113	100	84	55	72									
Maximum	11.45	11.37	11.26	9.15	9.26									
Minimum	0.33	0.01	0.02	0.01	0.01									
Average	4.34	3.83	3.23	2.92	2.74									

Table 3: Summary of maximum annual areas inundated for a continuous 25 days for the Nylsvley Reserve reach

Hydrological year	Maximum area inundated for 25 continuous days (km2)				Percentage of virgin scenario				Percentage of historical scenario			
	Virgin scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario
1973/1974	4.19	4.01	3.81	3.81	3.38	96	96	91	81	95	95	84
1974/1975	6.62	6.51	6.41	6.40	5.70	98	98	97	86	98	98	87
1975/1976	6.06	5.97	5.86	5.86	4.81	99	99	97	79	98	98	81
1976/1977	4.39	4.27	4.10	4.10	3.15	97	97	94	93	96	96	74
1977/1978	5.66	5.54	5.40	5.39	4.77	98	98	95	84	97	97	86
1978/1979	1.34	0.89	0.96	0.90	0.85	66	66	72	63	109	102	96
1979/1980	4.02	3.38	3.06	3.06	2.79	84	84	76	69	91	91	83
1980/1981	2.40	2.16	1.82	1.86	1.77	90	90	76	77	84	86	82
1981/1982	1.84	1.65	1.10	1.31	1.02	90	90	60	56	67	80	62
1982/1983	1.83	1.32	1.30	1.30	1.30	72	71	71	71	98	98	98
1983/1984	3.87	3.47	2.25	2.29	2.20	90	58	59	57	65	66	63
1984/1985	2.83	2.65	2.52	2.14	1.95	94	89	75	69	95	81	73
1985/1986	1.24	0.97	0.98	0.97	0.96	79	79	79	78	101	100	99
1986/1987	4.59	4.19	3.05	3.07	3.03	91	66	67	66	73	73	72
1987/1988	3.85	3.75	3.61	3.61	2.75	97	94	94	71	96	96	73
1988/1989	1.81	1.37	1.37	1.37	1.31	76	76	76	73	100	100	96
1989/1990	2.98	2.50	2.49	2.49	2.49	84	84	84	84	100	100	100
1990/1991	4.41	4.27	3.83	No data	3.76	97	87	0	85	90	0	88
1991/1992	1.42	0.80	0.87	No data	0.76	56	61	0	53	110	0	96
1992/1993	2.66	2.37	1.84	No data	1.84	89	70	78	69	79	0	78
1993/1994	3.18	2.67	1.99	No data	1.96	84	63	0	62	74	0	73
1994/1995	2.47	2.13	1.98	No data	1.95	86	80	0	76	93	0	92
1995/1996	8.77	8.68	8.60	No data	7.22	99	98	0	82	99	0	83
1996/1997	4.14	4.06	4.02	No data	3.99	98	97	0	96	99	0	98
1997/1998	2.53	2.31	2.02	No data	1.99	91	80	0	79	87	0	86
1998/1999	4.32	4.14	4.08	No data	4.07	96	94	0	94	99	0	98
1999/2000	6.08	6.02	5.85	No data	4.90	99	96	0	81	97	0	81
2000/2001	2.99	2.86	2.36	No data	2.33	96	79	0	78	82	0	81
% Virgin	100	93	85	84	77							
% Historical	108	100	92	91	83							
Maximum	8.77	8.68	8.60	6.40	7.22							
Minimum	1.24	0.80	0.87	0.90	0.76							
Average	3.66	3.35	3.13	2.94	2.82							

Table 4: Summary of maximum annual areas inundated for a continuous 25 days for the Mosdene reach

Hydrological year	Maximum area inundated for 25 continuous days (km2)					Percentage of virgin scenario				Percentage of historical scenario			
	Virgin scenario	Historical scenario	Olifantspruit Dam with constant 30/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario	Historical scenario	Olifantspruit Dam with constant 30/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario	Olifantspruit Dam with constant 30/s release scenario	Olifantspruit Dam with IFR release scenario	No flow from Olifantspruit scenario	
1973/1974	15.65	14.96	14.19	14.20	12.85	96	91	91	82	95	95	86	
1974/1975	23.98	23.78	23.64	23.64	22.50	99	99	99	94	99	99	95	
1975/1976	21.90	21.71	21.52	21.55	19.30	99	98	98	88	99	99	89	
1976/1977	16.33	16.06	15.05	15.04	13.55	98	92	92	83	94	94	84	
1977/1978	24.01	23.72	23.53	23.53	20.22	99	98	98	84	99	99	85	
1978/1979	6.06	4.71	4.79	4.71	4.69	78	79	78	77	102	100	100	
1979/1980	15.08	13.25	12.47	12.48	11.21	88	83	83	74	94	94	85	
1980/1981	10.56	9.68	8.65	8.73	8.55	92	82	83	81	89	90	88	
1981/1982	6.75	6.03	3.95	4.24	3.85	89	58	63	57	65	70	64	
1982/1983	6.30	4.81	4.59	4.54	4.44	76	73	72	70	95	95	92	
1983/1984	14.07	13.22	9.31	9.39	9.10	94	66	67	65	70	71	69	
1984/1985	10.56	10.06	8.75	7.57	6.56	95	83	72	62	87	75	65	
1985/1986	4.30	3.16	2.85	2.76	2.66	74	66	64	62	90	87	84	
1986/1987	21.28	20.79	18.92	19.00	18.81	98	89	89	88	91	91	90	
1987/1988	15.37	14.70	14.07	14.13	12.11	96	92	92	79	96	96	82	
1988/1989	6.75	4.69	4.85	4.88	4.62	70	72	72	68	103	104	98	
1989/1990	10.57	9.65	9.62	9.62	9.61	91	91	91	91	100	100	100	
1990/1991	17.31	16.80	14.22	No data	13.65	97	82	0	79	85	0	81	
1991/1992	3.95	1.69	1.74	No data	1.59	43	44	0	40	103	0	94	
1992/1993	9.61	8.56	6.44	No data	6.30	89	67	0	66	75	0	74	
1993/1994	11.23	9.86	7.00	No data	6.90	88	62	0	62	71	0	70	
1994/1995	9.04	7.61	6.71	No data	6.57	84	74	0	73	88	0	86	
1995/1996	28.36	28.35	28.21	No data	25.98	100	99	0	92	100	0	92	
1996/1997	16.29	15.92	15.28	No data	15.28	98	94	0	94	96	0	96	
1997/1998	10.19	9.61	7.79	No data	7.80	94	76	0	77	81	0	81	
1998/1999	18.52	18.06	17.50	No data	17.34	98	95	0	94	97	0	96	
1999/2000	20.42	20.11	19.91	No data	17.47	98	98	0	86	99	0	87	
2000/2001	11.20	10.93	9.52	No data	9.42	98	85	0	84	87	0	86	
% Virgin	100	94	87	55	81								
% Historical	106	100	92	60	86								
Maximum	28.36	28.35	28.21	23.64	25.98								
Minimum	3.95	1.69	1.74	2.76	1.59								
Average	13.77	12.95	11.97	11.77	11.18								

Table 5: Summary of maximum annual areas inundated for a continuous 25 days in the depth range 0.1m to 0.5m for the Nylsvley Reserve reach

Hydrological year	Maximum area inundated for 25 continuous days (km2)					Percentage of virgin scenario				Percentage of historical scenario			
	Virgin scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Historical scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	Olfantspruit Dam with constant 30l/s release scenario	Olfantspruit Dam with IFR release scenario	No flow from Olfantspruit scenario	No flow from Olfantspruit scenario
1973/1974	2.25	2.14	2.03	2.03	1.79	95	90	90	79	95	95	83	83
1974/1975	3.78	3.71	3.65	3.64	3.19	98	98	96	84	98	98	86	86
1975/1976	3.16	3.14	3.06	3.06	2.63	99	97	97	83	98	97	84	84
1976/1977	2.37	2.30	2.20	2.20	1.67	97	93	93	70	96	96	73	73
1977/1978	3.17	3.09	3.00	3.00	2.60	97	95	95	82	97	97	84	84
1978/1979	0.51	0.14	0.20	0.15	0.11	27	39	30	22	142	108	80	80
1979/1980	2.15	1.79	1.62	1.62	1.49	83	75	75	69	91	91	83	83
1980/1981	1.31	1.17	0.92	0.98	0.87	90	70	73	67	79	81	75	75
1981/1982	0.93	0.77	0.30	0.48	0.24	83	33	52	26	39	62	31	31
1982/1983	0.92	0.50	0.48	0.48	0.48	54	51	51	51	96	96	96	96
1983/1984	2.06	1.84	1.23	1.23	1.19	89	60	61	58	67	68	65	65
1984/1985	1.51	1.42	1.36	1.16	1.02	94	90	77	67	96	81	72	72
1985/1986	0.42	0.21	0.21	0.20	0.20	49	51	48	47	103	99	96	96
1986/1987	2.49	2.25	1.61	1.63	1.61	90	65	65	64	72	72	72	72
1987/1988	2.05	1.99	1.92	1.92	1.47	97	93	93	72	96	96	74	74
1988/1989	0.91	0.53	0.54	0.53	0.49	59	59	59	53	101	100	91	91
1989/1990	1.58	1.35	1.35	1.35	1.35	86	85	85	85	100	100	100	100
1990/1991	2.38	2.30	2.04	No data	2.00	96	86	0	84	89	0	87	87
1991/1992	0.58	0.07	0.13	No data	0.05	13	22	0	8	175	0	67	67
1992/1993	1.42	1.29	0.96	No data	0.93	91	67	0	66	74	0	72	72
1993/1994	1.68	1.43	1.05	No data	1.03	85	62	0	61	73	0	72	72
1994/1995	1.34	1.15	1.05	No data	1.02	86	78	0	76	91	0	89	89
1995/1996	4.30	4.25	4.18	No data	3.54	99	97	0	82	98	0	83	83
1996/1997	2.22	2.17	2.15	No data	2.13	98	97	0	96	99	0	98	98
1997/1998	1.36	1.26	1.07	No data	1.05	92	79	0	77	85	0	85	85
1998/1999	2.33	2.22	2.19	No data	2.18	95	94	0	94	98	0	98	98
1999/2000	3.44	3.40	3.29	No data	2.68	99	96	0	78	97	0	79	79
2000/2001	1.59	1.52	1.29	No data	1.27	96	81	0	80	85	0	83	83
% Virgin	100	91	83	81	74								
% Historical	110	100	91	90	82								
Maximum	4.30	4.25	4.18	3.64	3.54								
Minimum	0.42	0.07	0.13	0.15	0.05								
Average	1.94	1.76	1.61	1.51	1.44								