

Table 4.6: Return flows proposed for use in the LORMS

DESCRIPTION	PROJECT IRR REQUIREMENT (Mm ³ /a)	FIELD IRR EFFICIENCY (%)	CANAL LOSSES (%)	FIELD LOSSES (Mm ³ /a)	CANAL LOSSES (Mm ³ /a)	% RETURN OF FIELD LOSS	% RETURN OF CANAL LOSS	FIELD LOSS RETURN FLOW (Mm ³ /a)	CANAL LOSS RETURN FLOW (Mm ³ /a)	TOTAL RETURN FLOW (Mm ³ /a)	RETURN FLOW AS % OF P.I.R.	NET F.I.R.-F RET.FLO (Mm ³ /a)	CONSUMPTIVE CANAL LOSS AS % OF P.I.R.
Area 1: Upstream of Gariep													
RSA													
Diffuse irrigation from Farm dams	146.20	75.00	0.00	36.55	0.00	20.00	0.00	7.31	0.00	7.31	5.00	138.89	0.00
Diffuse irrigation from Caledon in RSA	10.97	75.00	0.00	2.74	0.00	20.00	0.00	0.55	0.00	0.55	5.00	10.42	0.00
Other diffuse irrigation from Caledon RSA	23.00	75.00	0.00	5.75	0.00	20.00	0.00	1.15	0.00	1.15	5.00	21.85	0.00
Irrigation d/s of Welbedacht u/s of Gariep	36.39	75.00	0.00	9.10	0.00	20.00	0.00	1.82	0.00	1.82	5.00	34.57	0.00
Irrigation d/s of Aliwal Noord u/s of Gariep	20.48	70.00	0.00	6.14	0.00	40.00	0.00	2.46	0.00	2.46	12.00	18.02	0.00
Irrigation d/s of Oranjedraai & u/s of Bosberg	1.89	70.00	0.00	0.57	0.00	30.00	0.00	0.17	0.00	0.17	9.00	1.72	0.00
Irrigation d/s of Bosberg Dam site & u/s of Aliwal	10.70	70.00	0.00	3.21	0.00	45.00	0.00	1.45	0.00	1.45	13.50	9.26	0.00
Lesotho													
Diffuse irrigation from Caledon in Lesotho	8.99	75.00	0.00	2.25	0.00	20.00	0.00	0.45	0.00	0.45	5.00	8.54	0.00
Area 2: Gariep to Orange -Vaal confluence													
Diffuse irrigation from Farm dams Vanderkloof sub-catchment													
Orange River irrigation Vanderkloof to Torquay	104.54	80.00	0.00	20.91	0.00	40.00	0.00	8.36	0.00	8.36	8.00	96.18	0.00
Irrigation demand directly from Orange/Vaal canal	17.02	75.00	15.00	3.62	2.55	10.00	60.00	0.36	1.53	1.89	11.13	14.11	6.00
Irrigation from compensation releases between Gariep and Vanderkloof Dam	21.90	75.00	0.00	5.47	0.00	40.00	0.00	2.19	0.00	2.19	10.00	19.71	0.00
Irrigation from Douglas weir canal and river	75.54	75.00	15.00	16.05	11.33	40.00	30.00	6.42	3.40	9.82	13.00	57.79	10.50
Irrigation from Ramah and Vanderkloof main canal	73.53	80.00	15.00	12.50	11.03	40.00	60.00	5.00	6.62	11.62	15.80	57.50	6.00
Irrigation directly from the Orange/Riet canal, Riet River Settlement and Ritchie	156.87	75.00	15.00	33.34	23.53	10.00	5.00	3.33	1.18	4.51	2.88	130.01	14.25
Lower Riet River Irrigation Board	50.96	75.00	15.00	10.83	7.64	20.00	5.00	2.17	0.38	2.55	5.00	41.15	14.25
Scholtzburg Irrigation Board	9.34	75.00	15.00	1.98	1.40	20.00	5.00	0.40	0.07	0.47	5.00	7.54	14.25
From Orange River Boegat/Wicklow to Marksdrift	43.94	80.00	0.00	8.79	0.00	40.00	0.00	3.52	0.00	3.52	8.00	40.42	0.00
Area 3: Riet / Modder catchment													
Modder River G.W.S.	19.71	70.00	30.00	4.14	5.91	40.00	20.00	1.66	1.18	2.84	14.40	12.14	24.00
Modder River G.W.S.	22.24	70.00	30.00	4.67	6.67	40.00	20.00	1.87	1.33	3.20	14.40	13.70	24.00
Tierpoort Irrigation Board	7.97	75.00	20.00	1.59	1.59	40.00	60.00	0.64	0.96	1.59	20.00	5.73	8.00
Kalkfontein Canal Scheme	39.42	75.00	15.00	8.38	5.91	40.00	60.00	3.35	3.55	6.90	17.50	30.16	6.00
Area 4: Orange Vaal confluence to 20 Longitude													
Marksdrift to Boegoeberg	154.34	75.00	0.00	38.59	0.00	50.00	0.00	19.29	0.00	19.29	12.50	135.05	0.00
Boegoeberg weir to Neusberg weir	73.19	75.00	0.00	18.30	0.00	50.00	0.00	9.15	0.00	9.15	12.50	64.04	0.00
Neusberg to Augrabies from river	37.04	70.00	0.00	11.11	0.00	50.00	0.00	5.56	0.00	5.56	15.00	31.48	0.00
Boegoeberg irrigation from canals	136.46	70.00	15.00	34.80	20.47	40.00	60.00	13.92	12.28	26.20	19.20	102.08	6.00
Irrigation from Uppington canals	135.92	70.00	15.00	34.66	20.39	40.00	60.00	13.86	12.23	26.10	19.20	101.67	6.00
Irrigation from Keimoes canals	89.16	70.00	15.00	22.74	13.37	50.00	60.00	11.37	8.02	19.39	21.75	64.42	6.00
Kakamas and Augrabies irrigation from canals	138.93	70.00	10.00	37.51	13.89	50.00	60.00	18.76	8.34	27.09	19.50	106.28	4.00
Namaqualand Irrigation Augrabies to Namibia	11.51	70.00	0.00	3.45	0.00	50.00	0.00	1.73	0.00	1.73	15.00	9.78	0.00
Area 5: 20 Longitude to River Mouth													
RSA													
Namaqualand irrigation Namibian border to Vioolsdrift	41.29	70.00	0.00	12.39	0.00	50.00	0.00	6.19	0.00	6.19	15.00	35.10	0.00
Vioolsdrift South irrigation	10.61	70.00	15.00	2.70	1.59	55.00	60.00	1.49	0.95	2.44	23.03	7.53	6.00
Alexander Bay Irrigation	11.42	70.00	0.00	3.42	0.00	40.00	0.00	1.37	0.00	1.37	12.00	10.05	0.00
Namibia													
From Orange River													
20 Longitude to Vioolsdrift	22.35	70.00	0.00	6.71	0.00	50.00	0.00	3.35	0.00	3.35	15.00	19.00	0.00
Irrigation from Orange River	45.88	70.00	15.00	11.70	6.88	55.00	60.00	6.44	4.13	10.56	23.03	32.57	6.00
Vioolsdrift North, Aussenkjer and others													
Total Orange River	1890.80			456.93	154.18		685.00	171.13	66.16	237.29		1565.49	
Area 6: Fish River Namibia													
From Fish River													
Hardap Dam	49.06	70.00	15.00	12.51	7.36	55.00	60.00	6.88	4.42	11.30	23.03	34.82	6.00
Naute Dam	3.88	70.00	15.00	0.99	0.58	55.00	60.00	0.54	0.35	0.89	23.03	2.76	6.00
Sub-total Fish River	52.94			13.50	7.94		120.00	7.43	4.76	12.19		37.58	
Total system	1943.74			470.43	162.12		805.00	178.56	70.92	249.48		1603.07	