

APPENDICES

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Appendix 1 – SUB-AREAS IN THE BERG WMA

Quaternaries	Rivers/River Reaches	Towns/Suburbs
<u>BERG UPSTREAM OF HERMON (Quats G10A-G10D)</u>		
G10 A	Assegaaibos/Franschhoek Wemmershoek Confluence	
G10 B	Wemmershoek/Zakariahshoek	
G10 C	Dwars/Wemmershoek Confluence/Dal Josaphat	Pniel/Klein Drakenstein/Paarl
G10 D	Dal Josaphat/Hermon	Wellington
<u>KLEIN BERG (Quats G10E)</u>		
G10 E	Kleinberg	Tulbagh
<u>BERG DOWNSTREAM OF HERMON (Quats G10F-G10M)</u>		
G10 F	Hermon to Klein Berg Confluence	Hermon/Saron/Riebeek Wes/Riebeek Kasteel
G10 G	24 & Leeu Rivers to Canal	
G10 H	Krom/Assegaaibos tributaries	Porterville/Piketberg
G10 J	Klein Berg Confluence/Misverstand	Moorreesburg
G10 K	Misverstand/Sout Confluence	
G10 L	Sout	Darling/Hopefield
G10 M	Sout Confluence/Mouth	Vredenburg/Saldanha/Velddrif
<u>COMBINED WEST COAST RIVERS (Quats G21A-G21B)</u>		
G21A	Dwars/Modder	Yzerfontein
G21B	Sout	Atlantis/Mamre/Melksbostrand

Appendix 1 – SUB-AREAS IN THE BERG WMA (cntd.)

Quaternaries	Rivers/River Reaches	Towns/Suburbs
DIEP RIVER (Quats G21C-G21F)		
G21 C	Kasteelburg/above Malmesbury	
G21 D	Above Malmesbury/ Mosselbank Confluence	Malmesbury
G21 E	Mosselbank	Kraaifontein/Upper Durbanville
G21 F	Mosselbank Confluence/Mouth	Tableview/Milnerton/Bloubergstrand
COMBINED KUILS/EERSTE, LOURENS AND SIR LOWRY'S RIVERS (Quats G22E-G22K)		
G22 E	Kuils	Durbanville/Bellville/Brackenfell/ Kleinvei/Khayelitsha
G22 F	Eerste: Jonkershoek	
G22 G	Eerste: Jonkershoek to Plakenbrug	Stellenbosch/Cloetsville/Khayamandi
G22 H	Eerste: Plankenbrug/Moddergatspruit/Mouth	Firgrove/Macassar
G22 J	Lourens	Somerset West / Strand
G22 K	Sir Lowry's Pass	Sir Lowry's Pass/Strand/ Gordon's Bay
COMBINED CAPE PENINSULA RIVERS (Quats G22A-G22D)		
G22 A	Silvermine/Wildevoelwei/Elsieskraal	St James/Fish Hoek/Simonstown/Noordhoek/Ocean View/ Kommetjie/Scarborough/Cape Point
G22 B	Disa/Hout Bay/12 Apostles	Hout Bay/Camps Bay/Clifton/ Sea Point/Green Point/City Bowl/ Woodstock
G22 C	Elsieskraal,Liesbeek,Vygekraal,Black,Salt	Parow/Goodwood/Pinelands/Claremont/Rondebosch/Rosebank/ Observatory/Bonteheuwel/ Heideveld/Langa/Athlone/Paarden Eiland
G22D	Diep River/Kaisers/Sand/Lotus/Zeekoevlei	Wynberg/Constantia/Plumstead/ Muizenberg/Grassy Park/Mitchell's Plain
STEENBRAS RIVER (Quat G40A)		
G40 A	Steenbras	

Appendix 2 – POTABLE WATER SUPPLY SCHEMES IN THE BERG WMA

Scheme Name	Raw Water Source	Area Supplied	Scheme Capacity	
			10 ⁶ m ³ /a	Limiting factor
1. WESTERN CAPE WATER SUPPLY SYSTEM				
Table Mountain and Southern Peninsula Water Supply Schemes	Hely Hutchinson Dam De Villiers Dam Victoria Dam Alexandra Dam Woodhead Dam Albion Spring	Cape Metropolitan Area	5	Raw water yield
	Kleinplaas Dam Lewis Gay Dam	Simon's Town Simon's Town	1,8	Raw water yield
Steenbras Water Supply Schemes	Steenbras Upper Dam Steenbras Lower Dam	Strand, Newlands, Wynberg	40	Raw water yield
Wemmershoek Water Supply Schemes	Wemmershoek Dam	Cape Town Met. Area Paarl Wellington	54	Raw water yield
Voëlvlei Government Water Supply Scheme	Voëlvlei Dam, receiving water from Klein Berg River, Leeu River, Twenty Four Rivers, own small catchment area	Cape Town Met. Area Armcor Factory at Krantzkop Swartland to Saldanha Regional Schemes	89	Raw water yield
RSE/Berg Government Water Supply Scheme	Theewaterskloof Dam	Stellenbosch Cape Metropolitan Area	124	Raw water yield
Atlantis	36 boreholes	Atlantis Mamre	6,0	Raw water yield
Paarl	Nantes Dam Bethel Dam Berg River Pump station	Paarl	2,8	Raw water yield
Somerset West	Land-en-Zeezicht Dam 4 boreholes	Somerset West	2,0	Raw water yield
Strand	Lourens River	Strand	0,8	Raw water yield
Stellenbosch	Eerste River at Jonkershoek	Stellenbosch	5,5	Raw water yield
Wellington	Antoniesvlei (supplementing supply from Wemmershoek)	Wellington	0,5	Raw water yield

Appendix 2 – POTABLE WATER SUPPLY SCHEMES IN THE BERG WMA (cntd.)

Scheme Name	Raw Water Source	Area Supplied	Scheme Capacity	
			10 ⁶ m³/a	Limiting factor
2. OTHER SCHEMES				
Piketberg	Misverstand Dam and local sources	7 750 people	1,0	Treatment capacity
Saron	Twenty-four Rivers Canal	Saron	0,34	Pipeline capacity
Porterville	Local sources	4 350 people	0,6	Raw water yield
Tulbagh	Local sources	4 700 people	0,6	Not known
Franschhoek	Local sources	4 500 people	0,6	Raw water yield
Pniel	Local sources	2 150 people	0,04	Storage

Appendix 3 – WASTEWATER TREATMENT WORKS IN THE BERG WMA

Water Management Area	Quaternary Catchment	Controlling Municipality	Name	(Ml/d)	Flow Description	Point of Discharge
Berg upstream of Hermon	G10A	Stellenbosch Municipality	Franschhoek	0.2	Avg Daily Flow	<i>To be determined</i>
	G10A	Department Public Works	La Motte State Forest	?	Not determined	<i>To be determined</i>
	G10B	Department Public Works	Drakenstein Prison	2.9	Avg Daily Flow	<i>Berg River</i>
	G10C	Drakenstein Municipality	Paarl	16.3	Avg Daily Flow	<i>To be determined</i>
	G10D	Drakenstein Municipality	Wellington	0.6	Avg Daily Flow	<i>To be determined</i>
Klein Berg	G10E	Witzenberg Municipality	Tulbagh	0.2	Avg Daily Flow	<i>To be determined</i>
Berg downstream of Hermon	G10F	Drakenstein Municipality	Gouda	<0.1	Avg Daily Flow	<i>To be determined</i>
	G10F		Riebeek-Wes	0.1	Avg Daily Flow	<i>To be determined</i>
	G10H	Berg River Municipality	Porterville	0.2	Avg Daily Flow	<i>To be determined</i>
	G10H	Berg River Municipality	Piketberg	0.5	Avg Daily Flow	<i>To be determined</i>
	G10J	Swartland Municipality	Moorreesburg	0.5	Avg Daily Flow	<i>To be determined</i>
	G10L	Swartland Municipality	Darling	0.1	Avg Daily Flow	<i>To be determined</i>
	G10L	Saldanha Bay Municipality	Hopefield	0.1	Avg Daily Flow	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Saldanha	1.0	Avg Daily Flow	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Vredenberg	1.1	Avg Daily Flow	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Laingville (St Helena Bay)	0.1	Avg Daily Flow	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Paternoster	?	Not determined	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Langebaan	0.6	Avg Daily Flow	<i>To be determined</i>
	G10M	Saldanha Bay Municipality	Shelly Point	?	Not determined	<i>To be determined</i>
	G10M	Berg River Municipality	Velddrif	0.2	Avg Daily Flow	<i>To be determined</i>
		Department Public Works	Riebeek Prison	<0.1	Avg Daily Flow	<i>To be determined</i>
West Coast Rivers	G21B	CCT	Wesfleur (Atlantis)	12	Capacity	Groundwater recharge of Atlantis aquifer
	G21B	CCT	Melkbosstrand	2,5	Capacity	To Atlantic via Soute River
Diep	G21D	Swartland Municipality	Malmesbury	1.1	Avg Daily Flow	<i>To be determined</i>
	G21D	Swartland Municipality	Malmesbury - Kalbaskraal	?	Not determined	<i>To be determined</i>
	G21F	CCT	Potsdam (Milnerton)	35	Capacity	Diep River, Rietvlei, Milnerton Lagoon. Irrigation of sports fields, Century City Water Feature, Table Bay

Appendix 3 – WASTEWATER TREATMENT WORKS IN THE BERG WMA (cntd)

Water Management Area	Quaternary Catchment	Controlling Municipality	Name	(Ml/d)	Flow Description	Point of Discharge
Kuil / Eerste	G22E	CCT	Mitchell's Plain	38	Capacity	To False Bay
	G22E	CCT	Kuilsriver (closed)	n/a	Capacity	Not applicable
	G22E	CCT	Kraaifontein	7	Capacity	To Maasdriest River, tributary of Diep River thence to Rietvlei
	G22E	CCT	Scottsdene	7,5	Capacity	To Kuilsriver then to False Bay
	G21F	Boland District Municipality	Philadelphia	<0.1	Avg Daily Flow	<i>To be determined</i>
	G22E	CCT	Bellville	56	Capacity	To Kuilsriver then to False Bay
	G22G	Stellenbosch Municipality	Stellenbosch	8.4	Avg Daily Flow	<i>To be determined</i>
	G22G	Stellenbosch Municipality	Stellenbosch - Klapmuts	?	Not determined	<i>To be determined</i>
	G22G	Spier Properties (PTY) LTD.	Spier Properties	?	Not determined	<i>To be determined</i>
	G22G	Spier Properties (PTY) LTD.	Spier - Chef Training School	?	Not determined	<i>To be determined</i>
	G22H	CCT	Zandvliet	55	Capacity	To Eerste River then to False Bay
	G22H	CCT	Macassar	35	Capacity	To Eerste River then to False Bay
	G22K	CCT	Gordon's Bay	3	Capacity	To Sir Lowry's diversion canal and False Bay
Peninsula	G22A	CCT	Simon's Town	3,8	Capacity	To False Bay
	G22A	CCT	Wildevœlvlei	14	Capacity	Into Wildevœlvlei and then to Atlantic
	G22A	CCT	Millers Point (small bioreactor)	?	Not determined	To False Bay
	G22B	CCT	Green Point Sea Outfall	40	Capacity	To sea (Atlantic)
	G22B	CCT	Camps Bay Sea Outfall	5,5	Capacity	To sea (Atlantic)
	G22B	CCT	Llandudno	0,3	Capacity	To sea (Atlantic)
	G22B	CCT	Hout Bay (sea outfall)	17,5	Capacity	To sea (Hout Bay)
	G22B	CCT	Oudekraal (small bioreactor)	?	Not determined	Pumped to Camps Bay outfall (Atlantic)
	G22C	CCT	Athlone	120	Capacity	To Black River then to Table Bay
	G22C	CCT	Parow North	1,2	Capacity	To irrigation of golf course
	G22D	CCT	Cape Flats	200	Capacity	To False Bay
	G22D	CCT	Borchard's Quarry	30	Capacity	To Table Bay via Black River and to golf course irrigation
<i>To be determined</i>		Department Public Works	Paardeberg Prison	?	Not determined	<i>To be determined</i>
		Public Works	Voorberg Prison			<i>To be determined</i>
		Boland District Municipality	Raithby	?	Not determined	<i>To be determined</i>
		Boland District Municipality	Klipheuwel	?	Not determined	<i>To be determined</i>

Appendix 4 – SOLID WASTE DISPOSAL SITES IN THE BERG WMA

Water Management Area	Quaternary Catchment	Area	Local Authority	District Municipality	Type of Site
Berg Upstream of Hermon	G10A	Franschhoek	Stellenbosch Municipality	Boland District Municipality	Compost Site
	G10A	Franschhoek	Stellenbosch Municipality	Boland District Municipality	Domestic Dumping Site
	G10D	Wellington	Drakenstein Municipality	Boland District Municipality	Domestic Dumping Site
Klein Berg	G10E	Tulbagh	Witzenberg Municipality	Boland District Municipality	General Waste Disposal Site
Berg Downstream of Hermon	G10F / G10J border	Saron	Drakenstein Municipality	Boland District Municipality	Domestic Dumping Site
	G10H	Piketberg	Berg River Municipality	West Coast District Municipality	Dumping Site
	G10H	Porterville	Berg River Municipality	West Coast District Municipality	Dumping Site
	G10H	Porterville	Berg River Municipality	West Coast District Municipality	Incinerator
	G10J	Moorreesburg	Swartland Municipality	West Coast District Municipality	Dumping Site
	G10J	Moorreesburg	Swartland Municipality	West Coast District Municipality	Compost Site
	G10L	Darling	Swartland Municipality	West Coast District Municipality	Dumping Site
	G10M	Saldanha Steel	Industry Saldanha Area	West Coast District Municipality	Dumping Site
	G10M	Saldanha	Saldanha Bay Municipality	West Coast District Municipality	Dumping Site
	G10M	Velddrif	Berg River Municipality	West Coast District Municipality	Dumping Site
	G10M	Langebaan	Saldanha Bay Municipality	West Coast District Municipality	Dumping Site
	G10M	Langebaan	Saldanha Bay Municipality	West Coast District Municipality	Garden Dumping Site
	G21D	Malmesbury	Swartland Municipality	West Coast District Municipality	Dumping Site/Recycling
	G21D	Malmesbury	Swartland Municipality	West Coast District Municipality	Incinerator
	G30A	Aurora	Berg River Municipality	West Coast District Municipality	Dumping Site
Diep	G21F	Visserhok (Brunig)	CCT (Tygerberg)	CCT	Composting Plant
	G21F	Fuel Firing Service	CCT	CCT	Oil Refinery
	G21F	Visserhok Landfill Pty Ltd	CCT	CCT	Landfill

Appendix 4 – SOLID WASTE DISPOSAL SITES IN THE BERG WMA (cntd)

Water Management Area	Quaternary Catchment	Area	Local Authority	District Municipality	Type of Site
Kuis / Eerste	G22G	Stellenbosch	Stellenbosch Municipality	Boland District Municipality	Domestic/Building/Garden Dumping Site
	G22G	Klapmuts T/S	Winelands District Council	Boland District Municipality	Transfer Station
	G22G	Klapmuts	Winelands District Council	Boland District Municipality	Closed
	G22G	Klapmuts	Winelands District Council	Boland District Municipality	Compost Site
	G22E	Durbanville (Tygerberg)	CCT	CCT	Transfer Station - Garden Refuse
	G22H	Faure	CCT	CCT	Domestic Dumping Site
	G22K	Gordon's Bay	CCT	CCT	Domestic Dumping Site
	G22E	Bellville	CCT	CCT	General Waste Disposal Site
	G22K	Somerset-West (Waterkloof)	CCT	CCT	Waste Transfer Station
	G22E	Bellville (Wastetech)	CCT	CCT	Closed Waste Disposal Site
	G22H	Macassar	CCT	CCT	Domestic Dumping Site
	G22E	Swartklip / Mitchell's Plain	CCT	CCT	Domestic Dumping Site
	G22E	Bellville South / Sacks Circle	CCT	CCT	Domestic Dumping Site
	G22E	Brakenfell	CCT	CCT	Domestic Dumping Site
Peninsula	G22D	CCT	CCT	CCT	Landfill
	<i>To be determined</i>	Sonumed	CCT	CCT	Medical Waste Site
	G22D	Coastal Park	CCT	CCT	Domestic Dumping Site
	G22C	Athlone	CCT	CCT	Domestic Dumping Site
	G22C	Milnerton Mediclinic	CCT	CCT	Incinerator
		Radnor CP	CCT	CCT	Domestic Dumping Site
		Everite Factory	CCT	CCT	Domestic Dumping Site
			Drakenstein Municipality	Boland District Municipality	Closed Dumping Site
		BCL Envirocare	CCT	CCT	Incinerator
Potential Sites	G21B	<i>To be determined</i>	CCT	CCT	<i>To be determined</i>

Appendix 5 – GENERAL AUTHORISATIONS IN THE BERG WMA – ABSTRACTIONS

Area	Abstraction (m³ / hectare / annum)
<u>BERG UPSTREAM OF HERMON</u>	
Quats G10A & G10B	750
Quats G10C & G10D	300
<u>KLEIN BERG</u>	
Quat G10E	750
<u>BERG DOWNSTREAM OF HERMON</u>	
Quats G10F, G10H - G10M	300
Quats G10G	750
<u>COMBINED WEST COAST RIVERS</u>	
Quat G21A	300
Quat G21B	750
<u>DIEP RIVER</u>	
Quats G21C - G21F	300
<u>COMBINED KUILS/EERSTE, LOURENS AND SIR LOWRY'S RIVERS</u>	
Quat G22F	750
Quats G22E, G22G - G22K	300
<u>COMBINED CAPE PENINSULA RIVERS</u>	
Quats G22A - G22D	750
<u>STEENBRAS RIVER</u>	
Quat G40A	750

Note : There are no GAs for Surface Water Abstractions in the Berg WMA

Appendix 6 – EXISTING IRRIGATION BOARDS IN THE BERG WMA

Water Management Area	Quaternary Catchment	Name	Scheduled Area (ha)	Quota (m ³ /ha/a)	Water Source
Berg Upstream of Hermon	G10A	Banhoek	450	4000	Theewaterskloof via Bankoek Diversion Intake
	G10C	Daljosaphat	215	Unknown	Dal River
	G10C	Palmiet	313	3300	Hugo's River
	G10C	Berg River	11242	4000-6000	Natural Berg River runoff and Theewaterskloof dam
	G10C	Simonsberg	125	4000	Summer abstraction from Berg River
	G10C	Noord-Agter Paarl	1079	5000	Natural Berg River winter runoff and Theewaterskloof dam
	G10C	Suid-Agter Paarl	876	4000	Natural Berg River winter runoff and Theewaterskloof dam
	G10C	Dwars River	1458	Unknown	
	G10C	La Motte	230	Unknown	Berg River
	G10D	Perdeberg	1487	6000	Natural Berg River winter runoff and Theewaterskloof dam
	G10D	Kromme River	646	Unknown	
Klein Berg	G10E	Klein Berg	1465	Unknown	
Berg Downstream of Hermon	G10F	Riebeek Wes	697	--	Natural winter flow in Berg River
	G10F	Riebeek Kasteel	150 (winter)	5000	Natural Berg River winter runoff and Theewaterskloof dam
			177 (summer)		
	G10F, G10J, G10K	Lower Berg River	1051 (winter)	7000	Voelplei, Theewaterskloof and Berg River flow. Farm dam storage.
			3644 (summer)		
Kuijs / Eerste	G22F	Stellenbosch	1703	4000	Theewaterskloof Dam via Stellenboschberg Tunnel outlet
	G22H	Helderberg	1192	340	Theewaterskloof dam via pipeline to Faure Water Treatment Works
	G22H	Lower Eerste River	514	--	Theewaterskloof Dam via Stellenboschberg Tunnel outlet
Ref : Berg WMA - Situation Assessment Report (Ninham Shand, 2002)					

Appendix 7 - FORUMS IN THE BERG WMA

Water Management Area	Existing and Proposed Forums	Comment
Klein Berg	Klein Berg Forum	<i>Status to be determined from DWAF</i>
Upper and Lower Berg	Lower Berg River Catchment Forum	<i>Status to be determined from DWAF</i>
	Voëlvelei Water Quality Forum	<i>Status to be determined from DWAF</i>
	Saldanha Bay Water Quality Forum	Established and functioning
	St. Helena Bay Forum	
	WEMCO Provincial Environmental Monitoring Committee	<i>Status to be determined from DWAF</i>
	Saldanha Groundwater Monitoring Forum	<i>Status to be determined from DWAF</i>
	St Helena Bay Water Quality Trust	<i>Status to be determined from DWAF</i>
	Langebaan Road/Elandsfontein Ground water Management Trust	<i>Status to be determined from DWAF</i>
	Saldanha Steel Environmental Monitoring Committee	Established and functioning
	Berg River Environmental Forum	<i>Status to be determined from DWAF</i>
West Coast Rivers	Sout / Donkergat River Catchment Forum	Not yet established by DWAF / CCT
Diep	Diep River Catchment Forum	Not yet established, DWAF to be the lead agent for this forum.
Kuijs / Eerste	Kuijs River Forum	Established but has not met for past 6 months
	Eerste River Catchment Management Forum	Not yet established by DWAF
Peninsula	Noordhoek Catchment Forum	Established and functioning
	Hout Bay Catchment Forum	Established and functioning
	Sand River Catchment Forum	Established and functioning
	Salt River Catchment Forum	Established and functioning
	Lotus River - Zeekoevlei Catchment Forum	Established and functioning
	South Peninsula Forum	Established and functioning
Other	Cape Metropolitan Coastal Water Quality Committee	Established and functioning
	False Bay Water Quality Advisory Committee	Established but future remains uncertain
	Die Benede-Bergrivier Substreekstruktuurplan	<i>Status to be determined from DWAF</i>

Appendix 8 - OLD AND NEW MUNICIPALITIES IN THE BERG WMA

OLD MUNICIPAL NAMES	NEW LOCAL MUNICIPALITY NAME	NEW DISTRICT MUNICIPALITY NAME
Cape Metro	CCT	CCT
CCT		
Oostenberg Municipality		
Helderberg		
Blaauwberg Municipality		
South Peninsula Municipality		
Tygerberg		
Bitterfontein / Nuwerus	Falls Directly Under West Coast District Municipality	WEST COAST DISTRICT MUNICIPALITY (WCDM)
Rietpoort		
West Coast		
Aurora	Berg River Municipality	
Piketberg		
Porterville		
Hopefield	Saldanha Bay Municipality	
Langebaan		
West Coast Peninsula		
Darling	Swartland Municipality	
Koringberg		
Malmesbury		
Moorreesburg		
Yzerfontein		
Tulbagh	Witzenberg Municipality	BOLAND DISTRICT MUNICIPALITY
Breede River	Falls Directly Under Boland District Municipality	
Winelands		
Paarl	Drakenstein Municipality	
Saron		
Wellington		
Franschhoek	Stellenbosch Municipality	
Pniel		
Stellenbosch		

Appendix 9 – RESOURCE POOR FARMERS AND COMMUNITIES IN THE BERG WMA

Water Management Area	Quaternary Catchment	Area	Implementing Authority
Berg downstream of Hermon	G10F / G10J border	Saron	DWAF and Department of Agriculture
<i>To be determined</i>		Safic	Department of Land Affairs
Klein Berg	G10E	Tulbagh (Kluitjieskraal)	Department of Land Affairs
Kuils / Eerste	G22G	Khayamandi	Department of Land Affairs
Peninsula	G22D	Philippi	Department of Land Affairs
Berg downstream of Hermon	G10H	Goedverwacht (Piketberg)	Department of Agriculture
	G10H	Wittewater (Piketberg)	Department of Agriculture
Diep	G21D	Riverlands	DWAF and Department of Agriculture
West Coast Rivers	G21A	Mamre	Department of Land Affairs

Appendix 10 – POSSIBLE FUTURE BULK WATER SUPPLY SCHEMES IN THE BERG WMA

Water Management Area	Quaternary Catchment	Scheme	Estimated Yield (10⁶ m³/a)	Estimated Cost (R million)
Klein Berg	G10E	Pumped storage from Voëlvlei	To be determined	To be determined
	G10E	Transfers from the Wit River and Michell's Pass (Breede WMA)	To be determined	To be determined
Berg downstream of Hermon	G10M	Recharge of Langebaan Rd aquifer by injection of pre-treated Berg River winter (excess) water.	To be determined	To be determined
	n/a	Buying out existing water rights from farmers.	To be determined	To be determined
	G10H	Misverstand Dam Raising	To be determined	To be determined
	G10F	Voëlvlei Augmentation	30	200
	G10F	Raise Voëlvlei Dam	To be determined	To be determined
West Coast Rivers	G21A, G21B	Development of local supply schemes, integrating surface and ground water use.	To be determined	To be determined
Kuis / Eerste	G22E	Possible recharge site for Cape Flats Aquifer at Macassar	To be determined	To be determined
	G22H	Eerste River diversion	8	77
	G22J	Lourens River diversion	19	35
Peninsula	G22D	Cape Flats wellfield could provide an estimated 18 million m ³ /a.	18	161
Steenbras	G40A	Raising the Steenbras dams for additional transfers from Palmiet (Breede WMA)	To be determined	To be determined
Other	n/a	Table Mountain Group Aquifer	To be determined	To be determined
	n/a	De-salination of sea water	Unlimited	To be determined
	n/a	Molenaars pipeline from Breede WMA	18	To be determined
	n/a	The re-use of treated effluent	160	To be determined

(1) Costs are based on Year 2000 price levels.

Appendix 11 – MAJOR DAMS IN THE BERG WMA

Water Management Area	Quaternary Catchment	Dam Name	Live Storage (10 ⁶ m ³)	Yield (10 ⁶ m ³ /a)					Owner
				Domestic	Irrigation	Other	Total	Assurance	
Berg Upstream of Hermon	G10B	Wemmershoek	58,8	54,0	0	0	54,0	1:50 Yr	CCT
	G10C	Nantes	0,77	0,5	0	0	0,5	1:20 Yr	Paarl
	G10C	Bethel	0,54						
Berg downstream of Hermon	G10H	Voëlvlei	164,1	89	32	0	121	1:50 Yr	DWAF
	G10J	Misverstand	6,1	5	0	0	5	Abstraction site	DWAF
Cape Peninsula	G22A	Lewis Gay	0,18	1,8	0	0	1,8	1:20 Yr	CCT
	G22A	Kleinplaas (Simonstown)	1,37						
	G22B	Alexandra	0,13	5	0	0	5	1:100 Yr (incl Albion Spring)	CCT
	G22B	Woodhead	0,95						
	G22B	De Villiers	0,24						
	G22B	Victoria	0,13						
	G22B	Hely Hutchinson	0,92						
	G22D	Silvermine	0,08	?	?	?	?	Not known	CCT
Kuis / Eerste	G22F	Kleinplaas (Jonkershoek)	0,36	18,5	1,5	0	20	Own yield is 20 million m ³ /a	DWAF
	G22G	Idas Valley 2	1,54	?	?	?	?	Balancing dams for water in Eerste River	Stellenbosch
	G22G	Idas Valley 1	0,50						
	G22J	Land-en-Zeezicht	0,45	?	0	0	?	Off channel storage	Somerset West
Steenbras	G40A	Steenbras Upper	31,8	62,5	0	0	62,5	1:50 Yr (includes 22,5 million m ³ /a from Palmiet transfer)	CCT
	G40A	Steenbras Lower	33,7						

(Ref : Water Resources Situation Assessment Report P19000/00/031)

Appendix 12 – FLOW GAUGING STATIONS IN THE BERG WMA

Water Management Area	Station No	Place or Description	River / Pipeline	Latitude	Longitude	Catchment Area	Record Period of Primary Data	
						(km ²)	From	To
Berg Upstream of Hermon	G1H001A01	Wintershoek	Wemmersriver	33 49'05"	19 05'19"	85	Jan-1955	Dec-1956
	G1H003A01	La Provence	Franschhoek	33 53'26"	19 04'44"	46	Mar-1949	May-2002
	G1H004A01	Driefontein	Berg	33 55'36"	19 03'41"	70	Apr-1949	May-2002
	G1H005A01	Zanddrift	Berg	33 37'47"	18 59'06"	717	Apr-1950	Feb-1951
	G1H007A01	Wellington	Berg	33 38'21"	18 59'06"	713	Apr-1951	May-1977
	G1H014A01	Zachariashoek	Zachariashoek	33 49'39"	19 02'08"	3	Jun-1964	Nov-1992
	G1H015A01	Zachariashoek	Kasteelkloofspruit	33 48'55"	19 03'43"	2	Jun-1964	Jul-1988
	G1H016A01	Zachariashoek	Kasteelkloofspruit	33 49'19"	19 03'35"	3	Jun-1964	Nov-1992
	G1H017A01	Zachariashoek	Kasteelkloofspruit	33 49'35"	19 01'43"	2	Jun-1964	Jul-1988
	G1H018A01	Zachariashoek	Bakkerskloofspruit	33 49'21"	19 02'50"	3	Jun-1964	Nov-1992
	G1H019A01	The Sanctuary	Banghoek	33 54'44"	18 56'36"	25	Apr-1968	May-2002
	G1H020A01	Noorder Paarl	Berg	33 42'29"	18 59'29"	609	Mar-1966	May-2002
	G1H032A01	Bosmanshoek	Banghoek	33 57'11"	18 58'44"	7.6	Mar-1975	Jul-1978
	G1H037A01	Wellington	Krom	33 37'39"	18 59'29"	69	May-1978	May-1992
	G1H038A01	Wolwekloof	Wolwekloof : Ogee	33 56'37"	19 01'39"	17	Sep-1978	May-2002
	G1H041A01	De Eikeboomen	Kompanjies	33 28'45"	18 58'41"	121	Aug-1979	Apr-2002
	G1H042A01	Ogee : Banghoek	Banghoek	33 57'10"	18 58'45"	7.6	Jun-1982	Dec-1989
	G1H044M01	Franschhoek Forestry Reserve	Jonkershoek Tunnel Berg River Outlet	33 57'15"	19 04'25"	n/a	Feb-1984	Mar-2002
	G1H045A01	Paarl WWTW	Effluent discharge	33 40'53"	18 58'45"	n/a	Dec-1983	Mar-1987
	G1H046A01	Wellington WWTW	Effluent discharge	33 39'31"	18 58'11"	n/a	Jan-1984	Dec-1989
	G1H052M01	Waterval	Jonkershoek Tunnel Dasbos Outlet	33 54'10"	19 01'54"	n/a	Jan-1982	Mar-2002
	G1H053M01	Franschhoek Forestry Reserve - East Portal	Theewaterskloof Tunnel - bi directional meter	33 57'10"	19 04'29"	n/a	Feb-1987	Mar-2002
	G1H054M01	Franschhoek Forestry Reserve - East Portal	Wemmershoek Outlet (minor)	33 57'18"	19 04'33"	n/a	Feb-1986	Jan-2002
	G1H055M01	Franschhoek Forestry Reserve - East Portal	Wemmershoek Outlet (main)	33 57'18"	19 04'33"	n/a	Feb-1984	Mar-2002
	G1H060A01	River Compensation	Wolwekloof	33 56'39"	19 01'39"	17	Aug-1978	May-2002

Appendix 12 – FLOW GAUGING STATIONS IN THE BERG WMA (cntd)

Water Management Area	Station No	Place or Description	River / Pipeline	Latitude	Longitude	Catchment Area	Record Period of Primary Data	
						(km ²)	From	To
Berg Upstream of Hermon	G1H061A01	Inlet to Shaft	Wolwekloof	33 56'39"	19 01'39"	n/a	May-1982	Feb-2002
	G1H062A01	Banghoek	Compensation releases	33 57'10"	18 58'45"	n/a	Dec-1989	Feb-2002
	G1H063A01	Shaft Inlet : Banghoek	Banghoek	33 57'10"	18 58'45"	7.6	Oct-1982	Feb-2002
	G1H064A01	River Compensation	Banghoek	33 57'10"	18 58'45"	7.6	Jun-1982	Feb-2002
	G1H071M01	Winterhoek	Wemmershoek outlet pipeline	33 49'56"	19 05'00"	n/a	Oct-1973	Aug-1992
	G1H072M01	Winterhoek, Wemmershoek Dam	Wemmershoek compensation pipeline	33 49'56"	19 05'00"	n/a	Oct-1973	Sep-1991
Klein Berg	G1H008A01	Nieuwekloof	Klein Berg	33 18'41"	19 04'31"	395	Nov-1976	Jul-1985
	G1H011A01	Watervalsberge	Watervals	33 22'44"	19 06'00"	27	Apr-1964	Mar-2002
	G1H012A01	Watervalsberge	Watervals	33 21'08"	19 06'04"	36	Apr-1964	Jun-1996
	G1H021A01	Mountain View	Klein Berg	33 11'05"	19 09'19"	19	Mar-1968	May-2002
	G1H057A01	Watervalsberge	Canal from Watervals River	33 21'08"	19 06'04"	n/a	Apr-1964	Jun-1996
Berg downstream of Hermon	G1H002A01	Driebosch	Twenty Four	33 08'02"	19 03'39"	187	Dec-1920	Oct-1970
	G1H006A01	Hopefield	Sout	33 03'42"	18 20'46"	1690	May-1950	Oct-1954
	G1H013A01	Drieheuwels	Berg	33 07'57"	18 51'45"	2934	May-1964	May-2002
	G1H023A01	Jantjiesfontein	Berg	32 55'30"	18 19'45"	8238	Oct-1980	Apr-2002
	G1H024A01	Kliphoek	Berg	32 49'00"	18 11'39"	n/a	Oct-1980	Apr-2002
	G1H028A01	Driebosch	Vier en Twintig	33 08'02"	19 03'39"	183	May-1972	May-2002
	G1H029A01	De Hoek Estates	Leeu	33 09'24"	19 03'08"	36	Nov-1972	May-2002
	G1H031A01	Misverstand	Berg	33 59'49"	18 46'44"	4012	May-1974	May-2002
	G1H034A01	Hollerivier	Moorreesburgspruit	33 03'58"	18 45'35"	134	Jul-1976	May-2002
	G1H035A01	Matjiesfontein	Matjies	33 02'52"	18 49'58"	676	Jul-1975	May-2002
	G1H036A01	Vleesbank	Berg	33 26'06"	18 57'25"	1312	Mar-1978	May-2002
	G1H040A01	La Fontaine	Vis	33 22'21"	18 55'30"	39	Aug-1979	May-2002
	G1H043A01	Vrisgewaagd	Sandspruit	33 09'41"	18 53'35"	152	May-1980	May-2002
	G1H048M01	Misverstand Dam	Pipeline to Withoogte	33 01'39"	18 47'25"	n/a	Mar-1986	Apr-2002
	G1H058A01	Driebosch	Canal from Twenty-Four Rivers	33 08'02"	19 03'39"	183	May-1972	May-2002
	G1H059A01	De Hoek Estates	Canal	33 09'24"	19 03'08"	n/a	Mar-1973	May-2002
	G1H065A01	Voelvrei	Canal from Voelvrei	33 21'05"	19 01'12"	n/a	Oct-1951	Feb-2002
	G1H066A01	Voelvrei	Klein Berg canal into Voelvrei	33 21'05"	19 01'12"	n/a	Jun-1951	Feb-2002
	G1H067A01	Voelvrei	Twenty Four rivers canal into Voelvrei	33 21'05"	19 01'12"	n/a	May-1972	Feb-2002

Appendix 12 – FLOW GAUGING STATIONS IN THE BERG WMA (cntd)

Water Management Area	Station No	Place or Description	River / Pipeline	Latitude	Longitude	Catchment Area	Record Period of Primary Data	
						(km ²)	From	To
Berg downstream of Hermon	G1H068M01	Voelvrei	Swartland pipeline	33 21'05"	19 01'12"	n/a	Oct-1968	Feb-2002
	G1H069M01	Voelvrei	ICS pipeline	33 21'05"	19 01'12"	n/a	Feb-1958	Jun-1982
	G1H070M01	Voelvrei	Cape Town pipeline	33 21'05"	19 01'12"	40	Feb-1971	Feb-2002
	G1R001A01	Voelvrei Dam	Voelvrei Dam	33 21'05"	19 01'12"	40	Jun-1951	Feb-2002
	G1R003A01	Misverstand Dam	Misverstand Dam	33 01'39"	18 47'25"	3967	Jul-1977	Feb-2002
Diep	G2H012A01	Malmesbury	Diep	33 27'52"	18 44'26"	244	Mar-1965	Feb-2002
	G2H013A01	Klipheuwel	Mosselbank	33 42'18"	18 42'02"	473	Apr-1966	May-1986
	G2H014A01	Vissershok	Diep	33 47'23"	18 32'58"	1360	Apr-1967	Nov-1982
	G2H042A01	Adderley	Diep	33 43'36"	18 36'56"	Unknown	Oct-1998	Apr-2002
Kuil / Eerste	G2H001A01	Carnoustie	Plankenbrug	33 54'13"	18 51'12"	70	Jun-1934	Jan-1938
	G2H002A01	Jonkershoek	Bosboukloof	33 57'44"	18 55'52"	2	Oct-1937	Mar-1961
	G2H006A01	Jonkershoek	Abdolskloof	33 57'50"	18 56'10"	<1	May-1940	Mar-1961
	G2H008A01	Jonkershoek	Jonkershoek	33 59'11"	18 57'23"	20	Jun-1947	Apr-1995
	G2H011A01	Macassar	Eerste	34 04'16"	18 46'15"	395	Dec-1950	Apr-1952
	G2H015A01	Faure	Eerste	34 01'49"	18 44'54"	338	Apr-1968	May-1980
	G2H016A01	Somerset West	Lourens	34 05'13"	18 51'31"	92	Apr-1970	Apr-1991
	G2H019A01	Stellenbosch	Eerste	33 56'37"	18 50'39"	176	May-1976	May-1984
	G2H020A01	Stellenbosch	Eerste	33 56'58"	18 50'19"	183	May-1978	Feb-2002
	G2H021A01	Kuilrivier	Kuil	33 56'32"	18 40'27"	133	May-1978	Oct-1987
	G2H026A01	Spier	Spier Canal	33 58'05"	18 47'28"	n/a	Oct-1980	Jun-1992
	G2H027M01	Nietgegend, Kleinplaas Dam	KWV pipeline	33 57'43"	18 52'11"	n/a	Nov-1984	Jan-1992
	G2H029A01	Strand	Lourens	34 06'00"	18 49'22"	107	Dec-1986	Feb-2002
	G2H030A01	Stellenbosch	Right bank canal	33 56'37"	18 50'39"	-	May-1976	Feb-2002
	G2H031M01	Jonkershoek, Kleinplaas Dam	Jonkershoek tunnel outlet - Valve 1	33 58'21"	18 56'56"	n/a	Mar-1984	May-1999
	G2H032M01	Jonkershoek, Kleinplaas Dam	Jonkershoek tunnel outlet - Valve 2	33 58'21"	18 56'56"	n/a	Mar-1984	Mar-2001
	G2H033M01	Jonkershoek, Kleinplaas Dam	Jonkershoek tunnel outlet - Valve 3	33 58'21"	18 56'56"	n/a	Mar-1984	Jun-2001
	G2H034M01	Kleinplaas Dam	Pipeline to Cape Town from tunnel	33 58'28"	18 56'37"	n/a	May-1982	Mar-2002
	G2H035M01	Kleinplaas Dam	Pipeline to S'Bosch/KWV from tunnel	33 58'50"	18 53'01"	n/a	May-1984	Jul-1993

Appendix 12 – FLOW GAUGING STATIONS IN THE BERG WMA (cntd)

Water Management Area	Station No	Place or Description	River / Pipeline	Latitude	Longitude	Catchment Area	Record Period of Primary Data	
						(km ²)	From	To
Kuijs / Eerste	G2H036M01	Kleinplaas Dam	Paradyskloof pipeline	33 57'45"	18 52'25"	n/a	Nov-1983	Jan-1992
	G2H037A01	Kleinplaas Dam	Jonkershoek	33 59'02"	18 57'11"	21	Jun-1989	Apr-2002
	G2H037A01	Klein Welmoed	Eerste River	34 00'17"	18 45'50"	n/a	Nov-1998	Apr-2002
	G2R001A01	Kleinplaas Dam	Jonkershoek	33 58'45"	18 57'00"	31	Jan-1983	May-2002
	G2H005A01	Kleinplaas Dam	Jonkershoek	33 58'21"	18 56'56"	31	Oct-1947	Feb-2002
Steenbras	G4H001A01	Kogelbaai	Steenbras	34 11'19"	18 51'18"	67	1916	1921
	G4R001A01	Lower Steenbras Dam	Steenbras - Lower Dam	34 11'13"	18 51'10"	66.8	1921	
	G4R007A01	Upper Steenbras Dam	Steenbras - Upper Dam	34 10'06"	18 54'00"	26.6	1988	

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
Upper and Lower Berg River	Voelvlei Augmentation Scheme: Feasibility Study. Main Report	Gibb Africa (Pty) Ltd	GIBAFR/004	2001
	Voelvlei Augmentation Scheme: Feasibility Study. Summary Report	Gibb Africa (Pty) Ltd	GIBAFR/005	2001
	Voelvlei Augmentation Scheme: Feasibility Study. New Infrastructure Design and Costs	Gibb Africa (Pty) Ltd	GIBAFR/006A	2001
	Voelvlei Augmentation Scheme: Feasibility Study. Draft Environmental Impact Report	Gibb Africa (Pty) Ltd	GIBAFR/008	2001
	Review of the Long-term Urban Demand for Water in the Cape Town - Saldanha Supply Area	Institute for Futures Research; Ninham Shand; Palmer Development Group	IRF/NS/PDG/001	2000
	Workshop to Consider the Effects of Water Conservation and Demand Management on the Future Demands of Irrigation Water Supplied from Theewaterskloof and Voelvlei Dams: Proceedings	Ninham Shand	3069	2000
	Voelvlei Augmentation Scheme: Feasibility Study. Volume 2: Hydrology Report	Gibb Africa (Pty) Ltd	GIBAFR/002	2000
	Voelvlei Augmentation Scheme: Feasibility Study. New Infrastructure Design and Costs	Gibb Africa (Pty) Ltd	GIBAFR/006A	2000
	Profile on Water Management in the Berg, Breede, Gouritz & Olifants / Doring WMA : The Utilisation and Availability of water	Ninham Shand	3152	2000
	Berg River : Proposed Management Arrangements for Resource Monitoring and Reserve Determination	Ninham Shand	3047	2000
	Feasibility Study of the Skuifraam Supplement Scheme: System Yield Analysis	Ninham Shand	2812	1999
	Skuifraam Dam Feasibility Study: System Analysis	Ninham Shand	2677	1999
	Skuifraam Feasibility Study: Main Report	Ninham Shand	2780	1999
	Skuifraam Feasibility Study: Outlet Works Flood Release Workshop Proceedings	Ninham Shand	2869	1999
	Voelvlei Augmentation Scheme: Feasibility Study. Volume 1: Hydrology Report	Gibb Africa (Pty) Ltd	GIBAFR/001	1999
	Voelvlei Augmentation Scheme: Feasibility Study. Volume 3: Hydrology Report	Gibb Africa (Pty) Ltd	GIBAFR/003	1999
	Voelvlei Augmentation Scheme: Feasibility Study. Environmental Scoping Report	Gibb Africa (Pty) Ltd	GIBAFR/007	1999
	Berg Dam : Environmental Motivational Report for Exemption	Ninham Shand	2927	1999
	Skuifraam Feasibility Study: Guidelines for Implementation	Ninham Shand	2805	1998
	Feasibility Study of the Skuifraam Supplement Scheme: Engineering Aspects	Ninham Shand	2680	1998
	Skuifraam Dam Feasibility Study. Flood Frequency Analysis: Flood Magnitudes for Required Exceedance Probabilities. Filed: Box 2	Ninham Shand	2810	1997
	Feasibility Study Skuifraam Supplement Scheme: Environmental Impact Assessment	Ninham Shand	2688	1997
	Skuifraam Feasibility Study: Inception Report	Ninham Shand	2662	1997

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
	Skuifraam Feasibility Study: Hydrology	Ninham Shand	2596	1997
	Skuifraam Feasibility Study: Main Report	Ninham Shand	2542	1997
	Skuifraam Feasibility Study: Flow Gauging Stations	Ninham Shand	2622	1997
	Skuifraam Feasibility Study: The Riversonderend. Situation Assessment, with Specific Reference to the Effects of Theewaterskloof Dam on the Riverine Ecosystem	Southern Water's Ecological Research and Consulting CC & UCT Freshwater Research Unit	2811	1996
	Skuifraam Feasibility Study. Ancillary Schemes: Engineering Aspects	Ninham Shand	2813	1996
	Skuifraam Feasibility Study. Skuifraam Dam: Engineering Aspects	Ninham Shand	2814	1996
	Skuifraam Feasibility Study: Environmental Impact Assessment. Volume 2: Annexure Report	Ninham Shand	2518A	1996
	Skuifraam Feasibility Study: Environmental Impact Assessment. Volume 1	Ninham Shand	2518	1996
	Skuifraam Feasibility Study: Environmental Impact Assessment. Summary Report	Ninham Shand	3019	1996
	Skuifraam Feasibility Study: Situation Assessment	Ninham Shand	2491	1996
	Skuifraam Feasibility Study: Berg River IFR Refinement Workshop Proceedings	Southern Waters	2606	1996
	Skuifraam Dam Feasibility Study: Berg River IFR Refinement Workshop Proceedings (31 January, 1 & 2 February 1996, Riebeek Wes)	Southern Waters	2606	1996
	Skuifraam Dam Feasibility Study: Molenaars River, South-Western Cape, Bulk Water Estimate for Environmental Maintenance	Southern Water Ecological Research and Consulting CC	3017	1995
	Effects of Water Conservation and Demand Management on the Growth of Urban and Agricultural Water Demands on the Timing of the Implementation of the Skuifraam Scheme	Ninham Shand	3151	1995
	Skuifraam Feasibility Study: Berg River Scheme. Robertsvlei Saddle Dam: Engineering Geological Report for Design; Foundation Conditions and Construction Materials	Forbes Dick & Associates	FDA/003	1995
	Skuifraam Feasibility Study:Skuifraam Dam. Berg River , Franschhoek District. Preliminary Geological Report: Availability and Properties of Concrete Aggregates and Embankment Fill Materials	Forbes Dick & Associates	FDA/001	1995
	Skuifraam Feasibility Study: Berg River Scheme. Skuifraam Dam Site: Engineering Geological Report for the Design; Foundation Conditions for the Main Dam. Volume 1: Text and Drawings	Forbes Dick & Associates	FDA/002	1995
	Skuifraam Feasibility Study: Berg River Scheme. Skuifraam Dam Site: Engineering Geological Report for Design; Foundation Conditions for the Main Dam. Volume 2: Borehole Logs and Core Photographs	Forbes Dick & Associates	FDA/002A	1995
	Western Cape System Analysis. In-Stream Flow Requirements: Volume 1: Proceedings of Skuifraam Dam Worksessions	Ninham Shand & BKS Inc	2066A	1995
	Upper Berg River Valley Water Supply. Environmental Impact Assessment : Addendums. Volume 2	Ninham Shand	2243	1995

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
	Upper Berg River Valley Water Supply. Environmental Impact Assessment : Summary Report	Ninham Shand	2243	1995
	Upper Berg River Valley Water Supply. Environmental Impact Assessment: Main Report. Volume 1	Ninham Shand	2243	1995
	Skuifraam Dam Feasibility Study: Berg River Scheme. Robertsvlei Saddle Dam: Engineering Geological Report for Design; Foundation Conditions and Construction Materials	Forbes Dick & Associates	FDA/003	1995
	Skuifraam Dam Feasibility Study: Skuifraam Dam. Berg River, Franschhoek District. Preliminary Geological Report: Availability and Properties of Concrete Aggregates and Embankment Fill Materials	Forbes Dick & Associates	FDA/001	1995
	Skuifraam Dam Feasibility Study: Berg River Scheme. Skuifraam Dam Site: Engineering Geological Report for the Design. Foundation Conditions for the Main Dam. Volume 1: Text and Drawings	Forbes Dick & Associates	FDA/002	1995
	Skuifraam Dam Feasibility Study: Berg River Scheme. Skuifraam Dam Site: Engineering Geological Report for Design, Foundation Conditions for the Main Dam. Volume 2: Borehole Logs and Core Photographs	Forbes Dick & Associates	FDA/002A	1995
	Western Cape System Analysis. Development of the Upper Berg River (Skuifraam Scheme)	Ninham Shand & BKS Inc	2105	1994
	Upper Berg River Valley Water Supply. Environmental Impact Assessment: Addendums. Volume 2	Ninham Shand	2243	1994
	Upper Berg River Valley Water Supply. Draft Environmental Impact Assessment	Ninham Shand	2243	1994
	Western Cape System Analysis. The Riversonderend-Berg Sub-system Analysis : Final	Ninham Shand & BKS	2048	1994
	Western Cape System Analysis. Development of the Upper Berg River (Skuifraam Scheme)	Ninham Shand & BKS	2105	1994
	Western Cape System Analysis. Water Requirements for the Maintenance of the Berg River Estuary. Volume 2: Compilation of Papers by Consultants. Final	Ninham Shand & BKS	2116	1994
	Western Cape System Analysis. Water Requirements for the Maintenance of the Berg River Estuary. Volume 1: Report on Worksession	Ninham Shand & BKS	2095	1994
	Western Cape System Analysis. Berg River Sub-system Analysis	Ninham Shand & BKS	2030	1994
	Report on the Safety Inspection of Wemmershoek Dam. Volume 2: Drawings	Ninham Shand	2141A	1993
	Report on the Safety Inspection of Wemmershoek Dam. Volume 1	Ninham Shand	2141	1993
	Western Cape System Analysis. Collection, Storage and Manipulation of Data: Volume 4: The Berg River Basin	Ninham Shand & BKS	1994	1993
	Western Cape System Analysis. Report on the Preliminary Berg River Environmental Assessment Worksession	Ninham Shand & BKS	1868	1993
	Western Cape System Analysis. Hydro-Salinity Modelling of the Berg River Basin	Ninham Shand & BKS	1907	1993
	Western Cape System Analysis. Hydrology of the Berg River Basin	Ninham Shand	2010	1993
	Western Cape System Analysis. Water Quality. Volume 2: Data for Berg River Basin: Final	Ninham Shand	1908	1993

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
Diep River	Diep River Corridor between Blaauwberg Road Bridge and the N7 Freeway: Management Plan	Ninham Shand	3005	1999
	Western Cape System Analysis. Hydrology of the Diep River Basin	Ninham Shand & BKS Inc	2019	1994
	Western Cape System Analysis. Water Quality. Volume 3: Data for Eerste, Lourens, Steenbras, Palmiet, Riviersonderend and Diep River Basins: Final	Ninham Shand	1908B	1993
Cape Peninsula Rivers	Third Safety Inspection of Hely Hutchinson Dam.	Ninham Shand	1577	2002
	Report on the Second Safety Inspection of Woodhead Dam	Ninham Shand	1865	2002
	Woodhead & Hely-Hutchinson Dams: Strengthening with Post Tensioned Cables. Final Design Report	Ninham Shand	2992	2001
	Woodhead & Hely-Hutchinson Dams: Strengthening with Post-Tensioned Cables. Construction Completion Report. Volume 1	Ninham Shand	2992	2001
	Woodhead & Hely-Hutchinson Dams: Strengthening with Post-Tensioned Cables. Report on Geotechnical Investigation	Ninham Shand	2992	2001
	Woodhead & Hely-Hutchinson Dams: Strengthening with Post-Tensioned Cables. Construction Completion Report. Volume 2	Ninham Shand	2992	2001
	Rehabilitation of Table Mountain Dams. Access Road (Contract Number WS 3/2001): Tender Report	Ninham Shand	3160	2001
	Tygerberg Hospital Detention Dam: An Investigation into the Necessity for Detention Facilities on the Elsieksraal River Upstream of Parow Station	Ninham Shand	3098	2000
	Woodhead and Hely-Hutchinson Dams: Strengthening with Post-Tensioned Cables. Tender Report	Ninham Shand	3003	1999
	Woodhead and Hely-Hutchinson Dams: Strengthening with Post-Tensioned Cables: Design Report	Ninham Shand	2992	1999
	Investigation into Cleaning of the Black / Vygekraal Rivers	Ninham Shand	2946	1999
Cape Peninsula Rivers	Woodhead and Hely Hutchinson Dams: Improvements to Stability. Technical Report.	Ninham Shand	2823	1998
	Environmental Impacts of the Options to Improve the Stability of the Hely-Hutchinson / Woodhead Dams on Table Mountain: Scoping Report	Ninham Shand	2825	1998
	Elsieskraal River Proposed Channel Modifications	Ninham Shand	2849	1998
	First follow-on Safety Inspection Report on the Hely-Hutchinson Dam	Ninham Shand	1577	1996
	Conversion and Updating of the Elsieksraal River Catchment Model	Ninham Shand	2919	1995
	Constantia Valley Riverine Open Space Study: Phase 1 Westlake and Diep Rivers	Ninham Shand	2035	1993
	Review of the April/May 1993 Storms over the Elsieksraal River Catchment	Ninham Shand	2060	1993
	Report on the Safety Inspection of Woodhead Dam	Ninham Shand	1865	1992
	Report on the Hydrological Monitoring of the Elsieksraal River Catchment and the Re-evaluation of the Recording Instruments	Ninham Shand	1901	1992

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
Kuil's/Eerste, Lourens, Sir Lowry's Pass Rivers	Integrated Water Resource Planning Study: Treatment of Water from the Proposed Eerste and Lourens River Diversions and Cape Flats Aquifer (Supporting document)	Morrison, I R	3216M	2001
	Integrated Water Resource Planning Study: Eerste River Diversion Report No. 2	Ninham Shand	3216A	2001
	Effects of Water Abstraction on the Estuaries of the Eerste and Lourens Rivers. (Integrated Water Resource Planning Study)	Huizinga, P; Taljaard, S; Van Niekerk, L	3216Q	2001
	Kuils River Channel Upgrade between the R300 and Van Riebeeck Road: Scoping Report	Ninham Shand	2952	1999
	Kuils/Eerste River System Evaluation of Nutrient Flux Downstream of Bellville WWTW	Ninham Shand	3028	1999
	Report on Access for Maintenance of the Kuils River between the N1 and Bottelary Road	Ninham Shand	2914	1999
	Kuils River Moss Study: Disaster Management. 1 in 50 Year and 1 in 2 Year Floodline Drawings	Ninham Shand	3010	1999
	Kuils River Metropolitan Open Space System (Moss). Volume 2: Annexures	Ninham Shand & Chittenden Nicks	2913A	1999
	Kuils River Metropolitan Open Space System (Moss). Volume 1	Ninham Shand & Chittenden Nicks	2913	1999
	Kuils River Metropolitan Open Space System (Moss): Book of Drawings	Ninham Shand & Chittenden Nicks	2913B	1999
	Kuils River between the N1 and Bottelary Road: Access for Maintenance and Recreation (Plus related River Upgrade Projects). Action Plan	Ninham Shand	3031	1999
Kuil's/Eerste, Lourens, Sir Lowry's Pass Rivers	Kuils Eerste River System Evaluation of Nutrient Flux Downstream of Bellville WWTW	Ninham Shand	3028	1999
	Preliminary Environmental Comment on Canalisation Proposals for the Upper Kuils River	Ninham Shand	2239	1994
	Kuils River Environmental Management Study	Ninham Shand	2194	1994
	Kuils River Flood Control. Report on the Potential Effect on Flood Risk of Filling on the Floodplain	Ninham Shand	2210	1994
	Kuils River Environmental Management Study	Ninham Shand	2079	1993
	Canalisation of the Kuils and Bottelary Rivers: Draft Report on Environmental Aspects of the Preliminary Design	Ninham Shand	2038	1993
	Western Cape System Analysis. Hydrology of the Eerste, Lourens and Sir Lowry's Pass River Basins	Ninham Shand	1963	1993
	Integrated Water Resource Planning Study: Eerste and Lourens Rivers Rapid Reserve Assessment (Summary document)	Southern Waters	1908B	1993
Steenbras River	Report on the Third Safety Inspection of Steenbras Upper Dam	Ninham Shand	1527B	2002
	Report on the Third Safety Inspection of Steenbras Lower Dam	Ninham Shand	1528B	2002
	Operation and Maintenance Manual for the Steenbras Hydro-Electric Lower Dam. Volume 1-3	Ninham Shand	2203B	2001

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
	Report on the Second Safety Inspection of the Steenbras Hydro-Electric Lower Dam	Ninham Shand	2203A	2000
	Implementation of the Recommendations in the Second Dam Safety Report for Steenbras Lower Dam	Ninham Shand	2846	1999
	Western Cape System Analysis: Palmiet/Steenbras Sub-system Analysis	Ninham Shand	2085	1999
	Steenbras Power Station: Report on the Minimum Drawdown Level of the Upper Reservoir	Ninham Shand	2840	1998
	Steenbras Pumped Storage Scheme: Inspection of the Waterways and Lower Forebay in December 1996 and January, February 1997	Ninham Shand	2597	1997
	Report on the First Follow-on Dam Safety Inspection of the Steenbras Upper Dam	Ninham Shand	1527	1996
	Report on the First Follow-on Dam Safety Inspection of the Steenbras Lower Dam	Ninham Shand	1528A	1996
	Steenbras Pumped Storage Scheme: Inspection of the Waterways and Lower Forebay in February 1995	Ninham Shand	2292	1995
	Report on the Safety Inspection of Steenbras Hydro-Electric Lower Dam. Volume 1 and Volume 2: Book of Drawings	Ninham Shand	2203	1994
	Western Cape System Analysis. Development of Irrigation in the Riversonderend and Palmiet/Steenbras Basins	Ninham Shand & BKS Inc	2170	1994
Steenbras River	Western Cape System Analysis. Hydrology of Palmiet/Steenbras River Basin	Ninham Shand & BKS Inc	1854A	1993
	Western Cape System Analysis. Collection, Storage and Manipulation of Data: Volume 3: The Palmiet/Steenbras River Basin	Ninham Shand & BKS Inc	1994C	1993
	Western Cape System Analysis. Water Quality. Volume 3: Data for Eerste, Lourens, Steenbras, Palmiet, Riversonderend and Diep River Basins: Final	Ninham Shand	1908B	1993
General	Integration of Raw Water Sources Supplying the CMA	Ninham Shand	3243	2002
	Integrated Water Resource Planning Study: Potential Savings Through Pressure Management. Report No.5	Ninham Shand	3216D	2001
	Integrated Water Resource Planning Study: Potential Savings Through Leakage Repair of Piping. Report No.6	Ninham Shand	3216E	2001
	Integrated Water Resource Planning Study: Potential for the use of Treated Waste Water within the CMA. Report No.8	Ninham Shand	3216G	2001
	Integrated Water Resource Planning Study: Administration Report. Volume 1. Report No.10	Ninham Shand	3216I	2001
	Integrated Water Resource Planning Study: Administration Report. Volume 2. Report No.10	Ninham Shand	3216J	2001
	Integrated Water Resource Planning Study: Cape Flats Aquifer	Ninham Shand, Umvoto Africa	3216C	2001
	Integrated Water Resource Planning Study: Main Report	Ninham Shand	3216	2001

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Water Management Area	Report Title	Author	Ninham Shand Reference	Report Date
	Watermeesterbepaling	Ninham Shand	3049	2000
	Strategic Evaluation of Bulk Wastewater: Kuils River WWTW (WWT/20). Status Quo Report. Report 7	Cape Wastewater Consultants, Ninham Shand, Africon Engineering International	CWC/007	1999
	Western Cape System Analysis. Desalination/Reclamation (in 4 Volumes) Volume 1: Seawater Desalination; Single Stage Reverse Osmosis; Volume 2: Seawater Desalination; Two Stage Reverse Osmosis; Volume 3: Desalination of Diep River Water; Volume 4: Reclamation	Ninham Shand, BKS Inc & Stewart Scott	1908B	1993