

Link to land cover

Refer to Table 3.5 and Map 1 and the location of the sites above for an explanation.

Calcium (Ca)

The elevated calcium levels at the two sites mentioned above are more than likely due to the natural geology in the area. This is probably especially true at the Great Brak River at Vishoek where the land cover is shrub (Table 3.5). The cultivate land and urban land cover at Mackiesputs Eye at Graaf-Reinet may have resulted in an increase in the calcium levels due to disturbance, but the source of calcium is probably still natural.

Magnesium (Mg)

The elevated magnesium concentrations at the sites mentioned above are more than likely due to the natural geology in the area. At some of the sites the levels may be elevated due to the disturbance of the soil surface due to cultivation, forestry and plantations (Table 3.5). The sites that are not largely natural and where water may have a bitter taste include: Mackiesputs Eye at Graaf-Reinet (bush, grass, urban and cultivated land), Boesmans River at Donkerhoek (bush, grass, shrub and cultivated land) and Kariega River at Smithfield (bush, grass and forest). The potential for diarrhoea increases at the Olifants River at Warm Water (shrub, cultivated land and plantation) and at the Swart Vlei at Ronde Valley (bush, plantation and cultivated land). The unacceptably high magnesium levels at the Great Brak River at Vishoek appear to be natural since the land cover is comprised of shrub.

Sulphate (SO₄)

The elevated sulphate concentrations at the sites mentioned previously are most probably due to natural reasons at the Groot River at Buffelsfontein (shrub), and the Great Brak River at Vishoek (shrub). Due to there being some man-modified land cover at the following sites, the elevated sulphate concentrations may be affected by human activities: Suikerbosrand River at Uitvlugt (cultivated land, grass and urban), Swart Vlei at Ronde Valley (bush, plantation and cultivated land), Mackiesputs Eye at Graaf-Reinet (bush, grass, urban and cultivated land) and the Olifants River at Warm Water (shrub, cultivated land and plantation).

Chloride (Cl)

The elevated chloride concentrations would appear to be related to the natural geology in almost all cases. It is only at the Bree River at Wagenboomsheuvel (cultivated land and shrub), Tarka River at Bridge Farm (shrub, grass and cultivated land) Great Fish River at Matomela's Reserve (shrub, bush and cultivated land), Hluhluwe River at Valsbaai (bush, plantation and cultivated land), Mackiesputs Eye at Graaf-Reinet (bush, grass, urban and cultivated land), Boesmans River at Donkerhoek (bush, grass, shrub and cultivated land), Kowie River at Bathurst (bush, grass and cultivated land), Olifants River at Warm Water (shrub, cultivated land and plantation) and the Swart Vlei at Ronde Valley (bush, plant and cultivated land) that there appear to be marked human impacts at a national scale.

Sodium (Na)

The elevated sodium concentrations appear to be related to natural sources. The land cover at the Sundays River at De Draay is shrub, at the Little Fish River at Rietfontein it is shrub and bush, at the Great Fish River at Fort Brown Peninsula it is shrub, bush and cultivated land, at the Great Fish River at Matomela's Reserve it is shrub, bush and cultivated land, at the Sak River at De Kruis it is shrub, at the Heuningklip River at Campherspoort it is shrub and bush, at the Mackiesputs Eye at Graaf-Reinet it is bush, grass, urban and cultivated land, at the Sundays River at Addo Drift East it is bush, shrub and cultivated land, at the Boesmans River at Donkerhoek it is bush, grass, shrub and cultivated land, at the Kariega River it is bush, grass and forest, at the Kowie River at Bathurst it is bush, grass and cultivated land, at the Tarka River at Bridge Farm it is shrub, grass and cultivated land, at the Groot River at Buffelsfontein it is shrub, at the Olifants River at Warm Water it is shrub, cultivated land and plantation, at the Great Brak River at Vishoek it is shrub and at the Swart Vlei at Ronde Valley it is bush, plantation and cultivated land.

“Hot Spot” Information from Additional WMA Sites

Refer to Map 8 and Table 4.4 for the salinity effects based on the “hot-spot” sites. They are the sites from the individual WMAs (and the national assessment sample site set) that exceed the *Very Good* and *Good* classes for the selected variables and fitness-for-use class.

Table 4.4 WMA sample sites (“hot spot” sites) exceeding the *Very Good* and *Good* range for domestic water use for the Domestic Use “Salinity” Water Quality Constituents

WMA Site	Sample Site	Constituent/s Exceeding Good Range	Extent of Exceedence	Location of Site
Olifants WMA				
95	B1H002Q01	SO ₄	Red	Spook Spruit At Elandspruit
96	B1H004Q01	SO ₄	Yellow	Klip Spruit At Zaaihoek
104	B1H019Q01	SO ₄	Yellow	Noupoort Spruit At Naauwpoort
148	B7H019Q01	SO ₄ ; K; Mg	Red; yellow; yellow	Ga-Selati River At Loole/Foskor
Usutu to Mhlatuze				
671	W3H012Q01	Cl; Na	Yellow; yellow	Mzinene River At Cloete
673	W3H015Q01	Cl	Purple	Hluhluwe River At Valsbaai/St Lucia Inflow
675	W3H023Q01	SO ₄ ; Ca	Red; yellow	Nkongolwana River At Veelsgeluk/ Kongolana (Cp5)
686	W3R002Q01	SO ₄ ; Cl; K; Na; Mg	Red; purple; red; purple; red	Lake St Lucia At Lister's Point
Upper Vaal WMA				
162	C2H004Q01	SO ₄	Yellow	Suikerbosrand River At Uitvlugt (Rw S2)
179	C2H132Q01	SO ₄ ; Ca	Yellow; yellow	Riet Spruit At Tamboekiesfontein
180	C2H133Q01	SO ₄ ; Ca	Yellow; yellow	Blesbok Spruit At Heidelberg
189	C2H149Q01	SO ₄ ; Ca	Yellow; yellow	Blesbok Spruit At Nigel East – R51 Bridge (B8)
190	C2H153Q01	SO ₄ ; Ca	Yellow; yellow	Wonderfontein Spruit At Ranfontein Azaadville Bridge
200	C2H234Q01	SO ₄	Yellow	Suikerbosrant River At Badfontein
Middle Vaal WMA				
231	C2H139Q01	SO ₄	Red	Koekemoer Spruit At Buffelsfontein
Mzimvubu to Keiskamma WMA				
513	R2H016Q01	Cl; Na	Yellow; red	Zwelitsha Spruit At Malakalaka
Lower Orange WMA				
283	D5H017Q01	SO ₄ ; Cl; Na; Mg	Purple; purple; purple; yellow	Renoster River At Leeuwenkuil
284	D5H021Q01	SO ₄ ; Cl; Na	Red; yellow; red	Sak River At De Kruis/Williston
Fish to Tsitsikamma WMA				
450	L6H001Q01	SO ₄ ; Cl; Na; Ca; Mg	Red; purple; red; yellow; yellow	Heuningklip River At Camperspoort
452	L7H007Q01	SO ₄ ; Cl; Na; Ca; Mg	Purple; purple; purple; yellow; red	Groot River At Sandpoort
459	M1H012Q01	Cl; Na	Yellow; yellow	Swartkops River At Uitenhage/Nivens Bridge
461	N1H013Q01	SO ₄ ; Cl; Na; Ca; Mg	Red; red; red; yellow; yellow	Mackiesputs Eye At Graaf-Reinet/ Van Reyneveldspas
463	N2H007Q01	Cl; Na	Red; yellow	Sundays River At De Draay
466	N3H002Q01	Cl	Yellow	Voël River At Rietvley
468	N4H003Q01	Cl; Na	Red; red	Sundays River At Addo Drift East/ Addo Bridge
469	N4H005Q01	SO ₄ ; Cl; Na; Mg	Red; purple; purple; yellow	Coerney River At Selborne/Carlton
472	P3H001Q01	Cl; Na; Ca; Mg	Purple; red; yellow; yellow	Kariega River At Smithfield/Lower Waterford
475	P4H001Q01	Cl; Na	Red; red	Kowie River At Bathurst/Wolfscrag
483	Q4H013Q01	Cl; Na	Yellow; red	Tarka River At Bridge Farm/Tarka Bridge (New Weir)
488	Q7H005Q01	Cl; Na	Yellow; yellow	Great Fish River Atsout Vleij/Sheldon

WMA Site	Sample Site	Constituent/s Exceeding Good Range	Extent of Exceedence	Location of Site
491	Q8H011Q01	Cl; Na	Yellow; yellow	Little Fish River At Rietfontein/ Junction Drift
493	Q9H001Q01	Cl; Na	Yellow; yellow	Great Fish River At Fort Brown Peninsula
495	Q9H012Q01	Cl; Na	Yellow; yellow	Great Fish River At Brandtlegte/ Piggot's Bridge
497	Q9H018Q01	Cl; Na	Yellow; yellow	Great Fish River At Matomela's Reserve/Outspan
Gouritz WMA				
383	J1H017Q01	Cl; Na	Red; red	Sand River At Buffelsfontein/Van Wyksdorp
384	J1H019Q01	SO ₄ ; Cl; Na; Mg	Yellow; purple; red; yellow	Groot River At Buffelsfontein/Van Wyksdorp
388	J1R002Q01	Cl; Na	Yellow; yellow	Bellair Dam On Brak River: Near Dam Wall
390	J1R004Q01	Cl; Na	Yellow; yellow	Miertjeskraal Dam On Brand River: Near Dam Wall
393	J2H007Q01	Cl	Yellow	Joubert River At Opsoek
401	J3H011Q01	SO ₄ ; Cl; Na; Ca; Mg	Purple; purple; purple; red; red	Olifants River At Warm Water
411	J3R002Q01	Cl	Yellow	Stompdrif Dam On Olifants River: Near Dam Wall
414	K1H009Q01	SO ₄ ; Cl; K; Na; Ca; Mg	Purple; purple; red; purple; red; purple	Hartenbos River At Hartenbosch/Hotel At Estuary
415	K1H013Q01	SO ₄ ; Cl; K; Na; Mg	Yellow; purple; yellow; purple; yellow	Hartenbos River At Hartenbosch/ Tributary Confluence
418	K1R001Q01	Cl	Yellow	Hartebeeskuil Dam On Hartenbos River: Near Dam Wall
421	K2H004Q01	SO ₄ ; Cl; K; Na; Ca; Mg	Purple; purple; red; purple; red; purple	Great Brak River At Vishoek
429	K3H011Q01	Cl	Yellow	Duiwe River At Klein Krantz
431	K3R003Q01	SO ₄ ; Cl; K; Na; Mg	Yellow; purple; yellow; purple; red	Ronde Vlei At Ronde Valley
432	K3R004Q01	Cl; K; Na; Mg	Purple; yellow; purple; yellow	Upper Lang Vlei At Klein Krantz
433	K3R005Q01	Cl; K; Na; Mg	Purple; yellow; purple; yellow	Lower Lang Vlei At Klein Krantz (East Shore)
434	K3R006Q01	SO ₄ ; Cl; K; Na; Mg	Yellow; purple; yellow; purple; red	Touws River Estuary At Wilderness
438	K4R001Q01	Cl; Na	Red; red	Groen Vlei At Ruygte Valley
439	K4R002Q01	SO ₄ ; Cl; K; Na; Mg	Yellow; purple; yellow; purple; red	Swart Vlei At Ronde Valley/ Hoogekraal
441	K5R001Q01	SO ₄ ; Cl; K; Na; Ca; Mg	Purple; purple; red; purple; red; purple	Knysna Lagoon At Knysna
Olifants/Doorn WMA				
298	G3H001Q01	Cl; Na; Mg	Red; red; yellow	Kruis River At Tweekuilen/Eendekuil
Breede WMA				
326	G4H006Q01	Cl	Yellow	Klein River At Can Q5-8/ Wagenboomsdrift
332	G4R003Q01	SO ₄ ; Cl; K; Na; Mg	Red; purple; yellow; purple; red	Bot River Vlei On Bot River At Ysterklip/Hermanus
333	G4R004Q01	SO ₄ ; Cl; K; Na; Ca; Mg	Purple; purple; red; purple; red; purple	Klein River Vlei On Klein Riv At Rocklands/Yacht
334	G5H008Q01	Cl; Na; Mg	Purple; purple; red	Sout River At Kykoedy
340	H1H015Q01	Cl; Na; Mg	Red; red; yellow	Bree River At Die Nekkies (Onder Brandvlei)
350	H3H011Q01	Cl; Na	Red; red	Kogmanskloof River At Goudmyn
352	H4H016Q01	Cl; Na	Yellow; yellow	Keisers River At Mc Gregor Commonage/Vrolykheid
354	H4H018Q01	SO ₄ ; Cl; Na; Ca; Mg	Yellow; purple; red; yellow; yellow	Poesjenels River At La Chasseur
355	H4H019Q01	Cl; Na	Red; yellow	Vink River At De Gorree
356	H4H020Q01	Cl; Na	Yellow; red	Nuy River At Doornrivier
362	H5H004Q01	Cl	Yellow	Bree River At Wolvendrift/Secunda
363	H5H005Q01	Cl	Yellow	Bree River At Wagenboomsheuve/ Drew
Berg WMA				
302	G1H009Q01	Cl; Na	Red; yellow	Brakkloof Spruit At Knolvlei Forest Reserve
309	G1H024Q01	SO ₄ ; Cl; K; Na; Mg	Yellow; purple; yellow; purple; red	Berg River At Kliphoeek
311	G1H034Q01	Cl; Na; Ca; Mg	Purple; purple; yellow; red	Moorreesburg Spruit At Holle River
312	G1H035Q01	Cl; Na	Red; red	Matjies River At Matjiesfontein

WMA Site	Sample Site	Constituent/s Exceeding Good Range	Extent of Exceedence	Location of Site
314	G1H039Q01	Cl; Na	Purple; red	Doring River At Grensplaas/Diepe Gat
315	G1H040Q01	Cl; Na	Yellow; yellow	Fish River At La Fonteine
321	G2H012Q01	Cl; Na	Yellow; yellow	Diep River At Malmesbury

Map 8 "Salinity" effects on Domestic Use as represented by the "hot spot" sample site set