

APPENDIX J₃

Comparison of Discharge Standards

Table 1: Comparison between Special and General Standards, as per DWS Regulations

Standard	Special	General
Description of standard	Quality standards for waste water or effluent arising in the catchment area draining water to any river specified in Schedule I or a tributary thereof at any place between the source thereof and the point mentioned in the Schedule, in so far as such catchment area is situated within the territory of the Republic of South Africa.	Quality standards for waste water or effluent arising in any area other than an area in which the SPECIAL STANDARD is applicable.
Colour, odour or taste	The waste water or effluent shall not contain any substance in a concentration capable of producing any colour, odour or taste.	The waste water or effluent shall not contain any substance in a concentration capable of producing any colour, odour or taste.
pH	Shall be between 5,5 and 7,5.	Shall be between 5,5 and 9,5.
Dissolved oxygen	Shall be at least 75 per cent saturation.	Shall be at least 75 per cent saturation.
Typical (faecal) coli	The waste water or effluent shall contain no typical (faecal) coli per 100 millilitres.	The waste water or effluent shall not contain any typical (faecal) coli per 100 millilitres.
Temperature	Shall be a maximum of 25°C	Shall be a maximum of 35°C.
Chemical oxygen demand	Not to exceed 30 milligrams per litre after applying the chloride correction.	Not to exceed 75 milligrams per litre after applying the chloride correction.
Oxygen absorbed	The oxygen absorbed from acid N/80 potassium permanganate in 4 hours at 27°C shall not exceed 5 milligrams per litre.	The oxygen absorbed from acid N/80 potassium permanganate in 4 hours at 27°C shall not exceed 10 milligrams per litre.

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Conductivity		Not to be increased by more than 15 per cent above that of the intake water. The conductivity of any water, waste water or effluent seeping or draining from any area referred to in section 21(6) of the aforementioned Water Act shall not exceed 250 milli-Siemens per metre (determined at 25°C).	Not to be increased by more than 75 milli-Siemens per metre (determined at 25°C) above that of the intake water. The conductivity of any water, waste water or effluent seeping or draining from any area referred to in section 21(6) of the aforementioned Water Act shall not exceed 250 milli-Siemens per metre (determined at 25°C).
Suspended solids		Not to exceed 10 milligrams per litre.	Not to exceed 25 milligrams per litre.
Sodium content		Not to be increased by more than 50 milligrams per litre above that of the intake water.	Not to be increased by more than 90 milligrams per litre above that of the intake water.
Soap, oil or grease		None.	Not to exceed 2,5 milligrams per litre.
Measured in milligrams per litre	Residual chlorine (as CP)	Nil	0,1
	Free and saline ammonia (as N)	1,0	10,0
	Nitrates (as N)	1,5	-
	Arsenic (as As)	0,1	0,5
	Boron (as B)	0,5	1,0
	Total chromium (as Cr)	0,05	0,5
	Hexavalent chromium (as Cr)		0,05
	Copper (as Cu)	0,02	1,0
	Phenolic compounds (as phenol)	0,01	0,1
	Lead (as Pb)	0,1	0,1
	Soluble ortho phosphate (as P)	1,0	
	Iron (as Fe)	0,3	
	Manganese (as Mn)	0,1	
Cyanides (as Cn)	0,5	0,5	

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Standard	Special	General
Sulphides (as S)	0,05	1,0
Fluoride (as F)	1,0	1,0
Zinc (as Zn)	0,3	5,0
Manganese (as Mn)		0,4
Cadmium (as Cd)	0,05	0,05
Mercury (as Hg)	0,02	0,02
Selenium (as Se)	0,05	0,05
Additional information	The waste water or effluent shall contain no other constituents in concentrations which are poisonous or injurious to trout or other fish or other forms of aquatic life.	The sum of the concentrations of the following metals shall not exceed 1 mg/l: Cadmium (as Cd), chromium (as Cr), copper (as Cu), mercury (as Hg) and lead (as Pb). The waste water or effluent shall contain no other constituents in concentrations which are poisonous or injurious to humans, animals, fish other than trout, or other forms of aquatic life, or which are deleterious to agricultural use.

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The effluent which will be discharged from the plant will have to comply with the discharge license to be issued by DWS. The application process for the license will be initiated shortly. Noting current guidelines in which the Klein Modder River is not listed as a Special Limits Catchment, a requirement for General Limits is anticipated as the DWS requirement.

Maselspoort potable water treatment plant is a short distance below the discharge point of the Botshabelo WWTW. Therefore phosphate and ammonia removal as well as disinfection of the discharged water should be critically considered.

The final effluent design values will have to be in line with the anticipated WULA requirements.

Although it is anticipated that DWS will grant an authorisation under General Limits, the BNR will be designed to maximise biological nutrient removal.

Parameter	General Limit	Design Limit	Special Limits	Unit
Chemical Oxygen Demand	<75	<75	<30	mgCOD/ℓ
Ortho-Phosphate as phosphorous	<10	<1	<1	mgOP-P/ℓ
Ammonia as Nitrogen	<6	<6	<2	mgNH ₃ -N/ℓ
Nitrate / Nitrate as Nitrogen	<15	<15	<1.5	mgNO ₃ -N/ℓ
Chlorine as Free Chlorine	0.25	0.25	0.25	mgCl ₂ /ℓ
Total Suspended Solids	<25	<25	<10	mgTSS/ℓ
<i>E. coli</i> Count	1 000	1 000	0	Counts/100mℓ