

MZIMVUBU WATER PROJECT FACT SHEET

ASPECT OF PROJECT	DESCRIPTION / FACT
Nature and locality of project	A Strategic Integrated Project (SIP 3) that is intended to simulate socio-economic development in the Eastern Cape Province, near Mthatha and Tsolo
Name of River	Tsitsa River, a tributary of the Mzimvubu River
Main Project components	Ntabelanga Dam storage, water treatment works, bulk potable water pipelines, bulk irrigation water pipeline, Lalini Dam and hydropower generation plant, and associated works
District Municipalities	Alfred Nzo, Joe Gqabi and OR Tambo
Purpose of project	Conjunctive scheme to supply domestic, industrial and irrigated agriculture water requirements, and for the generation of hydropower
Size of population served	539 100 (in 2020) increasing to 726 600 (in 2050)
High potential land for irrigated agriculture	2 451 ha in the Tsolo area 417 ha near to the dam and along the river Total area of 2 868 ha
Yield of Ntabelanga Dam and current allocation	241 million m ³ /annum: – Potable water : 33 million m ³ /a – Irrigation water : 28 million m ³ /a – Hydropower use : 180 million m ³ /a
Employment during construction	Estimated 7 070 direct, indirect and induced jobs p.a.
Employment during operation	Estimated 4 200 jobs p.a.
NTABELANGA DAM	
Mean annual runoff (present day)	415 million m ³
Storage capacity	490 million m ³
Area of dam basin	31.5 km ²
Length of dam basin	15.5 km
Dam type	Roller compacted concrete (RCC) gravity dam
Full supply level (FSL)	947.3 m.a.s.l.
Non-overspill crest (NOC) level	953.9 m.a.s.l. (right flank)
Maximum wall height to NOC	66.1 metres
Wall crest length (incl. spillway)	407 metres
Spillway length and type	150 metres Ogee type
Recommended design flood	2 500 m ³ /s
Safety evaluation flood (SEF)	5 530 m ³ /s
Environmental water requirement (total per annum)	87.249 million m ³ (21 % Natural MAR)

LALINI DAM & HYDROPOWER PLANT

Mean annual runoff (present day)	828 million m ³
Storage capacity	232 million m ³
Area of dam basin	14.5 km ²
Length of dam basin	22.5 km
Dam type	Roller compacted concrete (RCC) gravity dam
Full supply level (FSL)	765.58 m.a.s.l.
Non-overspill crest (NOC) level	770.41 m.a.s.l. (left flank)
Maximum wall height to NOC	53.4 metres
Wall crest length (incl. spillway)	371 metres
Spillway length and type	320 metres Ogee type
Recommended design flood	3 500 m ³ /s
Safety evaluation flood (SEF)	7 100 m ³ /s
Environmental water requirement (total per annum)	287.1 million m ³ (35% of Natural MAR)
Conduit/tunnel from dam to hydro-electric plant (HEP)	7.85 km long pipeline with a diameter of 2.5 m
HEP location elevation	445 m.a.s.l.
HEP installed capacity	37.5 MW Main HEP 5.0 MW at Lalini Dam 5.0 MW at Ntabelanga Dam ----- 47.5 MW Total Installed Capacity
Average Hydropower Output	23 MW
Total hydropower generation	200 million kW-hours per annum

BULK POTABLE WATER DISTRIBUTION INFRASTRUCTURE

Potable water source	Regional water treatment works at Ntabelanga Dam
Primary distribution system:	
Pump station 1 at dam & rising main to command Reservoir 1	5.84 km long pipeline with a diameter of 914 mm delivering 0.935 m ³ /s
Pump station 2 at Reservoir 1 & rising main to Reservoir 2	9.75 km long pipeline with a diameter of 914 mm delivering 0.83 m ³ /s
Pump station 3 at dam & rising main to command Reservoir 3	11.7 km long pipeline with a diameter of 711 mm delivering 0.48 m ³ /s
Pump station 4 at Reservoir 3 & rising main to Reservoir 4	14.38 km long pipeline with a diameter of 356 mm delivering 0.09 m ³ /s

BULK POTABLE WATER DISTRIBUTION INFRASTRUCTURE (Cont.)	
Secondary gravity pipelines:	Tertiary gravity pipelines:
Zone 1 = 28.5 km	Zone 1 = 102.7 km and 47 reservoirs
Zone 2 = 86.6 km	Zone 2 = 483.4 km and 181 reservoirs
Zone 3 = 91.4 km	Zone 3 = 319.0 km and 111 reservoirs
Zone 4 = None	Zone 4 = 133.3 km and 49 reservoirs
BULK IRRIGATION WATER DISTRIBUTION INFRASTRUCTURE	
Raw water source	Pump station at Ntabelanga Dam
Pump station & rising main to 40 000 m ³ balancing reservoir	16.4 km long pipeline with a diameter of 1 016 mm delivering 1.06 m ³ /s
Gravity pipelines to field edge	24.5 km of steel pipelines (500 to 1 200 mm diameter) 13.9 km of uPVC pipelines (200 to 355 mm diameter)
COST ESTIMATE (2014 prices)	
Component	Amount (including VAT, escalation and professional fees)
Ntabelanga Dam and Associated Infrastructure	R1 846 million
Ntabelanga Water Treatment Works	R1 027 million
Ntabelanga Bulk Potable Water Distribution:	
Primary and secondary distribution	R1 971 million
Tertiary distribution	R2 275 million
Ntabelanga Bulk Irrigation Water Supply	R795 million
In-farm irrigation investment costs	R180 million
Lalini Dam and Hydropower Scheme	R3 736 million
Allowances for Environmental and Social Offsets	R100 million
Total estimated cost - all project components	R11 930 million
Catchment Management Programme by DEA	R450 million
Total estimated cost of project	R12 380 million
FINANCIAL ANALYSIS	
Conjunctive Scheme (Ntabelanga Dam, Lalini Dam & Hydropower Scheme, Primary and Secondary Bulk Potable Water Distribution, Bulk Irrigation Water Distribution)	

Funding Model	100% Capital Grant Funded, Power Costs 100% Subsidized from Lalini Hydropower Scheme
Water Tariffs	R5.00/m ³ for potable water, R0.30/m ³ for irrigation water
Revenue from water and energy sales	R14 billion over 35 years
Payback Period of capital loan at 0% interest rate (Alternative funding scenario)	30 years
IMPLEMENTATION PROGRAMME	
Environmental Authorisation	Provisional approval granted June 2015
	One appeal was lodged and responded to
	Final decision expected end Feb 2016
Estimated project implementation programme	June 2015 to June 2022