

Annexure 1:
Estimated Water Use for 10131MR on Nous West 76

Table 1 provides for the estimated water requirement calculation based on all quarries and all living quarters being developed within the next 5 to 10 years. This calculation will however be amended to include the finding of the Geo-hydrological study to be completed as part of the application for a Water Use License (WUL).

With regard to Schedule 1 water use where no WUL is required the following will be applicable:

- At the Yellow Living quarters drinking water about 2m³ is obtained from the Yellow Solar Pump (P1) and pump to a 5 000l storage Plastic tank T1.
- At the Cape Spring Living quarters when developed drinking water about 2m³ will also be obtained from the Yellow Solar Pump (P1) or Farm Pump (P3) and transported to two 5 000l storage Plastic tanks.

With regard to the Section 21a WUL for abstraction of Groundwater the following will be applicable (Table 2):

- For process water the calculation use assumes that the maximum number of circular saws in use at the same time for all quarries will never exceed 4 and diamond wire saws will never exceed 2.
- Water consumption for Circular saws is on average 5m³/day and for diamond wire saws 1.5m³/day and saws are in operation on average 6 hours per day
- The long-term requirement is estimated at 10m³ per day at 60% recycling.
- The availability of groundwater (yield) will be verified as part of a 24-hour pump test do be done for the 2 bore holes with the highest yield P2 and P3.
- Recommendations from the Geo-Hydrological study will determine the availability of groundwater for mining purposes as well as pumping cycle.
- Water makeup in the case of water shortage will include increasing the recycled percentage or reducing the number of circular saws or replacing it with diamond wire saws.
- As a last option the economic feasibility of obtaining water from outside sources will be investigated

With regard to Section 21(g) WUL Disposing of waste water the following will be applicable (Table 3):

- As water is only use during processing for cooling purposes poor quality water can be use which make recycling feasible.
- Most mines aim for a close loop system with nearly all water recycled but for calculation purposes recovery is estimated at 60% at start-up of operations and needs to be improve to 80% within the next 5 years.
- A “Biozone” or similar purifying system needs to be provided at all living quarters which will provide for 80% of domestic water be recycled for processing purposes.

With regard to Section 21(b) WUL Storage of water the following will be applicable (Table 4):

- Water storage is mostly in 5 000 plastic tanks.
- A balancing dam for the Yellow quarry pumps D1 is used to collect water from where water is distributed to where it is needed by the sawing operations.

Table 1: Long Term 5-Year Water requirement

Quarry	Water requirement m ³ /day		Obtain From Pump No/Name
	Domestic	Process	
Yellow 2 Circular saws 2 Wire saws	*	10 3	P1 Yellow Solar pump P2 Nous pump
Cape Spring 2 Wire saws	*	10	
Yellow Living quarters	2	0	P1 Yellow Solar pump
Cape Spring Living quarters	2	*	P3 Farm Pump
TOTAL	4	23	

Table 2: Current abstraction (Section 21a WUL Abstraction of Groundwater)

Pump			Yeild		
No/Name	Position	Specification	m ³ /Hour	m ³ /day	Pump Cycle
P1 Yellow Solar pump	S28.78428 'E19.65289'	1.1Kw Submercible	Bore hole yeild to be determined during the pump test as part of the Geo-Hydrological study with recommendations on sustainabele pumping cycle. All recommendations including volumes available for abstraction will form part of the WUL. All pumps will be fitted with meters and monitored and the applicable water charges will be paid to DWAS		
P2 Nous pump	S28.78377° E19.65331°	1.5Kw Submercible			
P3 Farm Pump	S28.80105° E19.69684°	1.1Kw Submercible			
TOTAL					

Pump 1



Pump 2



Pump 3



Table 3: Long Term 5-Year Water requirement obtained from recycling (Section 21(g) WUL Disposing of waste water - Mine sump)

Quarry	Requirement m ³ /day	Recycled m ³ /day	Top Up m ³ /day	Collection Sump		
				No/Name	Position	Capacity m ³
Yellow	13	7.8	5.2	S1 Settling sump to D1 Balancing dam	S28.69050° E19.79044°	27.36
Cape Spring	10	6	4	Settling and Collection sump to be developed during construction phase		
Yellow Living quarters (LQ)	2	1.2	0.8	Biozone or similar purifying system to be provided and water pump to balancing dam (D1)		
Cape Spring Living quarters	2	1.2	0.8	Biozone or similar purifying system to be provided during construction phase		
TOTAL	27	16.2	10.8			27.36

Collection Sump S1



Table 4: Water storage (Section 21b WUL Storage of water)

Pump No/Name	Collection Dam (Reservoir)			Balancing Dam			End User		
	No/Name	Position	Cap m ³	No/Name	Position	Capacity	No/Name	Position	Cap m ³
P1 Yellow Solar pump	None	Na	Na	None	Na	Na	D1 Yellow Balancing Dam	S28.68895° E19.78924°	48.36
P2 Nous pump	None	Na	Na	None	Na	Na	T2 1 X Plastic tanks	S28.80105° E19.69684°	0.5
P3 Farm Pump	None	Na	Na	None	Na	Na	T1 1 X Plastic tank	S28.68987° E19.78942°	0.5
TOTAL	49.36		0			0			49.36

Dam D1 Balancing Dam for Yellow pumps



Tanks at Yellow LQ T1



Tanks at Farm Pump T2



Layout Plan water supply for 10131MR

