Water Balance Calculation

Catchment Rainfall Data

Month	SAAR [mm]	Mean Evaporation [mm]	HER [mm]
January	66.5	3	63.5
February	46.1	6	40.1
March	62.0	17	45
April	55.8	38	17.8
May	54.1	62	-7.9
June	66.5	74	-7.5
July	45.2	75	-29.6
August	69.1	59	10.1
September	73.6	35	38.6
October	86.8	16	70.8
November	84.2	6	78.2
December	84.2	2	82.2
Average	794.0	**393**	**401.3**

Water Balance Calculation

Operational lifetime 2 years

1 Phases operational commencing in 2020
Total effective annual rainfall 401.3mm/annum.

Assessment 1: Phase 1 Inert Landfill
Cell Area 60,462m^2 Void 732,362m^3 Time to fill 2 years. Assume 5% absorptive
Infill 300000m^3 per annum

15,000m^3 absorptive capacity per annum (0.05)
Surface area per cell max =60,462m^2
Volume of rain of cell per annum 0.401 X 60,432m^2 = 24,233m^3 per annum
15,000m^3- 24,233m^3= -9,233m^3 excess surface water to remove per annum
If one assumes a worst case scenario of 5%

Assessment 2: Phase 1 Inert Landfill
Cell Area 60,462m^2 Void 732,362m^3 Time to fill 2 years. Assume 5% absorptive
Infill 633000m^3 per annum

31,650m^3 absorptive capacity per annum (0.05)
Surface area per cell max =60,462m^2
Volume of rain of cell per annum 0.401 X 60,432m^2 = 24,233m^3 per annum
31650m^3- 24,233m^3= 7,417m^3 surplus therefore no waters to pump

Groundwater pumping rate currently 20m3 per day currently

Remainder of site

60,000m^2. Total rainfall per annum based on 401.3mm/year effective rainfall
Therefore a total to 24,060m^3 per annum

Conclusion

Based on as lifetime operational capacity of 2-3 years maximum assuming input
volumes to stay as designed then a small scale storage lagoon required with
annual maximum capacity of 7,417m^3 plus groundwater pumping which is
currently 20m^3 per day.

Total remaining surface water runoff from opencast development platform is
24,060m^3 per annum and discharger consent allows for 1200m^3 per day or
438,000m3 per annum. Therefore no variation to consent required.