

Table 1 Details of optimum pipe and pump configuration and cost analysis

| Description | | |
|---|---------------------|--------------|
| Slurry System Characteristics | | |
| Design throughput (tph) | | |
| Solids SG | | |
| Design concentration (%Cw) | | |
| Particle size (50 % finer) | | |
| Design Flow Rate (m ³ /h) | | |
| Initial Critical Deposition Velocity (m/s) | | |
| Initial Design Velocity (m/s) | | |
| Critical Deposition Velocity at End of Life (m/s) | | |
| Design Velocity at End of Life (m/s) | | |
| Pump Station 1 | | |
| Station Location (Km) | | |
| Total Number of Pumps | | |
| Pump Braking Power (per pump) (HP-kW) | | |
| Required Pump Motor Power (per pump) (HP-kW) | | |
| Maximum Discharge Pressure (psi-MPa) | | |
| Flange Rating Suction (Class-Mpa) | | |
| Flange Rating Discharge (Class-Mpa) | | |
| Terminal Station | | |
| Station Location (Km) | | |
| Flange Rating (class-MPa) | | |
| Pipe Material | | |
| Steel Quantity (m) | | |
| Steel Quantity (Metric Tons) | | |
| Pipeline Outer Diameter OD (mm) | | |
| Pipeline Inner Diameter ID (mm) | | |
| Carbon Steel API 5 L X65 Steel | Wall thickness (mm) | Quantity (M) |
| Design parameters | | |
| Head loss (m of slurry) | | |
| Pressure drop (MPa) | | |
| Specific gravity of slurry | | |
| Specific weight of slurry (N/cum) | | |
| Efficiency of pump (%) | | |
| Discharge (cum/s) | | |
| Total pump capacity required (kW) | | |
| Total pump capacity required (hP) | | |
| Worst water hammer pressure WWHP (Mpa) | | |
| Pipe wall thickness requirement for WWHP (mm) | | |
| Minimum time of valve closure (s) | | |
| Pipeline throughput (tonnes per hour) range | | |
| Flow rate (m ³ /hr) range | | |
| Solids concentration (by weight) range | | |
| Cost of slurry pipeline system | | |
| Capital Cost | | |
| Operating Cost | | |
| Total Cost | | |

Table 2 Performance of slurry pipeline during its life time

| Year | Pipe ID (mm) | Flow Velocity V(M/s) | Wear Ew (mm/y) | Deposition Velocity Vd(m/s) | V-Vd (m/s) | Cumulative Wear (mm) | Available wall thickness (mm) |
|------|--------------|----------------------|----------------|-----------------------------|------------|----------------------|-------------------------------|
| 0 | | | | | | | |
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |