

JUSTIFICATION OF THE INTEGRATED CORRIDOR

(For Laying of Transmission Line, Pipe Network and Road)

Alternative Studies & Selection of Final Layout:

Three alternative layouts for this scheme were studied:

Alternative – 1:

In Alternative – 1, it is proposed to lift the water from existing Gorakallu reservoir to the proposed upper reservoir of Pinnapuram PSP. As the length of Pipeline for pumping water between the existing Gorakallu reservoir to the proposed upper reservoir is about 12.76 KMs and the static head difference between the existing Gorakallu reservoir and the proposed Upper reservoir is about 230.66 mt, it has been proposed to pump the water in two stages from the existing Gorakallu reservoir to the proposed upper reservoir by implementing intermediate storage tank cum pumping station in between i.e., Stage - I & Stage II will be fully in lifting operation.

Stage-I: Layout having pumping station – 1 at the edge or just inside the Gorakallu Reservoir and Water Conductor System for lifting of water up to Intermediate Storage tank cum Pumping Station - 2. The length of pipeline from Pumping station – 1 to intermediate storage tank is 6.9 Km and the rated head of the pump is about 152.00m. The capacity and number of pumps required will be about 2.3 MW and 3 nos. respectively.

Stage-II: Layout having Intermediate Storage tank cum Pumping Station - 2 and Water Pipeline for lifting of water up to the proposed Upper Reservoir. The length of pipeline from Pumping station – 2 provided at intermediate storage tank to the proposed Upper reservoir is 5.84Km and the rated head of the pump is about 112m. The capacity and number of pumps required will be about 2.5MW and 2nos. respectively.

The total length of the pipeline in this alternative is 12.76 KMs. As the pipeline is not crossing any villages / houses there is no habitation issues are involved. The total area of land required for this alternative is worked out to about 21.87 Ha. The maximum length of pipeline of about 9.11 Km is coming in forest land area. The maximum area of land required for pumping scheme in this alternative is in forest land and very minimum in private land and the same is worked out to about 16.41 Ha and 5.47 Ha respectively.

The above details of Alternative – 1 is shown in Fig – 2.

G. Suresh



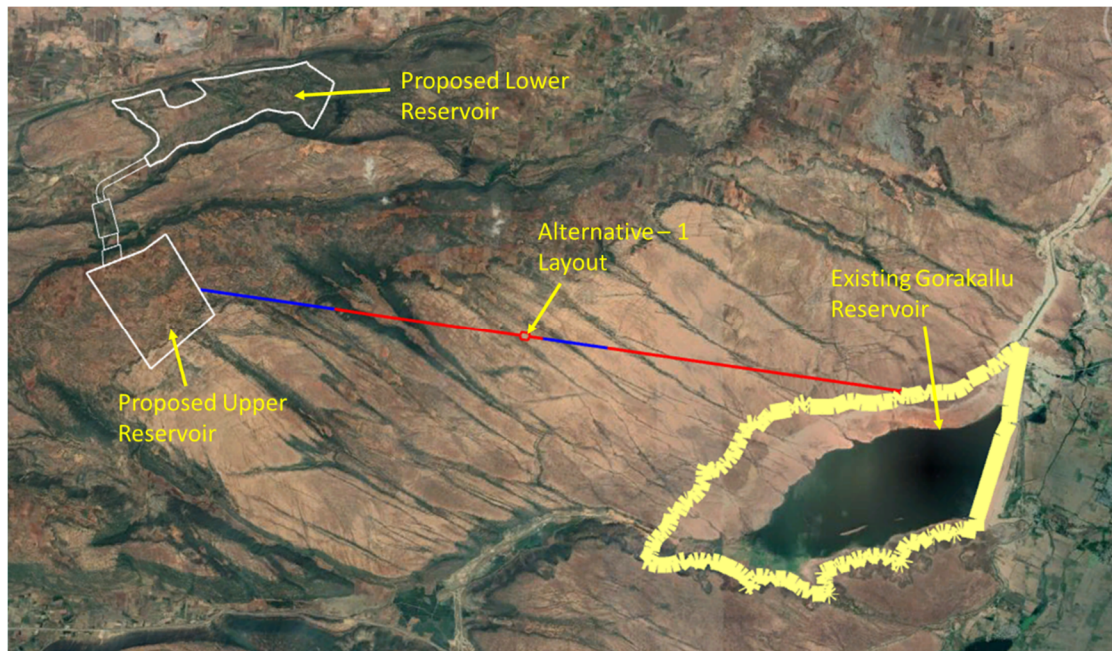


Fig – 2 Showing Alternative – 1 Layout

Alternative – 2:

In Alternative – 2, it is proposed to lift the water from existing Gorakallu reservoir to the proposed Lower reservoir of Pinnapuram PSP. As the length of Pipeline for pumping water between the existing Gorakallu reservoir to the proposed lower reservoir is about 25.01 KMs and the static head difference between the existing Gorakallu reservoir and the proposed lower reservoir is about 104.66 mt, it has been proposed to pump the water in two stages from the existing Gorakallu reservoir to the proposed lower reservoir by implementing intermediate storage tank cum pumping station in between i.e., Stage-I & Stage II will be fully in lifting operation.

Stage-I: Layout having pumping station – 1 at the edge or just inside the Gorakallu Reservoir and Water Conductor System for lifting of water up to Intermediate Storage tank cum Pumping Station - 2. The length of pipeline from pumping station – 1 to intermediate storage tank is 11.40 Km and the rated head of the pump is about 63.00 mt. The capacity and number of pumps required will be about 1.0 MW and 3 nos. respectively.

Stage-II: Layout having Intermediate Storage tank cum Pumping Station - 2 and Water Pipeline for lifting of water up to the proposed Lower Reservoir. The length of pipeline from pumping station – 2 provided at intermediate storage tank to the proposed lower reservoir is 13.62 Km and the rated of the pump is about 109.00 m. The capacity and number of pumps required will be about 2.5 MW and 2 nos. respectively.

G. Srinivas



The length of the pipeline in this alternative is too long and is crossing many existing seasonal nala's and main roads in between. Also, the pipeline is crossing the existing Sri Sailam Right Bank Canal (SRBC) in two locations. However, the pipeline is not crossing any villages / houses and hence there is no habitation issues are involved. The total area of land required for this alternative is worked out to about 40.33 Ha. The length of pipeline of about 10.12Km is coming in forest land area. The maximum area of land required for pumping scheme in this alternative is in Private land and minimum in forest land and the same is worked out to about 24.26 Ha and 16.06 Ha respectively.

The above details of Alternative – 2 is shown in Fig – 3.

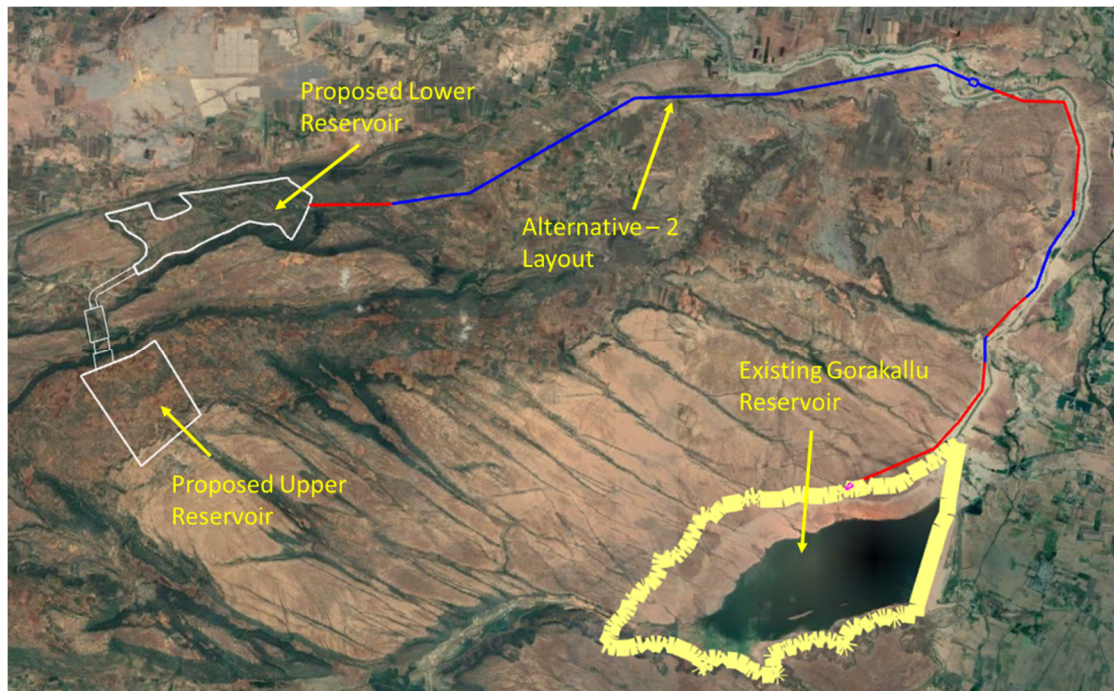


Fig – 3 Showing Alternative – 2 Layout

Alternative – 3:

In Alternative – 3, it is proposed to lift the water from existing Gorakallu reservoir to the proposed Lower reservoir of Pinnapuram PSP. As the length of Pipeline for pumping water between the existing Gorakallu reservoir to the proposed lower reservoir is about 15.107 Km, and the static head difference between the existing Gorakallu reservoir and the proposed lower reservoir is about 119.66m it has been proposed to pump the water in two stages from the existing Gorakallu reservoir to the proposed lower reservoir by implementing intermediate storage tank cum pumping station in between i.e., Stage-I will be in partly lifting operation and partly under gravity and Stage - 2 will be in fully lifting operation.

G. Suresh



Stage – 1 – Layout having pumping station – 1 at the edge or just inside the Gorakallu Reservoir and Water Conductor System for lifting of water and as well as discharging through gravity up to Intermediate Storage tank cum Pumping Station - 2. The length of pipeline from pumping station – 1 to intermediate storage tank is 9.92 Km and the rated head of pump is about 130.00m. The capacity and number of pumps required will be about 2.0 MW and 3 nos. respectively.

Stage – 2: Layout having Intermediate Storage tank cum Pumping Station - 2 and Water Pipeline for lifting of water up to the proposed Lower Reservoir. The length of pipeline from pumping station – 2 provided at intermediate storage tank to the proposed lower reservoir is 5.19km and the rated head of pump is about 60.00m. The capacity and number of pumps required will be about 1.20 MW and 2 nos. respectively.

The topographical profile of this alternative is most suitable to lay the pipeline. The pipeline is crossing few seasonal nala's (very small in size) and 1-2 minor roads. However, the pipeline is not crossing any villages / houses and hence there is no habitation issues are involved. The total area of land required for this alternative is worked out to about 25.34 Ha. The length of pipeline of about 7.92 Km is coming in forest land area. The maximum area of land for pumping scheme in this alternative is in Private land and minimum in Forest land and the same is worked out to 12.76 Ha and 12.58 Ha respectively.

The above details of Alternative – 3 is shown in Fig – 4.

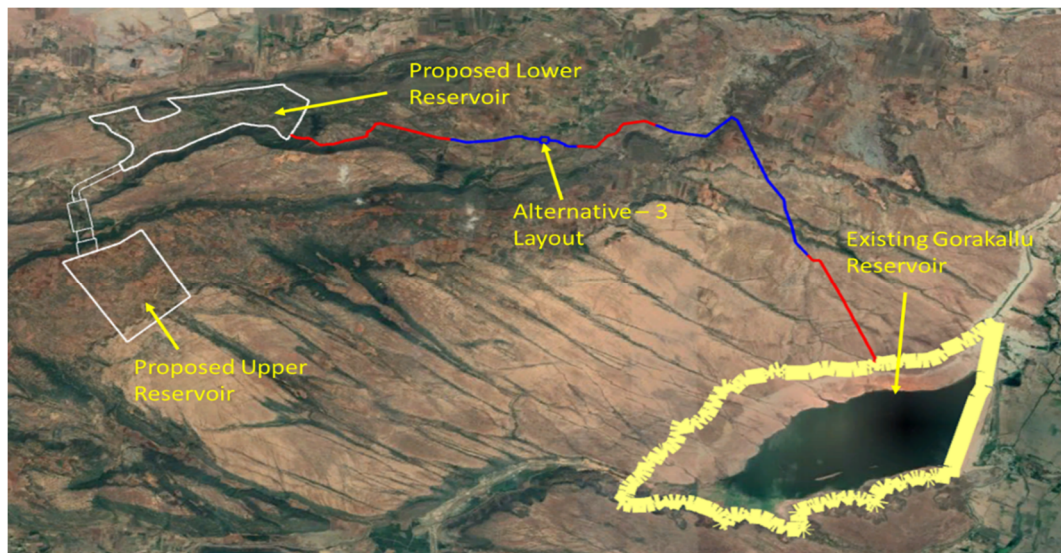


Fig – 4 Showing Alternative – 3 Layout

Selection of Final Layout:

As discussed above in all three alternatives, Alternative – 3 layout has been adopted as final layout considering the following reasons:

G. Survas



- The length of pipeline required in Alternative – 3 layout is 15.107Km which is more than Alternative – 1 layout but less than Alternative – 2 layout. Even with longer length the forest land requirement in this case is the lowest of all three alternatives i.e., about 30% lower than the second closest alternative.
- Since almost one third of line is under gravity and rated head requirements are also lower the pipeline cost in this case is lowest of all three.
- The topographical profile of the alignment in Alternative-3 is most suitable and requires very minimal cutting and filling. In Alternative-2 the civil structure requirements are very high because of crossing of existing canal at two locations and crossing of major roads at multiple locations. Construction of all these crossings of roads and canals will cause lot of hinderance to local inhabitants.
- The power requirement of Alternative-1 is highest and Alternative-2 is lower than Alternative-3 but since other advantages on account least Forest land, lower pipeline cost, lower civil cost and least disturbance to local population still Alternative-3 is best suitable for implementation.
- Since power requirement difference in all three alternatives is not very high therefore O&M cost will almost be same in all three cases this adoption of alternative 3 is suitable from this context as well.

Keeping all these aspects in view Alternative-3 has been proposed to be adopted as this is having least forest land, least cost of construction and minimal or no hindrance to local population.

All three Alternatives are shown in Fig – 5.

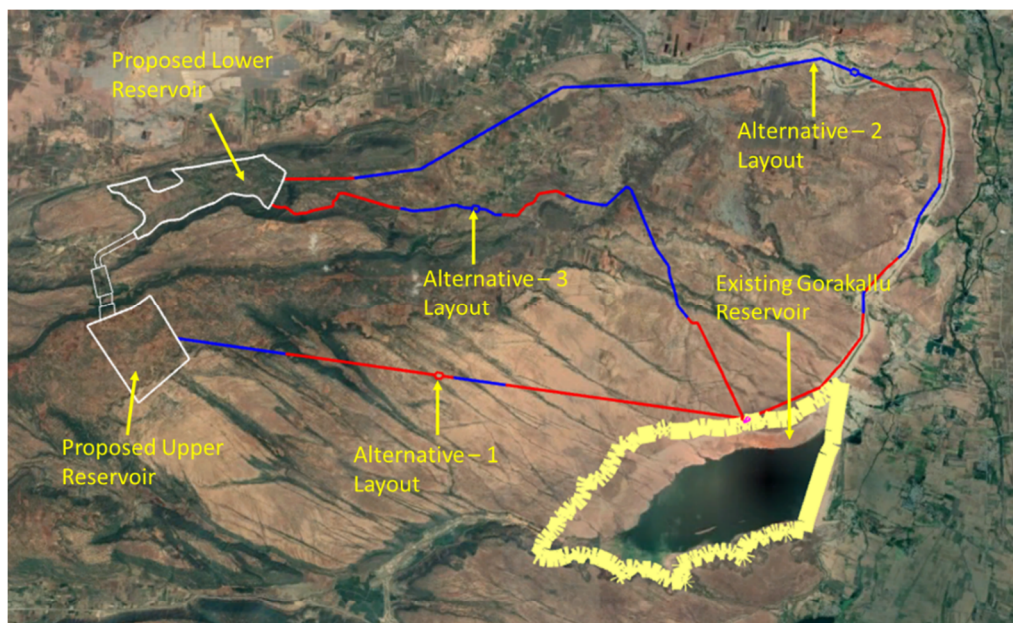


Fig – 5 showing All Three Alternatives

G. Sivas

