Annexure-1

Brief Summary of the project

Pumped Storage Project at Upper Sileru with capacity 1350 MW is proposed in between existing upper reservoir i.e Guntawada reservoir and lower reservoir at Donkarayi dam on Sileru river, a tributary of river Godavari. These two reservoirs are under operation for power generation and discharges are released to Downstream command area. The existing upper Guntawada reservoir (upper) near Sileru village is under operation with a live storage capacity of 3.108 TMC. The existing Donkarayi reservoir (lower) near Donkarayi village is under operation with a live storage capacity of 13.30 TMC.

The Pumped Storage Project at Upper Sileru envisages re-utilization of water of the Guntawada reservoir which is being released from existing Hydro Electric Power Station to the downstream Donkarayi reservoir. During non-monsoon seasons, the water levels of the Donkarayi reservoir gets depleted and pumped storage project would not be operated. In order to avoid this condition, a separate weir with Rubber dam of live storage capacity 1.7 TMC is proposed on the Sileru river at 7.5 km upstream of the Donkarayi reservoir to store and reutilize the water in pump mode.

Operational pattern of Pumped Storage Plant has been kept in such a way that 1.7 TMC of water will be utilized for the proposed pumped storage project without affecting the existing commitments at Donkarayi Reservoir. The project is a pumped storage scheme and hence, no consumptive utilization of water is required for its operation. A surface power house with nine pumps cum turbine of 150 MW each will be provided.

The project installed capacity is 1350 MW. 9 units of 150 MW/169 MW each of Pump-Turbine mode Vertical shaft Francis type units would be installed. Design discharge of each unit is 183.5 m3/s and rated head of 92.58 m. The Project would be operated as peaking station for 8 hours per day for 350 days and deliver 3780 MU energy to the grid. The project will be operated in pump mode at 9 hours per day for 300 days utilizing the off-peak surplus power of 4131 MU available from the grid. The ratio of generation to pumping energy works out to 78.43%.

There will be no submergence of additional land for the pumped storage project as the existing reservoir and a weir with small pondage in the river course will be utilised. About 410 Ha land required is for the construction of Approach channel, Intake structure, HRT, Surge shafts, Pressure shafts, Surface power house, TRT, Tailrace channel, Adits, Switch yard, Roads, other related structures, Muck disposal areas etc. Out of 410 Ha, APGENCO land is 30 Ha, Forest land is 380 Ha. No private land is involved. Civil, Hydro-Mechanical and Electrical works as appropriate will be provided.

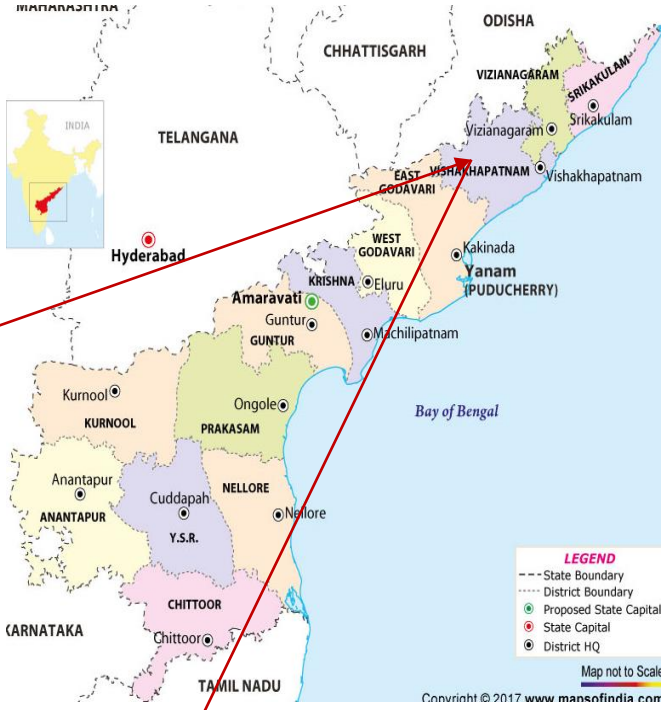
About 127.02 Lakh cum muck will be generated from the project activities and about 24.14 lakh cum will be used for aggregate. Balance 102.88 Lakh cum muck will be stored in the safe areas identified nearer to the project. About 260 Ha area is identified for the muck disposal areas.

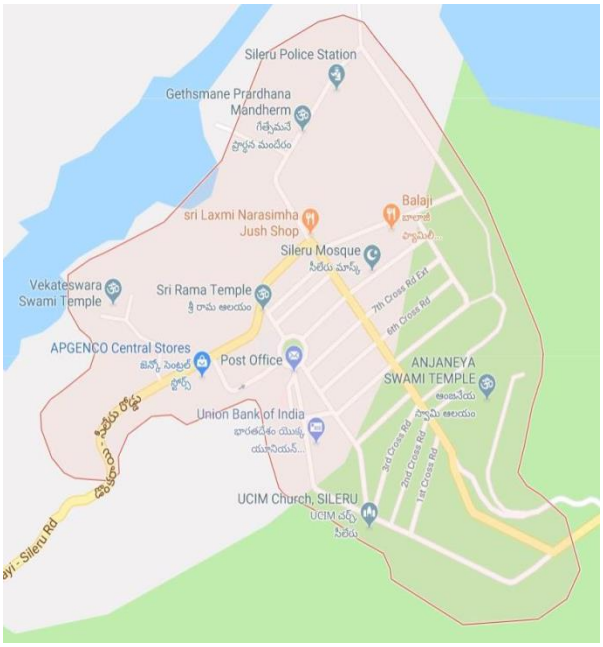
Project cost is Rs 11054.10 Cr. Levellised tariff for the project is Rs 5.49 per unit. Project construction period is 60 months. The project will provide temporary employment for 1000 people during construction stage, regular and contract employment for 500 people during operation phase. The project envisages grid stability, store energy to meet the peak power demand of the grid and encourage development of renewable energy sources.

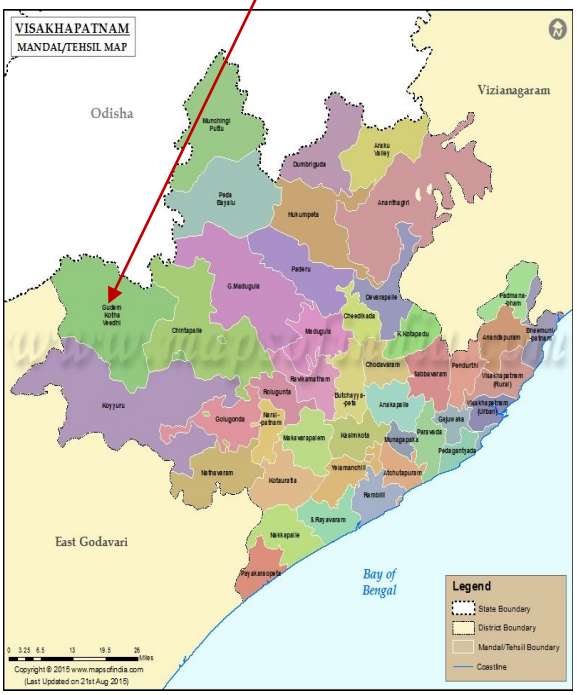
PROJECT LOCATION MAP

INDIA

Andhra Pradesh







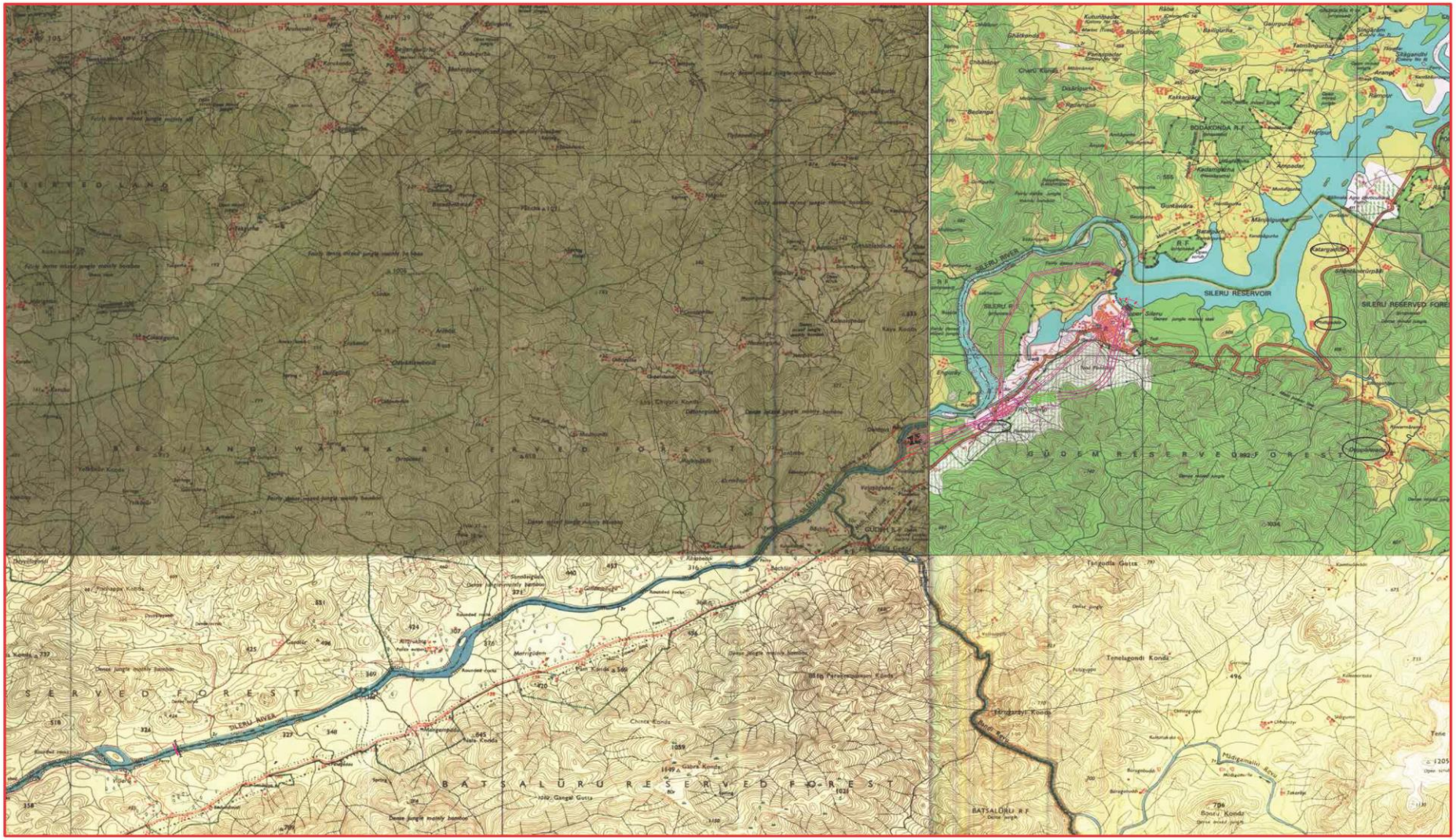
Upper Sileru Pumped Storage Site Visakhapatnam district

Annexure-2

Alternative sites and Comparative analysis of alternative sites for the proposed Pumped Storage Project (9x150 MW) at Upper Sileru

S.No	Features	Alternative Site – 1	Alternative Site – 2	Alternative Site-3
1.	Name of Village(s) and Mandal, District	Sileru, Gudem Kothaveedhi (M), Visakhapatnam	Sileru, GudemKothaveedhi (M), Visakhapatnam	Sileru, GudemKothaveedhi (M), Visakhapatnam
2.	Length of the Water Conductor System	5858 m	6139 m	7068 m
3.	Total extent of landrequired	390 ha	410 Ha	465 ha
4.	**Present use of land**			
a.	Forest Land involved	365 ha	380 ha	465 ha
b.	Govt/APGENCO Land	25 ha	30ha	-
c.	Private Patta land	---	---	---
5.	Displacement of population (Hamlets/villages)	Nil	Nil	Nil
6	Submergence area	-	-	-
7	Existence of. environmental sensitive areas such as Wildlife sanctuary/ National parks/Biosphere reserves/Elephant corridor etc	There are no such features with in 15 kms radius.	There are no such features with in 15 kms radius.	There are no such features with in 15 kms radius.

8	Environmental and Techno-economical feasibility and Remarks	The total length of the WCS is least but suitable rock cover is not available to support HRTs, TRTs and other structures. Hence not feasible.	Environmentally Feasible site. Adequate rock mass is available to support HRT, TRT other structures. Length of the WCS is almost same as Alt-1. This alternative is most suitable.	Highest Forest Land is involved. WCS is passing below the Tail Race Channel of the existing PH. Also suitable rock cover not available to support HRTs and TRTs. Length of the WCS is highest. Hence not feasible.

Annexure - 3

Upper Sileru Pumped Storage Project (Alternatives)