Chapter 4
Surveys and Investigations

4.1 General

The link Krishna (Srisailam) - Pennar envisages to transfer water from the existing Srisailam reservoir through the head regulator at Pothireddipadu into Srisailam Right Main Canal (SRMC). The water will then be released into an Escape Channel through the cross regulator at Banakacherla, which in turn joins the natural streams.

The surveys and investigations for the link Krishna (Srisailam) - Pennar project have been carried out to study the technical feasibility of the scheme.

4.2 Topographical Surveys

The topographical surveys conducted for the link alignment drawn on Topo sheet to a scale of 1:50,000 are described in the following sections:

4.2.1 River Surveys

Topographical surveys were done along the three natural streams, viz. Nippulavagu, Galeru and Kunderu. Longitudinal survey was carried out by taking the levels at every 30 m interval and cross sections were taken at every 500 m interval.

4.2.1.1 Escape Channel

The Escape Channel is an existing channel which takes off from Banakacherla cross regulator and meets the natural stream viz. Nippulavagu. The Escape Channel has a length of 3.56 km.

4.2.1.2 Nippulavagu River (RD 0 to 14.41 km)

The Escape Channel meets the Nippulavagu near Vempenta village. Nippulavagu runs in south and south-east direction before joining Galeru near Ayyavaripalli village. The survey has been carried out along the river Nippulavagu from the confluence point with Escape Channel till its joining the river Galeru at RD 14.41 km.

4.2.1.3 Galeru River (RD 14.41 to 38.50 km)

Galeru River runs predominantly in southern direction. Near Bhimavaram village, the river takes a turn towards west and joins Kunderu at RD 38.50 km. Santajutur anicut is located on Galeru at RD 22.375 km. At this point, Kurnool – Cuddapah canal (K.C. canal) crosses Galeru River and traverses on left of the river. Here, the waters of Galeru can be let into K.C. canal and vice versa, as the situation warrants. The river survey has been carried out along the river Galeru from the confluence point of Nippulavagu with Galeru River. The longitudinal survey along the river has been carried out for entire stretch of 24.09 km till it joins the river Kunderu at RD 38.50 km.

4.2.1.4 Kunderu River (RD 38.50 to 180.32 km)

In the initial reach Kunderu runs in south-west direction. Nandyal town is located on the left bank of the river at RD 42.44 km. Near Koilkuntla town at RD 84 km, it takes a turn towards south east. Rajoli anicut is located on Kunderu at RD 126.767 km. Here also, as at Santajutur anicut, waters of K.C. canal can be augmented from Kunderu and vice versa, depending upon the prevailing conditions. Near Kanaguduru, the river changes its direction towards south to south-east and continues in the same direction till it joins the river Pennar at RD 180.32 km. Alladupalli G&D site is located at RD 168.734 km. The longitudinal survey has been carried out for the entire stretch of 141.82 km along the river Kunderu from the confluence point of Galeru with Kunderu.

4.2.2 Reservoir Surveys

Since only the existing reservoir at Srisailam is to be utilised for the purpose of the transfer of water, no additional reservoir surveys have been carried out. No balancing reservoirs are proposed enroute of the link canal.

4.2.3 Head Works

The dam across the river Krishna at Srisailam is an existing structure completed in all respects. No modifications or alterations to the dam are contemplated for the purpose of the link scheme. Also, the link canal outfalls into the Pennar river through which the waters brought by the link canal flow further to the Somasila reservoir and hence no head work is proposed to be constructed across Pennar river.

4.2.4 Canal and Canal Structures

Since the transfer proposal is entirely through existing/ongoing canals and natural streams, no separate canals or Cross Drainage (CD) and Cross Masonry (CM) works are involved.

4.2.5 Mini Hydel Power Houses

It is proposed to provide 4 mini hydel power houses enroute of the natural streams, at the R.Ds mentioned in Table 4.1.

Table 4.1
Location of Mini hydel schemes proposed

RD in km	Name of stream
2.00	Nippulavagu
13.20	Nippulavagu
22.11	Galeru
127.76	Kunderu

The above power houses are proposed for utilising the available natural bed falls of the streams. It is proposed to provide controlling structures in such a way that the submergence is confined to the banks of the streams at these power houses. These power houses are proposed to be located by the side of the streams. No separate surveys have been carried out at present in this regard. More details regarding power houses are given in the Chapter on "Power".

4.2.6 Command Area Survey

The entire area in the vicinity of the link is served/or proposed to be served by Kurnool - Cuddapah Canal, Srisailam Right Bank Canal and Telugu Ganga Canal. Hence no irrigation enroute is proposed and therefore no command area surveys have been carried out.

4.3 Plant and Colony Layout

As the transfer of water in the link system is proposed through the existing/ongoing canals and natural streams, massive construction works are not required. Hence, the development of plant and colony layout is not considered in the present study. The same will be incorporated at the DPR stage of the project.

4.4 Geological and Foundation Investigation

Krishna (Srisailam) - Pennar link pass through existing approach channel, ongoing Srisailam right main canal and natural streams of Nippulavagu, Galeru and Kunderu and no major construction work is involved except embankment in the initial reaches to pass additional discharge. Even for the mini - hydel power houses enroute the link, detailed geological and foundation investigations may not be required at FR stage. Depending on the necessity, the foundation investigations can be carried out at the stage of preparation of Detailed Project Report.

4.5 Hydrological and Meteorological Investigation

There is one guage and discharge site at Alladupalli village maintained by CWC on the river Kunderu, which was established in the year 1985. The G&D site lies in Pennar basin.

4.6 Construction Material Investigations

The construction works involved in this project are installation of mini power houses enroute and construction of flood embankments. All the required construction materials for the mini power houses and for the embankments are available locally. Granite stone is available in Adoni, Alur and Yemmiganur mandals of Kurnool district. Sand can be obtained from the river beds. Cement can be obtained from the Panyam Cement Factory, which is located near by in Kurnool district itself.

4.7 Archaeological Surveys

No area is likely to be submerged, by the flow through this link or by the accumulation of water at hydel power structures. And hence no historical monuments/structures of Archaeological importance would be submerged. Flood banks are proposed to pass the additional link canal discharge through the natural streams and there is no possibility of flooding of surrounding areas.

4.8 Communication Surveys

All the important structures of Krishna (Srisailam) - Pennar link are approachable through pucca/kacha roads. As the link alignment runs

parallel to Atmakur - Nandyal road upto Nandyal bridge, the entire stretch is easily accessible. Most of the construction work of providing flood banks pertains to this stretch of the link. Even downstream of Nandyal bridge, the Kunderu river is approachable from either of the banks. The main towns viz. Kurnool, Nandyal, Kamalapuram and Cuddapah which are located close to the link are also well connected by the South Central Railway.

4.9 Submergence under Reservoirs

Since, no new reservoirs is proposed for the purpose of diversion, there is no possibility of any submergence under this link.

4.10 Surveys for Mini Hydel Schemes

No separate survey work has been done for mini hydel schemes. 4 power houses are proposed along the conveyance system by utilising the available natural bed falls at various locations of the streams. The surveys will be carried out at DPR stage.