

## Chapter 13 Estimates

### 13.1 General

The estimates for the project are prepared based on the Working Group Report "Guidelines for preparation of detailed project reports of irrigation and multipurpose projects" of Govt. of India, Ministry of Irrigation (now Ministry of Water Resources) 1980.

The cost of the Nagarjunasagar – Somasila link project is estimated under three units. The cost of 'head works' is given in **Unit-I**. The cost of 'conveyance system' is given under **Unit-II**. The cost of 'power component' is given under **Unit-III**. The total cost of the link project is estimated to be Rs. 6321 crores. The cost estimates have been prepared on the basis of the latest available 1998-99 schedule of rates.

#### 13.1.1 Classification of minor heads/sub-heads

The estimated cost of the works under Nagarjunasagar – Somasila link project has been divided into minor heads of direct and indirect charges and further classified into various items as given below.

Sl.No	Items	Rs (Lakh)
A	Direct charges	
I	Works	560398
II	Establishment	62110
III	Tools and plants (Ordinary)	5472
IV	Suspense	Nil
V	Receipts & Recoveries	(-) 2253
	Sub-Total	625727
B	Indirect charges	
I	Capitalised value of abatement of land revenue	722
II	Audit and Account Charges	5605
	Sub-Total	6327
	Total Cost of the Project	632054

### 13.2 Unit I – Head works

The total cost of head works is estimated to be Rs. 6438 lakh.

### 13.2.1 Classification of minor heads/sub-heads

The estimated cost of **Unit-I** has been divided into minor heads of direct and indirect charges and further classified as various items as given below.

Sl.No	Items	Rs (Lakh)
A	Direct charges	
I	Works	5686
II	Establishment	682
III	Tools and plants (Ordinary)	57
IV	Suspense	Nil
V	Receipts & Recoveries	(-) 44
	Sub-Total	6381
B	Indirect charges	
I	Capitalised value of abatement of land revenue	Nil
II	Audit and Account Charges	57
	Sub-Total	57
	Total Cost of the head works	6438

### 13.2.2 A. Direct charges

#### I – Works

**'A' Preliminaries:** An amount of Rs. 114 lakh is provided under this sub head. This is worked out at 2% on cost of I-Works (i.e. Rs. 5686). This sub-head covers the expenditure on investigations to be conducted during execution, surveys, design studies, field tests etc.

**'B' Land :** No provision is made under this sub-head under **Unit-I** as the land to be acquired for the minor items of new construction is minimal. However costs of land acquisition and related items as a whole i.e. for Unit-I, Unit-II and Unit-III are worked out and included under Unit-II.

**C' Works:** Provisions of Rs. 4300 lakh and Rs. 1050 lakh are made for construction of non-overflow section of the dam, including modifications to the existing dam for installing penstocks etc., and head regulator respectively, totaling to Rs. 5350 lakh. As the Nagarjunasagar – Somasila link canal is proposed to take off from the existing Nagarjunasagar at the same off-take level as that of NSRBC, a powerhouse is proposed on the link canal similar to the existing one on

NSRBC. The effective installed capacity of the powerhouse would be 90 MW. Cost of the power dam works out to Rs. 4300 lakh.

Cost of off take regulator is computed considering a rate of Rs. 2.15 lakh per cumec of the design discharge, based on the cost estimates prepared by the Govt. of Andhra Pradesh in case of Pothireddipadu head regulator of the Srisaillam Project. The cost of proposed head regulator is estimated as Rs. 1050 lakh.

**'K' Buildings:** No provision is made under this sub-head under **Unit -I**. The existing buildings at the Nagarjunasagar dam are proposed to be made use of to the extent possible for locating the office. However, a few buildings may have to be newly constructed, depending on the necessity. Cost of the buildings and related items as a whole i.e. for Unit-I, Unit-II and Unit-III is worked out and included under Unit-II.

**'M' Plantation:** No provision is made under this sub-head under **Unit-I** as only minimum plantation may be required additionally. The expenditure on the plantation being minor, the cost of plantation and related items as a whole i.e. for Unit-I, Unit-II and Unit-III is worked out and included under Unit-II.

**'O' Miscellaneous:** An amount of Rs. 95 lakh is provided under this sub-head.

**'P' Maintenance:** An amount of Rs. 28 lakh is provided under this sub-head as lump sum for maintenance of all the head works during construction period. This works out to about 0.5% of the cost of I – works.

**'Q' Special Tools and Plants:** An amount of Rs. 58 lakh is provided under this sub-head to cover cost of special Tools and Plants like excavators, concrete mixers, water pumps, etc. at nearly 5% of the provision for these items under **Unit – II**.

**'R' Communications:** A provision of Rs. 27 lakh is made under this sub-head towards laying of 6 km of temporary roads for connecting important work spots with existing roads.

**'X' Environment and ecology:** No provision is kept under this sub-head as the reservoir is already existing and as the additional construction of the proposed power dam and head regulator are not likely to cause any significant environmental or ecological impacts.

**'Y' Losses on stock and unforeseen:** A provision of Rs. 14 lakh at 0.25% of I-works less 'A' Preliminaries, 'B' Land and 'Q' Special T & P is made under this sub-head.

## **II-Establishment**

An amount of Rs. 682 lakh is provided under this sub-head for establishment including leave and pensionary charges at 12% on I-Works less B-Land.

## **III-Tools and Plants (Ordinary)**

A sum of Rs. 57 lakh at 1% of the cost of I-Works is provided under this sub-head to cover the cost of survey instruments, camp equipment, office furniture and equipment and other small tools.

**IV – Suspense:** No provision is kept under this sub-head.

## **V - Receipts and Recoveries**

An estimated deduction by way of sale of special T & P at 75% recovery of the provision under Q-Special Tools and Plants is provided as Rs. 44 lakh.

### **13.2.3 B. Indirect Charges**

#### **Audit and Account charges**

A provision of Rs. 57 lakh is made under this head at about 1% of the cost of I - Works to cover the audit and account charges.

### **13.3 Unit II - Conveyance System**

Total cost of conveyance system consisting of link canal, branch canals, distributaries, field channels etc. including the structures works out to Rs. 5856 crore.

#### **13.3.1 Classification of minor heads/sub-heads**

**Unit-II** has been divided into the following minor heads classified as direct and indirect charges:

Sl.No	Items	Rs (Lakh)
A	Direct charges	
I	Works	517455
II	Establishment	59296
III	Tools and plants (Ordinary)	5175
IV	Suspense	Nil
V	Receipts & Recoveries	(-) 2200
	Sub-Total	579726
B	Indirect charges	
I	Capitalised value of abatement of land revenue	722
II	Audit and Account Charges	5175
	Sub-Total	5897
	Total Cost of conveyance system	585623

### 13.3.2 A. Direct Charges

#### I - Works

**'A' Preliminaries:** The provision made under this sub-head is Rs. 10349 lakh. The percentage worked out is 2% on cost of I-Works (i.e Rs. 517455 lakh). This sub-head covers the expenditure on investigations to be conducted during execution, surveys, design studies, field tests etc.

**'B' Land:** Provision made under this sub-head covers the cost of land acquisition for link canal, branch canals, distributaries, field channels, power house and camp colonies (i.e. land to be acquired under Units-I, II and III). The cost of land acquisition and related items works out to Rs. 23319 lakh.

**'D' Regulators:** A provision of Rs. 3091 lakh has been made for construction of cross regulators.

**'F' Cross drainage works:** The cross drainage works are (1) aqueducts/canal syphons, (2) under tunnels, and (3) super passages. Cost for these structures is deduced from cost curves. Total cost of cross drainage works is estimated to be Rs. 27612 lakh.

**Aqueducts:** The total cost of aqueducts/canal syphons comes to Rs. 13334 lakh.

**Under tunnels:** The total cost of under tunnels works out to Rs. 9927 lakh.

**Super passages:** The total cost of super passages comes to Rs. 4351 lakh.

**'G' Bridges:** The total cost of bridges works out to Rs. 3685 lakh.

**Single lane bridges:** The cost under this sub-head works out to Rs. 2153 lakh.

**Double lane bridges:** The cost of double lane bridges works out to Rs. 1205 lakh.

**Railway bridges:** The cost of railway bridges works out to Rs. 305 lakh.

**Foot bridges:** The cost of foot bridges works out to Rs. 22 lakh.

**'H' Escapes:** The total cost of escapes comes to Rs. 874 lakh .

**'K' Buildings:** The buildings required under **Units-I, II and III** were considered under this sub-head. These are classified broadly as permanent and temporary buildings. These are further classified as residential and non-residential buildings. A sum of Rs. 4319 lakh is provided for buildings.

**'L' Earthwork and lining:** Total cost of earthwork and lining for the link canal is estimated to be Rs. 401377 lakh.

**'M' Plantation:** The plantation required under **Units-I, II and III** has been considered under this sub-head. The cost of the plantation works out to Rs. 459 lakh.

**'N' Tanks and reservoirs:** A sum of Rs. 100 lakh is provided for improving the existing tanks in the command area.

**'O' Miscellaneous:** The total provision made under this sub-head is Rs. 1116 lakh.

**'P' Maintenance:** A provision of Rs. 10637 lakh is made under this sub-head for the maintenance of all works during construction period.

**'Q' Special Tools and Plants:** A provision of Rs. 1166 lakh is made under this sub-head. The net amount charged to special tools and

plants is computed after deducting hire charges at 75% on the capital cost of machinery.

**'R' Communications:** A lump sum provision of Rs. 221 lakh is made under this sub-head for connecting important work spots with existing roads, roads to quarries, temporary diversion etc.

**'U' Distributaries, minors and sub-minors:** A provision of Rs. 16642 lakh is made under this sub-head.

**'V' Water courses/Field channels:** A provision of Rs. 4965 lakh is made under this sub-head for providing field channels in the command area.

**'W' Drainage:** A provision of Rs. 5703 lakh is made under this sub-head for drainage system in command area.

**'X' Environment and ecology:** A provision of Rs. 613 lakh is made towards afforestation, restoration of land in construction areas by filling, grading etc. to prevent further erosion and for protective measures as may be necessary.

**'Y' Losses on stock and unforeseen:** A provision of Rs. 1207 lakh at 0.25% of I-works less 'A' Preliminaries, 'B' Land and 'Q' Special T & P is made under this sub-head in the estimate.

## **II-Establishment**

An amount of Rs. 59296 lakh is made under this sub-head for establishment including leave and pensionery charges at 12% on I-works less B-Land.

## **III-Tools and Plants (Ordinary)**

A sum of Rs. 5175 lakh is made under this sub-head to cover the cost of survey instruments, camp equipment, office furniture and equipment and other small tools which works out to about 1% of the cost of I-Works.

**IV- Suspense:** No provision is kept under this sub-head.

## V - Receipts and Recoveries

An estimated deduction by way of resale or transfer of temporary buildings and sale of special T & P and miscellaneous receipts from rent charges of buildings is provided as Rs. 2200 lakh.

### 13.3.3 B. Indirect Charges

#### a) Audit and Account Charges

A provision of Rs. 5175 lakh is made under this head at about 1% of the cost of I-Works to cover the establishment charges of the Accounts staff.

#### b) Abatement of Land Revenue

A provision of Rs. 722 lakh at 5% of the land cost is provided towards abatement of land revenue due to land acquisition for canals and camps.

## 13.4 Unit III – Power component

A power block with four penstocks at dam toe powerhouse is proposed on the right side of the existing similar structure on NSRBC. The water after power generation would be guided to the link canal through 130 m long tailrace channel. Suitable modifications to the right embankment of Nagarjunasagar dam are proposed to be carried out for accommodating the proposed head regulator, power block with penstocks etc., leading to the proposed power house on the link canal. The cost of non-overflow section for power block is already considered under Unit – I. The total cost of powerhouse works out to Rs. 39993 lakh and is considered under **Unit - III**.

### 13.4.1 Classification of minor heads/sub-heads

**Unit-III** has been divided into minor heads classified as direct and indirect charges.



Sl.No	Items	Rs (Lakh)
A	Direct charges	
I	Works	37257
II	Establishment	2132
III	Tools and plants (Ordinary)	240
IV	Suspense	Nil
V	Receipts & Recoveries	(-) 9
	Sub-Total	39620
B	Indirect charges	
I	Capitalised value of abatement of land revenue	Nil
II	Audit and Account Charges	373
	Sub-Total	373
	Total Cost of the power component	39993

### 13.4.2 A. Direct Charges

#### I - Works

**'A' Preliminaries:** The provision made under this sub-head is Rs. 745 lakh. The percentage worked out is 2% on cost of I-Works (i.e. Rs. 37257 lakh). This sub-head covers the expenditure on investigations to be conducted during execution, surveys, design studies, field tests etc.

**'B' Land:** Requirement of land for the powerhouse purpose is included under **Unit - II**. As such no provision is kept under this sub-head in **Unit- III**.

**'G' Bridges:** A provision of Rs. 33 lakh is made under this sub-head for bridges

**'J' Power plant civil works:** Cost of civil works for the power plant works out to Rs. 9466 lakh.

**'O' Miscellaneous:** The total provision made under this sub-head is Rs. 284 lakh as estimated based on the Polavaram power house duly considering the escalation to bring the cost to the 1998-99 level.

**P' Maintenance:** A provision of Rs. 124 lakh is made under this sub-head for the maintenance of all works during construction period which is estimated again based on the Polavaram power house and duly considering the escalation.

**'Q' Special Tools and Plants:** A provision of Rs. 12 lakh is made under this sub-head which is estimated with reference to the Polavaram power house duly considering the escalation.

**'R' Communications:** A provision of Rs. 16 lakh is made under this sub-head being the estimated cost of 6 m wide road of 1 km length for connecting the power house with the existing roads.

**'S' Power plant electrical works:** The cost of power plant electrical works is estimated to be Rs. 26486 lakh.

**'Y' Losses on stock and unforeseen:** A provision of Rs. 91 lakh at 0.25% of I-works less 'A' Preliminaries, 'B' Land and 'Q' Special T & P is made under this sub-head in the estimate.

## **II-Establishment**

An amount of Rs. 2132 lakh is provided under this sub-head considering 10% of the cost of civil works and 4% of the electrical works under I-works.

## **III-Tools and Plants (Ordinary)**

A sum of Rs. 240 lakh is provided under this sub-head to cover the cost of survey instruments, camp equipment, office furniture and equipment and other small tools which works out to about 1% of the cost of civil works and 0.25% of the cost of electrical works under I-works.

**IV- Suspense:** No provision is kept under this sub-head.

## **V - Receipts and Recoveries**

An estimated deduction by way of sale of special T & P is provided as Rs. 9 lakh considering 75% recovery of the provision under Q-Special Tools and Plants.

### **13.4.3 B. Indirect Charges**

#### **Audit and account charges**

A provision of Rs. 373 lakh is made under this sub-head at 1% of the cost of I-Works to cover the establishment charges of the Accounts staff.