

Chapter 13

Cost Estimates

13.0 General

The Bedti-Varadalinkproject envisages construction of following components

1. Bedti (Pattanadahalla & Shalamalahalla) - Varada link
2. Bedti (Suremane) - Dharma - Varada link

The cost estimates of various components listed above are prepared in accordance with the “Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose Projects - 2010” published by the then Union Ministry of Water Resources (Ministry of Jal Shakti, Department of Water Resources)so as toestablish the economic viability of the link project.

The quantities of various material and works involved in the various components have been worked out based on the engineering drawings. The cost estimates are prepared based on 2020-21 price level. The schedule of rates of Govt of Karnataka for the year 2019-20 isapplied followed for 2020-21 also, since the SoR for 2020-21 is not released. The rates of those items for which rate is not available in the said schedule of rates, the same are taken from various circulated DPR of NWDAwith appropriate cost escalation to the year 2020-21.

13.1 Classification of units

The cost estimate of Bedti-Varada link project has been broadly grouped into following three units each separately under Link-I and Link-II.

Unit I Head works: Includes the cost of Pattanadahalla weir, Shalamalahalla weir,energy dissipation works, outlets, intake structures etc.,

under Link-I and Suremane barrage, energy dissipation works, outlets, intake structures etc., under Link-II

Unit II Conveyancesystem:Includes the cost of the approach channel, tunnel, canal, raising mains etc., pertaining to Pattanadahalla and Shalamalahalla diversion works under Link-I and those pertaining to Suremane diversion works under Link-II.

Unit III Lifting arrangements: Includes cost of pump houses, electrical and mechanical equipment for lifting separately under Link-I and Link-II.

The total cost of link project has been worked out as **Rs.281762lakhat** 2020-21 price level, which includes the cost of implementation of Environmental Management Plan (EMP), Socio-economic Survey. The abstract of cost of the project is given in **Table 13.1**and the details arefurnished in **Annexure 13.1**.

Table 13.1
Abstract of project cost

(Rs. Lakh)

Sl. No.	Unit	Link-I	Link-II	Total
1	Unit I : Head works	4894	10206	15100
2	Unit II:Conveyance system	55972	100183	156155
3	Unit III:Lifting arrangements	33760	76747	110507
	Total	94626	187136	281762

The link wise abstract of cost for Unit-I: Head works for both Link-I and Link-II is furnished at **Annexure 13.1.1**. Similarly the link wise abstract of cost for Unit-II: Conveyance system and Unit-III: lifting arrangements is

furnished in **Annexure 13.1.2** and **13.1.3** respectively.

13.2 Estimate for Link-I

The head-wise details for Link-I are described in the following paragraphs.

13.2.1 Unit I: Head works

Includes the cost of the weirs at Pattanadahalla, Shalamalahalla, energy dissipating arrangements at the weirs etc., The abstract of Unit I: Headworks which works out to **Rs.4894 lakhs**, for Link-I is given in **Annexure 13.2.1**.

Direct charges

The direct charges include the following sub-heads:

- I- Works;
- II- Establishment;
- III- Tools & plants;
- IV- Suspense; and
- V- Receipts & recoveries.

The details are described below

I Works

A: Preliminary

The provision under this sub-head has been kept as lump-sum amount @ of 2% of I-Works, which works out to **Rs.90 lakh**.

B: Land

The requirement of land for head works under Link-I (other than forest land) is assessed to be 12.45 ha. Adopting 4 times the market rate(including solatium charges), a provision of **Rs. 643 lakhs** made under this head. The details are given at **Annexure 13.2.1.1**.

C: Works

Provision is made to cover the cost of various components for construction of Pattanadahalla and Shalamalahalla weirs.

The total provision under this head has been worked out to **Rs. 2679lakh**. The details are given in **Annexure 13.2.1.2, 13.2.1.2.1 and 13.2.1.2.2**.

K: Buildings

A provision of 5% of cost of I:works is considered towards cost of buildings. The cost of permanent buildings is considered as 40% of total provision made for buildings and the remaining is considered for temporary buildings. Accordingly, the cost of permanent buildings is worked out as **Rs.90 lakh** and that for temporary buildings is worked out as **Rs. 134 lakh**.

M: Plantation

The provision for cost of plantation in the colony areas, parks, along the approach canal, and approach roads have been considered, which works out to **Rs. 125lakh**.The details under this sub-head are given in **Annexure 13.2.1.3**.

O: Miscellaneous

Provisions have been at 4% of I-Works under this sub head to cover the cost of the following works

- i. Capital cost of electrification; water supply, purification and distribution system, sewage disposal; medical equipment, firefighting equipment, furniture and crockery for inspection bungalows and circuit houses; recreation facilities; initial camp equipment for hospital, primary & secondary schools, community centers etc.
- ii. R & M of above equipment/infrastructural facilities etc., and inspection vehicles.
- iii. Other miscellaneous items such as inaugural function/ foundation stone laying ceremony, compensation to work men, visit of VVIPs/ VIPs and other dignitaries, documentation of technical records and project history including photographic records; security arrangements for dam sites, flood lighting, data processing machines etc.,

Total provision under this sub-head is about **Rs. 179 lakh**.

P: Maintenance

Provision has been made under this sub-head to cover the cost of maintenance of all works during the construction period. A provision of 1 % of the cost of I works less A - Preliminary, B- Land, O - Miscellaneous, M- Plantation, Q - Special T&P, X - Environment & ecology, and Y - Loss on stock has been made, which works out to **Rs. 31 lakh**.

Q: Special Tools & Plants

No provision kept under this head as the work is proposed to be executed through contractors.

R: Communication

Provision has been kept to cover the cost of approach roads to the diversion sites, quarry roads, temporary roads in the work area, widening of existing roads in the near vicinity of the project area etc. The total provision under this sub-head is **Rs. 124 lakh**. The details are given in **Annexure 13.2.1.4**.

X: Environment and ecology

Provisions under this sub head have been made towards the cost of extensive management measures to sustain environment and ecology such as compensatory afforestation, restoration of quarry sites, provision for free fuel to labourers, restoration and landscaping of project sites, Public Health management. The total provision under this sub-head works out to **Rs. 380lakh**. The details are given in **Annexure 13.2.1.5**.

Y: Losses on stock and unforeseen items

Provision under this sub- head has been made @ 0.25% of the cost of I- works less A-preliminary, B-land, O-miscellaneous, M-plantation, P-Maintenance, Q-special Tools & Plants, and X-Environment and ecology, is made under this sub-head. The total provision under this sub-head works out to **Rs.8lakh**.

II Establishment

Bedti-Varada link project is planned to be completed in a period of 5 years. Provision towards establishment charges has been made @ 10 % of I-Works excluding B-land. The total provision under this sub-head works out to **Rs. 384 lakh**.

III Ordinary Tools & Plant

Provision has been made under this head @ 1% of I-Works towards ordinary Tools & Plants to cover the cost of survey instruments, camp equipment and other small tools & plants. This provision is distinct from the Q- special Tools & Plants. The total provision under this sub-head works out to **Rs. 45lakh**.

IV Suspense

It is assumed that all the outstanding suspense would be cleared by adjustment to appropriate heads on completion of the project. As such no provision has been kept under this head.

V Receipt& Recoveries on capital account

Under this head, the estimated recoveries by way of resale or transfer of temporary buildings at 15% cost of temporary buildings and 83% of cost of permanent buildings towards receipts from rents is considered as receipts and recoveries. The same is worked out to be **Rs.95lakh**.

Indirect Charges

Provisions for abatement of cost of land revenue @ 5% of cost of land and Audit and account charges @ 1% of I-Works have been kept under 'Indirect charges'. The total indirect charges work out to **Rs. 77 lakh**.

Thus, the total cost of Head works (Unit-I) works out to **Rs 4894 lakh** for Link-I.

13.2.2 Unit II:Conveyance system (Canals, raising mains, tunnels)

Unit II under Link-I includes the cost of the following components/structures of the project:

- i) 2.13 km long open cut canal.
- ii) Two tunnels of total length 13.20 km

iii) One forebay

iv) Raising main of 10.15 km length.

Total cost of Unit II is estimated as **Rs. 55972lakh**. Details are given in **Annexure 13.2.2**. The sub-head wise details are given below.

Direct Charges

The direct charges include the following sub- heads:

I- Works;

II- Establishment;

III- Tools & Plants;

IV- Suspense and

V- Receipts & recoveries.

The details are described below:

I-Works

A- Preliminary

A lump-sum provision @ 2% of I-Works has been considered under this sub-head, which works out to **Rs. 1020lakht** to cover the expenditure to be incurred on various survey & investigation works, collection and procurement of data/ maps /remote sensing data, cost of consultancy works through various expert agencies, Environmental Impact assessment etc., for preparation of the Detailed Project Report of Bedti-Varada link project.

B- Land

The land required to be acquired (other than forest land) for laying raising mains, pump houses, for construction of the project components, stock yards, working area and approach roads etc., is worked out to be 17.33 ha for Link-I. 4 times the marked rate is considered for the private land

including solatium charges. The total provision under this minor head has been worked out to **Rs.964 lakh**. The details are given in **Annexure 13.2.2.1**.

C- Works

Under this sub-head the provisions have been made to cover the cost of canal, tunnel and raising mains. The quantities and the cost of the various components have been evaluated as per the design drawings. The total provision under this minor head has been worked out to **Rs. 42456lakh** for Link-I. The details are given in **Annexure 13.2.2.2 and 13.2.2.2.1 to 13.2.2.2.5**.

K- Buildings

The provision for the Temporary and Permanent buildings is considered at 5% of cost of I-works, which works out to **Rs. 2549lakh**. The cost of temporary buildings is taken as 40% of the total cost of buildings.

L- Earthwork

The earth work has been considered under the head C-works in respect of respective conveyance system viz., canal, tunnel and raising main.

M- Plantation

The provision for cost of plantation along the conveyance system and pump houses have been considered, which works out to **Rs. 174lakh**. The details are given in **Annexure 13.2.2.3**.

O- Miscellaneous

A provision of **Rs.2039 lakh** is kept under this sub-head, towards cost of electrification, water supply, sewage disposal etc., and maintenance of

these services, expenditure due to visiting dignitaries, inaugural ceremonies, medical assistance etc.

P- Maintenance

Provision has been made under this sub-head at 1% of I- works (excluding Preliminaries, Land, Miscellaneous, Plantation, Special T & P, Environment & Ecology, Loss on stock) which works out to **Rs. 468lakh.**

Q- Special Tools & Plants

No provision kept under this head as the work is proposed to be executed through contractors.

R- Communication

Under this sub-head necessary provision has been kept to cover the cost of quarry roads, temporary roads in the work area, widening of existing roads in the near vicinity of the project area etc., The total provision kept under this sub head is **Rs. 223lakh.** The details are given in **Annexure 13.2.2.4.**

U- Distributaries and minors & V- Water courses and field channels

Provision under this sub head not kept because the command area is existing one.

W- Drainage & X- Environment and Ecology

Provisions under this sub head have been made toward the cost of improving existing drainage and extensive management measures to sustain environment and ecology, compensatory afforestation, soil erosion control and water conservation measures, restoration of quarry sites, provision for free fuel to labour, Bio-diversity management plan, Public Health management and implementation of Environmental Management Plan and

Environmental Monitoring Programme etc., The total provision under this sub-head works out to **Rs. 964 lakh**. The details are given in **Annexure 13.2.2.5**.

Y. Losses on Stock and Unforeseen Items

Provision under this sub- head has been made @ 0.25% of the cost of I- works less A- preliminary, B- land, O- miscellaneous, M- plantation, P- Maintenance, Q- special Tools & Plants, and X - Environment and ecology. The total provision under this sub-head works out to **Rs.121lakh**.

The total cost of I-works after considering all the above items works out to **Rs. 50978lakh**.

II-Establishment

Bedti-Varada link project is planned to be completed in a period of 5 years. Provision towards establishment charges has been made @ 10 % of I- Works excluding B- land. The total provision under this sub-head works out to **Rs. 5001lakh**.

III-Ordinary Tools & Plant

Provision has been made under this head @ 1% of I-Works towards ordinary Tools & Plants to cover the cost of survey instruments, camp equipment and other small tools & plants. This provision is distinct from the Q- special Tools & Plants. The total provision under this sub-head works out to **Rs. 510lakh**.

IV- Suspense

It is assumed that all the outstanding suspense would be cleared by adjustment to appropriate heads on completion of the project. As such no provision has been kept under this head.

V- Receipt & Recoveries on capital account

Under this head estimated recoveries by way of resale or transfer of temporary buildings is considered at 15% of the cost of temporary buildings. Receipts from rents from buildings are considered at 83% of cost of permanent buildings. Total provision under this sub-head works out to **Rs. 1074 lakh.**

Indirect Charges

Provisions for abatement of cost of land revenue @ 5% of cost of land and Audit and account charges @ 1% of I-Works have been kept under 'Indirect charges'. The total indirect charges work out to **Rs. 558lakh.**

Thus, the total cost of Conveyance system(Unit-II) works out to **Rs55972 lakh.**

13.2.3 Unit III: Lifting arrangements

Direct charges

I- Works

Cost of civil works in respect of pump house and delivery cistern is considered along with Electrical and Mechanical works under the head J & S, which works out to **Rs.30957 lakh.**

A - Preliminaries

Under this head provision at 2% of cost of I -Works is kept which works out to **Rs.640 lakh**

P – Maintenance

A provision equal to 1% of cost of I-Works less A-preliminaries and Y loss on stock is kept under this sub-head which works out to **Rs. 320 lakhs**.

Y - Loss on stock

A provision of 0.25 % of I-Works less A-Preliminaries and P – Maintenance which works out to **Rs. 80 lakhs** kept under this head.

Thus, the total cost of I-Works under Unit-III Lifting arrangements for Link-I is assessed to be **Rs.31997 lakh**.

Establishment

A provision equal to 4.15% (weighted average basis) of civil and electrical works, which works out to **Rs. 1285 lakh** is kept for establishment.

Ordinary T & P

0.51% of cost of civil and E & M works which works out to **Rs.158 lakhs** considered towards cost of Ordinary T & P.

Indirect charges

Audit and account charges at 1% of I-Works, which works out to **Rs.320 lakhs** kept under indirect charges.

Thus, the total cost of direct and indirect charges for lifting arrangements is worked out to be **Rs. 33760 lakh** for Link-I at 2020-21 price level. The abstract of cost and the details of cost estimation of J&S -

Pumphouse, civil and electrical works for the lifting arrangement are given in **Annexure 13.2.3 and 13.2.3.1** respectively.

Cost of power required for lifting of water

Total power required to lift the water from Shalamalahallain single stage is 137.9 MU. Considering the cost of power at Rs. 1.80 per unit as per tariff schedule of Karnataka state for lift irrigation projects owned by the Government, the total cost of power for pumping is worked out to be **Rs. 1973 lakh.**

13.2.4 Onfarm development

The target command area is part of the existing command area under the Tungabhadra left bank canal, hence no provision is made under onfarm development.

13.2.5 Estimated cost of Link -I

The total estimated cost of Link-I of Bedti-Varada link project works out to **Rs.94626 lakhs** at 2020-21 price level as shown below.

		(Rs.lakh)
Unit – I	Head works	4894
Unit – II	Conveyance system	55972
Unit – III	Lifting Arrangements	33760
Total		94626

13.3 Estimate for Link-II

The head-wise details for Link-II are described in the following paragraphs.

13.3.1 Unit I: Head works

Includes the cost of the barrage at Suremane, energy dissipating arrangements etc., The abstract of Unit I: Headworks which works out to **Rs.10206lakh**, for Link-II is given in **Annexure 13.3.1**.

Direct charges

The direct charges include the following sub- heads:

- I- Works;
- II- Establishment;
- III- Tools & plants;
- IV- Suspense; and
- V- Receipts & recoveries.

The details are described below

I -Works

A: Preliminary

The provision under this sub - head has been kept a lump-sum amount @ of 2% of I-Works, which works out to **Rs.186lakh**.

B: Land

The requirement of land for head works under Link-II (other than forest land) is assessed to be nil. Details are given at **Annexure 13.3.1.1**. As such no provision is needed to be made under this head for Link-II (Head works).

C: Works

Provision is made to cover the cost of various components for construction of Suremane barrage.

The total provision under this head has been worked out to **Rs. 7788lakh**. The details are given in **Annexure 13.3.1.2**.

K: Buildings

A provision of 5% of cost of I: works is considered towards cost of buildings. The cost of permanent buildings is considered as 40% of total provision made for buildings and the remaining is considered for temporary buildings. Accordingly, the cost of permanent buildings is worked out as **Rs. 186lakh** and that for temporary buildings is worked out as **Rs.278 lakh**.

M: Plantation

The provision for cost of plantation in the colony areas, parks, along the approach canal, and approach roads have been considered, which works out to **Rs. 88lakh**. The details under this sub-head are given in **Annexure 13.3.1.3**.

O: Miscellaneous

Provisions have been at 4% of I-Works under this sub head to cover the cost of the following works

- iv. Capital cost of electrification; water supply, purification and distribution system; sewage disposal; medical equipment, firefighting equipment, furniture and crockery for inspection bungalows and circuit houses; recreation facilities; initial camp equipment for hospital, primary & secondary schools, community centers etc.

- v. R & M of above equipment/infrastructural facilities etc., and inspection vehicles.
- vi. Other miscellaneous items such as inaugural function/ foundation stone laying ceremony, compensation to work men, visit of VVIPs/ VIPs and other dignitaries, documentation of technical records and project history including photographic records; security arrangements for barrage site, flood lighting, data processing machines etc.,

Total provision under this sub-head is about **Rs. 371lakh.**

P: Maintenance

Provision has been made under this sub-head to cover the cost of maintenance of all works during the construction period. A provision of 1 % of the cost of I works less A - Preliminary, B- Land, O - Miscellaneous, M- Plantation, Q - Special T&P, X - Environment & ecology, and Y - Loss on stock has been made, which works out to **Rs. 84 lakh.**

Q: Special Tools & Plants

No provision kept under this head as the work is proposed to be executed through contractors.

R: Communication

Provision has been kept to cover the cost of approach roads to the diversion sites, quarry roads, temporary roads in the work area, widening of existing roads in the near vicinity of the project area etc. The total provision under this sub-head is **Rs.74lakhs.** The details are given in **Annexure13.3.1.4.**

X: Environment and ecology

Provisions under this sub head have been made towards the cost of extensive management measures to sustain environment and ecology such as compensatory afforestation, restoration of quarry sites, provision for free fuel to labourers, restoration and landscaping of project sites, Public Health management. The total provision under this sub-head works out to **Rs. 211lakh**. The details are given in **Annexure 13.3.1.5**.

Y: Losses on stock and unforeseen items

Provision under this sub- head has been made @ 0.25% of the cost of I- works less A-preliminary, B-land, O-miscellaneous, M-plantation, P-Maintenance, Q-special Tools & Plants, and X-Environment and ecology. The total provision under this sub-head works out to **Rs.21lakh**.

II Establishment

Bedti-Varada link project is planned to be completed in a period of 5 years. Provision towards establishment charges has been made @ 10 % of I-Works excluding B-land. The total provision under this sub-head works out to **Rs. 929 lakh**.

III Ordinary Tools & Plant

Provision has been made under this head @ 1% of I-Works towards ordinary Tools & Plants to cover the cost of survey instruments, camp equipment and other small tools & plants. This provision is distinct from the Q- special Tools & Plants. The total provision under this sub-head works out to **Rs. 93lakhs**.

IV Suspense

It is assumed that all the outstanding suspense would be cleared by adjustment to appropriate heads on completion of the project. As such no provision has been kept under this head.

V Receipt& Recoveries on capital account

Under this head, the estimated recoveries by way of resale or transfer of temporary buildings at 15% cost of temporary buildings and 83% of cost of permanent buildings towards receipts from rents is considered as receipts and recoveries. The same is worked out to be **Rs.196lakh.**

Indirect Charges

Provisions for audit and account charges @ 1% of I-Works have been kept under 'Indirect charges'. The total indirect charges work out to **Rs. 93lakh.**

Thus, the total cost of Head works (Unit-I) works out to **Rs.10206 lakh**for Link-II.

13.3.2 Unit II: Conveyance system (Canals, raising mains, tunnels)

Unit II under Link-II includes the cost of the following components/structures of the project:

- i) 0.35 km long delivery cistern / approach channel.
- ii) A tunnel of length 4.23 km.
- iii) One forebay.
- iv) Raising main of 22.30 km length.

Total cost of Unit II for Link-II is estimated as **Rs. 100183lakh.** Details are given in **Annexure 13.3.2.** The sub-head wise details are given below.

Direct Charges

The direct charges include the following sub- heads:

- I- Works;
- II- Establishment;
- III- Tools &Plants;
- IV- Suspense and
- V- Receipts & recoveries.

The details are described below:

I-Works

A- Preliminary

A lump-sum provision @ 2% of I-Works has been considered under this sub-head, which works out to **Rs. 1818lakht**o cover the expenditure to be incurred on various survey & investigation works, collection and procurement of data/ maps /remote sensing data, cost of consultancy works through various expert agencies, Environmental Impact assessment etc., for preparation of the Detailed Project Report of Bedti-Varada link project.

B- Land

The land required to be acquired (other than forest land) for laying raising mains, pump houses, for construction of the project components, stock yards, working area and approach roads etc., is worked out to be 20.74 ha for Link-II. 4 times the marked rate is considered for the private land including solatium charges. The total provision under this minor head has been worked out to **Rs.1071 lakh**. The details are given in **Annexure13.3.2.1**.

C- Works

Under this sub-head the provisions have been made to cover the cost of canal, tunnel and raising mains. The quantities and the cost of the various components have been evaluated as per the design drawings. The total provision under this minor head has been worked out to **Rs. 77276 lakh** for Link-II. The details are given in **Annexure 13.3.2.2 and 13.3.2.2.1 and 13.3.2.2.2.**

K- Buildings

The provision for the Temporary and Permanent buildings is considered at 5% of cost of I-works, which works out to **Rs. 4544lakh.**

L- Earthworks

The earth work has been considered under the head C-works in respect of respective conveyance system viz., canal, tunnel and raising main.

M- Plantation

The provision for cost of plantation along the conveyance system and pump houses have been considered, which works out to **Rs. 313 lakh.** The details are given in **Annexure 13.3.2.3.**

O- Miscellaneous

A provision of **Rs. 3635lakh** is kept under this sub-head towards cost of electrification, water supply, sewage disposal etc., and maintenance of these services, visiting dignitaries, inaugural ceremonies, medical assistance etc.

P- Maintenance

Provision has been made under this sub-head at 1% of I- works (excluding Preliminaries, Land, Miscellaneous, Plantation, Environment & Ecology, Loss on stock) which works out to **Rs. 838lakh.**

Q- Special Tools & Plants

No provision kept under this head as the work is proposed to be executed through contractors.

R- Communication

Under this sub-head necessary provision has been kept to cover the cost of quarry roads, temporary roads in the work area, widening of existing roads in the near vicinity of the project area etc., The total provision kept under this sub head is **Rs. 306lakh.** The details are given in **Annexure 13.3.2.4.**

U- Distributaries and minors & V- Water courses and field channels

Provision under this sub head not kept because the command area is existing one.

W- Drainage & X- Environment and Ecology

Provisions under this sub head have been made toward the cost of improving existing drainage and extensive management measures to sustain environment and ecology, compensatory afforestation, soil erosion control and water conservation measures, restoration of quarry sites, provision for free fuel to labour, Bio-diversity management plan, Public Health management and implementation of Environmental Management Plan and Environmental Monitoring Programme etc., The total provision under this sub-head works out to **Rs. 866lakh.** The details are given in **Annexure 13.3.2.5.**

Y. Losses on Stock and Unforeseen Items

Provision under this sub-head has been made @ 0.25% of the cost of I- works less A- preliminary, B- land, O- miscellaneous, M- plantation, P- Maintenance, Q- special Tools & Plants, and X - Environment and ecology. The total provision under this sub-head works out to **Rs.213lakh.**

The total cost of I-works after considering all the above items works out to **Rs. 90880lakh.**

II-Establishment

Bedti-Varada link project is planned to be completed in a period of 5 years. Provision towards establishment charges has been made @ 10 % of I- Works excluding B- land. The total provision under this sub-head works out to **Rs. 8981 lakh.**

III-Ordinary Tools & Plant

Provision has been made under this head @ 1% of I-Works towards ordinary Tools & Plants to cover the cost of survey instruments, camp equipment and other small tools & plants. This provision is distinct from the Q- special Tools & Plants. The total provision under this sub-head works out to **Rs. 909lakh.**

IV- Suspense

It is assumed that all the outstanding suspense would be cleared by adjustment to appropriate heads on completion of the project. As such no provision has been kept under this head.

V- Receipt & Recoveries on capital account

Under this head estimated recoveries by way of resale or transfer of temporary buildings is considered at 15% of the cost of temporary

buildings. Receipts from rents from buildings is considered at 83% of cost of permanent buildings. Total provision under this sub-head works out to **Rs. 1550lakh.**

Indirect Charges

Provisions for abatement of cost of land revenue @ 5% of cost of land and Audit and account charges @ 1% of I-Works have been kept under 'Indirect charges'. The total indirect charges work out to **Rs. 963lakh.**

Thus, the total cost of Conveyance system (Unit-II) works out to **Rs100183 lakh** for Link-II.

13.3.3 Unit III: Lifting arrangements

In Link-II, lifting is done in two stages viz., (i) with a static head of 120 m from the foreshore of the Suremane barrage and (ii) with a static head of 65.5 m at RD 10.90 km on the conveyance system.

Direct charges

I- Works

Cost of civil works in respect of pump house in two stages and delivery cistern is considered along with Electrical and Mechanical works under the head J & S, which works out to **Rs.70357lakhs.**

A - Preliminaries

Under this head a provision at 2% of coat of I – works is kept which works out to **Rs.1454 lakh.**

P – Maintenance

A provision equal to 1% of cost of I-Works less A-preliminaries and Y loss on stock is kept under this sub-head which works out to **Rs. 711lakh**.

Y – Loss on stock

A provision of 0.25 % of I-Works less A-Preliminaries and P – Maintenance which works out to **Rs. 177lakh** kept under this head.

Thus, the total cost of I-Works under Unit-III Lifting arrangements for Link-I is assessed to be **Rs.72699lakh**.

Establishment

A provision equal to 4.2% (weighted average basis) of civil and electrical works, which works out to **Rs. 2955 lakh** is kept for establishment.

Ordinary T & P

0.52% of cost of civil and E & M works which works out to **Rs.366 lakh** considered towards cost of Ordinary T & P.

Indirect charges

Audit and account charges at 1% of I-Works, which works out to **Rs.727 lakh** kept under indirect charges.

Thus, the total cost of direct and indirect charges for lifting arrangements worked out to be **Rs. 76747 lakh** for Link-II at 2020-21 price level. The abstract of cost and the details of cost estimation of J&S – Pumphouse, civil and electrical works for the lifting arrangement are given in **Annexure 13.3.3** and **13.3.3.1** respectively.

Cost of power required for lifting of water

Total power required to lift the water from Suremane in two stages is 181.3 MU. Considering the cost of power at Rs. 1.80 per unit, the total cost of power for pumping is worked out to be **Rs. 1291lakh.**

13.3.4 Onfarm development

The target command area is part of the existing command area under the Tungabhadra left bank canal, hence no provision is made under on farm development.

13.3.5 Estimated cost of Link -II

The total estimated cost of Link-II of Bedti - Varada link project works out to **Rs.187136lakh** at 2020-21 price level as shown below.

(Rs.lakh)

Unit – I	Head works	10206
Unit – II	Conveyance system	100183
Unit – III	Lifting Arrangements	76747
	Total	187136