

**Government of Punjab**  
**Water Resource Department**

**206 MW SHAHPURKANDI H.E. PROJECT**



**Detailed Project Report**

**SHAHPURKANDI H.E. PROJECT  
(206MW) FOR  
WATER RESOURCES  
DEPARTMENT  
GOVERNMENT OF PUNJAB**

# **Executive Summary & Salient Features**

## **EXECUTIVE SUMMARY**

### **1. Introduction**

The Shahpurkandi Hydroelectric Project is proposed to be constructed in Pathankot district of Punjab. The project envisages utilization of water of the river Ravi for power generation in addition to irrigation requirements. It is proposed to be located 11.0 km downstream of Ranjit Sagar Dam and 8.0 km upstream of Madhopur headworks. The reservoir of Shahpurkandi HE Project is proposed to act as a balancing reservoir and utilize the releases from Ranjit Sagar dam to fulfill the irrigation requirements of various commands by canals like Ravi canal, Kashmir canal, UBDC canal etc. It will also help the Ranjit Sagar Project to meet the power peaking requirement.

### **2. Project components**

The Shahpurkandi HE project envisages construction of

- 55.50 m high and 725 m long concrete dam across river Ravi to provide a live storage of 1538 Ha-m with FRL at EL 404.50 M and MDDL at EL 402.50 M.
- 7.7 km long concrete lined hydel channel having 385 cumec capacity to carry water from dam to UBDC canal through power house I & II.
- Six 6.35 m dia, 18 mm thick, circular shape, steel penstock for each 33 MW unit and one 3.17 m dia, 10 mm thick, circular shape, steel penstock for 8 MW unit.
- Two power houses one at RD 3517 m having three Kaplan Turbines of total capacity of 99 MW (3x33 MW) and other at RD 6627 m having installed capacity of 107 MW (3x33 MW + 8 MW).
- Balance portion of Ravi Canal and construction of aqueduct on Sukhral Khad.



### **3. Water and Power studies**

Hydrometeorological Data as provided by GoP have been compiled and five data volumes have been prepared as detailed in Chapter - II of the report.

In DPR, water availability has been assessed based on discharge data from 1921-22 to 1977-78. Based on above water availability, average annual generation has been worked out as 1042.92 MU and in case of dependable year it works out as 815 MU.

The inflow design discharge and PMF discharge for Shahpurkandi dam has been considered as 21,500 cumec and 26,000 cumec respectively. The total installed capacity is 206 MW. The power house no. I shall have three generating units of 33 MW each and Power house II shall have three generating units of 33 MW and one generating unit of 8 MW.

### **4. Geological Aspects**

Based on available Geological data, review have been made in the concerned chapter and geological appraisal is required to be strengthened by further investigations as suggested in the respective chapter.

### **5. Design and Engineering**

Various aspects related to Design and Engineering have been discussed in detail in respective chapter. The design and layout of the project is subject to review during updation stage after undertaking further investigations as suggested in the design and engineering chapter.

### **6. Power Evacuation Aspects**

Three nos. 220 kV double circuit line would emanate from the switchyard of power house-I from which one double circuit line would be terminated at 220 kV Sarna substation, one double circuit line to be terminated at Ranjit Sagar Dam project and one double circuit line would interconnect PH-I and PH-II of

Shahpurkandi project.

**7. Cost Aspects**

Cost Aspects have been reviewed and comments are incorporated in the cost aspects chapter. Revised cost estimate of Shahpurkandi Dam project has been approved by TAC of MoWR, Gol in its 138th meeting for Rs. 2715.70 Cr. The tentative Levellised tariff works out to be Rs. 2.16. per unit.

**8. Proposed Investigations**

The review report is based on data / details / information made available by GoP. However, in order to refine the design & engineering and the cost estimate, additional Survey and investigations have been proposed which are broadly mentioned in the Chapter - VIII of the report.

## Salient Features

### (A) RESERVOIR

i)	Gross Storage capacity	12071 Hec. m
ii)	Live Storage capacity	1538 Hec. m
iii)	Dead Storage capacity	10533 Hec. m
iv)	Dead Storage Level (Minimum pond level)	El.402.50 m
v)	Maximum Pond Level (N.R.L.)	El. 404.50 m
vi)	Max. Design flood level	El.405.00 m
vii)	Top level of dam	El. 407.50 m.
ix)	Area submerged below El.404.50 m	862.71 Hec.

### (B) CONCRETE DAM

i)	Top level of Dam	El. 407.50 m
ii)	Max. Height above foundation	55.50 m
iii)	Height above river bed (El.373.0)	34.5 m
iv)	Approx. length at top of OF section	418 m
v)	Width at top	9.0 m
vi)	Width of road	12.0m
vii)	Free board over max. Flood level (El. 407.50 m) under PMF conditions.	1.0 m (parapet)

### C) SPILLWAY (OVERFLOW SECTION)

i)	Clear waterway 22 spans of 12 m each	22x12=264 m
ii)	Gross Waterway	415 m

iii)	Pier width	21 Nos.	7.00 m each
iv)	Elevation of approach channel floor U/S of crest.		366.50 m
v)	Crest elevation		380.00 m
vi)	Type of gates		Radial gates.
vii)	Size of Spillway gates 22 No. radial gates of size		12m x6.6 m
viii)	Elevation of cistern		El. 359.00 m
ix)	Slope of upstream glacis		1: 1
x)	Slope of D/S glacis		Parabolic Trajectory
xi) (a)	Elevation of D/S sill floor of Spillway		El. 359.00 m
(b)	El of D/S sill		El. 369.50 m
xii)	Max. routed Probable flood outflow With reservoir El. 405.00m		21500 cumecs
xiii)	Catchment area RSDP+		6086 sq.km of 56 sq.km of SKDP = 6142 sq.km Approximate.
xiv) (a)	Maximum discharge intensity through one bay		=89.58 cumecs
(b)	At sill		=51.80 cumecs

#### (D) RAVI CANAL HEAD REGULATOR

i)	Clear waterway of 2 spans	6.00 m
ii)	Total width (gross waterway)	7.22 m
iii)	Pier width	1.22 m
iv)	Spacing of piers	4.88 m
v)	Crest Elevation	El. 397.50 m
vi)	Type of gates	Fixed wheel type gates.
vii)	Maximum designed discharge	32.58 cumecs

viii)	Upstream floor level	El. 397.900 m
ix)	Downstream floor level	El. 397.870 m
x)	Cistern level	El. 396.800 m
xi)	Size of gates	Span 3.0 m, Height 4.10m.

#### (E) HYDEL CHANNEL HEAD REGULATOR

i)	Clear Waterway of 7 spans	49.00 m
ii)	Total width (gross waterway)	58.00 m
iii)	Pier width	1.50 m
iv)	Spacing of piers	8.5 m c/c
v)	Crest Elevation	El. 397.5 m
vi)	Type of gates	Fixed wheel type gates.
vii)	Size of gates	Clear span 7.32m, Height 7.35m
viii)	Maximum designed discharge	385.00 cumecs (13600cusecs)
ix)	Upstream floor level	El. 397.00 m
x)	Downstream floor level	El. 396.00 m
xi)	Cistern level	El. 396.80 m

#### (F) POWER HOUSES

i)	No. of units	7 No's
ii)	Power House-I each	3 Units of 33MW
iii)	Power House-II	3 Units of 33 MW each & one No. 8 MW unit

iv)	Total generating capacity	206 MW
v)	Design Head MW	28.15 m for 33 Units & 23.25m for 8 MW unit
vi)	Type of Turbine	Vertical Kaplan
vii)	Power Generation per Year	1042.92 MU



Executive Engineer,  
SPK Dam Division No. 2  
Shahpurkandi Township

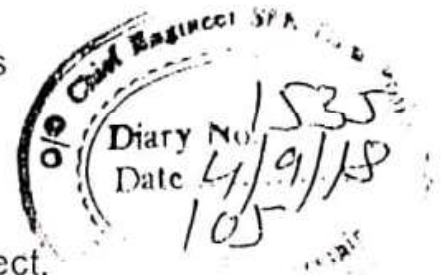
CP 832

ADMINISTRATIVE APPROVAL

Government of Punjab  
Department of Water Resources  
(Project Branch)

To

Chief Engineer/Shahpurkandi Dam Project,  
Water Resources Department,  
Shahpurkandi Township.



Memo No. 11/64/17-PJ(5)/PF/1300765

Dated, Chandigarh: 21/8/18

Subject:- Revised cost estimate of Shahpurkandi Dam Project at  
current price level.

In continuation to this department letter No. 11/64/17- PJ (5)  
/ 1298257 dated 9.8.2018 on the subject cited above.

CP 217

2. It is intimated that Government agrees to your proposal to  
revise the cost of shahpurkandi Dam Project to Rs.2793.54 crore (799.  
23 crore rupees Irrigation Component which is 28.61% and 1994.3 crore  
rupees power Component which is 71.39% ).

3. This issues with the concurrence of the Finance Department  
received vide their letter No 7/20/2017-4 FE4/1288938/1 Dated 3.8.18

*Government Secy*  
Under Secretary Water Resources

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72  
5/10/18

**APPROVAL OF SHAHPURKANDI DAM PROJECT FOR**

**RS. 2715 CR. BY TAC OF MoWR, GOI**

**Central Water Commission  
Project Appraisal Organization**

Telefax: 011-29583424/33(F)  
email: [ceprjap@nic.in](mailto:ceprjap@nic.in)

7<sup>th</sup> Floor (S), Sewa Bhawan,  
R.K. Puram, New Delhi.  
Dated: 05/11/2018

**Minutes of Meeting**

A copy of Summary Record of Discussions of the 138<sup>th</sup> meeting of the Advisory Committee on Irrigation, Flood Control & Multipurpose Projects, held under the Chairmanship of Secretary, MoWR, RD&GR, on 31/10/2018 at New Delhi is enclosed herewith for information and further necessary action please.

Comments, if any, may kindly be forwarded to the undersigned within 15 days.

Encl: As above

  
05/11/2018  
(C. K. L. Das)

Chief Engineer (PAO) &  
Member Secretary of the Advisory Committee

To,

**Members of the Advisory Committee:**

1. Chairman, CWC, Sewa Bhawan, R. K. Puram, New Delhi.
2. Secretary (Expenditure), Ministry of Finance, 1<sup>st</sup> Floor, North Block, New Delhi.
3. Secretary, Department of Power, Room No. 205, S.S. Bhawan, II<sup>nd</sup> Floor, New Delhi.
4. Secretary, Ministry of Environment & Forests & CC, 4<sup>th</sup> Floor, Prithvi Block, Indira Paryavaran, Jor Bagh, New Delhi.
5. Secretary, Department of Agriculture, Cooperation & Farmers Welfare, R.No. 126, Krishi Bhawan, New Delhi.
6. Secretary, Ministry of Tribal Affairs, Room No. 738, A-Wing, Shastri Bhawan, New Delhi.
7. Director General, ICAR, Room No-108, Krishi Bhawan, New Delhi.
8. Chairman, CEA, Sewa Bhawan, R. K. Puram, New Delhi.
9. Chairman, Central Ground Water Board, Jam Nagar House, New Delhi.
10. Adviser (Power), NITI Aayog, Room No. 248, Yojana Bhawan, New Delhi.
11. Adviser (WR), NITI Aayog, Room No. 230, Yojana Bhawan, New Delhi.
12. Joint Secretary & Financial Adviser, MoWR, RD & GR, Room No-401, S.S. Bhawan, New Delhi.

**Special Invitees:**

13. Additional Secretary, MoWR, RD&GR.
14. Member (RM), CWC, New Delhi.
15. Member (D&R), CWC, New Delhi.
16. Member (WP&P), CWC, New Delhi.
17. Joint Secretary (IC&GW), MoWR, RD&GR.
18. Principal Secretary, WRD, Govt. of Jammu & Kashmir, Jammu.
19. Principal Secretary, WRD, Govt. of Karnataka, Bengaluru.
20. Principal Secretary, WRD, Govt. of Maharashtra, Mumbai.



21. Principal Secretary, WRD, Govt. of Punjab, Chandigarh.
22. Chief Advisor (Cost), Department of Expenditure, Ministry of Finance, 2nd Floor, Lok Nayak Bhawan, New Delhi.
23. Commissioner (State Projects), MoWR, RD & GR, Room No-411, S. S. Bhawan, New Delhi.
24. Chief Engineer (IMO), CWC, New Delhi.
25. Chief Engineer (PPO), CWC, New Delhi with request to ensure participation of Project Authority in above meeting.
26. Chief Engineer (IBO), CWC, Chandigarh with request to ensure participation of Project Authority in above meeting.
27. Chief Engineer, Monitoring (Central), CWC, Nagpur with request to ensure participation of Project Authority in above meeting.

**Copy for kind information to:**

28. Sr. PPS to Secretary, MoWR, RD & GR, Room No. 407, Shram Shakti Bhawan, New Delhi.

**Government of India**  
**Ministry of Water Resources, River Development & Ganga Rejuvenation**  
**Central Water Commission**

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**SUMMARY RECORD OF DISCUSSIONS OF THE 138<sup>th</sup> MEETING OF THE  
ADVISORY COMMITTEE FOR CONSIDERATION OF TECHNO-ECONOMIC  
VIABILITY OF MAJOR & MEDIUM IRRIGATION, FLOOD CONTROL AND  
MULTIPURPOSE PROJECT PROPOSALS HELD ON WEDNESDAY, OCTOBER  
31<sup>ST</sup>, 2018 AT CENTRAL WATER COMMISSION, NEW DELHI:**

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The 138<sup>th</sup> meeting of the Advisory Committee of Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD&GR) for consideration of techno-economic viability of major & medium irrigation, flood control and multi-purpose project proposals was held under the Chairmanship of Shri U. P. Singh, Secretary to the Government of India, MoWR, RD & GR on Wednesday, 31<sup>st</sup> October, 2018 at Central Water Commission, New Delhi. The list of members of the Committee or their representatives/nominees/special invitees and officers from various Ministries/Organizations and representatives of State Governments who attended the meeting is at **Annexure.**

At the outset, the Secretary (WR, RD & GR) and Chairman, Advisory Committee welcomed the participants. He emphasized the importance of expeditious appraisal/examination of DPRs of the projects and their execution. He stressed on the need of good quality DPRs of the projects and stated that if needed, a seminar/workshop could be conducted on the preparation of DPRs of major & medium irrigation, flood control and multi-purpose projects. He also expressed his concern over the growing trend of submitting the proposals of project, which have already been started and substantial work on which is complete, for the consideration/acceptance by the Advisory Committee.

Thereafter, the agenda items were taken up one by one.

**(i) Confirmation of the minutes of 137<sup>th</sup> Meeting of the Advisory Committee**

CE (PAO), CWC and Member Secretary of Advisory Committee stated that the 137<sup>th</sup> meeting of the Advisory Committee of MoWR, RD&GR on Irrigation, Flood Control and Multi-purpose Projects was held on 28.08.2018. The Summary Record of Discussions was circulated vide letter No. 16/27/2017-PA(N)/1394-1417 dated 14.09.2018. The comments from the representative of Chief Advisor (Cost), Department of Expenditure, Ministry of Finance were received in respect of **Jihe Kathapur Lift Irrigation Scheme**, which is as given below:



*"From the revised Appendix (F1) and (F2) it is observed that the yield of vegetable crop considered as 245 Qt/Ha and rate of produces of gram considered as Rs. 7750/= per Ha. seems to be on higher side. PAO, CWC may consider the views of Ministry of Agriculture and Farmers Welfare, Govt. of India in respect of crop yield, rates of produces and cost of cultivation considered by project authorities for the estimation of agricultural benefits in pre & post project conditions for the purpose of B.C. Ratio computation."*

The Advisory Committee confirmed the Summary Record of Discussion of 137<sup>th</sup> meeting of Advisory Committee with above modifications.

**(ii) Follow up action after the 137<sup>th</sup> meeting of the Advisory Committee**

NIL

**(iii) Project Proposals considered by the Advisory Committee**

**A. Irrigation and Multi-purpose Projects**

**1. Revised Cost Estimate (RCE) of Shahpur Kandi Dam Project, Punjab, National Project (RCE, Multipurpose; Estimated Cost Rs. 2715.70 Crore @ PL Feb, 2018, B.C. Ratio 1.75:1)**

A presentation on above project was given by the Project Authority. It was informed that Shahpurkandi Dam Project is being constructed on River Ravi 11 km downstream of Ranjit Sagar Dam and 6 Km upstream of Madhopur headworks to provide a balancing reservoir to ensure maximum benefits both for Irrigation from the canal system taking off from Madhopur Headworks & Ravi Canal (J&K) and Power generation at Ranjit Sagar Dam Power House. The project was declared as National Project by Govt. of India in Feb., 2008. The earlier revised cost of the project was approved by the Advisory Committee in its 99<sup>th</sup> meeting held on 24<sup>th</sup> August, 2009 for Rs. 2285.81 Cr. at April, 2008 Price Level. The actual construction work on the Project started in March, 2013. However, the work got stopped on 30.08.2014 due to inter-state issues between Jammu & Kashmir and Punjab. Finally, an agreement was reached between Punjab and J&K states under the aegis of MoWR, RD&GR at New Delhi on 03.03.2017 & 08.09.2018.

The physical and financial progress of the project was presented during the meeting. It was stated that 12% of the work of Dam was complete and also the Head Regulator for Shahpurkandi Hydrel Channel in Punjab territory was almost complete. The salient features of the project and the variation statement giving the head-wise difference in the cost of present cost estimate and last approved cost estimate and the reasons for the same were presented by the Project Authority.



On a query with respect to change in scope of the project, Project authority stated that in the present proposal, the installed capacity of hydropower had been increased from 168 MW to 206 MW for optimum utilization of water and that there was no change with respect to Head Regulator and Canals. Further, as per the agreement dated 08.09.2018, siphon for the Kashmir Canal and balance portion of Ravi Canal shall be constructed within the scope of project cost. The cost of these two components had been assessed as Rs. 51.58 Cr as included in the Revised Cost Estimate.

The issue of a very large increase in the Establishment cost in the revised cost estimate from Rs. 160.35 Cr. to Rs. 382.4 Cr was comprehensively discussed. The CWC Guidelines allows 10-12% of I-works minus B-land for Establishment cost which works out to Rs. 210.80 crore at maximum rate of 12%. However, as the cost of Rs. 279.80 crore had already been incurred up to January, 2018, the Advisory committee of MoWR, RD&GR was requested to decide upon the admissibility of Rs. 382.40 crore. The Project Authority stated that the Establishment Cost was not included in the Central Assistance and not reimbursed to the State Govt. After due deliberations, the Committee agreed in respect of the Establishment Cost.

The proposal of revised cost estimate was accepted by the Advisory Committee.

***General Conditions:***

1. Participatory Irrigation Management (PIM) may be encouraged by the State Govt. by encouraging formation of Water Users Associations (WUAs) for raising awareness and participation of farmers in order to achieve project objectives. Once the project is completed, WUAs may be involved in Operation and Maintenance of canals, Warabandi etc. to ensure continuance of PIM.
  2. Micro irrigation may be adopted in the command areas where feasible.
  3. Water charges shall be collected from the farmers and this revenue may be utilized for Operation and Maintenance (O&M) of the project in future.
  4. Annual maintenance, de-weeding etc. should be ensured.
2. **Modernization of Vijayanagara Channels in Tungabhadra Project under Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP), Tranche-II, Karnataka (ERM , Major Irrigation, Externally Assisted (ADB); Estimated Cost Rs. 456.63 Crore @ PL 2017-18, B.C. Ratio 1.547:1)**

A presentation on the Project was made by the project authority. It was informed that earlier, the KISWRMIP, Tranche-2 comprised of two sub-projects namely



Modernization of Canal System of Tungabhadra Project amounting to Rs.3161.35 crore and Modernization of Vijayanagara Channels in Tungabhadra Project amounting to Rs. 432.55 crore. KISWRMIP, Tranche-2 with total estimated cost of Rs. 3593.90 crore (Rs.3161.35 + Rs.432.55) (PL 2013-14) was considered and deferred by the Advisory Committee of MoWR, RD & GR on Irrigation, Flood Control and Multipurpose Project during its 126th meeting held on 16.07.2015.

In order to speed up the implementation of KISWRMIP, Tranche-2 works, Govt. of Karnataka had proposed to take up this project i.e. Modernization of Vijayanagara Channels in Tungabhadra Project under KISWRMIP, Tranche -2 separately and proposed to be funded by Asian Development Bank (ADB).

It was stated that Vijayanagara Channel (VNC) System was a run-of-the-river irrigation channel system built during the Vijayanagara Empire more than 400 years ago constructed within the Tungabhadra basin starting from the Tungabhadra reservoir in Koppal District of Karnataka. The project consists of Modernization of 16 Channels and its distribution system lies in K-8 sub basin within Karnataka, having a total CCA of 11,154 ha and is spread across 3 districts, namely, Bellary, Raichur and Koppal. Out of these 16 Channels, 2 channels take off from Tungabhadra Dam whereas all other channels except Kalaghatta and Belagodahalla take off from anicuts constructed across Tungabhadra river at various locations.

The Project Authority further stated that, at present, the condition of these channels and its associated structures had deteriorated over a period of time. On account of this, it is difficult to reach water to the tail end areas during irrigation season. As a result, standing crops at the tail end are not getting enough water. Therefore, proposed modernization work will help in improving the efficiency in the channel system and also achieve the desired savings in water.

The State Finance Concurrence amounting to Rs. 432.55 Crore (Rs. 403.22 crore for Civil Works & 29.33 Crore for soft components) for the Modernization of Vijayanagara Channels has already been accorded vide G.O No.WRD/31/MTP/2015 Bengaluru Dated 24-06-2016 and the proposal for obtaining the SFC for total amount i.e. 456.63 Crore has already been submitted to State Finance Department for approval and expected to be obtained shortly.

The Secretary, MoWR, RD & GR enquired about the benefits associated with the project vis-a-vis the expenditure to be incurred in the project and how the project authority





will assure implementation of the proposed cropping pattern in the command area of the project. He also stressed on active involvement of Water Users Associations to develop a system for regular operation and maintenance of Field Irrigation Channels and fully realise the expected benefit of the proposed work under modernization. Project Authority stated that the main objective of the Project was improving water use efficiency and to increase the intensity of irrigation from 108.7 % to 145.6 % using less water. Project Authority further stated that 30 Nos Water Users Cooperative Societies (WUCs) and 02 federation would be actively involved to promote ownership, ensure value for money through such ownership, and longevity of the irrigation assets created. The Project Authority also shared the experiences gained from the KISWRMIP, Tranche -1 (Modernization of Gondi Project).

After detailed deliberation, the project was accepted by the Advisory Committee of MoWR, RD & GR subject to the submission of State Finance Concurrence for total cost of the project i.e. Rs. 456.63 Crore to the MoWR, RD & GR/CWC before signing of the loan agreement.

***General Conditions:***

1. Participatory Irrigation Management (PIM) may be encouraged by the State Govt. by encouraging formation of Water Users Cooperative Societies for raising awareness and participation of farmers in order to achieve project objectives. Once the project is completed, WUCS may be involved in Operation and Maintenance of canals, Warabandi etc. to ensure continuance of PIM.
2. Micro irrigation may be adopted in the command areas wherever feasible.
3. Annual maintenance, de-weeding etc. should be ensured.
4. Acceptance of the project proposal by the Advisory Committee of MoWR, RD&GR does not guarantee any eligibility towards release of fund under any existing scheme of MoWR, RD&GR such as AIBP, PMKSY, RRR, FMP etc., or funding from any external agency.

**3. Revised Cost Estimate (RCE) of Tral Lift Irrigation Project, Jammu & Kashmir (RCE, Medium Irrigation; Estimated Cost Rs. 170.50 Crore @ PL 2016, B.C. Ratio 1.70:1)**

A presentation on the scheme was given by Director (M&A), CWC, Jammu. It was stated that Tral Medium Lift Irrigation Project was located in Tral tehsil of Pulawama distt in Jammu & Kashmir. The CCA of the project is 3415 Ha and Annual Irrigation is 5122 Ha. The project envisages construction of an intake structure to draw water from the river,



3 no. pump houses, 3 nos. delivery tanks and distribution system. It was also stated that this project was under 99 priority projects under PMKSY.

Secretary MoWR, RD&GR observed that even after the commissioning of stage-I & stage-II pump houses, a potential of only 1200 Ha had been created out of 5122 Ha. Project Authority clarified that it was due to the fact that no command was being catered to by the first stage pump house and the area lying right of the second stage pump house was being catered to by it and the potential utilized by second stage pump house up to September, 2018 was 1200 Ha. There is a carrier on the left side of the second stage pump house for the third stage beyond which the major command of the project lies. The third stage pump house has been constructed, however, the pumps are yet to be installed.

On a query regarding electricity required for running of pumps, Project Authority stated that the same shall be paid from the State budget for which sufficient provision had been kept in the current financial year. No electrical charges shall be collected from the farmers for running of pumps and also the O&M cost shall be borne by the State Govt. It was informed that sufficient electricity was available with State Govt. and a dedicated feeder for electricity supply was also under installation.

After detailed deliberations, the proposal was accepted by the Advisory Committee.

***General Conditions:***

1. Participatory Irrigation Management (PIM) may be encouraged by the State Govt. by encouraging formation of Water Users Associations (WUAs) for raising awareness and participation of farmers in order to achieve project objectives. Once the project is completed, WUAs may be involved in Operation and Maintenance of canals, Warabandi etc. to ensure continuance of PIM.
  2. Micro irrigation may be adopted in the command areas where feasible.
  3. Annual maintenance, de-weeding etc. should be ensured.
4. **Revised Cost Estimate (RCE) of Ghungshi Barrage Medium Irrigation Project, Maharashtra (RCE, Medium Irrigation; Estimated Cost Rs. 498.46 Crore @ PL 2016-17, B.C. Ratio 1.279:1)**

A presentation on the Project was made by the Project Authority. Ghungshi Barrage Project is a Medium Irrigation Project across the river Purna in Tapi basin. The



project is situated near village Parad in Murtijapur Taluka of Akola district of Maharashtra to provide irrigation benefits to 6343 ha in drought prone areas. The project envisages construction of a barrage of 185 m length with 10 nos. of vertical gates across river Purna and earthen embankments on both the flanks. The irrigation is proposed to be provided through lifting of water from barrage pond through Pump House located on left bank of river and supply water in 6343 ha command area thorough Pressurized Distribution Network (PDN) in Murtijapur Taluka of Akola district. Annual irrigation of the project is 6660 Ha with intensity of irrigation being 105%. The estimated cost of the project is Rs. 498.46 Cr. @ PL 2016-17. The B.C ration of the project is 1.279. This project was earlier accepted by the Advisory Committee of MoWR, RD&GR in its 103<sup>rd</sup> meeting held on 11<sup>th</sup> March, 2010 for an estimated cost of Rs.170.15 Crore at Price Level of 2008-09.

A Variation Statement showing various reasons of increase of cost from Rs.170.15 Crore to Rs. 498.46 Cr. was presented. It was informed that the major increase of Rs 328.316 Crore is due to (i) increase in Land Acquisition cost amounting to Rs. Rs 44.66 Cr, (ii) Rs185.596 Crore due to SoR, Price escalation and change in design, (iii) Rs 104.055 Crore due to provision of PDN (Pipe Distribution Network) and other Miscellaneous work.

After detailed deliberations, the proposal was accepted by the Advisory Committee.

***General Conditions:***

1. Participatory Irrigation Management (PIM) may be encouraged by the State Govt. by encouraging formation of Water Users Associations for raising awareness and participation of farmers in order to achieve project objectives. Once the project is completed, WUAs may be involved in Operation and Maintenance of canals, Warabandi etc. to ensure continuance of PIM.
2. Micro irrigation may be adopted in the command areas where feasible.
3. Annual maintenance, de-weeding etc. should be ensured.

The meeting ended with a vote of thanks to the Chair.

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**LIST OF OFFICERS PRESENT IN THE 138<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON IRRIGATION, FLOOD CONTROL AND MULTI-PURPOSE PROJECTS ON WEDNESDAY, THE 31<sup>st</sup> OCTOBER, 2018 AT 12:00 HRS IN THE COMMITTEE ROOM OF CENTRAL WATER COMMISSION, 2<sup>nd</sup> FLOOR, SEWA BHAWAN, R K PURAM, NEW DELHI.**

Shri U.P. Singh, Secretary, MoWR, RD&GR

In Chair

**Members of the Advisory Committee or their representatives/nominees**

**S/Shri**

- |    |                                                                                                                         |                  |
|----|-------------------------------------------------------------------------------------------------------------------------|------------------|
| 1. | S. Masood Husain, Chairman, Central Water Commission                                                                    | Member           |
| 2. | Jagmohan Gupta, JS & FA, MoWR, RD& GR                                                                                   | Member           |
| 3. | S.K. Juneja, Scientist and officer I/C, Central Ground Water Board (Representing Chairman, Central Ground Water Board). | Member           |
| 4. | Sharvan Kumar, Director (HPA), CEA (Representing Chairman, CEA)                                                         | Member           |
| 5. | R.A.S. Patel, Assistant Commissioner, DAC&FW (Representing Secretary, Deptt. of Agriculture Cooperation & FW)           | Member           |
| 6. | C.K.L. Das, Chief Engineer, PAO, CWC                                                                                    | Member Secretary |

**Special Invitees:**

**MoWR, RD&GR**

**S/Shri/Smt**

1. T. Rajeshwari, Additional Secretary
2. Akhil Kumar, Joint Secretary (A&GW)
3. Rishi Kumar, Dy. Director, PMKSY-SPR Wing

**O/o Chief Adviser (Cost)**

**S/Shri**

1. B. Bandyopadhyay, Adviser (Cost)

**Central Water Commission**

**S/Shri**

1. N.K. Mathur, Member (D&R), CWC
2. S.K. Haldar, Member WP&P, CWC
3. Navin kumar, Chief Engineer, IMO, CWC
4. R.K. Pachauri, Chief Engineer, PPO, CWC
5. Atul Jain, Chief Engineer, IBO, CWC
6. Shiv Nandan Kumar, Chief Engineer, Monitoring (C), CWC, Nagpur
7. R.D. Deshpande, Director, CWC, Nagpur
8. N. Mukherjee, Director, PA(S) Dte., CWC
9. Rajiv Kumar, Director, PA(C) Dte., CWC
10. G.L. Bansal, Director, NP Dte., CWC
11. Anant Kumar Gupta, Director, EA Dte., CWC

12. Balram Kumar, Director, Cost Appraisal (Irrigation-1) Dte., CWC
13. Piyush Ranjan, Director, PA (N) Dte., CWC
14. Yoki Vijay, Director, M&A, Jammu
15. Dr. D.R. Mohanty, Dy. Director, PA (S) Dte., CWC
16. A.K. Madhok, Dy. Director, PA (C) Dte., CWC
17. Hradesh Kumar, Dy. Director, PA (S) Dte., CWC
18. K. Iyappan, Dy. Director, PA(N) Dte. CWC
19. Sanjay Meena, Dy. Director, PA(N) Dte. CWC
20. Mahesh Kumar Gupta, Dy. Director, NP Dte., CWC
21. Nagendra Kumar Singh, Dy. Director, NP Dte., CWC
22. Pradeep Kumar, Dy. Director, Cost Appraisal (HWF) Dte., CWC
23. S. Barman, AD, PA (S) Dte., CWC
24. Durgendra Singh, AD-II, PA (N) Dte., CWC

### **Officers from State Government**

#### **Punjab**

##### **S/Shri**

1. Er. J.S. Nagi, Chief Engineer (SKD), WRD
2. Er. Japan Singh Pathania, Chief Engineer/Hydel PSPCL, Patiala
3. Er. S.K. Gupta, Superintending Engineer, WRD

#### **Karnataka**

##### **S/Shri**

1. Mallikarjun B. Gunge, MD, KNNL
2. Shankar Gowda, Superintending Engineer (TPC), Munirabad
3. S.B. Nagabhushan, Executive Engineer, TR Division, Munirabad
4. Sandeep Nodiger, Consultant, EI Technologies, Technical Division, Bangaluru
5. K. Ashok, Consultant, Senior Project Manager, EI Technologies
6. Dr. Srinivas Mudrakartha, Dy. Team Leader, SMEC, PSC

#### **Jammu & Kashmir**

##### **S/Shri**

1. Abdul Wahid, Chief Engineer, I&FC, Kashmir
2. Mohammad Afzal, Executive Engineer, I&FC, Kashmir
3. Tariq Ahmed, Assistant Engineer, Irrigation Division TRAL, Kashmir
4. Zulfikar Ahmed Bhat, Assistant Engineer, MICD, Srinagar, Kashmir

#### **Maharashtra**

##### **S/Shri**

1. S.K. Ghanekar, Chief Engineer, Special Project Amravati, Maharashtra
2. Ashish T. Deogade, Superintending Engineer, Amravati Irrigation Project Circle, Maharashtra
3. G.K. Karpe, Sub Divisional Officer, Akola, Maharashtra
4. P.U. Ingle, Sectional Engineer, Akola, Maharashtra

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# INVESTMENT CLEARANCE

No.P.20011/2/2016-SPR/1891-1909  
Government of India  
Ministry of Water Resources, RD& GR  
State Projects Wing  
\*\*\*\*\*

431, Shram Shakti Bhawan,  
Rafi Marg, New Delhi-110001  
Dated: 26<sup>th</sup> April 2019

**Subject: Investment Clearance to "Revised Cost Estimate (RCE) of Shahpurkandi Dam Project (National Project), Punjab". (Estimated cost Rs 2715.70 Crore).**

The undersigned is directed to convey that on recommendation of the Investment Clearance Committee in its 10<sup>th</sup> Meeting held on 27.02.2019, the project proposal of "Revised Cost Estimate (RCE) of Shahpurkandi Dam Project (National Project), Punjab" has been considered acceptable for investment in State Plan with an estimated cost of Rs 2715.70 Crore at Price level of February 2018 subject to conditions stipulated in the 138<sup>th</sup> meeting of Advisory Committee of MoWR, RD & GR held on 31/10/2018 and other general conditions as mentioned below.

- i. The Investment Clearance thus accorded does not make the project eligible/entitled for any kind of Central Assistance under centrally sponsored/ central sector schemes unless otherwise already committed by Union Government.
- ii. All the Mandatory/Statutory clearance from various Ministries/Department /organisations has to be obtained by Project Authority.
- iii. The State should complete the project by June 2022 and the BC ratio and total cost will hold valid for this period only. Project may accordingly be executed as per the approved outlays in the State Annual Plans. The State Finance Department would restrict the expenditure to the approved cost (i.e. of Rs 2715.70 Crore at Price level of February 2018) and no additional expenditure beyond approved cost may be permitted unless the revised estimate is got approved following the prescribed procedure.
- iv. Design aspects shall be taken care by Project Authority during construction of the project.
- v. Further, due to enforcement of Model Code of Conduct for General Election in Country, the conditions mentioned in the NOC issued by Election Commission of India vide letter No 437/6/CG/ECI/LET/FUNCT/MCC/2019 dated 8<sup>th</sup> April 2019 (copy enclosed) for issuing Investment clearance have to be strictly adhered.

The salient features of the project are enclosed as Annexure-1.

Encl: As above

  
(Rishi Kumar)  
Deputy Director (PMKSY)



**Copy to**

1. Chairman, Central Water Commission, New Delhi.
2. Additional Secretary, (PP Wing), MoWR, RD&GR, New Delhi.
3. Principal Secretary, Irrigation Department, Govt. of Punjab.
4. Member (WP&P), Central Water Commission, New Delhi.
5. Joint Secretary, Plan Finance Division, Deptt. of Expenditure, Ministry of Finance, North Block, New Delhi.
6. Economic Advisor, MoWR, RD & GR, New Delhi.
7. JS & FA (WR), MoWR, RD & GR, New Delhi.
8. Advisor (WR), NITI Aayog, New Delhi
9. Commissioner (FM), MoWR, RD & GR. New Delhi.
10. Commissioner (Indus), MoWR, RD & GR. New Delhi.
11. Chief Engineer (PAO), CWC, New Delhi.
12. Chief Engineer (PPO), CWC, New Delhi.
13. Chief Engineer (IMO), CWC, New Delhi.
14. Chief Engineer, IBO, CWC, Chandigarh.
15. Chief Engineer, Shahpurkandi Dam Project, Govt. of Punjab.
16. U.S.(Budget ), MoWR, RD & GR,

**Copy for kind information to:**

1. PS to Hon'ble Minister (WR, RD&GR)
2. PPS to Secretary (WR, RD & GR)

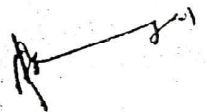
**BC RATIO OF SHAHPURKANDI DAM  
PROJECT**

**Salient features in respect of scheme "Revised Cost Estimate (RCE) of Shahpurkandi Dam Project (National Project), Punjab".**

1	Name of the Project and State	Shahpurkandi Dam Project (Punjab) National Project
2	Type of Dam	Concrete
3	Basin / Sub – Basin	Ravi
4	Catchment area	6086 sq.km. of RSDP + 56 sq.km. of SKDM = 6142 sq. km (Approximate)
5	Salient features of the work (location, length, height, type of dam).	<p>Shahpurkandi Dam Project is being constructed on River Ravi 11km downstream of Ranjit Sagar Dam and 6 km upstream of Madhopur headworks to provide a balancing reservoir to ensure optimum utilization both for Irrigation in the canal system taking off from Madhopur Headworks &amp; Ravi Canal (J&amp;K) and Power generation at Ranjit Sagar Dam Power House.</p> <p>The project is comprised of following components:</p> <ul style="list-style-type: none"> <li>(i) 55.5 m high concrete dam comprising of 22 bays of 12m each clear span (spillways)</li> <li>(ii) 7.70 km. long Hydel Channel designed for a discharge of 385 Cumecs (13591 cusecs) along the left bank of river;</li> <li>(iii) 2 Nos Power Plants of total 206 MW capacity (2X3X33MW + 08MW);</li> <li>(iv) 6 No Cross Drainage works/bridges on the hydel channel; and</li> <li>(v) 2 No. Head Regulators (One to feed Shahpurkandi Hydel Channel (Punjab) and other to feed the Ravi Canal (J&amp;K)).</li> </ul>

*[Signature]*

6	Gross Storage Capacity	120.71 MCM
7	Live Storage Capacity	15.38 MCM
8	Top level of Dam	EL 407.50m
9	Approx. length of Dam at top	301m
10	Expected Irrigation benefits	On completion, an Irrigation Potential of 5000 ha in Punjab State and 32173 ha in J&K State would be created. In addition to above, the Irrigation of about 1.18 Lakh ha area under UBDC system shall be stabilized.
11	Power generation	206 MW
12	Total estimated cost of the project.	Rs. 2715.70 Cr (February, 2018 Price Level).
13	B.C. Ratio	1.75





**ABSTRACT OF COST APPROVED BY CWC,****NEW DELHI**

Annexure- I

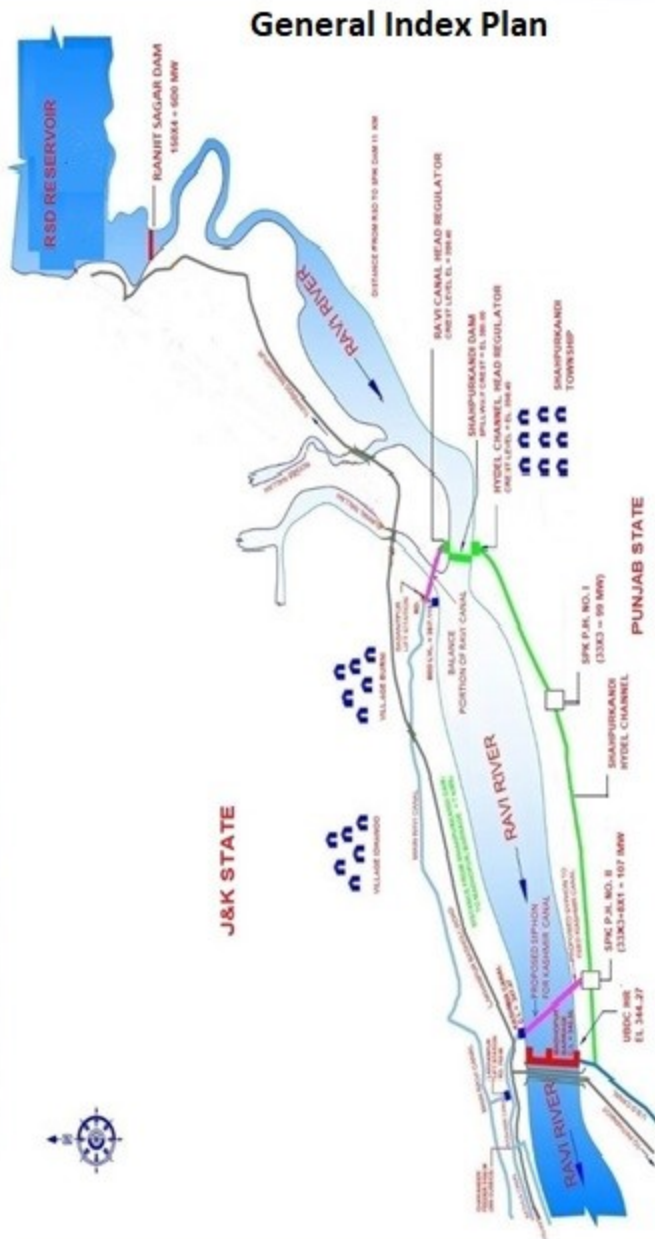
FIRST REVISED COST ESTIMATE (FEBRUARY, 2018 PL)

GENERAL ABSTRACT OF COST FOR CIVIL WORKS

NAME OF PROJECT: SHAHPURKANDI DAM PROJECT, PUNJAB

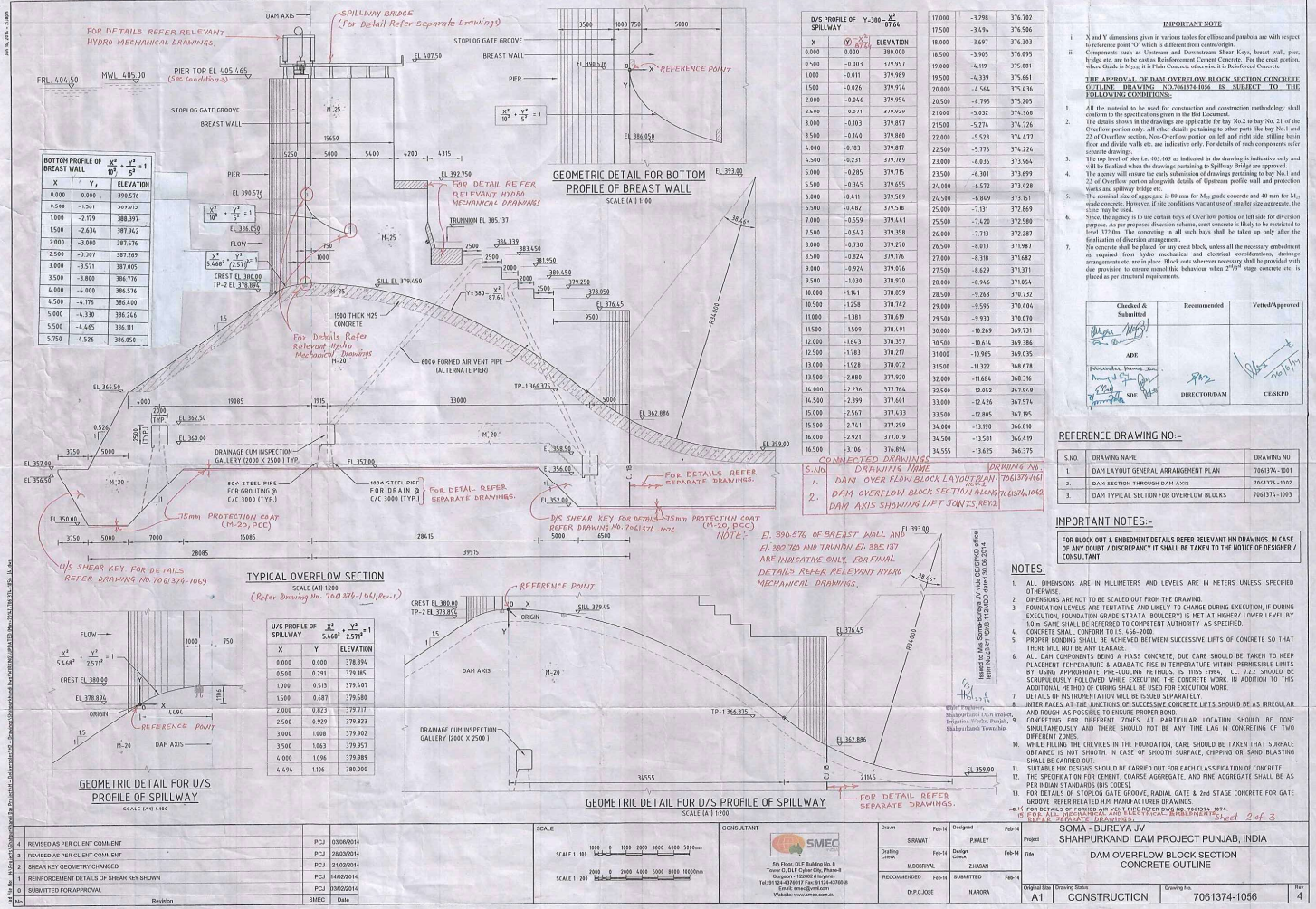
Sr. No.	Project Sub- Head	Amount in Rs. Cr.			
		Approved cost @ April, 2008 PL	Expenditure incurred upto 01/2018	Balance Cost @ February, 2018 PL	Total Revised Cost @ February, 2018 PL
1	2	3	4	5	6
A	DIRECT CHARGES				
I	WORKS				
110-114	A-Preliminary	14.33	6.37	7.96	14.33
115-117	B-Land	80.55	66.82	121.63	188.45
118-122	C-Works	881.66	85.66	881.92	967.59
118	Diversion Arrangement	11.37	1.31	0.19	1.5
119	Preparation of foundation of Dam	3.39	0.00	1	1
120 & 121	Concrete Dam	866.9	84.36	829.15	913.51
122 (a)	Construction of balance portion of Ravi Canal	0	0.00	33	33
122 (b)	Construction of Siphon from B.M.V Mini Unit to Kashmir Canal	0	0.00	18.58	18.58
123-128	D-POWER PLANT	600.78	98.33	567.08	665.41
123	Intake structure, Penstock, Tail Race	206.18	0.00	243.3	243.3
124	Power Plant Structure	156.6	0.00	184.79	184.79
124 2 a	Switch Yard No I & II	23.51	0.00	15.42	15.42
125	Hydel Channel	108.4	94.96	21.98	116.94
126	Bridges and Cross Drainage works	11.22	0.00	26.52	26.52
127.1	Head Regulator of Hydel Channel	23.81	3.37	0	3.37
127.2	Head Regulator of Ravi Canal	7.19	0.00	0	0
128	Bye Pass Channels	63.87	0.00	75.07	75.07
129	K-Building	33.97	4.73	23.27	28
130	M-Plantation	0.43	0.19	0.24	0.43
131	O-Misc	30	22.48	7.25	29.73
132	P-Maintenance	15.75	0.69	9.17	9.86
133-148	Q-VI Sp. T&P	58.64	12.84	7.16	20
149	R-Communication	39.25	0.65	12.14	12.79
150	X-Environment & Ecology	6.2	0.00	6.2	6.2
151	Y-Losses on stock	3.9	0.37	3.53	3.9
	<b>Total of I - Works</b>	<b>1765.46</b>	<b>299.13</b>	<b>1647.55</b>	<b>1946.69</b>
200	II-Establishment	160.35	279.80	102.6	362.4
300	III T&P	17.65	2.00	3	5
400	IV-Suspense	0	62.26	-62.26	0
500	V-Receipts on capital account (-)	41.39	3.46	37.93	41.39
	<b>Total Direct Charges</b>	<b>1902.07</b>	<b>639.73</b>	<b>1652.96</b>	<b>2292.70</b>
600	B- INDIRECT CHARGES	0	0.00	0	0
600.1	Capitalization of abatement of land revenue	1.25	0.00	1.25	1.25
600.2	Audit and Account	17.65	0.00	5	5
	<b>Total Direct &amp; Indirect Charges</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0</b>
	<b>Total (Rs. in Crores)</b>	<b>1920.97</b>	<b>639.73</b>	<b>1659.21</b>	<b>2298.95</b>

PLAN SHOWING RANJIT SAGAR DAM, SHAHPURKANDI DAM AND MADHOPUR BARRAGE





# GENERAL DAM OVERFLOW BLOCK SECTION



## GENERAL LAYOUT PLAN OF SHAHPURKANDI DAM PUROJECT

