



सत्यमेव जयते

भारत सरकार
Government of India
जल शक्ति मंत्रालय
Ministry of Jal Shakti
(जल संसाधन, नदी विकास और गंगा संरक्षण विभाग)
(Department of WR, RD and GR)
केन-बेतवा लिंक परियोजना प्राधिकरण
Ken Betwa Link Project Authority



क्रमांक:-के.वे.लि.परि.प्राधि./खण्ड/झांसी/टी-30(TAG)/

No:-KBLPA/Div./JHANSI/T-30(TAG)/ 1327-46

दिनांक:

Date: 23.12.24

Sub:- Minutes of 10th Meeting of Technical Advisory Group of Ken-Betwa Link Project Authority

The 10th meeting of the Technical Advisory Group of Ken-Betwa Link Project Authority (TAG-KBLPA) was held on 14.12.2024 & 15.12.2024 at Jhansi under the chairmanship of Shri D.P. Bhargava, Former Director (Technical), NHPC, Faridabad.

Minutes of the meeting, duly approved by the Chairman (TAG-KBLPA) is enclosed for kind information and further necessary action by all concerned.

(T. M. Tripathi)
ACEO (Canal) &
Member-Secretary

To: All the Members of TAG of KBLPA

1. Shri D.P. Bhargava, Former Director (Technical), NHPC, Faridabad.
2. Shri Y.K. Handa, Former Chief Engineer, CWC.
3. The Chief Engineer, Designs (NW&S), CWC, New Delhi.
4. Sh. V.K. Niranjana, Former HOD & E-in-C, I&WRD, UP.
5. Sh. G.P. Soni, Former Chief Engineer, WRD, MP.
6. The Director(CSMRS), New Delhi.
7. The Director, Hydrology-Central, CWC, New Delhi.
8. The Additional CEO (Head Works), KBLPA, Bhopal.
9. The Chief Engineer, BODHI, WRD, MP.
10. The Superintending Engineer (Design & Planning), KBLP, UP.

ऊपरी तल, बेतवा नदी परिषद कार्यालय, बेतवा नदी परिषद
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जल शक्ति - जल संयम

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Copy for kind information:-

1. The Member, D&R, CWC, New Delhi.
2. The Additional Chief Secretary, WRD, Govt. of MP, Bhopal
3. The Principal Secretary, I&WRD, Govt. of UP, Lucknow.

Special Invitee:-

1. The Chief Executive Officer, KBLPA, Bhopal.
2. The Director General, NWDA, New Delhi
3. The Engineer-in-Chief, WRD, Govt. of MP, Bhopal.
4. The Engineer-in-Chief (Projects), I&WRD, Govt. of UP, Lucknow.
5. The ACEO (HQ/P), KBLPA, Lucknow.
6. The ACEO (Construction), KBLP, I&WRD, Jhansi.
7. Experts from CWC in Gates, Canal & Stone Masonary/ Weir, CWC, New Delhi.

Minutes of 10th Meeting of Technical Advisory Group of Ken-Betwa Link Project Authority held on 14.12.2024 & 15.12.2024 at Jhansi

The 10th meeting of the Technical Advisory Group of Ken-Betwa Link Project Authority (TAG-KBLPA) was held on 14.12.2024 & 15.12.2024 at Jhansi under the Chairmanship of Shri D. P. Bhargava, Former Director (Technical), NHPC, Faridabad for discussion on the various components of the Ken-Betwa Link Project. The list of participants is attached as Annexure-I.

At the outset, Chairman welcomed the participant. After brief introduction of the participants, item wise agenda was taken up for discussion. The details of deliberation on agenda items and compliance on agenda items/ issues and points agreed upon are as under:

9.1 Compliances to the decisions taken in the 9th Meeting held on 28.09.2024 & 29.09.2024.

| Sl.No | Decision taken in 9 th TAG meeting | Follow up action |
|-------|--|--|
| 1. | <p>EPC contract of Ken-Betwa Link Canal TAG suggested modification/improvement on the following points:</p> <ol style="list-style-type: none"> 1. Increase the number of bridges to 1 bridge per 1.5 km, average, instead of the number specified in DPR 2010. 2. Provide at least one escape between two cross regulators. 3. Provide a cross regulator downstream of pumping stations and wherever required for filling existing tanks/reservoirs. 4. The specific experience requirement for the bridges, the requirement of “Minimum collective length of 5 km in a single Irrigation Project” may be changed to “Minimum collective length of 5 km”. 5. Reduce specific experience requirements for gross excavation, earth filling, and canal lining to 25% of the estimated quantum. 6. The design of the embankments may be optimized to keep first 2m from the surface as earth fill and the core filled with the compacted material in the same way as the CFRD. Now the BIS code for the CFRD is also available and the work may comply to the same standard. The conditions of the tender should make vibratory compaction in the embankment non-cohesive fillings as mandatory. 7. The draft tender must clearly provide the scope of Real Time Data Acquisition System (RTDAS). The standard specifications are already in place by the BIS. However, the provision may be inserted to provide an option the contractor to recommend any improvement which will be subjected to the acceptance of KBLPA. 8. The draft tender should incorporate obligation on the contractor to provide the disposal plan for approval of the KBLPA. A clause for | <p>The suggestions of TAG are incorporated in the tender suitably and updated tender was presented in the meeting.</p> |

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| | <p>the monitoring of adherence by the contractor to the disposal plan may be suitably inserted.</p> <p>9. The tender needs to elaborate on the detailed scope of Testing and Commissioning.</p> <p>10. The Siphons are presently not in practice because of the operational difficulties. Unless the pressing circumstance warrants so, the Aqueducts need to be preferred over the Siphons.</p> <p>11. For calculating discharge for design of cross-drainage works using Dickens Formula, the value of Dicken’s Constant “C” in the formula should be specified as 26.</p> <p>12. The TAG agreed in principle on the suggestions of few prospective bidders regarding provision of pipe network wherever technically feasible considering the functional requirements for speedy execution and reduced land acquisition. However, decision and approval of KBLPA on such proposals by the contractor shall be binding on the contractor.</p> <p>13. The State Governments of UP and MP need to firm up the size, design and locations of the outlets at the earliest. Further need to inform the number and design of their proposed outlets and the stilling well to ensure the connectivity with Main Canal. The draft tender needs to put an obligation on the contractor within his scope so that the outlets envisaged by the states seamlessly integrate into the canal structurally and hydraulically.</p> | |
| 2. | <p><u>Repair / Strengthening / Remodeling of Bariyarpur PUW, Parichha Weir, Barwa Sagar Dam along with appurtenant structures:</u></p> | |
| | <p><u>(A) Parichha Weir</u></p> <p>Prepare a detailed estimate for Self-Operating Automatic Hydro-Mechanical Gates for comparison with received EOIs. Conduct a LiDAR survey to assess local scour downstream of Parichha Weir. Keep provisions for an additional under-sluice near the head of Gursarai Canal for efficient operation.</p> | <p>I&WRD, Govt. of UP, presented a proposal for constructing an under-sluice near Gursarai Canal and adopting an ogee-shaped spillway to mitigate afflux due to pier construction.</p> |

| | |
|--|--|
| <p>(B) <u>Barwa Sagar Dam</u> I&WRD, Govt. of UP presented proposed sluice construction sites. TAG agreed prima facie on Site-2 and Site-3. Conduct a detailed examination of the suitability of these sites.</p> | <p>I&WRD, Govt. of UP presented a proposal for constructing under-sluices at Escape-2 and Escape-3 to facilitate desilting of suspended silt in Barwa Sagar Lake, carried by rainwater and the Ken-Betwa Link Canal.</p> |
|--|--|

9.2 EPC contract of Ken-Betwa Link Canal: -

The suggestions of TAG given in its Ninth meeting were incorporated and tender were again circulated to the state governments of Madhya Pradesh & Uttar Pradesh for their comments/feedback. Further the updated Tender based on the inputs received was presented before the TAG. Following recommendations were made: -

1. Scope of the Works

- (i). The TAG, after deliberation, recommended that in view of the rapid changing technologies, it may be prudent to exclude the RTDAS and SCADA from the present scope of the works. A separate tender for RTDAS and SCADA may be floated in the penultimate year of construction of canal so that the canal is equipped with the state of the art at the time of commissioning. Accordingly, it was advised to remove the RTDAS and SCADA from the present scope of the works and all references of the same in the entire tender may be reviewed and removed. A separate tender for the RTDAS & SCADA System may be issued during the penultimate year of the Ken-Betwa Link Canal project completion.
- (ii). The ACEO (E&M), Bhopal, suggested the use of Li-ion batteries as an alternative to lead-acid batteries and recommended establishing a dedicated power line of 11/33/132 KV for powering the pump house, head regulator, and cross regulator. Additionally, he proposed replacing DG sets and gasoline engines with power pack batteries. However, after detailed discussions, the TAG decided to adhere to the existing proposal of utilizing batteries and DG sets, due to their practical feasibility and suitability for the project requirements. TAG also advised that the provision for manual operation of the gates shall be kept. Further, the provision for gasoline engine was also dropped considering that it would not be able to cater to requirement of the gate operations.

2. Clause 3.1.1 General Experience; Sub-clause (b) - Financial

The TAG recommended that the requirement of the lead bidder to have experience of having successfully or substantially completed, during the last 20 years the major components of

- a) three Water Resources/ infrastructure projects with cost of executed works not less than ₹ 600 Crore each OR
- b) two Water Resources/ infrastructure projects with cost of executed works not less than ₹ 800 Crore OR
- c) One Water Resources/ infrastructure projects with cost of executed works not less than ₹ 1200 Crore

may be kept as 30%, 40% and 60% respectively of the estimated cost of the works.

3. Clause 3.1.2 Specific Experience; A Civil Works; (ii) Canal Lining

The title of the clause “Canal Lining” may be changed to “Canal Concrete Lining” and in the running text, “Experience of completion of combined concrete lining” may be changed to “Experience of completion of combined canal concrete lining”.

4. Clause 3.1.2 Specific Experience; A Civil Works; (iii) (iii)RCC Box (Barrel Type)

The phrase “*minimum collective length of RCC Box (Barrel Type) should be 5 Km in a single irrigation project*” should be changed to “*minimum collective length of RCC Box (Barrel Type) should be 2 Km in irrigation/ infrastructure projects but necessarily including at least a length of 100 m in a single stretch*”. Similar change may be incorporated in QR for PDE (Clause 3.4)

5. Clause 3.2 Hydro Mechanical Works: (ii) Specific Experience

In view of the actual requirements, the specific experience in “*Designing, Manufacturing, installation, testing and commissioning of Fixed Wheel type Vertical Lift Gate operated by hydraulic hoist or rope drum hoist with AxH=500cum or more*” may be reduced to *AxH=200 cum or more*

6. Clause 3.5 – Working Capital

The TAG suggested that the working capital for the project be maintained at a level sufficient to meet three months of requirement ($2000 \times 3/48 = 125$ crore).

7. Clause 4 Nature of Bidders Sub Clause B and D

The TAG felt that construction of bridges is a specialized item and hence it would be advisable to allow expert sub-contractor in this field. Hence the paragraph in Sub-clause B and D i.e. “*The bidder can propose not more than 5 Sub-contractor(s) to meet the criteria under Para 3.2- Hydro-mechanical works and Article 3.4 – Planning, Design and Engineering, in which*

he does not have the relevant experience.” May be modified as “*The bidder can propose not more than 5 Sub-contractor(s) to meet the criteria under Para 3.1.2 A (iv)-Bridges, Para 3.2-Hydro-mechanical works and Article 3.4 – Planning, Design and Engineering, in which he does not have the relevant experience.*”

Also, in the Note below the same clause, the phrase “*Note: The Sub-Contractor for hydro mechanical works can be proposed within 90 days of issue of LoA and for PDE within 30 days of issue of LoA*” may be changed to “*Note: The Sub-Contractor for hydro mechanical works and the Bridges can be proposed within 90 days of issue of LoA and for PDE within 30 days of issue of LoA*”

8. Clause 5 - Eligibility and Qualifying Requirements of Bidders (Important)

The TAG recommended that the Clause 5.1 to 5.3 may be changed as under

5.1 The tender of “EPC execution of Ken Betwa Link Canal under Ken- Betwa Link Project is being floated in two packages viz, Package I- RD-0 to RD-107 Km and Package II - RD-107 to RD 218.6 km. The invitation to bid is open for all the bidders from India who meet the Qualification Criteria as per Article 3 of the ITBs of respective packages. Each package is an independent bid and the bidder can participate in **EITHER OR BOTH** the packages of this tender, solely or through a Joint Venture with/without sub-contractors. Such JV may be formed with the same or different partners in each package. However, the same will be disclosed by the bidder in the bid Qualification Form - 1.

5.2 In such a case, the lead bidder and its JV partners/sub-contractors jointly will have to meet the following technical and financial requirements of both the packages separately and independently:

- **Clause 3.1.1(b)- Financial**– This qualification criteria will be met through different projects in package 1 and II i.e. the projects mentioned in one Package will not be considered in another Package irrespective of their size.
- **Clause 3.1.2(A)- Civil Works** – (i) Earthwork, (ii) Canal Concrete Lining (iii) Cross Drainage Works (iv) RCC Box (Barrel Type) and (v) Bridges
- **Clause 3.2 - Hydro mechanical Works - (i) General Experience & (ii) – Specific Experience**
- **Clause 3.4 – Design and Engineering Works**
- **Clause 3.5-Financial Capacity – Turnover, Net worth, Working Capital and Solvency**
- **Clause 3.6-Bid Capacity:**

In case, the same work is claimed in both the packages by the sole bidder or JV Partner/sub-contractor to meet the Qualification Requirement of Clause 3.1.2(A), Clause 3.2, Clause 3.4, Clause 3.5 and Clause 3.6, the quantities mentioned in the qualification criteria claimed in one package shall be deducted from the total quantities of the same work claimed in other package to arrive at the qualification of the bidder. For example, if the total quantity of the works executed by the sole bidder/ JV partner is 'A' out of which the quantity 'B' has been claimed to meet the requirement of Package 1, only the 'A-B' will be considered in Package 2, if the sole bidder / JV partner submits the bid in both the package.

- 5.3 (a) In the event of the bidder declaring its intention to participate in both the packages but not found to meet the criteria as mentioned in Article 5.2 above for both the packages during Technical evaluation, then both the bids submitted by him shall be treated as unresponsive. It is therefore in the own interest of the bidder to ensure that it meets the QR of both the bids, in case he decides to participate in the bid process of both the packages.
- 5.3 (b) Each bidder shall submit only one bid in a package, either individually or as a sole bidder or as a JV partner. A bidder who submits or participates in more than one bid (other than a sub-contractor) will cause all the proposals with the bidders's participation disqualified.

CONFLICT OF INTEREST

- A Bidder may be considered to have a Conflict of interest with one or more parties in this bidding, if
- i. they have controlling partner(s) in common; or
 - ii. they receive or have received any direct or indirect subsidy /financial stake from any of them; or
 - iii. they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
 - iv. a Bidder or any of its affiliate participated as a consultant in the preparation of the design or technical specification of the contract that is the subject of the bid; or
 - v. in case of a holding company having more than one Subsidiary/Sister Concern having common business ownership/management only one of them can bid. Bidders must proactively declare such sister/common business/management in same/similar line of Business;

All such Bidders having a Conflict of Interest, shall be disqualified

9. Clause 14.2

The TAG reviewed the existing allocation of the lump sum percentage price to be quoted by the successful bidder and proposed a reallocation to better align with project requirements to as given below: -

| S No | Description of the compartment | Percentage lump sum price quoted by the successful bidder |
|-------------|---|--|
| a | Planning Design and Engineering | 2% |
| b | Civil works | 90% |
| c | HM Supplies | 0.3% |
| d | HM Services (Transportation, Installation & Commissioning of HM Supplies) | 0.2% |
| e | O & M of the works / facilities for 5 years after completion of works | 7.5% |

10. Appendix CW-2

The TAG advised to keep the regulation of progress of payment to be tentative and shall be finalized by Engineer-in-charge at a later stage.

| S. No. | Description of Works | % of Total Quoted Price |
|---------------|--|--------------------------------|
| 3.1 | All components of the canal including Embankment, Earthwork, drainage systems, service Roads, slope protection works at the boundaries of the canal area etc. and its appurtenant structures | 45% |
| 3.2 | Construction of Cross Drainage Works and its appurtenant structures. | 20% |
| 3.3 | Canal Lining including seepage control and uplift control measures etc. | 28% |
| 3.4 | Construction of Roads/Railways crossings. | 7% |
| | Total | 100% |

The bidder may re-adjust the percentages at row 3.1 and 3.2 within their total combined allocation, subject to the bidder's discretion with the approval of Engineer-in-charge. The percentages for 3.3 & 3.4 will be kept fixed and shall not be subject to any reallocation or reshuffling.

11. Owner's Requirement – Clause 5 Civil Works

The TAG advised that the culverts designed for the project should have a minimum height of 2m and a width of 1.5m to facilitate the maintenance and safe and easy crossing of animals. This design requirement should be maintained while also ensuring that the culverts meet all other relevant functional and structural specifications.

12. Special Conditions of Contract (O&M) – Clause 4

The TAG suggested the redistribution of the payment schedule to reflect a year-wise distribution, with payments to be made on a month-wise basis, contingent upon the satisfactory completion of the work.

| | |
|--------------|--------------|
| First Year | 1.00% |
| Second Year | 1.10% |
| Third Year | 1.40% |
| Fourth Year | 1.75% |
| Fifth Year | 2.25% |
| Total | 7.50% |

13. Clause 38 of GCC - Settlement of Disputes and Arbitration

On recommendation of Govt of UP, the TAG advised that the dispute resolution mechanism may be kept as per DoE OM No F.1/2/2024 – PPD dated 3 June 2024.

14. Miscellaneous

The TAG advised to check the alignment of the Ken-Betwa Link Canal for potential interventions or conflicts with existing underground infrastructure, including gas pipelines, water pipelines, and other utilities using PM Gati Shakti Portal.

After incorporating the modifications, suggested above, the Bid Document may be treated as final from TAG and KBLP may go ahead with further action in this regard.

9.3 Detailed Project Report of Restoration of Bariyarpur Left Bank Canal.

In the 9th meeting of TAG-KBLPA, TAG suggested for revision of the project proposal and Videography of the canal & structures for better understanding. In view of this Govt. of MP has presented the revise proposal and videography of the canal and its structures which clearly showed the damages to the canal and structures. During discussion, officer of WRD, Govt. of MP informed that due to damage in the canal and constraints in the head available at the canal head they are not able provide the water for irrigation in the entire command and repairing is required to reap the benefits envisaged in the MoA for Ken-Betwa Link Project.

After detailed discussion, the TAG acknowledged the need for repairs and suggested that the design of canal structures should be tailored to accommodate the specific requirements of the local terrain and environmental conditions. Accordingly the DPR for the restoration of the Bariyarpur Left Bank Canal be prepared and submitted to the Central Water Commission (CWC) for cost appraisal.

The ACEO(HQ/P), KBLPA, Lucknow, apprised the TAG that the financial provisions for the restoration of the Bariyarpur Left Bank Canal are not included in the approved estimates for the Ken-Betwa Link Project. Only benefits from Bariyarpur Left Bank Canal are included as the ERM work under AIBP/PMKSY has been completed in 2018-19. Consequently, it was suggested that the funding aspect may be looked separately and the matter should be taken up by the Government of Madhya Pradesh.

9.4 Repair & Renovation of Dams/Tanks and their connecting Canals/Drains in Mahoba District:

The I&WRD, Govt. of UP, presented the DPR for the repair and renovation of Dams/Tanks and their connecting Canals/Drains in the Mahoba district. The presentation included four proposals for consideration by the TAG.

Chairman TAG and CEO, KBLPA suggested that gravity flow arrangements should be preferred over pumping arrangement, as far as possible, as it is easy in operation as well as lower O&M cost. TAG also suggested to include O&M cost in the estimate if gravity flow is not adopted in the proposal.

ACEO(HQ/P), KBLPA/CE(N), NWDA informed TAG that alternate Proposal- 5 has already been sent to I&WRD, Govt. of UP for their comments/examination and same should also have been included in the comparison. I&WRD, UP intimated that they will check the feasibility.

TAG suggested that for irrigation purposes, the design should conform to the standards specified in IS: 1916:1989, rather than IS: 3589:2001. Additionally, TAG suggested for adoption of IS:1916:1989 with food grade epoxy paint for the inner surface of MS pipes. TAG also suggested for use of Cable duct code for land acquisition for underground pipeline.

9.5 Repair / Strengthening / Remodeling of Bariyarpur PUW, Parichha Weir, Barwa Sagar Dam along with appurtenant structures:

PARICHHA WEIR & BARIYARPUR PUW

Background:

In the 9th meeting of TAG it was suggested that the masonry structure may have undergone significant chemical and physical changes over time. Installing gates in an inclined position could induce tensile stress, which should be avoided to prevent jeopardizing existing functionality. New piers for gates should be designed such as not create any tension in the existing weir and constructed without hampering current functionality to provide water to

stakeholders. Further, the intervention should not be hydrologically and structurally risky. The modernization the structure should be carried out in a manner considering stability of the structure.

Proposal Discussion and Recommendations:

I&WRD, Govt. of UP presented a proposal for the installation of top-hinged gates on a separate structure d/s of the existing weir body. TAG deliberated on the following points:

PARICHHA WEIR

1. I&WRD, Govt. of UP officers informed that there would be 30 percent increase in discharging capacity owing to adoption of ogee profile which will mitigate the additional afflux caused by the construction of piers/columns. Based on discussion, TAG suggested that an Ogee-shaped section is deemed suitable instead of the Broad Crested Weir.
2. TAG suggested for the provision of a cut-off/toe wall at the foundation level to ensure the stability of the Ogee section.
3. TAG suggested for adoption of the electro-mechanical operating system for the proper operation of the under sluice and off-taking canal gates. 'Automatic' word to be deleted.
4. Regarding the construction of an additional under sluice near the head of Gursarai Canal, I&WRD, Govt. of UP presented a suitable location. TAG suggested lowering the bed level of the under sluice box by 1 meter to facilitate easier silt removal near the Gursarai Canal. A single gate with an electro-mechanical system should be provided for ease of operation.
5. ACEO(HQ/P), KBLPA informed that for Repairing & Renovation for the Bariyarpur PUW, Parichha Weir and Barwa Sagar Dam ,only Rs.220 Crores has been provisioned in the Comprehensive Report and therefore the additional cost may have to be borne by the Govt. of Uttar Pradesh.

BARIYARPUR PUW

1. I&WRD, Govt. of UP officers informed that there would be 30 percent increase in discharging capacity owing to adoption of ogee profile which will mitigate the additional afflux caused by the construction of piers/columns. Based on discussion, TAG suggested that an Ogee-shaped section is deemed suitable instead of the Broad Crested Weir.
2. TAG suggested for the provision of a cut-off/toe wall at the foundation level to ensure the stability of the Ogee section.

3. TAG advised replacing the old gates with new electro-mechanically operated gates for the under sluice and off-taking canal.
4. TAG suggested providing flexible protection work along the right afflux bund using boulders in G.I. wire crates, supported by a launching apron, instead of a C.C./R.C.C. retaining wall.
5. TAG advised the construction of a control room near the sluice and head regulator for proper control and operation of the gates.
6. ACEO (HQ/P), KBLPA informed that for Repairing & Renovation for the Bariyarpur PUW, Parichha Weir and Barwa Sagar Dam , only Rs.220 Crore has been provisioned in the Comprehensive Report and therefore the additional cost may have to be borne by the Govt. of Uttar Pradesh.
7. TAG suggested that the structure should be designed for observed maximum flood.

BARWA SAGAR DAM

Background:

TAG in its 9th meeting deliberated that In view of the findings of the test report informed from I&WRD, Govt. of UP that the material deposited in the reservoir is clayey silt, the cost of desilting of Barwa Sagar reservoir outweighs the benefits for KBLP and is not economically sustainable and hence was not recommended to be to the part of the KBLP. TAG has suggested to provide sluice gate at suitable location. I&WRD, Govt. of UP presented two sites for consideration after conducting a site visit. Site 2 and Site 3 appeared to be suitable for the construction of sluice gates. TAG advised that further examination of these sites be undertaken for their suitability.

I&WRD, Govt. of UP presented a proposal for the construction of under sluices for Escape-2 and Escape-3, intended for the desilting of suspended silt in Barwa Sagar Lake, which flows with rainwater and would flow through Ken-Betwa Link Canal.

After detailed discussion, the following points were agreed upon:

1. **Escape-2:** I&WRD, Govt. of UP informed that a discharge of 20 Cumecs may pass through the existing drain. TAG found this proposal suitable and advised increasing the bed width of the channel in Barwa Sagar Lake from 2.5m to 4m, with a sloping ratio of approximately 1:10, to enhance operational efficiency and easy machinery movement.
2. **Escape-3:** I&WRD, Govt. of UP proposed the passing of 70 Cumecs, comprising both Ken-Betwa Link Canal tail water and excess water from Barwa Sagar, through Escape - 3. TAG noted the proximity of a state highway bridge and advised that the existing bridge be protected by jacketing or other suitable methods after the removal of existing rocks in a controlled manner. Ensuring the uninterrupted flow of 70 Cumecs was deemed essential.

3. ACEO(HQ/P), KBLPA informed that cost of Repairing & Renovation for the Bariyarpur PUW, Parichha Weir and Barwa Sagar Dam is only Rs.220 Crore in the approved estimate of KBLP and therefore any additional cost is to be borne by the Govt. of Uttar Pradesh.
4. **Junction Point for Escape Channels:** I&WRD, Govt. of UP informed that all escape channels (1, 2, and 3) converge at a point near the Jhansi-Chhatarpur highway, which may be developed as a junction point. Approximately 1.5 hectares of land is required for the development of this junction to highlight/ publicize the benefits of KBLP. TAG suggested that the cost of land acquisition for the development of infrastructure at the Junction Point may be kept in the Ken-Betwa Link Canal works.

9.6 Introduction of Submerged Pump-set in Command Area Development of KBLP:

I&WRD, Govt. of UP presented the proposal for the introduction of submerged pump-sets in the command area development under the Ken-Betwa Link Project (KBLP). After a detailed deliberation, the following key points were emerged:

- 1 The submerged pump-set is advised for use in areas where the suction lift head (pumping water level) ranges between 6m and 20m, primarily due to its low life cycle cost.
- 2 The pumping station for the submerged pump-set should be constructed in accordance with the relevant IS Codal provisions. The station must include all necessary electro-mechanical components to ensure the effective operation of the pump.
- 3 The sump well, used for off-taking water from the canal or lake via the approach channel, must include trash racks and a breast wall to prevent the entry of silt and debris. In cases where the sump well is constructed in a reservoir on piles, it should be protected by a trash rack to further safeguard against debris entry.
- 4 The submerged pump-set should not be directly installed on the Ken-Betwa Link Canal. Instead, water from the canal should be transferred to an adjacent sump well, where the pump-sets will be installed to lift the water.
- 5 A sufficient number of pump-sets, providing the minimum required submergence, should be installed to ensure optimal operation.

The meeting ended with vote of thanks to Chair.

List of participants in 10th meeting of Technical Advisory Group for Ken-Betwa Link Project Authority (TAG-KBLPA) held at Jhansi on 14.12.2024

Technical Advisory Group

- | | |
|--|------------------|
| 1. Shri D. P. Bhargava, Former Director (Tech.), NHPC, Faridabad | Chairman |
| 2. Shri Raj Kumar Mishra, ACEO (Head works), KBLPA, Bhopal | Member |
| 3. Shri Gyan Prakash Soni, Retd Chief Engineer, WRD, MP | Member |
| 4. Shri T.M. Tripathi, ACEO(Canal), KBLPA, Jhansi | Member Secretary |

Special Invite

1. Shri Prashast Kumar Dixit, CEO, KBLPA.
2. Shri Shiva Prakash, ACEO(HQ/P), KBLPA, Lucknow.
3. Shri Devesh Shukla, ACEO (Construction), KBLCC, Jhansi.
4. Shri P. K. Saxena, ACEO(E&M), KBLPA, Bhopal (Through VC)

Other Participants

1. Shri Yuvraj Warke, Chief Engineer, Dhasan-Ken Basin, Sagar, I&WRD, MP.
2. Shri Pradeep Kumar Saxena, Consultant, KBLPA, Bhopal.
3. Shri Naveen Gaur Superintending Engineer, WRD, Chhatarpur.
4. Shri Rahul Kumar Singh, Director Gates (NW&S), CWC, New Delhi.
5. Shri Manoj Kumar Meena, Director, CWC, New Delhi.
6. Shri Ashish Singh Kushwah, Executive Engineer, KBLPA, Jhansi.
7. Shri Santosh Kumar, Executive Engineer, KBLCCD, Jhansi.
8. Shri O.P. Singh Kushwah, Expert Consultant, WRD, MP.
9. Shri Anshul Jain, Assistant Engineer, KBLPA, Jhansi.
10. Shri Ashish Swami, Assistant Engineer, KBLPA, Jhansi.
11. Shri Ramesh Chandra, Assistant Engineer, KBLCCD, Jhansi.
12. Shri Faizan Ahmad Siddqui, Assistant Engineer, KBLCCD, Jhansi.
13. Shri Shivam Agarwal, Assistant Engineer, KBLCCD, Jhansi.

14. Shri Sanjay Kumar Mishra, Assistant Engineer, KBLCCD, Jhansi.
15. Shri Amit Tiwari, Junior Engineer, KBLPA, Jhansi.
16. Shri Bhoorsingh Meena, Junior Engineer, KBLPA, Jhansi.
17. Shri Ram Singh Meena, Junior Engineer, KBLPA, Jhansi.
18. Shri Sudhir Kumar, Junior Engineer, KBLCCD, Jhansi.
19. Shri Radheshyam Sharma, Junior Engineer, KBLCCD, Jhansi.
20. Shri Sukhdev, Junior Engineer, KBLCCD, Jhansi.
21. Shri Rajesh Chandra Jaiswara, Junior Engineer, KBLCCD, Jhansi.
22. Shri Bimlesh Goswami, Draftsman Grade-II, KBLPA, Jhansi.
23. Shri Shan Mohammad, Draftsman, KBLCCD, Jhansi.
24. Shri Sanjeev Kumar Rana, UDC, KBLPA, Jhansi.
25. Shri Javier Singh Yadav, Sinchparivachak, KBLCCD, Jhansi.
26. Shri Vijay Singh, Sinchpal, KBLCCD, Jhansi.
27. Shri Dhaniram Kushwah, Sinchpal, KBLCCD, Jhansi.
28. Shri Amit Kumar, Sinchpal, KBLCCD, Jhansi.

**List of participants in 10th meeting of Technical Advisory Group for Ken-Betwa Link Project Authority
(TAG-KBLPA) held at Jhansi on 15.12.2024**

Technical Advisory Group

- | | |
|--|---------------------|
| 1. Shri D. P. Bhargava, Former Director (Tech.), NHPC, Faridabad | Chairman |
| 2. Shri Raj Kumar Mishra, ACEO (Head works), KBLPA, Bhopal | Member |
| 3. Shri Gyan Prakash Soni, Retd Chief Engineer, WRD, MP | Member |
| 4. Shri V. K. Niranjana, Former HoD& E-In-C, I&WRD, UP | Member (Through VC) |
| 5. Shri T.M. Tripathi, ACEO(Canal), KBLPA, Jhansi | Member Secretary |

Special Invite

1. Shri Prashast Kumar Dixit, CEO, KBLPA.
2. Shri Shiva Prakash, ACEO(HQ/P), KBLPA, Lucknow.
3. Shri Devesh Shukla, ACEO (Construction), KBLCC, Jhansi.

Other Participants

1. Shri Pradeep Kumar Saxena, Consultant, KBLPA, Bhopal.
2. Shri D.K. Mishra, Superintending Engineer, KBLCC, Mahoba.
3. Shri Rahul Kumar Singh, Director Gates (NW&S), CWC, New Delhi.
4. Shri Manoj Kumar Meena, Director, CWC, New Delhi.
5. Shri Ashish Singh Kushwah, Executive Engineer, KBLPA, Jhansi.
6. Shri Santosh Kumar, Executive Engineer, KBLCCD, Jhansi.
7. Shri N. K. Jadiya, Executive Engineer, KBLCC, Mahoba.
8. Shri Jitendra Kumar, Executive Engineer, KBLCCD, Banda.
9. Shri Akhilesh Kumar, Executive Engineer, KBLCCD, Mahoba.
10. Shri Anshul Jain, Assistant Engineer, KBLPA, Jhansi.
11. Shri Ashish Swami, Assistant Engineer, KBLPA, Jhansi.
12. Shri Shubham Saxena, Assistant Engineer, KBLCCD, Jhansi.
13. Shri D. K. Awasthi, Assistant Engineer, KBLCCD, Jhansi.
14. Shri Sourabh Verma, Assistant Engineer, KBLCCD, Banda.
15. Shri Nihit Kumar Singh, Assistant Engineer, KBLCCD, Banda.
16. Shri Abhi Sahu, Assistant Engineer, KBLCCD, Mahoba.

17. Shri Mridul Shrama, Assistant Engineer, KBLCCD, Mahoba.
18. Shri Gaurav Chaudhary, Assistant Engineer, KBLCCD, Banda.
19. Shri Manoj Kumar, Assistant Engineer, KBLCCD, Jhansi.
20. Shri Faizan Ahmad Siddqui, Assistant Engineer, KBLCCD, Jhansi.
21. Shri Vaibhav Mohan Das, Assistant Engineer, KBLCC, Mahoba.
22. Shri Vinay Mishra, Assistant Engineer, KBLCCD, Jhansi.
23. Shri Ravi Shankar, Assistant Engineer, KBLCCD, Jhansi.
24. Shri Shivam Agarwal, Assistant Engineer, KBLCCD, Jhansi.
25. Shri Amit Tiwari, Junior Engineer, KBLPA, Jhansi.
26. Shri Bhoor Singh Meena, Junior Engineer, KBLPA, Jhansi.
27. Shri Ram Singh Meena, Junior Engineer, KBLPA, Jhansi.
28. Shri Than Singh, Junior Engineer, KBLCCD, Jhansi.
29. Shri Vimal Singh, Junior Engineer, KBLCCD, Jhansi.
30. Shri Arya Kumar Gupta, Junior Engineer, KBLCCD, Jhansi.
31. Shri Bimlesh Goswami, Draftsman Grade-II, KBLPA, Jhansi.
32. Shri Shan Mohammad, Draftsman, KBLCCD, Jhansi.
33. Shri Sanjeev Kumar Rana, UDC, KBLPA, Jhansi.