

Government of India
Central Water Commission
Project Appraisal (South) Directorate

7th Floor, Sewa Bhawan
New Delhi-110066

OFFICE MEMORANDUM

Subject - Kalasa Nala Diversion Scheme (Lift Scheme) & Bhandura Nala Diversion Scheme (Lift Scheme) of Govt. of Karnataka

A. Brief Background

1. Maharashtra, Karnataka and Goa are the basin States. The total catchment of the Mahadayi basin is 2,032 sq. km of which the catchment of the river in Goa is about 1,580 sq. km. (78%) that in Karnataka is about 375 sq. km (18%) and 77 sq. km (4%) in Maharashtra.
2. Tribunal was constituted on 16th November, 2010 to adjudicate upon the water dispute regarding the inter-state river Mahadayi and the effective date of constitution is 21.08.2013. Report & Decision under Section 5(2) submitted on 14.08.2018.
3. Further Report of the Tribunal under Section 5(3) is under consideration of Tribunal.
4. Also, as per Clause VIII & IX, (under A. Karnataka) of MWDT Award, which inter alia says; "*Keeping in view the overall scenario related to water availability, water needs, water demands, essential requirements towards environmental flow, and other related matters, the State of Karnataka is also permitted to divert 61.8 Mcum (2.18 tmc) of Mahadayi water at proposed Bhandura dam and 48.7 Mcum (1.72 tmc) of water at proposed Kalasa dam, only subject to fulfilling the flowing directions:*
(a) *The State of Karnataka shall undertake fresh planning and development of schemes for consumptive uses within the basin or diversion of water outside the basin, including the reservoir losses, and*
other related matters, for not more than 61.8 Mcum (2.18 tmc) at the

proposed Bhandura dam site;

(b) The State of Karnataka shall undertake fresh planning and development of scheme for consumptive uses within the basin or diversion of water outside the basin including the reservoir losses and other related matters for not more than 48.7 Mcum (1.72 tmc) at the proposed Kalasa dam site;

(c) Such utilizations shall necessarily require through review and modification of the Detailed Project Reports by the State Government of Karnataka. The State of Karnataka shall prepare modified Detailed Project Reports for diversion of water from the Mahadayi river basin; and

(d) The proposals in the form of Detailed Project Reports would be considered for implementation only after technical appraisal of the proposed projects by the central agencies, and only after obtaining all mandatory clearances as required by law."

5. Basin States have filed separate SLPs (32517/2018 of Maharashtra, 33018/2018 of Karnataka & 19312/2019 of Goa) against the decision dated the 14th August, 2018 of the Tribunal in the Hon'ble Supreme Court.

6. State of Karnataka filed an Interlocutory Application (I.A. 109720/2019 in SLP 33018/2018) before Supreme Court for a direction to the Union of India to publish the MWDT Award dated 14.08.2018. Supreme Court vide its Order dated 20.02.2020, allowed the said Interlocutory Application subject to the result of the pending proceedings. Accordingly, Central Government has published MWDT Award vide Gazette Notification No. S.O. 888 (E) dated 27.02.2020.

7. As per Section 6 of the Inter-State River Water Dispute Act, 1956, *Central Government shall publish the decision of the Tribunal in the Official Gazette and the decision shall be final and binding on the parties to the dispute and shall be given effect to by them".* Thus, after notification, the decision of Tribunal is now binding on party States.

(B) Examination of PFR & DPR in CWC

1. Pre-Feasibility Reports of Kalasa Nala Diversion Scheme (Lift

Scheme) and Bhandura Nala Diversion Scheme (Lift Scheme) were submitted to CWC on 17.06.2022 for technical appraisal. Project Authorities were communicated on 18.11.2022 to submit the DPR incorporating compliance w.r.t. observations of CWC on Inter-State Matters, Hydrology and Design aspects.

2. DPRs of Kalasa Scheme and Bhandura Scheme incorporating compliance were submitted on 23.11.2022 and 28.11.2022, respectively.

3. Technical appraisal of the DPRs has been carried out as per the **Guidelines for assessment of water availability for non-irrigation uses 2012** of CWC which inter-alia suggests "*project envisaging use of water for non-irrigation purpose is required to be appraised from water availability and inter-State /international issues, if any, only.*"
4. As per Para 4.7 of the Guidelines for Submission, Appraisal and Acceptance of Irrigation and Multipurpose Projects (2017) of CWC, "*copy of DPR of any project proposed in the river basin for which no tribunal award or inter-State agreement exists, will be circulated to the co-basin States by the Project Authority.*" As the Tribunal has already given its Award and the same has been notified, thus binding on the party States, it is not required to seek comments of co-basin States.
5. The Project specific aspect-wise comments are as under :

(1) Kalasa Nala Diversion Scheme (Lift Scheme)

Inter-State Matters:

- As per DPR, catchment area upto the proposed Kalasa dam site including that of Haltara and Surla Nala has been considered as 25.5 sq. km for assessment of water availability and quantum of water proposed for diversion outside the basin and reservoir losses and other related matters does not exceed 1.72 TMC (Kalasa Dam: 1.042 TMC; Haltara Dam: 0.27 TMC and Surla Nala: 0.405 TMC).
- DPR of Kalasa Nala Diversion scheme (Lift Scheme) has been found acceptable from inter-State angle as utilization proposed is within the Award of the Tribunal duly notified.

Hydrology:

- The annual rainfall and runoff estimated by MWDT has been adopted by project authorities to compute the rainfall runoff coefficient for each year. Hence by adopting these coefficients the daily, 10 daily and monthly runoff values have been estimated by project authorities. The annual yield at 75% dependability for Kalasa Nala Project (combined catchment – 25.5 sq. kms) works out as **2.19 TMC** (62.2 MCM), which is same as given in MWDT Award.
- Further, estimation of 100 year return period flood using hydro-meteorological approach as well as flood frequency approach for proposed dams on Kalasa nala and haltara nala generally **appears to be in order.**
- 100 year return period flood of 311 cumecs for Kalasa Nala and 125 cumecs for Haltara Nala dam site need **to be considered for design and planning purpose.**
- The 100 year return period flood for 8 (eight) check dams on Surna Nala estimated as per rational method of hydro-meteorological approach generally **appears to be in order.** Accordingly, **design and planning may be carried out** as per the design flood finalized by Hydrology Directorate of CWC for Surla Check dams (1, 2, 3, 3a, 4, 4a, 5) & Surla 6.
- Estimation of 25 year return period flood for proposed dams on Kalasa Nala, Haltara Nala and Surla Nala **has been found to be in order.** Value of diversion flood may be adopted as finalized by Hydrology Directorate of CWC.

Design:

- Some of the points suggested by CWC at PFR Stage have been incorporated in the DPR. Further, other suggestions pointed out need to be implemented at project construction stage.
- Detailed comments on Design aspects in this regard are enclosed for guidance.
- Further, as per Guidelines, only hydrology and inter-State aspects are to be seen by CWC. Therefore, only some preliminary operational aspects have been seen in CWC. However, project

authorities are to ensure all designs to be in consonance with the Award.

(2) Bhandura Nala Diversion Scheme (Lift Scheme)

Inter-State Matters:

- As per DPR, catchment area upto the proposed Bhandura dam site has been considered as 32.25 sq. km for assessment of water availability and quantum of water proposed for diversion outside the basin and reservoir losses and other related matters does not exceed 2.18 TMC.
- DPR of Bhandura Nala Diversion scheme (Lift Scheme) has been found acceptable from inter-State angle as utilization proposed is within the Award of the Tribunal duly notified.

Hydrology:

- The annual rainfall-runoff considered by MWDT has been adopted by project authorities to compute the rainfall runoff coefficient for each year. By adopting these runoff coefficients the daily, 10 daily and monthly runoff values have been estimated. The annual yield at 75% dependability for Bhandura Nala Project works out as **2.77 TMC** (78.7 MCM).
- Hydraulic head of Bhandura dam is less than 12m and the gross storage is smaller than 10 MCM, hence , as per IS 11223 (1985), the project classifies for 100 year return period flood as design flood. Using hydro-meteorological approach, project authorities have estimated design flood. The peak of 100 year return period flood is computed as 342.37 cumec. Estimated 100 year flood from flood frequency approach is 509.44 cumec and it is found that Bhandura diversion dam has been designed to discharge 542.96 cumec.
- Also, Estimation of 25 year return period flood for proposed Bhandura dam **has been found to be in order**. The value of

52.5 cumec of diversion flood has to be adopted for Bhandura Nala Scheme.

Design:

- Some of the points suggested by CWC at PFR Stage have been incorporated in the DPR. Further, other suggestions pointed out need to be implemented at project construction stage.
- Detailed comments on Design aspects in this regard are enclosed for guidance.
- Further, as per Guidelines, only hydrology and inter-State aspects are to be seen by CWC. Therefore, only some preliminary operational aspects have been seen in CWC. However, project authorities are to ensure all designs to be in consonance with the Award.

(C) Conclusion

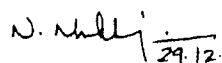
Based on the technical appraisal by CWC, DPRs of Kalasa Nala Diversion Scheme (lift Scheme) & Bhandura Nala Diversion Scheme (lift Scheme) are found to be acceptable from hydrology and inter-State aspects, subject to the strict compliance of the following conditions :

- i. Project Authority shall get all the mandatory approval from other concerned technical agencies as may be required in terms of said MWDT Award.
- ii. The observations of CWC as enclosed shall be duly considered by the Project Authorities. Further, final designs shall be such that they are in full consonance with MWDT Award as applicable.
- iii. Project Authority shall obtain all mandatory/Statutory clearances as required by law mentioned in the MWDT Award.
- iv. Environmental flow may be released as stipulated in MWDT Award.
- v. Project Authority shall communicate the information related to daily withdrawal of Mahadayi water on a regular basis to Basin States including Govt of Goa. Further, once 'Mahadayi Water Management Authority' as mandated by Clause-XII of the MWDT Award is constituted, regulation of diversion through said projects shall be

done in consultation with this Authority, or, as directed by the Authority.

vi. Effective sediment management shall be adopted by project authority.

vii. In this regard, this acceptance from hydrology and inter-State aspects as per Guidelines of CWC shall be subject to the decision in the proceedings before the Supreme Court in the SLPs (32517/2018 of Maharashtra, 33018/2018 of Karnataka & 19312/2019 of Goa) against the Report-cum-final decision dated the 14th August, 2018.


(N. Mukherjee)
Director

To

Chief Engineer

KNNL, Malaprabha Project Zone Dharwad

Govt. of Karnataka

Copy for kind information :

1. PPS to Secretary, DoWR, RD&GR, Ministry of Jal Shakti, New Delhi
2. Additional Chief Secretary, WRD, Govt of Karnataka, Bengaluru
3. PPS to Chairman, CWC, New Delhi.
4. PPS to Member, WP&P, CWC, New Delhi.



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण
विभाग
केंद्रीय जल आयोग
बैराज एवं नहर अभिकल्प (उ.प.एवं द.)
निदेशालय



Government of India
Ministry of Jal Shakti
Dept. of Water Resources, RD&GR
Central Water Commission
BCD(NW&S) Directorate

Sub: DPR of Kalasa Nala Diversion Scheme (Lift Scheme), Karnataka-reg.

Ref: 1. KNNL/CE/MPZ/AE-4/TA-3/2022-23/2900 dated 24.11.2022

2. This office File No. T-15027/1/2022-BCD(NWS)DTE dated 13.12.2022

(Copy enclosed)

3. email on the subject matter from PA(South) Dte dated 16.12.2022

Sir,

Kind attention is invited on the letter under reference no. 2, vide which conditional clearance to the DPR of Kalasa Nala Diversion Scheme (Lift Scheme), Karnataka was accorded. In this connection it is to clarify that the pumping capacity worked out in reference no. 2 was for the condition of uninterrupted pumping only.

Further, the provided pumping capacity is sufficient to lift the water for the 75% dependable year as per the Mahadayi Water Dispute Award (MWDT). However, it would be prudent that the actual diversion of water shall be monitored & controlled by the regulating body constituted as per the provisions of the MWDT.

Signed by Manoj Kumar

Meena

Yours Faithfully,

Date: 19-12-2022 17:59:23

Reason: Approved

(Manoj Kumar Meena)
Director

Copy to: Director, Project Appraisal (South), CWC, New Delhi.

षष्ठ तल(दक्षिण), सेवा भवन
राम कृष्ण पुरम, नई दिल्ली -110066
दूरभाष: 011-29583490
ई मेल: bcdnwsdte@nic.in
●जल संरक्षण-सुरक्षित भविष्य



Save Life●

6th Floor(South),
SewaBhawan,
R.K. Puram, New Delhi-110066
Tel: 011-29583490
E-mail: bcdnwsdte@nic.in

●Conserve Water-

File No.T-15027/1/2022-BCD(NWS) DTE

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण
विभाग
केंद्रीय जल आयोग
बैराज एवं नहर अभिकल्प (उ.प. एवं द.) निदेशालय



Government of India
Ministry of Jal Shakti
Dept. of Water Resources,
RD&GR
Central Water Commission
BCD(NW&S) Directorate

Sub: DPR of Kalasa Nala Diversion Scheme (Lift Scheme), Karnataka-reg.

Ref: KNNL/CE/MPZ/AE-4/TA-3/2022-23/2900 dated 24.11.2022

Sir,

Kind attention is invited to the letter referred above, vide which the Detailed Project Report of Kalasa Nala Diversion Scheme (Lift Scheme), Karnataka was forwarded for examination. The same has been examined and observations are as under:

1. The dam sections shall be designed following the Indian Standard Codal provisions.
2. The upstream retaining walls and downstream training walls shall be designed for critical loading conditions including sudden drawdown conditions.
3. Transient studies for all three lifts i.e., Haltara lift, Surla lift & Kalasa lift shall be performed with actual pump characteristics and the surge protection arrangements for upsurge as well as down surge to be planned accordingly before the construction stage.
4. The eight numbers of check dams proposed for the Surla Tapping System are intercepting the hilly streams containing the higher concentrations of sediments. Hence proper sediment flushing/removal arrangement for the eight numbers of check dams shall be planned to ensure the efficacy of the system.
5. The tapping arrangement of water from the Surla Nala along with its seven tributaries form a complex system wherein seven numbers of inlet pipes (having different diameters & different reservoir levels upstream) are augmenting different discharges into the main pipe at different RDs. Hence all the factors affecting the Hydraulic Gradient Line (HGL) of the system (i.e Frictional co-efficient, Head losses at entry & exit, Head losses due to bends, FRLs in the check dams, pipe diameter, flow velocities in the pipes etc.) shall be accounted precisely for checking the efficacy of the system. Further, it is desirable that a physical model study may be conducted to ascertain the proper functionality of the system.
6. The Surla Tapping System is planned to draw rainwater directly from the hilly streams (during the monsoon period) which contain high concentrations of sediments. In addition, the flow profile in the system is supposed to be changed abruptly on account of having inlets from eight different streams (with different catchment areas); the diameter of the main pipe as well as the off-take pipes are also varying. Further, there is no provision for the maintenance of the pipes in the system (due to the small sizes of the off-take / main pipes). Given these facts, it is suggested that proper coating on the inner

File No.T-15027/1/2022-BCD(NWS) DTE

surface of the off-take/main pipes shall be applied to protect the pipes from erosion and damage in due course of time.

7. The total combined annual yield at 75% dependability of the Kalasa Nala is 2.19 TMC. The Karnataka share against this is 1.72 TMC. The present project proposal of Karnataka state is to divert its share of water (1.72 TMC) to the Malaprabha river in a period of 5 months (June to October) every year. The pumping capacity provided can transfer 6.89 TMC of water in a period of five months period. This capacity is more than the share of the Karnataka state as per MWD (1.72 TMC). The pumping capacity may be matched with the allotted share. The detailed calculations on pumping capacity are attached as 'Annexure-I'.

The Detailed Project Report of Kalasa Nala Diversion Scheme, Karnataka may be treated as cleared from the design's point of view subject to incorporation of the above conditions/suggestions during the construction stage.

This issue with the approval of the Chief Engineer, Designs (NW&S) Unit, CWC.

**Signed by Manoj Kumar
Meena**

Date: 13-12-2022 09:52:00

Reason: Approved

Yours Faithfully,

(Manoj Kumar Meena)
Director

Copy to: 1. PPS to Member, WP&P, CWC, New Delhi.
2. Director, Project Appraisal (South), CWC, New Delhi.

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण
विभाग
केंद्रीय जल आयोग
बैराज एवं नहर अभिकल्प (उ.प. एवं द.)
निदेशालय



Government of India
Ministry of Jal Shakti
Dept. of Water Resources, RD&GR
Central Water Commission
BCD(NW&S) Directorate

Sub: DPR of Bhandura Nala Diversion Scheme (Lift Scheme), Karnataka-reg.

Ref: 1. KNNL/CE/MPZ/AE-4/TA-3/2022-23/2917 dated 25.11.2022

2. This office File No. T-15027/2/2022-BCD(NWS)DTE dated 13.12.2022

(Copy enclosed)

3. email on the subject matter from PA(South) Dte dated 16.12.2022

Sir,

Kind attention is invited on the letter under reference no. 2, vide which conditional clearance to the DPR of Bhandura Nala Diversion Scheme (Lift Scheme), Karnataka was accorded. In this connection it is to clarify that the pumping capacity worked out in reference no. 2 was for the condition of uninterrupted pumping only.

Further, the provided pumping capacity is sufficient to lift the water for the 75% dependable year as per the Mahadayi Water Dispute Tribunal (MWDT) Award. However, it would be prudent that the actual diversion of water shall be monitored & controlled by the regulating body constituted as per the provisions of the MWDT.

Signed by Manoj Kumar

Meena

Yours Faithfully,

Date: 19-12-2022 18:14:46

Reason: Approved

(Manoj Kumar Meena)
Director

Copy to: Director, Project Appraisal (South), CWC, New Delhi.

षष्ठ तल(दक्षिण), सेवा भवन
राम कृष्ण पुरम, नई दिल्ली -110066
दूरभाष: 011-29583490
ई मेल: bednwsdte@nic.in
●जल संरक्षण-सुरक्षित भविष्य●



Save Life●

6th Floor(South),
SewaBhawan,
R.K. Puram, New Delhi-110066
Tel: 011-29583490
E-mail: bednwsdte@nic.in

●Conserve Water-

File No.T-15027/2/2022-BCD(NWS) DTE

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन नदी विकास एवं गंगा संरक्षण
विभाग
केंद्रीय जल आयोग
बैराज एवं नहर अभिकल्प (उ.प. एवं द.) निदेशालय



Government of India
Ministry of Jal Shakti
Dept. of Water Resources,
RD&GR
Central Water Commission
BCD(NW&S) Directorate

Sub: Detailed Project Report of Bhandura Nala Diversion Scheme (Lift Scheme), Karnataka-reg.

Ref: KNNL/CE/MPZ/AE-4/TA-3/2022-23/2917 dated 25.11.2022

Sir,

Kind attention is invited to the letter referred above, vide which the Detailed Project Report of Bhandura Nala Diversion Scheme (Lift Scheme), Karnataka was forwarded for examination. The same has been examined and observations are as under:

1. The dam sections shall be designed following the Indian Standard Codal provisions.
2. Transient studies for the Bhandura lift shall be performed with actual pump characteristics and the surge protection arrangements for upsurge as well as down surge to be planned accordingly before the construction stage.
3. The upstream retaining walls and downstream training walls shall be designed for critical loading conditions including sudden drawdown conditions.
4. It is observed that in addition to the highest ground level, a few local peaks also exist along the longitudinal section of the pipeline. Hence to ensure the proper functionality of the pipeline; it is suggested to maintain a 3.0 m minimum clearance between the HGL & overt level of the pipeline throughout the length of the gravity main.
5. The total combined annual yield at 75% dependability of the Bhandura Nala is 2.77 TMC. The Karnataka share against this is 2.18 TMC. The present project proposal of Karnataka state is to divert its share of water (2.18 TMC) to the Malaprabha river in a period of 5 months (June to October) every year. The pumping capacity provided can transfer 8.58 TMC of water in a period of five months period. This capacity is more than the share of the Karnataka state as per MWDI (2.18 TMC). The pumping capacity may be matched with the allotted share. The detailed calculations on pumping capacity are attached as 'Annexure-I'.

The Detailed Project Report of Bhandura Nala Diversion Scheme (Lift Scheme), Karnataka may be treated as cleared from the design's point of view subject to incorporation of the above conditions/suggestions during the construction stage.

This issues with the approval of the Chief Engineer, Designs (NW&S) Unit, CWC.

File No.T-15027/2/2022-BCD(NWS) DTE

Signed by Manoj Kumar
Meena

Date: 13-12-2022 09:56:35

Reason: Approved

Yours Faithfully,

(Manoj Kumar
Meena)
Director

Copy to: 1. PPS to Member, WP&P, CWC, New Delhi.
2. Director, Project Appraisal (South), CWC, New Delhi.

Annexure - I

Bhandura Nala Diversion Scheme (Lift Scheme)

Calculation of pumping capacity

Nos. of pumps = 10 (8 working + 2 standby)

The discharge capacity of each pump = 1.875 cumec

Total Installed discharging capacity of 10 pumps = $10 * 1.875 = 18.75$ cumec

Total withdrawal capacity for 5 months = $18.75 * 3600 * 24 * 150 = 243000000$ cubic metre

= 8.58 TMC

Water allocated by MWDT = **2.18 TMC**

(The installed capacity of the 10 pumps (8 working + 2 standby) for 150 days with 24 hours running a day is 8.58 TMC)