Before

UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Petition No. 12 of 2024

In the Matter of:

<u>Petition seeking approval of capital investment on Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage under section 61 and 86 of the Electricity Act, 2003 read with relevant regulation and guidelines of the Commission.</u>

And

In the Matter of:

Managing Director, UJVN Limited, "UJJWAL", Maharani Bagh, GMS Road, Dehradun.

...Petitioner

Coram

Shri D.P. GairolaMember (Law) /Chairman (I/c)Shri M.L. PrasadMember (Technical)

Date of Order: February 27, 2024

ORDER

This Order relates to the Petition filed by Uttarakhand Jal Vidyut Nigam Limited (UJVN Ltd.) (hereinafter referred to as "UJVN Ltd." or "the Petitioner") seeking prior approval of the Commission for 'capital investment on Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage under Section 61 and Section 86 of the Electricity Act, 2003 read with relevant regulation and guidelines of the Commission'.

Background

- The Petitioner vide its letter No. M-1066/UJVNL/02/D(O)/B-8 dated 26.09.2023 had submitted its Petition for 'Capital investment on Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage under Section 61 and Section 86 of the Electricity Act, 2003 read with relevant regulation and guidelines of the Commission'.
- 3. The Petitioner under the facts of the case has submitted that:
 - "…
 3.4 Chilla Hydro Electric Power Project 36MW x 4 is one of the major HEP of Uttarakhand state, which was commissioned in 1981. Under this HEP a barrage and Head regulator on river Ganga at Virbhadra, Pashulok, 5 Km downstream of Rishikesh is constructed.
 - 3.5 Virbhadra Barrage, diverts a maximum 680 cumecs of water in 14.220 Km long power channel out of this discharge, 115 cumecs passes through silt ejector tunnel and 565 cumecs is used for power generation at Chilla HEP where it is again dropped in river Ganga about 5 Km U/s of Haridwar. At chain age 5.95 of power channel, super passage is provided on Bin River. At this place power channel flows through siphon and Bin river flows over the power channel.
 - For proper functioning of barrage, the safety of appurtenant structures is very 3.6 important. During the closure period, the repair & maintenance of upstream structures is possible but Glacis still remains under the erosion of water so these damages can be attended during the running of the project. The Spillway Glacis of barrage gates were remaining under continuous erosion of water for the years. Thus, due to this continuous erosion, the granite stones of Spillway Glacis have been eroded and damaged badly. Also, the joints were eroded and gap generated between the stones by virtue of which stones has been dislocated. The erosion in some joints was upto 30 cm. The eroded concrete surface will be treated by M-60 concrete after proper preparation of surface. Joints will be filled with UV resistant, high strength, anti shrink, abrasion resistant cementitious material. Keeping in view of the importance of structures and as per the recommendation of DSRP (Dam Safety Review Panel), an agreement for "Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15" was executed at Pashulok barrage, Rishikesh under DRIP-II (Dam Rehabilitation and Improvement Project-II).
 - 3.7 The initial scope of the work was to repair the Glacis and Floor area with application of UV resistant, High Strength, Anti-Shrink, Abrasion Resistant Cementations Materials Mortar conforming to EN-1504-3, class R4(2014) and in some portions with the use of M-60 Concrete along with anchoring 25 mm dia Tor Steel anchors/dowels bars.
 - 3.8 During the work "Additional works (damages at Bay No. 10and 12 and in the dentated End Sills) were observed". These damages could not be assessed at the time of preparation of estimate due to submergence of Glacis and downstream Floor structures under water so these works were not taken originally in the scope of work. As these works were also very essential for smooth operation of Barrage and their safety and

restoration is of utmost importance hence opinion has been asked from higher officers of UJVN Limited and from CPMU.

- 3.9 In continuation CPMU team visited the Pashulok barrage site on 07.04. 2022 and discussions were held with the CPMU team. Meanwhile, in view of the time constraint for working period following works were approved to carry out by Nigam under the agreement:
 - *UV resistant Special Cementitious Mortar on Floor of Bay. No. 9,10,11,13,14,15 and Glacis of bay no. 9,11,13,14,15.*
 - *WV resistant Special Cementitious Mortar on Piers from bay No. 09 to 15.*
 - *Repair work on Glacis of Bay No. 10 with M-60 Concrete.*
 - *Repair of Dentated End Sill of Bay No.9, 10,11 ,13,14, 15 with M-35 Concrete.*

Nigam also accorded the approval to carry out the balance work through fresh tender in season-2, under which the scope of work was as follows:

- UV resistant Special Cementitious Mortar on Glacis to End Sill of Bay No. 05,06,07,08.
- *WV resistant Special Cementitious Mortar on Piers from bay No. 05 to 08.*
- *Special Mortar on the Floor of Bay No.* 12.
- *Repair work of Bay No. 12 with M-60 Concrete.*
- > Repair work of Floor area in the upstream side of Gate Sill.
- Repair of all Dentated End Sills of bay No. 05, 06, 07 08 and 12 with M-35 Concrete.
- 3.10 The recommendation/inspection report was issued by the CPMU on 23.05.2022 and CPMU team recommended to carry out the protection work of Bay no. 10 only with Granite stones. Also for the dentated End Sill, it was apprised by CPMU team that dentated End Sill should be repaired with M-35 Concrete as per the original drawing however final decision shall be taken after exploring the possibility of converting dentated End Sill into cylindrical End Sill.
- 3.11 The supply and laying of granite stone was not in the scope of agreement's BOQ and execution of this work in the agreement would had caused creation of further extra items. Also it was informed by the contractor that it will take 50-60 days in supply and laying of granite stones at bay No. 10. As the discharge was increasing day by day and there was continuous spilling from barrage gates in the downstream side, Hence as per the recommendation of CPMU for avoiding the extra burden on the agreement the work had been concluded for season-1 and agreement was closed. Beside the protection work of bay no. 10 and restoration work of End Dentated Sill, all the work as approved for seson-1 was completed under the agreement.
- 3.12 After obtaining the approval for Inclusion of the protection work of Bay no. 10 and dentated End Sill work in the scope of separate bidding document from Nigam and as per the recommendation of CPMU the protection work of Bay no. 10 with granite stones and dentated End Sill work (restoration as per original drawing) has been added in the scope of work of separate Bidding document named as "Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage Rishikesh".

- 3.13 The proposed work is the extension of earlier approved work (Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15) by CPMU under DRIP-II hence request has been sent to CPMU for addition of work and allocation of fund Under DRIP-II on urgent basis so that the work can be started by December 2022.
- 3.14 Due to the Non availability of Additional fund Under DRIP-II the work of Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage could not be executed in the season of 2022-23. Two Monsoon season (Including Present Season) has been passed since the damage occurred in the gate no. 10 & 12. Also in the just upstream of sill beam many granite stones were found absent. Although efforts has been made for minimum operation of these gates but Operation of these gates in the excess flood has been carried out during Monsoon periods. Operation of Gate No.1 0 in the absence of granite stones and gate no. 12 with deteriorated Spillway Glacis along with granite stones absent in the upstream side of sill beam will only aggravate the damages both in upstream & downstream side. More delay in treatment will not only cause the additional expenditure but also endanger the safety of the Barrage.

It is also pertinent to mention here that, this proposed work is the extension of earlier work (Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15).

- 3.15 In view of the above mentioned facts, Special, Repair of Glacis, Floor and End Sill of Virbhadra Barrage are essentially important.
- 3.16 As per Regulation 22 (4) of UERC Tariff Regulations, 2021, a generating company is required to get prior approval for the additional capitalization works exceeding ₹ 5 Crore. The Regulation 22 (4) of UERC Tariff Regulations, 2021 states that:-

"Any addition/modification to the existing assets exceeding Rs. 2.50 Crore in case of distribution licensees and Rs. 5 Crore in case of generating companies/transmission licensees shall be taken up only after prior approval of the Commission. The investment approval applications covered under this sub-regulation are excluded from the application of proviso to Sub-regulation (2) of Regulation 10 of UERC (Conduct of Business) Regulations, 2014 in so far as the requirement of submission of documentary evidence with respect to the approval of BoD is concerned."

- 3.17 Therefore, a DPR amounting to ₹ 15.39 Crore (excluding taxes) has been prepared inhouse which is approved by the Competent Authority for carrying out the works related to **Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage** which could not be carried over under DRIP-II. The works proposed in the DPR will be carried out during the financial year 2023-24 (copy of the DPR is enclosed at **Annexure-1**).
- 3.18 The estimated cost for carrying out the capital investment on Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage is summarized as under-

S. No	Description of Works	Estimated cost in Rs. (Excluding GST)
1.	Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage Rishikesh.	14,94,30,141.74

S. No.	Description of Works	Estimated cost in Rs. (Excluding GST)
2.	Contingencies @ 3%	44,82,904.25
	Total	15,39,13,045.99

- 4. The Petitioner in its DPR has annexed the photographs of the eroded granite stones in upstream of sill beam, eroded granite stones of gate no. 10, damaged Glacis of Bay no. 12 and damaged in sills along with the relevant cross section drawings, which explicitly depict the dilapidated condition of the same.
- 5. The Petitioner has enclosed the inspection report by CPMU in its DPR in which the CPMU has given its following suggestions: -
 - "
 - a) It needs to be ensured that before taking up such under water works, de-watering and a thorough inspection of the barrage bays should be carried out for a realistic assessment of the actual quantum of works involved and to prepare estimate to avoid surprises and consequent significant variations in cost and time.
 - *b)* Use of HPC terminology instead of UV resistant special cementitious mortar is technically incorrect and hence it should be corrected in the correspondence henceforth.
 - c) Granite stones were provided in the original design of the barrage to safeguard against damages on account of rolling boulders which pass over the barrage during floods. This provision has worked well for the past about 50 years or so. In earlier comments of CPMU on the PST, it was suggested that the dislodged granite blocks should be replaced with new granite blocks. As such it is recommended to not repair the Glacis of bay no. 10 with M60 concrete but to use fresh granite blocks only.
 - d) For all other such damages/dislodgement of granite blocks in other bays the repairs may be carried out using fresh granite blocks only. It will also be desirable to create suitable stocks of granite blocks for future use.
 - e) Project authorities indicated that it may not be possible to carry out repair works in the d/s sloping Glacis of bay no. 12 before coming monsoon. It is therefore advised to avoid any flow through it and also from bay no. 10 during monsoon to prevent any further damages.
 - *f)* The dentated End Sill is proposed to be repaired using M35 concrete. The reinforcements in the dentated End Sill shall be as per the original drawings which were used for execution of works of the barrage initially. Final protection shall be with granite blocks as per original drawings.
 - *g)* However, the need for conversion of the dentated End Sill to a cylindrical End Sill to reduce future damages needs to be discussed. Final decision regarding End Sill may be taken thereafter after examining all aspects.
 - *h)* In view of consumption of over 90% of agreement value so far, it is suggested that variation in the cost of on-going contract due to large increase in quantities

of work because of improper assessment of quantities shall be taken up before monsoon having provision in the existing present Agreement shall be taken up. Balance works may be taken up through separate open bidding contract."

6. The Petitioner under the Cost benefit analysis section has mentioned that:-

"The Virbhadra barrage is quite old as the same was constructed before the commissioning of Chilla in 1980-81. The life span of such projects is 35 years as per codal provisions. With proper maintenance including rehabilitation works, the life span can be extended considerably though it would be difficult to give a definite figure. However, the modern Dam Safety practices have evolved around this concept only and in the present case, the proposed protection work of barrage under capital head is likely to result in at least 12 years life enhancement.

Due to the dislocation of Granite stones on Spillway Glacis, the leakage of water in the downstream side of Barrage through the Glacis and sill beam may occur, which can cause the following issues:

- 1. Leakage will be un- controllable, which may further increase with the passage of time.
- 2. This damage will further affect the alignment of the sill beam, which will lead to the spilling of water through sill beam.
- 3. Generation loss will not be affected in the Monsoon Period but in the lean season it can affect the generation of Chilla HEP significantly.
- 4. As the damage will increase with the passage of time, it will also be dangerous from the safety point of view for whole barrage structure.

In case of force closure/sudden failure of barrage gates, the Protection work will be more expensive because sudden failure will:-

- o Attribute to huge damages as compared to present damages of the Barrage. Thus, it will consume more time & cost.
- o The arrangement of manpower, material and working firm etc will take the additional time if done after the occurrence of any such undesired incident. Thus, there will be an additional generation loss in comparison to planned protection work of Barrage.
- It will be the prime priority to resume the barrage structure at the earliest; therefore the working agencies may have a bargaining power after any such undesired incident.
 Therefore, the execution of the proposed work will:-
- *Ensure the safety of Barrage structure to avoid its further deterioration/damages. Thus, limiting the damages vis-à-vis protection cost.*
- Help in arranging the expert working agency with the desired quantity of manpower, material etc well within planned time and in a proper (open tender process) manner. Thus avoiding any additional generation loss.
- *Maintain the bargaining power of the department.*
- *Help to maintain the efficacy of Barrage.*
- *Mitigate the risk of force closure / sudden failure of Barrage gates.*
- Avoid unexpected generation loss as a consequence of force closure / sudden failure of Barrage gates.

Leakage and spilling of water from barrage gates may be avoided which contributes to the increase in generation during lean period

During the life extension, other capital expenditure is not likely to be incurred except under abnormal conditions and normal O&M activities shall be carried out to maintain barrage components."

7. Further, the Petitioner under the recommendation section has mentioned that:-

"The 144 MW Chilla power House is fed through power channel and thereby contributing renewable energy to the state & simultaneously revenue to UJVN Ltd. Thus "Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage Rishikesh" included in the DPR is essentially important to maintain the smooth operation of Virbhadra Barrage in good service condition as well as for un-interrupted power generation.

For proper functioning of barrage, the safety of appurtenant structures is very important. In the closure period, the repair & maintenance of upstream structures is possible but Glacis still remains under the erosion of water so these damages can be attended during the running of the project. The Spillway Glacis of barrage gates were remaining under continuous erosion of water for the years. Thus, due to this continuous erosion, the granite stones of Spillway Glacis have been eroded and damaged badly. Also, the joints were eroded and gap generated between the stones by virtue of which stones has been dislocated. The erosion in some joints was upto 30 cm. The eroded concrete surface will be treated by M-60 concrete after proper preparation of surface. Joints will be filled with UV resistant, High strength, anti shrink, abrasion resistant cementitious material. Seeing the importance of structures and as per the recommendation of DSRP (Dam Safety Review Panel) this work has been incorporated for DRIP-II.

The treatment of these damaged portions is very urgent. Proper maintenance of downstream Glacis will prevent the leakage of water from sill beam. In long term also, restoration of structure ensure safe operation of barrage. Also, from safety point of view of structures proper maintenance of downstream portion is important which also enhance life of Barrage.

The recommendation/inspection report was issued by the CPMU on 23.05.2022. In the recommendation report CPMU team recommended to carry out the protection work of Bay no. 10 only with Granite stones. Also for the dentated End Sill, it was apprised by CPMU team that dentated End Sill should be repaired with M-35 Concrete as per the original drawing.

As this proposed work is the extension of earlier approved work (Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15) by CPMU under DRIP-II hence request has been sent to CPMU for addition of work and allocation of fund Under DRIP-II on urgent basis. But due to the Non availability of Additional fund Under DRIP-II the work of Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage was not executed in the season of 2022-23.

Two Monsoon season (Including Present Season) has been passed since the damage occurred in the gate no. 10 & 12. Also in the just upstream of sill beam many granite stones were found absent. Although efforts has been made for minimum operation of these gates but Operation of these gates in the excess flood has been carried out during Monsoon periods. Operation of Gate No. 10 in the absence of granite stones and gate no. 12 with deteriorated Spillway Glacis along with granite stones absent in the upstream side of sill beam will only aggravate the damages both in upstream & downstream side. More delay in treatment will not only cause the additional expenditure but also endanger the safety of the Barrage.

Hence in view of above narrated facts and Non availability of Fund Under DRIP-II the work of "Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage, Rishikesh" has been proposed under capital head 2023-24. It is also worth to mention here that this proposed work is the extension of earlier approved work (Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15) from Hon'ble UERC under DRIP-II.

Keeping in view the exigency, importance and above cited narration, it is kindly requested to accord the Administrative Approval for the work "Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage Rishikesh" Amounting to Rs. 18, 08, 10, 472.00 (Rs. Eighteen Crore Eight Lacs Ten Thousand Four Hundred Seventy Two Only) against Capital Expenditure of Chilla HEP for the FY 2023-24."

- 8. With regard to the time duration required for execution of the proposed works, the Petitioner has enclosed bar-chart indicating the month-wise items of works to be executed in the total 05 months. Furthermore, the Petitioner vide its letter dated 30.11.2023 requested the Commission for prioritizing the approval of the works so that the same shall be executed before the monsoon get started.
- 9. The Petitioner in its Petition under financing plan and phasing of expenditure has furnished that it shall arrange the expenditure from its internal resources and the total expenditure of Rs. 18.08 Cr. would be incurred during FY 2023-24.
- 10. On examination of the Petition & DPR certain deficiencies/infirmities were identified and accordingly, the Commission vide its letter No. 984 dated 18.12.2023 directed the Petitioner to submit/furnish its compliance on the following latest by 07.02.2024:-
 - "
 - 1. UJVN Ltd. is required to submit Bay-wise details of works proposed in the instant Petition alongwith its location details & estimated costs as the detail of works mentioned in the proposal are not clear.
 - 2. UJVN Ltd. is required to furnish the technical justification for the Bay-wise proposed works of the instant petition duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology inline with Regulation 22(2)e) of UERC (Terms and Conditions for Determination of Multi Year Tariff), Regulations 2021.
 - 3. UJVN Ltd. is required to submit the documentary evidence whether any effort has been made by it for funding the proposed works through DRIP or any other Centrally funded scheme/soft loan. Further, UJVN Ltd. is required to submit the letter/communication/ correspondence from the CWC/CPMU that the proposed works in the instant Petition shall not be taken by CWC/CPMU under DRIP scheme.

4. UJVN Ltd. is required to submit the details of Bay-wise major works (Civil and E&M separately) executed in Bay no. 05-15 of Virbhadra Baragge including 'DRIP-I', 'DRIP-II', 'Major work executed during last 15 years other than DRIP-I & DRIP-II' in the following format:

Sl. No.	Bay no.	Details of the executed work	Location where the work has been executed	Completion date	Expenditure incurred in Rs.	Present condition of the executed work	
Und	er DRIP-I						
Und	Under DRIP-II						
Majo	Major work executed during last 15 years other than DRIP-I & DRIP-II						

5. UJVN Ltd. from the details of aforesaid works as submitted in the Table mentioned above at Sl. No.4, is required to submit Bay-wise details of those works which have damaged/washed-out/eroded/not-working in the following format:

Sl. No.	Bay no.	Details of the executed work	Status whether Fully/Partially Damaged/washed -out/eroded/not- working	Year of Damaged/wash ed- out/eroded/not -working	De- Capitalized or not & Year of Decapitation	Details of insurance claimed/ received

6. The Commission vide its Order dated 29.12.2021 has granted in-principle approval for the works proposed under Part-A of DRIP-II amounting to Rs 45.26 Cr at Virbhadra Barrage. In this context, UJVN Ltd. is required to furnish the details of the work executed alongwith the estimated expenditure of the same in the following format:

S.No.	Description of works	Approved cost as per UERC Order dated 29.12.2021 (in Rs Cr.)	Amount as per PO/LoI (in Rs Cr.)	Amount as executed. (in Rs Cr.)	Status of Work	Reasons for escalation in executed amount, if any

Further, UJVN Ltd. is required to furnish the details of fund/amount disbursed for Virbhadra Barrage under Part-A of DRIP-II alongwith the copy of Utilization Certificates submitted by UJVN Ltd. Furthermore, UJVN Ltd. is required to furnish the approval granted by the appropriate authority for any change in the original proposal viz addition or removal of works or escalation in amount against the works that were covered under Part-A of DRIP-II at Virbhadra Barrage".

- 11. In compliance to the deficiencies, UJVN Ltd. vide its letter dated 24.01.2023 submitted its point-wise compliance as mentioned below:-
 - "
 - 1. The Bay wise works taken in the proposal are detailed below along with costing: -
 - I. <u>Bay No. 05 of barrage</u>
 - a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.
 - b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
 - c. Estimated amount <u>Rs. 1,23,32,292.00 only + GST Extra</u>.

II. Bay No. 06 of barrage

- a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 1,23,32,292.00 only + GST Extra</u>.

III. <u>Bay No. 07 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 1,23,32,292.00 only + GST Extra</u>.

IV. Bay No. 08 of barrage

- a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 1,23,32,292.00 only + GST Extra</u>.

V. <u>Bay No. 09 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 32,65,657.00 only + GST Extra</u>.

VI. <u>Bay No. 10 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair work of Glacis with Granite Stones and M-35 Concrete.
- c. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- d. Estimated amount <u>Rs. 1,05,75,806.00 only+ GST Extra</u>.

VII. <u>Bay No. 11 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 32,65,657.00 only + GST Extra</u>.
- VIII. <u>Bay No. 12 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream and downstream side.
- b. Repair work of RCC on Glacis with M-60 Concrete.
- c. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- d. Estimated amount <u>Rs. 3,02,52,657.00 only+ GST Extra</u>.

IX. <u>Bay No. 13 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 32,65,657.00 only+ GST Extra</u>.

X. <u>Bay No.14 of barrage</u>

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 32,65,657.00 only + GST Extra</u>.

XI. Bay No.15 of barrage

- a. UV resistant Special Cementitious Mortar on Floor area in upstream side.
- b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.
- c. Estimated amount <u>Rs. 32,65,657.00 only + GST Extra</u>.
- **XII.** Miscellaneous works such as Dewatering, making cunate, making temporary bandha and stopping of leakage.
 - a. Estimated amount <u>Rs.4,20,80,000.00 only + GST Extra</u>.
- 2. The Spillway Glacis of barrage gates were under continuous erosion of water for last many years. During monsoon flood with very high silt content, the erosion is also high. Due to this continuous erosion, the granite stones of Spillway Glacis have been eroded and damaged badly. The joints between the granite stone were eroded and gap developed, which lead to dislocation of granite stone. Apart from this some granite stones have been washed out completely. The Depth of erosion in some of the joints is as high as 30 cm.

DSRP (Dam Safety Review Panel) team visited the Barrage on October-2019 and as per the recommendation of DSRP (Annexure-I), an agreement for "Protection & Refurbishment Work from Spillway Glacis to End-Sill of Gate No. 05 to 15" was executed at Pashulok barrage, Rishikesh under DRIP-II (Dam Rehabilitation and Improvement Project-II). Approval was accorded by CPMU/World Bank and Hon'ble UERC for this work (Annexure-II).

During execution of the work some additional works such as damages at Bay No. 10 &12 and in the dentated End Sills, were also observed. These damages could not be assessed at the time of preparation of estimate because of submergence of Glacis and downstream Floor structures under water, due to which these works could not be taken originally in the scope of work. For smooth operation and the safety of Barrage, restoration of these structures are very important, hence opinion was sought from higher officers of UJVN Limited as well as CPMU (Central Project Management Unit), CWC as the work was under DRIP-II.

In this connection CPMU team(Central Water Commission) had visited the barrage site on 07.04 2022 and discussions were held at length with the CPMU team. The recommendation/inspection report was issued by the CPMU on 23.05.2022 (Annexure-III), in which CPMU team recommended to carry out the protection works of Bay no. 10 only with Granite stones. For the dentated End Sill, CPMU team recommended for repair with M-35 Concrete as per the original drawing.

The supply and laying of granite stones were not in the scope of agreement's BOQ and execution of this work in the agreement could cause, creation of further extra items. It was also informed by the contractor that it will take 50-60 days in supply and laying of granite stones at bay No. 10. As the discharge was increasing day by day and there was continuous spilling from barrage gates in the downstream side, hence as per the recommendation of CPMU for avoiding the extra burden on the agreement, the work was concluded for season-1 and agreement was closed. Following works were executed in the agreement:-

- *i.* UV resistant Special Cementitious Mortar on Floor of Bay. No. 9,10,11,13, 14, 15 and Glacis of bay no. 9,11,13,14,15.
- *ii.* UV resistant Special Cementitious Mortar on Piers from bay No. 09 to 15.
- *iii.* National Council for Cement and Building Material (NCCBM) was the third party in the agreement. The report of NCCBM is also enclosed for kind Consideration (*Annexure-IV*).

For carrying out remaining works along with protection work of Bay no. 10 and dentated End Sill work as per the recommendation of CPMU, separate bidding document named as "Special Repair of Glacis, Floor and End Sill of Virbhadra Barrage Rishikesh" has been prepared.

- 3. The correspondence with Nodal officer (DRIP) and with CWC is attached as **Annexure-V**. Beside these efforts has been made in the different meetings with CWC for additional budget, but due to fund constraints the additional work was not allowed under DRIP.
- 4. The Operation and maintenance of barrage came under UJVNL since April 2010. The detail Major works along with DRIP I/II, carried out since April 2010 are attached in the prescribed format as **Annexure-VI**.
- 5. The details are attached in the prescribed format as Annexure-VII.
- 6. The details are attached in the prescribed format as **Annexure-VIII**. Further it is to intimate that total Rs. 45.26 Crore was approved by Hon'ble UERC for Virbhadra Barrage under DRIP-II Part-A. Total 9 works amounting Rs. 17.05 Crore were awarded out of total 23 approved works. At Present total amount of Rs. 15.81 Crore has been disbursed against these works.

It is also worth to mention here that no work has been removed or added in original proposal as approved by Hon'ble UERC. Remaining works will be carried out as per the availability of fund Under DRIP-II Part -A."[Emphasis added]

12. Further, on examination of the Petition's aforesaid submissions, requirement of additional information was required for scrutiny of the Petition/DPR and

accordingly, the Commission vide its letter No. 1233 dated 15.02.2024 directed the Petitioner to submit/furnish its compliance on the following latest by 26.02.2024:

- "
- 1. UJVN Ltd. is required to submit Bay-wise details of the major works executed under DRIP-I, DRIP-II and 'other than DRIP' along with documentary evidence of independent agency for execution of the proposed work inline with Regulation 22(2)e) of UERC (Terms and Conditions for Determination of Multi Year Tariff), Regulations 2021 in the Format enclosed at Annexure-II.
- 2. UJVN Ltd. in its submission dated 24.01.2024 has not furnished the details w.r.t. 'letter/communication/ correspondence from the CWC/CPMU that the proposed works in the instant Petition shall not be taken by CWC/CPMU under DRIP scheme'. In this regard, UJVN Ltd. is required to submit the same.
- 3. UJVN Ltd. under DRIP-I works as mentioned at Annexure-VI of its submission dated 24.01.2024 submitted that present condition of the executed work cannot be assessed as the same are submerged under water and silt. However, UJVN Ltd. at Annexure-VII mentioned that the major works executed under DRIP-I are damaged/washed/eroded in year 2020. UJVN Ltd. is required to check the anomalies and submit the revised Annexure-VI.
- 4. UJVN Ltd. at Annexure-VII of its submission dated 24.01.2024 submitted that the works were damaged/washed/eroded in year 2020 and the same were decapitalized in year 2017. UJVN Ltd. is required to check the anomalies and submit the revised Annexure-VII.
- 5. Further, UJVN Ltd. submitted that the insurance has not been claimed for the aforesaid damaged/washed/eroded works. In this regard, UJVN Ltd. is required to submit the current status of insurance and the reasons for not claiming the aforesaid works in insurance.
- 6. UJVN Ltd. in its submission dated 24.01.2024 submitted that out of the total approval for the works proposed under Part-A of DRIP-II amounting to Rs. 45.26 Cr. at Virbhadra Barrage, works amounting to Rs. 17.05 Cr. were awarded. In this regard, UJVN Ltd. is required to submit the reason for not proposing the extension work pertaining to 'Protection & Refurbishment work from Spillway Glacis to End-Sill of gate no. 5 to 15 of Pashulok Barrage, Rishikesh' under DRIP-II from the balance amount of Rs. 28.21 Cr. (Rs. 45.26 Cr.- Rs. 17.05 Cr.)."
- 13. In compliance to the Commission's letter dated 15.02.2024, UJVN Ltd. vide its letter dated 17.02.2024 submitted its point-wise compliance as mentioned below:-
 - "
 - The Bay wise detail of works is enclosed as Annexure-I. The Inspection Report of DSRP and Approval of CPMU for DRIP-II works along with Inspection Report of CPMU are also enclosed for kind consideration.
 - Efforts have been made in the different meetings with CWC for additional budget, but due to fund constraints for Uttarakhand the additional work was not allowed under DRIP. Further, It is certified that the proposed work in the instant petition shall not be taken by CWC/CPMU under DRIP scheme.

- > The revised Annexure-VI is enclosed.
- ➤ The revised Annexure-VII is enclosed. Furthermore the damages due to continuous erosion/scouring during floods, the surface got damaged but area remains filled with huge debris and RBM. Its actual assessment can be done only after removal of deposited material which is a costly affair. Further if removed just for inspection and not for repairing the same will lead to structural safety threats which is not advisable.

Actual assessment of damages will be made after silt removal from site during execution of proposed work & possible insurance claim will be submitted.

Initially the total works of Rs.45.26 Cr. was proposed under DRIP-II of Virbhadra/ Pashulok Barrage and approved by Hon'ble against which works amounting to Rs. 17.07 Cr. has been awarded and remaining works will to be executed in coming future as per availability of Fund and receipt of NOC from CPMU. As the proposed work got exposed after removing deposited silt and dewatering, the quantum of work was much more than expected earlier. Therefore, it was suggested by DRIP expert team to close the agreement at this level to avoid excess variation & extra item and initiate the balance work along with additional work through fresh tender. The excess amount involved for this is not available under DRIP-II therefore, it has to be executed through internal resources."

Commission's Observations, Views & Directions:-

11

- 14. Based on examination and analysis of the Petition and subsequent submissions made by the Petitioner before the Commission, the observations, views and decision of the Commission are mentioned hereunder:-
 - (1) The works proposed by the Petitioner in its instant Petition are generally to be executed at upstream Floor (area between stoplog gate and main gate), Glacis, downstream Floor (between Glacis and End Sill), Piers and End Sill area in respective Bay 5 to Bay 15 of Virbhadra Barrage.
 - (2) Earlier, the Commission vide its Order dated 29.12.2021 had granted inprinciple approval for the following works under Part-A for Virbhadra Barrage:

S. No.	Description of Works	Amount (in Lakhs)
i) Ci	vil Works:	
1	Works Related to Chain Link Fencing along with Right Afflux Bund road of Virbhadra Barrage at Rishikesh.	166.49
2	Protection & Refurbishment work from Spillway Glacis to End-Sill of gate No. 05 to 15 of Pashulok Barrage, Rishikesh.	907.37
3	Renovation work of barrage Railing and other Related civil works.	107.55
4	Construction of Coffer Dam/Ring bandha at Virbhadra Barrage, Pashulok, Rishikesh.	160.00

S. No.	Description of Works	Amount (in Lakhs)
5	Construction of New Control Room Building at Virbhadra Barrage, Rishikesh.	184.25
6	Construction of Training Centre/Transit Camp Building at Rishikesh.	449.74
7	Construction of Guest House Building Near Police Chowki at Virbhadra Barrage-Rishikesh.	182.01
8	Construction of Residential Building at Hydel Colony at Virbhadra Barrage, Rishikesh	366.82
9	Procurement of 04 No. Vehicles	49.90
10	Procurement of Furniture for office/Training Center at Rishikesh.	40.00
11	<i>Consultancy works related to Supervision of Design for Structures and Supervision of Civil & Basic Facilities works.</i>	28.10
12	Hydrographic Survey of Virbhadra Barrage, Pashulok, Rishikesh.	19.00
	Subtotal Part-A (Civil works)	2661.23
ii) E	&M Works:	
13	<i>Replacement of S.S. plate on track guide of gate groove of all Barrage gates at Virbhadra Barrage, Pashulok, Rishikesh</i>	46.02
14	Replacement of Sill Beams at Virbhadra Barrage, Pashulok, Rishikesh.	174.03
15	<i>Renovation of Barrage Gates and Head Regulator at Virbhadra Barrage, Pashulok, Rishikesh.</i>	269.70
16	Supply, Installation, Testing and Commissioning of Package substation of 500kVA, 11 kV/415V CSS at Virbhadra Barrage, Pashulok, Rishikesh.	84.96
17	Providing and fixing of Chequered Plates at Barrage Gates, HR Gate and Gantry Crane Platform at Barrage Structure of Virbhadra Barrage, Pashulok, Rishikesh.	185.45
18	Epoxy painting on under sluice gates, other bay gates and Head Regulator gates at Virbhadra barrage, Rishikesh.	306.65
19	Repair and Strengthening of Boulder Excluder Tunnel of Under Sluice Gate No. 01 at Pashulok Barrage, Rishikesh	324.50
20	Providing and fixing of New Pre-fabricated Cabin above Hoisting Equipment of Under Sluice Gate N0. 01 to 04, Other Bay Gate 05 to 15, Head Regulator Gate No. 01 to 05 at Pashulok Barrage, Rishikesh.	58.05
21	Design, Supply, Installation, Commissioning & Testing of Early warning & Public Address system at Virbhadra Barrage, Pashulok, Rishikesh.	161.84
22	Supply, Installation, Testing & commissioning of fuel free solid waste disposer at Virbhadra Barrage, Pashulok, Rishikesh	53.43
23	Replacement of damaged Wire Rope Pullies of Under Sluice Gates, Other Bay Gates and HR Gates at Virbhadra Barrage, Rishikesh.	199.98
	Subtotal Part-A (E&M works)	1864.61
	Total Part-A (Civil + E&M Works)	4525.84

With regard to the work 'Protection and Refurbishment work from Spillway Glacis to End Sill of gate no. 5 to 15 of Pashulok Barrage, Rishikesh' mentioned above at S. No. 2 of the Table, the Petitioner in its instant Petition has submitted that the works pertaining to 'UV resistant Special Cementitious Mortar on Floor of Bay. No. 9,10,11,13,14,15 & Glacis of Bay no. 9,11,13,14,15' and 'UV resistant Special Cementitious Mortar on Piers from Bay No. 09 to 15' have been executed under DRIP-II in Virbhadra Barrage.

However, the works pertaining to 'Repair work on Glacis of Bay No. 10 with M-60 Concrete' and 'Repair of Dentated End Sill of Bay No.9, 10,11,13,14, 15 with M-35 Concrete' were not executed because the discharge of water at Barrage was increasing and the recommendation of CPMU for carrying out the protection work of Bay no. 10 only with granite stones (which was not in the original scope) could not be completed during the lean discharge period.

(3) It has been observed that the proposed works amounting to Rs. 15.39 Cr. (Excluding GST) in the instant Petition are the extension of earlier approved aforesaid work 'Protection and Refurbishment work from Spillway Glacis to End Sill of gate no. 5 to 15 of Pashulok Barrage, Rishikesh' under DRIP-II.

The Bay wise work including miscellaneous works as submitted by Petitioner are detailed below: -

Bay No.	Work Description	Proposed Estimated Amount (Excluding GST)
5	a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.	Rs. 1,23,32,292/-
6	 a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side. b. Repair of Dentated End Sills with Granite stone & M-35 Concrete 	Rs. 1,23,32,292/-
7	a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.	Rs. 1,23,32,292/-

Table 1: Bay-wise works of Virbhadra Barrage proposed by UJVN Ltd.

Bay No.	Work Description	Proposed Estimated Amount (Excluding GST)
	b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.	
8	a. UV resistant Special Cementitious Mortar on Glacis & Pier in Downstream side & Floor area in upstream and downstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete	Rs. 1,23,32,292/-
9	a. UV resistant Special Cementitious Mortar on Floor area in upstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete	Rs. 32,65,657/-
10	 a. UV resistant Special Cementitious Mortar on Floor area in upstream side. b. Repair work of Glacis with Granite Stones and M-35 Concrete. c. Repair of Dentated End Sills with Granite stone & M-35 Concrete 	Rs. 1,05,75,806/-
11	a. UV resistant Special Cementitious Mortar on Floor area in upstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete	Rs. 32,65,657/-
12	 a. UV resistant Special Cementitious Mortar on Floor area in upstream and downstream side. b. Repair work of RCC on Glacis with M-60 Concrete. c. Repair of Dentated End Sills with Granite stone & M-35 Concrete 	Rs. 3,02,52,657/-
13	a. UV resistant Special Cementitious Mortar on Floor area in upstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete	Rs. 32,65,657/-
14	a. UV resistant Special Cementitious Mortar on Floor area in upstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete.	Rs. 32,65,657/-
15	a. UV resistant Special Cementitious Mortar on Floor area in upstream side.b. Repair of Dentated End Sills with Granite stone & M-35 Concrete	Rs. 32,65,657/-
	Miscellaneous works such as Dewatering, making cunate, making temporary bandha and stopping of leakage	Rs.4,20,80,000/-
	Contingency@3% Total Estimated Amount in Rs.	Rs. 44,56,977/- Rs. 15,30,22,893/-

(4) Further, it has been observed that the major Bay-wise works proposed in the instant Petition pertaining to 'Application of UV resistant special cementitious mortar' at Glacis, Floor and Piers were executed under DRIP-I in FY 2017-18. From the submission of Petitioner, it has been further observed that the said works were damaged/washed/eroded in year 2020 and no insurance has been claimed for the same. The Petitioner is directed to actively pursue the matter of Insurance claim of the assets which were washed away (executed in DRIP-I) and ensure decapitalization of the assets in its books of accounts. Any financial gain received by the Petitioner in its ARR on account of the decapitalized assets should be clearly brought before the Commission during Tariff determination exercise. Non-compliance by the Petitioner may result in punitive action against it.

(5) The Commission had earlier provided in-principle approval for the proposed works under DRIP-II vide its Order dated 29.12.2021 only because of the availability of funds from World Bank for DRIP-II scheme for execution of the works which were important from the perspective of Dam/Barrages safety. The relevant Para of the aforesaid Order is mentioned below:-

"The Commission has observed that availability of funds for the works pertaining to safety which do not have direct tangible benefits remains a challenge for the developer/HEPs and the works proposed under the instant Petition are of similar nature. **However, considering the availability of funds from World Bank for DRIP II Scheme**, the Commission finds it prudent to give a nod to such works which are important from the perspective of Dam/Barrages safety. Further, it has come to the notice of the Commission that Govt. of India has launched schemes pertaining to 'Budgetary Support for Flood Moderation/Storage Hydro Electric Projects (HEPs)' and 'Budgetary Support to Cost of Enabling Infrastructure, i.e., roads/bridges' which envisages to make hydro generation tariffs more competitive in the interest of the consumers of the State. UJVN Ltd. is expected to utilize such schemes to the maximum extent for the projects under its jurisdiction."[**Emphasis added**]

Further, the Petitioner submitted that the present proposed works under the instant Petition if not executed may aggravate the damages both in upstream and downstream side that may endanger the safety of the Virbhadra Barrage.

- (6) With regard to the need of the proposed works, earlier CWC/CPMU recommended the 'Protection and Refurbishment work from Spillway Glacis to End Sill of gate no. 5 to 15 of Pashulok Barrage, Rishikesh' under DRIP-II and the suggestions, in this regard, made by CPMU are mentioned above at Para 5 of this Order.
- (7) With regard to End Sill works, the Commission is of the view that as per suggestions of experts of CPMU for replacement of dentated End Sill with a

cylindrical End Sill for reducing future damages, the Petitioner should ensure that final decision regarding End Sill be taken after examining all aspects as suggested by CPMU.

- (8) Despite, Commission's categorical query that a letter is to be furnished from CWC/CPMU that no further funding for the said works would be given under DRIP, the Petitioner has attempted to circumvent the issue and submitted that the works proposed in the instant Petition shall not be further proposed to CWC/CPMU under DRIP scheme. However, the Commission in this regard is of the view that the Petitioner should make its all efforts for executing the civil works associated with the safety of Dams/Barrages/Power Channels through grant available under various schemes of Government of India/State Government.
- (9) The Commission understands that uncertainty in civil works is an inevitable aspect, and some variations/geological surprises may arise at the time of execution of works. However, the works proposed in instant Petition are not of such nature which would propel large variations from the estimated quantities. The Petitioner is cautioned to execute works with quantum optimization and quality.
- (10) With regard to the project execution period, the Petitioner has envisaged to execute works prior to monsoon season. The Commission opines that since the Petitioner proposes to execute the works mentioned in the instant Petition prior to the current monsoon season, therefore, the Petitioner should judicially mobilize its resources in order to meet its deadlines i.e. before the current monsoon season without compromising the quality, workmanship aspects required for the works.
- (11) With regard to the quality and durability of the proposed works, the Commission opines that the Petitioner should execute the proposed works duly considering the observations/suggestions/recommendations of the DSRP /CPMU/CWC.
- (12) With regard to the under water nature of the proposed works, the Commission is of the view that ensuring quality and workmanship are vital for the proposed works. Further, post execution of the works, the assessment w.r.t. work quality

and volume of works executed are difficult to be ascertained due to under water nature of works at the later stage. Therefore, Petitioner is directed to inform the Commission at the time of dewatering and post execution of the works (before opening the Barrage gates). The Commission may appoint/depute any expert/third party agency for assessment of the works from the perspective of quantum, quality, workmanship and other aspects as it deems fit.

- 15. Based on the above discussion, the Commission grants in-principle approval for the proposed works. The in-principle approval is being granted subject to the following:
 - (1) The Petitioner should go for the competitive bidding to obtain the most economical prices from the bidders.
 - (2) The Petitioner should execute the proposed works duly considering the observations/suggestions/recommendations of DSRP team/CPMU/CWC at Para 5 above and ensure that the works should be executed with quality and durability.
 - (3) The Petitioner shall ensure that all the works carried out by the contractors shall be duly executed as per the drawings approved by the competent authority and procedures laid down for ensuring the quality & quantity of the work.
 - (4) The Commission may verify/check the proposed works to be executed by the Petitioner at any point of time during/post execution of the works from the perspective of Quality, Optimum utilization of resources, Benefits accrued from the proposed investments etc.
 - (5) The Petitioner must submit the detailed sanctioned letter from the Financial Institution, if any, to the Commission as soon as they get approval for the same. All the loan conditions as may be laid down by the funding agency, if any, in their detailed sanction letter should be strictly complied with. However, the Petitioner is directed to explore the possibility of swapping the loan with cheaper debt option, if any, available from DRIP or in the market etc.
 - (6) The Petitioner shall, within one month of the Order, submit a letter from the State Government or any such documentary evidence in support of its claim for equity funding agreed by the State Government or any other source in respect of the said works.

- (7) The Petitioner shall ensure to maintain photographic/videographic evidence at each stage of the proposed works and submit the same to the Commission alongwith Completion Report of the Project, comprising the completed cost of each of the works with as-built drawings alongwith expenditure incurred and financing of the Project.
- (8) The cost of the project and servicing on the same shall be allowed in the Annual Fixed Cost of the Petitioner after the assets are capitalized and subject to prudence check of the cost incurred.

Ordered accordingly.

(M.L. Prasad) Member (Technical) (D.P. Gairola) Member (Law) /Chairman (I/c)