#### Before

#### UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

#### Petition No. 23 of 2024

#### In the Matter of:

#### <u>Petition for seeking prior approval of capital investment on Rehabilitation Works</u> <u>of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project.</u>

And

In the Matter of: Managing Director, UJVN Limited, "UJJWAL", Maharani Bagh, GMS Road, Dehradun.

...Petitioner

#### Coram

Shri M.L. Prasad

Member (Technical)/Chairman (I/c)

#### Date of Order: May 17, 2024

#### <u>ORDER</u>

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 Rehabilitation works of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project'.

#### **Background**

- The Petitioner vide its letter No 22/UJVNL/03/D(P)/D-5 dated 12.02.2024 had submitted its Petition for 'Capital investment on Rehabilitation works of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project'.
- 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 discharged in river Ganga about 5 Km U/s of Haridwar. At chainage 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.
    - 3.6 Chilla HEP runs throughout the year without any brake, except for few hours when high flood discharge in the river is passed or when choking of trash racks is cleared by shutting down the plant. Since the last 05 years, the power channel is continuously in service without any major repair / closure. While examining the power channel during the short closures period in the Monsoon season of 2023-24, the major damages have been observed on the left bank majorly at the location where the power channel is in cutting portion i.e between Barrage to Intake of Chilla Power House. The lining of left bank's panels has gone under extensive damages at several locations. The side slopes at many locations in these cutting portions have completely collapsed, as a result the profile of the side slopes and lining of the power channel has been damaged.
    - 3.7 Therefore, the refurbishment of damaged power channel is necessarily required to ensure the safety of power channel vis-a-vis maintaining the service life of channel for un-interrupted power generation. The proposed refurbishment is also required for the safety of the inhabitants of nearby vicinity. To execute the works related to refurbishment of power channel below the Full Supply Level (FSL), a closure of 30 days shall be required.
    - 3.8 The proposal for refurbishment of power channel below F.S.L includes the provision of following works.
      - Dismantling of old damaged panels and laying filter material over the prepared surface.
      - *Providing PCC M20 toe wall to support the panel lining.*
      - Laying hand packed stone over the geo textile filter for lesser cavities to allow free movement of water without creating any water pressure.
      - Providing mechanically woven double twisted hexagonal Wire mesh gabion filled with boulder as per the requirement.
      - *Removal of muck from the bed of Power channel.*

• *Miscellaneous work as per the requirement.* 

Since, the closure expenditure is a one-time event and accordingly, all the associated works which require closure should be carried out simultaneously. Also, as the permission for closure of power channel is very difficult to be obtained, some other works for which closure is essential are also added to avoid the generation loss so that not only recurring expense on closure may be avoided and optimum utilization may be done of the closure period and the maximum works may be completed which require closure.

*The details of other works related to closure are as below:* 

# 3.9 Repair and Strengthening of Boulder Excluder Tunnel of under Sluice Gate No.01 at Virbhadra Barrage, Pashulok Rishikesh

The boulder excluder tunnel provided at gate no.1 has six openings. Silt excluder tunnel disposes the logs, trash, boulders debris and plays a vital role in smooth operation of Barrage, specially in the lean period. As the silt excluder tunnel is near the intake thus most of the trash goes out through it. It helps in reducing head loss which ultimately helps in avoiding short closure.

At present silt excluder tunnel is choked due to which gates need to be operated for proper removal of logs, debris etc. Also due to accumulation of these logs, trash the accumulation process is increased which results in frequent short closure. Also due to choking of silt excluder tunnel more silt is passing to power channel. For smooth operation inspection, repair and clearance of silt excluder tunnel is very important for which closure is required. During the DSRP visit in year 2019, the steel liner of boulder excluder tunnel found torn off at some isolated locations. DSRP has recommended for inspection of silt excluder tunnel to prevent it from rusting & abrasion and accordingly work was proposed as "Repair & Strengthening of Boluder Excluder Tunnel" under DRIP-II which was approved by Hon'ble UERC.

# 3.10 Restoration Work of Upstream Damaged Panels of Afflux Bundh at Virbhadra Barrage

In the upstream of Virbhadra barrage some panels of Afflux bundh are settling/sinking at different locations. It is anticipated that soil piping may be the root cause of sinking of riprap. Soil Piping is erosion in which the soil is carried away by water running through holes in the ground or there might be a flow along pre-existing openings such as cracks or voids along a soil-structure contact.

The timely treatment of these panels is very important as further increase in settlement of panels may endanger the safety of Afflux Bundh. As these panels always remain submerged while power plant is in operation, the repair work can only be carried out during closure period.

- 3.11 In view of the above mentioned facts, **Rehabilitation Works of Virbhadra Barrage** & **Power Channel of Chilla Hydro Electric Project** is essential & important.
- 3.12 These works were earlier proposed under DRIP-II, but could not be executed due to Non availability of fund. All the works can only be executed in closure period and essential for Barrage safety and operation.

3.13 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."

- 3.14 In view of above, a DPR amounting to ₹ 19.84 Crore (excluding taxes) has been prepared in-house & the same has been approved by the Competent Authority for carrying out the works related to **Rehabilitation Works of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project** which could not be carried out 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**).
- 3.15 The estimated cost for carrying out the capital investment on **Rehabilitation Works** of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project is summarized as under-

in Rs.

S.		Estimated	Contingencu	Total	
No.	Description of Work	Amount	@ 3%	Amount	
				(excluding GSI)	
	Refurbishment of Damaged				
	Chilla Power Channel at				
1	Different Places Barrage	12 00 21 002 51	11 67 620 00	11 20 00 622 50	
1	Head Regulator Gate to	13,09,21,002.31	41,07,030.00	14,30,00,032.39	
	Intake of Chilla Power				
	House.				
	Repair and Strengthening				
	of Boulder Excluder Tunnel	3,48,56,532.43	10,45,695.97	3,59,02,228.40	
2	of under Sluice Gate No. 01				
	at Virbhadra Barrage,				
	Pashulok Rishikesh.				
	Restoration Work of				
	Upstream Damaged Panels	1 00 51 00 ( 00			
3	of Afflux Bundh at	1,88,51,324.03	5,65,539.72	1,94,16,863.75	
	Virbhadra Barrage.				
	Total	19,26,28,858.97	57,78,865.77	19,84,07,724.74	

4. The Petitioner in its DPR has annexed the photographs of the damaged/collapsed panels of Chilla Power Channel, damaged lining of silt excluder tunnel and upstream damaged panels of Afflux Bundh on right side of Virbhadra Barrage. 5. The Petitioner has enclosed the recommendation report by DSRP in its DPR in which the following observations/recommendations have been suggested: -

"It is recommended that the condition of the downstream floor and the protection works be also inspected for any damage which needs rectification. These works may be taken up under DRIP-2.

The general condition of the piers on the upstream and downstream side of the Barrage is good. The condition of the road supporting structure is also good. However, following deficiencies in civil works were reported by project authorities and observed by DSRP:-

- The steel liner in boulder excluder tunnel was reported to be torn off at some isolated locations. This needs to be made good observing due precautions to ensure a proper bond between the concrete surface and the liner. To prevent it from rusting and abrasion, the steel liners in the silt excluder tunnels in the under sluice bay be treated with suitable anti corrosive and abrasion resistant epoxy coating in the entire length of silt excluder tunnels.
- The portion of the railing provided in RCC on the foot path on Barrage and head regulator at deck level is extensively damaged and needs replacement. The damaged concrete can be replaced by metal pipes.
- *At other locations, at the road level on the left bank, the missing railing be provided.*
- The cable tray provided on the head regulator along the missing railing at the deck level is rusted and be replaced.
- The base of the light pole at the corner of the control room is damaged and may be repaired. The railing provided on the upstream right bank be extended further for a length of about 1300 m for the safety of the people and cattle moving in the area." [Emphasis added]
- 6. The Petitioner under the Cost benefit analysis section has mentioned that:-
  - "…
  - 1. Refurbishment of Damaged Chilla Power Channel at Different Places from Barrage Head Regulator Gate to Intake of Chilla Power House

The power channel is more than 40 years old and has completed its service life. Therefore, the safety of the power channel is of upmost requirement to ensure un-interrupted power generation. The power channel is in continuous service since April 2017 without any major repair or force closure.

In case of force closure / sudden failure of power channel, the refurbishment work will be more expensive because sudden failure will:-

- Attribute to huge damages as compared to present damages of the power channel. Thus, it will consume more time & cost.
- 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 closure of power channel.
- It will be the prime priority to resume the power channel 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 power channel and help to avoid its further deterioration/damages. Thus, limiting the damages vis-à-vis refurbishment 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 power channel.
- > Mitigate the risk of force closure / sudden failure of power channel.
- Avoid unexpected generation loss as a consequence of force closure / sudden failure of power channel.

#### 2. Inspection of Silt Excluder Tunnel at Virbhadra Barrage.

*The silt excluder tunnel provided at gate no.* 1 *serves the disposal of logs, trash and boulders. After cleaning & strengthening, The Silt excluder tunnel attributes to following:* 

- > The accumulation frequency of Trash decreases at Intake.
- Safe disposal of logs and debris can be ensured without operating other gates.
- Due to Safe disposal of logs, boulders and less accumulation of trash in front of intake, head can be maintained for a longer period.
- *Silt navigation and its accumulation in the power channel can be avoided.*
- Short closure can be ensured for a longer period which ultimately helps in reducing generation loss.

#### 3. Restoration Work of Upstream Damaged of Afflux Bundh at Virbhadra Barrage.

- > The safety of Right side of Barrage can be ensured.
- > *Safety of the inhabitants of nearby vicinity can be ensured.*
- 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 Reservoir.
- > Mitigate the risk of force closure / sudden failure of barrage Reservoir.
- Avoid unexpected generation loss as a consequence of force closure / sudden failure.

#### 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 works included in the DPR of "Rehabilitation Works of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project" is essentially important to maintain the smooth operation of Virbhadra Barrage in good service condition as well as for un-interrupted power generation of Chilla HEP.

The 14.220 km long power channel from Virbhadra Barrage to intake of Chilla Power House is a very important structure of Chilla HEP to generate 144 MW in Ganga valley. Major civil / refurbishment works of power channel are required time to time to address the damages / disfunctionality of power channel as well as to ensure its safety for un-interrupted power generation. To address such damages, the major civil works for the refurbishment / repair of power channel was carried out last in the year 2018.

Chilla HEP runs throughout the year without any brake, except for few hours when high flood discharge in the river is passed or when choking of trash racks is cleared by shutting down of plant and since the last 05 years, the power channel is continuously in service without any major repair / closure. While examining the power channel during the short closures period in the Monsoon season of 2023-24, the major damages have been observed on the left bank majorly at the location where the power channel is in cutting portion i.e between Barrage to Bin Super passage. The lining of left bank's panels has gone under extensive damages at several locations. The side slopes at many locations in these cutting portions have completely collapsed, as a result the profile of the side slopes and lining of the power channel has been damaged.

Apart from the capacity and longitudinal slope, other main features of an open channel water conducting system are its side slopes and lining. The lining is required for:

- Seepage control.
- *Prevention of water logging.*
- *Increasing hydraulic efficiency.*
- *Increasing resistance against erosion.*
- *Reduction in cross-sectional area.*
- Low operation and maintenance cost
- •••

The earlier refurbishment works of power channel below the FSL were executed in the year 2018. To meet out the electricity demand of the state, the power channel is in continuous service without any closure for repair works since the last five years. Unlike the other electrical / mechanical equipments and machines, the power channel also requires a scheduled refurbishment after every certain interval for smooth functioning & maintaining its service life. Therefore, the refurbishment of damaged power channel is necessarily required to ensure the safety of power channel and maintaining the service life of channel for un-interrupted power generation. The proposed refurbishment is also required for the safety of the inhabitants of nearby vicinity. To execute the works related to refurbishment of power channel below the Full Supply Level (FSL), a closure of 30 days is required.

The Cementitious Concrete Geo-Synthetic Mattress (CCGM) is proposed as a lining material in long stretches. CCGM consists of a double layer high strength woven made of PET, with interwoven filter zones providing a concrete slab with an averaged overall thickness of approximately 120 mm after filling with highly fluid concrete. The filter zone releases the back water pressure and the concrete slab provides the strength and stability to canal lining. Lining of canals reduces the seepage appreciably and thus prevents the occurrence of water logging condition. The installation of CCGM does not required vertical and horizontal band if laid in continuous length hence the installation rate is faster than conventional lining methods. The Rugosity co-efficient of CCGM is lesser then the stone pitching, therefore it will increase the hydraulic efficiency of power channel.

Apart from the above benefits, the work of CCGM is more mechanized as compared to conventional works, thus a better quality can also be assured during the execution of work.

Since the closure expenditure is a one-time event and accordingly, all the associated works which calls for closure period should be carried out simultaneously. Also as the permission for closure of power channel is very difficult to be obtained, some other works for which closure is essential are also added to avoid the generation loss so that not only recurring expense on closure can be avoided but also for effective working on the works requiring closure can be ensured. The detail of works is as below:

**1.** Inspection of Silt excluder Tunnel.

2. Restoration work of Upstream damaged panels of Afflux Bundh at Virbhadra barrage.

These works were earlier proposed under DRIP-II, but could not be executed due to Non availability of fund. All the works can only be executed in closure period and essential for Barrage safety and operation. Hence in view of above narrated facts the DPR for "Rehabilitation Works of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project" has been proposed under capital head 2023-24.

The proposed works are not of annual occurring nature thus, can be considered under Capital Expenditure of Chilla HEP as per the Hon'ble UERC Guidelines.

Keeping in view the exigency, importance and above cited narration, it is kindly requested to accord the Administrative Approval for the work "Rehabilitation Works Of Virbhadra Barrage & Power Channel of Chilla Hydro Electric Project"

Amounting to **Rs. 23,30,80,919.36 (Rs. Twenty Three Crore Thirty Lacs Eighty Thousand Nine Hundred Nineteen & Paisa Thirty Six Only), including GST** against Capital Expenditure of Chilla HEP for the FY 2023-24."

8. Furthermore, the Petitioner has enclosed bar charts for the proposed works (A) 'Refurbishment of Damaged Chilla Power Channel at Different Places from Barrage Head Regulator Gate to Intake of Chilla Power House', (B) 'Repair and Strengthening of Boulder Excluder Tunnel of under Sluice Gate No. 01 at Virbhadra Barrage' & (C) 'Restoration Work of Upstream Damaged Panels of Afflux Bundh at Virbhadra Barrage' indicating the schedule of works to be started in the month of February, 2024 and completion in the month of April, 2024.

- 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. 23.31 Cr. inclusive of taxes 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. 174 dated 01.05.2024 directed the Petitioner to submit/furnish its compliance on the following latest by 22.05.2024:-

"

# <u>General Queries</u>

- 1. UJVN Ltd. is required to furnish the efforts made by it in seeking funding from DRIP/other Centrally funded schemes for grant/loan in the matter.
- 2. UJVN Ltd. is required to furnish the details of generation loss (in MUs) that could happen due to execution of the proposed works.
- 3. UJVN Ltd. is required to provide the copy of SoR/reference rate schedule duly highlighting the items which have been referred while preparing the estimates for the proposed works. Further, UJVN Ltd. is required to furnish the basis of unit rates of the individual items referred in the estimates which are 'approved by DGM (CM-GV)' alongwith supporting documents.
- 4. UJVN Ltd. is required to furnish a revised GANTT chart depicting the activity-wise details of works along with the duration (start date & end date), linkages amongst the various activities (start to start, start to finish, finish to finish & finish to start) for the works pertaining to:-
  - (1) Repair and strengthening of Boulder Excluder Tunnel of under sluice gate no. 1 of Virbhadra Barrage.
  - (2) Restoration work of upstream damaged panels of Afflux Bundh at Virbhadra Barrage.
  - (3) Refurbishment of damaged Chilla Power Channel at different places Barrage head regulator gate to intake of Chilla Power House.
- 5. With regard to proposed works at Boulder Excluder Tunnel and Afflux Bundh at Virbhadra Barrage, UJVN Ltd. has submitted that the execution of the same requires closure of the Power Channel. In this regard, UJVN Ltd. is required to substantiate its submission pertaining to the requirement of Power Channel closure for execution of the aforesaid works.
- 6. UJVN Ltd. is required to submit the details of works executed earlier at Virbhadra Barrage for which Coffer Dam/Ring Bandha were constructed alongwith the expenditure incurred in construction of aforesaid Coffer Dam/Ring Bandha.
- 7. UJVN Ltd. has submitted that the works proposed in the instant Petition were earlier proposed under DRIP-II at Virbhadra Barrage but could not be executed due to non-availability of funds. In this regard, UJVN Ltd. is required to submit the details of works

proposed, work executed under DRIP-II along with its present status & estimated/incurred cost at Virbhadra Barrage.

Further, UJVN Ltd. was required to submit the Dam/Barrage-wise details for DRIP-I, & DRIP-II in Format consisting following particulars: -

				Amo	ount in Rs. Crore
Dam/Barrage Name	In principle approval granted by the Commission	Amount sanctioned by CWC/World Bank	Amount disbursed by CWC/World Bank to GoU/UJVN Ltd.	Amount utilized by UJVN Ltd.	Copy of Utilization certificate

8. The Commission vide its Order dated 29/12/2021 pertaining to in-principle approval of capital investment under DRIP-II for strengthening and up-gradation of Virbhadra Barrage of UJVN Ltd., had expected from UJVN Ltd. to utilize the 'Budgetary Support for Flood Moderation/Storage Hydro Electric Projects (HEPs)' and 'Budgetary Support to Cost of Enabling Infrastructure, i.e., roads/bridges schemes' of GoI for their projects. In this regard, UJVN Ltd. is required to submit the efforts made by it in getting the benefit of the aforesaid scheme for the works proposed in the instant Petition.

# Power Channel Related

9. UJVN Ltd. is required to submit the details of major civil works carried out for the refurbishment/repair of power channel of Chilla HEP during last 15 years for DRIP-I, DRIP-II & 'other than DRIP-I & DRIP-II' in the Format consisting following particulars:

		Durati	ion of work	Details of	the work execu	ted
S. No.	Description of the executed work (specify exact work at Panel or floor of Power Channel)	Start date	Completion date	Panel No. of power channel where the work has been executed (specify left/right bank along with Panel No.)	Expenditure incurred	Present status of the execute d work

10. With regard to the works pertaining to Power Channel of Chilla HEP, UJVN Ltd. is required to furnish left bank and right bank Panel-wise/Chainage-wise in the following format:-

Sl. No.	Panel no. (specify left/right bank)	Details of the executed works in past	Status whether Fully/Partially Damaged/washed- out/eroded/not- working	Year of Damaged/was hed-out/eroded /dysfunctional	De- Capitalized or not & Year of Decapitalizati on	Details of insurance claimed/ received
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*Further, UJVN Ltd. is required to furnish the details of efforts made by it for receiving the insurance claims.* 

11. UJVN Ltd. has to confirm the Panel-wise details of Power Channel which are common in the instant Petition and were also executed under various schemes in past viz. DRIP-I, DRIP-II, other civil works. 12. UJVN Ltd. is required to furnish left and right bank Panel No.-wise description of works to be executed in the Chilla Power Channel describing the area where damage is to be restored:-

		At the bottom area of	Between toe area and	Above FSL
	Panel no.	Power Channel toe area	below FSL	(specify that CCGM/
Sl.	(specify	(specify that CCGM/	(specify that CCGM/	cement
No.	left/right	cement	cement concrete/masonry	concrete/masonry
	bank)	concrete/masonry	work/Gabion)	work/Gabion)
		work/Gabion)		

- 13. UJVN Ltd. has proposed for the use of Cementitious Concrete Geo-Synthetic Mattress (CCGM) over the damaged side slope in the power channel. UJVN Ltd. is required to provide the alternative materials / technology that are available in the market and can be used in place of CCGM alongwith its cost, pros and cons over CCGM.
- 14. UJVN Ltd. is required to furnish a comparative of expenditure incurred on Concrete Composite Geosynthetic Mattress (CCGM) for works executed in past for different projects within UJVN Ltd.:-

Sl. No.	Project Name/Power Channel where CCGM used	Year of expenditure	Unit rate (in Rs. per sqm)	Qty (in sqm)	Total expenditure on CCGM works (in Rs.)
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# Boulder Excluder Tunnel Related

15. UJVN Ltd. was required to submit the details of works executed at Virbhadra Barrage (Gate No. 1 to 4) of Chilla HEP under 'DRIP-I', 'DRIP-II', 'Major work executed during last 15 years other than DRIP-I & DRIP-II' in the format consisting following particulars:

Sl. No.	Barrage gates (no. 1 to 4) & Boulder Excluder tunnel	Details of the executed work	Location where the work has been executed	Completion date	Expenditure incurred in Rs.	Present condition of the executed work
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16. With regard to the works pertaining to Boulder Excluder Tunnel and Gate No. 1 to 4, UJVN Ltd. is required to furnish details in following format:-

Sl. No.	Details of the executed works in past	Status whether Fully/Partially Damaged/washed- out/eroded/not- working	Year of Damaged/washed- out/eroded /dysfunctional	De-Capitalized or not & Year of Decapitalization	Details of insurance claimed/ received
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*Further, UJVN Ltd. is required to furnish the details of efforts made by it for receiving the insurance claims.* 

#### At upstream Panels of Afflux Bundh

17. UJVN Ltd. is required to submit the details of works executed at upstream panels of Afflux Bundh at Virbhadra Barrage under 'DRIP-I', 'DRIP-II', 'Major work executed during last 15 years other than DRIP-I & DRIP-II' in the format consisting following particulars:

Sl. No.	Upstream Panels of Afflux Bundh	Panel No.	Details of the executed work	Completion date	Expenditure incurred in Rs.	Present condition of the executed work
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18. With regard to the works pertaining to upstream panels of Afflux Bundh at Virbhadra Barrage, UJVN Ltd. is required to furnish details in following format:-

*Further, UJVN Ltd. is required to furnish the details of efforts made by it for receiving the insurance claims".* 

- In response to the deficiencies observed in the Commission's letter dated 01.05.2024,
  UJVN Ltd. vide its letter dated 07.05.2024 submitted its point-wise reply as follows:-
  - (1) With regard to the replies on point no. 2, 3, 4, 6, 9, 11, 12, 14, 15, 17 & 18, UJVN Ltd. has enclosed Annexure-I, II, III, IV, VII, IX, X, XI, XII, XIV, XV respectively, whereas replies on point no. 1, 5, 7, 8, 10, 13 & 16, UJVN Ltd. has submitted that:-
  - "
    - 1. The work "Repair and strengthening of Boulder Excluder Tunnel of under sluice gate no. 1 of Virbhadra Barrage" was proposed under DRIP-II but could not be executed due to fund constraints under DRIP-II. Beside this remaining two works included in the DPR are not proposed for any other funding yet due to unavailability of fund under any of the World bank funding / GoI grant.
  - ••
  - 5. The panels of Afflux bundh which were settled/damaged and taken in the work remain submerged in water during the operation of chilla power channel. These panels can only be seen during the flushing time. Also the top of boulder excluder tunnel is the floor of intake of power Channel. During the operation of power channel boulder excluder tunnels also remains submerged, hence closure is essential to ensure no water in power channel.

The repair or inspection of these structures can only be made when there is no ponding in the reservoir which is only possible at the time of closure. Since the closure involves losses, all works requiring closure needs to be done within same closure period to minimize losses and accordingly the works at Boulder Excluder Tunnel and Afflux Bundh which require closure.

7. Actually PST's for 6 DRIP Dam/Barrages of UJVN Limited were prepared with overall cost. Rs 45.26 Crore but due to fund constraints work of Rs 19.27 Crore were

allowed. Detail of DRIP-II works regarding Virbhadra Barrage is enclosed as Annexure-V.

The Detail in Prescribed format enclosed as Annexure-VI.

8. The "Budgetary Support for Flood Moderation/Storage Hydro Electric Projects (HEPs)" and "Budgetary Support to Cost of Enabling Infrastructure" schemes of GOI are for new projects. In the instant petition works are of "Repair and maintenance" nature of existing projects in operation hence these works are not eligible for budgetary support under these schemes. However efforts will be made in future to adopt suitable scheme such as "Special assistance Scheme" or any other scheme of GoI/GoU for budgetary support for the works proposed in the instant Petition in future.

#### Power Channel Related

. . .

- 10. The Detail in Prescribed format enclosed as Annexure-VIII. Claim has been reported and site visit of surveyor has been done. Claim will be finalized after completion of the work.
- 13. The Cementitious Concrete Geo-Synthetic Mattress (CCGM) is proposed as a lining material over the damaged side slope in the cutting portion of power channel i.e from Barrage Head Regulator gate to Bin Super Passage in long reaches. CCGM is lining material manufactured by various companies, consists of a double layer high strength woven made of PET, with interwoven filter zones providing a concrete slab with an averaged overall thickness of approximately 120 mm after filling with highly fluid concrete. The filter zone releases the back water pressure and the concrete slab provides the strength and stability to canal lining. Lining of canals reduces the seepage appreciably and thus prevents the occurrence of water logging condition.

The alternative method for lining is the conventional method where lining of canal was done by providing stone filled gabions on dressed panels. The panels were prepared by providing horizontal and vertical CC bands.

The installation of CCGM does not required vertical and horizontal band if laid in continuous length hence the installation rate is faster than conventional lining methods. The Rugosity co-efficient of CCGM is lesser then the stone pitching, therefore it will increase the hydraulic efficiency of power channel.

CCGM will provide the added stability of side slopes of power channel lying in the cutting portion against the:-

- Frequent drawdown of water in the power channel.
- Back water pressure at the deepest point by releasing the water from inbuilt filter zones.
- Weed growth.

The cost of lining with CCGM is 20 -25% higher than the conventional method depending upon the thickness of lining But the work of CCGM is more mechanized, durable as compared to conventional method, thus a better quality along with faster

execution can also be assured during the execution of work to minimize the generation loss.

•••

16. The Detail in Prescribed format enclosed as Annexure-XIII. Actual assessment of damage will be made after dewatering and silt removal from Boulder excluder tunnel during execution of proposed work & possible insurance claim will be submitted.

# At upstream Panels of Afflux Bundh

...″

- 12. On examination of the aforesaid submissions, additional information was required for further scrutiny of the Petition/DPR and accordingly, the Commission vide its letter No. 242 dated 16.05.2024 directed the Petitioner to submit/furnish its reply on the following observations latest by 30.05.2024:
  - "
  - 1. With regard to UJVN Ltd.'s submission dated 07.05.2024 at point no. 7, UJVN Ltd. has submitted that the work amounting to Rs. 19.27 Cr. were allowed at Virbhadra Barrage under DRIP-II, however, the same has been indicated as Rs. 18.12 Cr. at Annexure-V and Rs. 20.25 Cr. at Annexure-VI. In this regard, UJVN Ltd. is required to clarify the deviation in its aforesaid submission.
  - 2. UJVN Ltd. at Annexure-VI of its submission dated 07.05.2024 has submitted that amount of Rs. 20.25 Cr. has been utilized at Virbhadra Barrage under DRIP-II against the amount of Rs. 45.26 Cr. sanctioned by CWC/World Bank. Further, UJVN Ltd. has submitted that due to fund constraints the balance work of DRIP-II is not being takenup. In this regard, UJVN Ltd. is required to clarify that how the funds are constraints when only Rs. 20.25 Cr. has been utilized against Rs. 45.26 Cr.
  - 3. UJVN Ltd.'s submissions at Annexure-VIII, Annexure-IX & Annexure-X of its submission dated 07.05.2024 are full of anomalies. In this regard, UJVN Ltd. is required to clarify the following:-
    - (1) With regard to Annexure-VIII & Annexure-IX, out of the total proposed panels in the instant Petition, 76% of the panels were repaired earlier and are damaged now. UJVN Ltd. is required to clarify the reasons for the recurrence of such damages.
    - (2) There are certain panels in left bank viz. 43, 44, 334, 335, 336 etc. which are shown damaged at Annexure-VII, however, the same are not being taken up for repair works under the instant Petition (as depicted Annexure-VIII & Annexure-X of submission dated 07.05.2024). UJVN Ltd. is required to submit the reasons for the same.
    - (3) UJVN Ltd. is required to justify its submission 'N/A' against 'decapitalized or not & year of decapitalization'.
    - (4) UJVN Ltd. in its submission at Annexure-VIII has submitted details of few panels for which insurance has been claimed. UJVN Ltd. is required to submit the reasons for not claiming insurance of other damaged panels.

(5) UJVN Ltd. at Annexure-X has submitted that out of proposed 176 panels, CCGM/Cement concrete works will be done at 35 panels and this accounts to area of 7,000 sqm. (as per drawing submitted by UJVN Ltd.), however, UJVN Ltd. in its estimate has proposed the quantity 10,500 sqm. for the CCGM works. In this regard, UUVN Ltd. is required to clarify about quantity proposed. Further

*In this regard, UJVN Ltd. is required to clarify about quantity proposed. Further, UJVN Ltd. is required to clarify the basis of proposing specifically 120 mm thick (after filling concrete) CCGM for the proposed works.* 

- (6) UJVN Ltd. is required to submit the revised Annexure-VIII, Annexure-IX & Annexure-X duly incorporating the above mentioned comments.
- 4. UJVN Ltd. is required to confirm regarding the verification by independent agency as mandated in Regulation 22(2)e) of UERC (Terms and Conditions for Determination of Multi Year Tariff), Regulations 2021 for the works proposed under the Petition and submit documentary evidence in support of the same.
- 5. On examination of the information submitted in Annexure-VII & Annexure-VIII, it has been observed that several panels have been repaired under DRIP-I multiple times and further they have been proposed in the instant Petition also. Further, it has been observed that at Annexure-VIII information w.r.t. the executed works has not been depicted correctly for several panels viz. panels at left bank no. 121, 122, 123, 124 & 125 which were repaired in FY 2017-18 also. UJVN Ltd. is required to furnish panel & bank-wise consolidated information in the prescribed format annexed at Annexure-A."
- 13. In compliance to the Commission's letter dated 16.05.2024, UJVN Ltd. vide its letter dated 17.05.2024 submitted its point-wise compliance as mentioned below:-
  - ,,
- For DRIP-II the cost of total work allowed is Rs. 19.27 Crore out of which expenditure of Rs. 18.12 Crore has already been incurred at Virbhadra Barrage. Rest amount i.e. Rs. 1.15 Crore pertaining to remaining work of "Construction of Training Centre at Rishikesh" as indicated in Annexure-V, which is in progress and balance amount will be utilized.

The Annexure -VI is based on IUFR in which some expenditure of DRIP-I is also counted in DRIP-II for Virbhadra Barrage. Hence the cost increased to 20.25 Cr which includes carry forward works from DRIP-I.

- 2. Initially the amount of Rs. 45.26 Crore was considered by CWC/World Bank for Virbhadra Barrage Under DRIP-II part 1. Due to some urgent works on the other projects fund allocated for Virbhadra barrage was utilized on other projects of UJVN Limited after taking approval from CWC under DRIP-II. Hence some works which were approved under DRIP-II for Virbhadra barrage could not be carried out under DRIP-II due to fund constraint. In this connection please have kind attention on Annexure-VI submitted earlier which refers for reallocation approved from CWC. Relevant is enclosed herewith for kind consideration (Annexure-I).
- 3. 1) In the Monsoon period of 2023-24 frequent flushing was carried out at pashulok Barrage due to heavy rain and flood. The rainfall was much heavier than the previous years in the month of August-23 (Comparison Sheet of Rainfall data Attached as

**Annexure-II**). It is evident from the attachment that in August 2023 rain fall occurred about three times more than previous two years. Due to this heavy rainfall the panels got saturated fully and Pore pressure on panels which are in cutting portion has increased considerably and during the flushing when HR gates were closed the water level of power channel goes down, causes the imbalance of pressure due to which Panel collapsed.

- 2) After perusal of annexure VII, it may be noted that on left bank panel 44 was repaired in the year 2016 and repaired again in 2018 and mentioned in working condition. Similarly, the panel no. 334, 335 & 336 were also repaired to bring to working condition after repair in the year 2018 only. This time these panels have not been damaged hence not taken for repair in the instant petition. However, panel no. 43 is in working condition and present which was inadvertently mentioned damaged on page no. 1 of Annexure-VII.
- 3) In the electrical/mechanical works, where machines got repaired and T&P got changed T&P can be decapitalized from the date of installation of replaced one. In the slope protection work, there is no recoverable T&P as panels made of filter material, gabions filled with boulders which were already washed out and there is no T&P to decapitalize.

Hence in view of the above UJVN Limited has submitted N/A against 'Decapitalized or not & Year of decapitalization'. However, the amount of damage as submitted to hon'ble commission will be decapitalized from books of account in FY 2024-25.

- 4) The panels which were damaged during the Monsoon period of 2023-24 (either fully or partially) have been claimed completely. However, as closure is a one time event so while preparing the estimate many panels which were partially damaged time to time during operation were also taken for repair in the cost estimate. These panels deteriorated/damaged gradually in the past and were not damaged in a single event. Hence claim of these panels could not made as the repair amount of these panels fall below the policy deductible amount of Chilla HEP which is Rs. 1.25 crore for single incident.
- 5) The CCGM has the tendency of shrinkage after filling M-20 grade concrete. In the instant petition the shrinkage of CCGM taken is 25% hence the quantity of CCGM has been taken accordingly. As per drawing submitted the quantity of CCGM is 8400 sqm. for which 10,500 sqm quantity has been taken.

The 120 mm thickness has been taken as per the codal provision as per IS Code 3873 which recommends thickness of lining from 120 to 150 mm with M-10 & M-15 Grade Concrete. In present case the thickness of lining can be optimized as UJVN Limited is using M-20 Concrete as per present practice for under water works (Copy Enclosed as **Annexure-III**).

6) As per the above mentioned replies no change is required in Annexure-VIII, Annexure-IX & Annexure-X hence need not to be revised in submission.

With regard to reply on point no. 4 & 5 of the observations forwarded vide the Commission's letter dated 16.05.2024, UJVN Ltd. has submitted the reply in prescribed format as *Annexure-IV & V*.

#### Commission's Observations, Views & Directions:-

14. Based on the examination and analysis of the Petition & subsequent submissions made by the Petitioner before the Commission, proposed works can be divided in two parts namely (A) Refurbishment works at Chilla Power Channel (B) Repair and restoration work at Virbhadra Barrage, which are detailed hereunder:-

### (A) Refurbishment works at Chilla Power Channel

The Petitioner has proposed the refurbishment works of damaged Chilla Power Channel at different places from Barrage head regulator gate to intake of Chilla Power House in the instant Petition. The Petitioner has submitted that major damages have been observed on the left bank of the Power Channel wherein the side slopes are completely collapsed resulting in the damage of its profile and panels of the Power Channel. The Petitioner has further submitted that the Power Channel is in continuous service since April, 2017 without any major repair or forced closure. From the photographs of panels of Chilla Power Channel annexed by the Petitioner in its DPR, it is has been observed that the panels of Power Channels are damaged/collapsed and if the same would not be repaired may initiate further deterioration/damages in Power Channel resulting in the threat to the safety of Chilla Power Channel.

Further from the submission of the Petitioner dated 07.05.2024, it has been observed that out of the total proposed 176 panels, 76% of panels were repaired earlier and are again damaged.

It has also been observed that the Petitioner has proposed CCGM/Cement concrete works at 35 Panels. In this regard, the Commission is of the view that the Petitioner should explore the vulnerable patches in the Power Channel where the panels are getting damaged repeatedly and ensure its precise attention during execution of refurbishment works in order to restrict such repeated damages in future. Further, from the submission of the Petitioner dated 07.05.2024 it has been observed that the Petitioner has claimed the insurance for few panels only.

#### (B) Repair and restoration work at Virbhadra Barrage

a. Repair and strengthening of Boulder Excluder Tunnel of under sluice gate no. 1 at Virbhadra Barrage

With regard to repair and strengthening of Boulder Excluder Tunnel at Virbhadra Barrage the Commission vide its Order dated 29.12.2021 had granted in principle approval under Part-A for Virbhadra Barrage as detailed below:-

S. No.	Description of Works	Amount (in Lakhs)
i) Civ	il 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
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	Consultancy works related to Supervision of Design for Structures and Supervision of Civil & Basic Facilities works.	28.10
12	Hydrographic Survey of Virbhadra Barrage, Pashulok, Rishikesh.	19.00
	Subtotal Part-A (Civil works)	2661.23
ii) E&	M Works:	
13	Replacement of S.S. plate on track guide of gate groove of all Barrage gates at Virbhadra Barrage, Pashulok, Rishikesh	46.02
14	Replacement of Sill Beams at Virbhadra Barrage, Pashulok, Rishikesh.	174.03
15	Renovation of Barrage Gates and Head Regulator at Virbhadra Barrage, Pashulok, Rishikesh.	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	185.45

S. No.	Description of Works	Amount (in Lakhs)
	Structure of Virbhadra Barrage, Pashulok, Rishikesh.	
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, Risbikesh	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

The Commission had earlier provided in-principle approval for the aforesaid works under DRIP-II vide its Order dated 29.12.2021 considering the availability of funds from World Bank for execution of the works which were important from the perspective of Dam/Barrages safety. The relevant Para of the aforesaid Order is being reproduced 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]** 

The Petitioner has submitted that the repair works at Boulder Excluder

Tunnel at Virbhadra Barrage had not been executed due to non-

availability of fund under DRIP-II. From the Petitioner's submission dated 07.05.2024 and 17.05.2024, it has been observed that out of the total sanctioned amount of Rs. 45.26 Cr. for Virbhadra Barrage under DRIP-II, the works amounting to Rs. 18.12 Cr. only have been executed and the remaining sanctioned amount has been transferred to other Barrages of UJVN Ltd. to meet out the deviations arising during the execution of the works. Due to this reallocation, paucity of funds surfaced for the works proposed in the instant Petition and compelled the Petitioner to propose the works to be executed through its own resources.

Earlier, the Commission in the Tariff Order dated 28.03.2024 for UJVN Ltd. observed the aforesaid reallocation/price variation issues against the works proposed under DRIP-II and had categorically directed the Petitioner to ensure that CPMU approvals should be obtained in time.

In this connection, regarding the submission dated 17.05.2024 of the Petitioner on reallocation of funds pertaining to DRIP-II, the Commission observed that none of the document has been furnished which could substantiate the approval of CWC/CPMU in the matter. In this regard, UJVN Ltd. is directed to validate the reallocation from the appropriate authorities to avoid any difficulty in future.

It has been observed that due to reallocation of funds amongst Dams/Barrages under DRIP-II scheme, UJVN Ltd. is approaching the Commission for approval of balance works of DRIP-II through normal add cap. In this regard, the Commission directs the Petitioner to judiciously analyse the need of works and if required, the Commission may be approached with a consolidated proposal for only those works which directly impact the safety of Dam/Barrage and generation from the Plant.

# b. Restoration work of upstream damage panels of Afflux Bundh at Virbhadra Barrage

From the photographs of panels of Afflux Bundh annexed by the Petitioner in the DPR, it is depicted that some panels are settled/sink/damaged at different locations of Afflux Bundh. The Petitioner has submitted that the root cause of sinking of panels could be the soil piping wherein, the soil is carried away by water running through holes in the ground. The Commission is of the view that if the settled/sink/damaged panels would not be treated/restored, there may be strong possibility of settlement of damaged panels, which may be severe threat to the safety of Afflux Bundh.

Earlier, the Petitioner proposed the restoration work of upstream damaged panels of Afflux Bundh at Virbhadra Barrage under Part-B of DRIP-II, however, at that time the Commission did not grant in principle approval in the matter in absence of DCRP approval, since, the Petitioner in the instant Petition has submitted a recommendation report of IEI civil engineers substantiating the need of the works, therefore, the Commission is considering the said proposal.

With regard to the Commission's specific query in its letter dated 01.05.2024 pertaining to claim of insurance against the damages, the Petitioner vide its submission dated 07.05.2024 has submitted that the possible insurance claim will be submitted once the assessment of the damages would be clear after removal of silt from the site i.e. during the execution of proposed work.

- 15. With regard to the insurance claims of all the damages/washed/eroded panels proposed in the instant Petition, the Petitioner is directed to actively pursue the matter of Insurance claim of the assets which were washed away 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.
- 16. The Petitioner in its submission dated 07.05.2024 has agreed that it would put its all endeavors to propose the works in the instant Petition under suitable scheme of GoI/GoU such as 'Special Assistance Scheme' for budgetary support. In this regard, the Commission again directs the Petitioner to make its all efforts for executing the proposed works associated with the safety of Dam/Barrages/Power Channels through grant/fund available under various schemes of GoI/State Government.
- 17. 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 judiciously mobilize its resources in order to meet its timelines i.e., before the current monsoon season without compromising the quality, workmanship aspects required for the works.

- 18. 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 work with quantum optimization and quality.
- 19. With regard to the quality and longevity of the proposed works, the Commission is of the view that the Petitioner should execute the proposed works duly considering the observations/suggestions/recommendations of the DSRP/CPMU/CWC or any other independent agency appointed by the Petitioner.
- 20. 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 Head Regulator 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.
- 21. Based on the above discussion and considering the safety and further deterioration/damages of the Chilla Power Channel and Virbhadra Barrage, the Commission grants in-principle approval for the proposed works subject to the following:
  - 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 and independent agency 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 make all its endeavor for executing the works proposed in the instant Petition through Grant/fund as discussed at Para 16 above.
- (7) 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.
- (8) 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.
- (9) 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) /Chairman (I/c)