BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE BENCH AT CHENNAI

M.A.No.2 of 2021

in

ORIGINAL APPLICATION No. 71 OF 2020

IN THE MATTER OF:

GavinollaSrinivas
H. No.1-99, Bapanapally Village,
DamargiddaMandal, NarayanpetDistrict,
Telangana —509407. …**Applicant/Applicant**

-Versus-

1. Union of India,
Rep. by itsSecretary,
Union Ministry of Environment,
Forest & Climate Change, and 4 others,….**Respondents/Respondents**

INDEX

S.No	**Date**	**Description of the Document**	**Page. No**
1	25.08.2021	OBJECTION COPY	1-39
2		**Annexure-I**CIII-D-17 filed before the KWDT-II	40
3		**Annexure-II** Owk Tunnel	41-60
4		**Annexure- III** IS: 1892 – 1979 Code of Practice for Subsurface Investigation	61-62
5	08.08.2020	**Annexure-IV** Expert Committee Report	63-64
6	13.07.2020	**Annexure- V**Order in O.A.71 of 2020	65-71
7	24.02.2021	**Annexure-VI** Order in M.A 6 OF 2020 IN O.A 71 OF 2020	72-78
8	30.06.2021	**Annexure- VII** check list of the DPR	79-87
9		**Annexure- VIIA** Chapter -7 of the DPR	88-89
10		**Annexure- VIII & IX** The guidelines issued by CWC during 2010 and 2017	90-173
11		**Annexure- X**Andhra Pradesh Infrastructure (Transparency through Judicial Preview) Act, 2019	174-181

12		**Annexure-XI** Judiciary Preview" for EPC procedure	182-183
13		**Annexure-XII**Mahatma Gandhi KalwakurthyLift Irrigation Scheme	184-191
14	15.07.2020	**Annexure-XIII**Notice Inviting Tenders (NIT No.01/2020-21,	192-197

DATE-26-08-2021

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BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE BENCH AT CHENNAI

M.A.No.2 of 2021

in

ORIGINAL APPLICATION No. 71 OF 2020

IN THE MATTER OF:

Gavinolla Srinivas
H. No.1-99, Bapanapally Village,
Damargidda Mandal, Narayanpet District,
Telangana —509407.

...**Applicant/Applicant**

-Versus-

1. Union of India,
Rep. by its Secretary,
Union Ministry of Environment,
Forest & Climate Change,
Indira Paryavaran Bhavan,
Jorbagh, New Delhi-110003.

2. Union of India
Rep. by its Secretary,
Union Ministry of Jal
Sakti Sramasakti Bhavan
New Delhi - 110 001

3. State of Telangana
Rep. by its Chief Secretary,
Secretariat, Hyderabad – 500022.

4. State of Andhra Pradesh,
Rep. by its Chief Secretary,
Secretariat, Velagapudi,
Guntur District, Andhra Pradesh – 522503.

5. Krishna River Management Board,
Rep. by its Member Secretary,
Government of India,
Ministry of Water Resources,
5th Floor, Jalasoudha, Errum Manzil,
Hyderabad - 500082.

...**Respondents/Respondents**

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

OBJECTION FILED BY THE 4TH RESPONDENT TO 2ND AND 5TH RESPONDENT FINAL REPORT DATED 13.08.2021

I, Adityanath Das, I.A.S. S/o Sri Gowrikantha Das, Aged 60 years, Chief Secretary to Government of Andhra Pradesh and Respondent No.4 do hereby solemnly affirm and submit as follows.

1. I am the Chief Secretary to the Government of Andhra Pradesh and I am well acquainted with the facts of the case.

2. It is submitted that this Hon'ble Tribunal by order dated.23.07.2021 directed Krishna River Management Board (KRMB) to submit a report as regard Rayalaseema Lift Irrigation Scheme (RLS). KRMB visited Rayalaseema Lift Irrigation Scheme on 11.08.2021 and submitted its report on 13.08.2021 to this Hon'ble Tribunal. The conclusions in the said report are as follows:

> ***"1. The activities undertaken at the site as observed by the team have been detailed at Item number 4 "Site Inspection and Observations" above, along with the photographs taken during the visit.***
>
> ***2. During the visit to the project site, no activity was going on at the site. However, the team observed that two batching plants have been installed at the site. Further, coarse aggregates, fine aggregates and sand were seen stacked besides the batching plant at the site.***
>
> ***3. The team is of the view that the works undertaken at the site are in excess than what is,***

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

in general, required for the purpose of the preparation of DPR as per Ministry of Water Resources "Guidelines for the preparation of DPR of irrigation and Multipurpose Projects" (2010)."

3. The State of Andhra Pradesh humbly submits the following brief note and replies to the report submitted by the KRMB on 13.08.2021. The same may be considered by this Hon'ble Tribunal.

4. It is submitted that the Rayalaseema Lift Scheme (RLS) is undertaken by the government of Andhra Pradesh in view of dwindling flows into Srisailam reservoir and change of inflow pattern into Srisailam reservoir to realize its allocated share of water by KWDT-I and KWDT-II and ongoing projects recognized in para.10 of XI Schedule of Act,2014.

5. It is submitted that the RLS was originally contemplated at Mutchumarri to draw water from the foreshore of Srisailam Reservoir. Later on, the project site was shifted from Mutchumarri to left side of the Pothireddypadu Head Regulator. The Project has certain peculiar features which are discussed below.

I. Unique "Nandyal Shale" Rock formation in the project site i.e. left side of Pothireddypadu Head Regulator.

6. It is submitted that the Srisailam reservoir is a common reservoir for both the States i.e., Telangana and Andhra

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Pradesh. The State of Andhra Pradesh is situated on the right side of the Srisailam reservoir and the State of Telangana is on the left side. However, the strata on the right side of Srisailam reservoir comprises of different Rock types, comprising of alternation of Quartzites, Sandstones, Limestones and Shales at different horizons of the major Kadapa and Kurnool formations. The project components will pass through mostly calcareous purple and grey shale's and they also touch limestone and Quartzite's beds here and there, the typical Rock formation in this area is called as "*Nandyal Shale*" with lime content and vertical and horizontal joint are seen in this Rock formation is unique and peculiar one In fact, the nature of the Rock formation is subject matter of Telugu Ganga Project (**Annexure-I** see para.3.1.5 of CIII-D-17 filed before the KWDT-II).

7. It is submitted that it has been explained in para.11 of the counter affidavit filed in M.A. 3 of 2021 that the GSI vide letter dt.04.12.2020 issued a feasibility report. However, as regard the nature of the strata observed as follows:

"Regionally, area exposes mainly sediments of Cuddapah Super group and Kurnool group of Meso to Neo-Proterozoic age. A small patch of migmatite and granite gneiss belonging to Peninsular Gneissic Complex (PGC-II) if Archean to Paleo-Proterozoic age is exposed in the northwestern part of the area. The Cuddapah Supergroup is divided into Cuddapah and Nallamalai Groups and occurs in the northern part. The chitravati Group is represented by the Pulivendla

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Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238

Formation and Tadipatri Formation. The Pulivendla Formation is essentially an arenaceous unit. It has a thin impersistent basal conglomerate followed by grit and quartzite. The Tadipatri Formation is constituted by shale, tuff, chert and jasper and lies conformably over Pulivendla Quartzite.

Tha Nallamalai Group is represented by Cumbum Formation which is exposed in the northeast. It consists as shale, phyllite and shale sequence with intercalations of quartzites.

The Kurnool Group of rocks unconformably overlies the Cuddapah Supergroup. They include Banaganapallen Narji, Owk, Paniam, Koilkuntla and Nandyal Formations. The oldest unit in this are is Banaganapalle Quartzite which is exposed in the northwest. The Narji Limestone, with massive and flaggy members, is exposed in the western margin. The overlying Owk Shale lies directly over Narji Limestone. It occurs as a thin but persistent band preserved due to capping of Paniam Quartzite over it. The Shale is predominantly non-calcareous, white, buff or yellow and is often ochrous. Paniam Quartzite occurs capping the Owk Shale, forming plateau. Koilkuntla limestone occurs in the western and northern.

The major part of the proposed pump house location is covered with the disposed muck excavated while the construction of Pothireddypadu head regulator. However, the reddish brown, thinly laminated, horizontally bedded shale belonging to Nandyal shale of Kurnool Supergroup is exposed in the cut slopes of adjacent Srisailam Right Main canal". **(See Annexure-I at pages 16 to 20 of counter affidavit of R3.)**

8. It is further submitted that it is evident that, as assessed by geologists the rock at foundation level is of 'Nandyal shale' which has highly to slightly varying weathered reddish-brown shale with thin laminations of grey shales. It is pertinent to note that weathered thin laminations in the rock may have to be strengthened against large differential settlements in order to prevent sudden failure of

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Velagapudi, Amaravati,
Guntur Dist. - 522 238.

foundations. Thus, such type of rock foundation requires deeper exposure to rule out any foundation failure

9. It is submitted that the State of Andhra Pradesh earlier constructed Owk Tunnel II, which is part of GNSS in Banaganapalle Mandal, Kurnool District, and Andhra Pradesh. The geological investigation with reference to Owk Tunnel, also show that rocks belonging to Kurnool group of Neoproterozoicage occur around the Tunnel site. The report communicated by the Geological Survey of India show that "the Nandyal shale" rock formation and also shows dark grey to black fine grained thinly laminated calcareous shale is exposed. It further shows that dark grey thinly bedded to massive argillaceous limestone is mapped between CH 59.144 km and CH 59.950 km. Grey fine grained, thinly bedded, highly fractured and horizontally disposed shale are exposed between CH 59.950 km and CH 60.300 km. While laying the tunnels, one of the tunnel collapsed, so the entire system was re-done. Thus, the nature of soil strata and rock formation varies the quantity of survey and investigation required at a particular project site and these peculiar rock formations need to be investigated in detail as per the IS Code and guidelines of the Central Water Commission. The report of the Geological Survey of India

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

with reference Owk Tunnel is herewith filed as **Annexure – II**.

II. Re: IS Code:

10. It is submitted that the Indian Standards Institution has issued IS: 1892 – 1979 Code of Practice for Subsurface Investigation for Foundations the relevant portion read as follows:

"***2.3.2. Depth of Exploration***- *The depth of exploration required depends on the type of proposed structure, its weight, the size, shape and disposition of the loaded areas, soil profile and the physical properties of the soil that constitutes each individual stratum. Normally, it should be one and half time the width of the footing below foundation level. In certain cases, it may be necessary to take at least one bore hole or cone test or both to twice the width of the foundation.* ***If a number of loaded areas are in close proximity the effect of each is additive. In such cases, the whole of the area may be considered as loaded and exploration should be carried out up to one and half times the lower dimension.*** *In weak soils, the exploration should be continued to a depth at which the loads can be carried by the stratum in question without undesirable settlement and shear failure. In any case, the depth to which seasonal variations affect the soil should be regarded as the minimum depth for the exploration of sites. But where industrial process affect the soil characteristics this depth may be more. The presence of fast growing and water seeking trees also contributes to the weathering processes".*

Thus, the unique rock formation in a project site plays a vital role in fixing the requisite extent of survey and investigation need to be undertaken. Wherever unique rock formation is there the survey and investigation would vary from normal work required for preparation DPR. The said I.S. Code is herewith filed as **Annexure-III**.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

III. Re: Earlier proceeding before this Hon'ble Tribunal:

11. It is submitted that this Hon'ble Tribunal by order dated 20.05.2020 appointed an Expert Committee and directed it to submit a report as regards RLS. The Expert Committee submitted its report on 08.08.2020. One of the Members of the Expert Committee is Prof., IIT, Hyderabad observed as follows:

> ***"Professor IIT, Hyderabad submits that lift scheme may result in land subsidence in Rayalaseema region since the natural geological formations contain limestone and lime may dissolve in water and may cause subsidence".***

The relevant portion of the report of the Expert Committee dated 08.08.2020 is herewith filed as **Annexure-IV.**

12. It is submitted that this Hon'ble Tribunal pending main O.A. modified order dt.20.05.2020 by order dt.13.07.2020. The relevant portion reads as follows: **Para 7**

> ***"In view of the above submission made by the learned senior counsel appearing for State of Andhra Pradesh, we feel that some modification is required in the order dt.20.05.2020. we make it clear that the above interim order will not prevent the State of Andhra Pradesh from preparing the project report and calling for tenders for that purpose, but the actual execution of the work on ground can be done only after getting further orders from this tribunal. To that extent, the order dt.20.05.2020 is modified".***

The relevant portion of order dated 13.07.2020 is herewith filed as **Annexure-V**. It is submitted that the original Applicant in O.A.71 of 2020, filed M.A. No. 6 of 2020 under

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Sections 26 and 28 of NGT Act, 2010.It is submitted that the State of Andhra Pradesh has filed its counter affidavit and the relevant portion reads as follows:

> ***"i. I state that the geological investigation is a part of DPR preparation. The DPR submitted without these investigation details has been returned by the CWC, vide remarks dt.16.12.2020.***
>
> ***ii. I state that the soil dump removal and leveling off the ground is part of investigation and DPR work but not the main work.***
>
> ***iii. I state that the work in the scheme can commence only when designs are finalized and suitably of foundation and location of choice of pump house is ascertained. The work which is going on now cannot be treated as the work of the scheme after DPR is finalized. The applicant cannot go to the extent of asking for restraining order even in respect of matters necessary for DPR.***
>
> ***iv. I state that we humbly submit that we are doing only preparatory work for DPR investigation but not the main work".***

13. It is submitted that this Hon'ble Tribunal passed an order on 24.02.2021 disposed the said application. The findings of this Hon'ble Tribunal in the said order read as follows: **Para 9 to 15**

> i. ***The counsel appearing for 5th respondent wanted time to file their counter to this application. The senior learned counsel appearing for the State of Andhra Pradesh reiterated that they have no intention to violate the directions of this Tribunal and what is being done by the State of Andhra Pradesh is only the preliminary investigation for the purpose of preparing the DPR on the basis of the guidelines of the Central Water Commission as they are the ultimate authority to approve the project before it is being put to execution.***

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

ii. ***The learned counsel appearing for the applicant reiterated their contentions in the application and he wanted the same committee to go into the issue to find out the nature of work that is being undertaken by them.***

iii. ***This Tribunal while disposing the Original Application No. 71 of 2020 issued certain directions and also prima facie came to the conclusion that considering the nature of the project, prior environmental clearance, is required and without getting environmental clearance, they cannot proceed with the work and further this Tribunal also observed that as per the directions of the Union Ministry of Jal Shakti, they will have to submit the DPR before the Krishna River Management Board and they will have to consider as to whether there is any deviation and whether such project can be permitted etc., on the basis of the powers vested on them under the Andhra Pradesh State Reorganization Act, 2014.***

iv. ***There is nothing to disbelieve the assertion made by the Chief Secretary of the State stating that there is no intention to violate the directions issued by this Tribunal while disposing the matter and whatever is being done is only strictly in accordance with the guidelines provided for preparing the DPR for the project.***

v. ***It is seen from the reply affidavit filed by the third respondent that they have made a complaint to the Krishna River Management Board regarding the alleged activity and wanted the Board to appoint a committee to go into the question and pass necessary directions.***

vi. ***We don't think that there is any necessity for this Tribunal to go into those aspects at this stage. We are now believing the assertions made by the Chief Secretary that they are only doing the preliminary investigation for the purpose of preparing the DPR on the basis of the directions given by the Central Water Commission as well as the Geologist for conducting the soil test which is necessary for the purpose of preparing the estimate regarding the constructions etc., that they want to make for implementing the project. Preparation of DPR for such projects can be carried out by the authorities***

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

only on the basis of the guidelines given by the competent authority who are expected to approve the same. Further, when risk involving projects are to be implemented, DPR has to be prepared properly and for that purpose, they may have to undertake certain investigation in a scientific manner involving certain tests etc. to ascertain the manner in which the contracts will have to be made and estimate the amount required for carrying out the work and that cannot be treated as execution of the project and willful disobedience of the direction of this Tribunal to attract the penal provision against the officials who are exercising their experience in carrying out the work.

vii. ***So under such circumstances, we feel that there is no necessity at this stage for go into the investigation in this matter and the Krishna River Management Board, on the basis of the compliant made by the Telangana Government in this regard, are at liberty to go into the question and if it is found that there is any violation of direction of this Tribunal in proceedings with the matter on the basis of the investigation conducted by them independently, they are at liberty to take appropriate action against the 4th respondent in accordance with law, apart from the applicant to approach this Tribunal at that stage.*** **This has been filed as Annexure-VI**.

IV. Re: CWC Guidelines for preparation of 'DPR':

14. It is submitted that the Central Water Commission (CWC) issued Guidelines for Submission, Appraisal and Acceptance of Irrigation and Multipurpose projects. It has issued the above-mentioned guidelines from time to time. In this context it is relevant to mention para.1.3 of guidelines of 2010 which reads as follows:

"Accordingly, the existing procedure of project appraisal of Irrigation, Flood Control & Multipurpose Projects for both major and medium projects, which are

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

having inter-State ramification, had been revised to accommodate various subsequent changes in guidelines of the Planning Commission and first revised Guidelines in this respect were issued in 2002. As per the Guidelines 2002, the concerned State Government in the initial stage submits preliminary report covering surveys and investigations, international/inter-State aspects, hydrology, irrigation planning, brief environmental aspects, intended benefits, etc. which are required to establish soundness of the project proposal. The project proposal is examined and if found acceptable, the CWC conveys 'In Principle' consent to the State Government for preparation of Detailed Project Report (DPR). Thereafter, DPR is prepared with up-to-date cost and simultaneously the Project Authorities process and obtain necessary clearances of the Ministry of Environment & Forests in respect of Environment Impact Assessment and Forest area being diverted. If Scheduled Tribe population is diverted, the clearance of R&R Plans is obtained from the Ministry of Tribal Affairs. The DPR thus prepared is examined in CWC. In States where central design and planning organizations do not exist, the CWC checks the designs also. The CWC finalizes the cost, B.C. ratio, internal rate of return etc. and the State Government obtains concurrence of the State Finance Department for the finalized cost. The project proposal, thereafter, is put up to the Advisory Committee for clearance, which is, by and large, like single window clearance".

15. It is submitted that the Central Water Commission (CWC) modified these guidelines in the year 2017 and issued modified guidelines 2017. Para.4 dealt with detailed project report (DPR) the following paragraphs are relevant herewith:

"4.2 CWC will primarily examine hydrology, inter-State aspects, irrigation planning, and economic viability in the DPR. Examination of these aspects by CWC is crucial from the point of view of holistic and unbiased examination of the project. As regards design and safety aspects, States having Central Design Organization (CDO) accredited* by CWC need to furnish a certificate in the prescribed proforma indicating that the planning & design / safety

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

aspects have been examined by the CDO under State Water Resources Department incorporating the list of BIS codes followed therein. States which don't have CDO/accredited CDO can take the help of accredited CDO of other States. CWC will necessarily examine design aspects in case of those States which don't furnish certificate from accredited CDO with regard to planning and design / safety aspects.

4.4 Detailed Project Report (DPR) shall be prepared in accordance with applicable Indian Standards and as per the latest" Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose Projects" issued by Govt. of India, MoWR, RD & GR (2010), after detailed surveys and investigations. It must be ensured that duly completed check-list, salient features and all relevant details as well as location map, Index map showing command area and canal network, annexure etc. as required by the aforesaid MoWR, RD & GR Guidelines are contained in the report and estimates are comprehensive as well as up-to-date in accordance with the existing Guidelines.

4.11 In case of Major, Medium irrigation & Multipurpose projects proposed to be funded under external assistance, soft copy shall be submitted through e - PAMS and sufficient sets of hard copies of DPR (refer Para 4.15) along with relevant clearances as per check-list Annexure-6 shall be submitted to the Chief Engineer, PPO, CWC.

4.14 In case where Design & Planning Organizations are existing in the concerned State and CWC certifies through accreditation process that it has sufficient competency to design such projects and a certificate is furnished by the accredited CDO in prescribed proforma Appendix-J of Annexure - 6 in respect of their detailed examination/clearance of the project proposal and appraisal/clearance of the State level Project Appraisal/Technical Advisory and Environmental Appraisal committees, examination of the project by CWC will be generally restricted to Inter-State aspects, basic planning, hydrology and economic viability.

4.16 In case certificates by accredited CDO are not appended with DPRs, design aspects shall also be scrutinized in detail. DPR of Major project proposals shall be examined in concerned Directorates of CWC,

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD&GR) and other Central agencies in respect of items pertaining to their area of specialization/area of concern. During techno-economic appraisal, State Govt.'s compliance to CWC observations will be required to be submitted by an officer not below the rank of Chief Engineer/Equivalent Competent Authority.

4.19 The final estimate shall be based on finalized designs and details of civil and hydraulic structures and economic analysis will be carried out by the Project Authorities/CWC adopting standard/accepted procedures. The project authorities will also submit concurrence of the State Finance Department for the finalized cost".

16. It is submitted that it is very clear from the above guidelines that preparation of DPR includes preparation of DPR for designs as well. The survey and investigation and the work done for survey and investigation forms part of a small portion of the total work to be done for the project. However, depending upon the nature of strata and observations of the experts, the quantity of survey and investigation work would vary from project to project depending on the versatile factors contributing for the same.

17. It is submitted that in para.14 of the counter filed in MA.3 of 2021 it was categorically stated that DPR was submitted to CWC on 30.06.2021. The check list of the DPR herewith filed as **Annexure-VII**, item no.64 shows that the 'DPR for Designs' has not been submitted on 30.06.2021. Chapter -7 of the said DPR shows the following aspects:

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

i. Canal and Pump House designs

The Canal and Pump House designs will be approved by the Central Designs Organization of the State of Andhra Pradesh. The Geological survey of India (GSI) Department will also be associated in assessing the Foundation parameters before finalizing the design aspects.

ii. Foundation Engineering and special analysis:

The required tests for assessing the foundation characteristics such as safe Bearing capacity, Cohesion – Internal friction analysis, permeability, Shear strength...etc will be conducted before taking up the designs of the structures. The Geological Survey of India Department will also be associated in assessing the Foundation parameters before taking up the design aspects. Chapter -7 of the said DPR is herewith filed as **Annexure-VII A**.

18. It is submitted that in para.17 of the counter affidavit it is specifically stated on 07.07.2021 that the work was stopped due to onset of the monsoon and the study of the subsidence factor is still pending as suggested by Geological Survey of India, Technical Expert Committee and Judicial Preview Committee. The work done at project site till now includes works relating to preparation of DPR submitted to CWC on 30.06.2021 and also preparation of DPR for Designs, which is pending.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

19. It is submitted that the design, rendering consultation, review and approval of Civil and Hydro-mechanical Designs and Drawings pertaining to Irrigation structures of various projects across the State of Andhra Pradesh are undertaken by the Central Designs Organization of the State of Andhra Pradesh, which has BSI Certification bearing No. ISO 9001: 2015. As per CWC guidelines in Para 4.14, states that once a State Government has design and planning organizations in the concerned State CWC certifies the work done by the Central Design Organization of the State of Andhra Pradesh through accreditation process. Para 4.16 of the CWC guidelines, states that in case certificate by accredited CDO are not appended with DPRs, design aspect shall also be scrutinized in detail. Para 4.19 of the CWC guidelines states that the final estimation shall be based on finalized designs of Civil and Hydraulic structures and economic analysis will be carried out by the project authorities / CWC adopting standard / accepted procedures. The project authorities will also submit a concurrence of the State Finance Department for the finalized cost.

20. It is submitted that the State of Andhra Pradesh humbly submits that it did not violate an order passed by this Hon'ble Tribunal and the work done at the project site is not in excess of DPR preparation, still some more work for

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

preparation of DPR for designs is pending. The applicants in the above M.A. No. 2 of 2021 and M.A. No. 3 of 2021 are misleading this Hon'ble Tribunal by making repeated Complaints without any responsibility. The guidelines issued by CWC during 2010 and 2017 are herewith filed as **(Annexure- VIII & IX)**.

V. Re: Judicial Review Committee Recommendations:

21. It is submitted that the Judicial preview of tenders will be taken up for each project exceeding Rupees 100 Cores as per the Andhra Pradesh Infrastructure (Transparency through Judicial Preview) Act, 2019 **(Annexure-X).**

22. It is submitted that the Judicial Preview Act (No.34 of 2019) is "an act to bring transparency in the infrastructure bidding process in the state through judicial preview thereby to ensure optimum utilization of public resources and for matters connected therewith and incidental thereto."

"Functions of Judicial Preview Committee as enumerated in Section-5 of the Act:

(1) The Government Agency or the Local Authority shall place before the Hon'ble Judge, all the tender related documents with regard to the Infrastructure Projects of value of Rupees 100 cores and above.

(2) The Hon'ble Judge may, suggest suitable modifications essential to achieve the object of transparency to secure competition and equal opportunity".

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

23. It is submitted that the Hon'ble Judge, Judicial Preview after scrutinizing the tender document of Rayalaseema Lift Scheme has suggested the following for two stage EPC Contract:

> ***"For all items of work such as pump house, pressure main, delivery cistern, Sub-Stations, Transmission lines, CM&CD works, any other relevant items of work etc., on completion of survey, detailed designs drawings, detailed estimates with cost analysis, BOQ with reference to rates adopted for Civil Items, rates approved by the DGS&D for the EM & HM works, rates for electrical items as per the approved APTRANCO SSR at the time of technical sanction have to be prepared by the successful Contractor and they should be got approved by the respective competent authorities. After according approval on thorough vetting by the subordinate engineering officials working in the CE's and ENC's office as the case maybe; and accordingly, the BOQs will be prepared. Correspondingly the supplementary contract agreement which form part of the main agreement on tentative basis as a composite contract agreement will be concluded enabling to go ahead with execution of works and also for making payments".***

24. It is submitted that the actual requirement of quantities will be in accordance with the approved drawings and payments will thus be regulated as per the approved drawings and as per actual execution. In such cases, where the approved designs result in any reduction in amount, the payment schedule will be adjusted to the actual. Payment schedule will be fixed from the supplementary contract agreement supra and same remains unchanged in case of any increase in quantities and price (since final DPR with reference to

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

BOQs and designs etc., being prepared by the Contractor after actual verifications and estimations etc., in a meticulous way). The designs and drawings could not be finalized for want of the design parameters to be supplemented from geological mapping and assessment of bearing capacity.

25. It is submitted that as stated above, the survey & investigation works so far carried are for preparation of DPR submitted to CWC on 30.06.2021 for its approval and also for preparation of DPR for designs, which are required for cost estimates. As per the Tender obligation as recommended by "Judiciary Preview" for EPC procedure. **(Annexure-XI).**

VI. Re: The replies of the State of Andhra Pradesh to the observations of KRMB Report dt.13.08.2021are as follows:

(i) Approach Channel

26. It is submitted that the Approach Channel is to draw water from 800 ft level of foreshore of Srisailam reservoir to the fore Bay of pump house and aligned for 8.89 km in foreshore.

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Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

27. It is submitted that one of the members from IIT, Hyderabad in the EAC and experts committee appointed by the Hon'ble NGT has submitted on 08.08.2020 that

"Lift scheme may result in land subsidence in Rayalaseema region since the natural geological formations contain limestone and lime may dissolve in water and may cause subsidence".

As per geologist suggestion also, (5th recommendation of report dt 4-12-2020)it is reported to study the subsidence of any limestone material present in the approach channel by exposing the strata to water for a season and observe any change in subsidence Therefore, it has become inevitable to expose the approach channel by excavating certain depth now submerged in water in the foreshore of Srisailam Reservoir for one season to study the subsidence effect after the water level recedes after 6 to 9 months. The total earthwork excavation involved in the approach channel is around 250 Lac. Cum. Only 74 Lac cum (around 30%) of earthwork Excavation is carried out in 8.89km long approach channel to variable depths to observe the subsidence factor. Now it is in drowned position. When the water recedes in the Srisailam reservoir, Geologist and experts will study the subsidence factor if any and recommend suitable remedial measures to be taken-up to arrest the subsidence of soils.

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Guntur Dist. - 522 238.

(ii) Forebay 237m long connecting approach channel to pump house

28. It is submitted that the Fore bay is the component connecting the approach channel and the pump house with 237 m length and width expanding from 63 m at approach channel to 250 m at pump house. The bed level will also vary with 1 in 12 slopes from 765 ft at approach channel to 702 ft at pump house. Presently the Fore bay is used to facilitate Ramp of 1 in 12 slope for carting of the excavated material from Pump House excavation 250 m Length x 40m Width x 60m Depth to the dumping place excavated in a restricted manner with steeper vertical sides to avoid massive excavation. The rock is of shale's variety containing calcium and lime content. Due to weathering action the vertical slopes would slip and fall causing danger and damage to the human lives and hence shot crating of the vertical sides of the Fore bay near pump house portion is carried out to safe guard the sides against weathering to prevent slipping, sliding & erosion. No walls are constructed for the fore bay. Hence the shot crating was not done on the walls of the Fore bay as observed by the team, it is only done on vertical sides of the excavated shale rock faces. The concrete vertical walls for the fore bay sides are to be constructed along with base concrete in the bed of Fore bay, only after obtaining necessary Environmental clearance and

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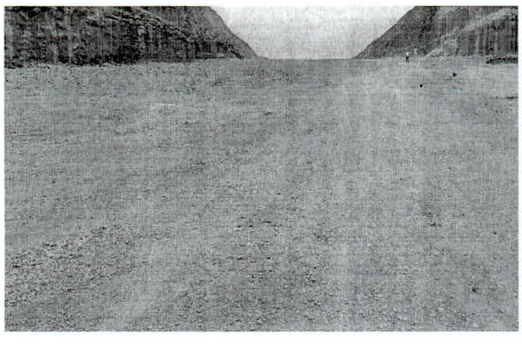
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

finalization of designs. There are no walls constructed in Fore bay, hence the team observation that the concreting on the walls of the Fore bay has been carried out is false.

29. It is submitted that the vertical sides of fore bay are to be retained by concrete walls for which the design parameters are to be finalized through remapping and plate load test at foundation level. The steep slopes of sides may not be retained long and may collapse due to weathering. Concreting is the process of temporary protection of weathered rock surface against further weathering, before tests are conducted and permanent retaining wall is designed and executed. Incidentally the partially excavated fore bay is being used as ramps for carting the excavated rock from the pump house area.



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Forebay

(iii) Pump House :

30. It is submitted that the bore whole data was submitted to the geologist and technical expert committee for assessing the foundation and design parameters of huge pump house structure. After verification, the geologist has suggested for geological mapping before start of actual concrete work and requested for further bore hole data to ascertain nature of bed rock to estimate the stability of slopes during the construction of pump house.

31. It is submitted that the Technical Experts opined that ***".after observing the partially excavated strata, it is difficult to assess the suitability of strata for foundation of such huge structure without seeing the actual strata at required foundation level and conducting the mandatory test like plate load test for assessing the bearing capacity of strata. Hence it is recommended the excavation of pump house up to the required foundation level and conducts the mandatory***

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Velagapudi, Amaravati,
Guntur Dist. - 522 238.

tests at foundation level viz., plate load test and submit to the committee for further course of action."

If designs are finalized based on borehole data alone the designer is unaware of dangers associated with actual rock conditions, which may result in large differential settlements or perhaps in sudden failure. The designs may be arbitrary and will not reflect actual cost estimate at review level, if they are revised at a later stage just before actual execution.

32. It is submitted that the Pump house is a concrete structure of size 250 m (L) X 40 m (W) X 60m (H) to seat 12 pumps, 12 motors and related electro mechanical equipment to lift water to a top level of 889 ft.

33. It is submitted that the Pump house of size 250 m x 40 m to a depth of 50 m to 60 m has been excavated for conducting detailed field investigation to extract the engineering properties of the foundation strata of the pump house as a part of investigation. Geologist has identified the rock strata as reddish brown thinly laminated, horizontally bedded shale belonging to Nandyal Shale (4thPara of page-3 of Geologist report). He also estimated the rock as at foundation level to be slightly weathered reddish brown shale with thin laminations of gray shale.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

34. It is submitted that the geologist suggested to remove the disposed muck and to intimate for further geological mapping before start of concrete. In view of unique Nandyal Shale formation it has become inevitable to reach foundation floor level for geological mapping.

35. It is submitted that the **Engineering Geological mapping is to be carried out on foundation floor of pump house in order to evaluate the basic design parameters**. All the discontinuities in the rock mass of the foundation are to be identified and mapped. Mapping is to be done to assess the requirement of ground improvement by adopting suitable Engineering measures.

36. It is submitted that the based on the investigations, geotechnical problems are to be identified and suitable engineering measures for rock support are to be suggested to make foundation monolithic.

37. It is submitted that it is to advise suitable protective engineering measures of excavated foundation floor of pump house based on detailed Engineering Geological Investigation and to decide the treatment for shear zones before construction of pump house in order to avoid differential settlement.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

38. It is submitted that the bearing pressure of the foundation in jointed rock masses can be estimated by rock types, Rock Mass Ratings (RMR), Unaxial Compressive Strength (UCS), Rock Quality Designation (RQD) pressure meter tests and plate load tests.

39. It is submitted that Geological mapping of foundation floor for important structures like pump house of lift schemes is essential to provide permanent data input for geological interpretations during construction and also forms a valuable documentation for post-construction stage.

It is relevant to mention a typical case study of Engineering geological consideration of deep pump house foundation floor – Lift Irrigation Scheme of MGKLIS – Mahatma Gandhi Kalwakurthy Lift Irrigation Scheme; It is enclosed for ready reference **(Annexure-XII).**

40. It is submitted that findings in the said report would establish that the extent of survey investigation work to be undertaken. The above case study of MGKLI explains the general procedures like identifying the rock types, characteristics of rock mass, rock quality designations and in-situ tests to be conducted in general to arrive at bearing pressure of foundation in jointed rock masses of deep pump house foundations. The total foundation floor was exposed in MGKLIS to conduct tests and remapping to arrive at the design parameters, though the foundation rock in MGKLIS

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Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

is of better quality when compared to what is proposed to be encountered like Nandyal shale in Rayalaseema Lift Scheme.

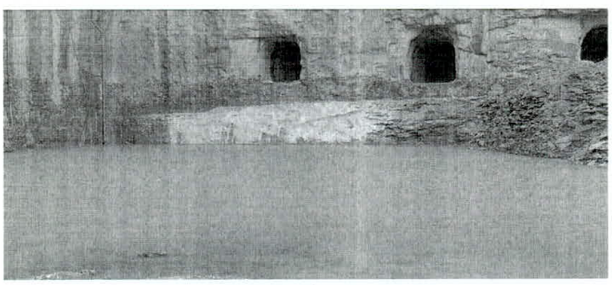
41. It is submitted that the joint inspection of the Technical Expert Committee, Water Resources Department, on 23.01.2021, advised to excavate up to the tentative foundation level of the pump house and observe the strength characteristics of the strata and conduct the mandatory tests at foundation level (viz) plate load test and submit to the committee for further course of action.

42. It is submitted that in order to conduct all these tests the geological mapping with 2X2 m grid size is to be done at the foundation floor level for mapping litho logical& structural features, hence excavation up to foundation floor level of 702 ft is very much necessary.

43. It is humbly submitted that Clause 2.3.2 As already submitted as per the code of IS 1892-1979 **Depth of exploration** specify that "If a number of loaded areas are in close proximity, the effect of each is additive, in such cases, the whole area may be considered as loaded and exploration should be carried out up to one and half times the lower dimension". In the present scenario, the lower dimension is 40 m and the depth of excavation should be done up to 1.5 x 40 = 60 m (183 feet).

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

44. Hence, the Pump House area is excavated to attain the foundation level so as to conduct the Plate Load Test and geological mapping to ascertain the soundness and suitability and bearing capacity of the strata for foundations to decide the designs of civil structures (250mx 40m) area is not yet excavated to the proposed foundation level of 702 feet to conduct the in-situ tests required for assessing the strength parameters. The plate load test and geological mapping are yet to be done after reaching the foundation level. The actual construction of the pump house will be started only after obtaining the required designs of the pump house. The construction of the pump house and forebay will involve lying of nearly 1.75 Lac cum of concrete which will approximately takes 2 to 3 seasons.



Pump house

After receding of monsoon and dewatering the area, to complete the investigation process to ascertain the design parameters like bearing capacity, the foundation has to be exposed to the foundation floor level or further depth as per

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Velagapudi, Amaravati,
Guntur Dist. - 522 238.

the suggestions of the Geologist. After observing the stratification, the geologist and the design experts may advice further testes to be conducted in addition to plate load test and Geological mapping for design parameters and may also suggest suitable protective engineering measures to make the foundation monolithic.

(iv) Pipe line (Delivery Main):

45. It is submitted that 12 No's of Pipe lines of 5 m diameter, one for each pump are proposed for 200 m long from bottom of Pump House to Delivery Cistern in inclined position. Massive open excavation for placing the pipe line is to be done and the same has to be refilled after placing the pipes which leads to lot of pressure on pipes resulting in thick costly pipes. To avoid this, the designers proposed inclined tunnels for the delivery pipes to be embedded in tunnels.

46. It is submitted that 5 M diameter tunnel for sample lengths of 35 m to 50 m for laying MS Pipe Line has been carried to check the stability, suitability and feasibility of the strata and finalize the designs of Tunnel and pipe line instead of massive open excavation. As soon as the sample lengths are carried out the excavation of tunnel is completely stopped and waiting for inspection of Geologist and Design Experts to decide the feasibility of tunnel and suggest methods of stabilisation of tunnel based on Rock Quality Designation.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

The same was explained to the team during their inspection but the team ignored conveniently to mention in their report.

47. It is submitted that the tunnelling operations could be observed at Owk where twin tunnels of 5.5 Km length which are 33 m apart are being carried out. The inspection report of GSI reported the following on the rock formation at OWK as "Dark grey thinly bedded to massive argillaceous lime stone with grey fine grained, thinly bedded, highly fractured and horizontally disposed shale".

48. It is submitted that similar rock formations have been encountered at the Pump house location of Rayalaseema lift scheme. It is to mention that one of the tunnels in the twin tunnels at Owk has collapsed. The tunnel was abandoned and another tunnel was excavated parallel to this duly detouring the fault zone and the same is stable and functioning. The rock formation as observed in the region varies drastically within short distances and hence need to be meticulously observed. In view of this it is very much necessary to closely verify the strata for its laminations and presence of lime stone and ascertain the stability of tunnel one tunnel is functioning well and the other tunnel has collapsed. The horizontal gap between the two tunnels is 30mts. The state of Andhra Pradesh was constrained to lay a new tunnel with extra costs. In the case of RLS the

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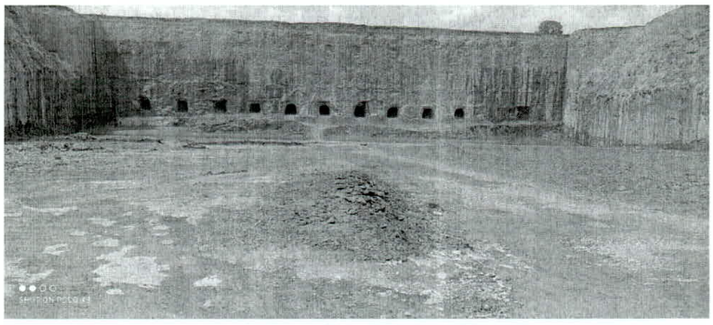
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

horizontal gap between the two tunnels is 20mts. In order to avoid collapse of any tunnel the sample length of all the tunnels have to be excavated. All the survey and investigation works done so far are bonafide with an intention to have detailed designs and to prevent collapsing at a later point of time.

49. It is submitted that if the intention is to do excess work than required for investigation the total tunnels and total lengths could have been completed instead of restricting them to sample lengths.



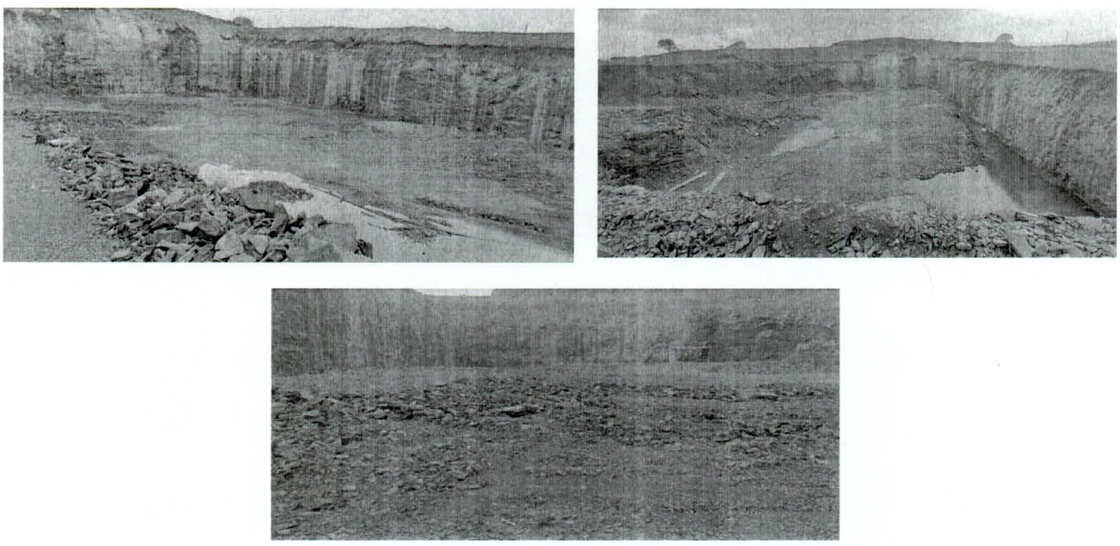
Tunnels for Delivery Mains

(v) Delivery Cistern & Link Canal:

50. It is submitted that the tentative proposed size of Delivery Cistern is 135m X 50 m X 17 m. The structure will be with concrete in bed and concrete walls on three sides and the fourth side joining the link canal. Foundation suitability, bearing capacity and geo mapping for the walls is to be ascertained at foundation level. Hence the foundation floor of Delivery Cistern is exposed for carrying out the tests.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

51. It is submitted that link canal is not excavated as there are no Design features and parameters to be required for investigation, Designs and verification.



Delivery Cistern

(vi& vii) Batching Plant and Stacking of Aggregates:

52. It is submitted that the erection of Batching Plant will take 2 to 3 months' time. Normally the erection of Batching Plant activity is a preconstruction activity to be carried before the commencement of work in any construction site. More over the time available for execution for this work in every year is limited as the reservoir gets filled and there would be a lot of seepage in the area.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

53. It is submitted that the procurement of material will be done in advance in any work as it will require more time. There is hardly less than 100 m M^3 of Sand (Fine Aggregate) collected

54. It is submitted that the arrangements like erection of batching plants and procurement of material are done to carry out the work after getting Environmental Clearance and other necessary clearances.

(viii) No activities at project site:

55. It is submitted that the Chief Engineer reported to KRMB that all activities have been stopped on 07-07-2021 even without attaining the required levels for necessary investigations and in-situ tests.

56. It is submitted that no labour, no machinery like earth movers, porcelains, dumpers etc. The labour sheds are also vacated. The work has come to a grinding halt as monsoon has stein and lot of seepage is possible in the working area due to filling of reservoir up to FRL. When the water level recedes considerably, the floor of the pump house has to be exposed to carryout the in-situ tests like plate load test and geotechnical mapping.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Deserted Labor Camps after 07-07-2021

57. It is submitted that the work that was undertaken till 07.07.2021 is part and parcel of survey and investigation for preparation of DPR. The main work of the project hasn't yet started at all. The above replies would establish that KRMB team which visited the project site did not state anywhere in the report that actual main work of the project has commenced and it has reported the quantum of work done at the project site

58. It is submitted that the above replies would establish that for special reasons detailed survey and investigation is undertaken as per the advice of the experts. DPR of designs is also required for clearing the project by CWC and also for cost estimation of the project.

59. It is submitted that the following works are to be taken up after the designs are finalized.

    i. Based on the severity of occurrence of subsidence, the side slopes of canal may have to be excavated to flatter slopes, grouting the area with cement slurry and

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Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

protecting the sides with retaining wall etc may be necessitated.. There is further 70% of the assessed earth work to be done in approach channel, besides lining a partial length of approach channel in bed and sides with one lakh cubic meters of concrete in to protect against the higher velocities.

ii. The fore bay sides are to be protected with side retaining walls upto ground level and floor concrete in the bed after excavating the fore bay to the required profile.

iii. A 200 ft height pump house (civil structure) is to be constructed to accommodate 12 sets of pumps and motors and auxiliary electro mechanical components.

iv. Balance length of tunnels or open excavation as the case maybe for delivery mechanism including pipes is to be carried.

v. The Delivery cistern 135 m * 50m * 17m of size is a tank like structure with concrete side walls and bed is to be constructed.

vi. The link channel, connecting the delivery cistern to the SRMC canal with in fall arrangements at the joining to canals to be constructed

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

60. It is submitted that it is clear from Notice Inviting Tenders (NIT No.01/2020-21, dated 15-07-2020. The completion of the project work is 30 months after completion of the remaining part of survey and investigation of completing the DPR for designs. Thus, the contentions of the applicants that main project work has already commenced, is not true and it will take considerable time. The notice inviting tender is herewith filed as **Annexure-XIII.**

61. It is humbly submitted that the State of Andhra Pradesh didn't violate any order passed by this Hon'ble Tribunal and never had any intention to violate any order passed by this Hon'ble Tribunal. The bonafide work done so far is part and parcel of survey and investigation for preparation of DPR for Design in addition to DPR already submitted to CWC on 30.06.2021. Thus, the applications are liable to be dismissed with exemplary costs.

Legal aspects:

62. It is submitted that the State of Telangana relied on "*The Braj Foundation (vs) Government of U.P. dated. 5.8.2014 rendered by NGT Principal, Delhi.& (2019) 20 SCC 747.*The judgment reported in 2019 it has no application to the facts of the case.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

The following judgments may be considered even though they are rendered under provisions of Contempt of Court Act.

1. (1992) 4 SCC 697 – Para.6.
2. (2001) 7 SCC 530 – Para. 1 to 5.
3. (2001) 3 SCC 739- Para. 13 to 17.
4. (2002) 4 SCC 21 – Para. 13 to 15.
5. (2003) 11 SCC 1- Para. 17.
6. (2006) 1 SCC 275 – Para. 9 to 12.
7. (2008) 14 SCC 392 – Para. 23, 28,32 to 34.
8. (2008) 16 SCC 592 – Para. 20 to 28, 35 to 37.
9. (2010) 3 SCC 705 – Para. 15 to 27.
10. (2013 9 SCC 600 – Para. 34 to 36.
11. (2013 9 SCC 753 – Para. 21 to 24.
12. (2014) 16 SCC 204 – Para. 11 to 15.
13. (2019) 18 SCC 150 – Para. 13 to 18.

1. From the above Judgments it is clear that the willful conduct is the primary and basic ingredient to initiate action for violation of any order passed by any Court or Tribunal.

2. The burden of proof is on the applicants and the standard of proof as regard to the breach has to be established beyond all reasonable doubts.

3. Relying on (1969)3ALL ER 1062 it is also held where there are two equally consistent possibilities open to the Court; it is not right to Court to hold that offence is proved beyond reasonable doubts. The above aspects are reiterated in all the above Judgments.

63. It is submitted that this respondent craves leave of this Hon'ble Tribunal to raise additional objection in the course of proceedings, if required.

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Under the said circumstances, it is humbly prayed that this Hon'ble Tribunal may be pleased to record this objection and dismiss the above M.A.No.2 and 3 of 2021 in O.A.No. 71 of 2020 with heavy cost and pass such further order or orders as this Hon'ble Tribunal may deem just and proper in the facts and circumstances of the case.

Deponent

CHIEF SECRETARY
Government Of Andhra Pradesh
Velagapudi, Amaravati,
Guntur Dist. - 522 238.

Solemnly affirmed at Vijayawada
On this the 25th day of August-2021
And signed in my presence.

Before me

Advocate Vijayawada

PENUMAKA AJAY BABU
ADVOCATE M.A.,L.L.M.,
HIGH COURT OF A.P.
CELL: 9493494444,9966370959

VERIFICATION

I, Adityanath Das, I.A.S. S/o Sri. Gowrikantha Das, Aged 60 years, Chief Secretary to Government of Andhra Pradesh do hereby state that what is stated above in paragraphs 1 to 63 are true to the best of my knowledge and belief.

Dated at Vijayawada on this the 25th day of August 2021.

DEPONENT

CHIEF SECRETARY
Government Of Andhra Pradesh
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Guntur Dist. - 522 238.

Annexure-I

< CIII-D-17_TGP Save ⋮

The general climatic condition in the area in characterised by the hot summer and general dryness except during monsoon period. In the project area the highest temperature in summer, which is generally in the month of May, Varies from 41°C to 46°C. The normal rainfall in the districts benefitted or traversed are indicated below:

District	Normal rainfall in m.m
1. Kurnool	622
2. Cuddapah	697
3. Nellore	1041
4. Chittor	826

3.1.5. General description of topography, physiography and Geology of the area:

The alignment of the canal lies almost in the Cudapah basin of South India. This basin is creascent shaped with an outer convex side in the west showing gentle dips towards the centre of the basin and the inner concave side much folded and faulted towards the East. Geographically, the basin lies between latitudes 13°-20'-00" and 17°-00'-00" and Longitude 77°-47'-00" and 80°-15'-00" and comprises an approximate area of 34,560 Sq.K.M (13,500 sq. miles). The Cuddapah town is more or less situated in the centre of the crescent. The Krishna river cuts through the Northern portion of the basin while the Pennar with its tributaries are confined to the souther portion.

The different rock types are an alternation of quartzites, sand stones, lime stones and shales at different horizons of the major Cuddapah and Kurnool formations. The canal traversing in the Nandyal valley will pass through mostly calcarious purple and grey shales. They also touch lime stone and quartzite beds here and there. The Pennar basin through which the canal passes constitute the region of quartzites and slaty shales.

70

Annexure-II

(1)

Government of India
Geological Survey of India

Fax 040-24220978
Telephone 040-20060776
Engineering Geology
Southern Region,
Bandlaguda
Hyderabad-500 068

No. 79 /JS/GSI/Owk tunnel/GNSS/2009-10

Dated: 25.J.2009

To
Superintending Engineer,
ICAD Department,
SRBC circle-II
NANDYAL-518 501
Kurnool District,
Andhra Pradesh.

E.E.	
DAO(W)	
Supdt.	
.D.	

Office of the Superintending Engineer
NANDYAL
11-2-10
S.R.B.C. Circle No. II

Sub: Note on construction stage Geotechnical investigation for Owk tunnel-II betweer Ch.57.750km and Ch.60.350km, GNSS, Banaganapalle mandal, Kurnool district Andhra Pradesh.

Sir,

Please find enclosed a note titled "Construction stage geotechnical investigation for Owk tunnel-II between Ch.57.750km and Ch.60.350km, GNSS, Banaganapalle mandal, Kurnool district, Andhra Pradesh" for necessary action.

Yours faithfully,

J. Sri Hari

(J. Sri Hari) 20.1.10
Senior Geologist

Copy forwarded for information to:

1. The Director, Engineering Geology. Division, G.S.I, Bandlaguda, Hyderabad.
2. The Chief Engineer, Central Designs Organization, 15 Mukhramjahi road, Nampalli, Hyderabad 500 001.
3. Sri. G.J.S.Prasad, Junior Geologist, E.G. Division, G.S.I, Bandlaguda, Hyderabad.
4. The Executive Engineer, SRBC CIRCLE, Nandyal, Kurnool district, Andhra Pradesh – 518 501.
5. M/S/ NCC –MAYTAS-ZVS(JV), Hyderabad.

(J. Sri Hari)
Senior Geologist

Construction stage geotechnical investigation for Owk tunnel-II between Ch.57.750km and Ch.60.350km, GNSS, Banaganapalle mandal, Kurnool District, Andhra Pradesh

by
J. Sri Hari
and
G. J. S. Prasad

Introduction: Owk tunnel-II is a part of GNSS (Galeru Nagari Sujala Sravanti) scheme which intends diversion of flood water from Gorakallu reservoir to Owk reservoir. Initially a 16m finished diameter single tunnel was proposed. Keeping in view of the bedded nature of the tunneling medium and evaluation of the limited subsurface exploration carried out at site which indicated that the quality of the rock is poor, it was decided to excavate twin tunnels of 11m finished diameter. Each of the proposed twin tunnels has a 'D' shape, 11m finished diameter, 5.675 km long separated by 33m rock ledge and are located from Ch.57.750km to Ch.63.425km near Owk village, Kurnool district.

The salient features of the proposed twin tunnels furnished by the project authorities are incorporated below.

Length of each tunnel	:5.675km
Shape of tunnel	:'D' having 11m width.
Designed discharge of each tunnel	:10,000 cusecs
Bed fall	:1 in 1925
TBL at entry	:223.358m
TBL at exit	:222.900m
Free board	:1.0m
Fore bearing	: S10°W
Location of the inlet portal	:15°16'30" ; 78°05'52"
Location of the outlet portal	:15°13'27" ; 78°05'07"
Toposheet nos	:57 I/ 3&4

Excavation of the tunnels is carried out by drilling and blasting method. Heading and benching process is adopted. Excavation of full section of tunnels is complete except for 1050m benching between Ch.57.750km and 58.800km in right tunnel. Excavation of soft zone located between Ch.58.800 and Ch.59.000km in right tunnel & between Ch.58.750 and Ch.59.000km in left tunnel is in progress. A WNW – ESE stream flowing along a major joint cutting across the tunnel alignment at Ch.60.300km results in inadequate rock cover due to deep weathering. To avoid

difficulty in tunneling it was planned to have cut and cover between Ch.60.350 and Ch.60.390km in right tunnel & between Ch.60.300 and Ch.60.400km in left tunnel which also helps to develop two additional faces for excavation for each tunnel.

Location: Owk tunnel-II is located 8km WNW of Owk village of Banaganapalle mandal. Owk village is located about 60km from Kurnool town which is located on Hyderabad Bangalore national highway.

Previous work: The first author visited the site during December 2007 and recommended to drill two more bore holes to asses the tunneling media. It was also recommended to have twin tunnels instead of single 16m finished diameter tunnel in view of poor 'Q' values and standup time. The project was visited again by Sri P. Balaji, Geologist, GSI during November 2008 and suggested random rock bolts in the crown area.

Present work: At the request of project authorities, geotechnical investigations was carried out between 14.12.2009 and 19.12.2009 and 3D geological mapping of parts of twin tunnel between Ch.57.750km and Ch.60.300km in left tunnel (L-1) and between Ch.57.750km and Ch.60.350km in right tunnel (R-1) had been carried out on 1: 200scale and a length of 5150m was covered to assess the support requirements. For the convenience of reference the reaches of left and right tunnels from the inlet portal to cut and cover portions are referred as L-1 and R-1. Remaining reaches up to outlet portal are L-2 and R-2. The fundamental approach followed is site investigation, empirical assessment of rock mass characteristics so that the supports suggested are appropriate to ground conditions. Shri. M. Chakradhar, Director, Engineering Geology Division, Geological Survey of India, Hyderabad inspected the twin tunnels on 18th and 19thDecember, 2009 and associated on the evaluation of the significance of discontinuities on rock mass behavior and support requirements. His views and recommendations were also incorporated in this geotechnical note. The authors are thankful to S/Sri Kasipathi, superintending engineer, Sri Muralinath Reddy, Executive engineer, irrigation department and other engineers from agency for their cooperation in carrying out the field work. Cover between Ch.57.750 and Ch.57.825; Ch.59.900 and Ch.59.950; Ch.60.200 and Ch.60.300varies from 15.749m to 48.242m and between Ch.57.825 and Ch.59.900; Ch.59.950 and Ch.60.200km cover varies from 53.074m to 200.830m.

Rocks belonging to Kurnool Group of Neoproterozoic age occur around the tunnel site. The generalized succession of litho-stratigraphic units (Nagaraja Rao, B.K. et al., 1987) is as follows.

Age	Group	Subgroup	Formation	Rock types
			Nandyal Shale	Shale partly calcareous
NEOPROTEROZOIC AGE	Kurnool Group	Kundair Subgroup	Koilkuntla Limestone	Siliceous shaly limestone with quartzite interbeds
			Paniam Quartzites	Massive and pinnacled quartzite, siliceous shale, basal pebble beds
		~~	~Paraconformity~	~~~~~~~~~~~~~~~~~~~~
			Owk Shales	Laminated shale mostly ochreous with siltstone interbeds
		Jammalamadugu Subgroup	Narji Limestone	Flaggy grey limestone, glauconitic sandstone and shale interbeds
			Banaganapalle Quartzite	Oligomict conglomerate, grit, quartzite, shale
		~~	~Unconformity~	~~~~~~~~~~~~~~~~~~~~
			Srisailam quartzite of Cuddapah Supergroup	Not exposed

Geology around the tunnel site: The proposed Owk tunnel-II passes through Uppalapadu plateau with gentle gradient towards east and south. The drainage in the area is sub-parallel to parallel and

follows the major joint pattern. The hilltops are occupied by massive quartzite with steep scarp faces and of shale in gentle slope areas. Study of the satellite imageries and examination of sub surface data indicates that the weathered zone located at Ch.58.800 is due to a N80°W - S80°E trending open deep joint which is located in limestone terrain. Due to solution activity and development of sink holes in these terrain blocks of quartzite along the joint collapsed and later filled with hill wash material. Inadequate cover at Ch.60.300km also is related to joint controlled stream in that area.

Geology along the tunnel: Dark grey to black fine grained thinly laminated calcareous shale is exposed in the approach canal and at the tunnel inlet portal. The contact between shale and quartzite is an angular unconformity as observed in the canal section upstream of inlet portal. Rock types observed in right tunnel and left tunnel are described in detail.

Right tunnel: Dark grey to black fine grained thinly laminated calcareous shale is exposed from Ch.57.750km (inlet portal) to Ch.57.914km. Dark grey fine to medium grained basic intrusive occurs at the contact between shale and quartzite between Ch.57.914km and Ch.58.026km in the tunnel. This dolerite sill is not exposed on the surface/hill slope. The contact between calcareous shale and basic intrusive is a sheared where the calcareous shale beds exhibit minor sympathetic brittle ductile shears/ closely spaced joints on either side of basic intrusive. Fresh hard and compact pink to brown massive to well bedded quartzite with intercalations of shale is intersected between Ch.58.026km and Ch.58.220km. Green and purple, thinly laminated fine grained variegated shale with thin limestone partings is encountered from Ch.58.220km to Ch.58.484km. Buff colored thinly bedded limestone with shale laminations is exposed between Ch.58.484km and Ch.58.780km. The reach between Ch.58.780km and Ch.58.987km is occupied by weathered and crushed zone. Buff colored thinly bedded limestone with thin shale laminations is exposed between Ch.58.987km and Ch.59.144km. Dark grey thinly bedded to massive argillaceous limestone is mapped between Ch.59.144km and Ch.59.950km. Grey fine grained, thinly bedded, highly fractured and horizontally disposed shale are exposed between Ch.59.950km and Ch.60.300km.

Left tunnel: Dark grey to black fine grained thinly laminated calcareous shale is exposed from Ch.57.750km (inlet portal) to Ch.57.866km. Dark grey fine to medium grained basic intrusive occurs at the contact between shale and quartzite between Ch.57.866km and Ch.58.018km in the tunnel. This dolerite sill is not exposed on the surface/hill slope. The contact between calcareous shale and basic intrusive is a sheared where the calcareous shale beds exhibit minor sympathetic shears/

closely spaced joints on either side of basic intrusive. Fresh hard and compact pink to brown massive to well bedded quartzite with intercalations of shale is intersected between Ch.58.018km and Ch.58.260km. Green and purple, thinly laminated fine grained variegated shale with thin beds of limestone is encountered from Ch.58.260km to Ch.58.505km. Buff colored thinly bedded limestone with shale laminations is exposed between Ch.58.505km and Ch.58.725km. The reach between Ch.58.725km and Ch.59.023km is occupied by weathered and crushed zone. Buff colored thinly bedded limestone with shale laminations is exposed between Ch.59.023km and Ch.59.130km. Dark grey thinly bedded to massive argillaceous limestone is mapped between Ch.59.130km and Ch.59.950km. Grey fine grained, thinly bedded, highly fractured and horizontally disposed shale are exposed between Ch.59.950km and Ch.60.350km.

Based on the disposition and tectonic setting shale observed at the inlet portal, quartzite and variegated shale including basic intrusive are grouped under Banaganapalle Formation. Grey limestone and argillaceous limestone are grouped under Narji Formation. Shale observed near the adit is grouped under Owk shale of Kurnool group of Proterozoic age.

Bedding trends in N75°W –S75°E direction and showing a dip of 22° towards south at inlet portal and dips of 5° to 6° in the remaining reaches of the tunnel. Sub-horizontal beds observed are due to minor warping/monoclinal folds. Sedimentary structures like laminations, cross bedding, stylolytes, asymmetric ripples, load casts are common in these rocks.

The rock types are traversed by three major sets of prominent joints in addition to bedding parallel joint. Joints trending E-W are traversed by thin calcite veins and encrustations. Two sets of random joints were also present. Joints are tight, discontinuous to continuous, very close to closely spaced and are sub-vertical to vertical. Pyrite streaks/stringers/nodules and calcite/quartz veins encrustation along the joint planes were present in the limestone. The streams are controlled by N80°W –S80°E trending joints. Major Joints in the order of prominence are mentioned below Tunnel trends in N10°E – S10°W.

Sl.No	Strike direction	Dip direction and amount
1.	Bedding parallel joint	5°NW/25°NW (towards outlet portal)
2.	N60° to 70°E~ S60° to 70°W	Vertical to sub-vertical
3.	E-W to N80°W – S80°E	Vertical
4.	N-S to N10°E-S10°W	Vertical to sub-vertical

Random joints:

1.	E-W	45° to 50° south (towards outlet portal)
2.	E-W	45° to 50° north (towards inlet portal)

Joint plane is rough, irregular and planar. Joint surface is unaltered with occasional surface staining only. Excavations are dry with minor dripping.

Supports provided during excavation and features observed: Since the tunnel excavations are in sedimentary bedded rock with gentle dips, slabby roof/ flat roof is quite common and this feature has been observed frequently in the crown portion of the tunnel. Steel rib supports were provided in the reaches where minor ripping and roof collapse were reported. Over break observed in the walls is due to the intersection of bedding parallel joint, N60° to 70°E~ S60° to 70°W trending joint and N-S to N10°E-S10°W trending joint. Roof collapse is due to thinly bedded nature of rocks. Steel rib supports were provided in the inlet portal and adits of right and left tunnels. Random bolting/shotcreting and over break is observed in shale and argillaceous limestone. Dampness/minor dripping observed along the joint planes. Supports provided during the course of excavation of the twin tunnels by the agency are tabulated below.

Nature of supports	Right tunnel	Left tunnel
Steel rib supports	Ch.57.750km to 57.840km; Ch.60.300 to Ch.60.350km;	Ch.57.750km to Ch.57.763km; Ch.58.100km to 58.123km; Ch.60.245 to Ch.60.300km;
Random Rock bolting	Ch.57.840km to Ch.57.905km; Ch.58.101 to 58.130km; Ch.58.460 to 58.630km; Ch.60.080 to Ch.60.110km; Ch.60.210 to Ch.60.245km;	Ch.56.030km to Ch.58.075km; Ch.59.350 to Ch.59.400; Ch.59.400 to Ch.59.490km; Ch.60.080 to Ch.60.110km; Ch.60.210 to Ch.60.245km;
Shotcrete	Ch.57.840km to Ch.57.905km	Ch.57.750km to 58.100km; Ch.60.210 to Ch.60.245km.
Minor dripping/ Dampness	Ch.58.320km to 58.330km;	Ch.57.783km to 57.870km; Ch.59.790 to Ch.59.810km; Ch.59.690 to Ch.59.730km; at Ch.59.645km; at Ch.59.625km; Ch.59.505 to Ch.59.515km; Ch.59.530 to Ch.59.540km; Ch.59.450 to Ch.59.460km.
Over break	Ch.58.300 to Ch.58.310km; Ch.59.450 to Ch.59.480km; Ch.59.920 to Ch.59.950km; Ch.60.040 to Ch.60.070km; Ch.60.080 to Ch.60.110km.	Ch.59.450 to Ch.59.480km; Ch.59.920 to Ch.59.950km; Ch.60.040 to Ch.60.070km; Ch.60.080 to Ch.60.110km.

Stand-up time: The stand-up time depends upon effective span which is defined as the width of the opening or the distance between the tunnel face and the last support, whichever is smaller. Excavation of full section of tunnels is completed except for 1050m benching between Ch.57.750km and 58.800km in right tunnel and the twin tunnels have shown a stand-up time of 4months to 12months. Stand-up time for arched openings will be significantly higher than that for a flat roof. Controlled blasting will further increase the stand-up time as damage to the rock mass is decreased. Where ever beds are horizontal flat roof is observed and roof collapse occurred. No over break is seen when the tunnel retained the arched roof. Excavation of crushed & soft rock located between Ch.58.800 and Ch.59.000km in right tunnel & between Ch.58.750 and Ch.59.000km in left tunnel could not be taken up as these reaches have shown very low stand-up time and movement of material occurred immediately after blasting. After detailed studies the load in this was calculated and proper support system was worked out by the engineers. The work is in progress in these reaches.

Geotechnical assessment: Tunneling Quality Index (Q) (After Barton et al. 1974) is calculated based on meticulous and strenuous geological logging inputs and the values for different reaches are tabulated in the following tables.

RIGHT TUNNEL

Reach from Ch.57.750km to 57.760km: Inlet portal

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 24	35
Joint set number(Jn)	3 sets+ random for portal (2 X Jn)	24
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Single weakness zone/Chemically disintegrated rock; excavation <50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**0.4** **Very Poor**

Reach from Ch.57.760km to 57.825km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 24	35
Joint set number(Jn)	3 sets+ random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Single weakness zone/Chemically disintegrated rock; excavation <50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	0.87 Very Poor

Reach from Ch.57.825km to Ch.57.914km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 24	35
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor dripping (<5litres/min)	1.0
Stress Reduction factor (SRF)	Medium stress >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	1.746 Poor

Reach from Ch.57.914km to Ch.58.026km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 17	60
Joint set number(Jn)	2 sets + random	6
Joint roughness number(Jr)	Rough, irregular, undulated	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation	1.0
Stress Reduction factor (SRF)	Massive rock with fractures excavation>50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	6.0 Fair

Reach from Ch.58.026 km to Ch.58.220km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 17	60
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor dripping (<5litres/min)	1.0
Stress Reduction factor (SRF)	Bedded rock , Excavations >50m	2.5
Tunnel Quality Index (Q)	(RQD Jn) (Jr/Ja)(Jw/SRF)	4 **Fair**

Reach from Ch.58.220km to Ch.58.484km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 20	50
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar occasionally slickensided	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Laminated shale depth of excavation >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**3.33** **Poor**

Reach from Ch.58.484km to Ch.58.780km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 18	55
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar with occasional slickensided	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Bedded rock depth of excavation >50m	2.0
Tunnel Quality Index (Q)	(RQD Jn) (Jr Ja)(Jw/SRF)	4.5 **Fair**

Reach between Ch.58.780 and Ch.58.987km:

Factors	Description	Value
Rock quality Designation(RQD)	Crushed rock	10
Joint set number(Jn)	Crushed rock, earth like	20
Joint roughness number(Jr)	Crushed zone	1.0
Joint alteration number(Ja)	Zone containing crushed rock and clay	8.0
Joint water reduction(Jw)	Large inflow or high pressure, considerable out-wash of joint fillings.	0.33
Stress Reduction factor (SRF)	Crushed and loose material in competent rock	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	0.004 **Exceptionally Poor**

Reach from Ch.58.987 to Ch.59.144km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3X 18	55
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Bedded rock where depth of excavation is >50m	2.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	4.5 **Fair**

Reach from Ch.59.144 to Ch.59.293km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 16	62
Joint set number(Jn)	3 sets+ random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation/ dampness	1.0
Stress Reduction factor (SRF)	Bedded rock where depth of excavation is > 50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	3.1 **Poor**

Reach from Ch.59.293 to Ch.59.305km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3X 16	62
Joint set number(Jn)	3 sets + random(3 x J_n for intersections)	36
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation is>50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**1.03** **Poor**

Reach from Ch.59.305 km to Ch.59.900km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X15	65
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation is >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**3.25** **Poor**

Reach from Ch.59.900 to Ch.59.950km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 15	65
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation is <50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**1.6** **Poor**

Reach from Ch.59.950 to Ch.60.350 km:

Factors	Description	Value
Rock quality Designation(RQD)	Closely jointed rock	10
Joint set number(Jn)	4 sets	15
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (< 5litres min)	1.0
Stress Reduction factor (SRF)	Heavily jointed bedded rock	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**0.2 Very poor**

LEFT TUNNEL

Reach from Ch.57.750km to 57.760km: Inlet Portal

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 24	35
Joint set number(Jn)	3 sets+ random for portal (2 X Jn)	24
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Single weakness zone/Chemically disintegrated rock; excavation <50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**0.4 Very Poor**

Reach from Ch.57.760 km to Ch.57.825km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X24	35
Joint set number(Jn)	3sets+random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Single weakness zone/Chemically disintegrated rock; excavation >50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr Ja)(Jw/SRF)	**0.87 Very poor**

Reach from Ch.57.825km to Ch.57.866km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 24	35
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Highly fractured and bedded rock >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**1.746** **Poor**

Reach from Ch.57.866 km to Ch.58.018km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 17	60
Joint set number(Jn)	2 sets + random	6
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Single weak zone excavation>50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**6.0** **Fair**

Reach from Ch.58.018 km to Ch.58.260km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 17	60
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavations	1.0
Stress Reduction factor (SRF)	Bedded rock, Excavations >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**4.0** **Fair**

Reach from Ch.58.260km to Ch.58.505km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 20	50
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar occasionally slickensided	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Laminated rock >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**3.33** **Poor**

Reach from Ch.58.505km to Ch.58.725km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 18	55
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavations	1.0
Stress Reduction factor (SRF)	Single weakness zones >50m	2.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**4.5** **Fair**

Reach from Ch.58.725 to Ch.59.023km:

Factors	Description	Value
Rock quality Designation(RQD)	Crushed rock	10
Joint set number(Jn)	Crushed rock, earth like	20
Joint roughness number(Jr)	Crushed zone	1.0
Joint alteration number(Ja)	Zone containing crushed rock and clay	8.0
Joint water reduction(Jw)	Large inflow or high pressure, considerable out-wash of joint fillings.	0.33
Stress Reduction factor (SRF)	Crushed and loose material in competent rock	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**0.004** **Exceptionally Poor**

Reach from Ch.59.023 to Ch.59.130m:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 18	55
Joint set number(Jn)	3 sets	9
Joint roughness number(Jr)	Rough, irregular, undulated	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation >50m	2.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	4.5 Fair

Reach from Ch.59.130km to Ch.59.293km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X16	62
Joint set number(Jn)	3sets+ random	12
Joint roughness number(Jr)	**Rough, irregular, planar**	1.5
Joint alteration number(Ja)	**Unaltered joint walls, surface staining only**	1.0
Joint water reduction(Jw)	**Dry excavation or minor inflow (<5litres/min)**	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation is >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**3.1** **Poor**

Reach from Ch.59.293 to Ch.59.305 km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 16	62
Joint set number(Jn)	3 sets + random (Jnx3 for intersections)	36
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor dripping	1.0
Stress Reduction factor (SRF)	bedded rock where depth of excavation is >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	1.03 Poor

Reach from Ch.59.305 to Ch.59.900km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X15	65
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1
Joint water reduction(Jw)	Dry excavation or dampness	1
Stress Reduction factor (SRF)	bedded rock where depth of excavation is >50m	2.5
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**3.25** **Poor**

Reach from Ch.59.900km to Ch.59.950km:

Factors	Description	Value
Rock quality Designation(RQD)	115- 3.3 X Jv 115- 3.3 X 15	65
Joint set number(Jn)	3 sets + random	12
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor inflow (<5litres/min)	1.0
Stress Reduction factor (SRF)	Bedded rock depth of excavation is <50m	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**1.6** **Poor**

Reach from Ch.59.950km to Ch.60.300km:

Factors	Description	Value
Rock quality Designation(RQD)	Closely jointed rock	10
Joint set number(Jn)	4 sets	15
Joint roughness number(Jr)	Rough, irregular, planar	1.5
Joint alteration number(Ja)	Unaltered joint walls, surface staining only	1.0
Joint water reduction(Jw)	Dry excavation or minor dripping	1.0
Stress Reduction factor (SRF)	Heavily jointed bedded rock	5.0
Tunnel Quality Index (Q)	(RQD/Jn) (Jr/Ja)(Jw/SRF)	**0.2** **Very poor**

Tunneling quality index 'Q' vs. Geology: Detailed analysis of tunneling quality index of calcareous shale mapped at the inlet portal reach indicates 'Q' values between 0.4 and 1.7 and the reach falls in 'very poor' to 'poor class'. Quartzite and basic sill which are bedded and massive respectively are falling in 'fair class' with 'Q' values of 4 to 6. Variegated shale is well laminated and fractured falls in 'poor class' and has a 'Q' value of 3.33. Buff colored limestone is well bedded and falls in 'fair' category with 'Q' value of 4.5. Zone with crushed rock and earth like material mapped in twin tunnels falls in 'exceptionally poor class' with 'Q' value of 0.004. Dark grey fine argillaceous limestone mapped falls in 'poor' to 'fair class' with 'Q' values from 1.0 to3.2. Inlet portal has shown 'very poor' value whereas intersection located at Ch.59.300 has shown 'poor' value.

In relating the value of 'Q' to the stability and support requirements of underground tunnel excavations, Equivalent Dimension 'De' has been calculated using the following formula (Barton et al. 1974).

Equivalent Dimension, De= Excavation span/Excavation Support Ratio

De= 12.0/1.6m=7.50 for 11.00m finished dia twin tunnel

Support categorization is based on this 'De' against 'Q' value utilizing log-log chart (Grimstad and Barton, 1993, reproduced from Palmstrom and Broch, 2006). Rock class, rock mass quality and supports for different reaches are mentioned in table-1.

Chemical analysis: During preliminary examination of rock samples from different reaches it was observed that many samples were reactive to HCl (hydrochloric acid). So, samples were collected from different locations and powered to -300 mesh and analyzed in the chemical laboratory, GSI for acid insolubles and the data is presented in appendix-1. Percentage of insolubles indicates calcareous nature of all the samples collected. Table showing chainage, rock type and percentage of acid insolubles is given below.

Sl.No.	Chainage in m	Rock type inferred during mapping	Acid insolubles (%)
1.	57900	Dark grey to black fine thinly laminated calcareous shale	49.91
2.	58400	Green and purple, thinly laminated fine variegated shale	16.05
3.	58700	Buff colored thinly bedded limestone	75.55
4.	59400	Dark grey thinly bedded to massive argillaceous limestone	87.88
5.	59540	Dark grey thinly bedded to massive argillaceous limestone	77.80
6.	59750	Dark grey thinly bedded to massive argillaceous limestone	45.17

7.	59800	Dark grey thinly bedded to massive argillaceous limestone	57.48
8.	59850	Dark grey thinly bedded to massive argillaceous limestone	49.91
9.	59900	Dark grey thinly bedded to massive argillaceous limestone	88.8
10.	60130	Grey fine grained, thinly bedded, fractured and horizontally disposed shale	16.84
11.	60350	Grey fine grained, thinly bedded, fractured and horizontally disposed shale	16.15

Chemical analysis indicates that many of the shale encountered in the tunnel are either limestone or argillaceous limestone. Samples collected at Ch.60130 and at Ch.60350 analyzed only 16% insolubles indicating its limestone nature. During field identification it is grouped under shale. This variation may be due the thin limestone band in shale. Sample collected at Ch.58.400km is from variegated shale which also indicates 16% insolubles may be due to the presence of lime rich band in the sample analyzed. Except for the Quartzite and basic sill mapped in the reach between Ch.57.750km and Ch.60.350km others are calcareous in nature.

Instrumentation for monitoring: Monitoring of the tunnel is to be carried out to have free flow of water and to avoid any untoward incidents in the tunnel. Excavation of benching is still to be carried out in some parts of the tunnel. It is recommended to install instruments like 1.Extensiometer for measuring the convergence, deformation of rock mass and ground movements/heave etc., 2.Strain gauge to determine strain in lining, 3.Stress cell, strain meter to estimate stress in lining segments, 4.Piezometer to arrive at pore water pressure, 5. Pressure cell/load cell to assess load on lining/ load in rock bolts and anchors and 6.Crack meter/joint meter to monitor movement in joints to monitor the stability of the tunnel during benching and after lining is completed for the entire life of the tunnel conducting water.

Recommendations and concluding remarks:

1. Rock class, Rock mass classification (Q) and estimated support system for different reaches mapped are presented in table.1. As per tunneling quality index these supports should have been provided during the progressive excavations of the tunnel. Random bolting and shotcreting were already carried out for certain vulnerable reaches during excavation to stabilize the rock mass as mentioned earlier.
2. Detailed assessment of the rock mass classification has been carried out based on which the mapped reaches fall under 'exceptionally poor', 'very poor', 'poor' and 'fair' category. However it is observed that the tunnel has a stand up time of 4months to 12months. Expert committee meetings held in Hyderabad decided to place steel fiber reinforced shotcrete in 'good' to 'very good' rock strata only but the mapped reaches fall under 'exceptionally poor',

'very poor', 'poor' and 'fair' category. Considering rock mass characteristics, site conditions and chemical data, it is recommended to place concrete lining as per the BIS code for tunnel reaches L_1 and R_1.

3. For the reach falls under 'exceptionally poor' (Right tunnel between Ch.58.780km and Ch.58.987km; left tunnel between Ch.58.725km and Ch.59.023km) category, it is recommended to continue fore poling, steel rib supports and cast concrete lining for stabilizing the tunnel.
4. Instruments for monitoring as discussed earlier are suggested to be installed as per requirement in the tunnel.
5. Contact grouting shall be carried out as per design specification.
6. It is also recommended to provide drainage holes of 50mm diameter with filter in the free board area of the tunnel.
7. The aforesaid suggestions and recommendations are to be implementing only after scaling, easing and random bolting before placing the lining as per design specification.

Approach canal reach:

In the approach canal reach, overhangs present on the slopes are to be removed providing a slope not less than ½ H: 1V. Whereas at the inlet portal it is suggested to (a.) remove overhangs (b.) maintain gentle slope ½:1 (c.) place systematic bolts 3m c/c, 4.m deep, 25mm dia thick and (d.) carry out steel fiber shotcrete for minimum thickness of 5cm.

The above recommendations should be carried out under supervision of the Superintending Engineer/Executive Engineer, keeping in view of the life of the water conductor system.

29/01/10

(G. J. S. Prasad)
Junior Geologist

J. Sri Hari 29.1.10

(J. Sri Hari)
Senior Geologist

Annexure-III

IS : 1892 - 1979
(Reaffirmed 2002)

Indian Standard

CODE OF PRACTICE FOR SUBSURFACE INVESTIGATION FOR FOUNDATIONS

(First Revision)

Second Reprint NOVEMBER 1985

UDC 624·131·31 : 624·15·051 ; 69·032·2 : 006·76

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 9

January 1981

major changes in thickness, depth or properties of the strata over the base area of the structure and its immediate surroundings. The number and spacing of bore holes or trial pits will depend upon the extent of the site and the nature of structures coming on it. For a compact building site covering an area of about 0·4 hectare, one bore hole or trial pit in each corner and one in the centre should be adequate. For smaller and less important buildings even one bore hole or trial pit in the centre will suffice. For very large areas covering industrial and residential colonies, the geological nature of the terrain will help in deciding the number of bore holes or trial pits. Cone penetration tests may be performed at every 50 m by dividing the area in a grid pattern and number of bore holes or trial pits decided by examining the variation in the penetration curves. The cone penetration tests may not be possible at sites having gravelly or boulderous strata. In such cases geophysical methods may be useful.

2.3.2 *Depth of Exploration* — The depth of exploration required depends on the type of proposed structure, its total weight, the size, shape and disposition of the loaded areas, soil profile, and the physical properties of the soil that constitutes each individual stratum. Normally, it should be one and a half times the width of the footing below foundation level. In certain cases, it may be necessary to take at least one bore hole or cone test or both to twice the width of the foundation. If a number of loaded areas are in close proximity the effect of each is additive. In such cases, the whole of the area may be considered as loaded and exploration should be carried out up to one and a half times the lower dimension. In weak soils, the exploration should be continued to a depth at which the loads can be carried by the stratum in question without undesirable settlement and shear failure. In any case, the depth to which seasonal variations affect the soil should be regarded as the minimum depth for the exploration of sites. But where industrial processes affect the soil characteristics this depth may be more. The presence of fast growing and water seeking trees also contributes to the weathering processes.

NOTE — Examples of fast growing and water seeking trees are Banyan (*Ficus bengalensis*), Pipal (*Ficus religiosa*) and Neem (*Azadirachta indica*).

2.3.2.1 An estimate of the variation with depth of the vertical normal stress in the soil arising from foundation loads may be made on the basis of elastic theory. The net loading intensity at any level below a foundation may be obtained approximately by assuming a spread of load of two vertical to one horizontal from all sides of the foundations, due allowance being made for the overlapping effects of load from closely spaced footings. The depth of exploration at the start of the work may be decided as given in Table 1, which may be modified as exploration proceeds, if required.

2.4 Importance of Ground-Water Tables

2.4.1 For most types of construction, water-logged ground is undesirable because of its low bearing capacity. On sites liable to be water-logged in

Annexure-IV

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

ORIGINAL APPLICATION NO. 71/2020 (SZ)

IN THE MATTER OF:

Sri Gavinolla Srinivas — Applicant

Versus

Union of India & Others — Respondent (s)

INDEX

S Suresh 8/8/2020

S. Suresh
Regional Director
Central Pollution Control Board
Regional Directorate
Bengaluru-560079

Place: Bengaluru

Date:08.08.2020

14	2013-14	812.9
15	31.07.2014	831.8
16	06.09.2015	794.8
17	28.05.2016	775.0
18	07.06.2017	775.5
19	09.06.2018	799.7
20	31.07.2019	804.1

VI.b. Social Impacts on member states sharing the water from Srisailam Reservoir

1. The proposed scheme will be lifting water from the foreshore of Srisailam reservoir. KWDT has fixed the sharing of water and KRMB is monitoring its implementation. KRMB has installed metering system at +12 km on PRP, the lifted water will join at +4 km on PRP and pass through the metering system. Keeping this in view, it was concluded that as long as Andhra Pradesh is restricted to draw only its allocated share of water by means of proposed Rayalaseema lift scheme, environmental & social impacts of the availability of water on other member states drawing water from Srisailam reservoir are not envisaged. As per the claims made by the state of Andhra Pradesh, the scheme will only guarantee to provide the allocated share of water to Rayalaseema region. KRMB may strengthen its monitoring and metering system to restrict the states of Andhra Pradesh and Telangana draw only their allocated share of water.
2. IIT, Hyderabad submits that lift scheme may result in land subsidence in Rayalaseema region since the natural geologic formations contain limestone and lime may dissolve in water and may cause subsidence.
3. IIT, Hyderabad submits that when the water is pumped, there is possibility of more water may be displaced and during pumping, there may not be complete control on the measuring. In order to avoid, the state of A.P. does not draw more water, KRMB shall strengthen its monitoring and metering mechanism.
4. IIT, Hyderabad submits that scheme is planned to draw 3 TMC per day from Srisailam reservoir from a much lower level i.e. +800 feet. This deprives the flows to other projects on the same reservoir and other downstream existing and ongoing projects. Hence the committee submits to Hon'ble NGT that KRMB shall examine the project on submission of detailed project report by state of Andhra Pradesh. The

Annexure-v

Item No.5 BEFORE THE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

Original Application No.71/2020 (SZ)

(Through Video Conference)

IN THE MATTER OF

Gavinolla Srinivas ..Applicant(s)

Vs

Union of India and Others ...Respondent(s)

Date of hearing: 13.7.2020

CORM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

For Applicant(s) : Sri. Sravan Kumar
For Respondent(s): Smt. M. Sumathi for R1

Smt. Yasmen Ali R.3

Sri. Venkatramani, Senior Advocate,

Smt. Maduri Donti Reddy and

Dr. Thushara James for R.4

Sri. D. Ramesh Kumar for R5

ORDER

As per order dated 20.5.2020, this Tribunal had directed the State of Andhra Pradesh not to proceed with the scheme till we get the report from the joint committee appointed by this Tribunal for this purpose. We have also appointed a joint committee comprising of the Expert Appraisal committee of Ministry of Environment Forest and Climate Change (MOEF&CC) on irrigation project (number of members as required and deemed fit for this

purpose can be identified by MoEF & CC and they can be made as members of the committee of EAC), Central Pollution Control Board , Regional Office Bangalore, on who's jurisdiction State of Andhra Pradesh and Telangana falls, Indian Institute of Technology (IIT) Hyderabad and a Senior Officer from Krishna River Management Board to examine the scheme and submit a report as to whether all required clearances, permissions, recommendations, have been obtained by the State of Andhra Pradesh for the purpose of launching the scheme and whether, what is the purpose for which the project is intended and whether it requires prior environmental clearance before starting the project and whether the precautions taken by them will be sufficient to protect interest of both the State of Telangana and Andhra Pradesh as the water from Srisailam project is being shared by both the States. The committee was also directed to consider the question as to whether the proposed exploitation of natural resources namely, water by this project will have any environment impact regarding the availability of the source of water and whether it will have any social impact on the members of the sharing States and submit a report to this Tribunal within a period of two months. Central Pollution Control Board regional office Bangalore was designated to be nodal agency and posted the case to 11.8.2020 initially.

2.On the basis of the submissions made by Sri. Venkatramani, Senior Advocate along with Smt. Madhuri Donti Reddy, counsel appearing for State of Telanganal, as per order dated 15.6.2020, this Tribunal has advanced the case today and directed the Registry to communicate the order to the committee members as well as the counsel appearing for applicant. That was how the matter is coming up for hearing today.

3. When the matter came up for hearing today through Video Conference, Sri. Sravan Kumar represented applicant, Smt. M. Sumathi entered appearance for first respondent, Mrs. H. Yasmeen Ali represented third respondent, Sri. Venkatramani, Senior Counsel along with Smt. Madhuri Donti Reddy and Dr. Thushara James appeared for fourth respondent and Sri. D. Ramesh Kumar represented fifth respondent.

4. Learned Senior Counsel appearing for State of Andhra Pradesh submitted that there is no necessity for obtaining any prior Environment Clearance for the purpose of implementation of the scheme. Learned Senior Counsel also submitted that it is only at the state of launching of the scheme and the actual implementation will start after preparing necessary project report and calling for tenders etc. Further, the earlier Srisailam Irrigation Project had already been completed in the year 1984 and the scheme is intended only to regulate the smooth flow of water through the canals by making some

alignment in the route without enhancing or deviating from the purpose of the earlier project or increasing extraction water than pemitted and this is required not only to cater the needs of State of Andhra Pradesh but also State of Tamil Nadu, as certain amount of water has to be supplied to them as per the agreement entered into between both the States and in order to facilitate that in a better way, this scheme is required. It is also submitted by learned Senior Counsel that by virtue of the order of this Tribunal, Andhra Pradesh Government is not able to proceed with the scheme. Learned Senior Counsel also submitted that this Tribunal's jurisdiction is only to consider the question whether the project requires any prior Environment Clearance and implementation of the scheme will have any impact in environment and other aspects as to whether any permission has to be obtained etc are outside the purview of this Tribunal. In the mean time, Smt. Madhuri Donti Reddy and Smt. Thushara James, learned counsel appearing for State Of Andhra Pradesh along with the senior counsel submitted that no work on ground has started as part of the implementation of the scheme and they are only in the stage of preparing the project report and calling for tenders. On account of the order passed by this Tribunal, they are not able to proceed with the preliminary work of preparing the project report and also calling for tenders etc for this purpose and only after finalisation of the project report, it will be considered as to whether

prior Environment Clearance is required for starting of work on ground. Learned counsel have undertaken that they will not launch the work on ground without getting any further order from this Tribunal. Smt. Jayalakshmi represented Central Pollution Control Board Regional Office, Bangalore who has been appointed as a member of the committee and nodal agency. Learned counsel appearing for applicant submitted that without getting the views of MoEF & CC no modified order can be passed.

5. We have considered the submissions made by learned Senior Counsel appearing for the State of Andhra Pradesh and also other counsel, including counsel for applicant.

6. As per order dated 20.5.2020, we have passed an order, directing the State of Andhra Pradesh not to proceed with the scheme till this tribunal got the report from the joint committee on the assumption that the State of Andhra Pradesh has already started execution of the work on ground, without getting necessary Environment Clearance. Since learned Senior Counsel appearing for State of Andhra Pradesh submitted that it is only in the launching stage and other formalities viz., preparation of project report and calling for tenders etc., will have to be done and only thereafter the question as to whether this project requires Environment Clearance or not will arise for consideration. By virtue of the order of this Tribunal Andhra Pradesh State Government is completely prevented from

proceeding with the preliminary stage of preparing the project and calling for tenders etc.

7. In view of the submission made by learned counsel Senior Counsel appearing for State of Andhra Pradesh, we feel that some modification is required in the Order dated 20.5.2020. We make it clear that the above interim order will not prevent the State of Andhra Pradesh from preparing the project report and calling for tenders for that purpose, but the actual execution of the work on ground can be done only after getting further orders from this Tribunal. To that extent, the order dated 20.5.2020 is modified.

8. In the mean time, MoEF & CC is directed to submit their views as to whether the present project requires any prior Environment Clearance before the same is put on execution. They will have to give their opinion on the basis of EIA Notification, 2006 on this aspect in order to help this Tribunal to come to a proper conclusion as to whether this project requires prior Environment Clearance before starting the work and whether the project can be allowed to start on ground before adjudication of the case and dispose of the case in accordance with law. Except this modification we don't propose any modification at this stage. The committee shall submit its report as directed. Post the case on 11.8.2020 of completion of service on other respondents getting their response and consideration of the report.

Registry is directed to communicate this order to the concerned authorities through e-mail immediately so as to enable them to comply with the direction of this Tribunal

Post on 11.8.2020

.....J.M.

(Justice K. Ramakrishnan)

.....E.M.
(Shri. Saibal Dasgupta)

O. A. No. 71/2020
13.7. 2020
Kkr

NATIONAL GREEN TRIBUNAL, NEW DELHI

Annexure-VI

Item No.40:

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

M A. No. 06 of 2020 (SZ) in
Original Application No. 71 of 2020 (SZ)

(Through Video Conference)

IN THE MATTER OF

Gavinolla Srinivas
H. No.1-99, Bapanapally Village,
Damargidda Mandal,
Narayanpet District,
Telangana – 509 407.

...Applicant(s)

Versus

1. Union of India,
   Rep. by its Secretary,
   Union Ministry of Environment, Forest & Climate Change,
   Indira Paryavaran Bhavan,
   Jorbagh, New Delhi- 110 003.

2. Union of India
   Rep. by its Secretary,
   Union Ministry of Jal Sakti
   Sramasakti Bhavan
   New Delhi – 110 001.

3. State of Telangana
   Rep. by its Chief Secretary,
   Secretariat, Hyderabad – 500 022.

4. State of Andhra Pradesh,
   Rep. by its Chief Secretary,
   Secretariat, Velagapudi,
   Guntur District, Andhra Pradesh – 522 503.

5. Krishna River Management Board,
   Rep. by its Member Secretary,
   Government of India, Ministry of Water Resources
   5th Floor, Jalasoudha, Errum Manzil
   Hyderabad – 500 082.

...Respondent(s)

For Applicant(s): Sri. Sravan Kumar.

For Respondent(s): Smt. M. Sumathi for R1.
Sri. J. Ramachandra Rao, Addl. Adv. General along with Sri. A. Sanjeev Kumar, Spl. Govt. Pleader & Smt. H. Yasmeen Ali for R3.
Sri. R. Venkataramani, Sr. Adv. along with Smt. Madhuri Donti Reddy for R4.
Sri. D. Ramesh Kumar for R5.

Date of Order: 24th February, 2021.

CORAM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER

HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

ORDER

1. This application has been filed by the applicant under Section 26 & 28 of the National Green Tribunal Act, 2010 requesting to take action against the 4th respondent for proceeding with the Rayalaseema Lift Irrigation Project against the directions issued by this Tribunal while disposing the case by Judgement Dated 29.10.2020.
2. According to the applicant, the 4th respondent is making lot of arrangements and steps for proceedings with the project without obtaining environmental clearance as directed by this Tribunal and according to the applicant that will amount to disobedience of the directions of this Tribunal which attracts the penal action to be taken against them as contemplated under Sections 25, 26 & 28 of National green Tribunal Act, 2010.
3. The 4th respondent filed a detailed reply affidavit sworn by the Chief Secretary of the State where in, they have categorically stated, that they

are not doing anything against the directions issued by this Tribunal and they have no intention to proceed with the project against the directions issued by this Tribunal and they are doing all the works relating to the project only in tune with the directions issued by this tribunal

4. It is also alleged in the reply affidavit that in order to prepare the DPR for the project as observed by this Tribunal in the matter while disposing the case, they have entrusted certain agencies for doing the investigation for preparing the DPR and they will have to do the preliminary investigation for the purpose of preparing the estimate on the basis of the guidelines given by the Central Water Commission, Ministry of Jal Shakti and for that purpose, on the basis of the directions given by the Geologist, the soil test will have to conducted and in order to get the proper report of the soil quality, the superficial dumped soil will have to be removed and in compliance with the directions given by the Geologist, arrangements were made for removing of superficial soil that has been dumped and that has been now projected as an activity of the State of Andhra Pradesh in execution of the project in violation of the directions issued by this Tribunal.
5. They have categorically reiterated, that they will proceed with the project only after preparation of the DPR and getting approval from the concerned departments as directed by this Tribunal and as such there is no violation or wilful disobedience committed by the 4th respondent and there is no necessity for initiating any action as contemplated under Section 25, 26 & 28 of National Green Tribunal Act, 2010 as required by the applicant.

6. Third respondent had also filed a reply affidavit stating that when they got information that some work is going on behalf of the State of Andhra Pradesh in respect of this project, they have applied to the Krishna River Management Board (KRMB) to enquire into the matter by appointing a committee and that matter is pending before them.

7. The applicant file rejoinder affidavit to the reply affidavit filed by the 4th respondent where in, they have reiterated the allegations and also produced certain photographs showing the nature of work that is alleged to be being done in that area.

8. Heard, Sri. Sravan Kumar the learned counsel appearing for the applicant. Smt. M. Sumathi represented the counsel for first respondent, Sri. J. Ramachandra Rao, Additional Advocate General along with Sri. Sanjeev Kumar, Special Government Pleader and Smt. Yasmeen Ali counsel for 3rd respondent, Sri. R. Venkataramani, Senior Counsel along with Smt. Maduri Donti Reddy for 4th respondent and Sri. D. Ramesh Kumar for 5th respondent.

9. The counsel appearing for 5th respondent wanted time to file their counter to this application. The senior learned counsel appearing for the State of Andhra Pradesh reiterated that they have no intention to violate the directions of this Tribunal and what is being done by the State of Andhra Pradesh is only the preliminary investigation for the purpose of preparing the DPR on the basis of the guidelines of the Central Water Commission as they are the ultimate authority to approve the project before it is being put to execution.

10. The learned counsel appearing for the applicant reiterated their contentions in the application and he wanted the same committee to go

into the issue to find out the nature of work that is being undertaken by them.

11. This Tribunal while disposing the Original Application No. 71 of 2020 issued certain directions and also prima facie came to the conclusion that considering the nature of the project, prior environmental clearance, is required and without getting environmental clearance, they cannot proceed with the work and further this Tribunal also observed that as per the directions of the Union Ministry of Jal Shakti, they will have to submit the DPR before the Krishna River Management Board and they will have to consider as to whether there is any deviation and whether such project can be permitted etc., on the basis of the powers vested on them under the Andhra Pradesh State Reorganisation Act, 2014.

12. There is nothing to disbelieve the assertion made by the Chief Secretary of the State stating that there is no intention to violate the directions issued by this Tribunal while disposing the matter and whatever is being done is only strictly in accordance with the guidelines provided for preparing the DPR for the project.

13. It is seen from the reply affidavit filed by the third respondent that they have made a complaint to the Krishna River Management Board regarding the alleged activity and wanted the Board to appoint a committee to go into the question and pass necessary directions.

14. We don't think that there is any necessity for this Tribunal to go into those aspects at this stage. We are now believing the assertions made by the Chief Secretary that they are only doing the preliminary investigation for the purpose of preparing the DPR on the basis of the

directions given by the Central Water Commission as well as the Geologist for conducting the soil test which is necessary for the purpose of preparing the estimate regarding the constructions etc., that they want to make for implementing the project. Preparation of DPR for such projects can be carried out by the authorities only on the basis of the guidelines given by the competent authority who are expected to approve the same. Further, when risk involving projects are to be implemented, DPR has to be prepared properly and for that purpose, they may have to undertake certain investigation in a scientific manner involving certain tests etc. to ascertain the manner in which the contracts will have to be made and estimate the amount required for carrying out the work and that cannot be treated as execution of the project and wilful disobedience of the direction of this Tribunal to attract the penal provision against the officials who are exercising their experience in carrying out the work.

15. So under such circumstances, we feel that there is no necessity at this stage for go into the investigation in this matter and the Krishna River Management Board, on the basis of the compliant made by the Telangana Government in this regard, are at liberty to go into the question and if it is found that there is any violation of direction of this Tribunal in proceedings with the matter on the basis of the investigation conducted by them independently, they are at liberty to take appropriate action against the 4th respondent in accordance with law, apart from the applicant to approach this Tribunal at that stage.

16. The Krishna River Management Board is directed to take appropriate decision in the application at the earliest.

17. With the above directions, observations and liberty to the applicant, this application is disposed of.

Sd/-
.....J.M.
(Justice K. Ramakrishnan)

Sd/-
.....E.M.
(Shri. SaibalDasgupta)

M.A.No.06/2020(SZ) in
O.A. No. 71/2020 (SZ)
24th February, 2021. Sr.

Annexure-VII

DETAILED PROJECT REPORT		
SECTION – I		
CHECK LIST		
I.	**GENERAL DATA**	
1	Name of the Project	Rayalaseema Lift Scheme to supplement 3 TMC per day to SRMC D/s of Pothireddypadu Head Regulator, Kurnool District, Andhra Pradesh.
2	Location :	
a.	State	Andhra Pradesh
b.	District	Kurnool
c.	Mandal	Jupadubanglow/Pamulapadu
d.	Longitude / Latitude of head works	15° - 54' – 15" N & 78° - 25' – 34" E
e.	Survey of India Topographical sheets of command area.	D44A5
F	Earthquake Zone number	Zone II
G	Complete address for correspondence along with pin code/ e-mail	Chief Engineer (P) Kurnool. Email: cepkurnool@gmail.com
3	Category of the Project :	
a.	Irrigation or Multipurpose	Multipurpose
b.	Storage or diversion	Diversion
II.	**PLANNING**	
4	Has the Master plan for overall development of the river basin been prepared and stages of basin development discussed briefly?	Not Applicable
5	Have the alternative proposals been studied and their merits and demerits discussed?	Yes
6	Does the scheme fit in the overall development of the river basin and its priority in the overall development of the basin discussed?	Not Applicable
7	Are there any features which are not likely to fit in the over all development of the basin? Have the other Departments concerned with the development been informed?	Nil
8	Is the present scheme proposed to be executed in stages? If so, are its various stages of execution and development discussed in the report?	Not Applicable
9	Are the effects of the scheme on the riparian rights existing upstream and downstream projects etc., discussed?	Not Applicable
10	Has the provision for municipal and industrial water supply been made?	Yes

III.	**INTERSTATE AND INTERNATIONAL ASPECTS**	
11	Are there any international / Interstate issues involved? If so, have these issues been identified and present status of agreement indicated specially in respect of.	Not Applicable
a.	Sharing of Water.	Not Applicable
b.	Sharing of Cost.	Not Applicable
c.	Sharing benefits.	Not Applicable
d.	Acceptance of the submergence by the Upstream State (s).	Not Applicable
e.	Compensation of land coming under submergence.	Not Applicable
f.	Settlement of oustees	Not Applicable
g.	Any other:	Nil
IV	**SURVEYS**	
12	Have the detailed topographical surveys been carried out for the following items and maps prepared as per prescribed scales.	
a.	River Surveys.	Not Applicable
b.	Reservoir Surveys.	Not Applicable
c.	Pump House	YES
d.	Plant and Colonies, sites	Not Applicable
e.	Canals, branch canals and water conductor system.	Not Applicable
f.	Major canal structures	Not Applicable
g.	Power houses, switch-yard, surge shafts, tailrace	Not Applicable
h.	Tunnel(s), adit(s), penstocks etc	Not Applicable
i.	Surveys (detailed and samples) of command area for OFD and drainage works.	Not Applicable
j.	Soil surveys	Not Applicable
k.	Surveys for Soil conservation	Not Applicable
l.	Any other surveys i.e. archaeological, right of way, communication etc.	Nil
V	**GEOLOGICAL INVESTIGATIONS**	
13	Have the Geological surveys for the following items been carried out and report on Geology appended?	
a.	Regional Geology:	Yes
b.	Reservoirs	Not Applicable
c.	Head works and energy dissipation area	Not Applicable
d.	Power houses and appurtenances	Not Applicable
e.	Intakes and regulators.	Not Applicable

f.	Major canal structures.	Not Applicable
g.	Tunnel(s), Penstock(s), Hill(s) etc.	Not Applicable
h.	Communication routes.	Not Applicable
i.	Any other	Not Applicable
VI	**SEISMIC INVESTIGATIONS**	
14	Has the seismicity of the region been studied and co-efficient of vertical/horizontal acceleration for the various structures discussed?	Zone-II Norms are adopted
15	Has the approval of the Standing Committee for recommending design of seismic coefficients for river valley project been obtained?	Not Applicable
16	Is there possibility of liquefaction of foundations? If so whether liquefaction studies been carried out	Not Applicable
VII	**FOUNDATION INVESTIGATIONS**	
17	Have the detailed foundation Investigation (including in-situ tests and laboratory tests) for the following structures been carried out and detailed report (s) appended?	
a.	Earth and rock fill dam(s)	Not Applicable
b.	Masonry/ concrete dam(s)	Not Applicable
c.	Barrage(s)/ Weirs/ Head regulator(s)	Not Applicable
d.	Canals & Canal Structures	Not Applicable
e.	Power house(s), Tunnel(s), Transformer caverns(s), de-silting chamber(s)	Not Applicable
f.	Pump house(s)	Yes
g.	Any other	Nil
18	Are there any special features affecting the designs?	No
VIII	**MATERIAL SURVEYS**	
19	Have the surveys and laboratory tests for the following construction materials been carried out and report (s) appended?	
a.	Soils for impervious, semi-pervious and pervious zones of earth and rock fill dam(s)	Not Applicable
b.	Sand.	The sources of construction material have been identified. Tests will be conducted as and when required.
c.	Rock and aggregate.	
d.	Bricks and tiles.	
e.	Pozzolans.	
f.	Cement and lime stone.	
g.	Steel	
h.	Any other.	Nil.

20	Have the sources for each of the above materials been identified and lead etc., indicated?	Yes
21	Have the proposals for procurement of scarce materials been indicated?	Does not arise
IX	**HYDROLOGICAL AND METEOROLOGICAL INVESTIGATION**	
22 (i)	Have the hydrological and meteorological investigations been carried out and status of data discussed in report?	
a.	Rainfall.	Enclosed
b.	Temperature	Enclosed
c.	Sunshine	Enclosed
d.	Gauge and discharge	Enclosed
e.	Sediment.	Enclosed
f.	Water quality.	Enclosed
g.	Evaporation and whether the above data has been appended?	Enclosed
22 (ii)	Has the above data been collected and appended	---
X	**HYDROLOGY**	
23	Is the hydrology dealt with in detail in a separate volume? Have its brief details been included in this report?	Discussed in the Report
24	Have an index map and bar chart showing location of various hydrometric, and rainfall stations and the data availability at those stations been attached?	Not Applicable
25	Are brief notes about quality, consistency, processing and gap filling of the data included?	Not Applicable
26	Have hydrological studies been carried out for the following.	
a.	To establish the availability of water for the benefits envisaged.	Does not arise
b.	To determine design flood for the various structures (Spillway, weir barrage etc.,)	Does not arise
c.	Sediment storage	Does not arise
d.	Evaporation rates from reservoir concerned area	Does not arise
e.	Command area rainfall	---
27	Has the Ground water Potential been indicated?	---
28	Have the studies regarding reservoir sedimentation been carried out and revised elevation –area capacity curves been used in the simulation studies (Working Table)?	---

29	Have the ecological requirements of water such as low flow augmentation and water quality control etc. and water requirement for domestic, industrial use and power generation (thermal, hydel, nuclear) been considered and included in the project report and incorporated in the simulation studies.	Does not arise
30	Have the details of the simulation studies (working tables) and conclusions arrived from the various alternatives explaining the factors and assumptions been included and discussed?	---
31	Has the number of failures for different aspects been indicated?	---
32	Have the likely desirable and undesirable changes in the hydrologic regime due to the project been brought out in the report?	Not Applicable
33	Is the criteria adopted for selection of the construction diversion flood discussed?	Not Applicable
34	Has the basis for determining the storage capacity been discussed?	Not Applicable
35	Have integrated working table (for more than one reservoir in the system) been prepared?	---
36	Has carry over storage been provided? If so, whether studies for most economic carry over storage been done?	Not Applicable
37	Have the flood routing studies been carried out?	Not Applicable
38	Have the back water studies been carried out?	Not Applicable
XI	**LAND ACQUISITION AND RESETTLEMENT OF OUSTEES**	
39	Have the type and quantum of land proposed to be acquired in the submerged areas, project area, area coming under canal and distribution system, area required for rehabilitation of the oustees been detailed?	Does not involve any LA/ R & R
40	Is the basis for provision for land compensation indicated?	Not Applicable
41	Have the rehabilitation measures, amenities and facilities to be provided to the Project Affected persons been discussed and whether their provisions included in the report? Are these in accordance state's policy/project specific policy /draft national policy for rehabilitation and resettlement	Not Applicable
42	Are the basis of land acquisition of the submerged area upto FRL/ MWL etc., discussed?	Not Applicable

XII	DESIGNS	
43	Does the state establish a Central Design Organization and State level multidisciplinary advisory committee and whether its composition has been indicated in the report?	Yes
44	Has the selection of final location of the head works/pump house and appurtenances, in preference to the other sites investigated been discussed?	Yes
45	Have the layout of the project is location of head works/pump house work shop sheds, offices, colonies etc. been finalized and discussed?	Yes
46	Has the layout of the various major components of the head works/pump house been discussed in the light of site features, geology, foundation characteristics etc.?	Yes
47	Have the detailed designs been prepared for the following components & got vetted by CDO?	
a.	Earth or rock fill dam, masonry or concrete dam, spillway, barrage, weir, etc. and appurtenances.	Not Applicable
b.	Energy dissipation arrangements, training walls etc.	Not Applicable
c.	Openings through dams-galleries, head regulators, penstocks other outlets, sluices etc.	Not Applicable
d.	Regulators	---
e.	Canal and water conductor system	---
f.	Canal structures	---
g.	Pump houses	Enclosed
h.	Power houses, tunnels, surge shaft	---
i.	Instrumentation	Not Applicable
j.	Power excavation arrangement	Not Applicable
48	Have the salient features of the above components and the assumptions made in the design of above components of the project been indicated and their basis discussed?	Yes
49	Have any model studies been carried out for location of the dam, spillway and other appurtenances & checking the design profile of the spillway, energy dissipation arrangements, location of outlets/ regulators etc.?	To be carried out before execution.
50	Has the final alignment of Approach canal and Link canal has been discussed in the light of various alignment studies?	Yes

a.	Does the canal design provide for meeting requirements of rush irrigation?	Not Applicable
b.	Have any intermediate storage and tail tanks been considered to reduce the canal capacities?	Not Applicable
51	Are the canals and distribution system being lined and if so what is the minimum capacity of the channel proposed to be lined?	Not Applicable
52	Is the location of canal structures on main and branch canals fixed after detailed surveys of the final alignments?	Not Applicable
53	Are the regulation arrangements of the off-taking channels both near and away from the cross regulators discussed?	Not Applicable
54	Are sufficient escapes, including terminal escapes provided on the main/branch canal distributaries/ minors?	Not Applicable
55	Have the basis for adopting water way for the cross drainage works been discussed?	Not Applicable
56	Have the proposals for rating of the falls, broad crest weirs, V-notches etc. been discussed for the canal and distribution system?	Not Applicable
57	Have any model studies for major canal structure(s) been carried out and if so are the results discussed and incorporated in the design?	Not Applicable
X III	**IRRIGATION AND COMMAND AREA DEVELOPMENT**	Not Applicable
XIV	**FLOOD CONTROL AND DRAINAGE**	
58	Have the various flood control components of the multipurpose project been indicated?	Not Applicable
59	Have the damage areas in pre-project & post project situations been identified and flood intensities worked out at each of the damage centre(s) which gets affected?	Not Applicable
60	Have the following flood aspects been discussed?	
a)	Flood cushion in the reservoir	Not Applicable
b)	Maximum moderated flood out flows over the spillway etc. and its frequency.	Not Applicable
c)	Existing and proposed safe carrying capacities of the channel below the dam after construction of flood embankment, channel improvement, river diversion etc.	Not Applicable
d)	Synchronized moderated peak floods due to release(s) from the dam upstream and un intercepted catchment upto the damage centres.	Not Applicable
e)	Average annual expenditure incurred on flood relief works.	Not Applicable

f)	Area and population affected/likely to be affected before/after the project	Not Applicable
g)	Estimated saving in annual loss of life, properly, cattle, crops etc. (evaluated in terms of money) due to flood control.	Not Applicable
61	Have the following drainage aspects of command area been discussed?	Not Applicable
a)	Existing Surface and sub-surface drainage network and problems of the drainage congestion, water logging, alkalinity/salinity if any.	Not Applicable
b)	Studies on sub soil water table (pre-monsoon, post-monsoon etc.).	Not Applicable
c)	Maximum intensity of 1, 2 and 3 day rainfall.	
d)	Deficiencies in farm drains.	Not Applicable
e)	Deficiencies in existing natural drains	Not Applicable
f)	Proposal for improvement of drainage/water logging /alkalinity /salinity of the area along with justification thereof.	Not Applicable
g)	Identification of the area in Command which will get benefited due to execution of drainage net-work and benefits thereof in terms of relief from crop damage, increased yields etc.	Not Applicable
XV	**NAVIGATION**	Not Applicable
XVI	**POWER**	Not Applicable
XVII	**CONSTRUCTION PROGRAMME AND PLANT AND MANPOWER PLANNING.**	In progress
XVIII	**FOREIGN EXCHANGE**	Not Applicable
XIX	**FINANCIAL RESOURCES**	
62	Has the concurrence of the State Finance Department been obtained?	Yes
63	IS the scheme included in the Five Year/ Annual Plan? Is not what is the present position regarding its inclusion in the plan?	NA
64	Whether the scheme has already been started? If so, is the present stage of construction indicated?	Work is awarded & Designs and Drawings are under consideration. Agency is mobilizing required men, materials and Machinery
65	Have the year wise requirement of funds been indicated?	Yes
66	Is the scheme covered or proposed to be covered under any foreign assistance/aid agreement?	NA
XX	**ESTIMATE**	
67	Is the separate volume of estimate attached as appendix?	Yes

68	Is the year to which the rates adopted in the estimate relate to indicated?	Yes
69	Have the analysis of which the rates for various major items of work for the major components of the project been furnished and with basis of analysis described?	Yes
70	Are the provision for the following items made on the basis of sample survey and sub-estimate:	Sub Estimates are there for all the components for the scheme.ie:- Approach Channel, Pump House, Delivery Cistern, Link Canal, Sub-Station etc.,
a)	Distributaries, minor and sub-minors/Pump House	
b)	Water courses	
c)	Drainage	
d)	CAD Works.	
XXI	**REVENUE**	Not Applicable
XXI	**B.C RATIO**	1.71:1
XXIII	**ECOLOGICAL ASPECTS**	Does not attract
XXIV	**COLONIES AND BULDINGS**	Not Applicable
XXV	**PUBLIC PARTICIPATION AND CO-OPERATION**	
71	Are the possibilities of these been discussed in:	Not Applicable
a.	Planning	
b.	Construction	
c.	Improved agricultural practices.	
d.	Any other	
72	Have public debate about utility of projects been held and the response there of outlined in the Report?	Yes
XXVI	**SOIL CONSERVATION**	No

CHAPTER-7 Annexure-VIIA

DESIGN FEATURES AND CRITERIA FOR THE PROJECT COMPONENTS

CENTRAL WATER COMMISSION GUIDELINES FOR SUBMISSION APPRAISAL AND CLEARANCE OF IRRIGATION AND MULTIPURPOSE PROJECTS 2017

In the above guidelines it was mentioned as follows:

Cl. 4.14 ***In case where Design & Planning Organizations are existing in the concerned State and CWC certifies through accreditation process that it has sufficient competency to design such projects and a certificate is furnished by the accredited CDO in prescribed proforma Appendix-J of Annexure - 6 in respect of their detailed examination/clearance of the project proposal and appraisal/clearance of the State level Project Appraisal/Technical Advisory and Environmental Appraisal committees, examination of the project by CWC will be generally restricted to interstate aspects, basic planning, hydrology and economic viability.***

The Water Resources Department of Andhra Pradesh State has an exclusive Central Design Organization which is well known for its competency in designs for scrutinizing and approving the design reports furnished by the project authorities. The Central Design Organization is headed by the exclusive Chief Engineer.

The Central Design Organization scrutinizes and approves the following design aspects:

(i) Alignments
(ii) Hydraulic particulars
(iii) Hydraulic Designs
(iv) Structural Designs
(v) Designs of Structures

} for Canals, Tunnels and other water conveyance system

(vi) Designs of Civil Structures such as pump house, surge pool, draft tubes, delivery mains, delivery cisterns etc.

A certificate is furnished by the Chief Engineer, Central Designs Organization, Andhra Pradesh State in prescribed proforma (Annexure-6) is herewith appended.

Besides the above, the Government of Andhra Pradesh utilizes services of **APGENCO and APTRANSCO** in respect of Hydro-Mechanical and Electro-Mechanical Works and works related to power substations, transmission lines by paying consultancy charges to APGENCO and APTRANSCO for undertaking such supervisory works as follows:

Andhra Pradesh Power Generation Corporation Limited (Andhra Pradesh State Public Sector Undertaking) scrutinizes and approves the all Hydro-Mechanical and Electro-Mechanical Works. They also participate in the Model testing of pumps and Motors in India as well as International manufacturing units. They also associate in erection and commissioning of Hydro-Mechanical and Electro-Mechanical units.

The **Andhra Pradesh Power Transmission Corporation limited (Andhra Pradesh State Public Sector Undertaking)** monitors and supervises substation works and also works related to transmission lines etc.

Thus, the **CENTRAL DESIGNS ORGANIZATION OF ANDHRA PRADESH STATE** Scrutinizes and approve the following design aspects also:

1. Canal and Pump House designs

The Canal and Pump House designs will be approved by the Central Designs Organization of Andhra Pradesh state. The Geological survey of India (GSI) Department will also be associated in assessing the Foundation parameters before taking of the design aspects.

2. Foundation Engineering and special analysis

The required tests for assessing the foundation characteristics such as safe Bearing capacity, cohesion – Internal friction analysis, permeability, Shear strength…etc will be conducted before taking up the designs of the structures. The Geological Survey of India Department will also be associated in assessing the Foundation parameters before taking up the design aspects.

3. Construction material

Andhra Pradesh state has an exclusive quality control organization. It conducts quality control tests on various construction material before execution of works, during

Annexure-VIII

Guidelines

for

Submission, Appraisal and Clearance

of

Irrigation and Multipurpose Projects,

2010

INTRODUCTION

1.1 The Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose Project, 1989 had been prepared by the Project Appraisal Organisation (PAO), Central Water commission (CWC) on the basis of the recommendations of the National Conference of Irrigation and Water Resources Ministers held in July, 1986 (**Annexure-1**).

1.2 The existing procedure for scrutiny examination of Irrigation & Multi-purpose projects by CWC and acceptance by Planning commission for inclusion in the State Development Plan was drawing attention of the MoWR due to pendency of many projects cleared by the Advisory Committee but awaiting investment clearance from Planning Commission in absence of clearance from Ministry of Environment & Forests (MoEF), Ministry of Tribal Affairs (MoTA), State Finance Desk and other agencies. Meanwhile the Planning Commission also simplified procedure of investment clearance to the projects other than those on inter-State river vide their letter Nos. 16(12)/96-I&CAD dated 17th November, 1997 (**Annexure-2**), 16(12)/96-I&CAD dated 7th January, 1998 (**Annexure-3**) and 16(12)/99-WR dated 30th November, 2000 (**Annexure-4**). Hence modifications in the existing appraisal procedure for inter-State projects in the CWC had become essential.

1.3 Accordingly, the existing procedure of project appraisal of Irrigation, Flood Control & Multipurpose Projects for both major and medium projects, which are having inter-State ramification, had been revised to accommodate various subsequent changes in guidelines of the Planning Commission and first revised Guidelines in this respect were issued in 2002. As per the Guidelines 2002, the concerned State Government in the initial stage submits preliminary report covering surveys and investigations, international/inter-State aspects, hydrology,

irrigation planning, brief environmental aspects, intended benefits, etc. which are required to establish soundness of the project proposal. The project proposal is examined and if found acceptable, the CWC conveys 'In Principle' consent to the State Government for preparation of Detailed Project Report (DPR). Thereafter, DPR is prepared with up-to-date cost and simultaneously the Project Authorities process and obtain necessary clearances of the Ministry of Environment & Forests in respect of Environment Impact Assessment and Forest area being diverted. If Scheduled Tribe population is diverted, the clearance of R&R Plans is obtained from the Ministry of Tribal Affairs. The DPR thus prepared is examined in CWC. In States where central design and planning organizations do not exist, the CWC checks the designs also. The CWC finalizes the cost, B.C. ratio, internal rate of return etc. and the State Government obtains concurrence of the State Finance Department for the finalised cost. The project proposal, thereafter, is put up to the Advisory Committee for clearance, which is, by and large, like single window clearance.

1.4 Of late, it has been observed in some of the projects that, the State Government takes unduly long time in compliance of the observations of CWC and other Central Appraising Agencies. As a result, a number of project proposals remain in the pending list of CWC even for more than the plan period. By the time, the State Government submit the compliance of the observations; the project estimates become irrelevant and are required to be modified. In order to streamline such delay, the Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose project, 2002 has been a little bit modified with the inclusion of certain Para and detailed checklist.

1.5 The present modified Guidelines 2010 are applicable to major and medium projects on inter-State rivers or their tributaries.

1.6 The Procedure for submission, appraisal and clearance outlined in the modified guidelines shall now be followed by the State Governments, will come into effect from 31st August, 2010.

2 PRELIMINARY REPORT

2.1 On the basis of collection of requisite information as well as Surveys and Investigations, the preliminary report shall be prepared to contain brief and to the point chapters on General data, General Planning, Inter-State and International aspects, Surveys & Investigations including Geological investigation, Seismic investigation, Foundation investigation, Construction material survey, Hydrological and meteorological investigations etc. Hydrology, Drinking water requirements, Irrigation planning, plans for other intended benefits, Environmental and Ecological aspects, etc. required for initial assessment of soundness of the basic planning of the project proposal as per the check-list (**Annexure-5**). Applicable check-list shall also be attached to ensure that all the desired information is contained.

2.2 Eight sets of Reports in respect of Major projects shall be submitted to the Chief Engineer, Project Appraisal Organisation (PAO), Central Water Commission (CWC), New Delhi. Reports in respect of Medium Projects shall be submitted to respective regional offices of CWC under intimation to the Chief Engineer, PAO, CWC. The submission and clarifications/compliance of the observations shall be attended by the concerned Chief Engineer of the State.

2.3 The preliminary reports shall be quickly scrutinized in the Office where they are submitted. However, once a report is found acceptable, “In Principle” consent

of CWC for DPR preparation shall be communicated from the Office of the Chief Engineer, PAO, CWC after examination and clearance by a Screening Committee. The time schedule for according "In Principle" consent of CWC for preparation of DPR is given at **Annexure-6**.

2.4 While communicating the said consent, the project authorities will be advised for preparation/submission of DPR in accordance with CWC guidelines. They will also be advised to submit Environment Impact Assessment Report together with R&R Plan, Environment and Disaster Management Plans along with broad cost estimate. An application for forest clearance, if required, may be sent to the Ministry of Environment & Forest (MoEF) with a copy to the Chief Engineer, EMO, CWC. In case Schedule Tribe population is likely to be affected, the R&R Plan will also be submitted to the Ministry of Tribal Affairs (MoTA).

2.5 The project authorities shall ensure that all necessary actions are taken to obtain clearances from the above mentioned Ministries well in time after due appraisal and DPR is submitted along with these clearance, whenever required.

2.6 The submission and clearance of Environment Impact Assessment, R&R Plans etc. and Forest Clearance shall be governed by the prevailing norms and regulations of the related Ministries.

2.7 The 'In Principle' consent of CWC for DPR preparation for a project shall have a validity period of 3 (three) years. In case Investment clearance is not accorded to this project within this validity period, the `In Principle' consent will suo-moto lapse.

3 DETAILED PROJECT REPORT

3.1 Detailed Project Report (DPR) shall be prepared in accordance with applicable Indian Standards and "Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose Projects" issued by Govt. of India, MoWR (erstwhile Ministry of Irrigation)–1980, after detailed surveys and investigations. It must be ensured that duly completed check-list, salient features and all relevant details as well as maps, annexure, etc. as required by the aforesaid MoWR Guidelines are contained in the report and estimates are comprehensive as well as up-to-date in accordance with the existing guidelines issued by Central Water Commission (1997).

3.2 The clearances obtained in respect of Environment Impact Assessment, Forest, R&R Plans, etc. shall also be appended with DPRs and implied costs shall be duly accounted in the estimate.

3.3 Twelve sets of DPRs alongwith relevant clearances as per check-list (**Annexure-7**) in respect of Major Projects shall be submitted to the Chief Engineer, PAO, CWC for examination. In case of medium projects, proforma reports shall be prepared giving salient features, notes in respect of basic planning, international / inter-State aspects, hydrology, irrigation planning, storage planning, spillway capacity, rates of important items, abstract of cost estimates, benefit cost ratio, etc. and sufficient copies of the same shall be submitted to respective regional offices of CWC for examination under intimation to the Chief Engineer, PAO, CWC.

3.4 In case Design & Planning Organizations are existing in the concerned State or the State certifies that it has sufficient competency to design such projects and a certificate is furnished by them in prescribed proforma (**Annexure-8**) in respect of

their detailed examination/clearance of the project proposal and appraisal/clearance of the State level project Appraisal/Technical Advisory and Environmental Appraisal committees, examination of the project by CWC will be generally restricted to inter-State aspects, basic planning, hydrology and economic viability. In such cases only 8 sets of DPR for Major projects and 4 sets of proforma report in case of Medium projects may be sent to respective offices of CWC for examination.

3.5 In case CDO certificates are not appended with DPRs/proforma reports, they shall be scrutinized in detail. Major project proposals shall be examined in concerned Directorates of CWC, Ministry of Water Resources (MoWR), Ministry of Agriculture, Central Ground Water Board (CGWB) and other Central agencies in respect of items pertaining to their area of specialization/area of concern. During techno-economic appraisal, State compliance to CWC observations will be required to be submitted by an officer not below the rank of Chief Engineer/Equivalent competent Authority.

3.6 All projects in the Ganga-Brahmaputra-Meghna and Indus basins would be examined from International angle in the MoWR. The State Governments which have borders with neighbouring countries should in particular keep this in view while considering any project close to International borders right from the initial stage of investigation and planning. This applies to major as well as medium projects irrespective of the fact that a Central Design and Planning Organization exists in that State or not. Similarly inter-State aspects and implications shall be duly verified in ISM Dte., of CWC even in case of medium projects.

3.7 The final estimate shall be based on finalized designs and details of civil and hydraulic structures and economic analysis will be carried out by the Project Authorities/CWC adopting standard/accepted procedures. The project authorities will also submit concurrence of the State Finance for the finalized cost.

3.8 Once techno-economic viability of a Project Proposal is established, a comprehensive note and check-list, duly finalized by PAO, CWC shall be circulated among Members of Advisory Committee of MoWR (Composition at **Annexure-9**) for consideration and clearance of Irrigation, Flood Control and Multipurpose Project Proposals.

3.9 The State Engineers of the level of Chief Engineer/Superintending Engineer associated with the project formulation/design will be invited to attend the Advisory Committee meeting so as to furnish information/ clarifications, if any, sought by the Members of the Advisory Committee.

3.10 On the basis of examination conducted by the Advisory Committee, decision on techno-economic viability of the projects is taken in the meeting of this Committee.

3.11 The projects found acceptable by the Advisory Committee shall be recommended for investment clearance by the Planning Commission and inclusion in the Five Year Plan/Annual Plan.

3.12 Normally for project proposals submitted with CDO certificates, appraisal will be completed within six months and for other proposals it would be completed

within 12 months provided response of the concerned State in respect of the observations of Central Agencies are received within 3 months. In case the technical issues are not settled and/or other requirements for TAC clearance viz., clearances of MoEF, MoTA, TAC of concerned state, etc., and State Finance Concurrence for the estimated cost are not furnished within one year, the project shall be treated as returned.

4 REVISED PROJECT/ ESTIMATE

4.1 In case of major and medium projects which have been approved by the Planning Commission and where the revised estimates of the project have increased by more than 15% of the original estimates, excluding escalation due to price-rise, or where there is change in scope i.e. change in projects parameters resulting in change in nature and benefits such as CCA, installed capacity, energy generation etc., Revised project Reports including Estimates will be furnished to CWC for examination as new major/medium schemes and the procedure for scrutiny for such revised project/estimates shall be same as outlined in the preceding chapters. Statement of excess costs, as detailed in Para 4.4 shall also be appended with the revised estimates.

4.2 The revised estimate for Major Irrigation and Multipurpose Projects, where there is no change in scope shall be critically examined in the State Standing Committee before submission to CWC. The estimates shall be submitted to CWC incorporating the action taken report on the recommendations of the committee as per direction of the Planning Commission vide circular No. 16(12)/2003/WR dated 18.05.2004 (**Annexure-10**).

4.3 The revised estimates for medium projects in which there is no change in scope can be approved by the TAC of concerned State under intimation to CWC, MoWR and Planning Commission as per direction of the Planning Commission vide circular No. 16(12)/2003/WR dated 18.05.2004 (**Annexure-10**). In this regard, a State Government will have to first satisfy the CWC that there has no change in the scope of the project and obtain their clearance for this before approving revised cost. If required, CWC will carry out a site inspection of the project before issue of no objection.

4.4 In respect of revised project estimates for Major Irrigation and Multipurpose Projects where there is no change in the scope and where the costs excluding escalation due to price rise have not changed by more than 15%, the concerned State Govt. need not forward detailed estimates for examination at Centre. For such projects/estimates the State Govt. should send project-wise statements of excess costs to CWC giving the abstract of costs under major sub-heads indicating the excess costs over the sanctioned costs and reasons thereof after obtaining concurrence of the State Finance Department. The covering note will include the salient features of the project contemplated in original proposal and that being executed at site. The CWC will examine such estimates broadly and send its views to the Advisory Committee for consideration and recommendation of the Planning Commission.

4.5 Time for appraisal of the revised estimates in CWC as well as response time for compliance by the concerned State Government shall be same as per para-3.12.

4.6 When revised estimates are prepared during construction, the quantities of items completed should be indicated separately and the cost thereof assessed on

the basis of actual expenditure. Any liability arising out of the contract for the completed work and affecting the cost should also be considered in the estimate.
For works in progress, the estimates should be based on contract rates. If the contract document contains any clause for escalation on the prices of materials and labour wages subsequent to the award of contract, the amount involved should be assessed and included in the estimate.

For works, not covered in any contract, prevailing local rates may be taken for items covered in the Schedule of Rates and for remaining items rates may be adopted on the basis of analysis of rates, prepared in accordance with the guidelines issued by CWC.

In case of any doubt on the viability of rate of any item, a certificate from the State/ Project Chief Engineer, duly justifying reasonability of the rate, shall generally be taken as final and acceptable.

Annexure-1

EXTRACT OF "SUMMARY RECORD OF NATIONAL CONFERENCE OF IRRIGATION AND WATER RESOURCES MINISTERS OF STATE AND UNION TERRITORIES HELD IN NEW DELHI, JULY 86"

2.2 Project Clearance

The Conference felt that improvement in project preparation at the State level would be an essential step to reduce the time taken for the techno-economic examination of projects at the Centre. For speedy clearance it recommended the following steps:

i) The projects should not be sent to the Centre for techno-economic examination unless these have be thoroughly and comprehensively prepared on an integrated basis by a multi-disciplinary Cell in conformity with the guidelines laid down for the purpose.

ii) The State Government should indicate their priorities for examination of projects in CWC at the time of Annual Plan discussions.

iii) Medium irrigation projects should be examined in the State's Design Organizations wherever existing and only thereafter these may be sent to the Central Water Commission for information with regard to water accounting. Where State design Organizations do not exist the present procedure will continue. Inter-State aspects of medium projects are, however, required to be cleared by the Centre.

iv) In case there is a Central Design Organization in the State Irrigation Department and the major projects are examined in such Organization before these are sent to the CWC, the examination of such projects in the Central Water Commission may be restricted to the scrutiny of Inter-State aspects, hydrology, water accounting and economic viability. In case, there is no Central Design Organization in the State irrigation Department, the major project reports will continue to be examined in the Central Water Commission as per existing procedure.

v) Central agencies in turn should review the procedures for techno-economic and other scrutinizes in consultation with the State and Union Territories and try to ensure that examination by diverse agencies run parallel and not in sequence and are completed within prescribed time-limits.

Annexure-2

No. 16(12)/96-I&CAD
Planning Commission
(I&CAD Division)

Sansad Marg, New Delhi
November 17, 1997.

To

The Chief Secretary of
All States/UTs

Subject: Revised Guidelines for Investment Clearance by the Planning Commission in respect of Medium Irrigation Schemes.

Sir,

1. The procedure for submission and examination of irrigation projects was laid down by the Planning Commission in its letter No. III-I(1)65-IP dated 25th July, 1966. This was modified vide letter of even number dated 4th January, 1968. The revised classification of major and medium irrigation schemes was circulated by the Planning commission vide letter No. II-11(42)72-I&CAD dated 25th September, 1975.

2. Keeping in view the policy of decentralization, the relaxation in the existing procedure has been under consideration of the Planning Commission for quite some time. Accordingly, the revised guidelines for investment approval for irrigation projects under State Plans are issued as under:

(a) The Planning Commission shall hereafter accord investment clearance in case of all major irrigation and / or multipurpose projects and in the case of medium irrigation, only for those projects where Inter-State angle is involved.

(b) The State Governments are hereby empowered to accord investment approval for medium irrigation schemes that do not involve any Inter-State aspect(s). However, in case of medium irrigation projects having Inter-state aspects/issues, such schemes would need techno-economic appraisal by Central Water Commission, and the Advisory Committee on Irrigation, Flood Control and Multipurpose Projects in the Ministry of Water Resources as well as investment clearance by the Planning Commission as per the procedure in vogue.

(c) Before according the investment approval to a medium irrigation scheme, the State Government should take into account the committed liabilities of on-going schemes vis-à-vis the availability of resources for the implementation of such scheme in the Plan so that available resources are not thinly spread over number of schemes resulting in time and cost overruns. For this purpose, the State Irrigation/Water Resources Deptt. should obtain the clearance from their State Planning Department.

(d) Also, the State Government. shall obtain all required statutory clearance(s) from the Ministry of Environment & Forest and Ministry of Welfare like environmental clearance. Forest clearance, approval for rehabilitation and resettlement Plan and all other clearance, as may be required before the investment approval is accorded.

(e) Before according investment approval, the State Government. shall satisfy itself that:

(i) the schemes have been prepared after adequate investigation;

(ii) the estimates are complete and correct technically;

(iii) the financial forecasts and estimates of benefits anticipated are based on reliable and accurate data; and

(iv) the need of environment conservation and proper rehabilitation of project – affected persons have been taken into account.

If required, the States can seek the assistance of Central Water Commission in the design of dams, barrages and canals etc.

(f) The State Governments shall intimate the copy of the investment clearance accorded by them in respect of eligible medium irrigation schemes to the Planning Commission, Ministry of Water Resources, Central Water Commission and all concerned Central Ministries / Organizations.

3. These revised guidelines take place with immediate effect.

Yours faithfully,

Sd/-

(B.N. Navalawala)
Adviser (I&CAD)

Copy for information to:

1. Cabinet Secretary, Cabinet Secretariat, Rashtrapati Bhawan, New Delhi – 110001.
2. Principal Secretary, Prime Minister's Office, South Block New Delhi.
3. Secretary to President, President Estate, New Delhi.
4. Secretary, Ministry of Water Resources, Shram Shakti Bhawan, New Delhi.
5. Secretary, Ministry of Agriculture (Deptt. of Agri. & Cooperation), Krishi ,Bhawan, New Delhi.
6. Secretary, Ministry of Environment & Forests, New Delhi.
7. Secretary. Ministry of Welfare, Shastri Bhawan, New Delhi.
8. Chairman, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi.
9. Joint Secretary, Ministry of Finance, Deptt. of Expenditure, Plan Finance II, North Block, New Delhi.
10. Chief General Manager, NABARD, Sterling Centre, Post Box No. 6552, Dr. Annie Besant Road, Worli, Mumbai-18
11. Irrigation Secretary of all the States / Administrator of U.Ts.
12. Principal Adviser (Admn)/Adviser (P&E), Planning Commission.
13. Information Officer, Planning Commission

Sd/-

(B.N. Navalawala)

Annexure-3

CLARIFICATION OF PLANNING COMMISSION REGARDING INTER- STATE RAMIFICATION

No. 16(12)/96-I&CAD
Planning Commission
(I&CAD Division)
Sansad Marg, New Delhi – 110001
January 7, 1998

To

The Chief Secretary of
All States/UTs

Subject: Revised Guidelines for Investment Clearance by the Planning Commission in respect of Medium Irrigation Schemes.

Sir,

Recently, the Planning Commission vide letter of even number dated 17.11.1997 on the above cited subject have issued Revised guidelines for investment clearance in case of medium irrigation projects.

2. In continuation, it is hereby clarified that any medium project which is located on an Inter-State or its tributary will be deemed to involve inter-state aspects/issues and thereby the projects on this category are not covered by the above guidelines and, as such, shall need investment clearance from the Planning Commission as per the procedure in vogue. Before consideration of a medium irrigation project for investment clearance, the concerned State/UT Govt. shall approach the Central Water Commission to obtain the confirmation / certification from the CWC to the effect that proposed medium project is not located on an inter-state river or its tributary. The Central Water Commission shall confirm/certify or otherwise to this effect within 4 week's time from the date of receipt of a State's such reference in CWC.

3. Further, it has now been decided in consultation with the CWC that the scrutiny of medium irrigation projects at CWC shall henceforth be completed in 18 weeks' time from the date o receipt of project proposal in CWC where the inter-state aspects have been resolved and hydrology and economic viability of the project is found acceptable. Whereas, in case of major irrigation and multipurpose

projects, the scrutiny at CWC shall henceforth be completed in 38 weeks' time from the date of receipt ;of DPR in CWC. Accordingly, the Central Water Commission will be shortly issuing revised guidelines for submission, appraisal and clearance of irrigation & multipurpose projects in lieu of prevailing guidelines issued by them in the year 1989.

4. The above guidelines shall be treated as part of the revised guidelines issued under Planning Commission's letter of even number dated 17.1.1.1997, copy thereof enclosed for ready reference.

Thanking you,

Yours faithfully,
Sd/-
(B.N. Navalawala)
Adviser (I&CAD)

Copy for information to:

1. Cabinet Secretary, Cabinet Secretariat, Rashtrapati Bhawan, New Delhi – 110001.
2. Principal Secretary, Prime Minister's Office, South Block New Delhi.
3. Secretary to President, President Estate, New Delhi.
4. Secretary, Ministry of Water Resources, Shram Shakti Bhawan, New Delhi.
5. Secretary, Ministry of Agriculture (Deptt. of Agri. & Cooperation), Krishi Bhawan, New Delhi.
6. Secretary, Ministry of Environment & Forests, New Delhi.
7. Secretary. Ministry of Welfare, Shastri Bhawan, New Delhi.
8. Chairman, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi.
9. Joint Secretary, Ministry of Finance, Deptt. of Expenditure, Plan Finance II, North Block, New Delhi.
10. Chief General Manager, NABARD, Sterling Centre, Post Box No. 6552, Dr. Annie Besant Road, Worli, Mumbai-18
11. Irrigation Secretary of all the States / Administrator of U.Ts.
12. Principal Adviser (Admn)/Adviser (P&E), Planning Commission.
13. Information Officer, Planning Commission

Sd/-
(B.N. Navalawala)

Annexure-4

No. 16(12)/99-WR
Planning Commission
(Water ResourcesDivision)

Yojana Bhavan, Sansad Marg,
New Delhi – 110001
DATED 30.11.2000

To

All Chief Secretaries of
States/UTs

Subject: Revised Guidelines for Investment Clearance by the Planning Commission in respect of Irrigation and Flood Control Projects.

Sir,

Keeping in view the policy of decentralization, the guidelines for investment approval by the Planning Commission for Irrigation and Flood Control including drainage projects under the State Plans are revised as detailed below:

(1) All major and or multi-purpose and medium irrigation projects and flood control including drainage projects which have Inter-State ramifications will be subject to techno-economic appraisal in CWC and then approval by the Advisory Committee on Irrigation. Flood Control and Multi-purpose projects in the MoWR before the investment clearance of such projects / schemes is accorded by the Planning Commission and in this case the prevailing procedure would continue. Guidelines issued earlier vide letter Nos. 16(12)/96-I&CAD dated 17.11.97, No. 16(12)/96-I&CAD dated 7.1.98 and No. 16(12)/1/99-I&CAD dated 18.6.99 refer in this regard.

(2) The State Governments are hereby empowered to accord investment approval for the major and or multipurpose & medium irrigation projects and flood control including drainage projects which do not have inter-State ramifications. It is also clarified that any project which is located on an inter-State river or its tributary will be deemed to involve inter-State ramification and as such shall need investment clearance from the Planning commission as per the para (1) above.

(3) Before according the investment approval to the schemes/ projects, the concerned State/UT Government will first obtain as a pre-requisite a certificate from the Central Water Commission in case of major and medium irrigation (and multi-purpose) projects whereas for flood and drainage projects schemes, a

certificate from Ganga Flood Control Commission in case of all Ganga Basin State, the Brahmaputra Board in case of all the North Eastern States including Sikkim and CWC in case of all other States to the effect that such project/scheme does not have any inter-State ramifications/implications.

(4) The State Government should take into account the committed liabilities of ongoing schemes vis-à-vis the availability of resources for the implementation of such scheme in the Plan so that available resources are not thinly spread over number of schemes resulting in time and cost overruns. For this purpose, the State Irrigation / Water Resources Department should obtain the clearance from their State Planning Department.

(5) Also the State Government shall obtain all required statutory clearance (s) form the Ministry of Environment & Forests and Ministry of Social Justice and Empowerment like environmental clearance. Forest clearance, approval for rehabilitation and resettlement plan and all other clearances, as may be required before the investment approval is accorded.

(6) Before according investment approval, the State Government shall satisfy itself that:

(a) the schemes have been prepared after adequate investigations;

(b) the estimates are complete and correct technically;

(c) the financial forecasts and estimates of benefits anticipated are based on reliable and accurate data; and

(d) the need of environment conservation and proper rehabilitation of project-affected persons have been taken into account.

(7) The State Governments shall intimate the copy of the investment clearance accorded by them in respect of eligible schemes to the Planning Commission. Ministry of Water Resources/ Central Water Commission and all concerned Central Ministries Organizations.

The above revised guidelines take place with immediate effect.

Yours faithfully,
Sd/-

(B.N. Navalawala)
Adviser (WR)

Copy for information to:

1. Cabinet Secretary, Cabinet Secretariat, Rashtrapati Bhawan, New Delhi – 110001.
2. Principal Secretary, Prime Minister's Office, South Block New Delhi.
3. Secretary to President, President Estate, New Delhi.
4. Secretary, Ministry of Water Resources, Shram Shakti Bhawan, New Delhi.
5. Secretary, Ministry of Agriculture (Deptt. of Agri. & Cooperation), Krishi Bhawan, New Delhi.
6. Secretary, Ministry of Environment & Forests, New Delhi.
7. Secretary. Ministry of Social Justice & Empowerment, Shastri Bhawan, New Delhi.
8. Chairman, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi.
9. Chairman, Ganga Flood Control Commission, Patna, Bihar..
10. Chairman, Brahmaputra Board, Guwahati, Assam.
11. Joint Secretary, Ministry of Finance, Department of Expenditure, Plan Finance, North Block, New Delhi.
12. Chief General Manager, NABARD, Sterling Centre, Post Box No. 6552, Dr. Annie Besant Road, Worli, Mumbai-18
13. Irrigation Secretary of all the States / Administrator of U.Ts.
14. Adviser (Admn)/Adviser (P&E), Planning Commission.
15. Information Officer, Planning Commission

Sd/-
(B.N. Navalawala)
Advisor (WR)

Annexure-5

Check List for Preliminary Report

1. Does the Preliminary Report contain the chapters on:

   i) General Data:

   This chapter would include the location, category and other physical features of the project.

   ii) General Planning:

   This chapter would include the discussion on the master plan for overall development of river basin and stages of basin development, alternative proposals of the project with their merits and demerits, priority of the project in the overall development of the basin, the effect of the scheme on the riparian rights existing upstream and downstream of the project, etc.

   iii) Inter-state and International Aspects:

   This chapter would include the Inter-state and International issues identified and present status of agreement indicated especially in respect of sharing of water, sharing of costs, sharing of benefits, acceptance of the submergence by the upstream state(s), compensation of land coming under submergence, settlement of oustees and any other issue if so. If there is no agreement between the states exists, the present position against the aforementioned items may be stated.

   iv) Survey & Investigations:

   This chapter would include detailed topographical surveys in respect of river, reservoir, head works (dams, dykes, barrages, weirs and other auxiliary component), plant site and colonies, canals, branch canals

and water conductor systems, major canal structure, power house, tunnels, adits, penstocks, command area for OFD and drainage works, soil conservation, etc. Apart from the above, the geological investigation, seismic investigation, foundation investigation and construction material survey for the project should also be discussed.

v) Hydrology:

This chapter would include an index map and bar chart showing locations of various hydrometric, climatic and rainfall stations and the data availability at those stations. A brief note about quality, consistency, processing and gap filling of the data should be furnished. Apart from the above, the availability of water for the benefits envisaged, design flood for the various structures, sedimentation studies, simulation studies, flood routing studies, backwater studies, etc, should also be carried out and discussed.

vi) Irrigation Planning:

This chapter would include all aspects of irrigation planning.

vii) Planning for other intended benefits:

This chapter would include a brief details of other benefits like flood control and drainage, power, drinking water requirements, etc.

viii) Environmental and Ecological Aspects:

Annexure-6

FLOW CHART FOR EXAMINATION OF PRELIMINARY REPORTS ON IRRIGATION AND MULTI-PUROSE PROJECTS (MAJOR)

TOTAL DURATION: 18 WEEKS

Preliminary Examination in the Appraisal Directorates and Circulation to specialized Directorates of CWC

(1 Week)

Examination in the various specialized Directorates of CWC and transmission of first set of comments to State.

(4 Weeks)

Submission of State's replies to the Comments raised by the Appraisal Directorates of CWC/ other central agencies including further studies and investigation etc.

(4 Weeks)

Examination of state's replies and discussion with the project engineers for finalization in the CWC

(6 Weeks)

(If required)

Preparation of Note by the Appraisal Directorates for the Screening Committee of CWC for conveying In-Principle Consent for preparation of DPR or otherwise.

(3 Weeks)

Annexure-7

Check List for Detailed Project Report

1. Whether the "In Principle" consent of the proposal been accorded by CWC ?
2. Date of issue of the "In principle" consent of the project proposal.
3. Whether the DPR has been submitted within the stipulated period ?
4. Whether the DPR has been prepared as per the existing guidelines of Ministry of Water Resources (erstwhile Ministry of Irrigation) ?

   (Please refer check-list enclosed in Working Group Report Guidelines for preparation of Detailed Project Report of Irrigation and Multipurpose projects-1980)

5. Whether the State has Planning and Design Organisation ?
   - i) If yes, whether certificate (along with date) has been issued by the organisation that the Design organisation is competent enough to check the design of all the components of the project and all the structural components as mentioned in the DPR are safe and economical ?
   - ii) If no, whether detailed design and drawings of all the structural components are attached ?
6. Whether the DPR has been submitted with;
   - i) Forest clearance accorded by MoEF (if required).
   - ii) Environmental clearance accorded by MoEF (if required).
   - iii) R&R clearance accorded by MoTA (if required).
   - iv) Clearance from other Ministries/Department (if required)
   - v) State Finance Concurrence.

     If yes, date of their clearance.

     If no, expected date of their clearance.

Annexure-8

Sample Letter of Clearance of Major / Medium Irrigation / Multi-purpose Projects by the CDO of the State Govt.

To

The Chief Engineer,
Project appraisal Organization,
Central Water Commission
Sewa Bhavan, R.K. Puram,
New Delhi – 110066

Subject: Clearance ---------- Major/ Medium Irrigation/ Multipurpose Project.

The above project has been examined in the Central Design Organization with reference to the Checklist as per guidelines for preparation of DPR 1980 and it is found that:

i) All necessary surveys and investigations for planning of the project and establishing its techno-economic feasibility have been carried out as per the aforementioned guidelines.

(ii) 10%/5000 ha. of the command area of the project (whichever is minimum) has been investigated in full details in three patches representing terrain conditions in the command for estimation of the conveyance system upto the last farm gates.

(iii) 10% of the Canal structures have been investigated in full detail.

(iv) Detailed Hydrological, geological, construction material investigations, have been carried out for all major structures i.e. dams, weirs, main canal, branch canal up-to distributaries carrying a discharge of 10 cumecs.

(v) Soil survey of the command has been carried out in detail as per IS 5510-1969.

(vi) Necessary designs for the various components of the project has been done in accordance with the guidelines and relevant Indian Standards.

(vii) Necessary studies for utilization of ground water have been done with special regard to problem of water logging and suitable provisions have been made for conjunctive use of ground water & drainage arrangements.

(viii) The cropping pattern has been adopted in consultation with the State Agriculture Department and are based on soil surveys of the command keeping in view the national policy in respect of encouraging crops for producing oil seeds and pulses.

(ix) The cost estimates and economic evaluations are carried out as per guidelines issued by the Central Water Commission.

(2) The project has also been examined by the State level Project appraisal / Technical Advisory Committee comprising representative of Irrigation, Agriculture, Fisheries, Forests, Soil Conservation, Ground Water, Revenue and Finance Deptt and State level Environmental Committee etc. and techno-economic feasibility of the project has been established.

(3) The project is recommended for clearance by Centre and approved by Planning Commission.

Chief Engineer,
Central Design Organization,
Irrigation Water Resources Department,
Govt. of----------

Annexure-9

(TO BE PUBLISHED IN THE GAZETTE OF LINDIA PART – I SECTION – I)

No. 12/5/86-P-II
Government of India
Ministry of Water Resources
New Delhi,

27th November, 1987.

RESOLUTION

Sub: Advisory Committee for Consideration of techno-economic viability of Major, Medium Irrigation, Flood Control and Multipurpose project proposals.

1) A Committee for recommending projects to be included in the Second Five Year Plan was set up by the Planning commission, vide their Resolution No. PC(V)/IV(5)/54, dated the 20th February, 1954. Later, the Planning Commission constituted an Advisory Committee for Irrigation, Flood Control and Multipurpose projects, vide their letter No. II-16(25)(1)/76-I&CAD, dated the 27th September, 1976. This Committee was entrusted with the function of getting the project examined by the Central Water Commission and Central Electricity Authority, as required to determine their techno-economic viability.

(2) The arrangements for scrutiny of techno-economic viability of irrigation, flood control and multipurpose projects have been reviewed by Government and it has been decided that the Advisory Committee constituted by the Planning Commission will be replaced by an Advisory Committee in the Ministry of Water Resources which will scrutinize proposals for major / medium irrigation, flood control and multi-purpose projects.

(3) The Committee shall consist of the following:

(i)	Secretary, Ministry of Water Resources	-	Chairman
(ii)	Chairman, Central Water Commission	-	Member
(iii)	Secretary (Expenditure), Ministry of Finance or his Nominee	-	Member

(iv)	Secretary, Department of Power, Ministry of Energy or his Nominee.	-	Member
(v)	Secretary, Department of Environment & Forest or his Nominee	-	Member
(vi)	Secretary, Department. of Agriculture & Cooperation or his Nominee	-	Member
(vii)	Secretary, Ministry of Welfare or his Nominee	-	Member
(viii)	Director-General, ICAR or his nominee	-	Member
(ix)	Chairman, Central Electricity Authority	-	Member
(x)	Advisor (I&CAD), Planning Commission	-	Member
(xi)	Advisor (Energy), Planning Commission	-	Member
(xii)	Financial Advisor , Ministry of Water Resources	-	Member
(xiii)	Chairman, Central Ground Water Board	-	Member
(xiv)	Chief Engineer (PA), CWC	-	Member-Secretary

(4) The Nominees will not be below the rank of Joint Secretary. The committee may also invite representatives of any other Government organizations, scientific body of experts in the relevant fields to participate in its deliberations.

(5) The functions of the Committee will be to examine projects proposed by State Governments, Central Government or other organizations and satisfy itself that:

i) the schemes have been prepared after adequate investigations;
ii) the estimates are complete and correct technically;
iii) the financial forecasts and estimates of benefits and anticipated are based on reliable and accurate data; and
iii) the need of environment conservation and proper rehabilitation of project-affected persons have been taken into account.

(6) The project proposals will be received in the Central Water commission which will carry out initial scrutiny in consultation with other concerned agencies and provide secretarial assistance to the Committee, which may modify, as necessary, the procedure for receipt of project proposals and their examination.

(7) On the basis of the examination conducted by the Committee, the Ministry of Water Resources would convey the decision on techno-economic viability of the

projects. Their inclusion in the Five Year Plans or Annual Plans, as the case may be, could be decided by the Planning Commission having regard to the objectives and strategy of the Plan.

Sd/-
(S. Kanungo)
Additional Secretary

ORDER

ORDERED that this Resolution be communicated to all the State Governments, Ministries/ Departments of the Government of India, the Comptroller and Auditor-General of India, Prime Minister's Office, President's Secretariat and Planning Commission.

ORDERED also that the Resolution be published in the Gazette of India.

Sd/-
(S. Kanungo)
Additional Secretary

The General Manager,
Government of India Press,
FARIDABAD (with Hindi version)

Annexure-10

No.16/(12)/2003/WR
Government of India
Planning Commission
(WR Division)

Yojana Bhawan, New Delhi the 18th May 2004.

To

The Chief Secretary,
Govt. Of

Subject: Revised estimates of major, multipurpose & medium irrigation projects on inter-state rivers.

Sir,

The procedure for getting revised estimates of major, multipurpose & medium irrigation projects on inter-state rivers as outlined in the guidelines issued by the Central Water Commission in 2002 for submission, appraisal and clearance of irrigation and multipurpose projects. A copy of the relevant extract is enclosed for ready reference. On a review of the position of submission of revised estimates by state governments and getting them approved as per prescribed procedure, it is seen that only in a very few cases, the state governments have got revised estimates approved. Such approvals sought are mostly confined to the first revision only and not the subsequent revisions. The latest estimated cost of practically all the irrigation projects in the country is thus unapproved. A state finance department have been permitting expenditure on projects much beyond the approved cost. In some cases, the state governments accord administrative approvals themselves for the revised cost without submission of the same to the CWC.

2. Keeping these facts in view, it has been decided to adopt the following procedure for submission of revised estimates of irrigation/multipurpose projects with immediate effect.

i) While according investment clearance, Planning Commission will make a specific mention in the clearance order requesting State Finance Department not to permit expenditure on the project beyond the approved cost unless the revised estimate is got approved following the prescribed procedure.

ii) For major irrigation/multipurpose projects, State Governments will constitute a Standing Committee of State Finance, Planning & Water Resources Secretaries who will examine critically the reasons for cost overrun and give their report with relevant/findings recommendations. The revised estimate will be submitted by the State Governments thereafter to the CWC together with this report and action taken report on the findings/recommendations of the committee. CWC will thereafter examine the revised estimates on a fast track basis. The Standing Committee will be serviced by the State Irrigation/Water Resources Department for providing necessary documents, etc.

iii) For medium irrigation projects, where there is no change in scope of the project, State Governments may themselves approve the revised estimate as per procedure for such approvals in the states. A copy of such approval may be endorsed to CWC, MoWR & the Planning Commission State Governments will have to first satisfy the CWC that there has been no change in the scope of the project and obtain their clearance for this before approving revised cost of medium projects. If required, CWC will carry out a site inspection of the project before issue of no objection. For projects where there is change in scope in terms of storage capacity, CCA, length of canals etc., the [procedure in (ii) above will be followed.

3. State Governments are requested to ensure strict compliance of the above revised procedure with a view to bring in more fiscal discipline and accountability in the irrigation sector.

4. For ongoing approved projects, State Governments are urged to expeditiously submit the revised estimates to the CWC in a time frame of say 6 months. For ongoing unapproved projects, State Governments may obtain quickly the required statutory and other clearances, update costs where required and submit it to the CWC for appraisal so that the projects can be accorded investment clearance thereafter.

Yours faithfully,

Sd/

(A. Sekhar)
Adviser (WR)

Annexure-IX

सत्यमेव जयते

GOVERNMENT OF INDIA

GUIDELINES FOR SUBMISSION, APPRAISAL AND ACCEPTANCE OF IRRIGATION AND MULTIPURPOSE PROJECTS, 2017

CENTRAL WATER COMMISSION

MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION

NEW DELHI

CONTENTS

APPENDIX

,l elngllu
S MASOOD HUSAIN

MEMBER (WP&P)
Central Water Commission
MoWR, RD&GR,
Government of India
2nd Floor, Sewa Bhawan, R.K. Puram,
New Delhi-110066

Preface

India, with its monsoon climate and agriculture dominated livelihood, heavily relies on assured water availability with requisite quality, in order to serve its large population. Water being a state subject, State Governments are primarily responsible to plan, execute and monitor water resources projects in order to meet these requirements as per local conditions.

Central Water Commission (CWC), a premier technical organization in the field of Water Resources in India for the past 72 years, has been involved in appraising the major & medium irrigation, flood control & multipurpose projects. For streamlining the submission, appraisal and acceptance of irrigation & multipurpose project proposals from the States, Guidelines originally issued in 1980, were earlier revised twice, in 1997 and in 2010.

The 2010 guidelines have now been revised considering the fast approaching technology adoption and governance progression since the earlier revision, keeping the core of the guidelines of 2010 intact. A web enabled Project Appraisal Management System (e-PAMS) is being introduced which will bring the complete appraisal process online, thus further promoting the spirit of transparency & accountability. In addition to this, consultative mode of Detailed Project Report (DPR) preparation is being introduced, in which specialized directorates of CWC shall provide their aspect wise technical expertise to the concerned project authority at the DPR preparation stage itself. The present mechanism provides a simplified appraisal process with compressed timelines of the constituent processes involved, which will further cut down possibility of delay in the appraisal process.

The instant revised version of guidelines is based on deliberation/discussions held within CWC in consultation with State Governments, Central Government Agencies and other stake holders.The Guidelines have been finalized after the Committee of Secretaries headed by Cabinet Secretary reviewed these in a meeting held on 04.07.2016. Subsequently these Guidelines have been approved by the Ministry of Water Resources, River Development and Ganga Rejuvenation in January 2017.

The commendable efforts and hard work put in by officers of Project Appraisal Organization (PAO), Irrigation Management Organization (IMO), various specialized directorates of CWC and other concerned central agencies in firming up the guidelines, are deeply acknowledged. **It is hoped that this will serve the intended purpose of guiding & assisting the State Governments**, and enhancing the efficiency of appraisal process of Irrigation & Multipurpose Water Resources projects**.**

(S. Masood Husain)
Member (WP&P), CWC

GUIDELINES FOR SUBMISSION, APPRAISAL AND ACCEPTANCE OF IRRIGATION AND MULTIPURPOSE PROJECTS, 2017

1. INTRODUCTION

1.1 The Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose Project, 1989 had been prepared by the Project Appraisal Organisation (PAO), Central Water Commission (CWC) on the basis of the recommendations of the National Conference of Irrigation and Water Resources Ministers held in July, 1986 **Annexure-1**.

1.2 The procedure of project appraisal of Irrigation, Flood Control & Multipurpose Projects for both major and medium projects, which are having inter-State ramification, had been revised to accommodate various subsequent changes in Guidelines of the Planning Commission and first revised Guidelines in this respect were issued in 2002. As per the Guidelines 2002, the concerned State Government in the initial stage submits preliminary report covering surveys and investigations, international / inter-State aspects, hydrology, irrigation planning, brief environmental aspects, intended benefits, etc. which are required to establish soundness of the project proposal. The project proposal is examined and if found acceptable, CWC conveys 'In-Principle' consent to the State Government for preparation of Detailed Project Report (DPR). Thereafter, DPR is prepared with up-to-date cost and simultaneously the Project Authorities process and obtain necessary clearances of the Ministry of Environment & Forests in respect of Environment Impact Assessment and Forest area being diverted. If Scheduled Tribe population is diverted, the clearance of R&R Plans is obtained from the Ministry of Tribal Affairs. The DPR thus prepared is examined in CWC. In States where central design and planning organizations do not exist, the CWC checks the designs also. The CWC finalizes the cost, B.C. ratio, etc. and the State Government obtains concurrence of the State Finance Department for the finalised cost. The project proposal, thereafter, is put up to the Advisory Committee for clearance, which is, by and large, like single window clearance.

1.3 It was further observed in some of the projects that the State Government takes unduly long time in compliance of the observations of CWC and other Central Appraising Agencies. As a result, a number of project proposals remain in the pending list of CWC even for more than the plan period. By the time, the State Government submits the compliance of the observations; the project estimates become irrelevant and are required to be modified. In order to streamline such delay, the Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose projects, 2002 was modified and the Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose projects, 2010 was formulated.

1.4 Subsequently, meeting of the Committee of Secretaries (CoS) was held on 04.07.2016 and further revision of the Guidelines based on the recommendation of the CoS and past experiences had been done which includes revision, addition, alteration in the existing Guidelines. Highlights of modifications which have been incorporated in these Guidelines are at **Annexure - 2.**

1.5 The present modified "Guidelines for Submission, Appraisal and Acceptance of Irrigation and Multipurpose projects, 2017" are applicable to major, medium irrigation and multi-purpose projects on inter-State rivers or their tributaries.

1.6 The Major sub-projects, submitted as part of agglomeration of number of Major, Medium, Minor sub-projects under common project title, would be appraised as individual Major Projects while the Medium sub-projects would be treated as "equivalent number of Major projects" based on the cumulative sum of the CCA of all the medium sub-projects and accordingly the timelines for appraisal of such projects would be revised suitably. In case of minor sub-projects of such agglomerated project, techno-economic acceptance would be given by State TAC and no separate appraisal would be undertaken in CWC.

2 WEB ENABLED PROJECT APPRAISAL MANAGEMENT SYSTEM (E-PAMS)

2.1 Pre-Feasibility Report (PFR), Detailed Project Report (DPR), Revised Cost Estimates (RCE) and Investment Clearance proposals shall be submitted by the Project Authority to CWC only through web enabled system on CWC website. Hard copies submitted to CWC without on-line submission through e - PAMS will not be accepted and considered for examination till submission on e-PAMS.

2.2 However, as e - PAMS is under development in CWC / NIC, till the time the e-PAMS is implemented, sufficient numbers of hard copies and soft copy of PFR / DPR / RCE may be submitted to CWC along with the entire checklist, as applicable, as per these Guidelines. If PFR/DPR/RCE is submitted without the applicable checklist, the same will not be accepted in CWC for examination.

2.3 Login ID and Password for each Project Authority of State Governments will be communicated through e-mail / SMS for online submission of request through e-PAMS.

2.4 The Procedure for submission, appraisal and acceptance outlined in the modified guidelines shall now be followed by the State Governments and will come into effect from the date of operationalisation of e-PAMS. Till e-PAMS is operational, except online portal, other procedure will come into effect from the date of issue of these Guidelines.

2.5 Tools and techniques are being developed to compute hydrological & other parameters on-line (web based) in CWC to bring uniformity in the DPRs. As and when completed, they will be suitably incorporated in this Guidelines.

3 PRELIMINARY REPORT / PRE-FEASIBILITY REPORT/CONCEPT NOTE

3.1 On the basis of collection of requisite information as well as Surveys and Investigations, the pre-feasibility report shall be prepared to contain brief and to the point chapters on General data, General Planning, Inter-State and International aspects, Surveys & Investigations including Geological investigation, Seismic investigation, Foundation investigation,

Construction material survey, Hydrological and meteorological investigations etc. Hydrology, Drinking water requirements, Irrigation planning, plans for other intended benefits, Environmental and Ecological aspects, etc. required for initial assessment of soundness of the basic planning of the project proposal shall be as per the check-list Annexure-3. Applicable check-list shall also be attached to ensure that all the desired informationis contained.

3.2 Soft copy of the Preliminary Report of Major, Medium and Multi-Purpose projects shall be submitted only by e-PAMS system. Further, eight (8) sets of hard copies of Reports in respect of Major projects shall be submitted to the Chief Engineer, Project Appraisal Organisation (PAO), Central Water Commission (CWC), New Delhi. Four (4) sets of hard copies of Reports in respect of Medium Projects shall be submitted to respective Regional Offices of CWC under intimation to the Chief Engineer, PAO, CWC. Eight (8) sets of Preliminary Report or Concept Note in case of Major, Medium and Multi-Purpose projects proposed to be funded under external assistance need to be submitted to Chief Engineer, Projects Preparation Organisation (PPO), CWC, New Delhi. The submission and clarifications/compliance of the observations shall be attended by the concerned Chief Engineer of the State Government.

3.3 The preliminary reports shall be scrutinized in the Office where these are submitted. However, once a report is found acceptable, "In Principle" consent of CWC for DPR preparation shall be communicated from the Office of the Chief Engineer, PAO, CWC or Office of the Chief Engineer, PPO, CWC in case of external assistance projects after examination and clearance by a Screening Committee.Composition of the Screening Committee is given at Annexure - 4. The time schedule for according "In Principle" consent of CWC for preparation of DPR is given at Annexure-5.

3.4 While communicating the said consent, the project authorities will be advised for preparation/submission of DPR in accordance with CWC guidelines. They will also be advised to submit Environment Impact Assessment Report together with R&R Plan, Environment and Disaster Management Plans along with broad cost estimate. An application for forest clearance, if required, may be sent to the Ministry of Environment, Forest & Climate Change (MoEF&CC) with a copy to the Chief Engineer, EMO, CWC. In case Schedule Tribe population is likely to be affected, the R&R Plan will also be submitted to the Ministry of Tribal Affairs (MoTA).

3.5 The project authorities shall ensure that all necessary actions are taken to obtain clearances from the above mentioned Ministries well in time after due appraisal and DPR is submitted along with these clearance, whenever required.

3.6 The submission and clearance of Environment Impact Assessment, R&R Plans etc. and Forest Clearance shall be governed by the prevailing norms and regulations of the related Ministries.

3.7 Copy of PFR of any project proposed in the river basin for which no tribunal award or inter-State agreement exists, will be circulated to the co-basin States by the Project Authority. CWC will send copy of the PFR to Resident Commissioner of the party States in New Delhi.

3.8 After circulation of the project report, the co-basin States have to furnish views/observations on the project proposal / report within 45 days of receipt of the report after which it will be presumed that the State has nothing to say.

3.9 The timeline for completion of examination of Pre - Feasibility Report is eight (8) weeks as per the Annexure - 5.

3.10 If deficiencies on the report as communicated by CWC/Other Central Agency are not attended by the Project Authority within two (2) months, the PFR shall be treated as sent back / returned to Project Authority and the project will be deleted from the list of projects under appraisal.

4 DETAILED PROJECT REPORT

4.1 Detailed Project Report (DPR) preparation by the Project Authority has to be undertaken in a consultative mode with CWC. For this, the Project Authority may make a presentation to the specialised Directorates of CWC. Project Authority needs to furnish a certificate indicating that the DPR has been prepared in a consultative mode with the specialized Directorates of CWC i.e. Hydrology, Irrigation Planning, Inter-State Matters and Project Planning from concerned design unit while uploading the DPR in e-PAMS. The certificate needs to be countersigned by the concerned Directorates dealing with the above matters in CWC. The certificate will however not be treated as acceptance by these Directorates of the DPR. CWC would carry out field inspection on need basis.

4.2 CWC will primarily examine hydrology, inter-State aspects, irrigation planning, and economic viability in the DPR. Examination of these aspects by CWC is crucial from the point of view of holistic and unbiased examination of the project. As regards design and safety aspects, States having Central Design Organisation (CDO) accredited* by CWC need to furnish a certificate in the prescribed proforma indicating that the planning & design / safety aspects have been examined by the CDO under State Water Resources Department incorporating the list of BIS codes followed therein. States which don't have CDO/accredited CDO can take the help of accredited CDO of other States. CWC will necessarily examine design aspects in case of those States which don't furnish certificate from accredited CDO with regard to planning and design / safety aspects.

4.3 Online Project Appraisal Management System (e-PAMS) necessitates submission of certificates by various Central agencies / State agencies / or their Accredited agencies (like GSI, CSMRS, CGWB, State Agriculture Department, Accredited agencies of CSMRS / GSI

etc.) with respect to various aspects such as Geological exploration, rock and soil testing for various engineering parameters, ground water planning, crop yield and market rate, cropping pattern etc., at thetime of submitting the DPR so that the appraisal process can be carried out unhindered within a stipulated time frame. The check list as a part of the e-PAMS for facilitating the Project Authorities to upload the DPR as per the prescribed norms is enclosed as Annexure - 6.

*Accreditation of CDOs and other agencies would be carried out by a Committee headed by Member(D&R), CWC after receipt of requisite information from the concerned State Governments and the list of accredited CDOs of various States will be communicated separately.

4.4 Detailed Project Report (DPR) shall be prepared in accordance with applicable Indian Standards and as per the latest" Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose Projects" issued by Govt. of India, MoWR, RD & GR (2010), after detailed surveys and investigations. It must be ensured that duly completed check-list, salient features and all relevant details as well as location map, Index map showing command area and canal network, annexures etc. as required by the aforesaid MoWR, RD & GR Guidelines are contained in the report and estimates are comprehensive as well as up-to-date in accordance with the existing Guidelines.

4.5 The clearances obtained in respect of Environment Impact Assessment, Forest, R&R Plans, etc. shall also be appended with DPRs and implied costs shall be duly accounted in the estimate.

4.6 DPR of ERM scheme shall be accepted by CWC for appraisal, only if the original project was accorded investment clearance by the then Planning Commission (now NITI Ayog) / MoWR, RD & GR. However, the ERM of the projects which were completed before 1976 will be accepted by CWC for appraisal.

4.7 Copy of DPR of any project proposed in the river basin for which no tribunal award or inter-State agreement exists, will be circulated to the co-basin States by the Project Authority. CWC will send a copy of the DPR to Resident Commissioner of the party States in New Delhi.

4.8 After circulation of the project report, the co-basin States have to furnish views/observations on the project proposal / report within 45 days of receipt of the report failing which it will be treated that the State has nothing to say.

4.9 In case of Major irrigation and Multi-purpose project, soft copy of the Detailed Project Report shall be submitted only by e-PAMS system and sufficient sets of hard copies of DPR (refer Para 4.15) alongwith relevant certificates from various accredited agencies and clearances as per check-list Annexure- 6 shall be submitted to the Chief Engineer, PAO, CWC for examination.

4.10 In case of medium projects, soft copy of the Detailed Project Report shall be submitted only by e-PAMS system and sufficient sets of hard copies of DPR (refer Para 4.15) alongwith relevant clearances as per check-list Annexure-6 shall besubmitted to Chief Engineer of respective Regional Offices of CWC for examination under intimation to the Chief Engineer, PAO, CWC.

4.11 In case of Major, Medium irrigation & Multipurpose projects proposed to be funded under external assistance, soft copy shall be submitted through e - PAMS and sufficient sets of hard copies of DPR (refer Para 4.15)alongwith relevant clearances as per check-list Annexure-6 shall be submitted to the Chief Engineer, PPO, CWC.

4.12 In case of National Projects, soft copy shall be submitted through e - PAMS and sufficient sets of hard copies of DPR (refer Para 4.15) alongwith relevant clearances as per check-list Annexure-6 shall be submitted to the Chief Engineer, PPO, CWC.

4.13 DPRs, not containing details as per check list will not be accepted by the System.

4.14 In case where Design & Planning Organizations are existing in the concerned State and CWC certifies through accreditation process that it has sufficient competency to design such projects and a certificate is furnished by the accredited CDO in prescribed proforma Appendix-J of Annexure - 6 in respect of their detailed examination/clearance of the project proposal and appraisal/clearance of the State level Project Appraisal/Technical Advisory and Environmental Appraisal committees, examination of the project by CWC will be generally restricted to inter-State aspects, basic planning, hydrology and economic viability.

4.15 The number of hard copies of DPR to be submitted to CWC is as follows:

a.	New Major, Medium Irrigation Project without CDO certificate	12 sets
b.	New Major, Medium Irrigation Project with CDO certificate	8 sets
c.	New Multipurpose Project with out CDO certificate	14 sets
d.	New Multipurpose Project with CDO certificate	10 sets
e.	ERM of Major, Medium Irrigation Project without CDO certificate	8 sets
f.	ERM of Major, Medium Irrigation Project with CDO certificate	7 sets
g.	ERM of Multipurpose Project without CDO certificate	10 sets
h.	ERM of Multipurpose Project with CDO certificate	9 sets

Note:

1. In addition to above, complete set of DPR consisting of all volumes may be sent by Project Authority to each co-basin States.

2. Project Authority may submit additional sets of DPR to CWC on request for examination of special analysis etc., as per the requirement.

4.16 In case certificates by accredited CDO are not appended with DPRs, design aspects shall also be scrutinized in detail. DPR of Major project proposals shall be examined in concerned Directorates of CWC, Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR,RD&GR) and other Central agencies in respect of items pertaining to their area of specialization/area of concern. During techno-economic appraisal, State Govt.'s compliance to CWC observations will be required to be submitted by an officer not below the rank of Chief Engineer/Equivalent Competent Authority.

4.17 In case of Medium projects, the concerned Monitoring & Appraisal Directorates of Field Units of CWC / Nodal directorates in CWC (HQ) may take assistance of concerned specialised units at CWC (HQ) on a case to case basis.

4.18 All projects in the Ganga-Brahmaputra-Meghna and Indus basins would be examined from international angle in the MoWR,RD&GR. The State Governments which have borders with neighbouring countries should in particular keep this in view while considering any project close to International borders right from the initial stage of investigation and planning. This applies to major as well as medium projects irrespective of the fact that a Central Design and Planning Organization exists in that State or not. Similarly inter-State aspects and implications shall be duly verified in ISM Dte., of CWC even in case of medium projects.

4.19 The final estimate shall be based on finalized designs and details of civil and hydraulic structures and economic analysis will be carried out by the Project Authorities/CWC adopting standard/accepted procedures.The project authorities will also submit concurrence of the State Finance Department for the finalized cost.

4.20 The time line for the appraisal of DPR Refer Annexure - 7&8 is as follows:

I. For Major, Medium and Multipurpose projects with certificate of accredited CDO - four (4) months

ii. For Major, Medium and Multipurpose projects without certificate of accredited CDO -six (6) months

4.21 If the deficiencies communicated by CWC/Other Central Agency are not attended and the DPR is not upgraded by the Project Authority, within three(3) months from the date of communication of deficiencies, the DPR / RCE shall be treated as sent back / returned to Project Authority and the project will be deleted from the list of projects under appraisal.

4.22 Once techno-economic viability of a Project Proposal is established, a comprehensive note and check-list, duly finalized by PAO / PPO / Regional office of CWC and approved by Member(WP&P), CWC,shall be circulated among Members of Advisory Committee of MoWR,RD&GR Composition at Annexure-9 for consideration and acceptance of Irrigation, Flood Control and Multipurpose Project Proposals.

4.23 The officers of the State Govt. of the level of Principal Secretary, Engineer-in-Chief alongwith other State Engineers associated with the project formulation/design will be invited to attend the Advisory Committee meeting so as to furnish information/ clarifications, if any, sought by the Members of the Advisory Committee.

4.24 On the basis of the note prepared by CWC and deliberations during the meeting of the Advisory Committee, decision on the acceptance of the projects will be taken in the meeting of this Committee.

4.25 Ordinarily, a project will be accepted by the Advisory Committee only when all the clearances including statutory clearances have been obtained by the Project Authority. However, in case the statutory clearances / concurrences such as Environment, Forest and Wild life clearances from MoEF&CC, clearance of R&R plan of tribal population from MoTA, the State Finance Concurrence (SFC) etc. are pending; the Advisory Committee may accord conditional acceptance to the project.

4.26 In case of projects deferred by the Advisory Committee, the concerned State Govt. needs to submit satisfactory compliances to the observations within a period of three (3) months. If not submitted within three (3) months, the project will be treated as returned back.

4.27 The projects found acceptable by the Advisory Committee shall be submitted by the State Government in prescribed format for Investment Clearance as per MoWR,RD&GR Guidelines issued vide Lr. No.P.15011/3/2015-SPR dated 17.12.2015 with due compliances of the observations made during the meeting of the Advisory Committee.

4.28 If any new project has already been started by the Project Authority before acceptance by the Advisory Committee then the said project will only be processed for inter-state aspect and will not be further considered for acceptance by the Advisory Committee and all such projects will be termed as unapproved projects.

4.29 The State Government shall submit updated DPR of the project incorporating all the improvements done during the course of appraisal of the project and acceptance by the Advisory Committee while submitting Investment Clearance proposal to CWC. The Investment Clearance proposals submitted without updated DPR will be returned forthwith.

5 REVISED COST ESTIMATE

5.1 RCE of a project shall be accepted by CWC for appraisal, only if the original project was accorded investment clearance by the then Planning Commission (now NITI Ayog) / MoWR,RD&GR. In case of externally aided projects, RCE of a project shall be accepted by CWC for appraisal, only if the original project was accepted by Advisory Committee of MoWR, RD & GR.

5.2 In case of major, medium and multipurpose projects which have been accorded investment clearance and where the revised estimates of the project have increased by more than 15% of the original estimates, or where there is change in scope i.e. change in projects parameters resulting in change in nature and benefits such as CCA, Storage, increase in water utilisation, installed capacity, energy generation etc., Revised Project Reports including Estimates will be furnished to CWC for examination as new major/medium schemes and the procedure for scrutiny for such revised project/estimates shall be same as outlined in the preceding chapters. Project-wise statements of excess cost over the sanctioned costs under major sub-heads and reasons thereof shall also be appended with the revised estimates.

5.3 The revised estimate for Major Irrigation and Multipurpose Projects, where there is no change in scope shall be critically examined in the State Standing Committee before submission to CWC. The estimates shall be submitted to CWC incorporating the action taken report on the recommendations of the committee as per direction of the erstwhile Planning Commission (Now NITI Ayog) vide circular No. 16(12)/2003/WR dated 18.05.2004 Annexure-10.

5.4 The revised estimates for medium projects in which there is no change in scope can be approved by the TAC of concerned State Govt. under intimation to CWC and MoWR,RD&GR as per direction of the erstwhile Planning Commission (Now NITI Ayog) issued vide letter No. 16(12)/2003/WR dated 18.05.2004 Annexure-10. In this regard, a State Government will have to first satisfy CWC that there has been no change in the scope of the project and obtain its clearance before approving revised cost. If required, CWC will carry out a site inspection of the project before issue of no objection certificate.

5.5 For Major, and Multipurpose projects, where there is no change in scope and where the costs escalation due to price rise alone has not changed by more than 15%, the concerned State Government need not forward detailed estimates for examination by CWC. The investment clearance of such Revised Cost Estimates would be guided as per para B(1)(iv) of MoWR,RD&GR Guidelines for investment clearance dated 17.12.2015.

5.6 However, based on the Cabinet approval dated 27.07.2016 on 99 prioritised projects enclosed at Annexure -11 under PMKSY - AIBP the following will be applicable:
"No separate clearance/TAC clearance/Investment Clearance in respect of prioritised 99

projects will be required for escalation in cost up to 20% over approved cost as on 01.04.2012. Fast track proforma clearance from CWC shall be sufficient for projects where escalation is more than 20% of approved cost as on 01.04.2012 and no separate investment clearance from MoWR, RD&GR shall be required". The Fast Track proforma clearance would be carried out in accordance to the procedure indicated vide CWC letter no. CH/116/2016-PAC/1405-60 dated 20.10.2016 and subsequent amendments, if any.

5.7 The Fast track Proforma clearance in case of above 99 prioritised projects with more than 20% cost escalation will be carried out by the respective Monitoring & Appraisal Directorates of Field Units of CWC. No separate acceptance from Advisory Committee is required.

5.8 Ordinarily, if certificate of accredited CDO is submitted by the State Governments in the appropriate format, CWC would not check the design aspects and the responsibility for design planning and safety aspects will rest with the concerned State Governments. However, in the Revised Cost Estimate of the project, if it is found that cost escalation due to design changes is more than 50% of the previously approved cost, then the design aspects of the project would be reviewed by a Committee of design experts including the representative from the Project Authority and State CDO.

5.9 When revised estimates are prepared during construction, the quantities of items completed should be indicated separately and the cost thereof assessed on the basis of actual expenditure. Any liability arising out of the contract for the completed work and affecting the cost should also be considered in the estimate.

5.10 For works in progress, the estimates should be based on contract rates. If the contract document contains any clause for escalation on the prices of materials and labour wages subsequent to the award of contract, the amount involved should be assessed and included in the estimate.

5.11 For works, not covered in any contract, prevailing local rates may be taken for items covered in the Schedule of Rates and for remaining items rates may be adopted on the basis of analysis of rates, prepared in accordance with the guidelines issued by CWC.

5.12 In case of any doubt on the viability of rate of any item, a certificate from the State/ Project Chief Engineer, duly justifying reasonability of the rate, shall generally be taken as final and acceptable.

5.13 RCE of Major, Medium and Multipurpose projects with change in scope will be treated as New Project as per the para 5.2 and all the paras from 4.1 to 4.27 & 4.29 of these Guidelines will also be applicable.

5.14 Submission of soft copy of RCE through e - PAMS and hard copies shall be as per the paras 4.9 to 4.12. Five (5) sets of RCE are sufficient for Major Irrigation and Multi-purpose projects without change in scope.

5.15 The time line for completion of appraisal of RCE of Major and Multipurpose projects without change in scope is three (3) months Annexure - 12.

5.16 Other appraisal procedures such as response time for compliance by the concerned State Government and acceptance by Advisory Committee of MoWR,RD&GR shall be same for the RCE without change in scope as per paras- 4.19, 4.21 to 4.27 and 4.29.

5.17 The State Government shall submit updated DPR/RCE of the project incorporating all the improvements done during the course of appraisal of the project and acceptance by the Advisory Committee while submitting Investment Clearance proposal to CWC.The Investment Clearance proposals submitted without updated DPR/RCE will be returned forthwith.

6 CLUSTER OF MINOR SURFACE IRRIGATION PROJECTS

6.1 Cluster of minor projects would be defined as those minor projects which are utilizing water from the same river/tributary/sub-tributary/watershed.

6.2 In all such cases where the planned utilisation / diversion from cluster of minor projects on the inter-State river/tributary/sub-tributary/watershed exceeds 10 MCM, Inter-State clearance needs to be mandatorily obtained by the State Govt. from CWC.

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Annexure-1

EXTRACT OF "SUMMARY RECORD OF NATIONAL CONFERENCE OF IRRIGATION AND WATER RESOURCES MINISTERS OF STATE AND UNION TERRITORIES HELD IN NEW DELHI, JULY 86"

2.2 Project Clearance

The Conference felt that improvement in project preparation at the State level would be an essential step to reduce the time taken for the techno-economic examination of projects at the Centre. For speedy clearance it recommended the following steps:

I) The projects should not be sent to the Centre for techno-economic examination unless these have been thoroughly and comprehensively prepared on an integrated basis by a multi-disciplinary Cell in conformity with the guidelines laid down for the purpose.

ii) The State Government should indicate their priorities for examination of projects in CWC at the time of Annual Plan discussions.

iii) Medium irrigation projects should be examined in the State's Design Organizations wherever existing and only thereafter these may be sent to the Central Water Commission for information with regard to water accounting. Where State design Organizations do not exist the present procedure will continue. Inter-State aspects of medium projects are, however, required to be cleared by the Centre.

iv) In case there is a Central Design Organization in the State Irrigation Department and the major projects are examined in such Organization before these are sent to the CWC, the examination of such projects in the Central Water Commission may be restricted to the scrutiny of Inter-State aspects, hydrology, water accounting and economic viability. In case, there is no Central Design Organization in the State irrigation Department, the major project reports will continue to be examined in the Central Water Commission as per existing procedure.

v) Central agencies in turn should review the procedures for techno-economic and other scrutinies in consultation with the State and Union Territories and try to ensure that examination by diverse agencies run parallel and not in sequence and are completed within prescribed time-limits.

Annexure-2

HIGHLIGHTS OF MODIFICATIONS INCORPORATED IN THESE GUIDELINES

- Detailed Project Report (DPR) submission and appraisal process are to be done only through web-enabled e-PAMS system. Hence deficiencies in DPR/acceptances will be issued by CWC and upgrading of DPR will be submitted by Project Authorities only through online mode which reduces postal and other communication delay. DPRs not containing details as per check list will not be accepted by the system.

- DPR preparation by the Project Authority has to be undertaken in a consultative mode with CWC which reduces deficiencies in the DPR before its submission to CWC.For this, the Project Authority will make a presentation to the specialised Directorates of CWC and other central agencies.

- Project Authority needs to furnish a certificate indicating that the DPR has been prepared in a consultative mode with the specialized Directorates of CWC i.e. Hydrology, Irrigation Planning, Inter-State Matters and Project Planning from concerned design unit while uploading the DPR in e-PAMS. The certificate will however not be treated as acceptance by these Directorates of the DPR.

- Online Project Appraisal Management System (e-PAMS) necessitates submission of certificates by various Central agencies / State agencies / or their Accredited agencies (like GSI, CSMRS, CGWB, State Agriculture Department, etc.,) at the time of submitting the DPR w.r.t
  - ➢ Geological exploration,
  - ➢ Rock and Soil testing for various Engineering parameters,
  - ➢ Ground water planning,
  - ➢ Crop yield and market rate,
  - ➢ Cropping pattern etc.,

- There would be no need to send DPR by CWC to Central Ground Water Board, Ministry of Agriculture and Farmers Welfare and CSMRS for examination, as the Project Authorities will get these aspects examined from the above respective agencies before submitting the DPR to CWC leading to fast track examination of the DPR.

- The time line for completion of examination / appraisal process has been curtailed to as follows:
  - ➢ Pre-Feasibility Report - 8 weeks
  - ➢ DPR with CDO certificate - 4 months
  - ➢ DPR without CDO certificate - 6 months

➢ Revised Cost Estimate without change in scope - 3 months

- In case the statutory clearances / concurrences such as Environment, Forest clearances from MoEF&CC, clearance of R&R plan of tribal population from MoTA, the State Finance Concurrence (SFC) etc., are pending, the Advisory Committee may accord conditional acceptance to the project.

- If the deficiencies communicated by CWC/Other Central Agency are not attended and the PFR / DPR / RCE is not upgraded by the Project Authority within the following periods from the date of communication of deficiencies, the PFR/ DPR / RCE shall be treated as sent back / returned to Project Authority and the project will be deleted from the list of projects under appraisal:

	As per Existing Guidelines	**As per Revised Guidelines**
Sending back of PFRs	No provision for send back.	02 months if compliances are pending from State Government.
Sending back of DPRs and RCEs	One year if compliances are pending from State Government	03 months if compliances are pending from State Government.

- If any new project has already been started by the Project Authority before acceptance by the Advisory Committee then the said project will only be processed for inter-state aspect and will not be further considered for acceptance by the Advisory Committee and all such projects will be termed as unapproved projects.

- Cluster of minor projects would be defined as those minor projects which are utilizing water from the same river/tributary/sub-tributary/water shed.In all such cases where the planned utilisation / diversion from cluster of minor projects on the inter-State river/tributary/sub-tributary/water shed exceeds 10 MCM, Inter-State clearance needs to be mandatorily obtained by the State Govt. from CWC

****

Annexure-3

CHECK LIST FOR PRE-FEASIBILITY REPORT/PRELIMINARY REPORT/CONCEPT NOTE

Does the Preliminary Report contain the chapters on:

i) General Data:

This chapter would include the location, category and other physical features of the project.

ii) General Planning:

This chapter would include the discussion on the master plan for overall development of river basin and stages of basin development, alternative proposals of the project with their merits and demerits, priority of the project in the overall development of the basin, the effect of the scheme on the riparian rights existing upstream and downstream of the project, etc.

iii) Inter-state and International Aspects:

This chapter would include the Inter-state and International issues identified and present status of agreement indicated especially in respect of sharing of water, sharing of costs, sharing of benefits, acceptance of the submergence by the upstream state(s), compensation of land coming under submergence, settlement of oustees and any other issue if so. If there is no agreement between the states exists, the present position against the aforementioned items may be stated.

iv) Survey & Investigations:

This chapter would include detailed topographical surveys in respect of river, reservoir, head works (dams, dykes, barrages, weirs and other auxiliary component), plant site and colonies, canals, branch canals and water conductor systems, major canal structure, power house, tunnels, adits, penstocks, command area for OFD and drainage works, soil conservation, etc. Apart from the above, the geological investigation, seismic investigation, foundation investigation and construction material survey for the project should also be discussed.

v) Hydrology:

This chapter would include an index map and bar chart showing locations of various hydrometric, climatic and rainfall stations and the data availability at those stations. A brief note about quality, consistency, processing and gap filling of the data should be furnished. Apart from the above, the availability of water for the benefits envisaged, design flood for the various structures, sedimentation studies, simulation studies, flood routing studies, backwater studies, etc, should also be carried out and discussed.

vi) Irrigation Planning:

This chapter would include all aspects of irrigation planning including source wise (such as ground water, surface water, water bodies) already existing irrigation facilities in the proposed command.

vii) Planning for other intended benefits:

This chapter would include a brief details of other benefits like flood control and drainage, power, drinking water requirements, etc.

viii) Environmental and Ecological Aspects:

Annexure- 4

COMPOSITION OF SCREENING COMMITTEE

The Screening Committee shall consist of the following:

1	Chief Engineer (PAO), Central Water Commission *(Chief Engineer(PPO), CWC in case of external assistance projects)*	-	Chairman
2	Director, Concerned Project Appraisal Directorate, CWC *(Director, External Assistance Directorate, CWC in case of external assistance projects)*	-	Member
3	Director, Concerned Monitoring & Appraisal Directorate from field unit of CWC *(for Medium projects)*	-	Member
4	Director, Concerned Hydrology Directorate, CWC	-	Member
5	Director, Concerned Irrigation Planning Directorate, CWC	-	Member
6	Director, Concerned Inter-State Matters Directorate, CWC	-	Member
7	Director, Concerned Directorate of CEA *(for Multipurpose projects)*	-	Member
8	Director, Project Appraisal (North) Directorate, CWC *(Director, External Assistance Directorate, CWC in case of external assistance projects)*	-	Member-Secretary

****

Annexure-5

FLOW CHART FOR EXAMINATION OF PRELIMINARY REPORTS ON MAJOR, MEDIUM IRRIGATION AND MULTI-PURPOSE PROJECTS TOTAL DURATION: 8 WEEKS

Preliminary Examination in the Nodal Appraisal Directorate in Head Quarter / Field office of CWC and Circulation to specialized Directorates of CWC, as applicable.

(1 Week)

Presentation by the Project Authority within one week of submission of PFR to various specialized Directorates of CWC /other central agencies, if required, for better understanding of the project proposal.

Examination in the various specialized Directorates of CWC and transmission of first set of comments on the deficiencies of the report to State

(2 Weeks)

Submission of State's replies to the Comments on the deficiencies of the reportraised by the Appraisal Directorates of CWC/ other central agencies including further studies and investigation etc.

(2 Weeks)

Examination of state's replies and discussion with the project engineers for finalization in the CWC

(2 Weeks)

(If required)

Preparation of Note by the Appraisal Directorates for the Screening Committee of CWC for conveying In-Principle Consent for preparation of DPR or otherwise.

(1 Week)

Annexure - 6

Check list for DPR submission

a. In case the DPR of a project is directly submitted without Preliminary Report/Concept Note, Project Authority needs to furnish a certificate indicating that the DPR has been prepared in a consultative mode with the specialized directorates of CWC i.e. Hydrology, Irrigation Planning, Inter-State Matters and Project Planning from concerned design unit. The certificate needs to be counter signed by the concerned team dealing above matters in the appraising agency. The Certificate format is given at Appendix - A. The team will also undertake field visit as and when required.

b. A certificate from Geological Survey of India (GSI) or any agency accredited by GSI, indicating that complete Geological exploration for the project required for the DPR stage has been carried out. The Certificate format and the list of agencies accredited by GSI are given at Appendix - B.

c. A Certificate from Central Soil and Materials Research Station (CSMRS) / or an agency accredited by CSMRS needs to be furnished stating that the required rock/soil mechanic tests have been carried out from the rock/soil samples collected through Geological exploration. The certificate format and the list of agencies accredited by CSMRS are given at Appendix - C.

d. Certificate from CSMRS / or an agency accredited by CSMRS towards quarry area and suitability of available construction material both qualitatively and quantitatively within economical reach has been assessed for the project parameters at DPR stage. The certificate format is given at Appendix - D.

e. Certificate from Central Ground Water Board that the command area will not be affected by water logging due to the irrigation project and there will not be further ground water depletion. The certificate format is given at Appendix - E.

f. A certificate from State Agriculture Department signed by Director, Agriculture as per the format enclosed as Appendix - F.

g. A certificate from National Committee on Seismic Design Parameters (NCSDP) shall be submitted for the site specific seismic design parameters in accordance to theGuidelines for preparation and submission of site specific seismic study report of river valley project. The Certificate format and the proforma to be furnished as a check-list in the beginning of the study report is enclosed as Appendix - G.

h. A Certificate signed by concerned Principal Secretary of State Govt. indicating status of

Action taken for Statutory clearances such as Environment Clearance, Forest Clearance from MoEF&CC and clearance in respect of R&R of Tribal population from MoTA. The Certificate format is given at Appendix - H.

i. A Certificate signed by concerned Principal Secretary of State Govt. indicating that the project is going to be constructed through contract and special team has been planned for timely construction of project as per the MoWR, RD&GR "Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose Projects, 2010". The Certificate format is given at Appendix - I.

j. The CDO certificate as contained in "Guidelines for Submission, Appraisal and Clearance of Irrigation and Multipurpose Projects, 2010"(Appendix - J), duly signed by Chief Engineer, Central Design Organisation and counter signed by Principal Secretary may be submitted. The CDO Certificate should include the list of BIS codes which has been followed establishing safety of structure and optimization of various components including Design Flood Studies as per PMF/SPF/Diversion Flood.

k. Concerned Principal Secretary of State Govt. needs to certify that the project involves _____ Km of Main Canal for which 100% survey has been carried out. For Distributaries & Minors, in the command there are _____ types of soil group and for each soil group _____ % of survey has been carried out. The Certificate format is given at Appendix - K.

l. Concerned Principal Secretary of State Govt. needs to certify that Proper Cadastral survey has been carried out for all the property coming under submergence, for reservoir and canal network. The Certificate format is given at Appendix - L.

m. Concerned Principal Secretary of State Govt. needs to send copy of DPR to the Principal Secretaries of all other co-basin States for their views. Copy of the letter vide which DPR was sent and Receipt for the same by the co-basin States needs to be submitted. Views of the co-basin States if received may also be submitted. The Certificate format is given at Appendix - M.

****

Appendix - A

Certificate on Preparation of DPR

This is to certify that Detailed Project Report (DPR) of _____Project, (Name of State) has been prepared in a consultative mode with the specialized directorates of CWC i.e. Hydrology, Irrigation Planning, Inter-State Matters and Project Planning from concerned unit under Design & Research Wing.

(signature with seal)
Chief Engineer,
_____ Project,
Irrigation/Water Resources Department,
Govt. of----------

Counter signed by

Hydrology
(Signature, Name with seal)

Irrigation Planning
(Signature, Name with seal)

Inter-State Matters
(Signature, Name with seal)

Project Planning
(Signature, Name with seal)

Appendix - B

Certificate on Geological exploration

This is to certify that complete Geological exploration for the _____ project, located in the State of _____ (Name of State) required for the DPR stage has been carried out by Geological Survey of India /_____ (Name of agency accredited* by GSI) during the period _____ in the area of_____(Name ofTehsil),_____(Name of District). Copy of the report is attached.

Authorised signatory of GSI /Agency accredited by GSI with seal

**The list of agencies accredited by GSI will be communicated separately.*

Appendix – C

Certificate on Rock/Soil mechanic tests

This is to certify that the required rock/soil mechanic tests have been carried out from the rock/soil samples collected through Geological exploration for the proposed _____ project located in the State of _____(Name of State) during the period _____ in the area of_____(Name of Tehsil), _____(Name of District). Copy of the report is attached.

(signature with seal)
Director,
Central Soil and Material Research Station,
Hauz Khas,
New Delhi

(or)

Authorised signatory of agency accredited by CSMRS with seal

**The list of agencies accredited by CSMRS will be communicated separately.*

Appendix - D

Certificate on suitability of available construction material

This is to certify that quarry area and suitability of available construction material both qualitatively and quantitatively within economical reach has been assessed for the project parameters at DPR stage for the proposed _____ project located in the State of _____(Name of State) during the period _____ in the area of _____(Name ofTehsil),_____(Name of District). Copy of the report is attached.

(signature with seal)
Director,
Central Soil and Material Research Station,
Hauz Khas,
New Delhi

(or)
Authorised signatory of agency accredited by CSMRS with seal

Appendix - E

Certificate on Ground Water Aspect

This is to certify that the command area of _____ project located in the State of _____ (Name of State) covering _____ (Name of Tehsils) Tehsils, of _____(Name of District) District, _____(Name of Tehsils) Tehsils, of _____(Name of District) District…….. will not be affected by water logging and there will not be further ground water depletion.

Conjunctive use of Ground Water with Surface water is also proposed in the command area as detailed below:

(signature with seal)
Member(SML),
Central Ground Water Board,
West Block-2,
R.K.Puram,
New Delhi

Appendix – F(1)

EXISTING CROP PATTERN AND PRODUCTIVITY PRE-PROJECT / PRE-ERM

NAME OF PROJECT:

(All rates in Rs. Amount in Rs. Lakh and Area in Ha.)

Sr. No.	Crop	Area	Yield (Qtl/ Ha)	Total yield (Qtl)	Price per Qtl. (Rs.)	Gross Income (in Rs. Lakh)	Breakup of Expenditure						Total Expenditure	Net Income (in Lakhs)
							Seed		Fertilizers, Chemicals, Manure etc.		Hired labour (Human, Animal & Machinery &Misc)			
							Rate/ Ha (Rs.)	Amt.	Rate/ Ha (Rs.)	Amt.	Rate/ Ha (Rs)	Amt.		
Kharif														
1														
2														
3														
4														
	Total													
Rabi														
1														
2														
3														
4														
	Total													
Other Crops														
1														
2														
3														
4														
	Total													
	GRAND TOTAL													

DIRECTOR
STATE AGRICULTURE DEPARTMENT

Appendix – F(2)

PROPOSED CROP PATTERN AND PRODUCTIVITY POST-PROJECT / POST - ERM

NAME OF PROJECT:

(All rates in Rs. Amount in Rs. Lakh and Area in Ha.)

Sr. No.	Crop	Area	Yield (Qtl/ Ha)	Total yield (Qtl)	Price per Qtl. (Rs.)	Gross Income (in Rs. Lakh)	Breakup of Expenditure						Total Expenditure	Net Income (in Lakhs)
							Seed		Fertilizers, Chemicals, Manure etc.		Hired labour (Human, Animal & Machinery &Misc)			
							Rate/ Ha (Rs.)	Amt.	Rate/ Ha (Rs.)	Amt.	Rate/ Ha (Rs.)	Amt.		
Kharif														
1														
2														
3														
4														
	Total													
Rabi														
1														
2														
3														
4														
	Total													
Other Crops														
1														
2														
3														
4														
	Total													
	GRAND TOTAL													

DIRECTOR
STATE AGRICULTURE DEPARTMENT

Appendix –G(1)

Certificate on submission of site specific seismic design parameters

This is to certify that site specific seismic design parameters in accordance with the Guidelines for preparation and submission of site specific seismic study report of river valley project has been submitted by Project Authority for the _____ project located in the State of _____ (Name of State) on _____ (Date). Study report of the river valley project has been submitted as per **Appendix – G (2).**

(signature with seal)
Chief Engineer,
_____ Project,
Irrigation Water Resources Department,
Govt. of_____

Counter signed by

Director,
FE&SA Directorate & Member Secretary, NCSDP,
Central Water Commission,
New Delhi

Appendix – G(2)

PROFORMA FOR SUBMISSION OF STUDY REPORT TO NCSDP

The study report should be compiled in a single dossier as per *proforma* given below.
The *proforma*, duly filled and signed, should be furnished as a check-list in the beginning of the study report.

Sl. No.	Description	Compliance(Yes/ No) w.r.t. Guidelines & reasons For Non-compliance
1	**Project Details**	
(a)	Name of the Project	
(b)	Name of the River over which the project is proposed	
(c)	Location of the Project: *State, District, Longitude & Latitude and Topo sheet no. of each of the Project component (e.g. Dam/Barrage /Power House etc.)for which design seismic coefficient is required. Information to be given in tabular format.*	
(d)	Type of Project: *Multipurpose or irrigation Storage (area/volume of reservoir) or Run of the River Scheme or Hydro Power Project(Surface/subsurface, installed Capacity, number of units etc.*	
(e)	*Details of the other projects in the vicinity (within 100 km): (Refer Annexure-E)* *Name of project, type of hydraulic structures, and seismic parameters (expected PGA for MCE) for projects constructed/ under construction.*	
(f)	Present Status of Investigation: *DPR submitted/approved; Salient comments/observations on DPR for ground exploration, relevant to Seismic design; status on environment clearance; preconstruction/ construction stage etc.*	
(g)	Nature of foundation Material: *Nature of foundation material (including geotechnical properties of rock / soil etc. below different segments of dam and other project components.*	
(h)	Name and address of the Project Authority and Consultants/Advisors: *Complete postal address with telephone /fax/e-mail of the Project Authority and Consultants / Advisor engaged by the project Authority for various types of inputs [geological, geotechnical, seismo-tectonics, seismic design etc] shall be given.*	
2	**Regional Geological and Seismo - Tectonic Evaluation** (*Refer Section 3.0 of the guidelines for details)*	

(a)	Tectonic Map:	
(b)	Seismo – tectonic section:	
(c)	Interpretation of regional tectonic mechanism and other details:	
(d)	Earthquake catalogue:	
(e)	Micro earthquake investigation:	
3	**Local Geologic Setting** *(Refer Section 3.0 of the guidelines for details)*	
(a)	Geological map:	
(b)	Surface & subsurface configuration of major faults:	
(c)	Additional inputs on subsurface configuration of major faults:	
4	**Evaluation of site specific seismic parameters**	
(a)	Methodology of the study: *The adopted study methodology, confirming to item 4 of the guidelines, should be briefly described. Any deviation from the recommended approach should be pointed out with adequate justification.*	
(b)	Evaluated site specific seismic parameters: *The study should furnish the identified MCE (deterministic); recommended response vertical seismic coefficients along with computed natural period of the dam; estimated duration of shaking; and acceleration time histories for both horizontal and vertical motions.*	
5	**Recommendations on design approach** *(Refer Section 5.0 of the guidelines for details)*	
6	**Submission of study report for NCSDP approval** *(Refer Section 6.0 of the guidelines for details)*	

Date:

Signature & Seal
of authorized representative
of Project Authority

Appendix –H

Certificate on status of action taken for Statutory Clearances

This is to certify that necessary actions have been taken for obtaining Statutory clearances for the _____ project located in the State of _____ (Name of State) and status of the action taken is as follows:

a. Environment Clearance from MoEF&CC :

i. EIA

ii. EMP

iii. Others

b. Forest Clearance from MoEF&CC :

c. Clearance in respect of R&R of Tribal population from MoTA:

Signed by

(Signature, Name with seal)
Principal Secretary, Water Resources Department,

Govt. of _____

Appendix –I

Certificate on mode of construction

This is to certify that the _____ project located in the State of _____ (Name of State) is going to be constructed through contract / Department and special team has been planned for timely construction of project as per the MoWR,RD&GR "Guidelines for preparation of Detailed Project Reports of Irrigation and Multipurpose projects, 2010". The constitution of the special team is as follows:

Sl. No.	Designation of officers of the team

Signed by

(Signature, Name with seal)
Principal Secretary, Water Resources Department,
Govt. of _____

Appendix – J

Sample Letter of Clearance of Major / Medium Irrigation / Multi-purpose Projects by the CDO of the State Govt.

To
The Chief Engineer,
Project Appraisal Organization,
Central Water Commission
Sewa Bhavan, R.K. Puram,
New Delhi – 110066

Subject: Clearance---------- Major/ Medium Irrigation/ Multipurpose Project.

The above project has been examined in the Central Design Organization with reference to the Checklist as per the latest guidelines for preparation of DPR of Ministry of Water Resources, RD & GR (2010) and it is found that:

I) All necessary surveys and investigations for planning of the project and establishing its techno-economic feasibility have been carried out as per the aforementioned guidelines.

(ii) 10%/5000 ha. of the command area of the project (whichever is minimum) has been investigated in full details in three patches representing terrain conditions in the command for estimation of the conveyance system upto the last farm gates.

(iii) 100% of Main Canal and 10% of the remaining Canal structures (Branch canals, Distributaries, Minors etc.) have been investigated in full detail.

(iv) Detailed Hydrological, geological construction material investigations have been carried out for all major structures i.e. dams, weirs, main canal, branch canal up-to distributaries carrying a discharge of 10 cumecs.

(v) Soil survey of the command has been carried out in detail as per IS 5510-1969.

(vi) Necessary designs for the various components of the project has been done in accordance with the guidelines and relevant Indian Standards for Planning & Design/Safety aspects including design flood estimation etc., of the project which are enclosed. (List of Codes is enclosed).

(vii) Necessary studies for utilization of ground water have been done with special regard to problem of water logging and suitable provisions have been made for conjunctive use of ground water & drainage arrangements.

(viii) The cropping pattern has been adopted in consultation with the State Agriculture Department and are based on soil surveys of the command keeping in view the national policy in respect of encouraging crops for producing oil seeds and pulses. Availability of water as per Inter-State agreements, awards and consent of co-basin States are also considered.

(ix) The cost estimates and economic evaluations are carried out as per guidelines issued by the Central Water Commission. No existing command of existing ground water, water bodies or minor irrigation schemes has been taken as beneficial command of the proposed project.

(2) The project has also been examined by the State level Project appraisal / Technical Advisory Committee comprising representative of Irrigation, Agriculture, Fisheries, Forests, Soil Conservation, Ground Water, Revenue and Finance Deptt. and State level Environmental Committee etc. and techno-economic feasibility of the project has been established.

(3) The project is recommended for acceptance by Central Water Commission and Ministry of Water Resources, River Development & Ganga Rejuvenation.

Chief Engineer,
Central Design Organization,
Irrigation Water Resources Department,
Govt. of_____

Counter signed by

Principal Secretary, Water Resources Department,
Govt. of _____

Appendix –K

Certificate on Survey and Investigation

This is to certify that the _____ project located in the State of _____ (Name of State) involves _____ Km of Main Canal for which 100% survey has been carried out. For Distributaries & Minors, in the command there are _____ types of soil group and for each soil group _____ % of survey has been carried out. Copy of the report is attached.

Signed by

(Signature, Name with seal)
Principal Secretary, Water Resources Department,
Govt. of _____

Appendix –L

Certificate on Cadastral Survey

This is to certify that proper Cadastral Survey has been carried out for all the property coming under submergence, for reservoir and canal network for the _____ project located in the State of _____ (Name of State). The list of properties coming under submergence are as follows:

Sl. No.	Name of Properties	
1	**Land in ha** *Forest land:*	
	Agriculture land:	
	Revenue land:	
	Others:	
	Total	
2	**Houses and Buildings (in Nos.)**	
3	**Other structures such as Road bridges, Railway bridges etc. (in Nos.)**	
4	**Others**	

Signed by

(Signature, Name with seal)
Principal Secretary, Water Resources Department,
Govt. of _____

Appendix –M

Certificate on sharing of information to co-basin States

This is to certify that copy of DPR of the _____ project located in the State of _____ (Name of State) has been sent to the Principal Secretaries of all other co-basin States for their views vide letter no. _____ dated _____(copy enclosed). Receipt for the same by the co-basin States enclosed. Views furnished by the co-basin States also enclosed herewith.

Signed by

(Signature, Name with seal)
Principal Secretary, Water Resources Department,
Govt. of _____

Annexure-7

FLOW CHART FOR EXAMINATION OF DETAILED PROJECT REPORTS ON MAJOR IRRIGATION AND MULTI-PURPOSE PROJECTS

Total Duration: 4 Months (with CDO) & 6 Months (without CDO)

Preliminary Examination in the Nodal Appraisal Directorates and Circulation to specialized Directorates of CWC / other central agencies.

(2 Weeks)

Examination in the various specialized Directorates of CWC / other central agencies and communication of deficiencies of DPR to State.

(1 Month)

Submission of State's replies attending the deficiencies of DPR including further studies and investigation etc.

(1 Month)

Examination of State's replies and discussion with the project engineers for finalization in the CWC.

(1 Month)

(If required)

Preparation of Note by the Appraisal Directorates for the Advisory Committee of MoWR, RD&GR for its consideration/Acceptance after getting necessary inputs from the Project Authority.

(2 Weeks)

Note:

1. ***For examination of Design aspects another one month time is allowed only if examination of design aspect depends on comments/acceptance of other aspect.***
2. ***For submission of compliances on design aspects by the Project Authorities, another one month time is allowed only if submission of compliances depends on comments/acceptance of other aspect.***
3. ***However, the total duration of the process of appraisal shall not exceed 6 months.***

Annexure-8

FLOW CHART FOR EXAMINATION OF DETAILED PROJECT REPORTS ON MEDIUM IRRIGATION PROJECTS

Total Duration: 4 Months (with CDO) & 6 Months (without CDO)

Preliminary Examination in the Nodal Appraisal Directorate of Field office of CWC and Circulation to specialized Directorates of CWC/ other central agencies as applicable.

(2Weeks)

Examination in the nodal appraisal Directorate of field office of CWC / various specialized Directorates of CWC / other central agencies and communication of deficiencies of DPR to State.

(1 Month)

Submission of State's replies attending the deficiencies of DPR including further studies and investigation etc.

(1 Month)

Examination of State's replies and discussion with the project engineers for finalization in the CWC

(1 Month)

(If required)

Preparation of Note by the Appraisal Directorates for the Advisory Committee of MoWR, RD & GR for its consideration/Acceptance after getting necessary inputs from the Project Authority.

(2 Weeks)

Note:

1. ***For examination of Design aspects another one month time is allowed only if examination of design aspect depends on comments/acceptance of other aspect.***

2. ***For submission of compliances on design aspects by the Project Authorities, another one month time is allowed only if submission of compliances depends on comments/acceptance of other aspect.***

3. ***However, the total duration of the process of appraisal shall not exceed 6 months.***

Annexure - 9

COMPOSITION OF ADVISORY COMMITTEE
(TO BE PUBLISHED IN THE GAZETTE OF INDIA PART – I SECTION – I)

No. 12/5/86-P-II
Government of India
Ministry of Water Resources
New Delhi,

27th November, 1987.

RESOLUTION

Sub: Advisory Committee for Consideration of techno-economic viability of Major, Medium Irrigation, Flood Control and Multipurpose project proposals.

1) A Committee for recommending projects to be included in the Second Five Year Plan was set up by the Planning commission, vide their Resolution No. PC(V)/IV(5)/54, dated the 20th February, 1954. Later, the Planning Commission constituted an Advisory Committee for Irrigation, Flood Control and Multipurpose projects, vide their letter No. II-16(25)(1)/76-I&CAD, dated the 27th September, 1976. This Committee was entrusted with the function of getting the project examined by the Central Water Commission and Central Electricity Authority, as required to determine their techno-economic viability.

(2) The arrangements for scrutiny of techno-economic viability of irrigation, flood control and multipurpose projects have been reviewed by Government and it has been decided that the Advisory Committee constituted by the Planning Commission will be replaced by an Advisory Committee in the Ministry of Water Resources which will scrutinize proposals for major / medium irrigation, flood control and multi-purpose projects.

(3) The Committee shall consist of the following:

(I)	Secretary, Ministry of Water Resources	-	Chairman
(ii)	Chairman, Central Water Commission	-	Member
(iii)	Secretary (Expenditure), Ministry of Finance or his Nominee	-	Member
(iv)	Secretary, Department of Power, Ministry of Energy or his Nominee.	-	Member
(v)	Secretary, Department of Environment &Forest or his Nominee	-	Member

(vi)	Secretary, Department. of Agriculture & Cooperation or his Nominee	-	Member
(vii)	Secretary, Ministry of Welfare or his Nominee	-	Member
(viii)	Director-General, ICAR or his nominee	-	Member
(ix)	Chairman, Central Electricity Authority	-	Member
(x)	Advisor (I&CAD), Planning Commission	-	Member
(xi)	Advisor (Energy), Planning Commission	-	Member
(xii)	Financial Advisor , Ministry of Water Resources	-	Member
(xiii)	Chairman, Central Ground Water Board	-	Member
(xiv)	Chief Engineer (PAO), CWC	-	Member-Secretary

(4) The Nominees will not be below the rank of Joint Secretary. The committee may also invite representatives of any other Government organizations, scientific body of experts in the relevant fields to participate in its deliberations.

(5) The functions of the Committee will be to examine projects proposed by State Governments, Central Government or other organizations and satisfy itself that:

i) the schemes have been prepared after adequate investigations;

ii) the estimates are complete and correct technically;

iii) the financial forecasts and estimates of benefits and anticipated are based on reliable and accurate data; and

i) the need of environment conservation and proper rehabilitation of project-affected persons have been taken into account.

(6) The project proposals will be received in the Central Water commission which will carry out initial scrutiny in consultation with other concerned agencies and provide secretarial assistance to the Committee, which may modify, as necessary, the procedure for receipt of project proposals and their examination.

(7) On the basis of the examination conducted by the Committee, the Ministry of Water Resources would convey the decision on techno-economic viability of the projects. Their inclusion in the Five Year Plans or Annual Plans, as the case may be, could be

decided by the Planning Commission having regard to the objectives and strategy of the Plan.

Sd/-
(S. Kanungo)
Additional Secretary

ORDER

ORDERED that this Resolution be communicated to all the State Governments, Ministries/ Departments of the Government of India, the Comptroller and Auditor-General of India, Prime Minister's Office, President's Secretariat and Planning Commission.

ORDERED also that the Resolution be published in the Gazette of India.

Sd/-
(S. Kanungo)
Additional Secretary

The General Manager,
Government of India Press,
FARIDABAD (with Hindi version)

Annexure - 10

No.16/(12)/2003/WR
Government of India
Planning Commission
(WR Division)

Yojana Bhawan, New Delhi the 18th May 2004.

To

The Chief Secretary,
Govt. of

Subject: Revised estimates of major, multipurpose & medium irrigation projects on inter-state rivers.

Sir,

The procedure for getting revised estimates of major, multipurpose & medium irrigation projects on inter-state rivers as outlined in the guidelines issued by the Central Water Commission in 2002 for submission, appraisal and clearance of irrigation and multipurpose projects. A copy of the relevant extract is enclosed for ready reference. On a review of the position of submission of revised estimates by state governments and getting them approved as per prescribed procedure, it is seen that only in a very few cases, the state governments have got revised estimates approved. Such approvals sought are mostly confined to the first revision only and not the subsequent revisions. The latest estimated cost of practically all the irrigation projects in the country is thus unapproved. A State Finance Department have been permitting expenditure on projects much beyond the approved cost. In some cases, the state governments accord administrative approvals themselves for the revised cost without submission of the same to the CWC.

2. Keeping these facts in view, it has been decided to adopt the following procedure for submission of revised estimates of irrigation/multipurpose projects with immediate effect.

i) While according investment clearance, Planning Commission will make a specific mention in the clearance order requesting State Finance Department not to permit expenditure on the project beyond the approved cost unless the revised estimate is got approved following the prescribed procedure.

ii) For major irrigation/multipurpose projects, State Governments will constitute a Standing Committee of State Finance, Planning & Water Resources Secretaries who will examine critically the reasons for cost overrun and give their report with relevant/findings recommendations. The revised estimate will be submitted by the State Governments thereafter to the CWC together with this report and action taken report on the findings/recommendations of the committee. CWC will thereafter examine the revised estimates on a fast track basis. The Standing Committee will be serviced by the State Irrigation/Water Resources Department for providing necessary documents, etc.

iii) For medium irrigation projects, where there is no change in scope of the project, State Governments may themselves approve the revised estimate as per procedure for such approvals in the states. A copy of such approval may be endorsed to CWC, MoWR and the Planning Commission. State Governments will have to first satisfy the CWC that there has been no change in the scope of the project and obtain their clearance for this before approving revised cost of medium projects. If required, CWC will carry out a site inspection of the project before issue of no objection. For projects where there is change in scope in terms of storage capacity, CCA, length of canals etc., the procedure in (ii) above will be followed.

3. State Governments are requested to ensure strict compliance of the above revised procedure with a view to bring in more fiscal discipline and accountability in the irrigation sector.

4. For ongoing approved projects, State Governments are urged to expeditiously submit the revised estimates to the CWC in a time frame of say 6 months. For ongoing unapproved projects, State Governments may obtain quickly the required statutory and other clearances, update costs where required and submit it to the CWC for appraisal so that the projects can be accorded investment clearance thereafter.

Yours faithfully,

Sd/

(A. Sekhar)
Adviser (WR)

Annexure - 11

No. P.18011/1/2016-SPR /2327– 2345

भारतसरकार

Government of India

जलसंसाधन, नदीविकासएवंगंगासंरक्षणमंत्रालय

Ministry of Water Resources, River Development and Ganga Rejuvenation

(SPR Section)

Room No.631, Shram Shakti Bhawan

New Delhi, **Dated 23 .08 .2016**

To

The Chairman,
Central Water Commission,
Sewa Bhawan, R. K. Puram,
New Delhi-110066

Subject: - Establishment of the Mission to ensure completion of 99 prioritised projects by December, 2019 including CAD&WM- **Follow-up action** reg.

Sir,

The undersigned is directed to inform that Cabinet on 27.07.2016 has approved creation of Mission with Additional Secretary / Special Secretary in MoWR, RD & GR to ensure completion of 99 prioritised projects under PMKSY- AIBP by Dec., 2019 including CAD&WM. While approving the above proposal the Cabinet has inter-alia approved that:

"No separate clearance/TAC clearance/Investment Clearance in respect of prioritised 99 projects will be required for escalation in cost upto 20% over approved cost as on 01.04.2012. Fast track *proforma* clearance from CWC shall be sufficient for projects where escalation is more than 20% of approved cost as on 01.04.2012 and no separate investment clearance from MOWR shall be required".

2. Further, it has been approved that Projects under Desert Development Programme (DDP) area shall be treated at par with projects in Drought Prone Area Programme (DPAP) for Central Assistance for ongoing projects (as on 1.4.12) also.

This is for kind information and further necessary action please.

Yours faithfully,

(Bhupinder Singh)
Senior Joint Commissioner (SPR-II)
Tel. No. 23710131
E-mail: sjcpr-mowr@nic.in, project1-mowr@nic.in

Copy to:

1. The PPS to Secretary (WR, RD & GR).
2. The PS to OSD (MoWR, RD & GR).
3. The Chief Engineer (PAO), CWC, Sewa Bhawan, new Delhi.
4. The Chief Engineer (PMO), CWC, Sewa Bhawan, new Delhi.
5. All Field Chief Engineers, Central Water Commission.

Priority Projects under AIBP

Sl No	Priory No	State	Name of the project
1	2	Andhra Pradesh	Gundlakamma
2	2	Andhra Pradesh	Tadipudi LIS
3	2	Andhra Pradesh	Thotapally
4	2	Andhra Pradesh	TarakaramTeertasagaram
5	2	Andhra Pradesh	Musurumilli
6	2	Andhra Pradesh	Pushkara LIS
7	2	Andhra Pradesh	Yerracalva
8	2	Andhra Pradesh	Maddigedda
9	1	Assam	Dhansiri
10	1	Assam	Champamati
11	3	Assam	Borolia
12	3	Bihar	Durgawati
13	3	Bihar	Punpun
14	3	Chhattisgarh	Maniyari Tank
15	3	Chhattisgarh	Kelo
16	3	Chhattisgarh	Kharung
17	3	Goa	Tillari
18	3	Gujarat	SardarSarovar
19	1	Jammu & Kashmir	Tral Lift
20	1	Jammu & Kashmir	PrakachikKhows Canal
21	1	Jammu & Kashmir	Restoration & Mod. of Main Ravi Canal
22	3	Jammu & Kashmir	Rajpora Lift
23	3	Jharkhand	Subernarekha Multipurpose
24	3	Karnataka	Karanja
25	1	Karnataka	Sri Rameswar Irrigation
26	3	Karnataka	NLBC System Project (New)
27	1	Karnataka	Upper Tunga Irrigation Project
28	3	Karnataka	Bhima LIS
29	3	Kerala	Karapuzha
30	3	Kerala	Muvattupuzha
31	1	Madhya Pradesh	Sindh Project Phase II
32	1	Madhya Pradesh	Indira Sagar Project Canal Phase - I & II (km. 0 to km. 142)
33	1	Madhya Pradesh	Indira Sagar Project Canal Phase - III (km. 143 to km. 206)
34	1	Madhya Pradesh	Omkareshwar Project Canal Phase-IV (OSP lift)
35	1	Madhya Pradesh	Bargi Diversion Project Phase - I (km. 16 to km 63)
36	2	Madhya Pradesh	Mahi Project

37	2	Madhya Pradesh	Barriyarpur LBC
38	2	Madhya Pradesh	Bansagar Unit 2
39	2	Madhya Pradesh	Mahan Project
40	2	Madhya Pradesh	Pench Project
41	2	Madhya Pradesh	Sagad Project
42	2	Madhya Pradesh	Singhpur Project
43	2	Madhya Pradesh	Sanjay sagar (Bah) Project
44	2	Madhya Pradesh	Mahuar Project
45	2	Madhya Pradesh	Indira Sagar Project Canal Phase - IV (km. 206 to km. 243)
46	2	Madhya Pradesh	Indira Sagar Project Canal Phase - V (Khargone Lift)
47	2	Madhya Pradesh	Omkareshwar Project Canal Phase-II (RBC km. 9.70 to km 65.50)
48	2	Madhya Pradesh	Omkareshwar Project Canal Phase-III (RBC km. 65.50 to km 142)
49	2	Madhya Pradesh	Bargi Diversion Project Phase - II (km. 63 to km 104)
50	3	Madhya Pradesh	Bargi Diversion Project Phase - III (km. 104 to km 154)
51	3	Madhya Pradesh	Bargi Diversion Project Phase - IV (km. 154 to km 197)
52	1	Maharashtra	Waghur
53	1	Maharashtra	Bawanthadi (IS)
54	1	Maharashtra	Lower Dudhna
55	1	Maharashtra	Tillari
56	1	Maharashtra	Lower Wardha
57	1	Maharashtra	Lower Panzara
58	1	Maharashtra	NandurMadhmeshwarPh-II
59	2	Maharashtra	Gosikhurd (NP)
60	3	Maharashtra	Upper Pen Ganga
61	3	Maharashtra	Bembla
62	3	Maharashtra	Tarali
63	3	Maharashtra	DhomBalakwadi
64	3	Maharashtra	Arjuna
65	3	Maharashtra	Upper Kundalika
66	3	Maharashtra	Aruna
67	3	Maharashtra	Krishna Koyana Lift
68	3	Maharashtra	Gadnadi
69	3	Maharashtra	Dongargaon
70	3	Maharashtra	Sangola Branch Canal
71	3	Maharashtra	Khadakpurna
72	3	Maharashtra	Warna
73	3	Maharashtra	Morna (Gureghar)
74	3	Maharashtra	Lower Pedhi

75	3	Maharashtra	Wang project
76	3	Maharashtra	Naradave (Mahammadwadi)
77	3	Maharashtra	Kudali
78	1	Manipur	Thoubal
79	1	Manipur	Dolaithabi Barrage
80	1	Odisha	Lower Indra(KBK)
81	2	Odisha	Upper Indravati(KBK)
82	2	Odisha	Rukura-Tribal
83	3	Odisha	Subernarekha
84	3	Odisha	Anandpur Barr. Ph.-I / Integrated Anandpur Barr.
85	3	Odisha	RET irrigation
86	3	Odisha	Kanupur
87	3	Odisha	Telengiri
88	1	Punjab	Kandi Canal Extension (Ph.II)
89	1	Punjab	Rehabilitation of Ist Patiala Feeder and Kotla Branch Project
90	1	Rajasthan	Narmada Canal
91	3	Rajasthan	Mod. of Gang Canal
92	2	Telangana	SriKomaramBheem project
93	2	Telangana	Gollavagu Project
94	2	Telangana	Rallivagu project
95	2	Telangana	Mathadivagu Project
96	2	Telangana	Peddavagu @ Neelwai project
97	2	Telangana	Palemvagu project
98	2	Telangana	Peddavagu @ Jagannathpur
99	2	Telangana	SRSP St.II
100	2	Telangana	Rajiv Bheema L.I. Scheme
101	1	Telangana	J. ChokhaRao LIS
102	3	Telangana	Indiramma Flood Flow Canal
103	2	Uttar Pradesh	Bansagar Canal
104	3	Uttar Pradesh	Arjunsahayak
105	3	Uttar Pradesh	Madhya Ganga canal PH-II
106	3	Uttar Pradesh	SaryuNahar(NP)

Annexure – 12

FLOW CHART FOR EXAMINATION OF REVISED COST ESTIMATE OF MAJOR IRRIGATION AND MULTI-PURPOSE PROJECTS WITHOUT CHANGE IN SCOPE

Total Duration: 3 Months

Preliminary Examination in the Nodal Appraisal Directorates and Circulation to specialized Directorates of CWC / other central agencies.

(1 Week)

Examination in the various specialized Directorates of CWC / other central agencies and communication of deficiencies of RCE to State.

(3 Weeks)

Submission of State's replies attending the deficiencies of RCE including further studies and investigation etc.

(3 Weeks)

Examination of State's replies and discussion with the project engineers for finalization in the CWC.

(1 Month)

(If required)

Preparation of Note by the Appraisal Directorates for the Advisory Committee of MoWR, RD&GR for its consideration/Acceptance after getting necessary inputs from the Project Authority.

(1 Week)

1 Annexure-X

THE ANDHRA PRADESH INFRASTRUCTURE (TRANSPARENCY THROUGH JUDICIAL PREVIEW) ACT, 2019.

(ACT No. 34 OF 2019)

ARRANGEMENT OF SECTIONS

CHAPTER I
PRELIMINARY

Sections

CHAPTER II
CONSTITUTION OF JUDICIAL PREVIEW

CHAPTER III
TECHNICAL OR OTHER COMMITTEES

CHAPTER IV
RECOMMENDATIONS

CHAPTER V
MISCELLANEOUS

SCHEDULE

(see section 2 (26))

SECTORS

Sectors enumerated below including PPP Projects

THE ANDHRA PRADESH INFRASTRUCTURE (TRANSPARENCY THROUGH JUDICIAL PREVIEW) ACT, 2019.

(ACT No. 34 OF 2019)

[14th August, 2019]

AN ACT TO BRING TRANSPARENCY IN THE INFRASTRUCTURE BIDDING PROCESS IN THE STATE THROUGH JUDICIAL PREVIEW THEREBY TO ENSURE OPTIMUM UTILIZATION OF PUBLIC RESOURCES AND FOR MATTERS CONNECTED THEREWITH AND INCIDENTAL THERETO.

Be it enacted by the Legislature of the State of Andhra Pradesh in the Seventieth year of a Republic of India, as follows:

CHAPTER-I
PRELIMINARY

1. Short title, extent, commencement and application - (1) This Act may be called the Andhra Pradesh Infrastructure (Transparency through Judicial Preview) Act 2019.

(2) It extends to the whole of the State of Andhra Pradesh.

(3) It shall come into force on such date as the Government may, by notification, appoint.

(4) It shall apply to all Infrastructure Projects implemented in the Sectors enumerated in Schedule Appended to the Act and to such other sectors as may be notified by the Government under the Act from time to time.

2. Definitions - In this Act, unless the context otherwise requires,-

(1) "Act" means the Andhra Pradesh Infrastructure (Transparency through Judicial Preview) Act 2019;

(2) "Bidder" means any entity including any Bidding Consortium, who has submitted a proposal to undertake an Infrastructure Project under Government Departments, Andhra Pradesh Public undertakings, Joint Ventures (JV), Special Purpose Vehicles (SPV) of Government of Andhra Pradesh and Public Private Partnership:

(3) "Bidding Consortium" means if the proposal for the Project is made jointly by more than one entity, then such group of entities shall be referred to as a Bidding Consortium;

(4) "Company" means any entity incorporated by memorandum of association under the Companies Act, 1956 (Central Act 1 of 1956) or incorporated under any other statute or deemed to be incorporated under the laws of India or the laws of any other country of the world;

(5) "Construction" means any construction, reconstruction, rehabilitation, improvement, expansion, addition, alteration and related works and activities including supply of any equipment, materials, labour and services related to build or

rehabilitate any Infrastructure Project comprising of physical structures or systems or commodities or for utilization of resources or provision of services;

(6) "Developer" means any Private Sector Participant who has entered into a contract for the Infrastructure Project with the Government or Government Agency or Local Authority through Public Private Partnership method;

(7) "Government" means the Government of Andhra Pradesh;

(8) "Government Agency" means any department of the Government or any corporation, Agency, Society, Trust or body owned or controlled by the Government by reason of the Government holding not less than 51% of paid-up share capital in such corporation or body;

(9) "Government Company" means any company in which not less than fifty-one per cent of the paid-up share capital is held by the Andhra Pradesh Government, or partly by the Andhra Pradesh Government and includes a company which is a subsidiary of a Government company as defined;

(10) "Hon'ble Judge" means person who is or has been Hon'ble Judge of the High Court;

(11) "Infrastructure" means public works relating to infrastructure for utilizing the natural resources and providing services by either public works of physical structure or systems for facilities or commodities or utilization of resources or provision of services through any method viz, engineering procurement construction method, or rate contract procurement;

(12) "Infrastructure Project" means any Project requiring a investment of value Rupees 100 Crore and above as may be prescribed by the Government from time to time undertaken by Andhra Pradesh Government, Andhra Pradesh Public Undertakings, Joint Ventures (JV), Special Purpose Vehicle (SPV) of the Government of Andhra Pradesh and Public Private Partnership (PPP):

(13) "Investment" means preliminary and pre-operative expenses, capital expenditure, lease on land and equipment, interest during construction, administrative expenses, all operating and maintenance expenses including expenses incurred on recovery of User Levies;

(14) "Judicial preview" means a Preview mechanism constituted under Section 3 of this Act, by a person who has been or is a Hon'ble Judge of the High Court;

(15) "Lead Consortium Member" means in case of a Bidding consortium, that consortium member vested with the prime responsibility of developing a Project, holding not less than 26% equity stake in the Bidding Consortium and also holding the highest equity stake amongst all other consortium members;

(16) "Local Authority" means any Municipal Corporation or Municipal Council or any Panchayat or any other statutory body formed, elected or appointed for local self-Government;

(17) “Local Laws” means laws other than central laws and applicable to the State;

(18) “Notification” means a notification published in the Andhra Pradesh Gazette and the word “notified” shall be construed accordingly;

(19) “Person” shall include any company or association or body of individuals, whether incorporated or not;

(20) “Prioritised Project” means any Project, which is notified by the Government as a prioritised project under the Act;

(21) “Prescribed” means Prescribed by rules or Regulations made under this Act;

(22) “Public Private Partnership” means Investment by Private Sector Participant in an Infrastructure Project of the Government Agency or the Local Authority in the State;

(23) “Regulations” means regulations made under this Act;

(24) “Responsive Bid” means a bid from an eligible Bidder which complies with all the requirements prescribed by the tender documents or other documents as the case may be;

(25) “Schedule” means a Schedule appended to the Act.

(26) “Sectors” means sectors as notified under Schedule of the Act and as may be notified from time to time by the Government;

(27) “State” means the State of Andhra Pradesh;

(28) “State Support” means grant by the State of any administrative support, asset based support, foregoing revenue benefits support, undertaking contingent liabilities by providing guarantees or financial support to the Developer in Public Private Partnership projects;

(29) “Unsolicited or Suo-Motu Proposal” means a proposal in respect of a Project not already initiated by the Government or Government Agency or Local Authority and which proposal is submitted by any Private Sector Participant to the Government Agency or Local Authority in respect of any Infrastructure in the State supported by project specifications, technical, commercial and financial viability and prima facie evidence of the financial and technical ability of such Private Sector Participant to undertake such Project with full details of composition of the Private Sector Participant and his financial and business background;

(30) “User Levies” means the right or authority granted to the Developer by the Government Agency or the Local Authority to recover Investment and fair return on Investment and includes toll, fee, charge or benefit by any name.

CHAPTER-II
CONSTITUTION OF JUDICIAL PREVIEW

3. **Constitution of Judicial Preview -** The Government may, by notification shall,-

(i) Provide for undertaking Judicial preview, prior to inviting tenders, by a person who is or has been Hon'ble Judge of High Court, for all infrastructure projects including Public Private Partnership (PPP) projects of the value of Rupees 100 Crore and above to ensure conformity in procedure, rules and guidelines prescribed by State and Central Governments from time to time.

(ii) Provide the Terms of Reference for the Judicial Preview and also specify the guidelines, rules as applicable from time to time, in the conduct of such preview.

4. Terms of engagement of Hon'ble members and staff - (1) The Government shall provide necessary staff to the Hon'ble Judge as required to discharge his functions. The terms and conditions of engagement of the Hon'ble Judge shall be as prescribed from time to time.

(2) The Government may provide relevant experts to the Hon'ble Judge as per empanelled list and the Honorarium and allowances of such experts, shall be as prescribed from time to time.

(3) In case the Hon'ble Judge so desires the assistance of persons of eminence, they may be engaged on case to case basis.

5. Functions of Judicial Preview Committee - (1) The Government Agency or the Local Authority shall place before the Hon'ble Judge, all the tender related documents with regard to the Infrastructure Projects of value of Rupees 100 crores and above.

(2) The Hon'ble Judge may, suggest suitable modifications essential to achieve the object of transparency to secure competition and equal opportunity.

(3) For the purpose of identification of an infrastructure project of value Rupees 100 crore and above; any part so segregated or divided or tendered separately which form part of the original work shall deemed to be an integral part of such infrastructure project, necessitating preview.

CHAPTER-III
TECHNICAL OR OTHER COMMITTEES

6. Technical or other committees - The Government may, from time to time constitute such committees or Technical committees consisting of such members for performing such of its functions as may be provided for under regulations, if required for assistance to the Hon'ble Judge.

CHAPTER-IV
RECOMMENDATIONS

7. Recommendations by the Hon'ble Judge - (1) The Hon'ble Judge shall place the tender related documents referred to for Judicial Preview by the concerned Government Agency or the Local Authority, in public domain for a week and invite suggestions.

(2) Within 8 days of such publication, the tender document (s) shall be previewed. After due discussion with the Government / Local Body and due examination, the Hon'ble Judge may suggest, such modifications as may be required, which will be binding on the Government.

CHAPTER-V
MISCELLANEOUS

8. Control by Government - The Judicial Preview shall be done in exercise of powers and functions under the Act as prescribed in the rules notified from time to time by the Government for efficient administration and effective implementation of the Act.

9. Protection of Action Taken in Good Faith - (1)No suit, claim or other legal proceedings shall lie against the Government or the staff or representatives of the Government in respect of anything which is in good faith done or intended to be done under the Act or any Rules or Regulations or orders made thereunder.

(2) It shall be open to Hon'ble Judge to devise any appropriate procedure or mechanism to deal with scurrilous or malicious attempts to obstruct the process of preview, and thereafter.

10. Members and Staff of Judicial Preview to be Public Servants - The Hon'ble Judge, Officer, person (s) employed for the Judicial Preview, provided for carrying out the objectives and purposes of this Act shall be deemed to be public servants within the meaning of Section 21 of the Indian Penal Code, 1860. (Central Act.No.45 of 1860).

11. Power to Remove Difficulties - (1) If any difficulty arises in giving effect to the provisions of the Act or the rules, regulations, scheme or orders made hereunder, the State Government within two years from the date of enactment of this Act, may by notification in the Official Gazette, make such provision, not inconsistent with the provisions of this Act, as may be necessary or expedient for removing the difficulty.

(2) All orders made under Sub-section (1) shall, as soon as may be after they are made, be placed on the table of the Legislature of the State and shall be subject to such modification by way of amendments as the Legislature of the State may make either in the same session or in the next session.

12. Delegation of Powers - The Government may, by notification, direct that any power exercisable by the Government under the Act shall be exercisable by an officer of the Government, subject to such terms as may be specified in such notification.

13. Act to Override Other State Laws - (1) If any provision contained in this State Act is repugnant to any provision contained in the Central Act, the provision contained in the Central Act shall prevail and the provision contained in this State Act shall to that extent of repugnancy, be void.

(2) The provisions of this Act are not derogatory to other enactments in force in State of Andhra Pradesh, but are supplementary to such enactments. If any provision of this Act is repugnant to the provisions of any State enactments, the provision of this Act will prevail.

(3) From the date of commencement of this Act, the Government / Local Authority shall furnish the tender documents as specified for Judicial Preview. They shall also prepare and provide a list of experts required for the purpose (s) of Judicial Preview, from time to time.

(4) The Government/Local Authority, shall assist the Judicial Preview in placing the documents in public domain and shall provide assistance to the Hon'ble Judge for quick and transparent disposal as envisaged in the Act.

(5)The entire exercise for each tender shall be completed within 15 days.

14. **Power to make regulations -** The Government may make regulations consistent with the provisions of this Act to carry out the purposes of this Act.

15. Schedule amendment - (1) The Government may, by notification, alter, add to or cancel any entries of the Schedule.

(2) Where a notification has been issued under sub-section(1) there shall, unless the notification is in the meantime rescinded, be introduced in the Legislature of the State, as soon as may be, but in any case during the next session of the Legislature of the State following the date of the issue of the notification, a Bill on behalf of the Government, to give effect to the alteration, addition or cancellation, as the case may be, of the Schedule specified in the notification, and the notification shall cease to have effect when such Bill becomes law, whether with or without modifications, but without prejudice to the validity of anything previously done thereunder:

Provided that if the notification under sub-section(1) is issued when the Legislature of the State is in session, such a Bill shall be introduced in the Legislature of the State during that session:

Provided further that where for any reason a Bill as aforesaid does not become law within six months from the date of its introduction in the Legislative Assembly, the notification shall cease to have effect on the expiration of the said period of six months.

16. Power to Make Rules - (1) The Government may by notification make Rules for carrying out all or any of the purposes of this Act.

(2) Every rule made under this Act shall be, immediately after it is made be laid before the Legislature of the State if it is in session, and if it is not in session, in the session immediately following for a total period of fourteen days which may be comprised in one session or in two successive sessions, and if, before the expiration of the session in which it is so laid or the session immediately following the Legislature of the State agrees in making any modifications in the rule or in the annulment of the rule, the rule shall from the date on which the modification or the annulment is notified, have effect only in such modified form or shall stand annulled as the case may be, so however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under the rule.

SCHEDULE

(see section 2 (26))

SECTORS

Sectors enumerated below including PPP Projects

1. Roads (State Highways, Major Districts Roads, Other District Roads & Village Roads), Bridges and Bypasses.
2. Health.
3. Land reclamation.
4. Canals, Dams, Tanks, Reservoirs.
5. Water supply, treatment and distribution.
6. Waste management.
7. Sewerage, drainage.
8. Public Markets.
9. Trade Fair, Convention, Exhibition and Cultural Centers.
10. Public Buildings.
11. Inland water transport.
12. Gas and Gas works.
13. Sports and recreation infrastructure, public gardens and parks.
14. Real Estate.
15. e-Governance Projects, IT Infrastructure.
16. Urban Development through Joint development agreement and Joint Venture with Private Sector companies, consortium of companies.
17. Telecommunication and Broadband Internet Services including provision of Fiber Grid, WiFi Services etc.,
18. Power-Generation, Transmission and Distribution including renewable (Solar & Wind) energy projects.
19. Other Highways Projects including housing or other activities being an integral Part of the Highway Project.
20. Transport Terminus and depots.
21. Railway system including Urban transit Projects.
22. Ports, Inland Ports.
23. Airports including but not limited to logistic hubs and Free Trade Zones.
24. Urban Development Projects including Smart City Projects.
25. Educational Institutions.

		regular field inspection and monitoring by the field engineers concerned so that there will not be any unnecessary financial loss / burden on the Government; much less undue benefit to the contractor. *For all items of work such as pump house, pressure main, delivery cistern, Sub-Stations, Transmission lines, CM&CD works, any other relevant items work etc., on completion of survey, detailed designs drawings, detailed estimates with cost analysis, BOQ with reference to rates adopted for Civil Items, rates approved by the DGS&D for the EM & HM works, rates for electrical items as per the approved APTRANCO SSR at the time of technical sanction have to be prepared by the successful Contractor and they should be got approved by the respective competent authorities. After according approval on thorough vetting by the subordinate engineering officials working in the CE's and ENC's office as the case maybe; and accordingly the BOQs will be prepared. Correspondingly the supplementary contract agreement which form part of the main agreement on tentative basis as a composite contract agreement will be concluded enabling to go ahead with execution of works and also for making payments.* *The actual requirement of quantities will be in accordance with the approved drawings and payments will thus be regulated as per the*	

		approved drawings and as per actual execution a nd in such cases, where the approved designs r esult in any reduction in amount, the payment s chedule will be adjusted to the actuals. ayment schedule will be fixed from the s upplementary contract agreement supra and sam remains unchanged in case of any increase in quantities and price (since final DPR with reference to BOQs and designs etc., being prepared by the Contractor after actual verifications and estimations etc., in a meticulous way). The tender percentage excess or less shall be applied. ***Amounts if any spent by the Department on preparation of IBM estimate (DPR) shall be recovered from the successful bidder, since provision is made in the tender document for meeting the same.*** ***Similar corrections to be made suitably wherever required, including at page 16 to 18 of the RFP***	

 Annexure- XII

Engineering geological consideration of a deep pump house foundation floor: case study of lift irrigation scheme, India

LG Singh, AK Naithani, Devendra Singh Rawat and Prasnna Jain
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***Abstract*—Geological mapping of deep foundation floor is essential to provide permanent data set for geological interpretation. A deep pump house (94 m long x 20 m width x 78 m deep) of Mahatma Gandhi Kalwakurthi Lift Irrigation Scheme-II (MGKLIS-II) wasconstructed at Mahaboobnagar District in TelanganaState for the irrigation of drought prone upland areas. Engineering geological mapping on 1:200 scale of foundation floor of pump house was carried out in order to evaluate the basic design parameters. All the discontinuities in the rock mass of pump house area with the zone of influence of the foundation were identified and mapped. Mapping was done to assess the requirement of any ground improvement by adopting suitable engineering measures. Safe bearing pressure of the foundation was estimated by rock mass rating, rockmass characteristic parameters. Based on investigations geotechnical problems were identified and suitable engineering measures for rock support were suggested to make foundation monolithic.**

Keywords—foundation floor; pump house; lift irrigation; rock mass rating; safe bearing pressure;Telangana state

I.INTRODUCTION

Mahatma Gandhi Kalwakurthy Lift Irrigation Scheme (MGKLIS) is proposed to provide irrigation water to an extent of 3.40 lakhs acres and utilising 25 TMC of water including drinking water facilities to 3,20,000 population (0.73 TMC) to chronically drought prone upland areas in Mahaboobnagar district covering about 303 villages in erstwhile taluks of Kollapur, Nagarkurnool, Achampet, Jadcherla and Kalwakurthy constituencies in 19 Mandals. This scheme (MGKLIS) was constructed having the three stages (I, II & III) for lifting the Krishna water from Srisailam reservoir (back water) to Gudipallygattu balancing reservoir through channels and tunnels(Fig. 1). Water will be lifted to a total height of 289 m in three stages from level +244.40 to +502.00m.

The present investigations were carried out for the foundation of pump house of MGKLIS-II. This deep pump house (94 m long x 20 m width x 78 m deep) is design to install heavy pump machine (~220 tons each pump machine) for the lifting of water[1]. This scheme was constructed near village Sathapur of Mahaboobnagar District, located 195 km away from Hyderabad city, for lifting the water from Singotam balancing reservoir to Jonnalaboguda balancing reservoir. The FRL of the Singotam and Jonnalaboguda balancing reservoirs are RL +334.680 m and RL +407.000 m respectively. The capacity of Singotam and Jonnalaboguda balancing reservoirs are 0.55 TMC and 2.14 TMC.

The major components of the project are: one 4 km long gravity canal from Singotam balancing reservoir having bed width of 19.15 m, one 4.53 km long and 6.85 m finished diameter 'D' shaped tunnel, one surge pool (94 m long x 40 m width x 75 m height), five 50 m long draft tube tunnels, one pump house (94 m long x 20 m width x 78 m height) and five (3 m finished diameter), 15 m length horizontal and 305 m length inclined (45°) main delivery tunnels. Lift height is 86 m and five pumps installed in the pump house cavity (30 MW capacity each). Design discharge of the pumps is 113.2 Cumec. This study pertains to large scale engineering geological mapping on 1:200 scale of excavated floor foundation of the pump house. The objective of this study was to advise suitable protective engineering measures of excavated foundation floor of pump house based on detailed engineering geological investigations.

Pump House is the key role in Lift Irrigation Projects, which are facilities including high speed electric pumps and other equipment for pumping fluids from one place to another. The pump machine shall be of the vertical shaft, single stage, Francis Turbine Pump, suitable for direct coupling to motor of (5x30 MW) with 10% over load rating. The direction of rotation shall be anti-clockwise when viewed from top. Each pump shall be so designed of ~220 tons weight including all removable parts including impeller, shaft, guide bearing, shaft seal, guide apparatus etc. They are used for a variety of infrastructure systems, such as the supply of water to high level reservoirs, canals, the drainage of low-lying land, and the removal of sewage to processing sites.

II.METHODOLOGY

Geological mapping on 1:200 scale of the pump house foundation was carried by using the Total Station. Grids were prepared for mapping and the size of the grid was 2 m x 2m, which was decided based on the mapping accuracy and resolution required for such investigations. All the lithological

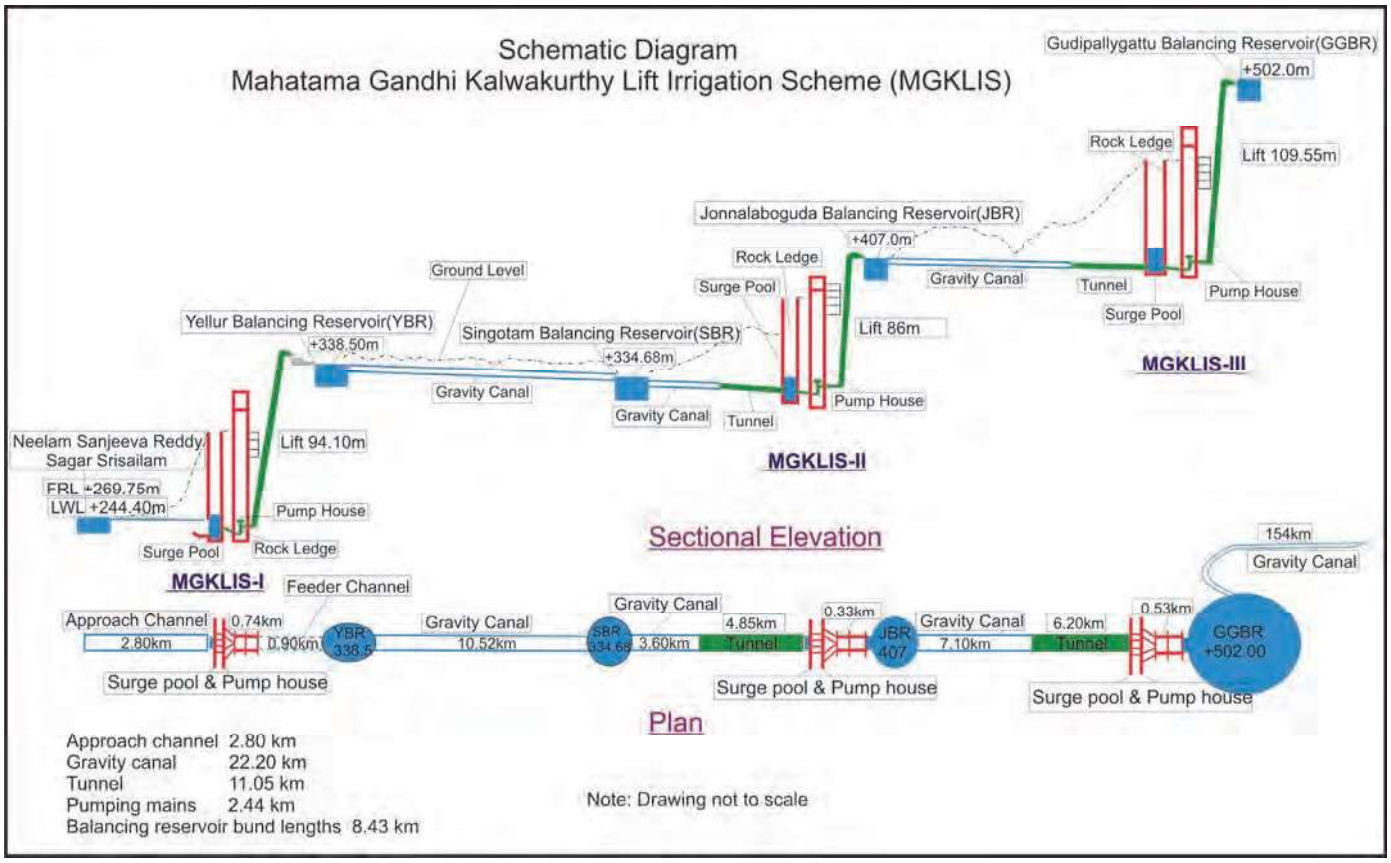

Fig.1. Plan and elevation of schematic drawing of MGKLIS [1]

and structural features were observed and mapped by using Total Station surveying equipment. Detailed examination of rock types in each grid were carried out which includes mineralogical composition, texture, classification and nomenclature and degree/grade of weathering. Fracture filling that have taken place in the study site were examined and recorded. The attitude and structure of the rocks, fractures and joint pattern present in the floor and walls were determined for mapping. ISRM [2] classification for weathered mass was used to characterize the rock mass into different grades. The assessment of Rock Mass Rating [3] for granite rock masses was done based on the rock joints and their nature.

III. Geology of the MGKLIS-II Project Site and Area Around

MGKLIS–II project area forms a part of Eastern Block of Dharwar Craton mainly comprised of Archaean granites which are intruded by mafic dykes age ranging from Archaean to Upper Proterozoic [4]. Granites and gneisses are exposed in and around the project site over a large area. In these formation many shears, fractures and faults have affected the terrain controlled the invasion of quartz, pegmatite, apatite and basic dykes along NW-SE, NNW-SSE, WNW-ESE, N-S, NNE-SSW and ENE-WSW directions [5,6,7]. The reactivation is seen especially in WNW-ESE trending features associated with basic dykes and quartz reefs exhibit intense fractures and shears [5]. The regional study of Mahaboobnagar District area based on geology, photogeology and Landsat imageries [8],identified NE-SW, NW-SE, WNW-ESE, NNE-SSW and nearly N-S trending lineaments and major faults trending in NW-SE, WNW-ESE, nearly E-W directions in the eastern and southeastern part of the area. No major lineament or fault is passing through the pump house area of MGKLIS-II project site.

The pump house area is excavated through medium to coarse grained pink granites, traversed by dolerite dykes. Pink granites are coarse grained, hard and jointed and shows phenocryst of alkali feldspar and quartz. Main minerals composition is alkali feldspars, quartz, mica and amphiboles. Three to five prominent joints set are developed and along the joint plane clay coating/filling was also recorded. Joints are irregular in pattern. Pink granite is generally fresh to slightly weathered (WI–WIII). Dolerite dykes are fine grained and greenish black in colour. The width of the dykes varies from 30 cm to >100 cm and their strike length is more than 50m in excavated part of pump house. Dykes are generally sheared along the contact at the pump house area. Plagioclase and clinopyroxene (augite /titanaugite) are the main minerals occurring in ophitic to sub-ophitic textures in dolerite. Quartz, epidote and opaques occur as accessories. Amphibole, biotite, sericite occur as alteration products. In a regional perspective E-W trending dykes show greater degree of alteration and are relatively older as established from intersecting features. Sulphide disseminations are reported in some dykes. Dykes are generally moderately to highly weathered (WIII – WIV).

IV. Engineering Geological Assessment of the Foundation of Pump House

Geological mapping of foundation floor is essential to provide permanent data input for geological interpretations during construction and also it forms valuable documentation for post-construction stage. For very important structures like deep pump house of lift irrigation, the foundation strata have to be well studied and documented for credible geologic interpretations. Rock is usually recognized as the best foundation material. However, design engineers should be aware of the dangers associated with heterogeneity and unfavourable rock conditions since over-stressing a rock foundation may result in large differential settlementsor perhaps sudden failure. In order to evaluate the design basis foundation parameters for pump house of MGKLIS-II, engineering geological mapping (on 1:200 scale) was carried out.

All the discontinuities in the rock mass of foundation of pump house with the zone of influence of the foundation has been identified and mapped. The primary purpose of the mapping is to provide a permanent record of conditions during the excavation. Mapping will be used to assess the requirement of any ground improvement. This permanent foundation record will assist in making better interpretation of post-construction foundation instrumentation data[9]. The floor of pump house was examined on a grid to grid basis; the size of the grid is 2 m x 2 m. All the lithological and structural features were observed and mapped using Total Station surveying equipment and shown in the final foundation grade geological plan map(Fig. 2).Classification of rock mass using Rock Mass Rating (RMR) of Bieniawski [3] has been attempted and based on investigations, recommendations for the treatment of foundation is given.

A. Geological and Structural Assessment – Floor of Pump House

The design foundation level is at RL +305.40 but in some areas it is excavated up to an average RL +303 and the over excavation was varying from 0.10 m to 2.4 m because of presence of unfavourable discontinuities, and shear zones.The foundation of pump house will be resting as per design on a raft of 300 mm thick at about 78 m below the existing ground level for functional requirement(Fig. 3). Total 1880 sq m excavated foundation area of pump house floor has been geologically mapped. Geological foundation mapping was done after the excavation and before first pore of concrete (Fig. 4). Based on the field observations and evidences, it is found that the entire floor area consists of coarse grained, hard and jointed pink granite (Fig. 5). Total four shear zones are mapped. The width of the shear zones are varying from 1 cm to 30 cm. No displacement has been recorded along shear zones. No evidences of faulting are observed on the surface of floor area. The structural features observed during the mapping indicated the need for consolidation grouting, so that the entire floor is function as single rock mass.On the basis of surface geological mapping the excavated surface is acceptable for foundation.

Pink granites are coarse grained, hard and jointed and shows phenocryst of alkali feldspar and quartz. Main minerals composition is alkali feldspars, quartz, mica and amphiboles. Five prominent joints set are developed and along the joint plane clay filling/coating was also recorded. Joints are irregular in pattern. Granites are generally fresh to moderately weathered (WI–WIII). At the foundation level granites are traversed by dolerite dyke (feature D1 marked in geological plan map). Dolerite dykes are fine grained and greenish-black in colour. The width of the dyke is up to 100 cm and strike length is more than 50 m in excavated part of pump house. Dyke is generally sheared and clay gouge was observed. Plagioclase and clinopyroxene (augite / titanaugite) are the main minerals occurring in ophitic to sub-ophitic textures in dolerite dyke. Quartz, epidote and opaques occur as accessories. Amphibole, biotite, sericite occur as alteration products. Dyke is generally highly weathered (WIV) as per the weathering grade. The rock mass is characterized by prominent five number of joint sets, which are continuous and persistent, slightly rough to smooth with unaltered joint walls. Staining has been recorded along the joint surfaces where the joints are tight and where opening is up to 50 mm, soft clay mineral and crushed material filling has been recorded. In general, the rock mass was characterized by dry condition or minor inflow i.e. < 5.0 l/min. Crack/fractures developed due to excavation / blasting were also recorded during geological mapping. Some of the cracks are tight while some are open with size of the opening varying from 1 mm to 5 mm. Hairline cracks developed due to excavation work were also recorded. The prominent joints recorded in the coarse grained granite at the foundation of pump house are given in Table I.

V. Geotechnical Assessment Floor of Pump House

The foundation of the pump house is falling under weathering grade WI - WIV. The grade of the rock mass as evaluated from the UCS and conditions of discontinuities has RMR values are varying from 49 to 63 and fall under fair to good rockmass category (Table II). Randomly 20 samples were selected from the pump house area for the unconfined compressive strength. Tests were conducted at site and specimens were tested at a moisture content close to field conditions. The values of uniaxial compressive strength (UCS) is varies from 132 to 291 MPa. The average value of Uniaxial compressive strength (UCS) is 210 MPa.

A. Safe Bearing Pressure for Foundation Floor

Safe Bearing Pressure is an important factor for the design of foundation for large engineering structures. The Bearing Pressure of the foundation in jointed rock masses can be estimated by Rock Types, Rock Mass Rating (RMR), Uniaxial Compressive Strength (UCS), Point Load Strength, Rock Quality Designations (RQD), Pressure Meter Test and Plate Load Test [10,11]. The Rock type and Rock Mass Rating (RMR) parameters are used to evaluate the Safe Bearing Pressure of the pump house foundation. Average RMR 56.73 of the foundation floor of the pump house was taken for the estimation of Safe Bearing Pressure. The Allowable Bearing Pressure was also estimated as given in the Table III

The Safe Bearing Pressure and Allowable Bearing Pressure calculated from the above two methods viz. by rock characteristic and RMR method are summarized in Table IV for the pump house.

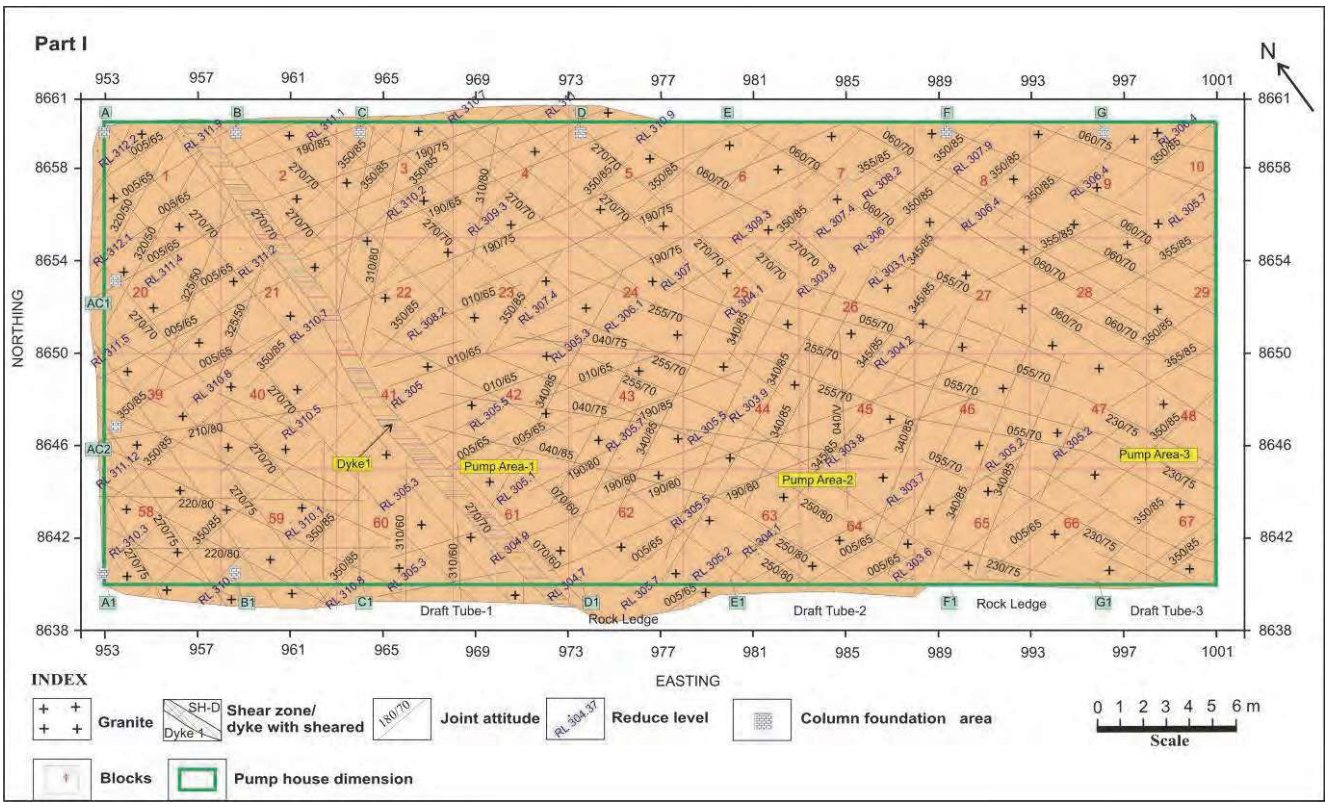

Fig. 2 (part I). Geology map of foundation of pump house of MGKLIS-II

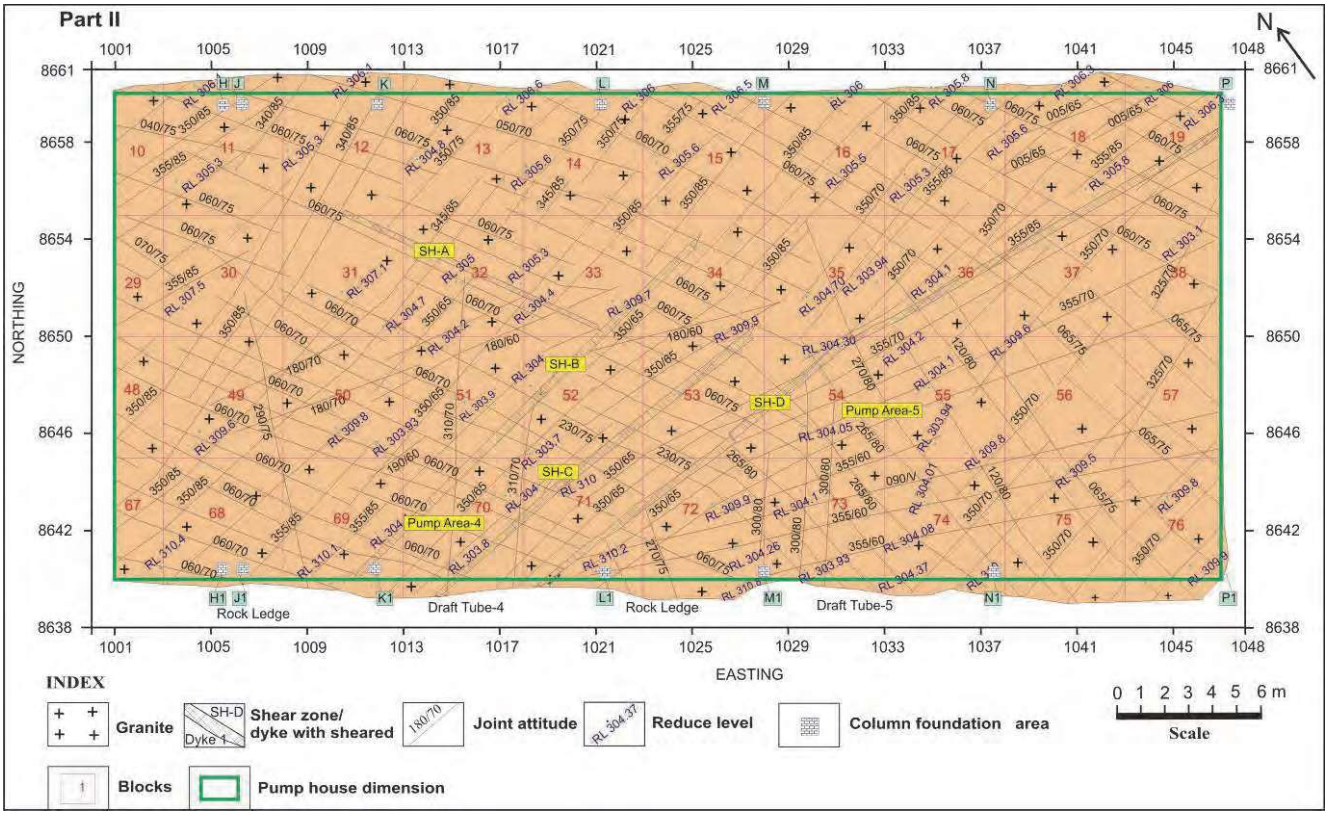

Fig. 2 (part II). Geology map of foundation of pump house of MGKLIS-II

Fig. 3. Pump house area, viewing towards left side i.e. western direction

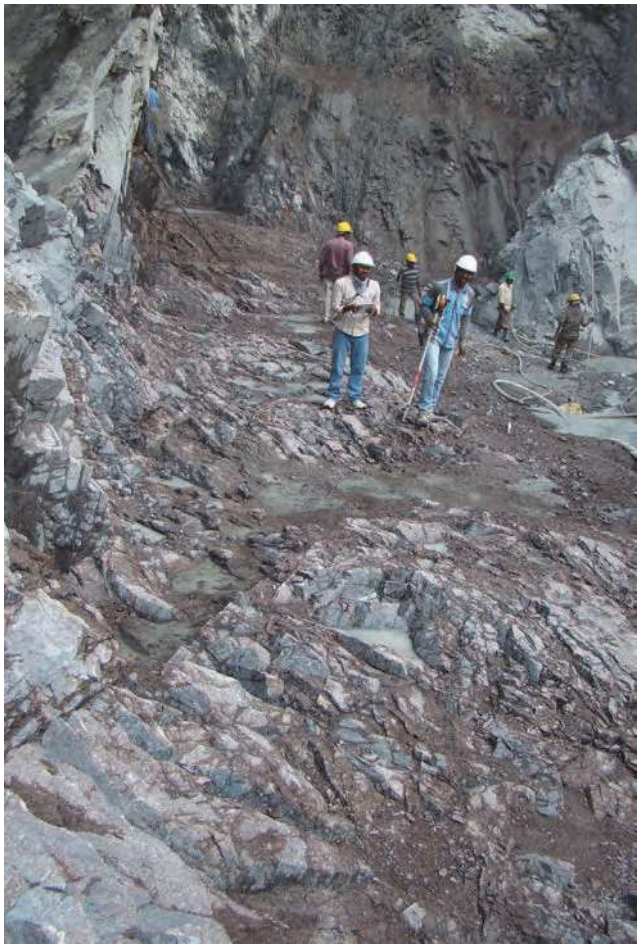

Fig. 4.Pink granite mapped at the foundation of pump house

TABLE I. PROMINENT JOINTS RECORDED IN COARSE GRAINED GRANITE

Joint set	Dip direction	Dip amount	Spacing (cm)	Persistence (m)	Roughness	Aperture (mm)	Infilling (mm)	Groundwater condition	Remarks
J1	340-355	60-85	10-50	>20	Slightly rough to smooth	Tight to 50	Nil-clay	Damp	Joint plane is stained
J2	040-070	70-75	50-100	>20	Slightly rough	Tight to 2	Nil-clay coated	Damp	Joint plane is stained to fresh
J3	220-270	75-80	30-70	20	Slightly rough	Tight to 1	Nil-clay coated	Damp	Joint plane is stained to fresh
J4	180-220	60-80	50-100	20	Slightly rough	Tight to 2	Nil-clay coated	Damp	Joint plane is stained to fresh
J5	290-325	70-85	70-100	10	Slightly rough	Tight to 2	Nil-clay coated	Damp	Joint plane is stained to fresh
J6	005-010	65	30-50	10	Slightly rough	Tight	Nil	Damp	Joint plane is fresh
J7	120	80	40-60	5	Slightly rough	Tight	Nil	Damp	Joint plane is fresh
J8	090	Vertical	30-80	10	Slightly rough	Tight to 2	Nil	Damp	Joint plane is fresh
J9	040	Vertical	-	10	Slightly rough	Tight to 1	Nil	Damp	Joint plane is fresh

Note: For vertical joints strike direction is given

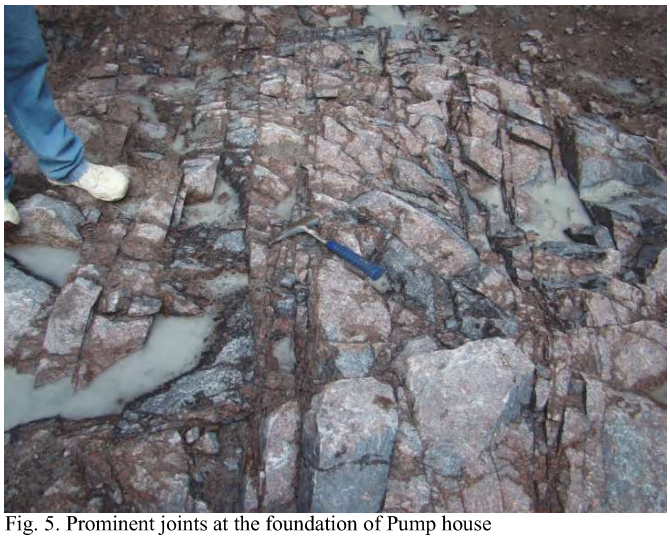

Fig. 5. Prominent joints at the foundation of Pump house

TABLE II.ROCK MASS CLASSIFICATION USING RMR OF THE FOUNDATION OF PUMP HOUSE

Block No.	Rock type	RMR		
		Value	Class	Description
1	Coarse pink granite	52	Class-III	Fair
2	Coarse pink granite	49	Class-III	Fair
3	Coarse pink granite	57	Class-III	Fair
4	Coarse pink granite	57	Class-III	Fair
5	Coarse pink granite	57	Class-III	Fair
6	Coarse pink granite	57	Class-III	Fair
7	Coarse pink granite	57	Class-III	Fair
8	Coarse pink granite	57	Class-III	Fair
9	Coarse pink granite	63	Class-II	Good
10	Coarse pink granite	57	Class-III	Fair
11	Coarse pink granite	63	Class-II	Good
12	Coarse pink granite	61	Class-II	Good
13	Coarse pink granite	61	Class-II	Good
14	Coarse pink granite	61	Class-II	Good
15	Coarse pink granite	52	Class-III	Fair
16	Coarse pink granite	57	Class-III	Fair
17	Coarse pink granite	57	Class-III	Fair
18	Coarse pink granite	52	Class-III	Fair
19	Coarse pink granite	52	Class-III	Fair
20	Coarse pink granite	57	Class-III	Fair
21	Coarse pink granite	49	Class-III	Fair
22	Coarse pink granite	49	Class-III	Fair
23	Coarse pink granite	57	Class-III	Fair
24	Coarse pink granite	63	Class-II	Good
25	Coarse pink granite	63	Class-II	Good
26	Coarse pink granite	57	Class-III	Fair
27	Coarse pink granite	63	Class-II	Good
				(continued)

Block No.	Rock type	RMR		
		Value	Class	Description
28	Coarse pink granite	63	Class-II	Good
29	Coarse pink granite	63	Class-II	Good
30	Coarse pink granite	61	Class-II	Good
31	Coarse pink granite	57	Class-III	Fair
32	Coarse pink granite	52	Class-III	Fair
33	Coarse pink granite	57	Class-III	Fair
34	Coarse pink granite	61	Class-II	Good
35	Coarse pink granite	57	Class-III	Fair
36	Coarse pink granite	52	Class-III	Fair
37	Coarse pink granite	52	Class-III	Fair
38	Coarse pink granite	57	Class-III	Fair
39	Coarse pink granite	61	Class-II	Good
40	Coarse pink granite	57	Class-III	Fair
41	Coarse pink granite	49	Class-III	Fair
42	Coarse pink granite	52	Class-III	Fair
43	Coarse pink granite	61	Class-II	Good
44	Coarse pink granite	57	Class-III	Fair
45	Coarse pink granite	52	Class-III	Fair
46	Coarse pink granite	63	Class-II	Good
47	Coarse pink granite	63	Class-II	Good
48	Coarse pink granite	63	Class-II	Good
49	Coarse pink granite	61	Class-II	Good
50	Coarse pink granite	57	Class-III	Fair
51	Coarse pink granite	52	Class-III	Fair
52	Coarse pink granite	52	Class-III	Fair
53	Coarse pink granite	52	Class-III	Fair
54	Coarse pink granite	52	Class-III	Fair
55	Coarse pink granite	57	Class-III	Fair
56	Coarse pink granite	57	Class-III	Fair
57	Coarse pink granite	57	Class-III	Fair
58	Coarse pink granite	57	Class-III	Fair
59	Coarse pink granite	57	Class-III	Fair
60	Coarse pink granite	57	Class-III	Fair
61	Coarse pink granite	49	Class-III	Fair
62	Coarse pink granite	61	Class-II	Good
63	Coarse pink granite	57	Class-III	Fair
64	Coarse pink granite	57	Class-III	Fair
65	Coarse pink granite	57	Class-III	Fair
66	Coarse pink granite	57	Class-III	Fair
67	Coarse pink granite	57	Class-III	Fair
68	Coarse pink granite	52	Class-III	Fair
69	Coarse pink granite	52	Class-III	Fair
70	Coarse pink granite	52	Class-III	Fair
71	Coarse pink granite	57	Class-III	Fair
72	Coarse pink granite	57	Class-III	Fair

Block No.	Rock type	RMR		
		Value	Class	Description
				(continued)
73	Coarse pink granite	57	Class-III	Fair
74	Coarse pink granite	57	Class-III	Fair
75	Coarse pink granite	61	Class-II	Good
76	Coarse pink granite	57	Class-III	Fair

TABLE III. CALCULATION SAFE BEARING PRESSURE (Q_{NS}) AND ALLOWABLE BEARING PRESSURE (Q_{ALLOW})

Base on rock characteristic	
Rock Type	Coarse grained Granite
Net Safe Bearing Pressure (q_{ns})	1000 t/m^2
Correction factor (for rock mass with continuous joints with aperture up to 5 mm and clay filled)	0.50
Allowable Bearing Pressure (q_{allow})	q_{ns} * correction factor
	1000 * 0.50 t/m^2
	500.0 t/m^2
Based on Rock Mass Rating, (RMR)	
Average RMR	56.73
Classification of rock mass	Class III
Description of rock mass	Fair
Net Safe Bearing Pressure (q_{ns})	**250.5 t/m^2**
Correction factor (for rock mass with continuous joints with aperture up to 5 mm and clay filled)	0.50
Allowable Bearing Pressure (q_{allow})	q_{ns} * correction factor
	250.5 * 0.50
	125.25 t/m^2

TABLE IV: SAFE BEARING PRESSURE AND ALLOWABLE BEARING PRESSURE FOR PUMP HOUSE FOUNDATION

Sl. No.	Method	Safe Bearing Pressure, t/m^2	Allowable Bearing Pressure, t/m^2
01	Base on rock characteristic	1000.0	500.0
02	Based on Rock Mass Rating	250.5	125.25

It is recommended to adopt the Allowable Bearing Pressure value obtained from RMR, that is 125.25 t/m^2 for the design of foundation on this stratum for pump house.

VI. TREATMENT AND RECOMMENDATIONS FOR FOUNDATION FLOOR

The rocks exposed at the foundation grade of the pump house are jointed pink granite interspersed with sheared dolerite dyke. Shear zones having the varying thickness are mapped which are having differential mechanical behavior due to varying physical properties leading to differential settlement. In order to overcome the problem of differential settlement shear zones treatment plan as given in Table V was suggested.

Based on the structural features mapped, consolidation grouting up to 6.0 m depth using primary, secondary and tertiary holes was recommended so that the entire floor area functions as a single rock mass. The pressure and proportion of grout mixes to be used for injection shall be based on water pressure test and the results of trial grouting operation. Special care to be taken to consolidate rock mass along the

TABLE V. TREATMENT PLAN FOR SHEAR ZONES AND DYKE WITH SHEAR AT THE FOUNDATION LEVEL OF PUMP HOUSE

Shear zone/ dyke	Thickness	Recommended excavation depth	Treatment plan
D1	Upto1.0m	1.5 m	Dolerite dyke is crushed and sheared, should be excavated up to 1.5 m depth by mechanical breakers and backfilled with concrete (M≥25) up to the foundation level after systematic cleaning, washing and jetting to make the rock mass monolithic. The concrete should be allowed to cure for 10-12 days before rock bolting. The length of rock bolt will be varying from 4 to 5 m as per the site condition.
SH-C, SH-D	20.00 to 30.00 cm	0.60 m	Shear zones area should be excavated up to 0.60 m depth by mechanical breakers and backfilled with concrete (M≥25) up to the foundation level.
SH-B	Up to 15.00 cm	0.50 m	Shear zones area should be excavated up to 0.50 m depth by mechanical breakers and backfilled with concrete (M≥25) up to the foundation level.
SH-A	Up to 10.00 cm	0.30 m	Shear zone having clay gauge should be excavated up to 0.30 m depth by mechanical breakers and backfilled with concrete (M≥25) up to the foundation level.

weak zones/shear zones. The holes which absorb water greater than 3 lugeons, shall invariable be grouted. (1 Lugeon is water loss of 1 lit/m/min at a pressure of 10 kg/sq cm) [12,13]. The grout holes shall be laid out in line with secondary holes staggered with reference to the primary holes on the adjacent lines. Spacing between holes initially shall be 6 m centre to centre. After completing the grouting through these primary holes intermediate holes will be taken in between primary holes. The number of holes for further grouting (tertiary grouting – which will be determined based on results of drilling and grouting of intermediate holes) will be such that a continuous consolidated area of satisfactory water tightness is achieved.

It was recommended to complete blasting before taking up grouting operation. Ifblasting after grouting is unavoidable, through testing and regrouting will be essential after blasting. Plain Cement Concrete (PCC) of M15 grade lining up to the design foundation level (i.e. RL+305.40 m) was recommended before 300 mm thick raft foundation. On the floor detached rock-masses were laying in scattered form, which were recommended to remove before any protective measure is applied.

VII. CONCLUSIONS

Base on detailed engineering geological investigation, it was observed that area in the floor of pump house site is characterized by coarse grained, hard and jointed pink granite traversed by sheared dolerite dyke. The floor region was fresh to moderately weathered (W-I to W-III) but prominent vertical/inclined joints were present. The grade of the rock mass as evaluated from the condition of discontinuities has RMR values varying from 49 to 63 and falls under fair to good rock mass. Allowable Bearing Pressure value obtained from RMR is 125.25 t/m^2 for the design of foundation of pump house. Treatment plan i.e. grouting etc. for the foundation of pump house is discussed in this paper to overcome the problem of differential settlement and to make floor monolith. The rock mass was quite competent and accepted for the first pour of concrete.

ACKNOWLEDGEMENT

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Annexure-XIII

1

Article 1: Notice Inviting Tender
Government of Andhra Pradesh
Water Resources Department
NIT No. 01/2020-21, Dt: 15.07.2020

Tenders for the work mentioned below are invited from the Contractors/ firms/ Companies registered with Government Andhra Pradesh (OR) with any State Government/ Central Government/ Public Sector Undertakings in appropriate class and category of registration to the monetary limits of subject tendered work.

1. **Preliminary details**:

Name of work: "Rayalaseema Lift Scheme to draw and utilize 3 TMC per day from Sangameswaram to SRMC at Km. 4.00 from Pothireddypadu Head Regulator – under EPC Turnkey System."

1	Department Name	:	**Water Resource Department**
2	Circle / Tender Inviting Authority	:	Superintending Engineer, SRBC Circle No.1, Nandyal
3	Tender Notice No.	:	**01/2020-21, Dt: 15 .07.2020**
4	Name of Project	:	**Rayalaseema Lift Scheme**
5	Name of Work	:	**"Rayalaseema Lift Scheme to draw and utilize 3 TMC per day from Sangameswaram to SRMC at Km. 4.00 from Pothireddypadu Head Regulator** – under EPC Turnkey System."
6	IBM Value (INR)	:	**Rs.3278,18,55,104/-**
7	Period of Completion (in Months)	:	30 Months
8	Form of Contract	:	**EPC**
9	Class of Contractor eligible for tendering	:	Refer tender document
10	Tender Type	:	Open
11	Bid Call (Nos.)	:	1st call
12	Type of Quotation	:	Percentage
13	Transaction Fee	:	Rs 29,500/- The participating bidders will have to pay transaction fee to M/s APTS, Vijayawada It is mandatory for the bidders to pay the transaction fee through the Electronic payment Gateway.
14	Bid Security (INR)/EMD	:	EMD amount is Rs.18.90 Crores. EMD shall be paid in the form of Bank Guarantee in favor of the Superintending

CONTRACTOR

CHIEF ENGINEER & DWRO

			Engineer, SRBC Circle No-1, Nandyal, Kurnool District to be valid for a period of 6 months from the date of bid submission to be obtained from any Government owned Public Sector Bank or any Scheduled Commercial Bank or To be paid through Net banking /RTGS/ NEFT from the Registered Bank Account.
15	Bid Document Downloading Start Date	:	From 27.07.2020 @ 09.00 AM onwards
16	Bid Document Downloading End Date	:	03.00 PM on 10.08.2020.
17	Pre bid Meeting	:	03.08.2020 @ 11.00 AM at O/o. The Chief Engineer & DWRO, Kurnool (AP)
18	Last Date & Time for Receipt of Bids	:	5.00 PM on 10.08.2020
19	PQ Stage Date & Time (EMD Submission)	:	11.00 AM on 12.08.2020
20	Technical Qualification Stage Date & Time	:	11.00 AM on 13.08.2020
21	Commercial Stage Date & Time	:	11.00 AM on 17.08.2020
22	Auction Date & Time	:	02.00 PM on 17.08.2020
23	Declaration of Successful Bidder by competent Authority (L1 after e-auction and physical Document verification)	:	02.00 PM on 19.08.2020
24	Bid Validity Period	:	90 Days from last date of receipt of Bids
25	Officer Inviting Bids	:	Superintending Engineer, SRBC Circle No.1, Nandyal.
26	Bid Opening Authority	:	Superintending Engineer, SRBC Circle No.1, Nandyal.
27	Address	:	O/o The Superintending Engineer, SRBC Circle No.1, Nandyal, Kurnool District, AP Pin No.518501.
28	Contact Details	:	Sri Sk. Kabir Bhasha, Superintending Engineer, SRBC Circle No.1, Nandyal, Kurnool District, AP. Pin No.518501. Cell No.8985003091. E-Mail : se1srbcnandyal@gmail.com
29	Procedure for bid submission	:	As per NIT

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30	General Terms & Conditions / Eligibility criteria	:	As per Tender Document
31	E- Auction(Reverse Tendering)	:	Reverse tendering shall be followed (refer tender document for further guidelines).
32	Special conditions	:	Refer tender document
33	Brief scope of work		The brief scope of the work is as detailed below. Surveying, investigation, designs, Engineering, Estimates and construction of works in the following components. **1.Excavation of approach channel including fore bay from level + 240.000 in Srisailam foreshore area upto the pump house.** 2.Construction of pump house of required area. 3.Supply, erection and commissioning of pumps and motors of required capacity. 4.**Erection of Delivery pipe lines of required capacity.** 5.Construction of Delivery cistern. 6.Construction of sub station of required voltage and laying electrical power line from the existing 400KV line 7.Construction of link canal including CM and CD works 8.For detailed scope of work, please refer the tender document.
34	Tender can be downloaded	:	https://tender.apeprocurement.gov.in
35	Tender documents (in zip format)	:	Tender Doc.zip
36	Others	:	Tender conditions are subject to modifications as per suggestions of Judicial preview/SLTC. Such changes if any will be notified through corrigendum to be issued from time to time.

2. Other Details

2.1. The bidders need to contact the tender inviting Authority for any information/ clarifications required to submit their tenders on e – procurement marketplace.

2.2. The bidders need to register on the electronic procurement marketplace of Government of Andhra Pradesh., that is, https://tender.apeprocurement.gov.in. For obtaining digital signature certificate, the bidders may contact APTS, VIJAYAWADA. On registration of the e – procurement marketplace they will be provided with a user

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ID and password by the system, and only by using the same they can submit their tenders online.

2.3. After registering on the e – Procurement marketplace, bidders need to scan and upload the required documents as per the tender requirements.

2.4. The bidders shall authenticate the tender with their digital certificate for submitting the tender electronically on e – Procurement Platform and the tenders not authenticated by digital certificate of the bidder will not be accepted on the e – Procurement platform.

2.5. The bidder shall mandatorily pay the transaction fee to M/s APTS UNIT, VIJAYAWADA through the electronic payment Gateway.

2.6. The bidders are advised not to wait till the last day of submission of tender to avoid uploading problem, if any, on the web site.

2.7. The bidders who are desirous of participating in e – Procurement marketplace shall submit their technical bids, price bids etc., online, as prescribed in the NIT and tender documents, displayed at e – Procurement marketplace. The bidders should upload the scanned copies of all the relevant and required certificates, documents etc., in the e – procurement marketplace in support of their technical bids. The bidders shall sign on all the statements, documents, certificates, uploaded by them, owning responsibility of the correctness/authenticity.

2.8. All the bidders shall invariably upload the scanned copies of Online Payment receipts / BG towards EMD in e-Procurement system and this will be the primary requirement to consider the bid as responsive.

2.9. The bidders shall furnish a declaration online stating that the soft copies uploaded by them are genuine. Any incorrectness/deviation noticed will be viewed seriously and apart from cancelling of the Tender and forfeiting the EMD, criminal action will be initiated including suspension from business.

2.10. If the tender inviting authority requests the bidders for the submission of hard copies of uploaded documents by written (written means communicated in writing and i.e. by e-mail, fax, Telex) demand in case of necessity during the technical bid evaluation, the same shall be produced by the bidders with in specified period.

2.11. The tenders will be opened online in e-procurement platform by the Superintending Engineer, SRBC Circle No.1, Nandyal or his nominee at his office on the date and time specified in the NIT. All the statements, documents, certificates, Online Payment receipts/ BG etc., uploaded by the bidders will be downloaded for technical evaluation. The clarifications, particulars if any required from the bidders will be obtained by addressing the bidders. The technical bids will be evaluated against the specified parameters/ criteria; same as in the case of conventional tenders and the technically qualified bidders will be identified. Clarification will be obtained in respect of uploaded documents only. No other document obtained / submitted will be taken into consideration in evaluation process.

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2.12. Competent Authority will carry out the technical bid evaluation solely based on the uploaded Certificates / documents, Online Payment receipts / BG towards EMD in the e- procurement System and open the Price bids of the responsive bidders.

2.13. The price-bids of such bidders, who are determined to have complied with the eligibility criteria i.e., qualified in the Technical Bid evaluation will only be opened by the Tender Inviting Authority i.e., Superintending Engineer, SRBC Circle No.1, Nandyal or his nominee at his office, on the date and time specified in the NIT.

2.14. If the office happens to be closed due to any reason on the dates specified in the NIT, the respective activity will be performed at the designated time on the next working day without any notification.

2.15. The tender inviting authority or an officer designated by him will notify the successful bidder and inform by Email/ Under certificate of posting at the address indicated in the tender for submission of original hard copies of all Uploaded documents, Online Payment receipts / BG towards EMD prior to entering into Agreement within a stipulated time period.

2.16. The successful bidder shall invariably furnish the original Online Payment receipts / BG towards EMD, certificates / documents of the uploaded scanned copies, to the Agreement concluding authority before entering into agreement either personally or through courier or post within the stipulated date and shall obtain the receipt of the same, which shall be the responsibility of the successful bidder. The Department shall not take any responsibility for any delay in receipt of original Online Payment receipts / BG towards EMD, certificates / documents from the successful bidder before the stipulated time. On receipt of documents, the Tender inviting authority shall ensure the verification of genuinity of the Online Payment receipts / BG towards EMD and all other certificates / documents uploaded by the bidder in e-procurement system in support of the qualification criteria before concluding the agreement.

2.17. If any successful bidder fails to submit the original hard copies of uploaded certificates / documents, Online Payment receipts / BG towards EMD within the stipulated time or if any variation is noticed between the uploaded documents and the original hard copies submitted by the bidder, the successful bidder will be suspended from participating in the tenders on e-Procurement platform for a period of **3 years** besides forfeiting the EMD and also be blacklisted. The e-Procurement system would deactivate the user ID of such defaulting successful bidder based on the trigger / recommendation by the tender Inviting Authority in the system. Besides this, the Department shall invoke all processes of law including criminal prosecution of such defaulting bidder as an act of extreme deterrence to avoid delays in the tender process for execution of the development schemes taken up by the Government. The information to this extent will be displayed in the e-procurement platform website.

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2.18. Subsequent information in support of the documents specifically uploaded by the bidder shall be sought for submission before finalization of tender if required, which will be considered. Whereas the documents submitted by the bidders in the form of hard copy of the documents which are not uploaded shall not be considered for technical bid evaluation.

2.19. Any other details can be had from the Office of the Superintending Engineer, SRBC Circle No.1, Nandyal. e-mail: se1srbcnandyal@gmail.com Mobile No. 8985003091.

Article 2: Instruction to Bidders

Name of Work:: "Rayalaseema Lift Scheme to draw and utilize 3 TMC per day from Sangameswaram to SRMC at Km.4.00 from Pothireddypadu Head Regulator – Under EPC Turnkey System".

Location: Muchumarri and **SRMC @ Km.4.00**"

Brief Scope of Work:

"Investigation, Design and Construction for lifting of 3 TMC per day from + 243.000M and above from Srisailam foreshore area and to deliver into SRMC downstream of Pothireddypadu at required level in Kurnool District, including defect liability period as mentioned under Clause 123 of General conditions of Contract and Operation & maintenance for 15 years for Hydro Mechanical -Electro Mechanical and O&M for 2 Years civil works under EPC turn-Key System."

For all items of work such as pump house, pressure main, delivery cistern, Sub-Stations, Transmission lines, CM&CD works, any other relevant items work etc., on completion of survey, detailed designs drawings, detailed estimates with cost analysis, BOQ with reference to rates adopted for Civil Items, rates approved by the DGS&D for the EM & HM works, rates for electrical items as per the approved APTRANCO SSR at the time of technical sanction have to be prepared by the successful Contractor and they should be got approved by the respective competent authorities. After according approval on thorough vetting by the subordinate engineering officials working in the CE's and ENC's office as the case maybe; and accordingly the BOQs will be prepared. Correspondingly the supplementary contract agreement which form part of the main agreement on tentative basis as a composite contract agreement will be concluded enabling to go ahead with execution of works and also for making payments.

The actual requirement of quantities will be in accordance with the approved drawings and payments will thus be regulated as per the approved drawings and as per actual execution and in such cases, where the approved designs result in any reduction in amount, the payment schedule will be adjusted to the actuals. Payment schedule will be fixed from the supplementary contract agreement supra and same remains unchanged in case of any increase in quantities and price (since final DPR with reference to BOQs and designs etc., being prepared by the Contractor after actual verifications and estimations etc., in a meticulous way). The tender percentage excess or less shall be applied.

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BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE BENCH AT CHENNAI

M.A.No.2 of 2021

in

ORIGINAL APPLICATION No. 71 OF 2020

IN THE MATTER OF:

GavinollaSrinivas
H. No.1-99, Bapanapally Village,
DamargiddaMandal, NarayanpetDistrict,
Telangana —509407. …**Applicant/Applicant**

-Versus-

1. Union of India,
Rep. by itsSecretary,
Union Ministry of Environment,
Forest & Climate Change, and 4 others,….**Respondents/Respondents**

OBJECTION FILED BY THE 4TH RESPONDENT TO 2ND AND5THRESPONDENT FINAL REPORT DATED 13.08.2021

M/S MADHURI DONTI REDDY
ADVOCATE
STANDING COUNCIL FOR GOVERNMENT OF
ANDHRA PRADESH
A.P. POLLUTION CONTROL BOARD
T.T.D. SUPREME COURT OF INDIA
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