GUIDELINES

FOR

PREPARATION AND SUBMISSION OF DETAILED PROJECT REPORT (DPR) OF CADWM PROJECTS UNDER THE PROPOSED INCENTIVIZATION SCHEME FOR BRIDGING IRRIGATION GAP (ISBIG)

AUGUST 2017

केन्द्रीय जल आयोग
CENTRAL WATER COMMISSION
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CENTRAL WATER COMMISSION

FOREWORD

Food and water security are the major challenges presently being faced by the country. This requires taking ernest steps in the right direction on all possible fronts. The launch of PMKSY is one such step which envisages Har Khet Ko Pani by ensuring optimal use of water resources. It is therefore imminent that irrigation management reforms are undertaken on a faster pace. Closing IPC-IPU gap is one such low hanging fruit which can be picked by making investments in CAD works and by improving water use efficiency in the MMI projects. Transfer of control and management of irrigation system to the Water User's Association (WUAs) is another area that needs to be addressed.

Presently "Guidelines for Preparation of Detailed Project Reports of Command Area Development 2010" is being used for preparing DPR of CADWM projects. In view of the changes in policy, specially introduction of a new scheme namely "Incentivisation Scheme for Bridging Irrigation Gap" (ISBIG) by the Ministry of Water Resources, River Development and Ganga Rejuvenation,and technological developments in formulation, funding, execution, operation and maintenance of projects and the experience gained in the use of these guidelines since 2010, it has been felt necessary to update this guideline. As such, the new guideline for CADWM projects is being brought out.

I acknowledge with thanks the valuable contribution made by the officers of PMO, CWC and CAD Wing of MoWR, RD & GR and hope that these guidelines would go a long way in preparation of comprehensive Detailed Project Report for CADWM projects.

(Narendra Kumar)
Chairman, CWC

PREFACE

During the post independence era, a large number of irrigation projects were constructed for increasing agricultural production in the country. However, during early seventies analysis of irrigation potential created and utilised revealed that there was a substantial gap between them. The Irrigation Commission, in its report in 1972, made specific recommendations that systematic development of commands of irrigation projects should be taken up in order to fully utilise the irrigation potential created. Subsequently a Committee of Ministers set up by the Ministry of Irrigation and Power analysed the issue and suggested in 1973 that a broad based Area Development Authority should be set up for every major irrigation project to undertake the work of comprehensive area development. Based on this recommendation, the Government of India initiated a Centrally Sponsored Command Area Development Programme (CADP) in December 1974 to improve irrigation potential utilisation and optimise agricultural production from irrigated land through integrated and coordinated approach of efficient water management.

In tune with the objectives of the programme a number of components such as construction of field channels and field drains, enforcement of warabandi, land levelling and shaping, realignment of field boundaries/ consolidation of holdings, introduction of suitable cropping patterns, strengthening of extension services etc. were included as a part of the programme. The XII Plan Working Group identified five key challenges namely achieving fuller utilization of created facilities; improving water use efficiency in MMI projects; ensuring physical and financial sustainability of MMI projects; rationalizing irrigation service fee (ISF) and improving its collection and incentivizingState Irrigation Agencies for the promotion of Participatory Irrigation Management (PIM) and volumetric water pricing and delivery to Water Users Association (WUAs). In the beginning of FY 2016-17, CADWM works were ongoing in 152 projects targeting a Culturable Command Area (CCA) of about 70 Lakh ha. While approving the new Scheme of prioritized AIBP (Accelerated Irrigation Benefit Program)

projects approved by Cabinet on 27th July 2016, the Cabinet note stated that "CADWM works of all other projects are proposed to be funded through new scheme of incentivization for bridging the gap between IPC and IPU, the works under which shall also include system correction/ renovation and modernization requirement of completed projects in addition to pressurized pipe system and use of sprinklers and Drip for their functioning at optimum level." In pursuance of directions contained in above referred Cabinet Note, a new 'Incentivization Scheme for Bridging Irrigation Gap (ISBIG)' has been formulated by the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR, RD & GR). As the new scheme has a changed outlook, it was felt imperative that the guidelines for preparation of Detailed Project Report (DPR) of CADWM projects be revised to accommodate and do justice with the various components that are part of the new Scheme ISBIG. Keeping in view the above, the revised guidelines for CADWM projects is being brought out.

The present guidelines is the result of commendable efforts and hard work put in by the officers of Project Monitoring Organisation, CWC and CAD wing of MoWR, RD & GR, specially Sh. Sanjiv Aggarwal, CE(PMO); Dr. B. R.K.Pillai, Commissioner(CAD) and Sh. S.K. Rajan, Director(P&P), CWC. I hope the concerned officials of the State Government and Central Water Commission would be greatly benefitted by the revised guidelines.

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

GUIDELINES FOR PREPARATION AND SUBMISSION OF DETAILED PROJECT REPORT (DPR) OF CADWM PROJECTS UNDER THE PROPOSED INCENTIVIZATION SCHEME FOR BRIDGING IRRIGATION GAP (ISBIG)

1.0 BACKGROUND

1.1 Command Area Development (CAD) works through CADWM Programme of Government of India are in implementation since 1974-75. The program has now been brought under the umbrella scheme Pradhan Mantri Krishi Sinchai Yojna (PMKSY) - Har Khet Ko Pani from 2015-16 onwards. The main objective of taking up CAD works is to enhance utilisation of irrigation potential created, bring overall efficiency in water utilisation and improve agriculture production on a sustainable basis through Participatory Irrigation Management (PIM). In order to promote water use efficiency in irrigation, the CADWM program has also been targeting development of micro-irrigation infrastructure for facilitating use of sprinkler/drip irrigation systems. The CADWM program also mandates formation of Water Users' Associations (WUAs) under each project, and also gives them start-up support through one-time infrastructure grant and functional grant.

1.2 In the beginning of FY 2016-17, CADWM works were ongoing in 152 projects targeting a Culturable Command Area (CCA) of about 70 Lakh ha. But, with the new Scheme of prioritized AIBP (Accelerated Irrigation Benefit program) projects approved by Cabinet on 27th July 2016, CADWM works got restricted to only 99 prioritized AIBP projects from 2016-17 onwards. However, the Para 3.3.5 of the cabinet note of this scheme ('PMKSY – Establishment of Mission for completion of prioritized irrigation projects and funding arrangements', CD-473/2016, dated 22.07.2016) stated that "CADWM works of all other projects are proposed to be funded through new scheme of incentivization for bridging the gap between IPC and IPU, the works under which shall also include system correction / renovation and modernization requirement of completed projects in addition to pressurized pipe system and use of sprinklers and Drip for their functioning at optimum level."

1.3 In pursuance of directions contained in above referred Cabinet Note, a new 'Incentivization Scheme for Bridging Irrigation Gap (ISBIG)' has been formulated by the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR,RD&GR); and the Scheme is under process for competent level approval. A concept paper of the Scheme was prepared and circulated by Ministry on 16.12.2016 to all the States inviting suggestions for improvements and for finalisation of the projects and the targeted extent of outstanding CCA. After the receipt of in-principle approval of the Department of Expenditure (DoE) under Ministry of Finance, the State level consultations were held by MoWR,RD&GR during 5th to 17th April, 2017 wherein the following was also agreed:

- CWC (PMO) shall issue separate guidelines for preparation of CADWM DPRs for facilitating preparation/ processing of DPRs by States/ CWC Regional Offices.

2.0 BRIEF ON ISBIG

2.1 The Incentivization Scheme for Bridging Irrigation Gap (ISBIG) aims for:

- Completion of CADWM works along with correction of system deficiencies in canal network for bridging the gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilised (IPU);
- Improving the water use efficiency in irrigation and providing assured supply of water to every farm field; and
- Transfer of control and management of irrigation system to the Water Users' Associations (WUAs).

2.2 As per present formulation of the Scheme, the above stated aims will be achieved in about 317 existing water resources projects of 24 States with below listed activities and targets:

- The CADWM works are targeted in about 80 lakh hectare of the balance Culturable Command Area (CCA) of these projects, while the correction of system deficiency will benefit their entire 178 lakh hectare of CCA;
- The Scheme at the gross level aims for about 30% of the CCA to be covered under micro irrigation, of which 30% will be covered by solar powered system as well;
- In projects targeted for conventional On Farm development (OFD) works, about 30% of the targeted extent will also be developed for Conjunctive use of Groundwater;
- At the gross level of Scheme, about 10 projects are targeted for providing infrastructure for reuse of industrial/ municipal waste-water on pilot basis;
- Another 10 projects are targeted on pilot basis for canal automation seeking introduction of control and measurement for demand-side management of the irrigation water.
- Water Users' Association (WUA) per 500 hectares of CCA (on an average basis) will be formed for the complete 80 lakh hectares of command, and each WUA will be targeted for strengthening of participatory irrigation management (PIM);
- Capacities of all existing 'Water And Land Management Institutes (WALMIs)' will be strengthened for deeper penetration of water education by way of WALMI's modernization and extension, and new WALMIs will also be created in those States where they are not in existence.

2.3 The above aims of the Scheme are covered by three separate activities, with an additional (fourth) activity focussing on Project Management. These aims/ activities will be achieved by holistic implementation of scheme through 'Structural' and 'Non-structural' interventions (Scheme components) by the Project Implementing Agencies (PIAs) as presented in Table below:

Table: Structural & Non-structural Interventions (Scheme Components)

Aim/ Activity	Proposed Interventions/ Scheme Components			
Bridging of the IPC & IPU gap	i	a) Creation of field channel/ pipe network below the outlets of distribution network	On Farm Development Works	Structural Interventions
		b) Land leveling and realignment of field boundaries		
		c) Improvement in farm drainage system		
		d) Reclamation of waterlogged farm areas		
		e) Construction of farm roads *(by convergence through MGNREGA)*		
	ii	Correction of system deficiency in canal network		
Improving water use efficiency & providing assured supply of water	iii	Infrastructure for increased coverage of micro irrigation system		
	iv	Installation of solar power system for micro-irrigation		
	v	Infrastructure for conveyance and additional treatment of municipal and industrial waste water for augmenting water for the farm use		
	vi	Infrastructure for conjunctive use of groundwater		
	vii	Automation of canal system for control and measurement of irrigation supplies		
Transfer of control and management of irrigation system to WUAs	viii	Strengthening of Participatory Irrigation Management (PIM) for sustainable operation and maintenance of irrigation network		Non-structural Interventions
	ix	a) Modernization and extension of existing WALMIs/IMTIs	Water Education	
		b) Creation of new WALMIs in States where not in existence		
Project management	x	Creation of incremental establishment		
	xi	Capacity building of the PIAs & WUAs		

2.4 Some of the key points of discussions emerging from state level consultations and pertinent to preparation of Detailed Project Report (DPR) as brought out in 'Minutes of Meetings' issued vide Ministry's letter no.15011/6/2016-CADWM dated 26.4.17 are as under:

a) The scheme, to be implemented with full financial closure through NABARD borrowing under Long term Irrigation Fund (LTIF), will be done in a Mission mode targeting completion of all projects in four years. State Governments will also be able to borrow funds for their counterpart share from NABARD subject to the FRBM limits; and hence project shall not be planned in the conventional budgetary mode.

b) The Central Assistance (CA) will be limited to the Central share arrived as per 'cost sharing ratio' applied on a project cost arrived as per CADWM 'cost norm'. The 'cost norm' will provide a level playing field for different projects (e.g. not rewarding an inefficient project) rather than providing any criteria for working out actual cost of the project. The actual cost estimate of the project will thus have to be prepared (and form part of the DPR) as per actual project requirements and the cost

schedule applicable for the pertinent States. The cost burden of each project, over and above the eligible CA, will have to be borne by the concerned State either through its own sources or through NABARD borrowing.

c) All existing irrigation projects where irrigation potential has been fully created but CADWM works are yet to be taken up, or CADWM works are only partially completed, can be included in ISBIG. The new/ ongoing projects where irrigation potentials are yet to be created will not be generally funded under this scheme in view of the large existing IPC-IPU gap and because of the short (four years) window of the project. However, with the intent of promoting micro-irrigation, exception to above position can be made in few new/ ongoing projects meeting the below listed criteria:
   - Projects will be completed within 2 years;
   - Projects do not entail creation of a new reservoir (e.g. Lift schemes)
   - No land acquisition cases are involved/ pending
   - The targeted command is for 100% micro-irrigation

d) No ERM of CADWM works will be permitted in the new scheme irrespective of the era of earlier work execution, or the scope of works covered in such execution. This is in line with the philosophy that once completed the assets created under CADWM shall get handed over to the Water Users Association (WUAs). States will have to ensure (and also give an undertaking at DPR stage) that CCA of a project already covered under CADWM works through the Central or State funding will not be taken up in ISBIG.

e) A minimum 30% extent of the CCA of a project included under ISBIG will be covered under 'Micro Irrigation (MI)' works; and the balance extent will be targeted for conventional 'On Farm Development (OFD)' works. In specific cases of projects where 30% extent of micro-irrigation is not found viable for technical, social or other considerations, the States will have to shift the unmet micro-irrigation targets (in terms of CCA in hectares) to some other projects included under ISBIG; new/ ongoing projects referred at Para (c) can be appropriately tailored for this purpose; identification of such other projects where micro-irrigation targets are adjusted shall be completed at DPR stage of the concerned project with justification for adjustment recorded in the DPR.

f) The OFD works shall ensure adequate supplies to each farmer's field. The Field Channel (FC) under each Chalk shall be planned for achieving the stated full coverage with minimum length of the FC; and thus planned FCs shall be created with maximum possible lined lengths (and balance unlined lengths) in such a manner which minimizes water loss under each limb thereby giving benefits to all tail-end farmers. Each Chalk level plan, before putting into implementation, shall have the concurrence of concerned WUA or the individual farmers under the Chalk; and a

permanent map of the same shall also be displayed at WUAs office for future reference and dispute resolution purpose.

g) The MI works component under the scheme will be limited to creation of MI infrastructure below 40 hectare chalk and up to the outlet point of individual farm field (about 1 hectare level). For facilitating procurement and installation of micro-irrigation devices/ equipments at farmers' end, convergence with the extant Scheme of Ministry of Agriculture & Farmers Welfare will be incorporated to the extent feasible. For balance area, the MI infrastructure shall be "future ready" with minimum 2 kg/cm2 pressure at the farm outlet so that farmer can make future investment on drip/ sprinklers.

h) Correction of System Deficiencies (CSD) will cover whole network of canals including head-works (but excluding dam). However, a cost norm for computation of CA will be applied restricting the ceiling cost of CSD to one third of the total project cost; and the surplus cost of CSD works over and above the ceiling cost (if any) will also have to be borne by the States for ensuring delivery of water to each field of the targeted CCA.

i) Projects for re-use of waste water will be taken up on pilot basis. Initially about 10 projects are being targeted, but their numbers can be increased based on actual cost estimates and extent of viable project proposals received. The Scheme will not cover creation of new Sewage Treatment Plants (STPs) or Industrial Affluent Treatment Plants (IATPs), and its funding will be essentially for creation of conveyance system (for hydraulic connectivity between outfalls of STPs/ IATPs and the distribution system of project's command) and the plant for incremental treatment, if required.

j) The component for Conjunctive use of groundwater has been brought in with a view of realizing assured water supply for every farm field, especially in the lean monsoon periods. About 30% of the area covered under conventional (flow/ flood) irrigation will be targeted for conjunctive use of groundwater. The approach will be to include volumetric and seasonal assessment of local water resources in addition to canal water; and the overall management plan will thus constitute the recharge-discharge interplay of the local aquifer while allocating total water between various users and uses. The activities covered will include components of groundwater development (dug wells/ tube-wells/ farm ponds) as well as strengthening of Participatory Ground Water Management (PGWM).

k) Canal automation, is also a new component which has been proposed mainly for introducing elements of 'control' and 'measurement' for bringing demand-side management in the irrigation sector. The technological solutions for canal automation are often found to be cost prohibitive owning to the need for integration of system over vast spread of project's command. However, the Scheme seeks to narrow down the objectives of available system to the elements of control and

measurement; and accordingly the canal automation system will be implemented on pilot basis by taking up integration of automation from the farm-end and upward (and not from head-works-end and downward as is conventionally approached) up to the extent of distributaries or branch canals. This will enable centralized control by the WUAs, and later on by the Distributory Committees as and when they become effective. Initially about 10 projects are being targeted, but their numbers can be increased based on actual cost estimates and extent of viable project proposals received.

l) Participatory Irrigation Management (PIM) will be the primary objective of taking up a project; and the project will be treated as complete only when WUAs take over the control and management of the irrigation assets created under the Scheme. The WUAs capacity for 'taking over' will be developed through hand-holding support by select social facilitators engaged under the project. States will have to show full commitment (and also give an undertaking at DPR stage) for fulfillment of this objective.

m) For deeper penetration of water education, the infrastructure of existing WALMIs /IMTIs will be strengthened/ upgraded and 3 new extension centers (EC) under each WALMI will also be created. The States, where no WALMI exist, can open a new WALMI with 3 ECs each. However, funding for land acquisition will not be covered for creation of ECs or new WALMIs; and States will be required to use the unutilized lands available in their irrigation projects along with salvaging of existing unutilized buildings. Only the bare essential incremental infrastructure for ECs shall be built; and the larger focus shall be on development of large demonstration farms for ground level reforms through adaptive trials and leading examples of best farm practices, simultaneously generating revenues for self-sustenance of WALMIs.

n) The Project Management cost will be limited to 2.5% of the total cost of the State. The incremental establishment cost, with a lump-sum provision of 1% of the structural intervention cost, shall not be utilized for salary component of the departmental officials/ staff; instead it shall cover the cost of outsourced manpower (over and above the existing manpower), essential infrastructure, vehicles, computers etc needed for implementation of project. Costs entailed for Technical Studies/ Detailed Project Reports, and for visits of Monitoring Committees/ Technical Teams etc, shall also form part of the incremental establishment cost. Separate cost provisions have been made for capacity building of State officials.

o) The performance linked incentivization will not only promote completion among States but also between different projects of the same State, thereby continually raising the bar set for expected performance.

p) The CADWM guidelines of the Ministry/ CPMU will be essentially for processing of the Central Assistance (CA) in a transparent manner; and it shall not be seen as a

pointer to micro-management of the projects. Same size cannot fit all; and hence the DPRs shall be formulated keeping in view the individual requirements of each project while meeting the broad objectives of: bringing supply of water to each farm field; implementing water-use efficiency and giving assured supply; and promoting participatory irrigation management. Requirements over and above those listed under CADWM guidelines for CA shall also be covered if they are essential for meeting the project objectives, and their cost estimates shall be included in DPRs for financing through NABARD loan for state's share.

q) The proposed extent of coverage of 'conjunctive use' and 'solar power backup' are aggregated at the Scheme level; and actual extent of coverage of these components in specific projects may vary from case to case, as decided at DPR stages.

r) The DPRs shall be prepared by States with proactive guidance/ assistance rendered by concerned CWC-CAD Cells. To the extent possible, the DPRs shall record realistic assessment of canal water availability after discounting for diversions through groundwater-use or pilferages; and also make realistic assessment of CAD coverage accounting for prevalent cropping pattern.

3.0 OBJECTIVES OF DPR

3.1 In order to include a project under ISBIG, the Detailed Project Report (DPR) for CADWM works are required to be prepared. All State Governments will be required to submit a fresh detailed project report in respect of all continuing or new projects, as the case may be, for assessment of the works already completed and left out, assessment of the physical and financial progress made so far, availability of financial resources, status and extent of the Participatory programme in the State/Projects, level of involvement of the WUAs in execution of works, and possibility of handing over of the system to them.

3.2 The broad objectives of the detailed project report shall be:

(a) To assess the health of the entire project from the main canal onwards in totality and identify the efforts require to restore the complete system;

(b) To provide in-depth analysis of the past efforts, and to identify the constraints;

(c) To identify the possibilities of recycling of urban municipal and industrial waste water with tertiary treatment wherever feasible in the command of the project;

(d) To know the status and trend of ground water scenario and possibilities of conjunctive use including improvement in ground water scenario;

(e) To know the general cropping pattern vis-a-vis the soil health and to identify the areas where micro irrigation is a suggestive/or preferred system of irrigation;

(f) To identify possibility of use of solar power for micro irrigation where availability of grid power is not adequate;

(g) To achieve maximum convergence with the schemes of other ministries at farm level for maximizing the benefits for the farmers;

(h) To explore the possibilities of doing canal automation leading to elements of control and measurement for improving demand management and assured delivery of the water to all the fields;

(i) To involve farmers at all levels of planning;

(j) To complete all CAD activities in only those outlet commands where WUAs have been formed and are effective, and to confirm that WUAs are willing to take over the system;

(k) To get an undertaking from the State Irrigation Departments indicating willingness to hand over the control and management of the assets created under the Scheme to the WUAs after completion of CADWM works;

(l) To seek evolution of suitable and sustainable measures for O&M of the distributaries and the micro level infrastructure;

(m) To ensure that all activities under the outlet command are taken up in an integrated and holistic manner.

(n) To identify the causes of waterlogging in the irrigated command and to take suitable measures for its reclamation.

3.3 Some of the project components proposed under ISBIG may require additional inputs and separate planning than the conventional CADWM interventions. In case of the requirement of extra time for appropriate planning and cost estimation of such cases, the PIA may choose to submit separately the part DPRs in respect of such components as: (i) Conjunctive use of groundwater, (ii) Correction of system deficiency, (iii) Micro-irrigation including solar power system, (iv) Canal automation, and (v) Reuse of waste water. However, the main DPR, essentially covering the 'On Farm Development' component, shall present the holistic picture of the total intervention (covering all components) explicitly indicating the overall scope of other components and the time schedule for detailing of such other components. The main and the part DPRs, basically pertaining to the same project, shall carry the same Document No suffixed with pertinent Part No. (e.g. [1/5], [2/5]..etc).

4.0 FORMAT OF DPR

4.1 The DPR shall be prepared so as to highlight summary of information as well as to cover descriptive information to the requisite details. The abbreviations used in the DPR shall be listed upfront for clarity and understanding. The Tables, Photographs, and Plates presented in the DPR shall be meaningfully numbered and their titles listed in Index. Each Annexure shall be presented with clear title and also listed in Index. The DPR shall be presented in the following format:

I	Title Page of DPR
II	Index of DPR
III	Undertaking
SUMMARIZED INFORMATION	
IV	Information Check List
V	Salient Features of Irrigation Project
VI	Salient Features of CAD Component
DESCRIPTIVE CHAPTERS	
Chapter-1	Introduction
Chapter-2	Irrigation Development of the State
Chapter-3	Project Features and Details
Chapter-4	Available Water Resources at Project Head
Chapter-5	Status of Conveyance System
Chapter-6	Irrigation Development of Command Area
Chapter-7	Cropping Pattern, Agricultural Production and Farmers' Income
Chapter-8	Operation and Maintenance
Chapter-9	Outline of Activities Targeted Under ISBIG
Chapter-10	On Farm development (OFD) Works
Chapter-11	Correction of System Deficiency (CSD) in Canal Network
Chapter-12	Development of Infrastructure for Micro Irrigation (MI)
Chapter-13	Infrastructure for Reuse of Waste Water
Chapter-14	Infrastructure for Conjunctive Use of Groundwater
Chapter-15	Automation of Canal System for Control & Measurement of Supplies
Chapter-16	Participatory Irrigation Management
Chapter-17	Contract Packaging and Implementation Schedule
Chapter-18	Organizational Setup and Project Management
Chapter-19	Cost Estimates and Financial Scheduling
Chapter-20	Convergence with Programs of Other Ministries
ANNEXURE	

4.2 Title Page: The tile page shall contain logos of the State Government and the PIA besides highlighting the names of the State Government and concerned Ministry/ Department/ PIA. It shall also contain the text "**Detailed Project Report of <full name of Project> for Inclusion under Incentivization Scheme for Bridging of Irrigation Gap**". It shall mention the month and year, and also the document number, of the DPR. A standardized document

number format may be followed involving the text "**ISBIG/DPR/<abbreviation for State name>/<short Project name> /<year> /<document's serial number as per State register>/[<part no. of present DPR>/<total nos. of part DPRs>]**". *Example: The main DPR of 'Annamayya' project of 'Andhra Pradesh' serially listed at '1234' of state's document register submitted in 'August 2017' but requiring later day submission of part DPRs for 'Correction of system deficiency' and 'Micro-irrigation' may be numbered as ISBIG/DPR/AP/ANNAMAYYA/2017/1234/[1/3]*. If any State is required to compulsory follow their own format, the same may also be provided in brackets below the standardized document number.

4.3 Undertaking: The focal point of project will be Participatory Irrigation Management (PIM) while other components of the project will be viewed as essential requirements for the success and sustenance of PIM. The PIM activities will be focussed on farmers and WUAs so as to make them ready for taking over the control and management of irrigation system developed under CADWM project, which is also the essential requirement for certifying the completion of project; and an undertaking in this regard, duly signed by the Principal Secretary of the concerned Department, will have to be given as per below given format:

UNDERTAKING

(*To be given by the Principal Secretary of the concerned State Department*)

1. We hereby declare our commitment for the successful implementation of Participatory Irrigation Management (PIM) in _____ (*give name of CADWM project*) under the Incentivization Scheme for Bridging Irrigation Gap.

2. We understand that a meaningful and sustainable PIM can happen only when farmers and the Water Users' Association (WUA) are ready to take over the control and management of the irrigation system created under CADWM program. Therefore we consider it our responsibility to help farmers in forming of WUAs, and to develop the capacity of WUAs for sustainable independent functioning through means of education, training, handholding support and release of admissible financial grants.

3. We also agree that taking over of the control and management of irrigation system by the WUAs is a necessary condition for completion of project under ISBIG, and accordingly we undertake to complete the project through holistic structural and non-structural interventions including legal and statutory measures as required.

Date:

Signature:
Name:
Designation:

(*Also, affix the official seal*)

4.4 Check List: This should be given at the beginning of the project report after index in the following manner:

Sl. No.	Information Check List	**Response** (including reference of Para/ Table/ Annexure for details)
1	Whether the State Government has approved the project for inclusion under ISBIG	
	Whether Project has been included in ISBIG proposal finalized on the basis of State level consultations held in April 2017? If no, give brief justification for the inclusion proposal at this stage.	
2	Whether project has been cleared by the Planning Commission? *(Not Applicable in case of minor irrigation schemes)* If yes, give reference in terms of letter no. and date.	
3	Whether ERM of the project (excluding CAD part) has been carried out earlier? If yes, provide details of:	
	(a) Period in which ERM was implemented:	
	(b) Cost of ERM implementation:	
	(c) Components/ Scope of ERM:	
4	Whether the irrigation potential of the existing project as originally envisaged has undergone a revision? If yes, provide details of:	
	(a) Originally envisaged Ultimate Irrigation Potential (UIP):	
	(b) Presently estimated UIP:	
	(c) Reasons for revisions in irrigation potential:	
	(d) Irrigation Potential Created (IPC) as of now:	
	(e) Latest estimate of Irrigation Potential Utilized (IPU):	
5	Whether the Culturable Command Area (CCA) extent been actually assessed and compared with that at the time of planning of the project? If yes, provide details of:	
	(a) Originally estimated CCA:	
	(b) Actual CCA extent:	
	(c) Shortfall / excess in CCA:	
	(d) Identified reasons for shortfall/ excess:	
6	Whether CADWM works for the project have been taken up earlier. If yes, provide:	
	(a) Details of earlier work, including: period of execution, cost, CCA Coverage, name of Scheme, extent of central assistance (if applicable)	
	(b) Whether there is any duplication involved in the CAD works completed earlier and now proposed?	
7	Whether details of the canal Command viz; distributory-wise /minor-wise details of outlets to be covered under the programme together with relevant maps and other details have been included?	
8	Whether the overall health check-up of the project (including hydraulic connectivity of full canal & distribution system) has been carried out for preparing estimates for correction of system deficiencies?	

9	Whether the semi-detailed soil surveys carried out in the command and the 'soil and land irrigability classification' brought out in the report?	
10	Whether points of pilferage or other water requirements have been identified and extent of water diversion from irrigated command of the project estimated?	
11	Are the areas and percentage of CCA that will be irrigated during Kharif, Rabi, perennial and any other season been indicated and compared with cropping pattern as existing prior to taking of the project, originally envisaged and actually developed after completion of the project?	
12	Whether the cropping pattern in the project command as originally envisaged has undergone a change? If yes, provide details of:	
	(a) Originally envisaged and the present copping pattern with details of area coverage in different cropping seasons:	
	(b) Measure of IPC-IPU gap attributable to above change in cropping pattern:	
	(c) Justification (if any) for acceptance of the change in cropping pattern; else, measures proposed for bringing a shift in cropping to the originally envisaged pattern or a new pattern (along with details of new cropping pattern).	
13	Have the cropping pattern & proper cropping calendar been devised with a view to maximise the production and ensuring canal closures for maintenance etc.? Have these been concurred by the Agriculture Department?	
14	Have the values of conveyance efficiency, field application efficiency and overall water use efficiency been indicated with basis thereof?	
15	Has the pattern of releases (10 daily/ monthly) from the diversion/ storage headwork been worked out and compared with those envisaged originally?	
16	Whether water availability study has been updated? If yes, are the supplies available sufficient to meet the requirements for ensuring 75 per cent dependability; and what are the current estimates of irrigation dependability?	
17	Whether the possibilities of enhancing irrigation dependability through augmenting the irrigation supply either by increasing storage or supplementing by groundwater has been explored? If yes, have the revised reservoir operation tables been prepared and furnished?	
18	Has a study of the ground water potential of the command area, the present level of the ground water use and the scope of future ground water utilisation, been carried out and included in the project report?	
19	Has the quality of surface water as also of ground water & drainage water (if intended-for irrigation use) been tested?	

20	Have the requirements of drainage in the command area, been studied and a suitable integrated drainage plan drawn-up and provided for in the cost estimate?	
21	Are there areas within the command affected by water logging / salinity/ alkalinity? If yes, provide details.	
22	In case of water logged areas within command, whether the root cause of water logging has been ascertained and remedial actions taken? If yes, provide	
	(a) Details of works executed with details of expenditure and areas recovered	
	(b) Extent of balance area affected by water logging	
23	Have the provisions for Participatory Irrigation Management (PIM) through non-structural intervention considered and provided for? If yes, provide details of:	
	(a) No. of existing and newly proposed WUAs along with requirements of their registration	
	(b) Training and capacity building programs for WUAs and farmers	
	(c) Provision for release of functional grant and infrastructure grant to WUA	
	(d) Provision for Agricultural Livelihoods Support Services and convergence with any other Scheme targeting the same beneficiaries	
	(e) Provision for promotion of conjunctive use of groundwater	
	(f) Provision of extension services and providing of important inputs like seeds, fertilizers etc	
	(g) Provision for handholding support to WUA through Social Facilitator	
	(h) Training programmes for field staff along with details of existing positions and proposal for strengthening (if any)	
24	Have the programme/ schedule of construction (structural intervention) aligned with the creation and capacity building of WUAs (non-structural intervention), and the phasing of expenditure involved been furnished?	
25	Are the water tariff rates for irrigation uses identified? If yes, provide:	
	(a) Basis, and basis-wise water tariff rates	
	(b) Methodology of water tariff collection	
	(c) Extent of O&M cost proposed to be recovered through water tariff collection	
26	Have the O&M aspects (both financial as well as management) been discussed? How are the O&M costs proposed to be met?	
27	Has the adequacy of the existing irrigation laws and revision (if considered necessary) been discussed?	
28	Whether views of water users about proposed works under the Scheme been obtained and described in the Report?	
29	Whether proposed field channel coverage extend to each farm field? If yes, provide:	

	(a) Average length of field channel (in m) per hectare including both lined and unlined portions	
	(b) Average length of lined field channel (in m) per hectare	
30	Whether requirement for consolidation of land holdings has been assessed. If yes, provide:	
	(a) Status of consolidation of holdings in the State	
	(b) Details of enabling/ compulsory legislation	
31	Have the list of ongoing programs of Agriculture Department in Command Area been given in the Report; and if area of convergence (if any) identified?	
32	Whether some parts of Command Areas are already covered under Micro irrigation. If yes, provide:	
	(a) CCA extent covered under micro-irrigation	
	(b) Details of Central Assistance (if any) through Schemes of any Ministry of the Govt. of India	
33	Whether 30% of the balance command of the Project has been proposed to be covered under micro irrigation. If no, provide:	
	(a) Extent of shortfall in CCA extent (in thousand hectare) under micro-irrigation from the targeted 30% coverage	
	(b) Name of the other project (proposed under ISBIG) to which shortfall of micro-irrigation target from current project will be shifted	
34	Whether the power scenario in the state has been reviewed for use of Micro-irrigation? Whether viability of use of alternate Solar power source has been examined and proposed?	
35	Whether the possibility of adding extra Command area over and above the designated command has been explored and such command area identified. If yes, provide:	
	(a) Additional CCA extent	
	(b) Rationale for proposed enhancement of command	
36	Whether automation of canal system with a view of introducing 'control' and 'measurement' in command area has been proposed?	
37	Whether augmentation of water for assured supplies has been proposed through reuse of waste water?	
38	Are the detailed cost estimates of CADWM works included in the Report?	
39	Whether adequate provision has been made in the State budget for providing matching share?	
40	Whether State Government intends to borrow funds from NABARD for meeting requirement of State Share in full or part?	
41	Whether details of all proposed components (including their cost estimates) under ISBIG have been covered in this DPR or whether part DPRs in respect of some components will be submitted separately? In case details are already covered, indicated <Covered>; in case of part submission, provide scheduled <dates of submission> of separate DPR; and in case the component is not proposed, indicate <Not Applicable>.	
	(a) Conjunctive use of groundwater	

	(b) Correction of system deficiency	
	(c) Micro-irrigation, including solar power system	
	(d) Canal automation	
	(e) Reuse of waste water	

4.5 Salient Features of Irrigation Project: This should be presented in the following manner:

1	Location	
	Name of River basin, Tributary, Irrigation project headwork	
	Type of dam, barrage etc.	
	Whether Major or Medium	
	Name of the State	
	Category of the project(Whether DPAP, DDP or TSP)	
	Type of irrigation delivery system (Lift or Gravity)	
	Year of start of construction	
	Year of completion	
	Cost(Completed)	
	Reasons for delay in completion, if any	

2 Canal Network:

A. Main and Branch Canals

Canal	Name	CCA (Th. Ha.)	Discharge at head (Cumecs)	No. of direct outlets	Length (Km.)	Portion lined (km.) (%)	Portion unlined (km.) (%)	No. of days of running on full discharge	Weather volumetric devises/- discharge measuring structures exist on the canals
Main	1. 2.								
Branch	1. 2.								

B. Distributaries/ Minors/ Sub-minors

Canal	Total Length in Km.	Portion \lined (km.) (%)	Portion unlined (km.) (%)	Weather volumetric devises/ discharge measuring structures exist
Distributaries				
Minors				

3 Hydrology of Catchment:

Catchment Area (Sq. Km.)	Average Rainfall. (mm)	Average Annual flow with years of assessment MCM	75% depend-able yield(Design) MCM	75% yield (present MCM)	Catchment Ground water yield (MCM)	Total yield MCM	Has the yield been affected due to upstream development if so details.

4 Storage:

	Year of first impounding	Gross (MCM)	Dead MCM	Live (MCM)	FRL (m)	Extent of Evaporation losses MCM (% of present yield)	Average Rate of siltation MCM/year	Weather rules of operation exists
5	Give details of rules of operation:							
6	Has the project yield been revised at any time (Give details)							
7	Has modernisation of the project/ canal been undertaken at any stage (Give details)							

4.6 Salient Features of CAD Component: Information should be given in the following manner:

1	Name of the CAD project	
2	Whether new or continuing under CAD Program from an earlier date? If continuing, provide	
	(a) Year of Inclusion:	
	(b) CCA Covered (in Th.ha)	
	(c) Balance CCA (in Th.ha)	
	(d) Estimated cost of CAD project as originally envisaged at the time of inclusion under CAD Program	
	(e) Total Expenditure incurred (Rs.Lac)	
	(f) Total Central Assistance released (Rs. Lac)	
3	Name of State and Department/ Agency implementing the Project.	
4	Name of State, Districts and Blocks served by the Project Command; and District wise area served by the Command in thousand hectares.	
5	Organizational Structure along with name, designation, address, phone, fax and e-mail of concerned Officials: a. Secretary level b. Chief Engineer level c. Administrator CADA d. SE level officers	
6	Is it proposed to set up a new Command Area Development Authority? If so, provide (a) Targeted date for setting of CADA (b) Proposed Organisation structure	
7	Financial source of the project at State level- Whether State funds or through loans or through corporations.	

8	Has the CAD project executed through State funding or External assistance at any stage wholly or partly? If yes details.	

9	Area served by the Command in Thousand Hectare:	
	Gross Area of the Irrigation Project (Design)	
	CCA of the Irrigation project (Design)	
	Ultimate Irrigation Potential (Design)	
	Updated CCA of Irrigation Project (if revised)	
	Updated Ultimate Irrigation Potential (if revised)	
	Irrigation Potential created at present	
	Irrigation Potential utilised at present	

10 Cropping pattern (in terms of CCA covered, including that through micro-irrigation):

Crop name	Originally envisaged				Presently proposed			
	Kharif	Rabi	Perennial	Total	Kharif	Rabi	Perennial	Total
1.								
2.								
Total								

11 Intensity of irrigation (Crop-season-wise and annual):

Irrigation Intensity (in percentage)	Kharif	Rabi	Perennial	Total
As Originally envisaged				
As Presently proposed				

12 District-wise details of CCA and CAD Coverage in Thousand Hectare:

District	Total CCA	CCA covered at present	Balance CCA targeted under ISBIG
1.			
2.			
Total			

13 Information regarding marginal (up to 1 ha), small (1 to 2 ha), medium (2 to 10 ha) and large (more than 10 ha) farm holdings:

Information on farm holdings	Marginal	Small	Medium	Large	Total
Number of farm holdings					
Total CCA Coverage of farm holdings					

14 Information regarding weaker sections of the farming community:

Information on farming community	SC	ST	OBC	General	Total
Number of farm holdings					
Total CCA Coverage of farm holdings					

15 Activity-wise Structural Intervention Targets proposed under ISBIG:
(Strike-off the activity which is not applicable)

Sl. No	Activity	Unit	Target Qty.	Financial-year-wise phasing of physical targets				
				FY1	FY2	FY3	FY4	FY5
i	On Farm Development Works							
	a) Field Channel/ UGP network (benefited area)	Th. Ha						
	b) Land levelling/ realignment of boundaries (benefited area)	Th. Ha						
	c) Farm drainage (benefited area)	Th. Ha						

		d) Reclamation of water logged area (benefited area)	Th. Ha						
		e) Construction of farm roads (benefited area)	Th. Ha						
	ii	Correction of System Deficiency in canal network (benefited area)	Th. Ha						
	iii	Infrastructure for Micro-irrigation (benefited area)	Th. Ha						
	iv	Solar power for Micro-irrigation (benefited area)	Th. Ha						
	v	Infrastructure for reuse of waste water (benefited area)	Th. Ha						
	vi	Infrastructure for conjunctive use of ground water (benefited area)	Th. Ha						
	vii	Automation of canal system (benefited area)							

16 Activity-wise Non-Structural Intervention/ PIM Targets proposed under ISBIG:
(Strike-off the activity which is not applicable)

Sl. No	Activity	Unit	Target Qty.	Financial-year-wise phasing of physical targets				
				FY1	FY2	FY3	FY4	FY5
a	Registration of existing WUA (No. of WUAs)	No.						
b	Creation/ registration of new WUA(No. of WUAs)	No.						
c	Functional grant to WUA (No. of WUAs)	No.						
d	Infrastructure grant to WUA (No. of WUAs)	No.						
e	Agriculture Livelihood Support Services – *use separate rows for separate identified services*	As applicable						
f	Training/ demonstration to farmers/ WUA (No. of Trng./ demonstr.)	No.						

17 Time Schedule:
(Strike-off the activity which is not applicable. Actual months of activity accounting for limitations of working seasons may be provided as 'Net available months'.)

Sl. No	Project/ Activity	Unit	Target Qty.	Proposed Time Schedule (Month & Year) for the Activity				
				Start of Activity	End of Activity	Total Months	Net available Months	Remarks
I	FOR WHOLE PROJECT							
II	ACTIVITY-WISE:							
i	On Farm Development Works	Th. Ha						
ii	Correction of System Deficiency in canal network	Th. Ha						
Iii & iv	Infrastructure for Micro-irrigation including solar power	Th. Ha						
v	Infrastructure for reuse of waste water	Th. Ha						
vi	Infrastructure for conjunctive use of ground water	Th. Ha						

	vii	Automation of canal system	Th. Ha						
	viii	Participator Irrigation Management	No. of WUAs						

18 Estimated Costs and Expenditure Scheduling (In Rs. Thousands):
(In Remarks column, enter <Not applicable> or <Separate DPR> as may be the case)

Sl. No	Activity	Cost Rs.Th.	Remarks	Financial-year-wise phasing of financial targets				
				FY1	FY1	FY1	FY1	FY1
i	On Farm Development Works							
	a) Field Channel/ UGP network (benefited area)							
	b) Land levelling/ realignment of boundaries (benefited area)							
	c) Farm drainage (benefited area)							
	d) Reclamation of water logged area (benefited area)							
	e) Construction of farm roads (benefited area)							
ii	Correction of System Deficiency in canal network (benefited area)							
iii	Infrastructure for Micro-irrigation (benefited area)							
iv	Solar power for Micro-irrigation (benefited area)							
v	Infrastructure for reuse of waste water (benefited area)							
vi	Infrastructure for conjunctive use of ground water (benefited area)							
vii	Automation of canal system (benefited area)							
viii	Participator Irrigation Management							
	a) Services of Social Facilitators							
	b) Functional grant to WUA							
	c) Infrastructure grant to WUA							
	d) Agriculture Livelihood Support Services – *use separate rows for separate identified services*							
	Training/ demonstration to farmers/ WUA							
ix	Expenditure on Incremental establishment							
x	Expenditure on capacity building of PIA							
	Total							

5.0 DESCRIPTIVE CHAPTERS

5.1 Chapter-l: Introduction

Introduction would cover broadly the location of the project area and the general topographical details relating to hilly areas or rivers or the drainage lines. This chapter would highlight in brief the background of project covering vital details related to planning and design of projects; commencement and completion of projects; extension, renovation and modernization, if any; and details of project evaluation or any such studies.

Chapter would detail as to how the project has been covered under State Irrigation Plan (SIP) and pertinent District Irrigation Plans (DIP) along with details of District-wise development proposed. Justification for proposing the project for inclusion under ISBIG, and the need of taking up particular activities proposed as part of the project would also be covered in this chapter. The chapter would summarize the targeted extent of major activities (e.g. OFD, micro-irrigation etc.), and also provide the broad cost estimates and phasing of works along with list of activities needing separate DPRs and their schedule of submission.

The contents on financing covered under the chapter would include details of mode of financing of the project. This will include the funds as made available by State, Centre and other Institutions. The details of accounting procedure to be adopted may also be indicated.

5.2 Chapter-2: Irrigation Development of the State

The Chapter would highlight the general development of irrigation in the State. The chapter would narrate the process of Irrigation Water Charges/ Tariff collection from the farmers, the rates of water tariff, the extent of tariff collection, and overall improvements achieved in recent past or under consideration; relevant act/orders of the State in regard irrigation water charges would also be attached. Chapter would indicate the O&M policy for irrigation projects being adopted by the State Government, and also highlight State's commitment for promotion of Participatory Irrigation Management and transfer of control and management of CADWM assets to the Water Users' Associations; Status of PIM Act or any other applicable Act may also be furnished. State's Policy as regard to promotion and incentivization of micro irrigation, if any, would also be highlighted under this Chapter. The Chapter would also highlight the system of project evaluation and the methodology of assessment of the irrigation potential utilization (IPU) adopted by the State for its numerous irrigation projects and relevant State Acts in this regard

5.3 Chapter-3: Project Features and Details

This Chapter would briefly give the data on the following aspects:

(i) General details of the area viz. geographical area district-wise gross area and Culturable command area, etc.

(ii) Physiography covering (a) climate, rainfall, location of rain gauge stations, equipments installed (b) temperature - maximum, minimum of all zones of project area with data (c) mean wind speed and their variations and (d) mean relative humidity. Other specific data relating to Physiography may also be included.

(iii) Rivers, drainage systems and other details of relief of command area. The availability of outfalls may be discussed in detail.

(iv) Topography, giving general details of country slopes as related with the irrigation slopes for flow or lift irrigation, land specific features of general topography.

(v) Soil survey details as per available data, methodology used for soil surveys, soil series, soil irrigability and land-capability classification; soil maps as available. The suitable details indicating the fertility status of the soils and remedial measures for covering their deficiencies. Number and location of soil testing laboratories as available may also be given.

(vi) General water availability giving hydrological conditions of the area, rainfall characteristics, ground water. Information on monitoring may also be given covering details such as depth of ground water, ground water fluctuation maps indicating the position obtained before the introduction of irrigation, analysis of data for the assessment of rising/depleting trends of ground water, quality of ground water along with details of the area under various limiting values of salinity and alkalinity indicators. Number and locations of water testing laboratories may also be given.

(vii) Socio-economic status covering data on population, households, workers - rural/ urban and literacy status etc.

(viii) Land holding, land tenure, arid farm economy giving details of land holding series, frequency distribution, land values and tenures; and farm budget analysis dealing with farm income and expenditure on irrigated and un-irrigated holdings.

(ix) Command area map clearly showing waterlogged area/ saline area landholdings, etc should be provided.

5.4 Chapter 4: Available Water Resources at Project Head

This chapter would give details of usual water availability at the project head in Kharif and Rabi seasons in normal rainfall year and the deficit rainfall year, the average and 75% dependable flows as given in the project report and at present along with details of the revised yield studies. Canal-wise details of allocation of water for irrigation at the head may be given.

5.5 Chapter 5: Status of Conveyance System

This chapter would contain details relating to status of the existing conveyance system giving inter-alia details of existing deficiencies, which are hindering the water use efficiency, frequency of the O&M works, availability of funds for O&M, participation of Water Users' Associations etc in the O&M activities. Details of potential created and utilized, other performance indicators, existing and proposed benchmarks may be given; and detailed analysis

of IPC-IPU gap of the project (with breakup for CCAs served by each main canal/ Branch canal/ Distributory) may also be carried out and presented in this chapter. Information on volumetric assessment of water at prominent points along with a map may also be provided. Details of earlier study on seepage and other losses, if any, may also be provided.

The project authorities would carry out the general health checkup for carrying out the correction of system deficiencies throughout the project including canals, distributaries, minors, etc. The following points and additional points, if any, as relevant to the project would be discussed in details under this chapter.

(i) Hydraulic Survey of the Canal System.
(ii) Field measurement of seepage losses in main canal/ branch/ distributary/ minor/ sub-minor
(iii) Original design capacity and Present capacity; Its sufficiency or otherwise for the proposed peak requirement; Design of revised section (lined/unlined) if applicable
(iv) Identification of the reaches needing improvements including: Lining; Re-sectioning; Strengthening/ Stabilization of banks; and repairs of cross-regulators, gates and hoists
(v) Review of the capacity of existing canals. Preparation of capacity statement showing discharges from main canal, each branch canal worked out from tail to head taking into account transmission losses
(vi) Need for remodeling and extension of existing canal system with details of new canals and distribution system.
(vii) Estimation of conveyance (canal and distribution system) efficiency
(viii) Gross Water requirements at the canal head along with details of water requirement for: (a) Irrigation crop-wise, season-wise ; (b) Pisciculture; and (c)Horticulture
(ix) Intensity of irrigation crop-wise and season-wise for: (a) Pre project; (b) As originally proposed; (c) As actually attained (d) As proposed after CADWM works

5.6 Chapter 6: Irrigation Development of Command Area

This chapter would highlight the project provisions in the sanctioned project estimate with reference to the intensity of irrigation to be achieved, cropping pattern adopted and the operation plan. Also it will discuss the development of irrigation in the command during the period of construction till its proposed inclusion, cropping pattern adopted and operation plan being followed. This chapter would broadly cover: -

(i) Source of irrigation available in the command area,
(ii) Details of irrigation network; details of minor irrigation schemes so that conjunctive use of surface and ground water can be done
(iii) Design/envisaged flows in the system,
(iv) Details of the network and gross area and culturable command area covered under each system,
(v) Distributory-wise name of the outlet and their discharge and CCA
(vi) Status of linking of channel and construction of structures such as head works, bridges, escapes etc. on the alignment

(vii) Operational details of the system including rotational programme of various channels with discharges
(viii) Water account of all the distributaries/ minors and its comparison with the design data discussing the designed and achieved intensity of irrigation
(ix) Deficiencies in the supplies
(x) The system constraints and proposed action for taking remedial measures
(xi) Prevailing On-Farm Water Management practices; need and the strategies to be adopted to bring about a switch over from the present practices to improved and better water management practices
(xii) Suitability of micro irrigation in the command; availability of grid power in the command for reliability of micro irrigation; extent of micro-irrigation and coverage of solar power backup proposed.
(xiii) The areas to be covered under micro irrigation in the command of the project may be identified and marked on the map.
(xiv) Potential for reuse of waste water in the command with comment on its techno-socio-economic viabilities
(xv) Potential for full or part development through PPP mode along with details of supporting studies, if any

5.7 Chapter 7: Cropping Pattern, Agricultural Production and Farmers' Income

This chapter would give the region-wise details of pre-project cropping pattern, present cropping pattern, and cropping patterns to be promoted in future with a view to improve water use efficiency and increase production, productivity and income of the farmers. The possibility of change of cropping pattern for effectively using micro irrigation may be explored and brought out in the chapter.

The overall impact on development due to shift from rain-fed to irrigated conditions may be assessed and described in this chapter. The data on crop-wise yields for pre-project/post-project scenario may be utilized for making the projections of additional production and farmers' income that would accrue on full irrigation development with CADWM works.

5.8 Chapter 8: Operation and Maintenance

This chapter would highlight the existing set up as well as the new proposed set up for dealing with operations and maintenance of the canal system and delivery arrangements up to farmers holding including OFD works. Legal status of provisions of existing regulatory Acts, or the newly proposed Act, or proposed amendment of existing Act, in support of transfer of control and management of irrigation system (developed with CADWM funding) to WUAs, and for financial empowerment of WUAs for collection of water charges etc. may also be detailed. Chapter would also provide details of rationalized structure of water charges as existing on date, and as may be needed for the financial sustainability of WUAs after covering the nominal tariff payable to the Department and incurring of the O&M costs. The chapter may

also mention if the Department would release water to WUAs at the last government controlled outlets; and describe the methodology for volumetric measurement of water at such outlets, if proposed.

5.9 Chapter 9: Outline of Activities Targeted Under ISBIG

This chapter would present a holistic view of all activities of the Project targeted under ISBIG. The chapter would list out the proposed activities under the four Scheme components – namely: (i) Bridging of IPC-IPU gap; (ii) Improving water use efficiency and providing assured supplies; (iii) Transfer of control and management of irrigation system to WUAs; and (iv) Project management – and provide justification for taking up of each activity in light of facts presented in earlier chapters.

The requirement of any additional activity, which is not covered under ISBG but is considered to be essential for the success of overall program, may also be detailed here along with details of cost implication. Any variations proposed in the scope or implementation methodology of the activity included under ISBIG may also be highlighted here.

{*It may be noted here that additional activity or modification of an existing ISBIG activity shall be examined by CWC for appropriate recommendations. However, implementation of such activity shall not be pursued by the State without explicit consent of the Ministry of Water Resources, RD & GR.*}

5.10 Chapter 10: On Farm development (OFD) Works

The On Farm development (OFD) component is essentially for connecting every farm field under the command with the outlets of the distribution system (government outlets) through a network of field channels (FC) and/ or pipelines; and it may also involve one or more of the four sub-activities – namely: (i) land levelling and realignment of field boundaries; (ii) improved farm drainage system; (iii) reclamation of waterlogged farm areas; and (iv) construction of farm roads – depending upon varied requirements of the targeted fields. Since the size, length and capacity of the field channels may vary from case to case depending upon numbers, size, and shapes of the farm holdings within the *Chak* (targeted command below government outlet), the extent of lining may be restricted to an optimum length in a cost effective manner and the unlined FCs created for balance lengths. Intervention for reclamation of water logged area shall not be sought merely on the basis of present condition of field, but by envisaging the overall improved condition of field after total project implementation. Construction of farm roads shall be taken up through convergence with the Scheme of MGNREGA operated by MoRD wherein construction of Gravel road/ WBM road is permitted.

The chapter would cover details of all relevant components of OFD works along with pertinent maps and typical engineering details/ drawings. The layouts of FCs under each outlet shall be presented in suitable digital maps along with geo-tagging of the outlet. In addition to presentation of the quantum of different work components in appropriate units, the extent of

OFD works are also to be presented in terms of targeted CCA (which will be derived by deducting the proposed micro-irrigation extent from the targeted balance CCA of the project) and the anticipated increase in IPU. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner.

5.11 Chapter 11: Correction of System Deficiency (CSD) in Canal Network

This activity may be taken up if irrigation project is found to be operating much below its potential because of the deteriorated conditions the canal network, and the conditions can be rectified by measures such as: cleaning of the channels by de-silting and weeding; raising earthwork in embankments or dressing the bed and side-slopes to the design standard and removing undercuts in hard strata; strengthening of banks in filling sections; restoring bed gradients; replacing and painting metal parts in gates and hoists; making control and measuring devices fully functional etc. These water conveyance deficiencies may pertain to any part of the canal network below the head regulator – i.e. in main canal, branch canal, distributaries, or minors.

The chapter would cover details of all relevant components of CSD works along with pertinent maps and typical engineering details/ drawings. The layouts of the pertinent portions of canal system shall be presented in suitable digital maps along with geo-tagging of the major intervention points. In addition to presentation of the quantum of different work components in appropriate units, overall extent of CSD works are also to be presented in terms of total CCA that will benefit from the CSD intervention and the anticipated increase in IPU. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner.

{In case this activity is not proposed to be included, the chapter may be left blank with the comment "Not applicable". In case a Separate DPR is being proposed to cover the detailed information of the activity, the fact may be highlighted while furnishing the preliminary information of the proposed interventions along with time schedule of submission of the DPR}

5.12 Chapter 12: Development of Infrastructure for Micro Irrigation (MI)

Micro-irrigation (MI) infrastructure includes components of sump, pump, HDPE pipelines, and pertinent devices needed for bringing efficiency in water conveyance and field applications through sprinklers, rain guns, drip, pivots etc. The devices – such as sprinkler/ rain gun/ Drip sets etc. – needed to be installed by individual farmers below farm outlets are not part of the micro-irrigation infrastructure; and farmers are expected to bear the cost of such devices or avail subsidies available in extant scheme of the Ministry *of Agriculture.* Alternatively, pari-passu farm level implementation may be proposed as part of convergence with the Micro Irrigation Scheme of Ministry of Agriculture and Farmers' welfare. In case of micro-irrigation, other components such as land levelling, drainage works, reclamation of water logged areas etc would be discarded entirely.

Community based solar pumping system for micro-irrigation may be proposed in areas where the grid power is either not available or available without any surety (*Projects of East and North-east areas of the country will be given greater preference for inclusion of this activity*). Solar powered pumping systems of different ratings ranging from 10 hp to 40 hp may be installed depending upon the size of the *chak* of individual outlets. The solar power system may also be connected to the grid wherever grid supply is also available; the solar PV arrays installed may be of such power ratings that the total annual solar energy generation becomes more than the annual energy requirements, so that excess power generated can be purchased by the State DISCOMS. The activity may cover the cost of supply, installation, and commissioning of solar water pumping system, along with grid connectivity wherever available. For the purpose of cost estimation, extent of solar power installations are represented in terms targeted CCA, which is taken as 30% of the CCA proposed to be covered under micro-irrigation.

The chapter would cover details of all relevant components of MI works, including solar power coverage, along with pertinent maps and typical engineering details/ drawings. The design of farm level micro irrigation systems – like: for drip irrigation, laterals and emitting devices as per BIS standards; for sprinkler irrigation, DPE/PVC pipes/ nozzles and other equipment as per BIS standards – may also be narrated for farm level MI implementation, if proposed under convergence. The layouts of the MI network under each outlet shall be presented in suitable digital maps along with geo-tagging of the outlet. The extent of MI area supported by solar powered pumps shall also be demarcated in the overall map. In addition to presentation of the quantum of different work components in appropriate units, overall extent of MI works are also to be presented in terms of CCA to be brought under MI coverage (along with MI coverage supported by solar power) and the anticipated increase in IPU. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner. The road map for seeking convergence with the Scheme of Ministry of Agriculture and Farmers' welfare for the earliest use of MI infrastructure by the concerned farmers may also be presented with relevant details and coverage extent. For balance area, the micro-irrigation infrastructure shall be "future ready" with minimum 2 kg/cm^2 pressure at the farm outlet so that farmer can make future investment on drip/ sprinklers.

{In case this activity is not proposed to be included, the chapter may be left blank with the comment "Not applicable". In case a Separate DPR is being proposed to cover the detailed information of the activity, the fact may be highlighted while furnishing the preliminary information of the proposed interventions along with time schedule of submission of the DPR}

5.13 Chapter 13: Infrastructure for Reuse of Waste Water

The infrastructure for reuse of municipal and industrial waste-water in irrigation will be created with a view of augmenting water for assured supply of water to every farm field. The intervention will mainly focus on creating hydraulic connectivity between outflow point

of a Sewage Treatment Plant (STP) or an Industrial Affluent Treatment Plant (IATP) and the distribution network of the irrigation project; and intervention for incremental treatment of the waste water, wherever necessary, will also be included. The component will not only augment the irrigation water, but also lead to reduction in the river-water and groundwater pollution levels. Only the existing Sewage Treatment Plants or Industrial Waste-water Treatment Plants will be targeted as source of waste-water for augmentation of irrigation in the select projects. The Scheme will cover the cost component of: (i) creating any additional treatment facility for improvement of water quality for irrigation purpose; (ii) infrastructure for conveyance of waste-water up to irrigation canal network; (iii) planning and design activities – including social and environmental studies, if needed.

The chapter would cover details of all relevant components of infrastructure for reuse of waste water with pertinent maps and typical engineering details/ drawings. The details of similar existing arrangements, if any, may also be furnished highlighting the learning being incorporated in the proposed design. The points of uncertainties and the risks associated with investment may also be assessed and presented upfront. The layout of the conveyance network shall be presented in suitable digital maps along with geo-tagging of the inlet, outlet and any other crucial point. In addition to presentation of the quantum of different work components in appropriate units, overall extent of reuse of waste water are also to be presented in terms of the CCA covered and the anticipated increase in IPU. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner.

{In case this activity is not proposed to be included, the chapter may be left blank with the comment "Not applicable". In case a Separate DPR is being proposed to cover the detailed information of the activity, the fact may be highlighted while furnishing the preliminary information of the proposed interventions along with time schedule of submission of the DPR}

5.14 Chapter 14: Infrastructure for Conjunctive Use of Groundwater

Infrastructure for the conjunctive use of groundwater will be created with a view of realizing assured water supply for every farm field, especially in the lean monsoon years. The approach will be to include volumetric and seasonal assessment of local water resources in addition to canal water; and the overall management plan will thus constitute the recharge-discharge interplay of the local aquifer while allocating total water between various users and uses. The activities covered will include components of groundwater development (dug wells, tube-wells, farm-ponds etc) as well as strengthening of Participatory Ground Water Management (PGWM). Strategic handholding support to the WUAs (over and above the support envisaged for PIM) by technical resource agencies with extensive experience in PGWM will also be provided.

The chapter would cover details of all relevant components of infrastructure for conjunctive use of groundwater with pertinent maps and typical engineering details/ drawings. The details of similar existing arrangements, if any, may also be furnished highlighting the

learning being incorporated in the proposed design. The points of uncertainties and the risks associated with investment may also be assessed and presented upfront. The layout of the conveyance network shall be presented in suitable digital maps along with geo-tagging of the proposed groundwater structures. In addition to presentation of the quantum of different work components in appropriate units, overall extent of conjunctive groundwater use are also to be presented in terms of the CCA covered and the anticipated increase in IPU. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner.

{In case this activity is not proposed to be included, the chapter may be left blank with the comment "Not applicable". In case a Separate DPR is being proposed to cover the detailed information of the activity, the fact may be highlighted while furnishing the preliminary information of the proposed interventions along with time schedule of submission of the DPR}

5.15 Chapter 15: Automation of Canal System for Control & Measurement of Supplies

The automation of canal system will be taken up with a view of improving demand-side management in irrigation. The implementation of demand-side management in irrigation sector has been difficult mainly on account of the complete absence of control and measurement system at water users' end. The implementation will hence mainly focus on the elements of control and measurements; and the integration of automation will be done from the farm-end and upward, rather than from head-works-end and downward as is conventionally approached. This intervention is expected to enable centralized control by the WUAs, and later on by the Distributory Committees as and when they become effective.

The chapter would cover details of all relevant components of canal automation with pertinent maps and typical engineering details/ drawings. The details of similar existing arrangements, if any, may also be furnished highlighting the learning being incorporated in the proposed design. The points of uncertainties and the risks associated with investment may also be assessed and presented upfront. The layout of the targeted conveyance network shall be presented in suitable digital maps along with geo-tagging of structures covered under automation. In addition to presentation of the quantum of different work components in appropriate units, overall extent of canal automation are also to be presented in terms of the CCA covered. All the items taken up for execution may be documented in detail covering total assessment of work and line of action for taking up these activities in a systematic manner.

{In case this activity is not proposed to be included, the chapter may be left blank with the comment "Not applicable". In case a Separate DPR is being proposed to cover the detailed information of the activity, the fact may be highlighted while furnishing the preliminary information of the proposed interventions along with time schedule of submission of the DPR}

5.16 Chapter 16: Participatory Irrigation Management

The non-structural interventions proposed in the Scheme will strengthen the WUAs thereby making them ready to take over the control and management of irrigation system – thus ensuring commencement of the participatory irrigation management. Services of Social Facilitators (NGOs, or similar entities, having substantial experience in influencing village level social activities and reforms) will be hired for accomplishment of specified deliverables linked with the success of PIM. The PIM will be initiated by formation of WUAs (wherever nonexistent) and supported by the sub-activities of: (a) release of one-time functional grant to WUAs; (b) release of one-time infrastructure grant to WUAs; (c) Agriculture Livelihoods Support Services [ALSS]; and (d) training and demonstration to farmers/ WUAs.

The chapter would give salient features of PIM Act if already enacted in the State, the Status of formation of Water Users' Associations, their viability and whether they are functional or not; and if not functioning, reasons thereof and strategies being thought of for their revival. The chapter would cover the complete blue print of WUA formation; WUAs capacity building; and the manner in which the control and management of the system will be handed over to the WUA. Transfer of control and management of irrigation system may also include delegation of water tax collection to respective WUAs. The constitution of the WUAs covering the initial, middle and tail reaches would also be included in this Chapter along with details of the safeguards for protection of the interests of women and weaker sections. The operation schedule of delivery of water to the farmers with the tail end farmers getting 1st priority would also be mentioned. The chapter would describe the measures proposed for continuous handholding support of WUAs, along with details of institutions that would be associated for trainings and demonstrations. Liaison with allied departments/ institutions like WALMls, Agriculture Universities and Departments, Research Institutes like ICAR and other rural development institutes in the area may be discussed. The time frame for all above non-structural interventions, along with timing of the release of functional and infrastructure grants and the timing of the transfer of control and management of irrigation system would also be described and correlated with the time frame of the structural intervention.

The chapter would also comment on the infrastructural facilities already available in the command area and the gaps therein affecting the overall production and economy of the farmers; the covered infrastructure components may include:

(i) Agricultural supporting services: (a) inputs viz seeds, fertilizers, pesticides etc.; (b) system of agricultural extension; (c) Agricultural Research indicating the list of Agriculture Universities, other research demonstration Institutions and extension education facilities as available
(ii) Roads
(iii) Market centers
(iv) Other miscellaneous services such as plant protection, horticulture, soil and water testing, agro-industries and other small/ marginal farmers' development agencies etc.

(v) Facility available for agricultural credit from various banks; the mechanism for arranging short and long term loans/credit to small/marginal farmers and other fanners may also be detailed.

The chapter would describe the measures proposed for bridging the infrastructure gap through convergence of efforts of various State Departments. It would also detail the methodology for utilizing the component of Agriculture Livelihoods Support Services for improving overall production and economic status of the rural populace including its non-farming community.

5.17 Chapter 17: Contract Packaging and Implementation Schedule

The chapter would provide details of the contract packaging. It is expected that dissimilar activities will be covered under different work packages, but different work components of the same activity will be brought under same work package targeting holistic outcome of the activity. The size of the work packages may be appropriately designed keeping in mind the time frame of the Scheme, and the reasoning of such package design may be furnished in the report. The mile stone dates of the implementation schedule of each work package, along with respective bar charts of time scheduling, would also be included in the chapter.

5.18 Chapter 18: Organizational setup and Project Management

This chapter would describe the current organizational setup of the Project Implementing Agency (PIA) and also cover the proposal of the State Government for setting up the suitable Command Area Development Authority, if not already done. In case implementation of different project components are proposed to be executed through multiple agencies, the details of nodal PIA and each of the supporting PIA may be furnished with details of activities covered by each PIA. The particulars of the nodal officer of PIA (in case of multiple agencies, nodal officers of each PIA) covering name, designation, address, phone/ fax/ mobile and email would also be included in the chapter. The available staff strength of the PIA(s) may be assessed in light of the anticipated peak work requirements for timely completion of Project, and the gap (if any) may be filled by creation of incremental establishment; physical and financial details of such an incremental establishment would also be presented in the chapter.

The chapter would describe the framework of Project Management for holistic implementation of all targeted activities delineating the roles and responsibilities of different officials under each targeted Projects as well at State level. The issues of coordination between different departments, especially in case of activities involving convergence under different Schemes, may be assessed judiciously and mechanism for their earliest resolution may also be developed and presented in this chapter. The chapter would contain details of the State level Committee or other mechanisms set up by State Government for strengthening the monitoring of the CADWM Program. The periodicity of the monitoring exercise, the manner of reporting,

and methodology adopted for bringing about a qualitative improvement in the implementation of the program may also be highlighted. The steps related to promotion of the Management Information System, public dissemination of information and transparency may also be described. The road map for performance evaluation of the project components covering details of evaluating agency (if identified), scope, estimated costs, and timings of evaluation etc. would be presented in this chapter. The chapter would also include all evaluation studies done so far, whether for the project as a whole or for Specific component of the project, with details of the findings thereof.

5.19 Chapter 19: Cost Estimates and Financial Scheduling

This chapter would present the assessment of workload under each activity, and the item-wise unit rates and cost estimates of the works. The assumptions made (if any) regarding assessment of the work quantities shall be highlighted along with reference of the applicable schedule of rates. In case, rates are not available under applicable schedule of rates, the pertinent rate-analysis/ justification of the rates may also be furnished. Besides the summary of total cost estimates for the whole project, the detailed cost estimates of each targeted scheme component may be presented; and in case for estimates of some scheme components separate DPRs are being proposed, the fact may be highlighted while furnishing preliminary/ tentative cost estimates.

The chapter would also present the quarterly and yearly financial scheduling for each targeted scheme component of the project and for the overall project. The proposed financial scheduling shall be in tune with the works implementation schedule covered in Chapter-17.

5.20 Chapter 20: Convergence with Programs of Other Ministries

Various other Ministries of Government of India such as Ministry of Agriculture and Ministry of Rural Development are operating programs/ schemes which have components relating to on-farm water management, ground water development, micro-irrigation, farm roads, renovation of tanks etc. The provisions of such schemes can be used/ dovetailed to benefit the farmers. The chapter would identify convergence with such existing programs/ schemes of other ministries detailing specific components of these schemes and linking them with the activities targeted under ISBIG. The chapter would also clearly bring out that there is no overlap in funding of the same activity/ component from two different schemes, and would also highlight the safeguards proposed in this respect.

5.21 Annexure

Various maps/ layouts/ engineering drawings provided as per requirements of different chapters may be placed as Annexure and referenced appropriately. Similarly elaborately tabulated data/ spread sheet or any other information repeatedly referred under different chapters may also be placed as Annexure with appropriate numbering. The titles of Annexure

shall clearly reflect the contents of annexure, and footnotes may also be used for improving overall clarity of information.

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