Annex – 3
(Immediate measures without financial implication)

Table 1: Implemented Recommendations with Non Financial Implications Indicating Benefits.

Sr. No.	CPRI Recommendations	Action Plan/ Present Status/Comment	Reference	Benefits
1	Constant and continuous liaison with coal mines for better quality of coal.	Schedule of visit by O&M personnel is followed.	Vol-1,Page-11,Sr.No-09	Stone and Shells are reduced.
2	Implementing a detailed plan for coal management during rainy seasons.	Pre monsoon activities are planned and completed.	Vol-1,Page-16,Sr.No-94	Generation loss during rainy season is optimize.
3	Strengthening and Improving the maintenance practices at CHP	1) Housekeeping shall be improved. 2) Scrappers of all conveyors are adjusted or replaced & will be maintained. 3) Preventive maint. Schedule will be adhered to.4) Predictive maintenance work will be introduced.	Vol-4,Page-06,Sr.No-02	Conveyer utilization factor improved.
4	Measuring the ash to water ratio on daily basis for unit-1 to 7	For Stage I & II - Already in practice. For Stage-III & IV implemented	Vol-4,Page-06,Sr.No-05	Operating Hours of FATP pump and Ash slurry pumps is maintained.
5	Optimizing water to ash ratio for unit-1 to 7	Water curtain system is installed in system in Unit 5 & 6, hence water quantity is required more to avoid clinker bridging inside bottom ash hopper. Ash Water	Vol-4,Page-06,Sr.No-06	Operating Hours of FATP pump and Ash slurry pumps is maintained.

		ratio is monitored on daily basis and optimize accordingly. Measures are being taken to optimization.		
6	Bomb calorimeter data to be interfaced with LAN.	GCV analysis data obtained through Bomb calorimeter is made available on LAN.	Vol-1,Page-11,Sr.No-07	Useful for retrieving factual data and ensuring system healthiness.
7	The process of performance trending can be taken up for operational optimization, the aid of TGA of fired coal, stress evaluation, etc., can also be used as guidelines.	Weekly sheet of Proximate analysis of received coal is distributed to all PCR for consideration of Loading.	Vol-1,Page-16,Sr.No-88	Useful for declaration of day ahead OLC.
8	Condition monitoring policy to be evolved and round the clock graded monitoring of units of difference classes of equipment is required for maintenance decision support as well as outage reduction.	Covered in P6-1-HO-IT	Vol-1,Page-12,Sr.No-25	Useful for early detection of fault to avoid further secondary damages.
9	While procuring replacement spares, material up gradation and new technology options must be kept in mind instead of old time tested spares.	Present Status - It is implemented in some cases CHP, I&C etc. Action Plan:-This will be further enhanced after discussing with maint. Section heads, vendors etc. After looking all the aspects i.e. inventory,	Vol-1,Page-15,Sr.No-64	Cost effective solution with reliability in operation is achieved.

		acceptability, availability		
10	Pooling the resources and having common bank of spares instead of each Section carrying its own stock of spares reduced the locked up capital.	Present Practice: - This is done for consumable items only. Action Plan:-This will be implemented after discussing with maint. Sections and management for identification of common items.	Vol-1,Page-14,Sr.No-61	Inventory optimization is achieved.
11	For special components which are posing difficulty in obtaining spares, competent agencies for reverse engineering should be identified.	The special components / spares are developed with the help of prospective vendors.	Vol-1,Page-14,Sr.No-63	Dependency on OEM is avoided, hence immediate solution is possible.
12	Dynamic proactive vendor development	Vendor development system is already in practice. Dynamic & proactive vendor development in specialized cases shall be developed.	Vol-1,Page-15,Sr.No-66	Cost effective and time effective solutions are achieved.
13	The percentage of tenders turning into orders must be increased to around 90 %.	This will be examined and all out efforts will be made to achieve the same.	Vol-1,Page-15,Sr.No-67	BY processing through SAP, physical movement of paper reduced.
14	The time constant for vendor registration which is around 2-3 months presently must be reduced by a re-look at the	In e-tendering system, registration is must to participate in purchase activity. It is online and	Vol-1,Page-15,Sr.No-68	On line vendor registration is in practice.

	process.	simple.		
15	Long term contracting can be entered into to minimize inventory levels for many items.	Action Plan :- Long term contracting is done in 1) Consumables 2) Spares 3) Work Contracts	Vol-1,Page-15,Sr.No-70	No. of ARC (Annual rate contract)
16	Development and implementation of major maintenance works standards must be made mandatory for all.	Standardization is done by FQAD	Vol-1,Page-12,Sr.No-29	Quality checks are carried out during Overhauls and shutdown of unit or critical auxiliaries.
17	Capture and dissemination of maintenance knowledge	1) Presently maintenance knowledge is Capture and disseminations in form of work instructions, Quality forms & procedures are available for major maintenance activities. 2) Possibility of use of multimedia & E-forum is also under implementation.	Vol-1,Page-12,Sr.No-36	Useful for brainstorming during critical emergencies.
18	Strengthening and Improving the maintenance practices at CHP	Combined with P1-228-CHP-IT	Vol-3(Stun),Sr.No-21	Conveyer utilization factor improved.
19	GCR working needs to be strengthened in respect of heat rate and its financial impact on realistic basis.	Loading and Testing of application packages for strengthening heat rate is presently being done at	Vol-1,Page-17,Sr.No-102	Daily discussion of performance parameters are carried out with financial impact to increase awareness.

		Koradi. After its successful commissioning it will be implemented. M/s CMC, Mumbai		
20	Video conference facilities of MSPGCL to be put to effective usage for HO-station and Station to station meetings/discussions.	Established and in service for review	Vol-1,Page-16,Sr.No-86	Most of the time the critical issues are discussed through video conferencing
21	Increasing the Hydrogen pressure in generator for Unit 1 to 4	Implemented in Unit 1 to 4	Vol-2-U4, Page-08, Sr.No-19	Rated hydrogen pressure is maintained. No rise of winding temperature is observed even at full load.
22	Increasing the FD fan discharge pressure For U 1 & 2	Air registers are also to be made operative. Various flue gas & air duct leakages will be attended in shutdown.	Vol-3(Stun),Sr.No-02	The actual design pressure is obtained
23	Increase the PA fan discharge pressure near to the design value for U-1 to 4	Various flue gas & air duct leakages attended in shutdown	Vol-3(Stun),Sr.No-07	The actual design pressure is obtained
24	Overhauling of H2 Booster pump and DM/GS pump 2 to avoid overloading for U-1 to 7	Trimming of impeller of H2 booster pump in unit-3 & 4 and DM/GS pump in unit 1 to 4 carried out, pump overhauled one by one. Not applicable for Unit 5, 6, 7. Pumps Overhaul of 2 out of 8 H2 booster pump completed.	Vol-3(Stun),Sr.No-12	Energy saving in H_2 booster pump is obtained. The current of remaining pumps are within limit

25	Existing quality circle movement has majority participation from artisans while the role of engineers is to remain as facilitator/coordinator. Formation of Engineers quality circles is required.	Present Practice:- Two quality circles consisting of engineers are formed. They had also resolved one problem with the help of this management tool. Action Plan :- Some more quality circles of engineering staff of different section	Vol-1,Page-19,Sr.No-136	Nine analysis committees are formed for obtaining the solution to minimize the failure frequency.
26	Focused in-house training based on actual need for training in required areas.	Training need analysis will be carried out & accordingly in-house training programmed will be refined.	Vol-1,Page-18,Sr.No-123	Need base trainings are imparted as per recommendation of Section Heads. Improved knowledge level of the staff.
27	The section level ISO objectives must be more focused on performance and oriented towards achieving better levels of performance. Instead of objectives oriented towards resource conservation, shift towards heat rate improvement.	Section level objectives with a focus on PLF, Availability, Heat rate etc for Unit 5, 6 and 7 already prepared. For other units same shall be prepared...	Vol-1,Page-15,Sr.No-71	Performance parameters are selected for Local improvement.
28	Cleaning of lube oil coolers of all HT equipments	Already in practice	Vol-3(Stun),Sr.No-01	TTD within the range is maintained throughout the year.
29	Arresting air leakages and flue gas leakages in ducts	Perform during every overhaul	Vol-3(Stun),Sr.No-11	Improvement in Wind Box pressure and margins on ID Fan loading

30	Plotting of auxiliary power variation with plant load and made available at control room for the operator to monitor the auxiliary power	Recommendation shall be covered in Energy Monitoring System under project P5-5-TICTEST-IT capital scheme	Vol-3(Stun),Sr.No-15	Auxiliary Conservation awareness had increased
31	Reducing the transformer tap of auxiliary transformer supplying power to seal air fans 1B & 1C	Tap Changed from tap position 3 to 2. Reduction in voltage from 550 Volts to 44o Volts.	Vol-3(Stun),Sr.No-18	Rated voltage at transformer is achieved
32	Reducing the overloading of motors	Motor resizing done	Vol-3(Stun),Sr.No-27	Events of motor failure reduced.
33	Reducing air leakages in compressed air line	a. All visible leakages are attended. Ultrasonic leak detection instrument is in process for detecting minor leakages.	Vol-3(Stun),Sr.No-30	Continuous tracking of leakages and replacement activity
34	Reducing the pressure of service air compressors to 4.0 kg/cm^2	Implemented	Vol-3(Stun),Sr.No-31	Current reduction observed by 10%
35	Optimizing the voltage at motor terminals	Suitable Tap Changing done	Vol-3(Stun),Sr.No-32	Voltage level of transformer is optimized to avoid motor failure.
36	Air leakage test on compressed air lines.	Covered in project id - P13-51-TM-IT	Vol-3(Stun),Sr.No-33	Continuous tracking of leakages and replacement activity
37	Improving the performance of CW pumps at Unit 2	Pump overhaul done.	Vol-3(Stun),Sr.No-19	
38	Reducing air leakages in compressed air line	Covered in project id - P13-51-TM-IT	Vol-4,Page-06,Sr.No-11	Current reduction observed by 10%