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## BHARAT COKING COAL LIMITED

## MASTER PLAN

## FOR

# DEALING WITH FIRE, SUBSIDENCE AND REHABILITATION IN THE LEASEHOLD OF BCCL

# UPDATED MARCH' 2008.

CENTRAL MINE PLANNING & DESIGN INSTITUTE LTD REGIONAL INSTITUTE – 2 DHANBAD

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# SUMMARISED DATA

# SUMMARISED DATA

SL NO	PARTICULARS	MASTER PLAN'04	MASTER PLAN'06	MASTER PLAN'08
Α	Dealing with fire			I
1	Total nos. of fires identified at the time of nationalisation	70	70	70
2	Additional fires identified after nationalisation	6	7	7
3	No. of fires extinguished till date	10	10	10
4	Totalno.offiresexcludingtheextinguished fires	66	67	67
5	Fires already under control, requiring no action plan except maintenance of status	9 * Kankanee XIII & XIV seam * Loyabad XV, XIV & XIII seam * Kachhi-Balihari XV seam * Bhalgora XIV seam * Bhalgora XV seam * Simlabahal XIV seam * Amlabad XIV seam * Jealgora fire	9 * Kankanee XIII & XIV seam * Loyabad XV, XIV & XIII seam * Kachhi-Balihari XV seam * Bhalgora XIV seam * Bhalgora XV seam * Simlabahal XIV seam * Bhagaband XVI seam * Amlabad XIV seam * Jealgora fire	9 * Kankanee XIII & XIV seam * Loyabad XV, XIV & XIII seam * Kachhi-Balihari XV seam * Bhalgora XIV seam * Bhalgora XV seam * Simlabahal XIV seam * Bhagaband XVI seam * Amlabad XIV seam * Jealgora fire
6	No. of collieries affected by fires	40	41	41
7	Total surface area affected by fires	8.90 sq.km	8.90 sq.km	8.90 sq.km
8	Potential impact of fire	<ul> <li>* Dhanbad-Patherdih Rail Line.</li> <li>* Adra-Gomoh Rail Line.</li> <li>* Chatkari, Kari, Ekra, Katri Jores.</li> <li>* Jharia, Kirkend and many other populated areas.</li> </ul>	<ul> <li>* Dhanbad-Patherdih Rail Line.</li> <li>* Adra-Gomoh Rail Line.</li> <li>* Chatkari, Kari, Ekra, Katri Jores.</li> <li>* Jharia, Kirkend and many other populated areas.</li> </ul>	<ul> <li>* Dhanbad-Patherdih Rail Line.</li> <li>* Adra-Gomoh Rail Line.</li> <li>* Chatkari, Kari, Ekra, Katri Jores.</li> <li>* Jharia, Kirkend and many other populated areas.</li> </ul>
9	No. of fires for which action plan has been proposed	66	67	67
10	No. of fires considered for Projectisation.	66	67	67

SL NO	PARTICULARS	MASTER PLAN'04	STER PLAN'04 MASTER PLAN'06	
11	No. of fire projects to be implemented.	40*	45**	45**
12	Maximum No of fire projects to be implemented at a time	15	21	21
13	Total duration proposed for implementation of fire projects (excluding 2 years of pre- implementation activity	15 years	10 years	10 years
14	Technology suggested for controlling fires	* Excavation of fire material	* Excavation of fire material	* Excavation of fire material
		*Surface sealing and blanketing.	*Surface sealing and blanketing.	*Surface sealing and blanketing.
		*Isolation by trenching and back filling with cohesive soil.	*Isolation by trenching and back filling with cohesive soil.	*Isolation by trenching and back filling with cohesive soil.
		*Construction of grout barrier and stabilisation against rail, road and jore.	*Construction of grout barrier and stabilisation against rail, road and jore.	*Construction of grout barrier and stabilisation against rail, road and jore.
		*Filling of opencast high wall, shafts, inclines and other subsided areas.	*Filling of opencast high wall, shafts, inclines and other subsided areas.	*Filling of opencast high wall, shafts, inclines and other subsided areas.
		*Cooling and excavation of fire material and filling with cohesive soil.	*Cooling and excavation of fire material and filling with cohesive soil.	*Cooling and excavation of fire material and filling with cohesive soil.
		*Blind flushing with sand / cement / fly ash/grout mixture.	*Blind flushing with sand / cement / fly ash/grout mixture.	*Blind flushing with sand / cement / fly ash/grout mixture.
		*Cooling by water curtain/ in filteration ponds.	*Cooling by water curtain/ in filteration ponds.	*Cooling by water curtain/ in filteration ponds.
		*Seam sealing, tunnel plug and underground	*Seam sealing, tunnel plug and underground	*Seam sealing, tunnel plug and underground
15	Phase wise no of fire projects to be implemented			
	Phase-I (First five year)	27	28	28
	Phase-II (2nd five year)	13	17	17
16	Total indicative fund requirement for controlling the fires (Rs. Crs.)			

SL	PARTICULARS	MASTER PLAN'04	MASTER PLAN'06	MASTER PLAN'08
				4.00
	• Pre-implementation activities (2 years)	3.27	4.75	4.93
	• Phase-I (3 <sup>rd</sup> to 7 <sup>th</sup> yrs.)	1299.40	1014.55	1101.19
	• Phase-II (8 <sup>th</sup> to 12 <sup>th</sup> yrs.)	1161.48	1133.21	1205.39
	• Phase-III (13 <sup>th</sup> to 17 <sup>th</sup> yrs)	493.67	-	-
	Total	2957.82	2152.51	2311.50
В.	Stabilisation	·		
17	No. of sites proposed to be stabilized through sand stowing	121	-	-
18	Total duration proposed for implementation of subsidence control projects	20 years	-	-
19	Total capital requirement (Rs. Crs)	387.48	-	-
С	Rehabilitation of in-ha	bitated sites from end	angered areas	
20	No. of sites proposed to be Rehabilitated.			
	Full	271	326	326
	Part	261	269	269
	Total	532	595	595
21	No .of houses to be vacated			
	BCCL	36208	44155	44155
	Private (Authorized)	15571	29444	29444
	Private (Un -Authorized)	12719	23847	23847
	Other	802	868	868
	Total	65300	98314	98314
22	No of houses proposed to be Resettled/Constructed			
	BCCL	36208	25000	25000
	Private (Authorized)	15571	29444	29444
	Private (Un -Authorized)	12719	23847	23847
	Other	802	868	868
	Total	65300	79159	79159
23	Phase wise no. of houses proposed to be rehabilitated			

SL NO	PARTICULARS	MASTER PLAN'04	MASTER PLAN'06	MASTER PLAN'08
	<ul> <li>Phase – I (3<sup>rd</sup> to 7<sup>th</sup> yrs)</li> </ul>	19984	45795	45795
	Phase – II (8 <sup>th</sup> to 12 <sup>th</sup> yrs)	18861	33364	33364
	Phase – III (13 <sup>th</sup> to 17 <sup>th</sup> yrs)	16321	-	-
	• Phase – IV (18 <sup>th</sup> to 22 <sup>nd</sup> yrs)	10134	-	-
	Total	65300	79159	79159
24	Land required for rehabilitation (Ha)			
	For BCCL houses	978.57	400.00	400.00
	For Non BCCL houses	802.07	1104.99	1104.99
	Total	1780.64	1504.99	1504.99
25	Time frame for implementation (excluding 2 years of pre- implementation period).	20 Years	10 years	10 years
26	Estimated Capital required (Rs. Crs.)			
	• Pre Implementation (1 <sup>st</sup> & 2 <sup>nd</sup> yrs)	39.42	143.31	163.79
	• Phase – I (3 <sup>rd</sup> to 7 <sup>th</sup> yrs)	576.61	2184.71	2498.26
	• Phase – II (8 <sup>th</sup> to 12 <sup>th</sup> yrs)	705.59	1857.92	2118.55
	• Phase – III (13 <sup>th</sup> to 17 <sup>th</sup> vrs)	683.16	-	-
	<ul> <li>Phase – IV (18<sup>th</sup> to 22<sup>nd</sup> vrs)</li> </ul>	442.13	-	-
	Total	2446.91	4185.94	4780.60
27.	Estimated capital required for BCCL houses		931.10	1068.45
	<ul> <li>Estimated capital required for Non-BCCL houses including others</li> </ul>		3254.84	3712.15
	Total		4185.94	4780.60
С	Diversion of Rail and Roa	d		
28	Estimated capital (Rs Crs)	-	20.00	20.00
29	Phase wise total capital			

SL NO	PARTICULARS	MASTER PLAN'04	MASTER PLAN'06	MASTER PLAN'08
	for Master Plan			
	• Pre Implementation (1 <sup>st</sup> & 2 <sup>nd</sup> yrs)	46.58	148.06	168.72
	<ul> <li>Phase – I (3<sup>rd</sup> to 7<sup>th</sup> yrs)</li> </ul>	1955.45	3199.26	3599.45
	Phase – II (8 <sup>th</sup> to 12 <sup>th</sup> yrs)	1998.45	2991.13	3323.94
	Phase – III (13 <sup>th</sup> to 17 <sup>th</sup> yrs)	1296.78	-	-
	<ul> <li>Phase – IV (18<sup>th</sup> to 22<sup>nd</sup> yrs)</li> </ul>	494.95	-	-
	Total	5792.21	6358.45	7112.11

\* Including 6 EMSC / RCFS Schemes. \*\* Including 5 EMSC / RCFS Schemes

## **30. PHASE WISE SUMMARY OF REHABILITATION**

Phase	No of houses (including demo.			Total	Lan	d for	Total (ha)	
	Scheme)				resettler	nent (ha)		
	BCCL	PVT.	ENCHR.	OTHER		BCCL	NON-	
							BCCL	
PHASE-I	12462	16671	16166	496	45795	199.39	660.27	859.66
PHASE-II	12538	12773	7681	372	33364	200.61	444.72	645.33
TOTAL	25000	29444	23847	868	79159	400.00	1104.99	1504.99

1. Projection - Physical					
Particulars	Pre- implementation (1 <sup>st</sup> & 2 <sup>nd</sup> Yr.)	Phase- I (3 <sup>rd</sup> to 7 <sup>th</sup> Yr.)	Phase-II (8 <sup>th</sup> to 12 <sup>th</sup> Yr.)	Total	
	A. Dealing	with fire			
<ul> <li>i) No. of fire project to be implemented</li> </ul>	-	28*	17	45	
	B) Rehab	oilitation			
<ul> <li>i) No. of sites to be rehabilitated</li> </ul>	-	300	295	595	
	ii) No. of houses to	o be rehabilitated			
a) BCCL	-	12462	12538	25000	
b) Private	-	16671	12773	29444	
c) Encroachers	-	16166	7681	23847	
d) Others	-	496	372	868	
Total		45795	33364	79159	
2.	Projection – Finan	cial (Rs. In cror	res)		
Particulars	Pre- implementation (1 <sup>st</sup> & 2 <sup>nd</sup> Yr.)	Phase- I (3 <sup>rd</sup> to 7 <sup>th</sup> Yr.)	Phase-II (8 <sup>th</sup> to 12 <sup>th</sup> Yr.)	Total	
A. Dealing with fire	4.93	1101.19	1205.39	2311.50	
B) Rehabilitation					
a) BCCLHouses	34.75	478.95	554.75	1068.45	
b) Non BCCL Houses	129.04	2019.32	1563.80	3712.15	
Total	163.79	2498.27	2118.55	4780.60	
c. Diversion of Rail & Road (Advance Action)	20.00	3599.46	3323 94	20.00	
Granu Tular (ATDTU)	100.12	3333.40	JJZJ.34	1114.11	

# **31. Summary of Physical and Financial Projections**

\* Including fire ongoing EMSC/RCFS scheme and one maintenance project.

# INTRODUCTION



#### 1.0 INTRODUCTION

#### 1.1 Historical Background

Mining areas in Jharia and Raniganj coal fields, within the leasehold of Bharat Coking Coal Limited, are faced with problems of Fire and subsidence due to the century old history of mining in these coal fields. These problems have been receiving attention of all concerned from time to time and the mitigation measures have been taken on case to case basis at different times.

The problem of danger of subsidence of surface land over mine workings standing on small stooks vis-à-vis danger to habitations have attracted the attention of authorities concerned, technical organizations and institutions from time to time. MMGI of India formed the first subsidence committee in 1922. The second subsidence committee was formed by the same institute, which submitted its report in 1937, recommending remedial measures to minimize the danger due to mine subsidence. A few more committees were set up to examine the problem and areas where danger due to subsidence was apparent. One such committee was "Barakar Subsidence Committee in 1957", which submitted its report on the danger subsidence of G.T. Road and residential building in Barakar town. In 1953 two separate reports were submitted by the erstwhile NCDC entitled "Fire, Subsidence and Problems relating to Mine Workings in Underground ". In 1964, Director, CMRS, Dhanbad submitted a report entitled "Report on the Study of Coal Fires, subsidence and Problems Relating to Mine Workings.

The Govt. of India, Ministry of Energy (Department of Coal), constituted a committee under the Chairmanship of Mr. S.P. Gugnani, Joint Secretary, Dept. of Coal on 5<sup>th</sup> January 1976, to examine the whole question of safety in the nationalized coal mines. The Committee (Gugnani Committee – 1976) also decided to examine the question of safety of surface dwellers arising out of underground workings. The committee constituted a sub-committee with Sri S. Bagchi as convenor on 11.03.76 to make an in-depth study of the problems of subsidence and fire in coal mining areas and suggest solutions for the same. The committee submitted a report in 1979. The committee observed that the gigantic and multifarious subsidence problems in Jharia Coalfield was caused due to existence of old workings with full height extraction and wide galleries, multi-seam and multi-section development under shallow depths, existence of developed seams under extracted lower seam with stowing etc. There are many towns, villages, rivers, jores, roads, railway line etc., in Jharia Coalfield which are standing over small pillars / stooks reported to be water logged. If, by any chance, this water drains away it may cause subsidence. In addition, fire is also active in some areas, causing danger to the surface structure. In many mines, size of pillars, which were left below the surface structures as a protective measure, is not known because of non-availability of off-set plans of abandoned workings. The committee recommended the following eight (8) main measures to control danger due to subsidence depending upon conditions prevailing in individual mines of BCCL.

- a. Vacating and / or dismantling the surface structures over the goaved out or unstable workings 30 collieries.
- b. Stabilsation of underground workings by packing or with suitable support system 45 collieries.

- c. Division of road, railway line, jore etc. and shifting of buildings and other infrastructures from unstable workings 8 collieries.
- d. Keeping the unstable workings under observation by measuring surface movement and assessing stability of workings by investigation -15 collieries.
- e. Stopping further extension or extraction of mine workings or further construction of structure on the surface 4 collieries.
- f. Preparation, procurement and updating of mine plans to determine the extent of instability 4 collieries.
- g. Controlling underground fire effectively to prevent surface subsidence and breathing of air through subsided area 8 collieries.
- h. Assessing the danger of inundation to the workings due to surface or underground collapse 3 collieries.

The committee also recommended the formation of Area Development Authorities by the concerned State Governments by 1981 so that these could regulate the construction of structures over coal baring areas to deal with the problems of subsidence on a permanent footing.

The long history of mining in these coal fields have led to increase in the number of sites prone to danger of safety due to fire and subsidence. Recurrent problems of fire and subsidence in these two coal fields and their spurt in 1996 required identification of subsidence and fire prone areas so that measures could be taken to tackle them. CMRI was engaged by BCCL for identification of such inhabited areas within the leasehold of BCCL. Subsequently, DGMS also identified a number of inhabitated areas, which require attention due to problems of fire and subsidence.

It has been felt right from the beginning of this decade that a comprehensive action plan needs to be prepared for dealing with the problems of fire and subsidence in these two coalfields. As a recourse to this, a project entitled "Jharia Mine Fire Control Technical Assistance Project" was funded by the World Bank under the Development Credit Agreement in April 1993. M/s. GAI/MET-CHEM Joint Venture, USA / Canada were engaged for "Development of Fire Fighting Programme in JCF" (a part of the total project, the other part being preparation of Environmental management Plan for JCF). The consultants submitted their study report in 1996, identifying a number of fire projects with their estimated capital requirement.

In December 1996, Govt. of India constituted a high Power Committee under the Chairmanship of Secretary, Ministry of Coal with other members from the Govt. of Bihar & West Bengal, Planning Commission, DGMS, Ministry of Labour, Chairman CIL, CMDs of ECL, BCCL & CMPDI with director (Tech), Ministry of Coal as member Secretary to review the problems of fire & subsidence in Jharia and Raniganj coal fields and suggest measures to deal with problems of existing habitation on subsidence / fire prone areas. The Committee was also asked to suggest areas for resettlement, mechanism for evacuation and resettlement of affected population and Institutional arrangement to prevent new habitation in fire and subsidence prone areas. Subsequently, Ministry of Coal directed CMPDI to study in depth problems of subsidence and fire in BCCL and ECL, and submit its report. As the fire problem was already studied under World Bank funding, two separate projects relating to

subsidence and rehabilitation problems were funded by Ministry of Coal, under Coal S&T Grant as EMSC projects. The projects were as follows:

SL.	Name of the Project	Sanctioned Capital
No.		
1	Generation of data and identification of subsidence prone areas and its segregation into controllable and uncontrollable areas in the leasehold of BCCL (Phase-I)	Rs. 25.84 lakhs
2	Technological Measures for control of subsidence where feasible, assessment of evacuation and resettlement needs where subsidence control is not feasible and assessment of fund requirement for both in the leasehold of BCCL (Phase – II)	Rs. 48.33 lakhs

The study in respect of the first project as mentioned above (Phase – I) was completed in February / April / August '98 and the report submitted in three volumes. The second project as mentioned above (Phase – II) has been prepared in two parts, one dealing with the technological measures for control of subsidence where feasible and the other dealing with rehabilitation and re-settlement needs for the areas where subsidence control is not feasible. These reports were submitted in January 1999.

The Standing Sub-committee of SSRC on Environment and Ecology directed CMPDI in its XVIth. meeting held at CIL, Calcutta on 30.06.98 to prepare a Master Plan for dealing with the problems of fire, subsidence and rehabilitation in the leasehold of BCCL, considering the fire control measures, areas to be stabilised, areas requiring rehabilitation including the phased requirement of funds for the same.

Accordingly, three separate Draft Master Plan for "Dealing with Fire Subsidence Control of Inhabitated Areas", and "Rehabilitation of Uncontrollable In-habitated Areas" was prepared in the month of February 1999. The drafts were discussed at CMPDI (HQ), Ranchi on 12.03.1999 and BCCL on 16.03.1999. Thereafter, the final report entitled "Master Plan for dealing with fire. Subsidence and Rehabilitation in the Leasehold of BCCL" submitted in March '99 incorporating the views expressed in the above meetings. The three reports mentioned above viz., World Bank funded report for "Development of Fire Fighting Programme in JCF" and coal S&T Grant funded EMSC projects, namely, "Generation of data and identification of subsidence prone areas and its segregation into controllable and uncontrollable areas in the leasehold of BCCL (Phase-I)" and Technological measures for control of subsidence where feasible, evacuation and resettlement needs where subsidence control is not feasible and assessment of fund requirement for both in the leasehold of BCCL (Phase-II)" formed the basis for preparation of the Master Plan prepared in 1999.

#### 2.0 BRIEF OF MASTER PLAN, 1999

It the Master Plan for Fire, Subsidence and Rehabilitation in the Leasehold of BCCL (1999) the following aspects were included:

- Dealing with fire
- Subsidence Control of the in-habitated Areas
- Rehabilitation of the uncontrollable subsidence prone in-habitated areas.

Master Plan 1999 envisaged the following:

- A) Dealing with 55 nos. of fire out of 64 no, within a time frame of 15 years, in three phases, each of 5 years duration for a capital investment of Rs 1481.93 Crs.
- B) Subsidence control of 121 unstable and controllable inhabitated sites through sand stowing within a time frame of 20 years in four phases, each of 5 years duration for a Capital Investment of Rs. 291.88. Crs.
- C) Rehabilitation of 65300 houses from the unstable and uncontrollable in-habitated areas within a time frame of 20 years, in 4 phases, each of 5 years for a Capital Investment of Rs 1981.14 Crs. Total no. of houses proposed to be rehabilitated were 65300 from 532 localities (271 full, 261 part).

Total indicative fund requirement for dealing with was Rs.3754.95 Crs

#### 3.0 BRIEF OF MASTER PLAN '2004

Cost updation of Master Plan'1999 was done in April '2004 as per directive of Ministry of Coal. The salient features of Master Plan'2004 was as under:

A) Dealing with 57 nos. of fire out of 66 no, within a time frame of 15 years, in three phases, each of 5 years duration for a capital investment of Rs 2952.82 Crs.

B) Subsidence control of 121 unstable and controllable in-habitated sites through sand stowing within a time frame of 20 years in four phases, each of 5 years duration for a Capital Investment of Rs. 387.82. Crs.

C) Rehabilitation of 65300 houses from the unstable and uncontrollable in-habitated areas with a time frame of 20 years, in 4 phases, each of 5 years for a Capital Investment of Rs 2446.91 Crs. Total no. of houses proposed to be rehabilitated was 65300 from 532 localities (271 in full, 261 in part). Total indicative fund requirement was Rs. 5792.21 Crs.

#### 4.0 CHRONOLOGICAL EVENT AND NECESSITY OF REVISION OF MASTER PLAN

♦ The Master Plan prepared in March'99 was approved by BCCL Board in April '99 and submitted to CIL for approval in May'99.

- The Master Plan '99 was submitted by CIL to Ministry of Coal in March'2000.
- As an out come of writ petition (Civil) No. 387/97 filed by Sri Haradhan Roy, EX-MP in 1997, an Action Plan for shifting and rehabilitation, dealing with fire and stabilization of unstable areas was prepared in April '03. This Action Plan was prepared based on Master Plan'99.
- The Action Plan was sent to state Govt. of Jharkhand and West Bengal as well as to Ministry Labour / DGMS for their comments and acceptance.
- The Action Plan was finalized in July '03 incorporating the decisions of State Govt. & DGMS.

 $\diamond$  Dy. Secretary, Govt. of India, vide his letter 22020/2/2003 – CRC dated 4<sup>th</sup> Feb'04 advised BCCL to update the Master Plan '99.

- Solution of the Master Plan '99 was done and submitted to BCCL in April '04.
- Supreme Court of India appointed Director General of Mines safety to go through the Action Plan and subsequent affidavit / ATR filed by UOI and to verify the same and file a report in the court within three months.
- DGMS constituted a committee and submitted its report in Aug'05. One of the observations of the committee was:

"As there is no scientific method available to check long-term stability of the site stabilised by sand stowing, it might not be possible to certify that the areas thus stabilised. The present stabilization work may restrict the effect of subsidence and allow some time. The final and permanent solution is evacuation of the affected area and rehabilitation. "

- The updated Master Plan was approved by BCCL and CIL Board in July '04 and submitted to MOC for approval.
- Planning commission accorded "In Principal" approval of the Master Plan vide letter no. M-12026/2/2005 coal dt. 29.03.05. However, planning commission sought some clarifications which were sent to MOC in May'05.
- In June '05, the IMG note of updated Master Plan was submitted to MOC.

- MOC vide letter no. 22020/1-CRC(PT) dt. 25.07.05 communicated that instead of IMG note a PIB note shall be submitted.
- Draft PIB note for Master Plan of BCCL Part was sent to ECL for preparing combined PIB not of BCCL & ECL on 15.10.05.
- ♦ MOC vide letter no. 22020/2/2005-CRC dt. 15.12.05 directed for preparation of revised PIB note with the following consideration.
- 1. All the areas where stabilisation through hydraulic stowing was proposed now have to be considered for total re-settlement.
- 2. It is being suggested that instead of shifting the affected people from the endangered areas in a number of small townships, it would be prudent to develop large satellite townships through the reputed builders / building organizations providing necessary civic amenities to motivate the people for shifting.
- 3. To further the rehabilitation process it is being suggested that wherever possible, schemes / project reports may be prepared for the areas where shifting of population is being considered and extraction of the available coal reserves may be undertaken either by O/C or by U/G means.
- On 23.02.06, a meeting was held on Master Plan in the Chamber of Secretary (Coal) where it was decided that as desired by Planning Commission, the execution of Master Plan should be tried to be completed within a period of 10 years. The minutes of the above meeting is enclosed as Annexure I.

In order to comply with the suggestion of planning commission, Secretary (Coal) and DGMS Committee, it is necessary to revise the Master Plan, April'04.

Accordingly, the Master Plan was revised in April'2006 considering the following:

1. Time frame of Implementation for different activities under Master Plan will be 10 years (excluding 2 years of Pre-Implementation activities) to comply with the suggestion of Planning Commission.

However, acceptance of such reduction of time frame needs to be obtained from the concerned State Govt.

2. All the sites, which were proposed for stabilization has been considered for rehabilitation to comply with the suggestion of the committee constituted by DGMS.

The above Master Plan, April'2006 with an Indicative Capital requirement of Rs 8637.28 Crs. was presented before Secretary (Coal) in his chamber on 4.7.2006. In the above presentation the following decisions were taken.

- As the manpower in BCCL is continuously reducing due to super -annuation, only 25000 BCCL houses shall be constructed against 42650 houses as proposed in the Master Plan. Therefore fund for construction of only 25000 houses shall be considered in the Master Plan.
- II) The cost estimate of the fire projects should be reduced to the extent possible. Whenever fire is handled by direct removal of coal and OB, the cost shall be set off considering that 50% of coal will be available for selling.
- III) A sample survey should be carried out for private (Pucca & Kutcha) for ascertaining suitable fund provision as compensation in the Master Plan.
- IV) For the purpose of income generation scheme, it has been decided that head of every displaced house shall be paid wage of 250 days in a year for two years as per minimum wage rate of respective state Govts.

The Master plan, July'2006 has been prepared considering the above decision and was submitted to State Govt. of Jharkhand for their acceptance vide letter no.GM (ENV)/F-rhab/2007/138 dated 6.3.2007. Jharkhand state Govt. has not given acceptance as yet.

Cost up-dation of the Master Plan July'o6 has been done up to Feb'08 considering the increase in WPI and Civil Cost Index.. Increase in WPI was about 7% and Civil cost index was 14.28%

#### 5.0 SCOPE OF WORK OF MASTER PLAN '2008

Master Plan now covers only following two aspects:

- i) **Dealing with fire**, which includes identification of fire areas, selection of technologies to deal with the fires, prioritization for implementation and assessment of tentative fund requirement.
- ii) **Rehabilitation & Resettlement** of the affected people from the areas affected by fire & subsidence including identification of affected sites, identification of resettlement sites and assessment of tentative fund requirement.
- **Note:** "BCCL vide letter no GM(Env)/F- /06 dated 22<sup>nd</sup> April, 2006 suggested that diversion of railway lines and NH 32 road passing through coal bearing areas of JCF should also be included in the Master Plan'2006.

Diversion of rails and roads passing over the coal bearing areas are affected by fire and subsidence at many places and may further be affected. As the diversion will affect the operation of other coal producing companies like TISCO & SAIL, other industries operating in the coalfield and State Govt. as well as Railway, a joint decision is to be taken involving all the above stakeholders.

Moreover, the diversion of rail and road requires survey of the alternative routes, detail layout planning by expert agencies like RITES and likely to take about two years time.

Therefore, in this Master Plan, a lump sum provision of Rs.20 Crs has been kept for survey and planning only as an advance action. The detail proposal for diversion may be taken up as a separate Master Plan in future. "

As per the recommendation of the committee constituted by DGMS, all the sites proposed for stabilization in the Master Plan '99, have now been considered for rehabilitation. The time frame for implementation of Revised Master Plan has been considered as 10 years proposed to be implemented in two Phases (Phase – I & II each of 5 years duration), excluding 2 years of pre-implementation period.

Implementation of the Fire control measures and rehabilitation of BCCL houses from the endangered area will be the responsibility of BCCL, where as rehabilitation of Non-BCCL houses/structures from the endangered areas will be the responsibility of State Govt. of Jharkhand and West Bengal. Land acquisition for BCCL employees shall be done in association with State Govt. of Jharkhand.

Rehabilitation sites will be located on non-coal bearing area along the fringe / periphery of Jharia coalfield. The sites will have the basic infrastructural facilities like Water & Electricity, School, Banks, Hospitals, Market Complex, Play Ground, and Community Center etc.

# **DEALING WITH FIRE**



#### 6.0 MASTER PLAN FOR DEALING WITH FIRE

#### 6.1 Introduction

History of fire in Jharia Coal Field dates back to 1916 when the first incidence of fire was reported from XIV seam of Bhowrah colliery. Since then a number of fires have occurred in underground workings, in opencast pits and in opencast overburden debris. According to the investigations made after nationalization 70 fires were known to exit in JCF in the leasehold of BCCL, covering an area of 17.32 Sq.km. It was estimated that about 37 mt of good quality prime coking coal has been destroyed and about 1864 mt of coal has been locked up due to these fires. Subsequently following (7) more fires was identified making the total tally of fires to 77.

XV seam fire, Kachhi Balihari Colliery

- IX & IX spl seam fire, Bassuria Colliery
- XI & XII seam fire, Kendwadih Colliery
- V/VI/VII seam fire, Shatbdih OCP
- X seam fire, Sendra-Bansjora Colliery
- XI, XIII & XIV seam fire of East Katras colliery.

These 77 fires are spread over in 41 collieries of BCCL. The list of 77 fires is given in **Table-1** and the tentative location of the fire areas are shown in **drawing -2**.

The principal issues that BCCL is facing due to pervasive mine fire problem concern the health and well being of the persons living on or near the fire areas, threat to infrastructures like railway lines, roads, buildings, jores / rivers etc. and associated impacts on the exploitation of coal resources in the light of complications brought about by the fires

Out of 77 fires areas, ten (10) fires got completely extinguished due to control measures taken after formation of BCCL. Out of the balance 67 fires, nine (9) are underground fires, sealed behind the stoppings and are now at dormant state. These nine (9) underground fires do not need any action plan except maintenance of the status quo. Remaining 58 fires are although controlled but still requires action proposed to be dealt under this Master Plan, Area wise no. of fires is given in **Table – 2**.

## TABLE -1

#### LIST OF FIRES IN THE LEASEHOLD OF BCCL

SI. No.	Name of the fire	Fire Status
1	Ganeshpur X. XI . XII & XIII seam fire	Active
2	Burwabera X seam fire	Active
3	Phularitand X. XI. XII seam fire	Active
4	Angarpathra XII, XI, X, IX Spl. seam fire	Extinguished
5	Gaslitand XVT, XVB seam fire	Active
6	Jogta XV, XIV, XIII, XII, XI seam fire	Active
7	Kankanee XIII & XIV seam fire	Active
8	Ekra XI & XII seam fire	Active
9	Ekra XIII & XIV seam fire	Active
10	Loyabad XV, XIV, XIII seam fire	Active
11	Bassuriya XIV, XIII & XII, XI and X seam fire	Active
12	Sendra Bansjora XIV, XIII, XII, XI seam fire	Active
13	Bansdeopur XIV, XII seam fire	Active
14	Gopalichak XVI, XV, XIV, XIII, XII,XI seam fire	Active
15	Industry XII, XI seam fire	Active
16	Kusunda XII, XI seam fire	Active
17	Alkusa XII, XIV seam fire	Active
18	Kustore XIV, XIII, XII, XI seam fire	Active
19	Ena XII, XI seam fire	Active
20	Pure jharia X seam fire	Active
21	K.P. Dobari X, V/VI/VII/VIII/VIIA seam fire	Active
22	Rajapur X seam fire	Active
23	Kujama XII, XI seam fire	Active
24	Kujama IX, X seam fire	Active
25	Bhalgora XIV seam fire	Dormant
26	Bhalgora XV seam fire	Dormant
27	East Bhuggatdih XV, XIV seam fire	Active
28	Ena XIV seam fire	Active
29	Ena XV seam fire	Active
30	Simlabahal XIV seam fire	Dormant
31	N.S. Lodna XIII, XIIIA, XIV seam fire	Active
32	Bagdigi XIV, XIA, XV seam fire	Active
33	Baniahar XV, XIVA, XIV seam fire	Active
34	Bhaga XV seam fire	Active
35	South Tisra VII, VIII, IX, X seam fire	Active
36	Bhowra XIII, XIV seam fire	Active
37	Bararee XV, XIVA, XIV seam fire	Active
38	Bhulan Bararee XIII, XIV seam fire	Active
39	Bhulan Bararee XVI, XV seam fire	Active
40	Sudamdin IX to XIV seam fire	Active
41	Patheroln IX to XIII seam fire	Active

SI.	Name of the fire	Fire Status
No.		
42	Bhowra IX, X seam fire	Active
43	Block –II XII, XI/XII, X Spl. seam fire	Active
44	Katras-Choitudih XIII seam fire	Active
45	Katras-Choitudih XIV, XV seam fire	Active
46	Tetulmari IV seam fire	Active
47	Tetulmari VI/VII seam fire	Active
48	Kendwadih XIII seam fire	Dormant
49	Kendwadih XIV, XIII seam fire	Dormant
50	Pootkee XV seam fire	Extinguished
51	East Bassuriya V/VI seam fire	Active
52	East Bassuriya VIII seam fire	Active
53	Kessurgarh V, VI, VII seam fire	Extinguished
54	Bhagaband XVI seam fire	Dormant
55	Amlabad XIV seam fire	Dormant
56	Sudamdih XV seam fire	Extinguished
57	Moonidih XVIIT seam fire	Extinguished
58	Damoda V, VI, VII seam fire	Dormant
59	Mudidih fire	Dormant
60	Jogidih X seam fire	Extinguished
61	Kooridih X seam fire	Extinguished
62	Nudkhurkee X seam fire	Extinguished
63	West Mudidih IX/X seam fire	Extinguished
64	East Katras XIV seam fire	Extinguished
65	North Tisra VII, VIII, IX seam fire	Active
66	North Tisra X seam fire	Active
67	Jeenagora IX, X, XI seam fire	Active
68	Jeenagora IX, X, XI,XII seam fire	Active
69	Joyrampur XI, XII, XIII seam fire	Active
70	Jealgora XV, XIV, XIIIB, XIIIA seam fire	Dormant
71	Bassuriya IX,I X Spl. seam	Active
72	Industry X seam	Active
73	Kachhi Balihari XV seam	Dormant
74	Kendwadih XI, XII seam	Active
75	Shatabdi V/VI/VII seam	Active
76	Sendra Bansjora X seam	Active
77	East Katras XI,XIII & XIV seam fire	Active

#### TABLE – 2

SL	AREA	TOTAL NU	MBER OF FIRES	TOTAL
No.		ACTIONS REQUIRED	ACTION NOT REQUIRED (Except maintenance)	
1	Barora	5	-	5
2	Block-II	1	-	1
3	Western Jharia	-	-	-
4	Govindpur	-	-	-
5	Katras	4	-	4
6	Sijua	9	2	11
7	Kusunda	7	-	7
8	Pootkee-Balihari	4	2	6
9	Kustore	9	3	12
10	Bastacolla	2	-	2
11	Lodna	13	1	14
12	Eastern Jharia	4	1	5
	TOTAL (J.C.F.)	58	9	67
13	Chanch-Victoria (R.C.F)	-	-	-
	GRAND TOTAL BCCL (JCF +RCF)	58	9	67

#### ADMINISTRTIVE AREA-WISE NUMBER OF FIRES IN BCCL

#### LIST OF EXTINGUISHED FIRES

- 1. Angarpathra XII, XI, X Spl. seam (UG Fire)
- 2. Pootkee XV seam (UG Fire)
- 3. Kessurgarh V/VI/VII seam (Surface Fire)
- 4. Jogidih X seam (Surface Fire)
- 5. Kooridih X seam (Surface Fire)
- 6. East Katras XIV seam (Surface Fire)
- 7. West Mudidih IX / X seam (Surface Fire)
- 8. Nudkhurkee X seam (Surface Fire)
- 9. Moonidih XVII T seam (UG Fire)
- 10. Sudamdih XV seam (UG Fire)

#### 6.2 Past Efforts to combat Mine Fire

After the nationalization of coal mines, serious thoughts were given for conservation of prime coking coal in JCF., the only source in the country. A Master Plan of Reconstruction of Jharia Coal Field was drawn up where fire was one of the major problems to be dealt in JCF before starting large opencast blocks as envisaged in the Master Plan of JCF Reconstruction. During 1976-1988, 22 fire projects to deal with the fires were sanctioned by BCCL for a total investment of Rs. 114.57 Crores. These fire projects covered the then 59 fires out of the 70 fires exiting at the time of nationalization.

Between 1998-2001, another eight schemes for dealing with fire and subsidence problems were sanctioned by Govt. of India under S&T grant (EMSC/RCFS) for a capital investment of Rs. 39.85 Crores. Out of these six schemes have been completed, 2 are under implementation.

Massive efforts were made in the implementation of 22 fire projects by the application of best available technology, such as surface sealing, digging, trenching, inert gas infusion and remote sand-bentonite mixture flushing. Besides, stabilization work was carried out to save railway lines, jores and other areas, which were accessible.

Over 22 million cubic metre of blanketing work was carried out, and more than 50 million tones of sand stowed below ground. Approximately 3 million cubic meter of nitrogen gas has been flushed below the ground to control fires. A sum of Rs. 76.00 Cores approximately has been incurred in the fire fighting, measures against the fire projects till March 1997. The implementation of these schemes, though could not extinguish all the fires completely, it was possible to achieve the following:

- Liquidated 10 fires completely
- Controlled majority of the fires from total devastation. However, slow fire activities continue.
- Reduced the total surface area affected by fire to 8.90 sq.km from earlier reported 17.32 sq.km.
- Reduced the blockage of coal from 1864 MT to 1453 MT.

#### 6.3 Jharia Mine Fire Control Technical Assistance Project

Although the efforts of BCCL in tackling the fire as outlined above and the results obtained were encouraging, it is only minuscule in size if seen in the perspective of all the fires raging in Jharia Coal Filed. The problem of fire is very vital and technical in nature and also due to various other serious issues like environmental pollution, rehabilitation and acute financial constraints, the company approached World Bank through Ministry of coal, Govt. of India for Jharia Mine fire Technical Assistance for exhaustive study of the technology of dealing with fire and environment in Jharia coal field. World Bank provided a loan of 12 million US\$ and International Consultant GAI/MET-CHEM was engaged for fire dealing problems. The consultant started the work in 1994 and completed their study in June, 1996. The consultants have used the state of the art technology and modern scientific tools and methods for evaluation of the problems and suggested possible mitigating measures.

#### 6.3.1 Fire Study by GAI/MET-CHEM

Utilising the remote sensing data of NRSA for Fires of JCF and colliery details, GAI/MET-CHEM undertook extensive drilling and temperature / gas monitoring along with field investigations for making inventory, boundaries and critical parameters of fires with possible spread and rate of spread of fires vertically and horizontally, potential danger to surface structures arising from spread and rate of propagation of fires. They also evaluated cost for the most suitable method of remedial actions. The final report for dealing with fire was submitted in June 1996.

The main observations / recommendation of the study of GAI/MET-CHEM are as under:

- i) The overall surface area affected by fire has reduced. Latest study indicates 8.90 sq.km. against earlier figure of 17.32 sq.km of surface area occupied by Jharia Fires.
- ii) Dhanbad Patherdih rail line (2.8 km stretch) is endangered by fire and requires immediate grout stabilization or preferably relocation.
- iii) Adra-Gomoh rail line requires protection near Phularitand.
- iv) Ekra, Kari and Chatkari jores are endangered due to fires and require immediate protection at several places.
- v) Jharia and Kirkend towns and many other built up areas are endangered due to fires and require immediate isolation from fires.
- vi) Total extinguishment of fires immediately is not achievable but further advance of these fires can be controlled by the application of the recommended fire abatement measures / control measures.

The recommended fire abatement measures are the more improved use of one or combination of the following existing control measures:-

- Excavation
- Isolation by trenching
- Grout barrier and stabilization
- Blanketing / surface sealing
- Blind flushing

#### 6.4 Control Measures For Dealing with Fires.

A variety of methods can be considered for controlling or extinguishing a fire. These are divided into i) conventional Methods of Fire Control and Extinguishment, and II) Other Methods of Fire Control and Extinguishment.

### 6.4.1 Conventional Methods of Fire Control and Extinguishment

Conventional Methods that have been employed with varying degree of success are as under :

- 1) Total Excavation of fire
- 2) Isolation by trenching
- 3) Blind flushing
- 4) Surface sealing
- 5) Isolation by underground stopping
- 6) Quenching and cooling
- 7) Cooling by water curtain
- 8) Flooding
- 9) Natural Burnout

#### 6.4.2 Other Methods of Fire Control and Extinguishment

- 1) Inert Gas injection
- 2) Chemical Treatment
- 3) Burnout Control
- 4) Modified Bulk filling (Water / Slurry)
- 5) Modified Bulk filling (Pneumatic) and
- 6) Underground Coal Gasification

#### 6.4.3 Fire Control Measures Proposed in the Master Plan

Out of the various control measures currently available, the recommended control measures are the more improved use of one or combination of the following measures.

- Excavation of fire material and filling with cohesive soil
- Filling of opencast high wall, shafts, inclines and other subsided areas.
- Isolation by trenching and backfilling with soil
- Construction of grout barrier and isolation against rail, road and jores.
- Surface sealing and blanking
- Blind flushing with sand / fly ash / grout mixture
- Cooling by water curtain / infiltration pond
- Cooling, quenching and removal
- Seam sealing, tunnel plug and underground stopping.

#### 6.5 Methodology adopted in preparation of the Master Plan

Fire Report submitted by GAI/MET-CHEM in June 1996 under Mine Fire Technical Assistance Project (Fire fighting programme) form the basis of the present Master Plan for dealing with fire. While reviewing the above fire report, it was found that the following underground fires were not considered.

- 1. Bhagaband XVI seam fire
- 2. Kachhi Balihari XV seam fire
- 3. Loyabad XV, XIV and XIII seam fire
- 4. Industry X seam fire
- 5. Amlabad XIV seam fire

The above fires have been included in this Master Plan and suggested control measure, time schedule and fund requirement etc. have been given.

#### 6.6 Recommended Technologies

Different alternatives for control measures to deal with each fire have been described in the report submitted by GAI/MET-CHEM. The most suitable control measure for each fire has also been recommended. In majority of cases, the measures as recommended by GAI/MET-CHEM have been considered in this Master Plan to arrive at the fund requirement and time schedule or each fire. However, for Block-II fire, Phularitand fire, Protection of Chatkari jore against Lodna group of fires, protection of Dhanbad – Patherdih Railway line in Lodna, Bagdigi, Bararee & Kujama, ROCP fire, Sudamdih – Patherdih fire, the technology has been changed based on the prevailing condition of the fires. The project wise details of fires and recommended technologies have been given in **Table – 3**.

## PROJECTWISE DETAILS OF FIRE AND TECHNOLOGY SUGGESTED

(Table-3)

			<i>6</i> 1		
SL No.	Name of the of Fire projects	S	eams on fire	UG or Surface fire	Technology of fire control
1	JCF-F/LODNA/RAIL/I/1	I			
	Excavation of rail road bed and backfill with structural	Lodna	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface fire	Excavation and Back filling
	fill (length 3.5 km) at Lodna Bagdigi & Bararee Collieries	Bagdigi	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface & U/G	
	along with diversion of chatkari jore.	Bararee	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface & U/G	
2	JCF-F/BASTACOLA/ KUJAMA	JORE/I/2			
	Scheme for dealing with fire for protection of chatkari Jore at Kujama collieriy	Kujama	XI/XII	Surface fire	Temporary diversion of Jore
3	JCF-F / KUSTORE / RAJAPUR	/I/3 (Part A , Raj	apur OCP)	•	
	Scheme for dealing with fire at Rajapur Colliery by excavation method with IX/X seam base	Rajapur	X, IX	Surface fire	Back filling of quarry with non combustible material, Excavation in south Jharia Part, Stabilisation along DB road & surface sealing.
4	JCF-F/BARORA/SHATABDI O	CP/I/33		•	
	Scheme for dealing with fire at Shatabdi OCP by excavation method	Shatabdi	V/VI/VII	Surface	Excavation & Back filling
5	JCF-F/KATRA/EAST KATRAS	(NEW AKASHKI	NAREE)/I/35	•	
	Scheme for dealing with fire at East Katras (New Akashkinaree) colliery	East Katras/New Akashkinaree	XI,XII,XIV	Surface	Trench cutting
6	JCF-F/EJ/SUDAMDIH &PATHR	EDIH/I/19			•
	Scheme for fire dealing at Sudamdih / Patherdih Colliery (Part A )	Sudamdih & Patherdih	XI/XII,XIV,XV	Surface & UG	Filling with incombistible material and high pressure sand flushing
7	JCF-F/SIJUA/SENDRA BANSJ	ORA/I/21 (Part A	)		
	Scheme for dealing with Sendra Bansjora X seam fire	Sendra Banjora	X	Surface	Trench cutting, blind flushing & sealing
8	JCF-F/KATRAS/GASLITAND/I/	24		•	
	Scheme for dealing with Gaslitand Fire	Gaslitand	XV,XIV & OB	Surface	Surface sealing & blind flushing
9	JCF-F/KATRAS/KATRAS CHO	ITUDIH/I/26			
	Scheme for dealing with Katras Chiotudih Fire	Katras Choitudih	XVT&B, XIV,XIII	Surface	Excavation and filling
10	JCF-F/KUSUNDA/EAST BUSS	URIYA/I/32	·	·	
	Scheme for dealing with East Bassuria Fire (Part A)	East Bassuria	V/VI,VII,VIII	Surface	Surface sealing, Sand flushing

11       JCF -F / LODNA/NT, ST, JEENAGORA, JOYRAMPUR/I/8(SURFACE SEALING)         Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.       Bararee       XV, XIVA, XIV, XVI       Surface & U/G       Surface sealing with incommaterial and cohesive soil         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I//11(SURFACE SEALING)       Surface sealing for dealing with incommaterial and cohesive soil       Surface sealing for dealing with incommaterial and cohesive soil         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I//11(SURFACE SEALING)       Surface sealing for dealing with incommaterial & cohesive soil.       Surface sealing with incommaterial & cohesive soil.         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIV XIVA Surface fire XIV, XIVA Surface sealing with incommaterial & cohesive soil.	bustible
11       JCF -F / LODNA/NT, ST, JEENAGORA, JOYRAMPUR/I/8(SURFACE SEALING)         Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.       Bararee       XV, XIVA, XIV, XVI       Surface & U/G       Surface sealing with incom material and cohesive soil         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)       Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV, XIVA, XIV       Surface & U/G       Surface sealing with incom material & cohesive soil.         13       JCF-F / LODNA / LODNA / I /1/2 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Bararee       XV, XIVA, XIV, XVI       Surface & U/G       Surface sealing with incom material & cohesive soil.	bustible
Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.       Bararee       XV, XIVA, XIV, XVI       Surface & U/G       Surface sealing with incom material and cohesive soil         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)       Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV, XIVA, XIV       Surface & U/G       Surface sealing with incom material and cohesive soil         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA       Surface fire XVA, XIV and Cohesive soil.	bustible
South Tisra, Jeenagora & Joyrampur Collieries.       N. Tisra       X, IX, VIII & VII       Surface & U/G         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)         Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV,XIVA,XIV       Surface & U/G       Surface sealing with incom material & cohesive soil.         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIVA       Surface fire Surface sealing with incom material & cohesive soil.	bustible
S. Tisra       X, IX, VIII & VII       Surface & U/G         12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)         Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV,XIVA,XIV       Surface & U/G       Surface sealing with incom material & cohesive soil.         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIVA       Surface fire XIV,ACE SEALING	bustible
12       JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)         Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV,XIVA,XIV       Surface & U/G       Surface sealing with incommaterial & cohesive soil.         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)         Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIVA       Surface fire XIV,XIFACE SEALING	bustible
Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.       Bagdigi       XV,XIVA,XIV       Surface & U/G       Surface sealing with incommaterial & cohesive soil.         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)       Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIVA       Surface fire XIVA, Surface sealing with incommaterial & cohesive soil.	bustible
& Bhulan Bararee Collieries.       Bararee       XV,XIVA,XIV, XVI       Surface & U/G         13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)         Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIVA XIVA XIVA XIVA XIVA XIVA XIVA	bustible
13       JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)         Surface sealing for dealing with fire at Lodna Collieriy.       Lodna       XVA,XV,XIVA XIV,XIIIB,XIIIA       Surface fire material & cohesive soil.	bustible
Surface sealing for dealing with fire at Lodna Collieriy.LodnaXVA,XV,XIVA XIV,XIIIB,XIIIASurface fire material & cohesive soil.Surface sealing material & cohesive soil.	bustible
14 JCF-F / BASTACOLLA / KUJAMA / GOCP/I/10 (SURFACE SEALING )	
Surface sealing for dealing with fire at Kujama & GOCP.KujamaXI, XII, XIV 4ft XT/BSurface & U/GSurface sealing / Blanketting incombustible material & cohest	ng with ive soil.
15 JCF-F / KUSTORE / RAJAPUR/I/ 37(Part B ,Bastacolla Annexed)	
Scheme for dealing with fire at Rajapur Colliery by excavation method with V/VI/VII seam base       Rajapur       V/VI/VII/VIII, IX & X       Surface & U/G       Digging out of fire by ex method	cavation
16 JCF-F / KUSTORE / ALKUSA/I/4 (Part-B)	
Scheme for dealing with fire at Alkusa Colliery.         Alkusa         XIV, XII, XII & XI         Surface         Back filling, seam sealing, and reclamation	surface
17 JCF-F/BARORA/PHULARITAND/I/6	
Scheme for dealing with fire at Phularitand Colliery (Block-III Coking).       Phularitand       XI/XII, IX/X       Surface & UG       Excavation with water quenching	g
18 JCF-F/KUSTORE/KUSTORE/I/7	
Scheme for dealing with fire at Kustore       Kustore       XV, XIV, XIII, XI, XI & Surface & UG       Quenching, dozing, surface         at Kustore Colliery (NW & SE fire).       OB       UG       trench excavation & back filling	sealing,
19 JCF-F/KUSTORE/ ENA( NW)/I/13	
Scheme for dealing with fire Ena XIV. XI/XII Surface & Trench excavation & soil filling	
at Ena Colliery.	
at Ena Colliery.     UG       20     JCF-F/KUSTORE/ENA (MID & SE)/I/31	
at Ena Colliery.     UG       20     JCF-F/KUSTORE/ENA (MID & SE)/I/31       Scheme for dealing with Ena (Mid & SE ) Fire     Ena       XI,XII,XIII,XIV     Surface       Surface sealing and back filling	
at Ena Colliery.     Interference of the contraction of	
at Ena Colliery.     UG       20     JCF-F/KUSTORE/ENA (MID & SE)/I/31       Scheme for dealing with Ena (Mid& SE ) Fire     Ena       21     JCF-F/SIJUA/MUDIDIH/I/9       Scheme for dealing with fire at Mudidih Colliery.     Mudidih       XV Top & Bot     Surface & UG       Maintenance of existing surface and establishment of tem monitoring programme	ice seal perature

	Scheme for dealing with fire at Gopalichak Colliery.	Gopalichak	XIV, XIII	UG	Back filling of quarry high wall, tranch excavation back filling cement grout injection.
23	JCF-F/BASTACOLA/KUJAMA/	RAIL/I/36			
	Excavation of rail road bed and backfill with structural fill (length 1.4km) at Kujama colliery with XI/XII seam base along with diversion of chatkari jore.	Kujama	XI/XII	Surface	Excavation & Back filling
24	JCF-F / BLOCK -II / BLOCK -II/	11/5			
	Scheme for dealing with fire at Block-II OCP.	Block-II OCP	XIII, XI/XII, XSpl & Overburden	Surface	Quenching of fire material with water conon & dozing, spreading.
25	JCF-F/SIJUA/ TETULMARI(W)/	II/15	•	•	
	Scheme for dealing with west fire at Tetulmari Colliery.	Tetulmari	IV/V/VI	UG	Surface sealing & Blanketting
26					
	Scheme for dealing with Tetulmari (East) Fire	Tetulmari	V T&B, IVT&B,OB	Surface &UG	Surface sealing & Blanketting
27	JCF-F/EJ/SUDAMDIH&PATHR	EDIH/II/38 (Part-I	B)	L	•
	Scheme for fire dealing at Sudamdih / Patherdih Colliery (Part B )	Sudamdih & Patherdih	XI/XII,XIV,XV	Surface & UG	Trench cutting and Filling with incombistible material
28	JCF-F/KUSTORE/EAST BHUG	GATDIH/II/17	•		
	Scheme for dealing with East Bhuggatdih Fire	Kustore	XV,XIV	Surface	Cohesive soil sealing
29	JCF-F/KUSUNDA/BASSURIYA	-1/II/18			Cond fluching and grout injection
	Bassuria 1&2 Fire	Kusunda		UG	Sand hushing and grout injection
30	JCF-F/PB/KENDWADIH(S)/II/20	)			
	Scheme for dealing with Kendwadih (South) Fire	Kenwadih	XIII,XIV	UG	Sand flushing
31	JCF-F/PB/KENDWADIH(N)& (E	:)/I/23			
	Scheme for dealing with Kendwadih (North)& (East) Fire	Kenwadih	XI,XII,XIII	UG	Blind flushing and tunnel plug
32	JCF-F/SIJUA/SENDRA BANSJ	ORA/II/39 (Part E	3)	÷	•
	Scheme for dealing with Sendra Bansjora XI,XII,XIII & XIV seam fire	Sijua	X,XI,XII,XIII,XIV	Surface & UG	Trench cutting, grout injection, Surface sealing
33	JCF-F/BARORA/DAMODA/I/22	Baraara		Quinfa a a	Quenching and removal of fire motorial
	Damuda Fire	Daraora	v/vi/vii,iX &OB	Surrace	Quenching and removal of fire material
34	JCF-F/E J/BHOWRAH(N) & (S)	/11/25		0	Over the sector of the sector
	Scheme for dealing with Bhowra N&S Fire	Jnaria	XV,XIV & OB	Surface	Quenching, surface sealing
35	JCF-F/SIJUA/JOGTA/II/27				

	Scheme for dealing with Jogta Fire	Sijua	XIV,XA,X	Surface	Cooling through water curtain,Surface sealing
36	JCF-F/KUSUNDA/BASSURIYA	(3&4)/11/28		1	
	Scheme for dealing with Bassuria 3&4 Fire	Kusunda	IXI,XII,XII, XIV	UG	Trench cutting & filling
37	JCF-F/SIJUA/BANSDEOPUR(E	)/11/29			
	Scheme for dealing with Basdeopur (East) Fire	Bansdeopur	XIII,XIV	Surface	Surface sealing, cement/fly ash flushing and filling of highwall
38	JCF-F/SIJUA/BANSDEOPUR(V	V)/II/30			
	Scheme for dealing with Basdeopur (West) Fire	Bansdeopur	XIV,XIII	Surface	Trench cutting,back filling & surface sealing
39	JCF-F/KUSUNDA/EAST BUSS	URIYA/II/32 (Part	-В)	1	
	Scheme for dealing with East Bassuria Fire (Part B)	East Bassuria	V/VI,VII,VIII	Surface	Surface sealing, Sand flushing
40	JCF-F/Maintenance	Fires of all coll	ieries		Maintenance of existing status
	On going EMSC/RCFS scheme	es			
41	Scheme for dealing with fire and subsidence at Industry colliery	Ena/Industry		Surface & UG	Blind flushing & surface sealing
42	Scheme for dealing with fire and subsidence at Alkusa colliery	Alkusa	XIV, XIII, XII & XI	Surface	Blind flushing & surface sealing
43	Revised Scheme for dealing with fire and subsidence at Lodna & Bagdigi Collierycolliery	Lodna & Bagdigi	XI/XII	Underground	Nitrogen flushing
44	Scheme for dealing with fire and subsidence at Jeenagora colliery for protection of Jore	Jeenagora & Barraree		Surface	Jore diversion, Blind flushing & surface sealing
45	Scheme for dealing with fire and subsidence at Block-II OCP& Phularitand Colliery for protection of Rail colliery for protection of Jore	Block-II & Phularitand		Surface & UG	Blind flushing, Quarry edge filling & surface sealing

#### 6.7 Time Schedule

The requirement of time to deal with a particular fire depends on:

- The nature and the extent of the fire.
- The technology to deal with the fire.

The following criteria have been assumed to determine the duration to deal with each fire depending on situation.

#### 6.7.1 Trench excavation, fire excavation and simultaneous back filling.

It is assumed that excavation will be done with  $5.0m^3$  capacity shovel. The annual excavation capacity of such a shovel is 8 lakhs m3. A reduction factor of 0.8 has been considered as the excavation would be done in fire areas. Thus annual excavation rate of 8x0.8 = 6.4 lakh m<sup>3</sup> (0.64 million cum.) / year per shovel has been considered.

#### 6.7.2 Surface Sealing / Seam sealing with cohesive soil and filling with non-combustible material.

Where filling and surface sealing need to be done by bringing material from outside, a transportation and filling rate of  $200m^3/day / tripper$  of  $8m^3$  capacity has been considered (i.e. 5000 m3/ month).

#### 6.7.3 Sand Flushing (Blind Flushing) through borehole

A sand flushing rate of 15m3 / day / borehole has been considered depending on the volume of sand a minimum of 8 and a maximum of 16 boreholes will remain in flushing operation.

#### 6.7.4 Drilling

For 6" diameter (150 mm) boreholes with rotary cum percussive drill, a drilling rate of 250 m / month / machine has been considered. For 10" diameter (250mm) boreholes, the same has been considered as 150 m/month.

#### 6.7.5 Blind Flushing with fly ash / sand / cement / grout mixture

Rate for blind grout flushing mixture has been considered as 600m3 per month with one mixer / flushing unit. The number of mixing unit / flushing unit will depend on the volume of void to be filled within the stipulated time.

#### 6.7.6 Cooling by water curtain

Depending on the intensity of fire, 2 to 3 years time has been assumed forcooling by water circulation through borehole.

#### 6.7.7 Quenching & Excavation of fire with water

It has been assumed that quenching of hot material before excavation would run simultaneously with excavation. However, a minimum of one month quenching time has been considered before excavation.

#### 6.7.8 Maximum time to deal with a fire

Maximum time required to deal with a particular fire project would depend on the volume of jobs involved and the number of equipment engaged at a particular site. Based on the volume or work, such number of different equipment like shovel, tipper, drilling machine etc. are to be engaged at a particular fire site so as to complete the activities within a maximum period of 10 years.

#### 6.8 Grouping of fire areas in to Projects

One or more fire areas located in close proximity having same priority on urgency of implementation have been grouped together to form a fire project. Out of 77 fires, 10 fires have been extinguished and 9 underground fires have been kept under control by underground stopping. 67 fires including 9 underground fires have been grouped into 45 fire projects proposed to be/is being implemented in a time frame of 10 years. These 45 fire projects include 5 ongoing EMSC/RCFS schemes and one project for maintenance of existing fire. The grouping of exiting fires into 45 fire projects has been shown in **TABLE – 4**.

The fire projects are large in size, requiring large amount of capital for dealing with fire in totality. However, in actual practice, some times smaller projects (sub-projects of the Main Projects), may have to be formulated for implementation depending on the urgency of dealing with a particular section of the fire. All these sub-projects (if required) will bear the same project code with different sub-projects.

#### TABLE – 4

SL. No.	CODE NAME OF FIRE PROJECTS	ORIGINAL FIRE NAME
1	JCF-F/LODNA/RAIL/I/1	NS Lodna XIII, XIIA ,XIV seam
		Baniahir XV, XIV, XIVA seam
		Bhaga XV seam.
		Bagdigi XIV,XIVA, XV seam
		Bararee XV,XIV,XIVA seam
		Bhulan Bararee XIII, XIV seam
		Bhulan Bararee XV seam
2	JCF-	Kujama XI/XII seam
	F/BASTACOLLA/KUJAMA/JORE/I/2	
3		Pure Jharia X seam

#### **GROUPING OF FIRES INTO PROJECTS**
SL. No.	CODE NAME OF FIRE PROJECTS	ORIGINAL FIRE NAME	
	JCF-F/KUSTORE/RAJAPUR/I/3	K.P. Dobari X,XIX,V/VI/VII/VIIA	
	(Part-A)	Rajapur X seam	
4	JCF-F/BARORA/SHATABDIH/I/33	Shatabdih V/VI/VII seam	
5	JCF-F/KATRAS/EAST KATRAS	East Katras XIV seam & XI	
	(NEW AKASKINAREE)/I/35	seam	
6	JCF-F/EASTER JHARIA/SUDAMDIH	Patherdih IX-XIII seam	
	& PATHERDIH/I/19 (Part-A)	Sudamdih IX - XIV seam	
7	JCF-F/SIJUA/SENDRA	Sendra X seam	
	BANSJORA/I/21 (Part-I)		
8	JCF-F/KATRAS/GASLITAND/I/24	Gaslitand XVT & B seam	
9	JCF-F/KATRAS/KATRAS	Katras-Choitudih XIII , XIV, XV	
	CHOITUDIH/I/26	seam	
10	JCF-F/KUSUNDA/EAST	East Bassuria V/VI seam	
	BUSSURIYA/I/32	East Bassuria VIII seam	
11	JCF -F / LODNA/NT, ST,	South Tisra VII, VIII, IX, X seam	
	JEENAGORA,	North Tisra VII, VIII, IX seam	
	JOYRAMPUR/I/8(SURFACE	Jeenagora IX,X, XI, XII seam Joyrampur XI, XII,XIIA seam	
	SEALING)	Joyrampur XI, XII,XIIA seam	
12	JCF-F / LODNA / BAGDIGI,	Bagdigi XIV,XIVA, XV seam	
	RARAREE, B.	Bagdigi XIV,XIVA, XV seam Bararee XV,XIV,XIVA seam	
	BARAREE/I/11(SURFACE SEALING)	Bararee XV,XIV,XIVA seam Bhulan Bararee XIII, XIV seam	
		Bhulan Bararee XV seam.	
13	JCF-F / LODNA / LODNA / I /12	NS Lodna XIII, XIIA ,XIV seam	
	(SURFACE SEALING)	Baniahir XV, XIV, XIVA seam	
		Bhaga XV seam.	
14	JCF-F/BASTACOLA/KUJAMA &	Kujama IX,X seam	
	GOCP/I/10 (SURFACE SEALING)	Kujama XI,XII seam	
15	JCF-F/KUSTORE/RAJAPUR/I/37 (Part-B. BASTACOLLA ANNEXED))	Rajapur X,IX,V/VI/VII seam fire.	
16	JCF-F/KUSTORE/ALKUSA/I/4 (Part-	Alkusa XIII, XIV seam	
	B)	Kusunda XI, XII seam	
17	JCF-F/BARORA/PHULARITAND//I/6	Phularitand X, XI, XIII seam	
18	JCF-F/KUSTORE/KUSTORE/I/7	Kustore XI, XII, XIII, XIV seam	
		Kusunda XIII XIV seam	
		Fna XV seam	
19	JCF-F/KUSTORE/FNA (NW)/I/13	Industry XI, XII seam	
		Ena XIV seam	
20	JCF-F/KUSTORE/FNA (MID &	Ena XI XII seam	
	SE)///31	Ena XIV seam	
21	JCF-F/SIJUA/MUDIDIH/9	Mudidih Fire	
22	JCF-F/PB/GOPALICHUCK/I/14	Gopalichak Fire, Pootkee XVI	
		seam	

SL. No.	CODE NAME OF FIRE PROJECTS	ORIGINAL FIRE NAME
23	JCF- F/BASTACOLLA/KUJAMA/RAIL/I/36	Kujama XI & XII seam.
24	JCF-F/BL-II/BLOCK-II OCP/I/5	Block-II XIII, XI/XII, X Spl. Seam
25	JCF-F/SIJUA/TETULMARI(W)/II/15	Tetulmari V/VI seam
26	JCF-F/SIJUA/TETULMARI(E)/II/16	Tetulmari IV seam
27	JCF-F/EJSUD. & PATH/II/38 (PSRT-	Patherdih IX-XIII seam
	B)	Sudamdih IX –XIV seam
28	JCF-F/KUSTORE/EAST BHUGGATDIH/17	East Bhuggatdih XV, XIV seam
29	JCF-F/KUSUNDA/BASSURIYA-1/I/18	Basseriya XIV, XIII, XII XI seam
30	JCF-F/PB/KENDWADIH(S)/II/20	Kenduwadih XIII, XIV seam
31	JCF-F/PB/KENDWADIH(N)/I/23	Kendwadih XI,XII,XIII seam
32	JCF-F/SIJUA/SENDRA BANSJORA/I/21	Ekra XI,XII seam
33	JCF-F/BARORA/DAMODA/II/22	Damoda, V,VI,VII,IX seam
34	JCF-F/EASTER	Bhowra XIII, XIV seam
	JHARIA/BHOWRAH(N) & (S)/II/25	
35	JCF-F/SIJUA/JOGTA/II/27	Jogta XV, XIV, XIII, XII,XI seam
36	JCF-F/KUSUNDA/BASSURIYA	Busseriya IXT & B, IX spl. XI, XII
	(3&4)/11/28	seam
37	JCF-F/SIJUA/BANSDEOPUR(E)/II/29	Banseopur XIII,XIV seam
38	JCF-	Banseopur XIII,XIV seam
	F/SIJUA/BANSDEOPUR(W)/II/30	
39	JCF-F/KUSUNDA/EAST	East Bassuria V/VI/VII
	BASSURIA/II/32 (Part-B)	East Bassuria VIII seam
40	F/MAINTENANCE/34	Existing fires under control
	On going EMSC/RCFS Schemes	
41	Scheme for dealing with fire at	Ena/Industry, X seam
	Industry colliery	
42	Scheme for dealing with fire at Alkusa Colliery	Alkusa XIII & XIV seam
43	Revised Scheme for dealing with fire	Lodna & Bagdigi XI/XII seam
44	Scheme for dealing with fire at Jeenagora colliery for protection of	Jeenagora XIII & XI/XII seam
	Jore	
45	Scheme for dealing with fire at	Phularitand / Block-II OCP
	Phularitand / Block-II OCP for protection of rail	XI/XII & X seam

# 6.9 **Prioritisation of fire Areas**

Depending on the urgency of dealing based on the potential impact, all the fire areas have been prioritized into different priorities. The following factors have been considered to determine the priority of dealing with individual fire.

- 1. Threat to jore / railway line / existing pits
- 2. Threat to villages / inhabitated areas
- 3. Number of seams on fire / loss of reserves
- 4. Intensity of the fire.

Depending on the above, out of 45 projects, 28 projects have been proposed in Priority – I (i.e. Phase-I) and rest 17 projects in Priority-II (i.e. Phase-II). One project is for maintenance of the existing fires under control.

# 6.10 Codification of identified projects

Different fire project has been codified based on their urgency of implementation.

The sample code number is JCF-F/KUSTORE/ ALKUSA/I/4,

Where the first code JCF stands for Jharia Coalfield, F stands for fire, KUSTORE stands for name of the Area, ALKUSA stands for name of the colliery, I stand for priority number 1 and 4 stands for serial number of the fire project in terms of implementation schedule.

For Lodna group of fire code number is JCF-F/LODNA/RAIL/I/1 where 4<sup>th</sup> code 'RAIL' stands for project for protection of rail fire.

Based on the above, each fire project has been codified.

# 6.11 Action Programme

A composite action programme for all the fire projects have been prepared basedon the following assumptions.

- 1. There are 45 fire projects of which 28 fire projects including 5 ongoing EMSC/RCFS scheme as well as one maintenance project will be /is being implemented in Phase -I and rest 17 in Phase II. Maximum no. of fire projects to be implemented at any point of time is 21.
- 2. One Fire Project has been identified for maintenance of existing fires under control including expenses for TIR/GPS/Diagnostic Survey/monitoring of temperature / gas analysis/ scientific studies and plantation of cooled down areas.

The composite Action Plan for all the fire Projects has been shown in **Table-5**.

For speedy implementation, it is suggested that the fire projects should be implemented through contractual means as far as possible.

	COMPOSITE ACTION PLAN ALONG	ИІТН Ү	EAR W	ISE REC	UIREN	IENT	OF FL		OR FI	RE PF	OJEC	TS	Fable-5	
		Sapital	Duration	Pre-		Sched	lule of In	nplemen	tation Y	earwise F	equireme	ent of fur	spu	
<u>o</u>	Name of the of Fire projects	Rs.	(Month)	Implem-			hase-I				Р	hase-II		
		(rores)		ntation Activities	٢	2	3	4	5	9	2	œ	6	10
-	JCF-F/LODNA/LODNA/RAIL/I/1	695.00	120		105.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	30.00
	Excavation of rail road bed (length 3.5 km) at Lodna Bagdigi & Bararee Collieries along with diversion of chatkari jore.					T	T				T	T		
2	JCF-F/BASTACOLA/KUJAMA/JORE/I/2	6.88	48		2.13	2.54	1.52	0.69						
	Scheme for dealing with fire for protection of chatkari Jore at Kujama collieriy													
ю	JCF-F / KUSTORE / RAJAPUR///3 (Part A , Rajapur OCP)	62.36	84		30.00	30.00	2.36							
	Scheme for dealing with fire at Rajapur Colliery by excavation method with IX/X seam base													
4	JCF-F/BARORA/SHATABDI OCP///33	46.26	48		1.85	23.00	21.41							
	Scheme for dealing with fire at Shatabdi OCP by excavation method				I	Ī								
5	JCF-F/KATRA/EAST KATRAS (NEW AKASHKINAREE)///35	35.02	48		5.04	9.61	19.72	0.65						
	Scheme for dealing with fire at East Katras colliery													
9	JCF-F/EJ/SUDAMDIH&PATHREDIH///19	25.04	60		1.48	9.85	10.88	2.44	0.39					
	Scheme for fire dealing at Sudamdih / Patherdih Colliery (Part A)													
7	JCF-F/SIJUA/SENDRA BANSJORA/I/21 (Part A)	9.91	24		2.03	7.88								
	Scheme for dealing with Sendra Bansjora X seam fire													
∞	JCF-F/KATRAS/GASLITAND/I/24	20.10	84		3.38	6.73	2.59	2.67	2.66	1.98	0.09			
	Scheme for dealing with Gaslitand Fire													
6	JCF-F/KATRAS/KATRAS CHOITUDIH///26	15.93	48			3.77	5.17	1.39	0.6				2.5	2.5
	Scheme for dealing with Katras Chiotudih Fire												ľ	
10	JCF-F/KUSUNDA/EAST BUSSURIYA///32	8.52	48		3.79	4.28	0.35	0.10						
	Scheme for dealing with East Bassuria Fire													
1	JCF -F / LODNA/NT, ST, JEENAGORA, JOYRAMPUR///8(SURFACE SEALING)	36.30	36				10.00	15.00	11.30					
	Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.						Τ							
12	JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)	30.30	36					12.00	12.00	6.30				
	Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.													
			1	40 -								-	-	

13	JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)	27.50	72		4.58	4.58	4.58	4.58	4.58	4.60		
	Surface sealing for dealing with file at Loura Collieny.											
14	JCF-F / BASTACOLLA / KUJAMA / GOCP/I/10 (SURFACE SEALING )	40.63	48		10.15	10.15	10.15	10.18				
	Surface sealing for dealing with fire at Kujama & GOCP.					T						
15	JCF-F / KUSTORE / RAJAPUR// 37(Part B ,Bastacolla Annexed)	91.00	72		40.00	15.00	15.00	10.00	10.00	1.00		
	Scheme for dealing with fire at Rajapur Colliery by excavation method with V/V/NI seam base											
16	JCF-F / KUSTORE / ALKUSA/I/4	9.08	36		4.60	4.48						
	Scheme for dealing with fire at Alkusa Colliery.				ľ							
17	JCF-F/BARORA/PHULARITAND///6	90.00	84			12.85	12.85	12.85	12.85	12.85	12.85	12.90
	Scheme for dealing with fire at Phularitand Colliery (Block-III Coking).				-8							
18	JCF-F/KUSTORE/KUSTORE/I/7	32.22	38	7.11	8.23	8.23	8.65					
	Scheme for dealing with fire at Kustore Colliery (NW & SE fire).											
19	JCF-F/KUSTORE/ ENA( NW)///13	29.11	47				7.58	7.58	7.57	6.38		
	Scheme for dealing with fire at Ena Colliery.											
20	JCF-F/KUSTORE/ENA (MID & SE)/I/31	31.04	40		5.18	8.94	8.87	8.06				
	Scheme for dealing with Ena (Mid& SE ) Fire				I	I	ſ					
21	JCF-F/SIJUA/MUDIDIH/I/9	16.05	48		3.00	3.00	3.00	3.00	4.05			
	Scheme for dealing with fire at Mudidih Colliery.				T	T						
22	JCF-F/P.B./GOPALICHAK/I/14	66.88	48				13.37	13.37	13.37	13.37	13.40	
	Scheme for dealing with fire at Gopalichak Colliery.											
23	JCF-F/BASTACOLA/KUJAMA/RAIL/II/36	213.00	60					50.00	40.75	40.75	40.75	40.75
	Excavation of rail road bed and backfill with structural fill (length 1.4km) at Kujama colliery with XI/XII seam base along with diversion of chatkari											
	jore.											
24		43.51	60		11.00	11.0		6.30	3.49	3.49	3.48	4.75
	Scheme for dealing with fire at block-II OUP.(A) and KAI basti (B)										Γ	

25	JCF-F/SIJUA/ TETULMARI(W)/II/15	12.84	48		Ċ	.21 3.2	1 3.2′	1 3.2′	-
	Scheme for dealing with west fire at Tetulmari Colliery.								Т
26	JCF-F/SIJUA/TETULMARI(E)/II/16	16.05	48		4	.00 4.0	0 4.0	0.4.0	ល
	Scheme for dealing with Tetulmari (East) Fire								
27	JCF-F/EJ/SUDAMDIH&PATHREDIH/II/38	22.84	28		8	.00 10.0	0 4.8	ŧ	
	Scheme for fire dealing at Sudamdih / Patherdih Colliery (Part B)								
28	JCF-F/KUSTORE/EAST BHUGGATDIH/II/17	6.96	33		5	.50 2.5	0 1.9	0	
	Scheme for dealing with East Bhuggatdih Fire								
29	JCF-F/KUSUNDA/BASSURIYA-1/II/18	14.78	38		e	.21 5.6	1 4.5	1.3	4
	Scheme for dealing with Bassuria 1&2 Fire								
30	JCF-F/PB/KENDWADIH(S)/II/20	11.78	46		1.00 3	.00 3.0	0 3.0	1.78 D	ő
	Scheme for dealing with Kendwadih (South) Fire								
31	JCF-F/PB/KENDWADIH(N)& (E)/II/23	12.91	50		0.48 4.0	0 4.0	0 2.5(	1.9:	ŝ
	Scheme for dealing with Kendwadih (North)& (East) Fire								
32	JCF-F/SIJUA/SENDRA BANSJORA/II/39 (Part B)	32.81	39		8.00 13	.10 6.6	0 5.1	-	
	Scheme for dealing with Sendra Bansjora XI,XII,XIII & XIV seam fire				 _	_			
33	JCF-F/BARORA/DAMODA/II/22	14.97	17				7.6	8 7.2	0
	Scheme for dealing with Damuda Fire							┛	
34	JCF-F/EASTER JHARIA/BHOWRAH(N) & (S)/II/25	22.12	30			4.00	10.00	8.1	2
	Scheme for dealing with Bhowra N&S Fire								
35	JCF-F/SIJUA/JOGTA/II/27	6.16	36		2.4	3 2.28	0.81	0.6	4
	Scheme for dealing with Jogta Fire				-				
36	JCF-F/KUSUNDA/BASSURIYA (3&4)/II/28	23.17	22			6.00	8.00	9.1	7
	Scheme for dealing with Bassuria 3&4 Fire							-	
1									۱

37	JCF-F/SIJUA/BANSDEOPUR(E)/II/29	56.19	60							12.36	12.54	10.75	8.45	12.09
	Scheme for dealing with Basdeopur (East) Fire								-0-	I				
38	JCF-F/SIJUA/BANSDEOPUR(W)/II/30	14.62	14										6.36	8.26
_	Scheme for dealing with Basdeopur (West) Fire												╢	
39	JCF-F/KUSUNDA/EAST BUSSURIYA/II/32	8.14	30									1.60	4.23	2.31
	Scheme for dealing with East Bassuria Fire (Part B)											4		
40	F/MAINTENANCE/34	53.50			5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35	5.35
	New fire if any	107.00			10.70	10.70	10.70	10.70	10.70	10.70	10.70	10.70	10.70	10.70
	Sub Total	2118.46			170.75	190.82	246.78	199.22	197.05	242.09	238.79	232.10	233.73	167.14
	Contingencies Charges@ of 3%	63.55			5.12	5.72	7.40	5.98	5.91	7.26	7.16	6.96	7.01	5.01
	Supervision Charges @ 5%	105.92			8.54	9.54	12.34	9.96	9.85	12.10	11.94	11.61	11.69	8.36
	Sub Total with contingency & supervision charges	2287.94			184.41	206.09	266.52	215.15	212.82	261.46	257.90	250.67	252.43	180.51
	Preparation of project/Fire schemes	10.65		2.14	1.21	1.21	1.22	1.22	1.22	1.22	1.21			
	Total	2298.59		2.14	185.62	207.30	267.75	216.37	214.04	262.68	259.11	250.67	252.43	180.51
	TIR Survey	2.79		2.79										
	Grand total	2301.38		4.93	185.62	207.30	267.75	216.37	214.04	262.68	259.11	250.67	252.43	180.51
	Phase Wise total			4.93		-	091.08					205.38		

SL		Capital	Duration	Pre- Implem		Schec	lule of Ir	nplemen	tation Ye	earwise F	kequirem	ent of fui	spu	
	Name of the EMSC/RCFS Projects	(rores)		ntation			phase-I					hase-II		
				Activities	-	7	с	4	ъ	9	7	ω	6	10
4	Scheme for dealing with fire at industry colliery (EMSC-23)	1.23			0.70	0.53								
42	Scheme for dealing with fire at Alkusa Colliery (EMSC-22)	0.004			0.004									
42	Scheme for dealing with fire at Lodna & Bagdigi Collieries (RCFS-01)	2.90			2.2	0.70								
44	Scheme for dealing with fire at Jeenagora Colliery for protection of Jore	3.40			1.50	1.90								
45	Scheme for dealing with fire at Phularitand/Block-II OCP for protection of Adra-Gomoh rail line.(RCFS-02)	2.58			1.50	1.08								
	Sub Total	10.114			5.90	4.21								
	Grand Total	2311.50		4.93	191.52	211.51	267.75	216.37	214.04	262.68	259.11	250.67	252.43 1	80.51
	Phase wise Total	2311.50		4.93		~	101.19				Ì	1205.38		

# ON GOING EMSC/RCFS SCHEMES (5 NOS) BALANCE AMOUNT

# 6.12 Present status of formulation & Implementation of the fire schemes

Out of the 45 fire schemes/ projects proposed to be prepared and implemented within 10 years of time, 5 schemes under EMSC/RCF is uder implementation and would be completed in next two years, 7 schemes have already been prepared, 6 have been approved and under implementation. Three schemes are under preparation.

SI	Name of the schemes/project	Status
no		
1	JCF-F/BASTACOLA/KUJAMA/JORE/I/2 Scheme for dealing with fire for protection of Chatkari	Report prepared, sanctioned and under implementation.
	Jore at Kujama colliery	
2	JCF-F/KATRA/EAST KATRAS (NEW	Report prepared, sanctioned, again
	AKASKINAREE)/I/35 (Revised)	revised and submitted and in the
	Scheme for dealing with fire at East Katras (New	process of approval.
2		Depart propered, constituted and
3	Schome for fire dealing at Sudamdih / Batherdih	Report prepared, sanctioned and
	Colliery (Part A)	
4	JCF-F/SIJUA/SENDRA /I/21 (Part-A)	Report prepared, sanctioned and
•	Scheme for dealing with Sendra Bansjora X seam fire	under implementation.
5	JCF-F/KUSUNDA/EAST BUSSURIYA/I/32	Report prepared, sanctioned and
	Scheme for dealing with East Bassuria Fire (Part A)	under implementation.
6	JCF-F/BARORA/SHATABDI OCP/I/33	Report prepared & sanctioned and
	Scheme for dealing with fire at Shatabdi OCP by	under implementation.
	excavation method	
7	JCF-F / KUSTORE / RAJAPUR/I/3 (Part A , Rajapur	Report prepared , under process of
	OCP)	approval.
	Scheme for dealing with fire at Rajapur Colliery by	
	excavation method with IX/X seam base	
8	JCF-F/LODNA/LODNA/RAIL/I/1	Report is under preparation
	Excavation of rail road bed and backfill with structural	
	fill (length 3.5 km) at Lodna Bagdigi & Bararee	
	Collieries along with diversion of chatkari jore.	
9	JCF-F/KATRAS/GASLITAND/I/24	Report prepared and under
10		approval
10	JUF-F/KATRAS/KATRAS CHUITUDIH/I/26 (Part A &	be finalized due to lend problem
	D) Scheme for dealing with Katras Chiotudih Fire	be intalized due to faild problem
11	Scheme for dealing with fire at kustore colliery	Draft report prepared, under process of finalisation
12	Scheme for dealing with fire at Rai basti Block-II area	Draft report prepared, under
		process of finalisation
13	Scheme for dealing with fire at Industry colliery	Under implementation.
14	Scheme for dealing with fire at Alkusa Colliery	Under implementation
15	Revised Scheme for dealing with fire at Lodna &	Under implementation
	Bagdigi collieries	•
16	Scheme for dealing with fire at Jeenagora colliery for	Under implementation
	protection of Jore	
17	Scheme for dealing with fire at Phularitand/ Block-II	Under implementation
1	OCP for protection of rail	

The status of preparation & implementation of fire schemes is as under:

# 6.13 Pre-Implementation Activities.

Before implementation of the fire projects, certain pre-implementation activities like TIR survey for delineation of present extent of fire, preparation of fire schemes for the projects to be implemented in the  $1^{st}$  and  $2^{nd}$  year of the implementation period, etc. Fund requirement for the pre-implementation activities are as under:

SI. No.	Activities	Year wis C	e fund (Rs. rs.)	Total
		1 <sup>st</sup> Yr.	2 <sup>nd</sup> Yr.	
1	TIR Survey and other surveys for delineating fire areas	1.62	1.17	2.79
2	Preparation of some of the schemes for dealing with fire for Phase-I	1.07	1.07	2.14
	Total	2.69	2.24	4.93

#### 6.14 Organization

Implementation of the 45 nos. fire projects within a time frame of 10 yrs., in two phases, each of 5 yrs duration will be the responsibility of BCCL. In phase-I, 28 nos. and in phase-II 17 nos. of projects are to be implemented. For speedy implementation it is proposed that the projects will be implemented through contractual means wherever feasible.

For implementation the fire abatement measures at different locations, it is proposed to have a separate division for implementation of fire control measures at Company Head Quarter headed by an official of Chief General Manager Rank. The responsibility of Fire division at Company (HQ) level would be as under :

- Implementation of pre-implementation activities as per Master Plan
- Preparation and approval of fire dealing Projects/Schemes
- Preparation of tender documents, tendering and award of work
- Arrangement and disbursement of fund to concerned Areas
- Monitoring and supervision of various fire projects under implementation
- Organising R&D jobs and special study required for dealing with fire.

The fire control measures are proposed to be implemented through a separate fire Cell at each Area, under the administrative control of General Manager/Chief General Manager of the concerned Areas.

The expenditure for running the separate fire cell /division at HQ and at Area level will be met from the supervision cost (5% of total capital) considered in the Master Plan/

# 6.15 Fund Requirement

The fund requirement for dealing with each fire by different alternative technologies was estimated by GAI/MET-CHEM in US in 1996. The fund requirement for the recommended technology has been escalated upto June'06 based on wholesale Price Index (WPI) and has been considered in this Master Plan. However, in some cases the requirement as estimated by GAI/MET-CHEM has been judiciously reduced depending on the present cost of particular activity. Moreover, where the fire schemes have already been prepared, the actual cost based on the technology proposed has been considered.

"While approving the Updated Master Plan '2004 for a total outlay of Rs. 5792.21 Crs. For dealing with fire, subsidence and rehabilitation in the lease hold of BCCL, CIL Board in its meeting held on 19.07.04 directed that as and when fire is handled by direct removal of coal and OB, the cost thereof shall be set off from sale value of coal realised if any"

As actual recovery of coal depends on many factors and can not be correctly ascertained, It has been assumed that 50% of total in-situ coal may be recovered for sale and accordingly sale realization of 50% of total in-situ coal has been off set against the total excavation cost for the fire projects where excavation technology has been proposed. However, the amount may vary from place to place. The cost of rehabilitation of the stable sites falling within the area of excavation for dealing with fire has been considered in rehabilitation projects.

Total indicative capital requirement to deal with all the fires of BCCL is estimated to be Rs.**2311.50** Crores including the fund required for pre implementation activities and balanced fund of ongoing EMSC / RCFS schemes. The total capital is proposed to be spent in 10 years of time.

Total fund requirement includes fire dealing cost, 3% contingency and 5% supervision charges. The supervision charges will cover the expenditure (Revenue, furniture & fittings, vehicle, office equipment etc) of separate fire cell/ organization at BCCL.

Implementation of fire dealing projects will take about 12 years time . During this time new fires may come up which require extra fund.

The year wise& phase wise indicative requirement of capital is shown in TABLE – 6.

# TABLE -6

# YEAR-WISE INDICATIVE CAPITAL REQUIREMENT FOR DEALING WITH FIRE PROJECTS

PHASE	YEAR	INDICATIVE FUND (Rs.Crs)
Pre-implementation Pha	ise	
	1st	2.69
	2nd	2.24
Total Pre-Implementatio	n Phase	4.93
Implementation Phase		
Phase-I	3rd	191.52
	4th	211.51
	5th	267.76
	6th	216.36
	7th	214.04
Sub Total Phase-I		1101.19
Phase-II	8th	262.68
	9th	259.11
	10th	250.67
	11th	252.43
	12th	180.50
Sub Total Phase-II		1205.38
Grand total		2311.50

# **REHABILITATION & RESETTLEMENT**



# 7.0 MASTER PLAN FOR REHABILITATION OF INHABITATED FIRE & SUBSIDENCE PRONE AREAS.

#### 7.1 Introduction:

In the updated Master Plan of April'04, altogether 532 sites (271 in full & 261 in part) were considered for rehabilitation as the houses over these sites were declared unstable & uncontrollable (UU) as ground movement can not be controlled by stowing. Total no. of houses proposed to be evacuated from 532 sites were 65300 which includes

BCCL houses	:	36208
Non-BCCL : Private houses	:	15571
Non- BCCL : Un-authorised houses (Encroacher)	:	12719
Others : (Religious places, schools, Hospitals,	:	802

Post offices, Police stations etc).

Apart from these 532 sites, 121 sites were considered unstable but controllable (UC) i.e where ground movement could be controlled by stowing.

In accordance with the directive of Supreme court of India, on 3<sup>rd</sup> May, 2005, Director General of Mines Safety (DGMS) constituted a Committee to go through the Action Plan and subsequent affidavit/ATR filed by UOI and to verify the same in connection with PIL case filed by Sri Haradhan Roy, Ex MP.

The Committee concluded that as there are no scientific methods available to check long term stability, it might not be possible to certify that the areas thus stabilized. The present stabilization work may restrict the effect of subsidence and allow some time. The final and permanent solution is evacuation of the affected area and rehabilitation.

In view of the above, 121 sites which were proposed for stabilization have now been considered for rehabilitation.

#### 7.2 Total no. of houses in the endangered areas

Over the period of time from original Master Plan of March'1999 to date, 24 Nos. of sites have been demolished and shifted to other places by BCCL management. These sites have been deleted from this Master Plan.

Where fire dealing has been proposed by excavation method some stable parts are necessarily to be evacuated for digging out the fire. Such stable parts have now been

considered in rehabilitation. 26 such sites (23 part & 3 full) have been included in this Master Plan.

Considering the above & combining the earlier stabilization sites with Rehabilitation, total no. of sites proposed to be rehabilitated under the present Master Plan comes to 595 (326 in full & 269 in part). Total affected area under these site is estimated to be 25.70 sq.km

The number of houses under stabilization sites (now proposed for rehabilitation were supplied by BCCL after survey done in March '06 and the same has been considered for rehabilitation. Total no of houses from stabilization sites were 17302 (BCCL : 6480, Private : 6533, Encroachers and others : 4289). Total no of houses from stable parts were 3055. (BCCL : 1505, Pvt. : 591 and Encroachers : 959)

The no. of Non-BCCL houses under uncontrollable sites as per Master plan'1999 was 28290. Over the time of 7 years, there was further construction of houses in the endangered areas. JRDA/State Govt. of Jharkhand has done demographic survey in 2005 for 119 sites of Phase – I of Master Plan' 2004. It has been verbally reported by JRDA that the total no of Non-BCCL houses in 119 sites under Phase-I has increased to 14075 from 9850, i.e. an increase of 42.89% over a period of seven years with an annualized increase of 5.25%. This has been considered as a sample survey and has been uniformly applied for other sites in this Master Plan.

However no increase in BCCL houses has been considered as there has not been any construction over the years in those areas.

On the above considerations, total no. of houses in the endangered areas has now been estimated at 98314. The details are as under:

TOTAL	:	98314
Others : (Religious places, schools, Hospitals, Post offices, Police stations etc.)	:	868
Non- BCCL : Un-authorised houses (Encroacher)	:	23847
Non-BCCL: Private houses	:	29444
BCCL houses	:	44155

# 7.2.1 Total no. of houses proposed to be constructed/ resettled

In the meeting held with Secretary (Coal) on 4.7. 2006, it was decided that due to decrease in the manpower strength in BCCL only 25000 houses for BCCL employees required to be constructed. With this consideration total no of houses proposed to be resettled comes to **79159**. The details are as under:

BCCL houses	:	25000
Non-BCCL : Private houses	:	29444
Non- BCCL : Un-authorised houses (Encroacher)	:	23847
Others : (Religious places, schools, Hospitals, Post offices, Police stations etc.	:	868

It is proposed that as soon as a person residing in endangered areas of BCCL houses retires, the house shall be demolished.

#### 7.3 Demographic Survey and valuation of Properties

Demographic survey and valuation of the properties of the houses to be rehabilitated should be conducted for assessment of actual compensation and benefits before implementation of rehabilitation project.

# 7.4 **Rehabilitation & Resettlement Package**:

# 7.4.1 PROPOSED R & R PACKAGE FOR THE NON-ECL/NON- BCCL PEOPLE FOR THE REHABILITATION FROM THE UNSTABLE LOCATIONS

It is proposed that R & R package for both BCCL and ECL for Non BCCL/ Non ECL employees should be similar as far as possible. The main elements of the proposed R&R package to be offered to the people to be rehabilitated are as follows:-

- 1. It is proposed that resettlement should be done in satellite townships located on non-coal bearing areas/ Barren measures identified as per Master Plan.
- 2.a) Head of every family will be entitled to the compensation equivalent to the assessed cost of homestead land and other infrastructure within their homestead land. In addition, the head of each family shall be provided with a plot of land of 100m<sup>2</sup> free of cost at the resettlement site having all amenities and infrastructural facilities.

If the above offer is not acceptable then head of each house will be provided a constructed flat of around 40m<sup>2</sup> as super built up area having two room, a kitchen and an attached toilet in triple storey building. In such case no other cash compensation shall be paid.

In case the requirement of land is more than 100m<sup>2</sup>, additional land may be provided at the resettlement site subject to the maximum quantity of land owned at the rehabilitation site on payment basis as per market rate or adjusted against the entitled cash compensation, if land is available.

The assessment for compensation will be done by state Govts./Implementing agencies of State Govts.

- 2b) In case a house owner does not want to construct house on the 100 m<sup>2</sup> free plot of land at the resettlement site, he will be offered equivalent cash compensation in lieu of the free plot along other entitled cash compensation.
- 3. Those who opt for free plot and cash compensation shall have the choice of constructing their houses over the plot of land allotted to them. No additional money for the construction would be provided. Such house owners shall also be provided assistance (free of cost) in designing the house to be constructed, if they so desire.
- 4 No compensation will be paid to the house owner having no homestead land. They are proposed to be resettled in newly constructed resettlement site with all basic amenities (road, light, water supply etc). Head of each house will be provided with a constructed house of around 27 sq. m. as super built up area in triple- storey building.
- 5 Proper procedure shall be developed for payment of compensation to those families who opt for cash compensation and construction of their own houses at the new site.
- 6 Each house owner will be paid a maximum of Rs. 10000/- (Ten thousand) as shifting allowance from their present living places to the new houses at the resettlement site.
- 7 It will be binding to all house owners that the final payments are made only after they have shifted to the resettlement site and handed over the possession of existing homestead land and buildings to the company along with executing a registered deed of exchange. The existing house at the unstable site shall be demolished.
- 8 For the purpose of income generation due to displacement/shifting to the new resettlement site, it is proposed to pay minimum wage per day for 250 days in a year for 2 years to the head of each family as per minimum wage rate of respective State Govts.
- 9 The town planning and construction at the proposed resettlement site will also include infrastructure development like road, street lighting, drainage, sewerage treatment, community centre, water supply etc.

- 10 The community facilities like primary schools, community centre, small dispensary and shopping centre will also be included in the town planning. These common facilities will be constructed as per the plan under the proposed compensation package. However, the running cost of all the facilities, i.e. water supply, power supply, schools, dispensary etc. shall not be the part of compensation package and will have to be looked after by the Panchayat and other bodies of the State Government.
- 11 Common structures such as religious places etc. shall be built at resettlement site on mutual agreement basis from Rehabilitation fund of Master Plan.
- 12 The proposed location of resettlement site is guided by the following considerations:
  - a) Preferably the proposed resettlement site should be either land owned by BCCL or vested to the state Government.
  - b) In case such land are not available, then the required land may be purchased from private owner by State Govt.
- 13. No employment shall be offered for any rehabilitation under the Master Plan

# 7.4.2 BCCL Houses:

BCCL houses from the endangered areas are proposed to be rehabilitated in four Satellite Township in non-coal bearing areas along the periphery of JCF. The houses over endangered houses will be rehabilitated with equivalent type of house in satellite township in triple storied building having all basic infrastructural facilities. As soon as an employee residing in the identified endangered area retires, the house shall be demolished.

It is proposed that Rehabilitation/resettlement work of BCCL houses shall be the responsibility of BCCL whereas the same for Non BCCL houses including encroachers shall be the responsibility of concerned state Govt. However acquisition of land for rehabilitation of BCCL employees shall be done in association with State Govts of Jharkhand/West Bengal.

# 7.5 Amenities & Infrastructures:

The resettlement sites of the affected population for BCCL & Non-BCCL has been identified exclusively on non coal bearing areas sufficiently away from the impact of future mining. For this purpose, it is proposed that satellite township should be constructed along the fringe of Jharia Coal Field. The size of township should be large enough to accommodate at least 12500 Non-BCCL families and 6000 BCCL families. In each locality, there will be separate town ship for BCCL houses and Non-BCCL (both private & encroachers) adjacent to each other. In each township the following amenities will be provided as per BPE norm.

- Primary school
- High school
- Bank
- Post office
- Community center
- Shopping center
- Hospital
- Play ground & children park
- Water Supply ,Sewage disposal & sanitation
- Road, Culverts & Drains
- Power Supply

It is proposed that rehabilitation sites for Non-BCCL families should be adjacent to rehabilitation sites of BCCL houses.

# 7.6 Requirement of land at Resettlement site :

# A) For BCCL houses

The BCCL houses will be resettled in satellite townships with equivalent type of houses in triple storey building. The weighted average plinth area of the houses proposed to be rehabilitated has been estimated at 48.09 sq m /house. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for BCCL houses has been estimated at 400.00 Ha. (@ 160 m<sup>2</sup> /House)

# B) For Non BCCL Houses

# i) Private (Authorised)

Head of every family will be provided a plot of land measuring 100 sq.m. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for private authorized houses has been estimated at 794.98 Ha. (@ 270 m<sup>2</sup> /house)

# ii) Private Houses (Encroachers)

Encroachers will be provided with a house constructed on about 27 sq.m land in triple storied building in the resettlement site. However provision of 11 sq . m of land has been considered for construction of another room in future . Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for encroachers has been estimated at 310.01 Ha. (@ 130 m<sup>2</sup>/house)

With the above consideration, total requirement of land has been estimated at **1504.99 hactre** of which **400.00** ha of land is required for resettlement of BCCL houses and **1104.99** ha for Non-BCCL houses. Phase wise Requirement of land is as under:

Sl.no	Particulars	Phase-I	Phase II	Total
1.	BCCL houses	199.39	200.61	400.00
2.	Non BCCL Houses	660.27	444.72	1104.99
	Total (Ha)	859.66	645.33	1504.99

# 7.7 Duration of Implementation:

Planning Commission vide letter no.M-12026/2/2005 dated 29.3.2005, suggested that the time frame of implementation of the Master Plan should be reduced to 7-8 years. In the meeting held with Secretary (Coal) on 23.2 06, it was decided to reduce the time frame to 10 years. Accordingly, duration of implementation has been considered as 10 years (excluding 2 years of Pre Implementation activities)

in 2 phases, each of 5 years duration

The no. of houses, proposed to be rehabilitated under each phase are as under:

SI. No.	NAME	BCCL	PVT	ENCR.	OTHER	TOTAL
1	PHASE -I	12462	16671	16166	496	45795
2	PHASE -II	12538	12773	7681	372	33364
	TOTAL	25000	29444	23847	868	79159

# 7.8 Prioritisation of Rehabilitation sites:

Depending on the urgency of evacuation based on the ground condition all the sites were prioritised into 4 different priority. (Priority – I to Priority – IV) in Master Plan'1999 & '2004. As desired by planning Commission, the time frame of implementation has been reduced to 10 years in 2 phases (excluding 2 years of Pre Implementation activities) from 20 years in 4 phases . Therefore, the houses which were proposed in lower priority/phase has now been considered in higher priority/phase i.e. sites of priority III & IV have been considered in Priority - I or II and so on. With the above considerations all the sites have now been prioritised into Priority – I & Priority – II.

UOI has submitted an affidavit against the PIL case filed by Sri Haradhan Roy, Ex MP indicating that houses over 119 sites will be shifted in  $1^{st}$  phase within five years. All those 119 sites has been retained in Phase –I. Out of the total 595 sites, 300 sites will be rehabilitated in priority / Phase – I & 295 sites in Phase- II.

However even after rehabilitating all the sites under Priority - II, or I it may not be possible to start opencast mining operations until the stable sites falling with the area are evacuated. These stable sites, proposed to be evacuated along with mining operation, cost of which will

be included in the mining project report, if mining operation is taken up. However, where fire dealing by excavation method has been proposed no further rehabilitation will be required.

# 7.9 Codification & Grouping of uncontrollable sites into projects.

The uncontrollable sites are proposed to be rehabilitated in a group with proper codification. Each project has been assigned a code name showing the name of the Phase / Priority. The project code JCF / Rehab./ I/ 1 indicates that :

:	Jharia Coalfield
:	Rehabilitation
:	Phase
:	Priority /project
	:

Total 4 no. of projects has been envisaged. Phase wise, Project wise details are given in **table no. 7** 

Table-7

# **ACTION PLAN FOR REHABILITATION IN PHASE - I**

# <u>1ST TO 5TH YEAR</u>

SI.No.	Area	Colliery	Site name & no.	
				Affected Area (Sq.m.)
	JCF/	REHAB/P-I/2		
1	Barora	Damuda	Albion Section/O9	1600
2	Barora	Damuda	BJ Section B/O7	3200
3	Barora	Damuda	North Damuda Sec C/O3	4800
4	Barora	Damuda	North Damuda Sec D/O4	1200
5	Barora	Damuda	North Damuda Sec E/O5	1600
6	Barora	Damuda	Pathrakuli Village/10	3200
7	Barora	Muraidih	Barora Village No. 2/ O5	30400
8	Barora	Muraidih	Central Kenduadih Village/O7	1600
9	Barora	Muraidih	Kenduadih Village/ O6	34400
10	Barora	Phularitand	Akashkinaree Gwala Patti/O8	17600
	Barora	Phularitand(S)	Akashkinaree Gwala Patti/O8	1600
11	Barora	Phularitand	Ashakhuti Qtrs./09	13600
	Barora	Phularitand(S)	Ashakhuti Qtrs./09	14400
12	Barora	Phularitand	Badora/13	8400
13	Barora	Phularitand	Birajpur/10	8400
14	Barora	Phularitand	Mandra, Ganheshpur & Barwabera/O5	11200
	Barora	Phularitand(S)	Mandra, Ganheshpur & Barwabera/O5	41600
15	Barora	Phularitand	Maniura near Phularitand station/06	16000

	5			0000
- 10	Barora	Phularitand(S)	Manjura near Phularitand station/O6	9600
16	Barora	Phularitand	Mohalpatti Eastern Rly. Quarters/07	18400
47	Barora	Phularitand(S)	Monalpatti Eastern Riy. Quarters/07	4800
1/	Barora	Phularitand	Nawagarh & Part of Muchikuli/16	19200
18	Bastacolla	Bastacolla	BastaCollaS2705	167255
19	Bastacolla	Bastacolla	Chandmari Sec-2/07	12211
20	Bastacolla	Bastacolla	Leper colony/08	4350
21	Bastacolla	Bastacolla	Manjhi Bhasti/O9	7890
22	Bastacolla	Bastacolla(S)	Bastacolla Section 1/04	96347
23	Bastacolla	Bera	Bera Kala/Indira Awas/O3	41535
24	Bastacolla	Bera	Chandmari/O2	49972
25	Bastacolla	Bera	Jorapathak Road/O1	49972
26	Bastacolla	Dobari	BCCL Colony-2/03	4999
27	Bastacolla	Dobari	Sahana VillageO2	41535
28	Bastacolla	Ghanoodih	4/5 Pit Area/O3	20179
29	Bastacolla	Ghanoodih	Buffer dhowra/O5	20179
30	Bastacolla	Ghanoodih	Mallah Patti/O1	28182
31	Bastacolla	GOCP	Bhuiya Dhowra / 05	4061
32	Bastacolla	Kuiya	ACM Qtrs./O2	1706
33	Bastacolla	Kuiya	Colliery Office/O1	2678
34	Bastacolla	Kujama	Road Side Durgapur/O2	65436
35	Bastacolla	Kujama	Jharia Town / 05	108271
36	Bastacolla	Kujama(S)	Pandebera/03	11748
37	Bastacolla	Kujama	South Kujama /01	104301
38	Block-II	Benedih	Khoki Bigha/O1	8800
39	Block-II	Block-II	Bilaspuri Dhowrah /10	2400
40	Block-II	Block-II	Kessurgarh Bastee/ O7	48000
41	Block-II	Block-II	Sidpuki Village/O6	1600
42	Block-II	Nudkhurkee	Nudkhurkee Bastee no. 2/ O9	1600
43	Block-II	Nudkhurkee	Nudkhurkee Bastee no. 3 /O7	4000
44	C-V Area	Basantimata	Company Colony near Office/O2	3929
45-48	C-V Area	Begunia	Barakar Town/1A,1B,1C, &1D	375299
49	C-V Area	Laikdih	Nutugram/O1	74956
50	C-V Area	New Laikdih	Jograd Bastee/12	5388
51	C-V Area	New Laikdih	Office Complex,W/S,CHP/O2	14690
52	C-V Area	Old Chanch	Bautdih 1/O4	11368
53	C-V Area	Old Chanch	Yadavpur Luchi Bai/O6	18000
54	C-V Area	Old Chanch	Bautdih 2/O5	39961
-		(Closed)		
55	C-V Area	Old Chanch	Reliance Factory 1/O2	8539
		(Closed)		
56	C-V Area	Old Chanch	Reliance Factory 2/O3	93769
	<u></u>	(Closed)		04050
5/	C-V Area	Victoria West	Baltoria/O2	81656
58	C-V Area	Victoria West	Barakar Town /03	239416
59	C-V Area	Victoria West	Jnanakpura/04	/12/0
60	C-V Area	Victoria West	Jhewri Mohalla/O6	30491
61	C-V Area	Victoria West	Karimdanga/O/	48382
62	C-V Area	Victoria West	Pahalsadarga /05	15235
63	E. Jharia	Amlabad	Bhuiya Patti/03	16000
64	E. Jharia	Patherdih	Huchuktand /O2	4800
65	E. Jharia	Patherdih	Pure Chasnalla/O9	30400

66	E. Jharia	Sudamdih SM	Patherdih Village/O3	16000
67	Gobindpur	Dharmaband	Barat Area of NHS/O6	9600
68	Gobindpur	Dharmaband	Dharmaband Village/O5	35200
69	Gobindpur	Dharmaband	Dispensar Qrts Area/O2	17600
70	Gobindpur	Dharmaband	No.6 NHS Qtrs/O3	51200
71	Gobindpur	Dharmaband	Office Area/O4	57600
72	Gobindpur	Dharmaband	Thana Area Qrts./O1	32000
73	Gobindpur	Gobindpur	Tiwari Bastee /O2	4750
74	Gobindpur	Jogidih	Central Sinidih Bastee/12	2645
75	Gobindpur	Jogidih	East Sinidih Unit/11	3825
76	Gobindpur	Jogidih	HZL Factory Surroundings/13	16495
77	Gobindpur	Jogidih	Tundoo Khas Village/15	43859
78	Gobindpur	Jogidih	Tundoo Village/10	9210
79	Gobindpur	Kharkharee	Kharkharee & Nawagarh/O2	62400
80	Gobindpur	Maheshpur	Ashakhuti Phularitand 6/03	5618
81	Gobindpur	Maheshpur	Bamandih Colony/15	3159
82	Gobindpur	Maheshpur	Maheshpur Colliery Office & Houses/05	26304
83	Gobindpur	Maheshpur	Sinidih Basti, Quarters & Hutments(North of DB Road)/13	1149
84	Gobindpur	Maheshpur	Sinidih NHS Otrs.& Hutment(East & West of HZL Road)/10	13056
85	Gobindpur	Maheshpur	Sinidih Quarters & houses surround sub-	10948
			station/12	
86	Gobindpur	S.Gobindpur	15 A Seam B/16	1600
87	Gobindpur	S.Gobindpur	Aam Bagan Bastee- A/17	22400
88	Gobindpur	S.Gobindpur	Aam Bagan Bastee-B/18	30400
89	Gobindpur	S.Gobindpur	Bilbera 'B' /10	18400
90	Gobindpur	S.Gobindpur	Bilbera Jealgora Section/05	22400
91	Gobindpur	S.Gobindpur	Diamond-Teturia B/O8	1600
92	Gobindpur	S.Gobindpur	Hanuman Nagar/11	8000
93	Gobindpur	S.Gobindpur	South Govindpur 'A' / O3	4000
94	Gobindpur	S.Gobindpur	South Govindpur-C/O9	16000
95	Gobindpur	S.Gobindpur	Tanda Bari 'B' /O4	8000
96	Gobindpur	Teturia	4 Pit Area /05	25600
97	Gobindpur	Teturia	Agent Bunglow/O4	12800
98	Gobindpur	Teturia	Baru Bhutu Bastee/O6	400
99	Gobindpur	Teturia	Dharmaband Agent Bunglow/O7	3600
100	Katras	Angarpathra	A.P. Section -1/O1	212100
101	Katras	East Katras	Choitudih/19	26280
102	Katras	East Katras	Koiludih 6/17	2500
103	Katras	Gaslitand	Gaslitand Colony/O1	132900
104	Katras	Gaslitand	Gaslitand Upper Dhowra/O5	25100
105	Katras	Katras-Chaitudih	Bastee No.4/11	30450
106	Katras	Katras-Chaitudih	Kathal Dhowrah /O8	1300
107	Katras	Katras-Chaitudih	Lakurka Vill. No. 1/ 12	21375
108	Katras	Katras-Chaitudih	Lakurka Vill. No. 2/ 13	5575
109	Katras	Katras-Chaitudih	Lal Dhowra To Pokherpar/03	8350
110	Katras	Katras-Chaitudih	Near 3 Pit Habitation/02	8350
111	Katras	Katras-Chaitudih	North of 1 Pit/04	4850
112	Katras	Katras-Chaitudih	Ramakant Bhartiya House/18	465
113	Katras	Katras-Chaitudih	Yule Pit Qtrs./07	6650
114	Katras	Salanpur	Central Salanpur Block -II /O8	17420
115	Katras	Salanpur	East Salanpur Block 1 /21	14980
116	Katras	Salanpur	East Salanpur Block -1&2/ (1&2)	36110

117	Katras	Salanpur	New Lakurka Section Block -1 /16	6000
118	Katras	Salanpur	North Salanpur Block -2/O5	33888
119	Katras	Salanpur	North Salanpur Block -3/O6	88320
120	Katras	Salanpur	Railway Colony/O3	16160
121	Kustore	Alkusa	DAV School & G. Camp / 02	43330
122	Kustore	Alkusa	Hutment near Durga Mandir / 05	33800
123	Kustore	Alkusa	Officers Qtr. near Thana / 01	43330
124	Kustore	Burragarh	Burragarh Office Complex/ O8	29049
125	Kustore	E. Bhagatdih	1 Pit Area / 04	15612
126	Kustore	E. Bhagatdih	Boka Pahari / 01	13166
127	Kustore	E. Bhagatdih	Chowthai Kuli &Hussainabad / 09	172269
128	Kustore	E. Bhagatdih	Katras More Area / 11	34084
129	Kustore	E. Bhagatdih	Khas Jharia / 08	44060
130	Kustore	E. Bhagatdih	No. 3&5 Colony /0 2	22739
131	Kustore	E. Bhagatdih	No. 4 Pit Area/0 5	33685
132	Kustore	Ena	Colliery Qtrs / 03	2165
133	Kustore	Ena	No.2 Colony/ 04	27751
134	Kustore	Ena	Officers colony &B.up Area / 05	99885
135	Kustore	Ena	Parsatand Bast/ 02	9869
136	Kustore	Kustore	08 No.Dhowra / 01	14000
137	Kustore	Kustore	3 No. Colony &D Mandir /O8	100489
138	Kustore	Kustore	Simla bahal Basti / 03	70000
139	Kustore	Rajapur	Kukur Thapa / 02	27889
140	Kustore	Rajapur	N. WB Colony / 04	19250
141	Kustore	Rajapur	New Colony & Ena Islampur / 05	59500
142	Kustore	Rajapur	Rajapur Colony / 03	10720
143	Kustore	Rajapur	Fatehpur Bastee/O1	21263
144	Kustore	Simla bahal	Bhalgora Dhaska Patti / 01	176574
145	Kustore	Simla bahal	Fire Brigd. Area / 09	30129
146	Kustore	Simla bahal	Inside Colliery Comd. Area / 05	71539
147	Kustore	Simla bahal	Jharia Town (P. Area) / 02	125143
148	Kustore	Simla bahal	Shamsher nagar / 03	240123
149	Kusunda	Basseriya	Gwala Patti /01	59705
150	Kusunda	Basseriya	No. 1 Basti /O3	4009
151	Kusunda	Godhur	Rawani Bastee	
152	Kusunda	Gondudih	Surender Colony (East Loyabad)/ O7	11584
153	Kusunda	Industry	West Ena 1 & 2 pit / O1	268687
154	Kusunda	Khas Kusunda	Colliery Office Complex & company's qtrs./ 10	
155	Kusunda	Kusunda	Kusunda village /O1	21042
156	Kusunda	Kusunda	Workshop, Office & Qtrs.(PK-1&2 pit area)/ O4	78198
	JCF/	REHAB/P-I/1		
157	Lodna	Bagdigi	Bagdigi Basti /O1	89600
158	Lodna	Bagdigi	Bagdigi Colony / O2	27200
	Lodna	Bagdigi(S)	Bagdigi Colony / O2	41600
159	Lodna	Bararee	Along Jore Side Colony/11	17600
	Lodna	Bararee(S)	Along Jore Side Colony/11	11200
160	Lodna	Bararee(S)	Bazaar Dhowrah/12	7200
161	Lodna	Bararee	Brahman Basti / O2	14400
162	Lodna	Bararee	Chhata Dhowra & Durga Mandir /O5	35200
163	Lodna	Bararee	Chiraiyatand Colony /O1	30400
164	Lodna	Bararee	Colony near 1 pit /O4	35200
165	Lodna	Bararee	Colony near Bararee School / Bagan Dhowra /O3	19200

166	Lodna	Bararee	Digwadih New Colony / O8	41600
167	Lodna	Bararee	Dom Dhowra /O6	10400
168	Lodna	Bararee	East side of DB Road /09	24000
169	Lodna	Bararee	Mudivita Village/10	1600
	Lodna	Bararee(S)	Mudivita Village/10	1600
170	Lodna	Bararee	Naya Dhowra Colony/ O7	19200
171	Lodna	Jealgora	1&2 Pit Area/11	32000
172	Lodna	Jealgora	Bagdigi Basti / 12	26400
173	Lodna	Jealgora	Bucharkhana Area / O1	43200
174	Lodna	Jealgora	Buriband /14	13600
175	Lodna	Jealgora	Check Post area /O6	4000
176	Lodna	Jealgora	North Jealgora 3&4 Pit/ O2	64000
177	Lodna	Jealgora	Stadium Area colony/O8	76800
178	Lodna	Jealgora	Sweeper Dhowra /09	16000
179	Lodna	Jeenagora	Central Sulunga Colony No.1/ O9	2400
180	Lodna	Jeenagora	E.B. Section colony no. 1/O1	6400
	Lodna	Jeenagora(S)	E.B. Section colony no. 1/O1	800
181	Lodna	Jeenagora	EB Sec. Colony No. 2/02	21600
182	Lodna	Jeenagora	Khas Jeenagora, Colony No.1/O3	32000
183	Lodna	Jeenagora	Khas Jeenagora & Kalisthan /05	7200
184	Lodna	Jeenagora	Khas Jeenagora Colony No. 2/ 04	4000
185	Lodna	Jeenagora	Khas Jeenagora Colony no. 3/ 06	15200
186	Lodna	Jeenagora	Khas Jeenagora Colony no. 4/07	10400
187	Lodna	Jovrampur	6 pit Dhowra & Atta Chaki /O1	27200
	Lodna	Jovrampur(S)	6 pit Dhowra & Atta Chaki /01	40000
188	Lodna	Jovrampur	Around Area Office/WS & No. 2 Basti/03	56000
189	Lodna	Jovrampur	Beer Company Locality/Q5	8800
190	Lodna	Joyrampur	Durga Mandir Area /04	40000
191	Lodna	Joyrampur	Hazaribagh Colony near Hospital /02	30400
	Lodna	Jovrampur(S)	Hazaribagh Colony near Hospital /02	27200
192	Lodna	Lodna	2 nit Bhaga Colony/ 28	44800
193	Lodna	Lodna	16 no incline Jore side Colony / 22	8000
194	Lodna	Lodna	2 No. Incline Colony / 23	3200
	Lodna	Lodna(S)	2 No. Incline Colony / 23	30400
195	Lodna	Lodna	3 nit hasti /09	4800
100	Lodna	Lodna(S)	3 pit basti /09	800
196	Lodna	Lodna	4 nit Colony / 24	25600
197	Lodna	Lodna	5  No. Colony/ (C-17)	46400
198	Lodna	Lodna	8 pit area colony / 19	17600
100	Lodna	Lodna(S)	8 pit area colony / 19	27200
199	Lodna	Lodna	Balugada Colony / 26	7200
100	Lodna	Lodna(S)	Balugada Colony / 26	3200
200	Lodna	Lodna	Chalchalia Labour Colony /25	20800
201	Lodna	Lodna	Chalchalia Labour Colony/(C-13)	24000
202	Lodna	Lodna	Firkuband Colony / 30	7200
203	Lodna	Lodna	Hanumangari Basti/14	16000
203	Lodna	Lodna	Indira Chowk Road side Basti /07	3200
204			Indira Chowk Road side Basti /07	3200
205			lealora Barrier Colony / 18	30/100
205		Louna	leenadora Branch site / 20	1280
200			leenagora Branch site / 20	1920
207	Lodna		Ibaria, Club & road side Basti /O8	28000
	Lound	Lound		20000

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208	Lodna	Lodna	Joyrampur / Badigi Barrier / 21	11200
209	Lodna	Lodna	Kalidham Colony / 27	10400
210	Lodna	Lodna	Kujama Village /02	2880
011	Lodna	Lodna(S)	Kujama Village /02	1920
211	Lodna	Lodna	Lodna Village /O1	46400
0.10	Lodna	Lodna(S)	Lodna Village /O1	8800
212	Lodna	Lodna	Nadiapar Kujama Basti /O4	12800
213	Lodna	Lodna	New Bhaga Bast / 11	99200
214	Lodna	Lodna	New Colony Baniahir /13	49600
215	Lodna	Lodna	Niluri Patra Bastee /05	1600
216	Lodna	Lodna	Office Compelx Area / 31	84800
	Lodna	Lodna(S)	Office Compelx Area / 31	2400
217	Lodna	Lodna	Suratand Basti /O6	4000
	Lodna	Lodna(S)	Suratand Basti /O6	6400
218	Lodna	Lodna	Tar Plant Area / 12	20800
	Lodna	Lodna(S)	Tar Plant Area / 12	6400
219	Lodna	North Tisra	BCCL Colony No. 1/O1	12800
220	Lodna	North Tisra	SG Section Basti /O3	14400
221	Lodna	North Tisra	Tilaboni Basti/O2	25600
	Lodna	North Tisra(S)	Tilaboni Basti/O2	12800
222	Lodna	South Tisra	B.J. & S.T. Section/ O3	24000
223	Lodna	South Tisra	Huchuktand Basti/O1	36000
224	Lodna	South Tisra	No.1 Pit S.T. Section /O2	1600
225	P-B Area	Balihari 10/12 Pit	63 Dhowra/O1	16300
226	P-B Area	Balihari 10/12 Pit	BCCL Colony No.1/13	7900
227	P-B Area	Balihari 10/12 Pit	Miner's Colony/11	5800
228	P-B Area	Balihari 10/12 Pit	Miner's Qtrs./09	2400
229	P-B Area	Bhagaband	Aralgoria Basti/O2	19000
230	P-B Area	Bhagaband	Bhagaband Bastee/O4	235800
231	P-B Area	Bhagaband	DVC Colony/O1	44650
232	P-B Area	Bhagaband	Kashiatand/O5	33500
233	P-B Area	Bhagaband	Kenduadih Bastee(6B)/O7	0
234	P-B Area	GopaliChak	1 No. Dhowra/13	19534
235	P-B Area	GopaliChak	Bowri Basti No.3/11	6511
236	P-B Area	GopaliChak	In Chandra /O3	68016
237	P-B Area	GopaliChak	Leper Bastee/O5	3720
238	P-B Area	GopaliChak	Marine Qtrs. /07	10790
239	P-B Area	GopaliChak	Pasi Dhowra / 10	21395
240	P-B Area	GopaliChak	Rlv. Colony & Station/O6	25116
241	P-B Area	GopaliChak	West Side NH-32/09	11348
242	P-B Area	Hvdro-Minina	4 Pit Bastee/O6	35200
243	P-B Area	Hvdro-Mining	Balihari Bastee/O4	33340
244	P-B Area	Hvdro-Mining	Kumar Patti/O3	5200
245	P-B Area	Hvdro-Mining	Nehru Nagar/Q5	7740
246	P-B Area	Kenduadih	2/12 Incl.Dhowra & Hutments/18	3060
247	P-B Area	Kenduadih	Atwal Colony/12	19000
248	P-B Area	Kenduadih	Babubasa Colony/O2	8600
249	P-B Area	Kenduadih	Colony near Post Office /03	40000
250	P-B Area	Kenduadih	East of Hindi Bhawan / 16	22900
251	P-B Area	Kenduadih	E-B Section/Q9	4800
252	P-B Area	Kenduadih	Kathgola Maidan/Q6	47770
253	P-B Area	Kenduadih	Kenduva Bazar /07	146500
		. contaudum		

254	P-B Area	Kenduadih	Khoira Pit Head Bath/19	8360
255	P-B Area	Kenduadih	Labour Dhowra/17	7000
256	P-B Area	Kenduadih	Muslim Bastee/O8	36700
257	P-B Area	Kenduadih	Naya Dhowra Colony O4	52200
258	P-B Area	Kenduadih	Officer's Colony/10	4800
259	P-B Area	Kenduadih	Rajput Basti /05	15340
260	P-B Area	Pootkee	Staff Qrts./O4	794600
261	Sijua	Bansdeopur	8 No. Dhowra /O8	9000
262	Sijua	Bansdeopur	BSP OH office / 14	9000
263	Sijua	Bansdeopur	Elec. Sub-station/12	3000
264	Sijua	Bansdeopur	Harijan Basti /O1	5460
265	Sijua	Bansdeopur	Indira Awas/11	5880
266	Sijua	Bansdeopur	Mallah Basti /O2	8775
267	Sijua	Kankanee	South of 7 pit /O2	6000
268	Sijua	Loyabad	5 pit Area /O9	45000
269	Sijua	Loyabad	7 / 8 Area /O1	21500
270	Sijua	Loyabad	8 pit area /O2	19200
271	Sijua	Mudidih	10 pit colony /O7	5000
272	Sijua	Mudidih	Jogta Colony / 13	93200
273	Sijua	Mudidih	Liprosy Area /O9	11500
274	Sijua	Mudidih	Nepali Dhowra /O6	95000
275	Sijua	Mudidih	New Shyam Bazar /12	10000
276	Sijua	Mudidih	No. 4 pit area / 11	1800
277	Sijua	Mudidih	Shyam Bazar/ O8	68000
278	Sijua	Mudidih	Tetulmari Vill. /04	1500
279	Sijua	Nichitpur	Hard coke Bhatta/O3	5800
280	Sijua	Nichitpur	Nichitpur Bastee/O2	10000
281	Sijua	Nichitpur	Staff Qrts. /O4	46046
282	Sijua	Nichitpur	Staff Qrts. /05	12560
283	Sijua	Sendra Bansjora	11 No. Colony/11	1900
284	Sijua	Sendra Bansjora	13 No. Colony/13	7500
285	Sijua	Sendra Bansjora	Gareria Colony /15	5700
286	Sijua	Sendra Bansjora	Gareria Colony 1/14	2000
287	Sijua	Sendra Bansjora	Habitation west of DB Road/12	10375
288	Sijua	Tetulmari	Director's Bunglow / 14	25200
289	Sijua	Tetulmari	Hirak & Private/12	12150
290	W. Jharia	Bhatdee	Belakhanda Co. Qrts./O6	24200
291	W. Jharia	Hantoodih (Closed)	Kultand Village/O3	116900
292	W. Jharia	Hantoodih (Closed)	Washery colony/O1	49600
293	W. Jharia	Lohapatti	Koraidih & Santadih/O8	4700
294	W. Jharia	Lohapatti	Kusumtand /10	221100
295	W. Jharia	Lohapatti	Modidih/O9	47900
296	W. Jharia	Lohapatti	Telmocho/O4	73200
297	W. Jharia	Moonidih	Lalpur Rutha Bastee/O6	1178800
298	W. Jharia	Murulidih (Closed)	BSEB & its surroundings /O1	56220
299	W. Jharia	Murulidih (Closed)	Murulidih Village/O4	266200
300	W. Jharia	Murulidih 20/21 Pit	Bhuli Qrts./O2	47000
Total for Phase - I				12044691

# **ACTION PLAN FOR REHABILITATION IN PHASE - II**

# 6TH TO 10TH YEAR

SI.No.	Area	Colliery	Site name & no.	Affected
				Allected
				Area
				(Sq.m.)
	JCF/	REHAB/P-II/1		
1	Barora	Damuda	BJ Section 'A/O6	17600
2	Barora	Damuda	Karmatand Section/11	24000
3	Barora	Damuda	North Damuda Section F/18	400
4	Barora	Damuda	Sijua Village/ O8	9600
5	Barora	Madhuband	Colliery Office & Qtrs./O6	24000
6	Barora	Madhuband	Dhowatand Village/O4	40000
7	Barora	Madhuband	Kutkutia Patti/ O5	27200
8	Barora	Phularitand	Nawagarh Bastee (Part)/12	16000
9	Barora	Phularitand	Phularitand Bazar / Hatia/11	41600
10	Barora	Phularitand	West Side of Punduvita Village/14	5600
11	Bastacolla	Bastacolla	Colony near Dhansar Police Station/ O3	12436
12	Bastacolla	Kujama	Khas Jharia/O4	17491
13	Block-II	Block-II	Madhuband Colony /O5	51200
14	C-V Area	Laikdih	Dumarkunda & company Qutrs./4A&4B	38685
15-16	C-V Area	Laikdih	Dumarkunda Village/2A&2B	78617
17	C-V Area	Laikdih	Manjhi Bastee/O6	12295
18	C-V Area	New Laikdih	CMW Colony/O8	51138
19	C-V Area	Victoria	Heslok Pit Area/O1	20806
20	E. Jharia	Amlabad	Bhuli Quarter & Staff Colony/ (1&2)	52000
21	E. Jharia	Bhowra North	No. 6 Block/O9	33600
22	E. Jharia	Bhowra North	No. 7 Bastee/O2	16000
23	E. Jharia	Bhowra North	No.9 Block Near Hospital/10	8000
24	E. Jharia	Bhowra North	No-8 Block/01	12800
25	E. Jharia	Bhowra North	Parasiabad Bastee/O5	4800
26	E. Jharia	Bhowra North	Parasiabad Labour Block/O4	12000
27	E. Jharia	Bhowra South	12 No. Area Colliery Office to Kumar Patti/ 16	104000
28	E. Jharia	Bhowra South	35 Area Chhapra More/12	52000
29	E. Jharia	Bhowra South	36 Jore Area behind Area Office/14	20000
30	E. Jharia	Bhowra South	4 no. Dhowrah/Amlabad Road/18	52800
31	E. Jharia	Bhowra South	Gourkhunti 35 Incline/13	77600
32	E. Jharia	Bhowra South	Jahaj Tand/19	5600
33	E. Jharia	Patherdih	Chandrabad/11	30400
34	E. Jharia	Patherdih	Hattalla Village/ O5	51200
35	E. Jharia	Patherdih	Kamini Nagar/10	14400
36	E. Jharia	Patherdih	Modern Sudamdih/O8	12800
37	E. Jharia	Patherdih	Pandey Bastee/O7	11200
38	E. Jharia	Patherdih	Patherdih/ O4	14400
39	E. Jharia	Sudamdih Inc.	Main Colony Chief House/ O4	8000

40	E. Jharia	Sudamdih Inc.	Main Colony Miners house/05	19200
41	E. Jharia	Sudamdih Inc.	Main Colony/ O3	16000
42	E. Jharia	Sudamdih Inc.	Old Incline Colony/06	4800
43	E. Jharia	Sudamdih S.M.	New Miners colony/02	33600
44	E. Jharia	Sudamdih S.M.	River side colony/01	30400
45	Gobindpur	Akashkinaree	Akashkinare Colony/ O6	3837
46	Gobindpur	Akashkinaree	Labour Qtrs. Along PWD Road/ O2	19139
47	Gobindpur	Akashkinaree	Part of Bhatmurna Bastee/O3	6996
48	Gobindpur	Akashkinaree	Qtrs. Along office compound/O4	37973
49	Gobindpur	Akashkinaree	Qtrs.on South side of Akashkinaree/O5	32070
50	Gobindpur	Block-IV / Kooridih	Kooridih 3 seam Area Hutment/ O4	1870
51	Gobindpur	Block-IV / Kooridih	LCH Dhowrah Govindpur/18	720
52	Gobindpur	Block-IV / Kooridih	Near Block-IV Office/15	26846
53	Gobindpur	Block-IV / Kooridih	Near Gobindpur Hospital/14	24280
54	Gobindpur	Block-IV / Kooridih	NHS Qrts/12	1400
55	Gobindpur	Block-IV / Kooridih	South Gobindpur Bastee/16	7040
56	Gobindpur	Block-IV / Kooridih	South Gobindpur Dhowra/17	1562
57	Gobindpur	Gobindpur	Agardih Labour Qtrs/07	17580
58	Gobindpur	Gobindpur	Darpan Bastee/05	132
59	Gobindpur	Gobindpur	Imli Dhowrah/O3	31145
60	Gobindpur	Gobindpur	IV Seam Colony/O1	57408
61	Gobindpur	Gobindpur	Labour Qrts./06	1174
62	Gobindpur	Gobindpur	Mehtadih Colony & Bunglow/O4	31145
63	Gobindpur	Joaidih	Baihardih Colony 'B'/ 1B	8365
64	Gobindpur	Jogidih	Baihardih Village/1A	5118
65	Gobindpur	Kharkharee	Nawagarh More & Phularitand Village/ 03	14400
66	Gobindpur	Kharkharee	Part of Phularitand Village/ 3A	24000
67	Gobindpur	Maheshpur	Maheshpur Bastee/O1	33309
68	Gobindpur	Maheshpur	NHS Qtrs. & House North of DB Road/11	43823
69	Gobindpur	Maheshpur	Premnagar Colony Bastee etc./ 14	13418
70	Gobindpur	Maheshpur	Staff Qtrs. & Hutment/O4	2806
71	Gobindpur	S.Gobindpur	Bilbera - C/13	8000
72	Gobindpur	S.Gobindpur	Bilbera 'A'/ 07	1600
73	Gobindpur	S.Gobindpur	Kali Nagar Bilbera/12	8000
74	Gobindpur	S.Gobindpur	South Govindour 'B/O6	2400
75	Gobindpur	S.Gobindpur	Tandabari-A/Q1	18400
76	Gobindpur	Teturia	Colliery Office Area/O3	22400
77	Gobindpur	Teturia	NHS Qtrs.& Hutment/Q1	43600
78	Gobindpur	Teturia	No.2 Locality/O2	32800
79	Katras	Angarpathra	AP Section-2 /O2	16800
80	Katras	Angarpathra	JK Khas/04	2200
81	Katras	Angarpathra	JK Section/Q3	62400
82	Katras	Angarpathra	National Angarpathra-2/06	6500
83	Katras	East Katras	Akashkinaree 04/06	2800
84	Katras	East Katras	Akashkinaree -2/02	400
85	Katras	East Katras	Akashkinaree 3/04	3840
86	Katras	East Katras	Akashkinaree 5/07	1000
87	Katras	East Katras	Akashkinaree-6/08	4350
88	Katras	East Katras	Bhandardih 2 /11	2500
89	Katras	East Katras	Koiludih 01/03	3900
90	Katras	East Katras	Koiludih 3/10	40180
91	Katras	East Katras	Koiludih 4/15	65752

92	Katras	East Katras	Koiludih-2/O9	2450
93	Katras	East Katras	Koiludih-5/16	65752
94	Katras	East Katras	Malkera/18	3840
95	Katras	East Katras Project	Bhandardih 3/12	32400
96	Katras	Gaslitand	Qtrs. Near 6 Pit VAP/O4	43900
97	Katras	Gaslitand	Qtrs. Near 7 Pit & Colliery Office/O2	35500
98	Katras	Gaslitand	Qtrs. Near Ground UAP/O3	6500
99	Katras	Katras-Chaitudih	2 Pit Dhowrah/O6	9450
100	Katras	Katras-Chaitudih	5 No. Pit Area/10	4550
101	Katras	Katras-Chaitudih	Bengali Dhowra/O5	6650
102	Katras	Katras-Chaitudih	Dhowra of SW portion of 9 Pit/15	1850
103	Katras	Katras-Chaitudih	Habitation North of 13 Seam Quarry/17	1400
104	Katras	Katras-Chaitudih	Lakurka Bunglow Surrounding Area/O9	32550
105	Katras	Katras-Chaitudih	Lakurka Staff Qtrs./14	29370
106	Katras	Katras-Chaitudih	Loading Dhowrah (Lakurka Section) /16	13940
107	Katras	Keshalpur	Huts near 3/2 incline/O6	3550
108	Katras	Keshalpur	Quarter near 3/2 incline/07	460
109	Katras	Keshalpur	Quarter near Agent Office/O4	2050
110	Katras	Salanpur	Central Salanpur Block 4 (10) & Lakurka Khas Block 4/ 15	27760
111	Katras	Salanpur	Central Salannur Block 5 (12) Lakurka Khas Block 3/ 14 & 9	20170
112	Katras	Salanpur	Khas Gobindour Area/23	12800
113	Katras	Salanpur	Khas Gobindpur Block 1 /22	14400
114	Katras	Salanpur	Lakurka Khas Block 1 (11) & Central Salannur Block 1/ 07	15312
115	Katras	Salanpur	Lakurka Khas Block 2/13	2450
116	Katras	Salanpur	New Lakurka Section Block 2/17	19180
117	Katras	Salanpur	New Lakurka Section Block 3/18	1040
118	Katras	Salanpur	New Lakurka Section Block 5/ 20	4800
119	Katras	West Mudidih	2 Seam Area near 8/2 Incline/Q2	550
120	Katras	West Mudidih	Dalahi Bastee/05	7200
121	Katras	West Mudidih	House near 4 no. Sub-station/O8	1004
122	Katras	West Mudidih	Huts near Caplamp Room no. 1/ O6	1100
123	Katras	West Mudidih	Near 10/2 Incline 1 Area /11	1100
124	Kustore	Alkusa	GM Bunglow & Otrs /04	36188
125	Kustore	Alkusa	Otrs Near 6/7 Pit/O3	2484600
126	Kustore	Burragarh	Burragarh Basti/02	15339
127	Kustore	Burragarh	Burragarh CISE Centre/07	6084
128	Kustore	Burragarh	Nagu Centre & Bachha Centre/O4	30412
129	Kustore	Burragarh	Officer's & Staff Colony/Q3	18660
130	Kustore	Burragarh	Pure Burragarh Basti/O5	20299
131	Kustore	Burragarh	Surendra Colony/Karmik Ngr/O1	27713
132	Kustore	E. Bhagatdih	Bihar Talkies & Raja Bari Area/12(A)	219387
133	Kustore	E. Bhagatdih	Jharja Water Board Area /06	35750
134	Kustore	E. Bhagatdih	Bihar Talkies & Raja Bari Area/12(B)	10518
135	Kustore	E. Bhagatdih	Gopalichak Basti/Q3	21185
136	Kustore	E. Bhagatdih	Koiri Bandh Area/10	7363
137	Kustore	Hurriladih	7 No. Colony/O4	35526
138	Kustore	Hurriladih	Bhutgoria Old Complex/07	16473
139	Kustore	Hurriladih	Hurriladih Bastee/Q2	39223
140	Kustore	Hurriladih	Hurriladih Old Colony/O6	14914
141	Kustore	Hurriladih	New Colony 1&2 No/O3	30436
142	Kustore	Hurriladih	Pather Bunglow Bastee/O1	26499
143	Kustore	Hurriladih	Sargujia Bastee/05	24894

144	Kustore	Kustore	Bhagwan Das Centr/O9	19173
145	Kustore	Kustore	BNR KustoreO4	40308
146	Kustore	Kustore	Dak Banglow Area/10	108191
147	Kustore	Kustore	Kalimandir Area/O2	9940
148	Kustore	Kustore	Khapra Dhowra/O6	23373
149	Kustore	Kustore	Naya Dhowra/O5	34099
150	Kustore	Kustore	Old Simlabahal Office/11	14382
151	Kustore	Kustore	Qtrs. Near 10 Pit Area/O7	32000
152	Kustore	Simlabahal	Bhaga S.E. Rly. Colony/O8	12062
153	Kustore	Simlabahal	Bhalgora Project Complex/O6	49370
154	Kustore	Simlabahal	DAV School Area/O7	15867
155	Kustore	Simlabahal	Gariban Patti/O4	45389
	JCF/	REHAB/P-II/2		
156	Kusunda	Dhansar	Bright Kusunda Colony/O2	28000
157	Kusunda	Dhansar	East Godhur Colony/O1	45637
158	Kusunda	Dhansar	New Delhi Colony/O3	12056
159	Kusunda	E. Bassuriya	Gareria Basti/O1	41296
160	Kusunda	Godhar	3 Pit Area/O3	58437
161	Kusunda	Godhar	Baldar Bastee/O1	2000
162	Kusunda	Gondudih	10 No. Dhowrah/O8	4882
163	Kusunda	Indusrty	Lahabera Bastee/O3	2936
164	Kusunda	Industry	Huchuktand Bastee/O2	2655
165	Kusunda	Industry	KOCP Office & Colony Qtrs./05	2936
166	Kusunda	Industry	Rise Bhagatdih Colony/O6	6908
167	Kusunda	Khas Kusunda	B Panel Area/O7	14091
168	Kusunda	Khas Kusunda	Colony near KG Section School/11	6011
169	Kusunda	Khas Kusunda	Company Qtr. West of Bhuli Road/12	7608
170	Kusunda	Khas Kusunda	Dharia Joba Village/O4	1573
171	Kusunda	Khas Kusunda	Gondudih Bastee/O3	12296
172	Kusunda	Khas Kusunda	Harijan Basti/O5	11451
173	Kusunda	Khas Kusunda	Hospital Basti/O8	16345
174	Kusunda	Khas Kusunda	Kharikabad Bastee/ O9	17971
175	Kusunda	Khas Kusunda	Kusunda Station Village/O6	11451
176	Kusunda	Kusunda	Keska Basti Qtrs./O2	21042
177	Lodna	Jealgora	16 No. Dhowra Area/13	32000
178	Lodna	Jealgora	7 Pit Old Hospital Area/10	36000
179	Lodna	Jealgora	Durga Mandir Colony/O4	28800
180	Lodna	Jealgora	Guest House Area/07	54400
181	Lodna	Jealgora	Jealgora Bastee/O3	28800
182	Lodna	Jealgora	Jealgora Colony/O5	72000
183	Lodna	Lodna	5 No. Colony/29	32000
184	Lodna	Lodna	GM Bunglow & Road Side Bastee/15	48000
185	Lodna	Lodna	Phus Bungla Road side Bastee/10	3200
186	Lodna	Lodna	Phus Bungla Road side colony/16	3200
187	Lodna	Lodna	Puranadih Village/O3	6400
188	Lodna	Lodna	Shalimar Colony/17	16000
189	P-B Area	Balihari 10/12 Pit	60 Dhowra/O3	11500
190	P-B Area	Balihari 10/12 Pit	88 Dhowra/O2	87350
191	P-B Area	Balihari 10/12 Pit	BCCL colony 2/14	11150
192	P-B Area	Balihari 10/12 Pit	Bunglow & Babu Basa/O8	16300
193	P-B Area	Balihari 10/12 Pit	Pit Office/12	20000
194	P-B Area	Balihari 10/12 Pit	Village No. 1 Balihari/O6	5000

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195	P-B Area	Balihari 10/12 Pit	Village No.2 Balihari/O5	29700
196	P-B Area	Balihari 10/12 Pit	Villagee No. 3 Balihari/O7	2500
197	P-B Area	Balihari 10/12 Pit	Shakti School/10	144400
198	P-B Area	Bhagaband	Aralgoria Basti-3/O3	77000
199	P-B Area	Bhagaband	Kenduadih Bastee (6A)/O6	192600
200	P-B Area	Bhagaband	Kenduadih Bastee (6G)/12	0
201	P-B Area	Bhagaband	Kenduadih Bastee(6)/O8	0
202	P-B Area	Bhagaband	Kenduadih Bastee(6D)/O9	0
203	P-B Area	Bhagaband	Kenduadih Bastee/10	0
204	P-B Area	Bhagaband	Kenduadih Bastee-6F/11	0
205	P-B Area	GopaliChak	17 No. Dhowra/14	44651
206	P-B Area	GopaliChak	2 No. Gopal Colony/12	84651
207	P-B Area	GopaliChak	3 No. Bastee/KK Sec/O4	8372
208	P-B Area	GopaliChak	Marine Colony-1/O1	57674
209	P-B Area	GopaliChak	Marine Colony-2/O2	12093
210	P-B Area	GopaliChak	Sudamdih colony/08	48139
211	P-B Area	Hydro-mining	BC Plant/07	45440
212	P-B Area	Hydro-mining	Krishna Nagar/O8	9600
213	P-B Area	Hydro-mining	Oranga Patti Birsa Nagar/02	4230
214	P-B Area	Hydro-mining	Station Dhowra/O1	3900
215	P-B Area	Kenduadih	4 Pit Ghansadih Colliery Qtrs./20	11100
216	P-B Area	Kenduadih	Ghansadih/14	48150
217	P-B Area	Kenduadih	Gwala Basti & Kali Mandir/15	4925
218	P-B Area	Kenduadih	Khoira ColonyO/1	51400
219	P-B Area	Kenduadih	Nimtala/11	37700
220	P-B Area	Kenduadih	No.5 Dhowra Bastee/13	40250
221	P-B Area	Pootkee	13 No. Bastee/O2	62156
222	P-B Area	Pootkee	17 No. 10 No. & Gwala Bastee/O1	118370
223	P-B Area	Pootkee	2 No. & JMBH/O3	79628
224	P-B Area	Pootkee	Bowri Basti/O6	110576
225	P-B Area	Pootkee	Prem Nagar/O5	130060
226	P-B Area	Pootkee	Sri Nagar Colony/O7	111896
227	Sijua	Bansdeopur	15 No. Dhowrah/13	1000
228	Sijua	Bansdeopur	4 No. colony/O4	3000
229	Sijua	Bansdeopur	40 No. Dhowra/10	10700
230	Sijua	Bansdeopur	7 No. BSP/O7	12000
231	Sijua	Bansdeopur	Bansudeopur Colliery/O6	6500
232	Sijua	Bansdeopur	New Colony /O3	5000
233	Sijua	Kankanee	5 Pit Area/01	3500
234	Sijua	Kankanee	7 Pit Area/O3	40000
235	Sijua	Kankanee	Hanuman Nagar/O4	75000
236	Sijua	Kankanee	Loyabad Station/O5	5400
237	Sijua	Kankanee	Railway Quarters/O6	1500
238	Sijua	Kankanee	Sendra 7 Pit/O7	15000
239	Sijua	Loyabad	3 No. Area/O8	5000
240	Sijua	Loyabad	6 Pit Area/10	96000
241	Sijua	Loyabad	Central Hospital/O6	7500
242	Sijua	Loyabad	Coke Plant-1/14	26000
243	Sijua	Loyabad	Coke Plant-2/15	38400
244	Sijua	Loyabad	Idgah Area/12	12800
245	Sijua	Loyabad	Kankanee Basti/O5	22000
246	Sijua	Loyabad	Madanadih/O3	5000

247	Siiua	Lovabad	New Drift/18	56000
248	Sijua	Lovabad	Pootkee Barrier/19	17600
249	Sijua	Lovabad	Pootkee Colony/20	72000
250	Sijua	Lovabad	Power House-2/17	35000
251	Sijua	Mudidih	6/10 Colony/Q2	3350
252	Sijua	Mudidih	22/12 Colony/Q5	35900
253	Sijua	Mudidih	Jogta Upper/14	14100
254	Sijua	Mudidih	Kairo Bagan/10	6700
255	Sijua	Sendra Bansiora	10 No. Colony/05	1000
256	Sijua	Sendra Bansiora	19 No. Colony/19	750
257	Siiua	Sendra Bansiora	21 No. Colony/21	625
258	Sijua	Sendra Bansjora	6 Pit Colony/O4	5110
259	Sijua	Sendra Bansjora	6 Pit Colony/O8	2160
260	Sijua	Sendra Bansjora	6 Pit colony/Past/O9	600
261	Sijua	Sendra Bansjora	Bansjora Village/16	4792
262	Sijua	Sendra Bansjora	OCP Office/O2	13200
263	Sijua	Sendra Bansjora	Office Colony/O6	4600
264	Sijua	Tetulmari	Beldari Bastee/ 11	3000
265	Sijua	Tetulmari	Chandore Bastee ./08	3000
266	Sijua	Tetulmari	Chandore West No.1/17	900
267	Sijua	Tetulmari	Chandore West No.2/18	675
268	Sijua	Tetulmari	Dalahi Basti & BCCL Quarters/O1	95890
269	Sijua	Tetulmari	Hutments of RNS/15	2026
270	Sijua	Tetulmari	Malla Dhowrah/O5	18000
271	Sijua	Tetulmari	Naya More Basti/13	2400
272	Sijua	Tetulmari	Nimia Dhowra/O7	836
273	Sijua	Tetulmari	Pondihdih Bastee/ 10	16200
274	Sijua	Tetulmari	Substation RNS/16	660
275	Sijua	Tetulmari	Workshop/O6	18000
276	W. Jharia	Bhatdih	Belakhnda & Bhatdih Bastee/O5	120400
277	W. Jharia	Bhatdih	Colliery Quarters/O4	400000
278	W. Jharia	Bhatdih	Tentulia & Balakhanda Bastee/O2	76400
279	W. Jharia	Bhurungia	Bhurungia Village/O1	309000
280	W. Jharia	Hantodih	Hantoodih Village/O2	520600
281	W. Jharia	Lohapatti	Chhatatand/O5	31800
282	W. Jharia	Lohapatti	Jamdiha Bastee/O7	139600
283	W. Jharia	Lohapatti	Kashiatand/O2	64800
284	W. Jharia	Lohapatti	Lohapatti Bastee/O1	65200
285	W. Jharia	Moonidih	Baludih/Dobray Village/O2	388500
286	W. Jharia	Moonidih	Dhobani Bastee/O4	384600
287	W. Jharia	Moonidih	Jatudih Colony & Village/O1	264000
288	W. Jharia	Moonidih	Moonidih Basti/O5	244600
289	W. Jharia	Moonidih	Moonidih Colony/O3	828000
290	W. Jharia	Murulidih (closed)	Mohuda Bastee/O2	145600
291	W. Jharia	Murulidih (Closed)	Murulidih Colliery Qtrs./O3	308000
292	W. Jharia	Murulidih 20/21 Pit	Bulbazar/O5	76000
293	W. Jharia	Murulidih 20/21 Pit	Chitrutand Basti/O1	27700
294	W. Jharia	Pandugora	Lakhanpur/O2	59600
295	W. Jharia	Pandugora	Padugora/O1	24600
Sub Total				13650508
Total ( Phase-I & Phase-II )				25695199

# 7.10 Action Plan for Rehabilitation & Resettlement

Area wise, Colliery wise, site wise and phase wise no. of houses to be rehabilitated along with their land and indicative fund requirement has been shown in **Table no-7**.

# 7.11 **Pre-Implementation Activities:**

Before commencement of actual implementation of resettlement, the following activities are to be completed.

- i. Demographic Survey of affected population with details of houses and land including valuation.
- ii. Identification & Acquisition of land for Phase-I township
- iii. Tendering and awarding of work for land survey and township planning
- iv. Surveying of land
- v. Township planning
- vi. Tendering and award of work for construction of houses

The pre-implementation activities will be completed within 2 years period and the estimated cost is Rs. 163.79. The detail of cost is given in **Table 8** 

#### Table-8

# Fund requirement for Pre implementation Activities

SI.	Activities	1 <sup>st</sup> year	2 <sup>nd</sup>	Total (Rs.
no			year	Crs)
1	Socio – Economic survey, Valuation survey and	0.70	0.71	1.41
	other survey for Non-BCCL houses.			
2	Land acquisition BCCL & Non BCCL houses for	69.42	69.41	138.83
	Phase-I (860 ha)			
4.	Contingency (3%) & supervision charges (5%) for	5.55	5.56	11.11
	land acquisition			
3	Township planning and preparation of	6.22	6.22	12.44
	Rehabilitation scheme for Phase -I			
	Total	81.89	81.90	163.79

# 7.12 Identification of Resettlement sites & their description:

Total 79159 Nos. of affected houses are proposed to be resettled in Satellite Township with all basic amenities and infra -structural facilities in non-coal bearing areas along the fringe of JCF. In each township, about 6000houses for BCCL and 12500 houses for Non BCCL are proposed to be constructed in different sector. The resettlement sites will be selected

preferably where Govt. land/BCCL land is available. Tentative resettlement mouzas are as follows:

- Belgoira, Amagarha, Shabaigara, Palani, Sapta, Fakiradih, Manoharpur, Nagarikalan, Tilatanr, Pokrabara, Kolipur, Pochari, Darida, Barrakunda, Mahanpur, Dahibari, Pathbari etc.

Resettlement sites should be finalised based on the availability of land during implementation of the project. The tentative satellite townships are shown in Drg. no.4. These sites are tentative and actual location can be decided only after availability of land is finalized by State Govt.

# 7.13 Location wise shifting from rehabilitation site to Resettlement Sites:

		Table- 9		
Administrative Areas	Resettlement Township			
	Township no	Mouzas		
BASTACOLA	1A (NON BCCL)	BELGORIA		
KUSTORE		AMAGARHA(P)		
LODNA		SABAIGARA		
E.JHARIA				
BASTACOLA	2A (BCCL)	PALANI (P)		
KUSTORE				
LODNA				
E.JHARIA				
POOTKEE BALIHARI				
KUSTORE		SAPTA		
POOTKEE BALIHARI	2B (NON BCCL)	FAKIRADIH (P)		
	3A (BCCL)	NAGRIKALAN(P)		
	3B (NON-BCCE)	215 (P)		
KATRAS		215(1)		
SIJUA				
KATRAS	4A (BCCL)	POKRBERA(P)		
GOVINDPUR		KOLIPUR(P)		
BARORA		POCHARI(P)		
BLOCK-II		DARIDA(P)		
W. JHARIA				
KATRAS	4B (NON-BCCL)	BAMAKUNDA(P)		
GOVINDPUR		JURSABAD		
BARORA		KHARYA(P)		
BLOCK-II		MAHANPUR(P)		
W. JHARIA		DAMODARPUR(P)		
C.V. AREA	5A & 5B (BCCL & NON-BCCL)	DAHIBARI		
		PATHBARI		


# 7.14 Organisation:

It is proposed that rehabilitation & resettlement of BCCL houses will be the responsibility of BCCL whereas the same for Non BCCL houses including the encroachers will be the responsibility of concerned State Govt.

For rehabilitation of BCCL houses, it is proposed to have a separate R&R division headed by an official of Chief General Manager rank at Company HQ The responsibility of the R&R division at Company (HQ) level would be as under

- Identification & Acquisition of land in association with state govt. and surveying for the BCCL houses
- Preparation of tender documents, tendering and award of work for surveying of land and township planning.
- Preparation of town ship plans through external agencies and approval of cost estimates of townships
- Arrangement and disbursement of fund to different implementing agencies
- Monitoring and supervision of various works under implementation

For rehabilitation of Non-BCCL houses (Pvt. & Encroachers), it is proposed that a suitable organisational set up be formed by State Govt. for implementation of rehabilitation plan under the Master Plan

# 7.15 Indicative Fund Requirement for Rehabilitation Projects:

Total fund requirement for rehabilitation Projects has been estimated at Rs 5297.07 Crs. including fund for pre implementation activities. This also includes 3% contingency and 5% supervision charges. The supervision charges will cover the expenditure (Revenue, furniture & fittings, vehicle, office equipment etc) of separate organization at BCCL and state Govt.

Rehabilitation project is proposed to be implemented in 12 years time (including 2 years of pre-implementation activities}. During this period further sites may become endangered which shall be rehabilitated with same R&R package as proposed in the Master Plan. This may require additional fund.

The year wise capital requirement has been shown in **Table -10** 

# TABLE -10

# YEAR-WISE INDICATIVE CAPITAL REQUIREMENT FOR REHABILITATION

PHASE	YEAR	INDICATIVE FUND (Rs.Crs)
A) Pre-implementation Phase		
	1 <sup>st</sup>	81.89
	2 <sup>nd</sup>	81.90
Total Pre-Implementation Phase		163.79
Implementation Phase		
Phase-I	3 <sup>rd</sup>	448.66
	4th	509.75
	5th	509.75
	6th	515.05
	7th	515.05
B) Sub Total		2498.26
Phase-I		
Phase-II	8th	423.71
	9th	423.71
	10th	423.71
	11th	423.71
	12th	423.71
C) Sub Total Phase-II		2118.55
Grand total (A+B+C)		4780.60

A) Pre Implementation			
Activities			
BCCL houses	34.75		
Non BCCL houses	129.04		
Sub Total ( A)	163.79		
B) Phase-I			
BCCL houses	478.95		
Non BCCL houses	2019.32		
Sub Total (B)	2498.27		
C) Phase-II			
BCCL houses	554.75		
Non BCCL houses	1563.80		
Sub Total (C)	2118.55		
Grand Total (A+B+C)	4780.60		
BCCL houses (A+B+C)	1068.45		
Non BCCL houses (A+B+C)	3712.15		

Phase wise Fund requirement for BCCL and Non BCCL Houses (Rs. Crs)

# **DIVERSION OF RAILS AND MAJOR ROADS**



## 8.1 Introduction

"BCCL vide letter no. GM(Env)/F-/06/238, dated 22<sup>nd</sup> April,2006, suggested that diversion of railway lines and NH 32 road passing through coal bearing areas of JCF should also be included in the Master Plan'2006.

The Master Plan envisages dealing with fire, subsidence and rehabilitation in the unstable in-habitated areas only in the leasehold of BCCL. However protection measures against fire affecting the rail and jores have been considered under dealing with fire in this Master Plan.

Diversion of rails and roads passing over the coal bearing areas are affected by fire and subsidence at many places and may further be affected. As the diversion will affect the operation of other coal producing companies like TISCO & SAIL, in addition to other Industries operating in the coalfield, private parties, State Govt. and Railway, a joint decision should be taken involving all the above stake holders.

### 8.2 Brief of Railway lines and Roads proposed for diversion

A number of rail heads passes through JCF. Some of the rail heads are affected by fire at different locations. A brief account of rail heads affected/likely to be by fire in BCCL is as under:

#### Adra- Santhaldih-Bhaga-Gomoh Rly. Line (S.E Rly)

The above Rly line is affected by active surface & underground fire of Patherdih, Sudamdih and Bhowra collieries between Sudamdih station and Bhowra halt.. It is also affected by active fire of Phularitand and Block-II OCP between Kharkharee and Khanoodih station.

XVI seam fire of Pootkee/Gopalichauk Colliery exists on the south side of the above railway line which may affect the line in future.

# Patherdih-Bhojudih Link Line (S.E Rly) between Patherdih and Sudamdih Stations (Part of Dhanbad - Patherdih Railway line)

The east ward advance of XIVA/XIV seam fire in the old abandoned quarry of Patherdih Colliery mal affect the line in future.

#### Dhanbad-Chandrapura (DC) Rly line (S.E Rly)

Dhanbad Chandrapura is likely to be affected by fires of Bassuria and sendra Bansjora collieries in future.

# Dhanbad-Kusunda-Tetulmari link line (S.E Rly)

The above link line is already affected by fire of East Bassuria colliery and it is likely to be affected by the fires of Bassuria Colliery.

## ROAD :

National Highway-32 passing over the coal bearing areas of JCF is affected due to fire of Kenduadih colliery between Kedua and Kirkend and District Board road passing from Jharia to Kendua is endangered due to fire of Alkusa colliery near Kendua Police Station.

# 8.3 Proposal

The diversion of rail and road requires accurate survey of the alternative routes, assessment of alternative railway sidings will be affected due to diversion, quantification of benefits, detail layout planning for diversion by expert agencies like RITES. The above activities are likely to take about two years time.

Therefore, in this Master Plan, a lump sum provision of Rs. 20.00 Crs as advance action has been kept for surveying and planning only. The detail proposal for diversion may be taken up as a separate Master Plan in future.

## 9.0 Total Indicative fund requirement for Master Plan

The total indicative capital required to implement the Master Plan, for Dealing with Fires, Subsidence Control of Inhabitated Areas and Rehabilitation of unstable-Uncontrollable subsidence –prone Inhabitated areas is estimated at **Rs. 7112.11** Crores. Year-wise requirement of funds for each type of jobs is shown in **Table –11** 

## **TABLE – 11**

## YEAR-WISE CAPITAL REQUIREMENT FOR MASTER PLAN

Phase	Year	Fire	Rehab.	Diversion	Total
		Projects	Projects	of	
				Rail/road	
Pre-impler	nentation				
	1st	2.69	81.89	10.00	94.58
	2nd	2.24	81.90	10.00	94.14
Sub-total		4.93	163.79	20.00	188.72
Implementation period		ł			
Phase -I	3rd	191.52	448.66		640.18
	4th	211.51	509.75		721.26
	5th	267.76	509.75		777.51
	6th	216.36	515.05		731.41
	7th	214.04	515.05		729.09
Sub Total Phase I		1101.19	2498.26		3599.45
Phase-II	8th	262.68	423.71		686.39
	9th	259.11	423.71		682.82
	10th	250.67	423.71		674.38
	11th	252.43	423.71		676.14
	12th	180.50	423.71		604.21
Sub Total	Phase -ll	1205.38	2118.55		3323.45
Grand Tot	al	2311.50	4780.60	20.00	7112.11

# Rs. In Crs.

# 10.0 SOURCE OF FUNDING

Committee of Secretaries in its meeting held on 18.03.03 in the committee room of the cabinet secretariat, Rashtrapati Bhawan, New Delhi directed that the Ministry of Coal would examine the extent to which funds could be mobilized by (a) enhancing the cess on coal, and (b) utilising a portion of the profits of BCCL and ECL. Any shortfall would be made good by suitably enhancing the Plan allocation.

Accordingly the following funding arrangement for implementation of Master Plan has been decided by Ministry of Coal

SL. No.	Source	Amount in Rs. Crores / Annum
1	The Coal Cess (CCDA) i.e. Stowing Excise Duty has been increased to Rs. 10/- tonne	120
2	CIL fund as Rs. 6/ tonne	165
3	EMSC provision	30
4	Unspent fund lying with MOC @ Rs. 80.00 Crs. per year for 5 years.	80
	TOTAL	395

The above fund of Rs. 395 Crs / year was adequate to implement the activities under Master Plan for a period of 20 years for ECL & BCCL. After considering the recommendations of MOC and Planning Commission by reducing the time period from 20 years to 10 years (excluding 2 years of Pre-Implementation), the corresponding yearly fund requirement for BCCL only would vary from Rs 604.21 Crs to Rs. 777.71 Crs as total fund requirement has been estimated at Rs. 7112.11 Crs.

Accordingly, MOC may take necessary steps to enhance the availability of fund to meet the requirements both for ECL and BCCL for completion of all activities under this Master Plan.