

## **CHASNALLA COLLIERY**

### **Location**

Chasnalla Colliery of Collieries Division, M/s Steel Authority of India Ltd is located in the Eastern part of the Jharia Coalfield, District Dhanbad, Jharkhand and covers an area of about 3.5 sq.km. It is situated at about 20km from Dhanbad Railway Station. The Chasnalla mine concession lies between latitudes 23°40'03":23°38'33"N and longitude 86°26'52":86°27'57"E. It is covered by Survey of India Survey Sheet Nos. 88, 89, 94 & 95 (RF 1:10,000) of Topo Sheet No. 731/6 and falls within the sheet no. 8 of the geological map (4" = 1 mile) published by the Geological Survey of India.

The property is bounded by Tasra Colliery, which is now part of SAIL property after transfer of Tasra Coal Block to SAIL in 1995, to its east and north-east and Sudamdih and Pathardih collieries of BCCL delineate the western limit. The southern bank of Damodar River (old course) forms the southern boundary of the colliery. It is situated at about 20 km from Dhanbad Railway Station.

### **Background**

Chasnalla Colliery has been in operation prior to nationalization and operation is still continuing. Chasnalla colliery was first started in the year 1938 as a U/G mines. There are two Mouzas under Chasnalla Colliery viz. Chasnalla Mouza (Area: 266.80 ha) & Het Kandra Mouza (Area: 81.38 ha). Both these Mouzas have been granted lease for 750 years w.e.f. 27/04/1938.

The Colliery has been worked since long in past through a number of inclines and Quarries by earlier Mine Owners up to a shallow depth. The difficult geological conditions, particularly steep inclination of the seam did not permit operation in depths. Mine was abandoned in the year 1948 and the developed workings of 13/14 seam, which were later being worked, got flooded with water in the course of operations.

During late 1950s, IISCO management took over the property of Chasnalla Colliery and a proposal was concurred for extraction of the virgin part of the property after leaving an adequate barrier, against water-logged old workings which were earlier flooded with water on the rise side. Initial exploration was conducted in 1959-62 by M/s International Construction Company Limited, London. Based on this exploration, planning was envisaged for exploitation of XIII/XIV and other underlying seams by sinking three shafts, two of them located in the West named as Up-cast & Down-cast Shaft and one located in the east named as East Mine Shaft. The coal extraction was planned by horizon system of u/g mining, and accordingly horizon at (-) 30MRL and (-) 149MRL known as Ist and IInd horizon were developed.

Shaft sinking of the deep mine started in the year 1965 and was completed in the year 1969. Production started from Deep Mine in early 1970s. However disaster struck on 27th Dec'1975 inundating the underground workings and resulting in the death of 375 persons. Due to tragic disaster, all mining activities of Deep Mine came to stand still thereafter.

The abrupt closure of Deep Mine forced the Management to switch over to the option of extracting combined 13/14 seam, 24 m thick and gradient of 38° by opencast Method. The seam in the Rise & upper portion was developed and partially worked earlier through manual opencast. A serious effort at mining by opencast method was made only after the disaster in 1975.

The reconstruction of Deep Mine started in the year 1990 and production started in the year 1992. The balance present geological reserve (as on 31-03-2014) of Deep mine is about 14.7 Million Tonnes. In order to make up the shortfall of production, IISCO Management contemplated the possibility of working of upper seams up-to 16 seam through Inclines.

CMPDI engaged as a consultant of IISCO, submitted the feasibility report on exploitation of the upper seams in 1979, based on the exploration carried out between 1959 & 1962. The Upper Seam U/G mine was started in the year 1982 with the objective to augment the production of coking coal from

Chasnalla Colliery. Mine plan envisaged to achieve a targeted production of 1000 tpd. Due to geo-mining condition like high gradient of seams, and manual long wall mining, targeted production could never be achieved since inception of the mine. Production from Upper Seam Project started in the year 1986 and present balance geological reserve is approximately 6.88 Million Tonne (as on 31-03-2014).

Approximately 9.38 Million Tonnes of coal has already been extracted through opencast method in East Quarry till 31-03-2014. The present strike length is 1.35 km and the area is approx 0.54 Sq Km the present mineable reserve of east quarry is approx 1.02 Million Tonne.

During preparation of Mining Plan of Tasra Opencast project in 2009, as per Ministry of Coal guidelines, for conservation point & for avoiding loss of coal in barriers, area of East Quarry has now been included in the approved Mining Plan Project Area of Tasra Opencast Project.

In the 2003, West quarry was started by removal of old dumps and production started coming from the year 2004. Reserve as per permission up to depth of 76m RL is 1.2 MT of coal.

SAIL is also having a pit head coal washery of installed throughput capacity 2.04 MTPA in Chasnalla. However, due to deterioration in ash percentage and change in size fraction of coal, the rated capacity could not be achieved and the washery has operated at a maximum coal throughput of 1.326 Mtpa in the near past.

### **Mining method:**

#### a) Deep mine:

Mine has been developed through two vertical shafts i.e UC & DC. The two longwall panels in XIII seam are being operated. De-pillaring is being done by Jankowice Longwall method (manual) of mining with hydraulic sand stowing. Production of coal by drilling and blasting in the face, major portion of basted coal fall on chain conveyor and remaining coal is shovelled on to the face conveyor in face, face conveyor discharge coal into chimney, with gravity coal is transported in the chimney through coal chute and loaded into mine cars at chimney bottom. Loaded mine cars are hauled up to pit bottom by 12 Te battery locomotives and raised to surface through 9 Te capacity skip fitted in UC and transported to washery through belt conveyor.

#### b) Upper Seam:

Mine has been developed through inclines. Manual longwall faces are being operated. De-pillaring is being done by Jankowice Longwall method of mining with hydraulic sand stowing. Production of coal by drilling and blasting in the face, blasted coal loaded into tubs by shovelling and in turn tubs unloaded into chimney, by gravity coal is transported in the chimney through coal chute and loaded into mine cars at chimney bottom. Loaded mine cars are hauled up to pit bottom by 4 Te battery locomotives and mine cars are unloaded in the bunker and through inclined skips coal is transported to surface

#### c) West Quarry:

Quarry is being operated by opencast method deploying shovel- dumper combination. The pillars which were developed by underground methods in past are being exploited through opencast mining. Some of the pillars are under the influence of fire.

**Past 3 years production (Coking Coal) in Ton:**

Existing mines	2011-12	2012-13	2013-14	ABP 2014-15
Upper Seam	11810	10400	83050	110000
Deep Mine	60705	54694	37466	77000
West Quarry	265685	54694	37466	297000
East quarry	40459	198359	177518	330000
Total	378659	318147	335500	814000

**Present Status:**

Chasnalla Coal Complex basically comprised of 2 opencast projects (West Quarry & East Quarry) and 2 underground Projects (Deep Mines & Upper Seam Project, both being degree three gassy mines) apart from a centralized Coal Washery for coal Preparation.

Presently Deep Mine, Upper Seam, West Quarry & Washery are in operation. Area of East Quarry has now been included in approved Mining Plan Project Area of Tasra Opencast Project. A Mining Plan of a total colliery capacity of 1.5 MTPA is under preparation.

Out of the original Lease Area of Chasnalla Mine of about 348.18 Ha, about 243.50 Ha has become part of approved Mining Plan Project Area of Tasra Opencast Project which incidentally encompasses Deep Mine, Upper Seam, part of West Quarry & the existing Washery.

Now for taking Environmental Clearance for Chasnalla Colliery, an area of about 230.88 Ha has been proposed as Chasnalla Area covering Deep Mine, Upper Seam, part of West Quarry & the existing Washery, by including part of Tasra Project Area into Chasnalla Area leaving aside Tasra Mine Pit Area intact.

Proposed Chasnalla Mine Area = 230.88 Ha

Area of washery = Approx 16.5 ha

(Existing- 12.5 Ha; New-4.0 Ha)

N.B. - Existing & proposed new washery area falls under the lease hold area of Chasnalla.

Additionally, it has been proposed to upgrade the capacity of existing coal washery to 2.8 MTPA and to setup a new 1.2 MTPA Coking Coal Washery at Chasnalla. Existing washery as well as proposed new washery area falls under the lease hold area of Chasnalla Colliery.

**Background of the Company**

Steel Authority of India Limited is one of the top steel producers in the world with a turnover of more than Rs. 50,000 Crores. The company is among the seven Maharatnas of the country's Central Public Sector Enterprises. SAIL has five integrated steel plants, three special plants, and one subsidiary in different parts of the country.

SAIL traces its origin to the formative years of an emerging nation - India. After independence the builders of modern India worked with a vision - to lay the infrastructure for rapid industrialisation of the country. The steel sector was to propel the economic growth. Hindustan Steel Private Limited was set up on January 19, 1954.

Hindustan Steel (HSL) was initially designed to manage only one plant that was coming up at Rourkela. For Bhilai and Durgapur Steel Plants, the preliminary work was done by the Iron and Steel Ministry. From April 1957, the supervision and control of these two steel plants were also transferred to Hindustan Steel.

The Ministry of Steel and Mines drafted a policy statement to evolve a new model for managing industry. The policy statement was presented to the Parliament on December 2, 1972. On this basis the concept of creating a holding company to manage inputs and outputs under one umbrella was mooted. This led to the formation of Steel Authority of India Ltd. The company, incorporated on January 24, 1973 with an authorized capital of Rs. 2000 crore, was made responsible for managing five integrated steel plants at Bhilai, Bokaro, Durgapur, Rourkela and Burnpur, the Alloy Steel Plant and the Salem Steel Plant. In 1978 SAIL was restructured as an operating company.

Since its inception, SAIL has been instrumental in laying a sound infrastructure for the industrial development of the country. Besides, it has immensely contributed to the development of technical and managerial expertise. It has triggered the secondary and tertiary waves of economic growth by continuously providing the inputs for the consuming industry.

### **Modernisation & Expansion**

SAIL, is in the process of modernizing and expanding its production units, raw material resources and other facilities to maintain its dominant position in the Indian steel market. The objective is to enhance the production capacity to 23.46 MTPA of Hot Metal from the installed production capacity of 13.8 MTPA.

Coal produced from Chasnalla & Jitpur coal Mines is sent to SAIL Steel Plants after being washed at Chasnalla coal washery. The present requirement and supply of coking coal to SAIL steel plants are as under:-

Coking coal	Requirement (in Million Ton)	Indigenous supply	Imported coal
Before expansion	13.30	4.00 (30%)	9.30 (70%)

Out of above, about 0.5-0.60 mill tones of prime coking coal is available from own sources of SAIL i.e. from Chasnalla & Jitpur collieries. The balance quantities of about 3.5 mill tons of coal is being supplied from CIL sources.

Steel is one of the core industries of the country. It is a critical input to other industries including construction industry, automobiles sector, railways & hosts of other industries. One of the important raw materials for steel making is coking coal of appropriate quality. Coking coal production in India has been stagnating for the past few years. The short supply/availability of coking coal was further accentuated during last couple of years when the market price of coal touched an all-time high and good quality coking coal was in short supply in world market. SAIL is the major consumer as well as importer of coking coal in India. SAIL's requirement of coking coal is likely to increase to 21 million tons from the present level of consumption with implementation of the growth plan.

Development of Chasnalla Colliery Project is, therefore an imperative for SAIL to augment indigenous coking coal availability.