Project title: Advice for Preparation of Strata Control and Monitoring Plan (SCAMP) for the Development of XI Seam of Jamadoba Colliery, Tata Steel Limited **Project No.:** CNP/4894/2019-20	**Executive Summary:** The virgin patches of the XI seam of Jamadoba colliery, Tata Steel Limited are to be developed by the Continuous Miner (CM) technology. The thickness of the seam is varied from 5.47-9.55m as per borehole Nos. UG/48/96 and UG/50/97. The depth of covers of the XI seam in the study area is approximately 612.26m to 767.11m. The average thickness and depth of cover of the seam are 7.55m and 690m respectively. The immediate roof consists of shale. In some portion of the mine, the coal is left in the roof. The adjusted RMRs of the shale roof and the coal roof are 43.92 and 35.28 respectively. The development of the seam is to be carried out by the CM along the roof with a maximum height and width of the gallery of 3.5m and 5.5m respectively. The management of Tata Steel Limited requested Director, CSIR-CIMFR, Dhanbad for advice to prepare the strata control and monitoring plan (SCAMP) for the development of XI seam. Accordingly, the study has been undertaken for preparation of SCAMP including stability analysis of the surrounding rock mass during the development of the XI seam by a low capacity CM. Three-dimensional elasto-plastic numerical modelling has been carried out to understand the stress regimes and the failure characteristics of the surrounding rock mass during the development. The modelling is done as per the lithology, the physico-mechanical properties and the geomining conditions provided by the mine management. The unavailable properties of some of the parameters are assumed based on the experience and engineering judgement. It is found from the study that the pillar of size 60m x 60m (centre to centre) has the safety factor more than 2 which can be considered as long-term stable. The support system is designed based on the rock load height, which is equal to the yielded height of the roof rock as obtained from the numerical modelling. Full column resin grouted roof bolts and cement grouted cable bolts are considered for supporting the roof. The

	anchorage strengths of both full column resin grouted roof bolt (1.8m grouted length) and cement grouted cable bolts of 6.0m long are considered as 19t. The safety factor of the support system is kept as 2 and more. Considering the CM operation, the side supports are designed with the cut-able bolts. The strata control and monitoring plan is suggested with suitable geotechnical instruments. The details of the above are discussed in the respective sections of this report.