Project title: Advice on study for depillaring of 124LW panel by Continuous Miner (CM) Technology in East Block of Churcha Mine (RO), Baikunthpur Area, SECL **Project No.:** CNP/4928/2019-20	**Executive Summary:** Churcha mine (RO), Baikunthpur Area (SECL) which subsumed two operating adjacent mines, namely Churcha colliery and Churcha West colliery after amalgamation, has seven numbers of seams among which the seam number V is the only workable seam of average thickness 3.8m. Presently, the mine management has proposed to extract 124L West panel in the East Block of Churcha mine (RO) where the development of pillars is going on with the deployment of Continuous Miner (CM). The operating depth of 124LW panel varies between 412-426m. A fault having 20m throw is present at the western part of the boundary of the panel. As per the borehole data (BHMESC 46) a competent and strong dolerite sill (127.89m thick) is found to exist between 162.11m - 290.0m depth in the mine block area. The immediate roof is composed of a small layer of shale having thickness 0.1m to 1.0m, which gets separated on exposure. A massive competent sandstone roof exists up to the floor of dolerite sill but above the said shale layer. Kushmaha Dam, an important surface feature, is present at the southern side of the proposed depillaring panel 124LW. The Senior General Manager, GMMCO Limited, requested Director, CSIR-CIMFR, Dhanbad, vide E-mail dated 09/08/2019 for scientific study/advice for depillaring of 124LW panel by CM Technology by way of a comprehensive study. 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 depillaring operations. The modelling is done as per the lithology, the physico-mechanical properties and the geo-mining details provided by M/s GMMCO Ltd., the properties as per the CSIR-CIMFR test reports data and from various other sources, like literature, earlier reports etc. Some of the parameters are taken into account, based on the experience and engineering judgments. The straight line of extraction with the “Split & Slices” caving method of mining using CM technology is

	recommended to be adopted for depillaring. An innovative '**T-Split**' extraction methodology by CM deployment has been proposed where there would be one level split with fender size 10.6m x 42m (corner to corner towards dip) and one dip-rise split creating two fenders of equal sizes as 18.25m x 27.9m (corner to corner). The width of the split gallery should not be more than 5.5m. The slices should be driven at a distance of 5m from the dip-side corner of the pillar. The width and length of the slice should not be more than 5.5m and 12m respectively. A rib of not less than 2.5m width is to be kept between two consecutive slices during extraction. The support system in the split gallery and 3-way junction is designed with full column resin grouted roof bolts of at least 1.8m grouted length and of 22mm diameter. Two rows of 2.4m long roof bolts having 6 nos. of bolts in each row are to be used as breaker lines. Installation and testing of bolts in all places should be done as per DGMS norms/guidelines. Each resin grouted roof bolts shall be kept tightened against the roof by a domed shaped washer and bearing plate. The plate shall be tightened by a nut as per the DGMS norms. The strata control and monitoring plan is suggested with a suite of geotechnical instruments. The details of the above are discussed in the respective sections of this report.