

**Land Restoration / Reclamation Monitoring of Rajmahal
OCP of ECL Based on Satellite Data for the Year- 2008**



CMPDI
A Miniratna Company

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**Remote Sensing Cell
Geomatics Division
CMPDI, Ranchi**

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1.0 Background

- 1.1 All human activities are based on the land which is most scarce natural resource in our country. Per capita land availability in India is the lowest owing to high population density and less land mass. Out of total 329 million hectare (mha) land mass of the country, coal mining is limited to only on 0.10% (0.36mha) area. As per XI Plan, to meet the energy demand of the country, coal production would be raised to 680 million tonnes by the end of the year 2011-12 for which about 40,000 hectare of land would have to be acquired for coal mining projects. It has been envisaged that 85% coal production would be from opencast mines, which causes land degradation due to ground breaking. There is an urgent need to reclaim and restore the mined out land for its productive use for sustainable development of the coal mining. This will not only mitigate environmental degradation, but would also enable coal companies to offer the restored lands to displaced families which would help in creating a more congenial environment for land acquisition in future.
- 1.2 Keeping above in view, Coal India Ltd. requested Central Mine Planning & Design Institute (CMPDI), Ranchi who has well equipped remote sensing facilities and capabilities to develop an effective system of surveillance for land reclamation/restoration for all the opencast coal mines with production of more than 5 million cu. m. per annum (coal + OB taken together) based remote sensing satellite data, regularly on annual basis for sustainable development of mining operation within command area of CIL and its subsidiaries. The annual land reclamation/restoration status report of all such mines to be put on the website of CIL, (www.coalindia.nic.in), CMPDI (www.cmpdi.co.in) and the concerned coal companies in public domain. Detail report to be submitted to State Pollution Control Board and MoEF and concerned CIL's subsidiaries. Such monitoring would not only facilitate in taking timely mitigation measures against environmental degradation,

but would also enable coal companies to utilize the reclaimed land for larger socio-economic benefits in a planned way.

- 1.3 CMPDI undertook the above assignment, and the present report is embodying the finding of the study in nutshell for the year 2008 for Rajmahal Opencast Project of Eastern Coalfields Limited (ECL).

2.0 Objective

Objective of the land reclamation/restoration monitoring is to assess the area of backfilled, plantation, OB dumps, social forestry, active mining area, settlements and water bodies, distribution of wasteland, agricultural land and forest land in the leasehold area of the project. This is an important step taken up for assessing the progressive status of mined land reclamation and for taking up remedial measures, if any, required for environmental protection.

3.0 Work Plan

- 3.1 One opencast project of ECL producing 5 million cubic m. (Coal + OB together) during the year 2008 was taken up for land restoration / reclamation monitoring based on the *RESOURCESAT-1* satellite data, land reclamation /mine closure monitoring was carried out using ERDAS Imaging digital image processing s/w on GIS platform. Land reclamation monitoring will be carried out regularly on annual basis to assess the progressive status of land restoration / reclamation in the above opencast mine. The report of this study has been uploaded on the website of CMPDI, CIL & ECL in public domain.

4.0 Land Reclamation Status in Eastern Coalfields Ltd.

- 4.1** Rajmahal OCP was taken up for land reclamation monitoring during the year 2008. Baseline data was generated for the mine's leasehold area. Land use map derived from satellite data are shown in Plate 4.1. Status of land reclamation is given in Fig.4.1.
- 4.2** Study based on the data of 2008 reveals that plantation in Rajmahal Opencast Project covers an area of about 1.49 Sq.Km. (33.11 %).
- 4.3** Study also reveals that 44.44% of mined out area in the Rajmahal Opencast Project have been reclaimed by ECL and balance 55.55% area is under active mining zone.
- 4.4** Area of each land use class present in the leasehold of the Rajmahal Opencast Project is shown in the Table - 4.1. Land use maps derived from satellite data are shown in Plate 4.1.

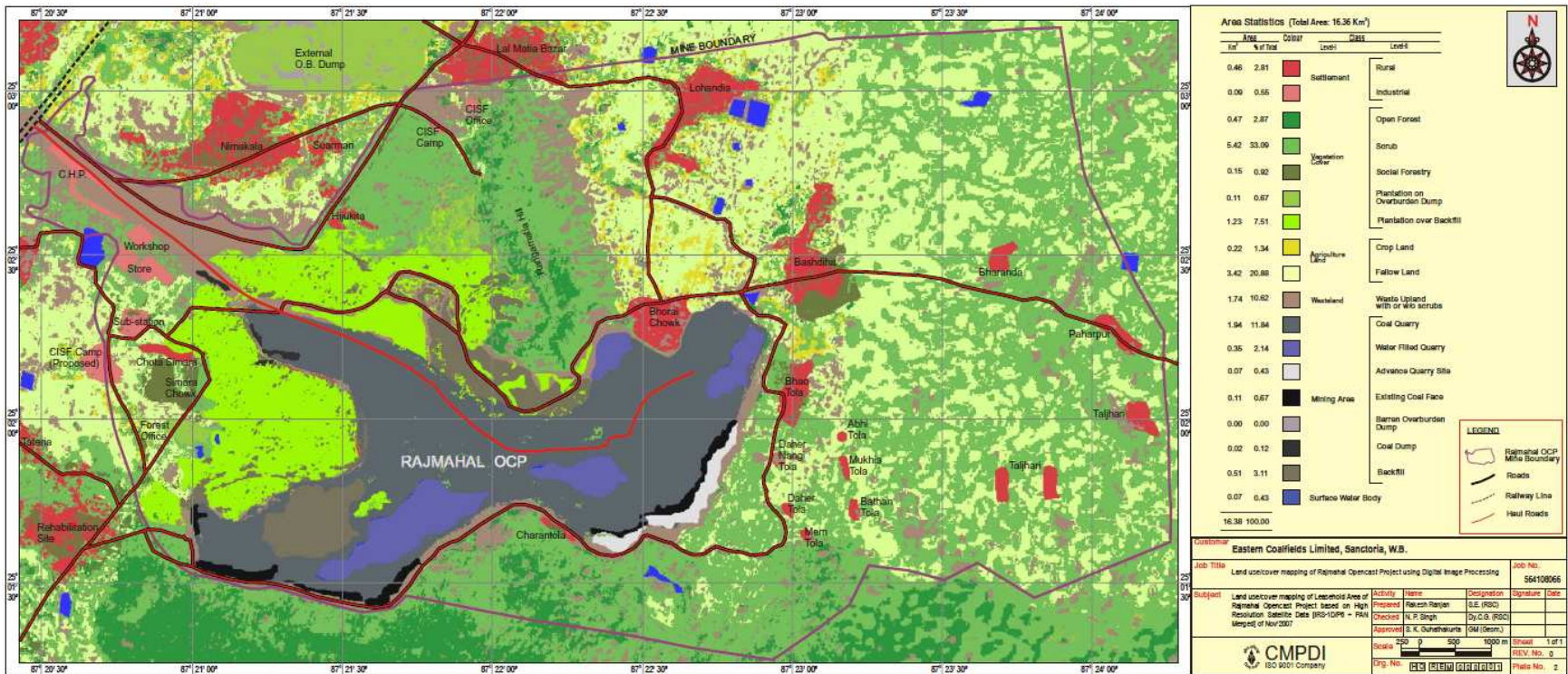


Plate 4.1

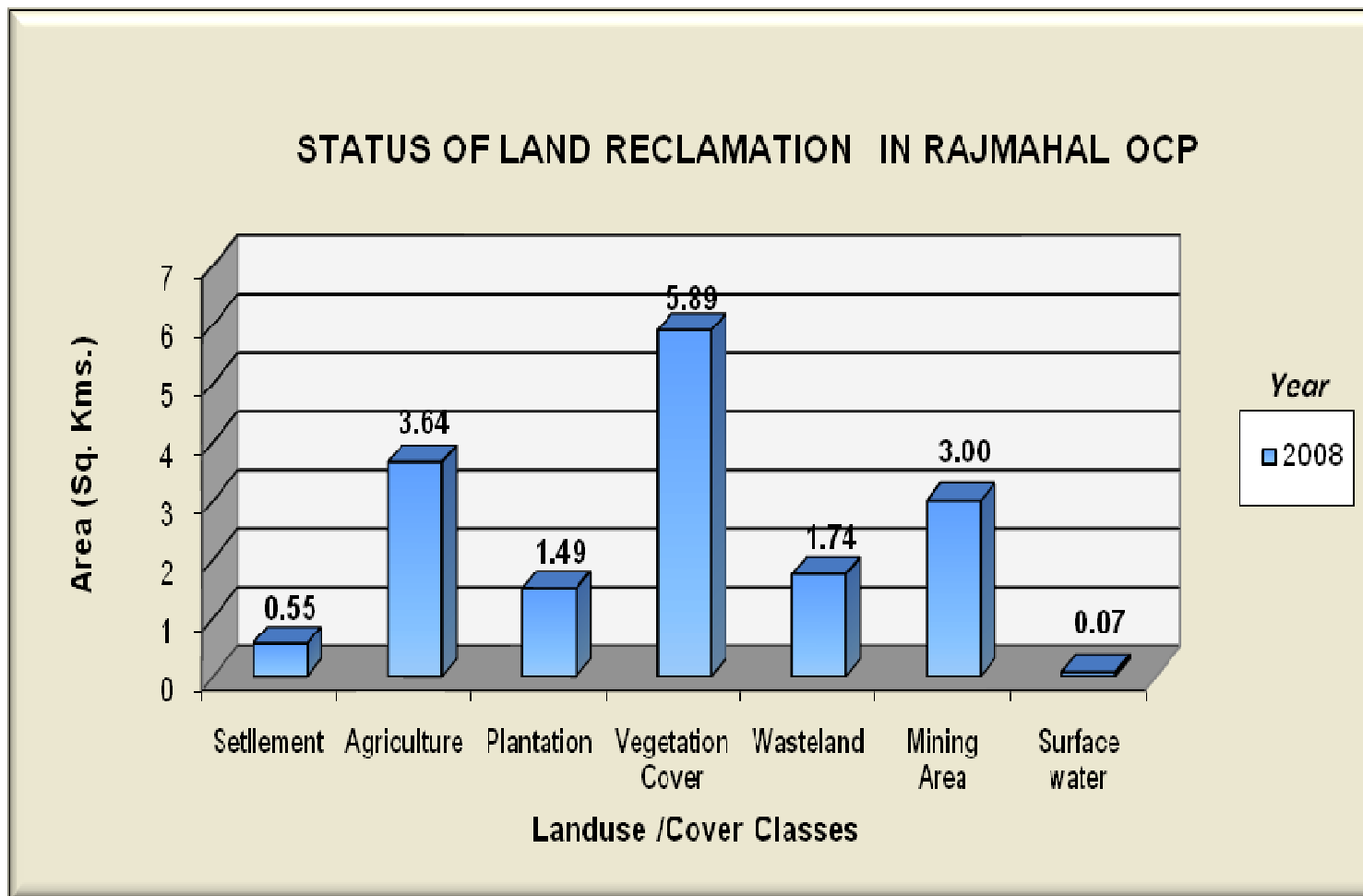


Figure 4.1



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