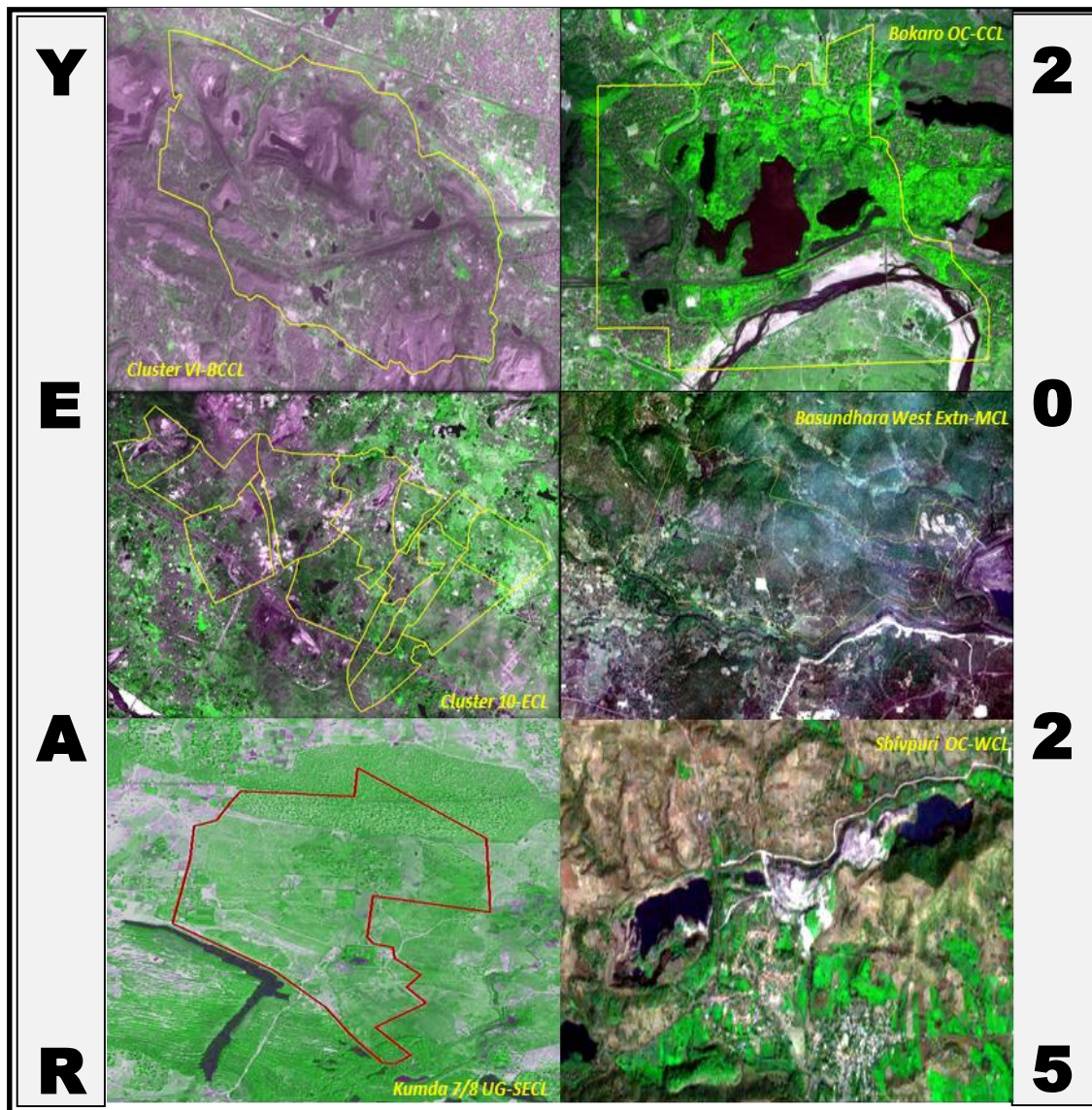


**Land Reclamation Monitoring of 35 (OC/ UG/ Cluster) Mining Projects of CIL
producing less than 5 mcm (Coal+OB) annually
based on Satellite Data for the Year 2025**



Submitted to

Coal India Limited

Kolkata



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कोल इंडिया लिमिटेड के ५ मिलियन घन मीटर (कोल+ अधिभार) से कम उत्पादन क्षमता वाले ३५ (खुली/भूमिगत एवं क्लस्टर) खदानों के भूमि पुनरुद्धार हेतु वर्ष २०२५ के उपग्रह डाटा के आधार पर निगरानी का वार्षिक प्रतिवेदन

Land Reclamation Monitoring of 35 (OC/ UG / Cluster) Mines Projects of CIL
producing less than 5 mcm (Coal+OB) annually
based on Satellite Data for the Year 2025

March- 2026

Remote Sensing Cell
Geomatics Division
CMPDI, Ranchi



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कार्यकारी सारांश

१.० प्रोजेक्ट

कोल इंडिया लिमिटेड के विभिन्न सहायक कंपनियों से संबंधित ५ मिलियन घन मीटर (कोल+अधिभार) से कम उत्पादन क्षमता वाले ३५ क्लस्टर एवं खुली/भूमिगत खदानों के भूमि पुनरुद्धार हेतु वर्ष २०२५ के उपग्रह डाटा के आधार पर वार्षिक निगरानी।

२.० उद्देश्य

भूमि पुनरुद्धार (लैंड रिक्लेमेशन) का उद्देश्य पट्टाक्षेत्र में बैकफील, वृक्षारोपण, सामाजिक वानिकी, सक्रिय उत्खनन क्षेत्र, जल निकाय (वाटर ड्रेनेज) बंजर भूमि, कृषि भूमि और जंगल के विभिन्न प्रकार के वितरण प्रणाली के क्षेत्र का आकलन करने के लिए है। यह अध्ययन न केवल उपरोक्त सभी खुली खदानों के भूमि पुनरुद्धार (लैंड रिक्लेमेशन) का निगरानी के प्रगति का आकलन में मदद करेगा बल्कि पर्यावरण संरक्षण के लिए आवश्यक उपचारात्मक उपायों को क्रियान्वित करने में भी सहायता करेगा।

३.० मुख्य निष्कर्ष

- कोल इंडिया द्वारा चयनित विभिन्न खदानों के निगरानी हेतु वर्ष २०२५ में कुल ३५ परियोजनाओं को कोल इंडिया लिमिटेड के कार्यदेश के अनुसार उपग्रह डाटा के आधार पर भूमि पुनरुद्धार की निगरानी हेतु चुना गया।
- ३५ क्लस्टर एवं खुली/भूमिगत खदानें जिनका वर्ष २०२५ के उपग्रह डाटा के आधार पर भूमि पुनरुद्धार की निगरानी हेतु चयनित किया गया है उनका कुल पट्टा क्षेत्र ५६२९७.६७ हैक्टर है तथा उत्खनन क्षेत्र ५१५४.८१ हैक्टर है। जिसमें ८६५.८७ हैक्टर (१६.८०%) क्षेत्र में जैविक पुनरुद्धार किया गया है, २५७५.३१ हैक्टर (४९.९६%) क्षेत्र में तकनीकी पुनरुद्धार कार्य प्रगति पर है तथा शेष १७१३.६३ हैक्टर (३३.२४%) क्षेत्र सक्रिय खनन के अंतर्गत आता है। उपग्रह डाटा के विश्लेषण से स्पष्ट है कि ३५ क्लस्टर एवं खुली/भूमिगत खदानों के कुल उत्खनन क्षेत्र ५१५४.८१ हैक्टर के ३४४१.१८ (६६.७६%) क्षेत्र में कुल भूमि पुनरुद्धार का कार्य किया गया है। परियोजनानुसार विवरण तालिका-१.१ और लेखा -१.१ में प्रदर्शित किया गया है।
- वर्ष २०२५-२६ में विभिन्न कोयला कंपनियों के चयनित ३५ क्लस्टर एवं खुली/भूमिगत खदानों का भूमि पुनरुद्धार के तुलनात्मक विश्लेषण वर्ष

२०२१/२२/२३ के सापेक्ष में करने पर पता चलता कि भूमि पुनरुद्धार का क्षेत्र वर्ष २०२१/२२/२३ के २७७०.४४ हैक्टर की तुलना में वर्ष २०२५-२६ में बढ़कर ३४४१.१८ हैक्टर हो गया है। कुल भूमि पुनरुद्धार में जैविक और तकनीकी पुनरुद्धार दोनों ही शामिल हैं। वर्ष २०२५-२६ में कुल भूमि पुनरुद्धार में ६७०.७४ हैक्टर की यह वृद्धि पर्यावरण संरक्षण की दिशा में कोल इंडिया के विभिन्न सहायक कम्पनियों द्वारा पर्यावरण संरक्षण की दिशा में किए गए सतत प्रयास का परिणाम है। जिनका परियोजनानुसार विवरण लेखा-१.२ में दर्शाया गया है।

- यह देखा गया है कि कोल इंडिया के प्रायः सभी सहायक कंपनियों के उत्खनन क्षेत्र में तकनीकी पुनरुद्धार के बढ़ते हुए रुझान का पता चलता है। वर्ष २०२५ के उपग्रह डाटा के पूर्व वर्ष (२०२१/२२/२३) तुलनात्मक विश्लेषण से यह पता चलता है कि वर्ष २०२५ में तकनीकी पुनरुद्धार के क्षेत्र में कुल समग्र वृद्धि ४९२.०७ हैक्टर का आकलन किया गया है।
- पूर्व वर्ष (२०२१/२२/२३) से वर्ष २०२५ के उपग्रह डाटा के तुलनात्मक विश्लेषण से यह पता चलता है कि वर्ष २०२५-२६ में डब्लूसीएल, एसईसीएल, बीसीसीएल और इसीएल में जैविक पुनरुद्धार के अंतर्गत क्षेत्र में वृद्धि पाई गई। जैविक पुनरुद्धार के अंतर्गत क्षेत्र तालिका-१.१ से पूर्णतः स्पष्ट हो जाता है।
- यह भी पाया गया है कि कोल इंडिया की सहायक कंपनियाँ डब्लूसीएल, एसईसीएल, बीसीसीएल और इसीएल के पट्टाक्षेत्र में कुल वृक्षारोपण (हरित क्षेत्र) जिसमें बैकफील, अधिभार डंपिंग क्षेत्र में वृक्षारोपण तथा सामाजिक वानिकी के अंतर्गत वृक्षारोपण सम्महित है इनमें वृद्धि दर्ज किया गया है। जबकि सीसीएल के कुल हरित क्षेत्र में थोड़ी कमी का मुख्य कारण अधिभार का हरित क्षेत्र पर डालना या डम्पिंग, नए रोड बनना इत्यादि हो सकता है। विश्लेषण के अनुसार २०२५-२६ में कोल इंडिया के सभी सहायक कोयला कंपनियों के तहत आनेवाले परियोजनाओं के कुल पट्टाक्षेत्र में ६.८९ प्रतिशत हरित क्षेत्र (कुल वृक्षारोपण) के अंतर्गत पाया गया है।
- वर्ष २०२५ के उपग्रह डाटा के विश्लेषण से यह पता चलता है कि कोल इंडिया के प्रायः सभी सहायक कंपनियों के भूमि पुनरुद्धार में बढ़ोतरी हुई है।

वर्ष २०२५-२६ में विभिन्न कोयला कंपनियों के चयनित ३५ क्लस्टर एवं खुली/भूमिगत खदानों का भूमि पुनरुद्धार के तुलनात्मक विश्लेषण वर्ष २०२१/२२/२३ से करने पर पता चलता कि भूमि पुनरुद्धार का क्षेत्र वर्ष २०२१/२२/२३ के २७७०.४४ हैक्टर (६६.००%) की तुलना में वर्ष २०२५ में बढ़कर ३४४१.१८ हैक्टर (६६.७६%) वर्ग किलोमीटर हो गया ।

- वर्ष २०२५ के उपग्रह डाटा के आधार पर चयनित क्लस्टर एवं खुली/भूमिगत खदानों के वार्षिक निगरानी से संबन्धित विश्लेषण, पाई चार्ट के माध्यम से चार्ट – १.१ में दर्शाया गया है। २०२५ में कोल इंडिया की सहायक कंपनियों में भूमि पुनरुद्धार की स्थिति बार चार्ट के द्वारा चार्ट-१.२ में दर्शाया गया है। भूमि पुनरुद्धार और हरित क्षेत्र की स्थिति को बार चार्ट के द्वारा क्रमशः चार्ट-१ ३.और चार्ट-१ ४.में दर्शाया गया है।

Executive Summary

- 1.0 Project** Land restoration / reclamation monitoring of 35 Cluster and OC/UG coal mines in different subsidiaries of Coal India Ltd. (CIL) producing less than 5 million cu.m. (Coal+OB) per annum based on satellite data on triennial basis.
- 2.0 Objective** Objective of the land restoration / reclamation monitoring is to assess the area under backfilling, plantation, social forestry, active mining area, water bodies, distribution of wasteland, agricultural land and forest in the leasehold area of the projects. This will help in assessing the progressive status of mined land reclamation and to take up remedial measures, if any, required for environmental protection.

3.0 Salient Findings

- In the year 2025, amongst projects of different subsidiaries of Coal India Ltd. taken up 35 (Clusters and OC/UG) mines for monitoring.
- Out of the total mine leasehold area of 56297.67 Ha of the 35 (Clusters and OC/UG) projects considered for monitoring during 2025-26; total excavated area is 5154.81 Ha; out of which 2575.31 Ha area (49.96%) is under backfilling (Technical Reclamation), 865.87 Ha area (16.80%) has been planted (Biologically Reclaimed) and 1713.63 Ha area (33.24%) is under active mining. It is evident from the analysis that 3441.18 Ha (66.76%) area out of the total excavated area of 5154.81 Ha of the 35 (Clusters and OC/UG) projects is already under reclamation and balance 1713.63 Ha (33.24%) area is under active mining. Company wise details are given in Table – 1.1 & Chart-1.2.
- On comparing the status of land reclamation carried out in previous year (2021/22/23) with respect to year 2025-26 in the 35 (Clusters and OC/UG) projects of different CIL subsidiaries, it is evident from the analysis that area under land reclamation has increased from 2770.44 Ha (2021/22/23) to 3441.18 Ha (Yr. 2025-26), which includes both area under plantation (Biological Reclamation) and areas under backfilling (Technical Reclamation). This increase of 670.74 Ha area of land reclamation is the result of the efforts made by CIL's subsidiary companies towards land reclamation. Year wise comparison in land reclamation in different subsidiaries is given in Chart 1.3.
- It has been observed that in all the subsidiaries of Coal India Limited (CIL), technical reclamation has shown an increasing trend. As compared to the

analysis done in the year 2021/22/23, it has been found that there has been an overall increase of 495.07 Ha in area under technical reclamation commutatively in the year 2025.

- It has been observed that in WCL, SECL, BCCL & ECL area under biological reclamation has increased in comparison to previous study. In CCL biological reclamation has marginally reduced. (Refer Table-1.1).
- In has been also observed that in subsidiaries like WCL, SECL, BCCL & ECL, total area under plantation (Green Cover) which includes plantation over backfill, plantation over overburden dumps and plantation done under social forestry etc. has increased as compared to previous years of study.
- However, in CCL, there has been marginal decrease in area under green cover due to fresh dumping activities, construction of roads and mine advancement in some projects. All these factors have contributed for decrease in Green Cover.
- Overall, 6.89% of the total leasehold area of all the subsidiaries of CIL commutatively is under Green Cover as per the analysis of satellite data of the year 2025.
- Analysis of the results based on satellite data of the year 2025 also indicate that all subsidiaries of CIL except SECL and CCL, whose projects were under monitoring indicate an increasing trend for area under reclamation. It has been observed that total area under reclamation has increased from 2770.44 Ha (66.00%) in 2021/22/23 to 3441.18 Ha (66.76%) in the year 2025.
- Commutative Status of Land Reclamation monitoring based on satellite data of the year 2025 is indicated in the Pie Chart in Chart-1.1. Subsidiary wise status of Land Reclamation Monitoring of the projects monitored based on satellite data of the year 2025 is shown in form of Bar Chart at Chart-1.2. Comparison of Area under Reclamation and Green Cover in different subsidiaries of Coal India Limited between the years 2021/22/23 to 2025 has been shown in form of Bar- Chart in Chart-1.3 & 1.4. The composite land reclamation status in remaining mines of every listed subsidiaries (<5 MCM Coal+OB) as per clause 2(ii) of the received work order from CIL has been incorporated under sub table of their respective Table 1.

Table 1.1: Status of Land Reclamation in different Subsidiary

Subsidiary wise Land Reclamation Status in OC/UG and Clusters Projects <5 million Cu.m. (Coal + OB) based on Satellite Data of the Year 2025

Sl. No.	Coal Company (No. of OC/UG Projects and Cluster of mines)		Area in Hectare (% calculated in respect of total excavated area)																		
			Leasehold Boundary		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover generated in Leasehold)		Total Area under Reclamation		
							Biological Reclamation		Other Plantation												
					Area under Backfilling		Area under Plantation on backfill		Plantation on External OB Dumps		Social Forestry, Avenue Plantation etc.										
1	2		3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11 (=4+5)		
	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	2021/22/23	2025	
(A)	PROJECT WISE (OC)																				
1	WCL (04)	WCL (04)	2031.96	1991.46	149.04 48.54%	169.60 44.46%	40.23 13.10%	75.49 19.79%	48.61	58.55	58.47	52.09	117.80 38.36%	136.35 35.75%	307.07	381.44	147.31 7.25%	186.13 9.35%	189.27	245.09	
2	SECL (15)	SECL (15)	13577.91	12399.72	87.43 36.61%	47.45 19.11%	131.72 55.16%	161.29 64.97%	7.75	1.00	480.61	480.92	19.64 8.22%	39.50 15.91%	238.79	248.24	620.08 4.57%	643.21 5.19%	219.15	208.74	
3	MCL (02)	MCL (02)	1465.35	1465.35	0.00 0.00%	0.00 0.00%	0.00 0.00%	0.00 0.00%	0.00	0.00	3.00	3.00	0.00 0.00%	0.00 0.00%	0.00	0.00	3.00 0.20%	3.00 0.20%	0.00	0.00	
4	CCL (05)	CCL (05)	3506.73	2286.90	268.62 32.80%	185.84 29.70%	204.05 24.91%	166.56 26.62%	136.50	139.78	223.31	235.27	346.33 42.29%	273.31 43.68%	819.00	625.71	563.86 16.08%	541.61 23.68%	472.67	352.40	
TOTAL (A) (26)		TOTAL (A) (26)	20581.95	18143.43	505.09 37.01%	402.89 32.09%	376.00 27.55%	403.34 32.13%	192.86	199.33	765.39	771.28	483.77 35.44%	449.16 35.78%	1364.86	1255.39	1334.25 6.48%	1373.95 7.57%	881.09	806.23	
(B)	CLUSTERS WISE																				
1	BCCL (05)	BCCL (05)	8140.24	8140.24	621.40 60.28%	676.47 60.11%	115.10 11.17%	132.31 11.76%	70.30	87.30	360.84	362.28	294.35 28.55%	316.60 28.13%	1030.85	1125.38	546.24 6.71%	581.89 7.15%	736.50	808.78	
2	ECL (04)	ECL (04)	30078.00	30014.00	953.75 52.93%	1495.95 53.93%	199.10 11.05%	330.22 11.90%	181.20	283.40	1303.80	1306.88	648.94 36.02%	947.87 34.17%	1801.79	2774.04	1684.10 5.60%	1920.50 6.40%	1152.85	1826.17	
TOTAL (B) (09)		TOTAL (B) (09)	38218.24	38154.24	1575.15 55.61%	2172.42 55.71%	314.20 11.09%	462.53 11.86%	251.50	370.70	1664.64	1669.16	943.29 33.30%	1264.47 32.43%	2832.64	3899.42	2230.34 5.84%	2502.39 6.56%	1889.35	2634.95	
TOTAL CIL (A+B) (35) Less than 5 MCM		TOTAL CIL (A+B) (35) Less than 5 MCM	58800.19	56297.67	2080.24 49.56%	2575.31 49.96%	690.20 12.29%	865.87 16.80%	444.36	570.03	2430.03	2440.44	1427.06 34.00%	1713.63 33.24%	4197.50	5154.81	3564.59 6.06%	3876.34 6.89%	2770.44	3441.18	

Note: In reference of the above Table, different parameters are classified as follows:

- Area under Biological Reclamation includes areas under plantation done on backfilled area only.
- Area under Technical Reclamation includes area under barren backfilled only
- Area under Active mining includes coal quarry site, quarry filled with water etc.
- Social Forestry and Plantation on external OB dump are not included in Biological Reclamation and are put under separate categories as shown in the table.
- (%) calculated in the above table is in respect of total excavated area except for "Total area under plantation" where (%) is calculated in terms of leasehold area.

STATUS OF LAND RECLAMATION WITHIN THE LEASEHOLD OF 26 OC/UG MINES & 09 CLUSTERS OF MINES FOR MONITORING IN THE YEAR 2025-26

(For projects producing Less than 5 MCM Coal+OB)
(Pie chart indicated distribution of Total Excavated Area Only)

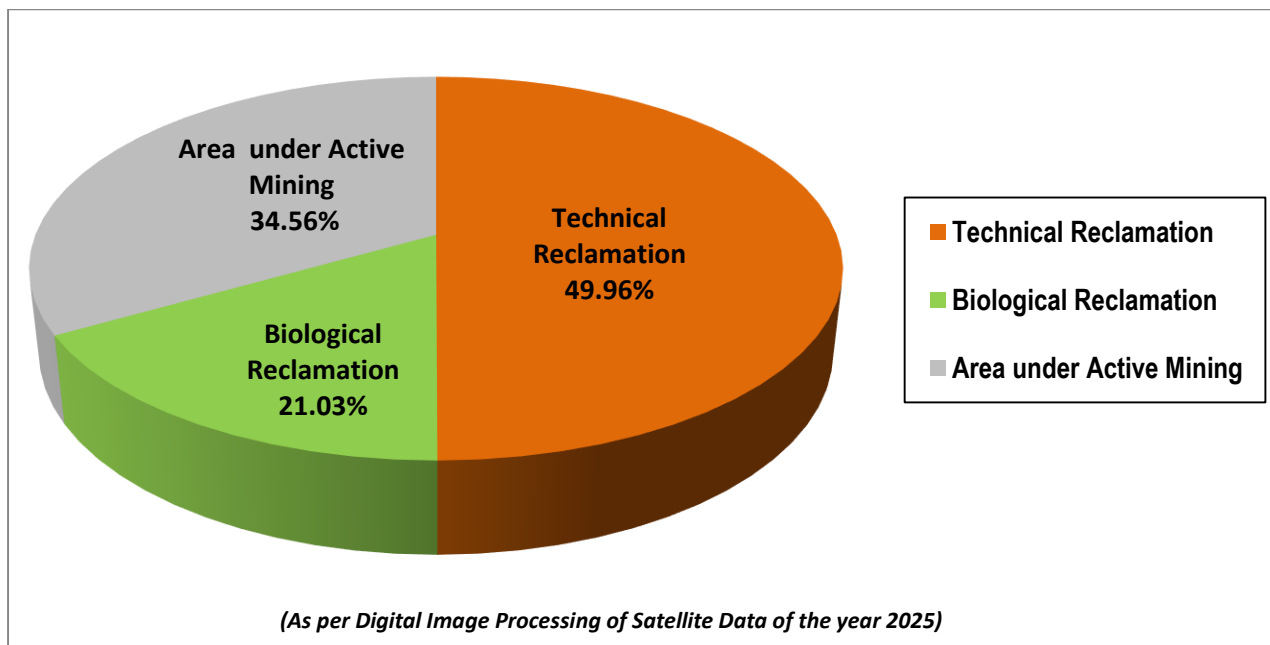


Figure 1.1: Pie Chart Showing Status of Land Reclamation

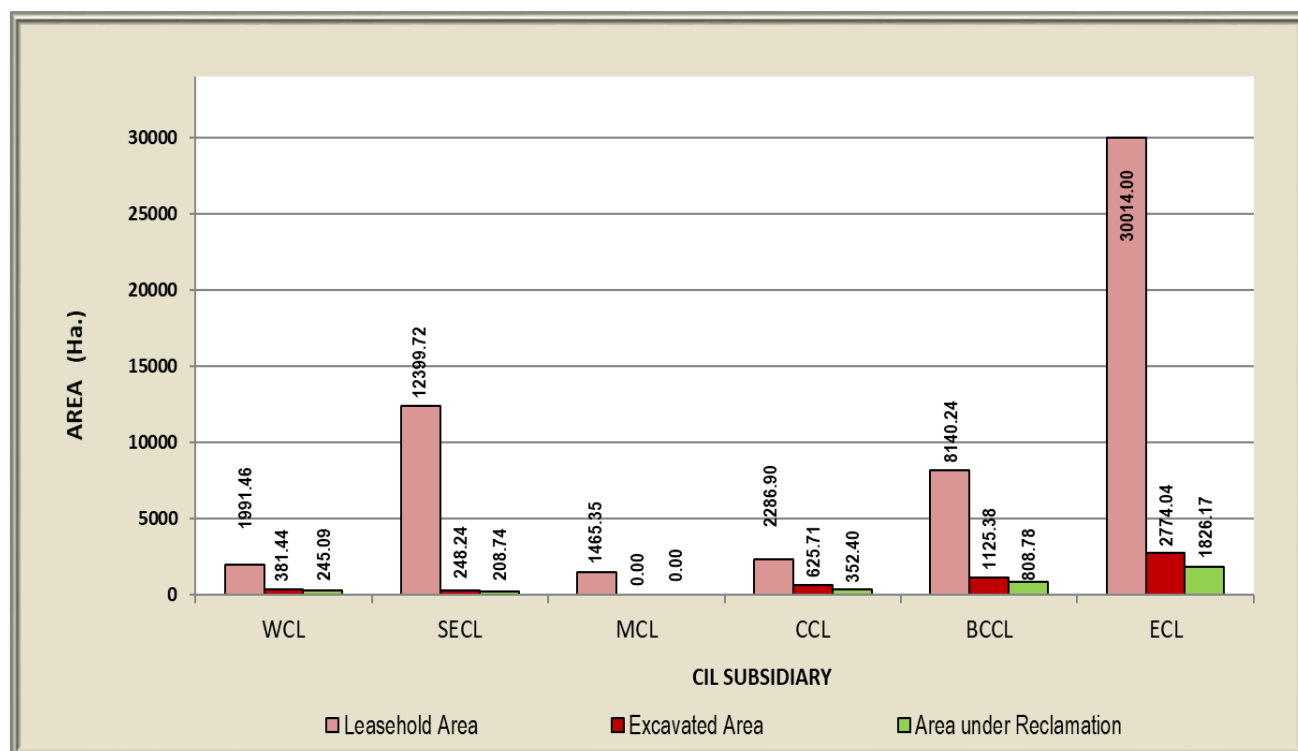


Chart 1.1: Subsidiary Wise Land Reclamation Status in the Year 2025

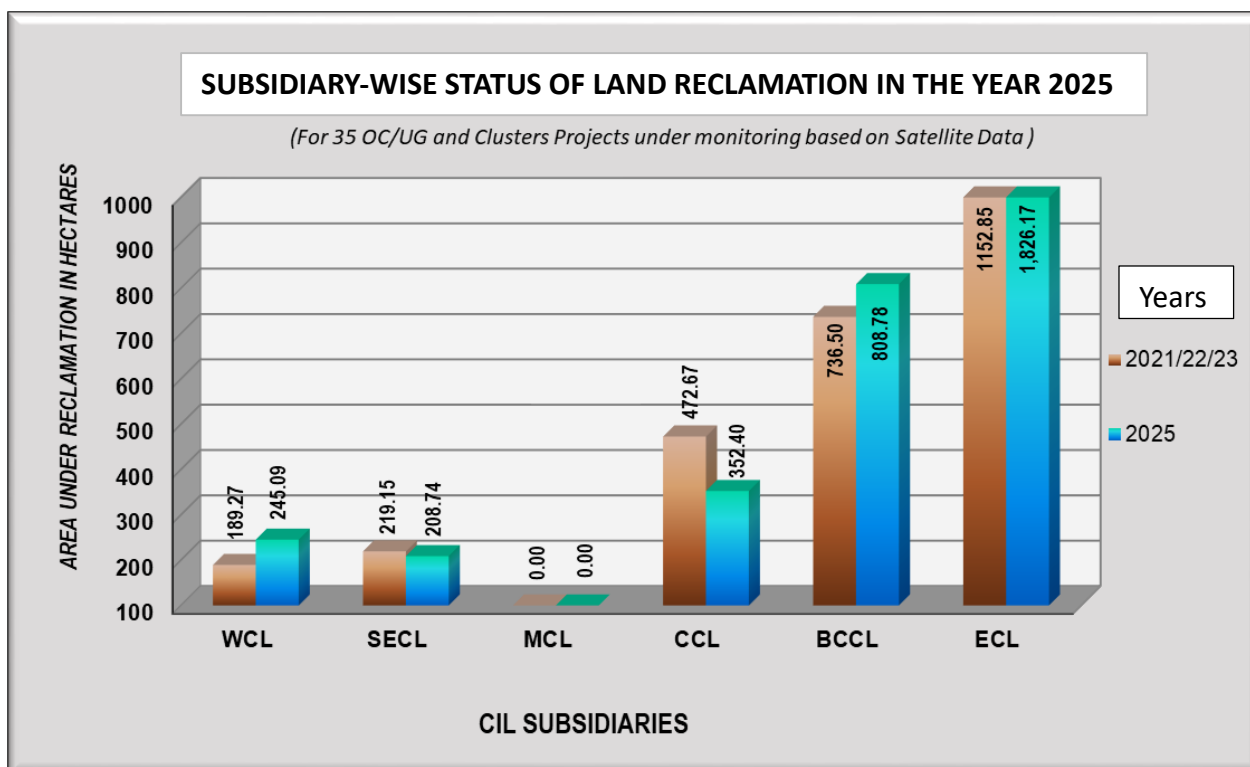


Chart 1.2: Comparison for Area under Land Reclamation in between 2021/22/23 to 2025

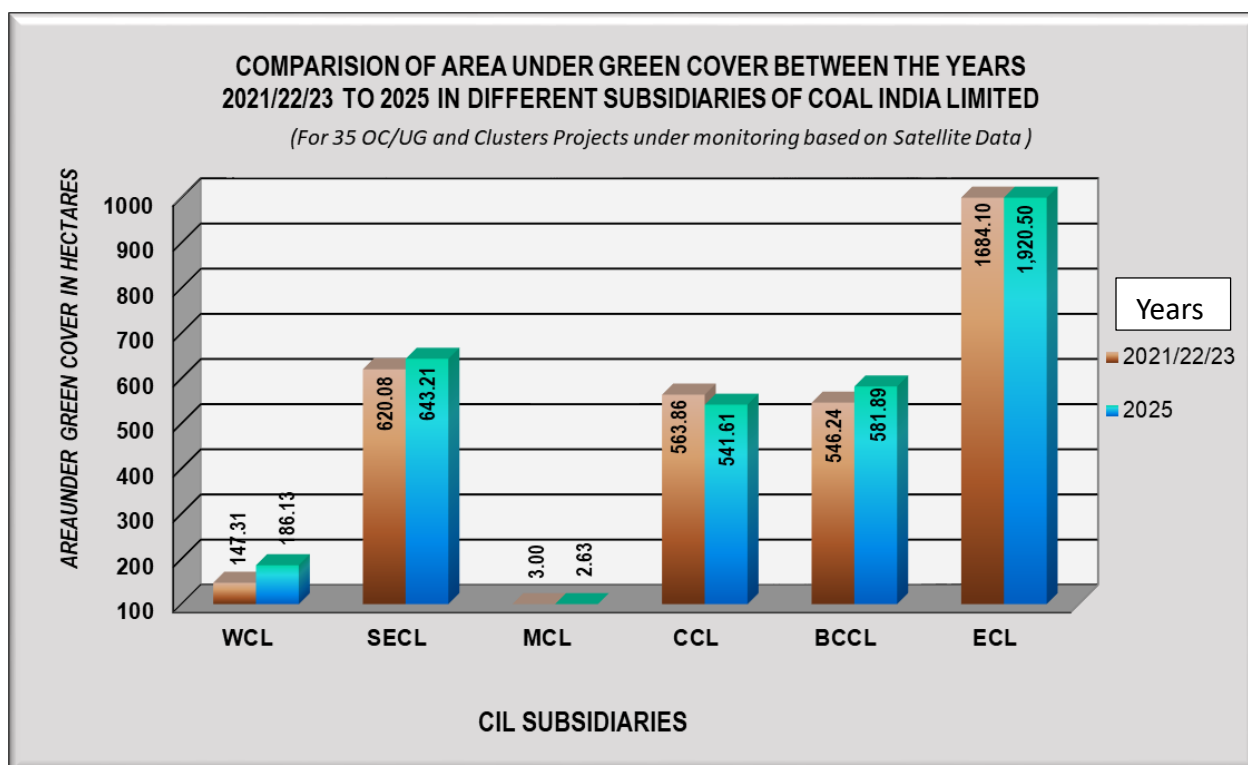


Chart 1.3: Comparison for Area under Green Cover in between 2021/22/23 to 2025

1. Background

- 1.1** Land is the most important natural resource which embodies soil, water, flora, fauna and total ecosystem. All human activities are based on the land which is the scarcest natural resource in our country. Mining is a site-specific industry, and it could not be shifted anywhere else from the location where mineral occurs. It is a fact that surface mining activities do affect the land environment due to ground breaking. Therefore, there is an urgent need to reclaim and restore the mined out land for its productive use for sustainable development of mining. This will not only mitigate environmental degradation but would also help in creating a more congenial environment for land acquisition by coal companies in future.

Keeping above in view, Coal India Ltd. (CIL) issued a work order vide letter no. CIL/WBP/Env/2009/2428 dated 29.12.2009 to Central Mine Planning & Design Institute (CMPDI), Ranchi, for monitoring land reclamation. Status of the opencast/underground and clusters of coal mines having production of less than 5 million m³ per annum (coal + OB taken together per annum) based on remote sensing satellite data, regularly on triennial basis for sustainable development of mining. Further, a revised work order was issued vide letter no. CIL/WBP/Env/2011/4706 dated 12.10.2012 from Coal India Limited for the period 2012-13 to 2016-17 which was subsequently followed by another work order vide letter no. CIL/WBP/Env/2017/DP/8477 dated 21.09.2017 from Coal India Limited for the period 2017-18 to 2021-22 for land reclamation monitoring of 109 opencast projects and vegetation cover monitoring of 13 major coalfields for the period 2023-2024. In the latest CIL work order vide letter no. vide their letter No CIL/ENV/11463 dated 03.07.2024 from Coal India Limited for the period 2024-25 to 2026-27 for land reclamation monitoring of opencast projects and vegetation cover monitoring of 19 major coalfields. According to this work order, all mines in CIL with output capacity of 5 million cu. m (coal +OB) shall be monitored every year and all mines below this capacity shall be monitored at an interval of 3 years. All coalfields in CIL shall also be monitored at an interval of 3 years as per a defined plan. The result of land reclamation status of all such mines to be put on the website of CIL (www.coalindia.in), CMPDI (www.cmpdi.co.in) and the concerned coal

companies in public domain. Detail report to be submitted to Coal India and respective subsidiaries.

- 1.2 Land reclamation monitoring of all opencast coal mining projects would also comply the statutory requirements of Ministry of Environment, Forest & Climate Change (MoEF & CC), GoI (Government of India). 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 study and the present report is embodying the findings in nutshell carrying out for the 35 opencast/underground and clusters projects of different subsidiaries producing less than 5 million cubic m. Coal +OB in the year 2025-26.

2. Objective

Objective of the land reclamation/restoration monitoring is to assess the area of backfilled, plantation, OB dumps, social forestry, active mining area, settlements, 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. Methodology

There are number of steps involved between raw satellite data procurement and preparation of final map. National Remote Sensing Centre (NRSC) Hyderabad, being the nodal agency for satellite data supply in India, provides only raw digital satellite data, which needs further digital image processing for extracting the information and map preparation before uploading the same in the website. Methodology for land reclamation monitoring is given in Fig 1. Following steps are involved in land reclamation /restoration monitoring:

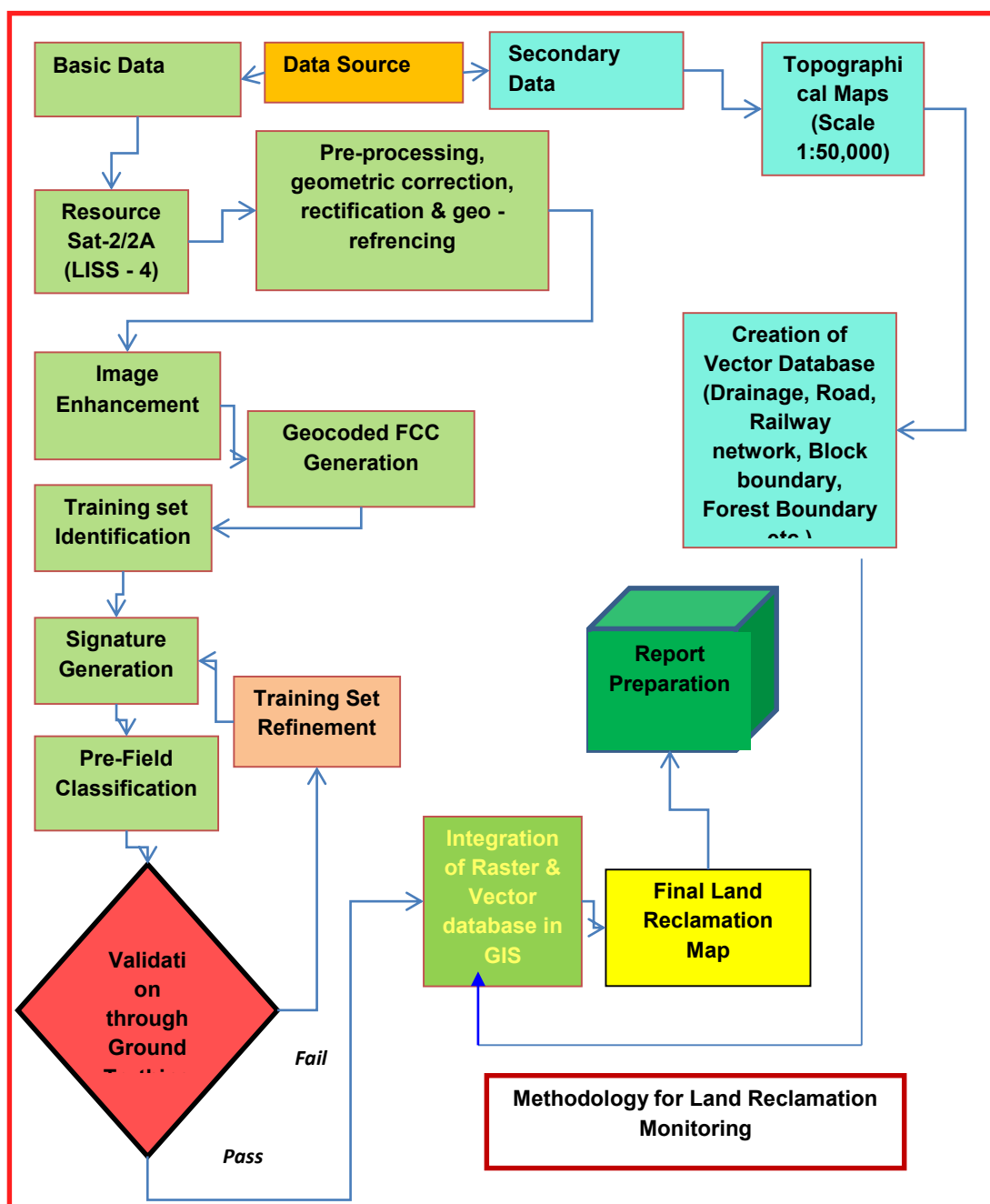


Figure 3.1 Methodology for Land Reclamation Monitoring

3.1 Data Procurement

After browsing the data quality and date of pass on internet, supply order for data is placed to NRSC. Secondary data like leasehold boundary, topo sheets are procured for creation of vector database.

3.2 Satellite Data Processing

Satellite data are processed using ERDAS IMAGINE v 2022 digital image processing s/w. Methodology involves the following major steps:

3.2.1 Rectification & Geo-referencing: Inaccuracies in digital imagery may occur due to 'systematic errors' attributed to earth curvature and rotation as well as 'non-systematic errors' attributed to satellite receiving station itself. Raw digital images contain geometric distortions, which make them unusable as maps. Therefore, geo-referencing is required for correction of image data using ground control points (GCP) to make it compatible to Sol (Survey of India) Topo-sheet.

3.2.2 Image enhancement:

To improve the interpretability of the raw data, image enhancement is necessary. Local operations modify the value of each pixel based on brightness value of neighbouring pixels using ERDAS IMAGINE v 2022 digital image processing s/w and enhance the image quality for proper interpretation.

3.2.3 Training set selection

Training set requires to be selected, so that software can classify the image data accurately. The image data are analysed based on the interpretation keys. These keys are evolved from certain fundamental image-elements such as tone/colour, size, shape, texture, pattern, location, association and shadow. Based on the image-elements and other geo-technical elements like land form, drainage pattern and physiography; training sets were selected/identified for each land use/cover class. Field survey was carried out by taking selective traverses in order to collect the ground information (or reference data) so that training sets are selected accurately in the image. This was intended to serve as an aid for classification.

3.2.4 Classification and Accuracy assessment

Image classification is carried out using the maximum likelihood algorithm. The classification proceeds through the following steps: (a) calculation of statistics [i.e. signature generation] for the identified training areas, and (b) the decision boundary of maximum probability based

on the mean vector, variance, covariance and correlation matrix of the pixels. After evaluating the statistical parameters of the training sets, reliability test of training sets is conducted by measuring the statistical separation between the classes that resulted from computing divergence matrix. The overall accuracy of the classification was finally assessed with reference to ground truth data.

3.2.5 Area calculation

The area of each land use class in the leasehold is determined using ERDAS IMAGE v 2022 digital image processing s/w.

3.2.6 Overlay of Vector data base

Vector data base created based on secondary data. Vector layer like drainage, railway line, leasehold boundary, forest boundary etc. are superimposed on the image as vector layer in the Arc GIS database.

3.2.7 Pre-field map preparation

Pre-field map is prepared for validation of the classification results.

3.2.8 Ground Truthing:

Selective ground verification of the land use classes are carried out in the field and necessary corrections if required, are incorporated before map finalization.

3.2.9 Land reclamation database on GIS:

Land reclamation database is created on GIS platform to identify the temporal changes identified from satellite data of different cut-off dates.

4. Work Plan

Total 26 opencast/underground and 9 clusters projects producing 5 million cubic m. less (Coal + OB together) during the year 2025-26 were taken up for the study. Based on the *RESOURCESAT-2* satellite data, land reclamation / mine closure monitoring was carried out using ERDAS IMAGE digital image processing s/w and Arc-Info GIS.

The list of 26 opencast/underground project producing less than 5 mcm (Coal and OB together) annually of different CIL subsidiaries and 09 clusters of BCCL & ECL taken up for Land Reclamation monitoring based on satellite data of year 2025 is given in table below: The list of subsidiary wise 39 opencast/underground and cluster projects taken up for Land Reclamation Monitoring based on satellite data of year 2025 is given in table below:

Subsidiary <i>(No. of Projects)</i>	Opencast/Underground & Cluster Projects <i>(5 million Cu.m. Coal +OB or less per annum)</i>
WCL (04)	Ambara OC, Barkuhi OC, Ghorawari OC, Shivpuri OC
SECL (15)	Kotma OC, Mahan OC, West Chirimiri OC, Churcha RO U/G, Katkona U/G, Jhilimili U/G, Pandavpara U/G, Kumda 7/8 U/G, Vijay West U/G, Jamuna U/G, Damni U/G, Khairaha U/G, Rajendra U/G, Dhelwadih U/G, Bagdewa U/G
MCL (02)	Basundhara West Extension OC and Gopalji OC
CCL (05)	Bhurkunda OC, Religera OC, Bokaro OC, Sirka OC, Kedla OC
BCCL (05)	Cluster II, Cluster VI, Cluster XIV, Cluster XV and Cluster XVI
ECL (04)	Cluster 9, Cluster 10, Cluster 11, Cluster 12
TOTAL (35)	

WESTERN COALFIELDS LIMITED

5. Land Reclamation Status in Western Coalfields Ltd.

5.1 Following four (04) opencast projects producing less than 5 million cubic m. (Coal + OB together) p.a. of Western Coalfields Ltd. have been selected as per the CIL work order and taken up for satellite data based land reclamation monitoring during the year 2025:

- | | |
|---------------|-----------------|
| 1. Ambara OC | 2. Ghorawari OC |
| 3. Barkuhi OC | 4. Shivpuri OC |

5.2 Project wise Land Reclamation status in WCL for the year 2025 is given in Table 5.1 and also shown graphically in Chart- 5.1. Area statistics of different land use class present in the mine leasehold boundaries of the above projects for the year 2025 are shown in the Table - 5.2. Land use maps derived from satellite data are shown in Plate 5.1-5.4. Year wise changes in the different land use classes based on satellite data of the year 2018, 2021 and 2025 are depicted in Bar Charts in Chart- 5.2 - 5.5.

5.3 Study reveals that out of total mine leasehold area of 1991.46 Ha of 4 OC projects in WCL viz Ambara, Barkuhi, Ghorawari and Shivpuri considered for monitoring during year 2025-26; total excavated area is 381.43 Ha (19.15%), out of which 75.49 Ha (19.79%) area has been revegetated (Biological reclamation) and 169.60 Ha (44.46%) area is under backfilling (Technical reclamation) and balance 136.35 Hectare (35.75%) area is under active mining. It is evident from analysis that 245.9 Hectares (64.25%) area of above four OC projects are under total reclamation in WCL. Project wise details area given in Table 5.1.

5.4 There has been overall increase in area under technical reclamation (area under backfilling) in all the four projects of WCL. The cumulative increase of 20.56 Ha area under backfilling in the year 2025 as compared to the year 2021 is due to more area coming under backfill in the mines as indicated in Table 5.1.

5.5 Study indicates that overall all the four projects of WCL considered for this study in the year 2025-26 indicate increasing trend in Biological reclamation (plantation on backfill) with respect to the year 2021-22.

- 5.6** It is evident from analysis that area under land reclamation, which includes both plantation on backfill (Biological Reclamation) and area under backfilling (Technical Reclamation), has increased from 189.27 Ha (Yr. 2021) to 245.09 Ha (Yr. 2025). This increase of 55.82 Ha area under total reclamation for four opencast mine of WCL in the period of three years is due to both increase in area under technical reclamation and Biological Reclamation to the tune of 20.56 Ha and 35.26 Ha respectively. Project wise status of Land reclamation for eleven OC mines area are shown in bar chart (Figure-5.1)
- 5.7** After analyzing the satellite data of year 2021 vs. 2025, it is evident that total area under plantation (Green Cover) carried out on backfilled area, OB dumps as well as area under social forestry in all the four mines of WCL has increased from 147.31 Ha (Yr.2021) to 186.13 Hectare area (Yr.2025) in span of four years. This increase of 38.82 Hectare area under total plantation (Green Cover) during three years is due to more plantations has been carried out within leasehold area of the mines, which are not under mining operation presently.
- 5.8** The leasehold boundary of Ambara, Barkuhi and Ghorawari OCPs has been updated as per EC whereas the leasehold boundary of Shivpuri OCP has remained unchanged. The updation in leasehold boundaries has resulted in reduction of total leasehold area for the four projects as compared with the total leasehold area in 2021. The shape of leasehold boundary of Ambara, Barkuhi and Ghorawari OCPs has been updated on the basis KMLs received from WCL however, the area remains the same as indicated in the report for the year 2021-22 except for Ghorawari OC (Refer table-5.1).
- 5.9** Out of 4 projects of WCL, maximum land reclamation has been carried out in Shivpuri OC projects (100%) followed by Ambara (76.99%), Ghorawari (60.17%) and Barkuhi OC (27.71%) respectively.
- 5.10** Land reclamation monitoring of above set of opencast mines of WCL will be carried out again in the next cycle with the help of satellite data and comparison for status of the same will be made with respect to the satellite data of the year 2025.

Table 5.1 Summarized Land Reclamation Status in WCL

Sl. No.	Project	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining* (* All closed mines)		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological Reclamation		Other Plantations											
	(A)				Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External Over Burden Dumps		Social Forestry, Avenue Plantation Etc.								
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2021	2025	2021	2025	2021	2025	2021	2025	2021	2025	2021	2025	2021	2025	2021	2025	2021	2025
1	Ambara	162.15	162.15	45.67	55.62	13.84	28.38	0.00	0.00	10.91	6.76	26.55	25.11	86.06	109.11	24.75	35.14	59.51	84.00
				53.07%	50.98%	16.08%	26.01%					30.85%	23.01%			15.26%	21.67%	69.15%	76.99%
2	Barkuhi	237.51	237.51	15.64	20.89	0.00	0.43	0.00	0.00	8.81	14.44	18.01	55.62	33.65	76.94	8.81	14.87	15.64	21.32
				46.48%	27.15%	0.00%	0.56%					53.52%	72.29%			3.71%	6.26%	46.48%	27.71%
3	Ghorawari	1296.01	1255.51	42.76	43.99	16.24	25.18	27.68	38.02	14.84	11.23	38.10	55.62	97.10	124.79	58.76	74.43	59.00	69.17
				44.04%	35.25%	16.73%	20.18%					39.24%	44.57%			4.53%	5.93%	60.76%	55.43%
4	Shivpuri	336.29	336.29	44.97	49.10	10.15	21.50	20.93	20.53	23.91	19.66	35.14	0.00	90.26	70.60	54.99	61.69	55.12	70.60
				49.82%	69.55%	11.25%	30.45%					38.93%	0.00%			16.35%	18.34%	61.07%	100.00%
	TOTAL	2031.96	1991.46	149.04	169.60	40.23	75.49	48.61	58.55	58.47	52.09	117.80	136.35	307.07	381.43	147.31	186.13	189.27	245.09
				48.54%	44.46%	13.10%	19.79%					38.36%	35.75%	15.11%	19.15%	7.25%	9.35%	61.64%	64.25%

(% is calculated with respected to Excavated Area as applicable)

Note: In reference of the above Table, different parameters are classified as follows:

1. Area under Biological Reclamation includes Areas under Plantation done on Backfilled Area Only.
2. Area under Technical Reclamation includes Area under Barren Backfilling only
3. Area under Active Mining Includes Coal Quarry, Advance Quarry Site, and Quarry filled with water etc., if any.
4. Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the Table above.
5. (%) calculated in the above Table is in respect to "Total Excavated Area" except for "" Total Area under Plantation"" where % is in terms of "Project Leasehold Area".

Table 5.2 Composite land reclamation status in remaining mines of WCL (<5 MCM Coal+OB) as per clause 2.(ii) of the received work order from CIL

(Area in Hectare)																			
Sl.No.	Clmster No.	TotalLeasehold Area		Technical Reclamation		Plantation						Area under Active Mining		TotalExcavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		TotalArea under Reclamation	
						Biological		Other Plantations		SocialForestry, Avanue Plantation Etc.									
				Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External OB Dumps		Social Forestry, Aavanue Plantation Etc.									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
(B)		2023	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024
5	Kolegaon	397.52	397.52	0.00	0.00	0.00	0.00	83.45	96.67	24.11	29.70	67.64	82.78	67.64	82.78	107.56	126.37	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			27.06%	31.79%	0.00%	0.00%
6	Chhinda	106.68	106.68	0.00	0.00	0.00	0.00	20.11	20.74	4.30	4.68	23.81	26.51	23.81	26.51	24.41	25.42	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			22.88%	23.83%	0.00%	0.00%
7	Urdhan	315.00	315.00	4.70	7.38	0.00	0.00	10.15	15.44	9.02	11.13	38.06	50.96	42.76	58.34	19.17	26.57	4.70	7.38
				10.99%	12.65%	0.00%	0.00%					89.01%	87.35%			6.09%	8.43%	10.99%	12.65%
8	Gauri	339.10	339.10	0.00	0.00	0.00	0.00	0.00	14.46	8.00	10.42	62.77	70.94	62.77	70.94	8.00	24.88	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			2.36%	7.34%	0.00%	0.00%
9	Ghonsa	278.68	278.68	11.59	18.29	0.00	0.00	5.51	8.61	6.54	10.80	98.39	118.12	109.98	136.41	12.05	19.41	11.59	18.29
					13.41%		0.00%						86.59%			4.32%	6.96%	0.00%	13.41%
	TOTAL (B)	1436.98	1436.98	16.29	25.67	0.00	0.00	119.22	155.92	51.97	66.73	290.67	349.31	306.96	374.98	171.19	222.65	16.29	25.67
				5.31%	6.85%	0.00%	0.00%					94.69%	93.15%			11.91%	15.49%	5.31%	6.85%
(C)		2019	2022	2019	2022	2019	2022	2019	2022	2019	2022	2019	2022	2019	2022	2019	2022	2019	2022
10	Singhori	425.04	425.04	0.00	0.00	0.00	0.00	0.00	0.00	4.59	7.63	26.82	50.56	26.82	50.56	4.59	7.63	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			1.08%	1.80%	0.00%	0.00%
11	Makadhokra II	258.23	258.23	44.61	57.75	2.90	0.00	58.76	47.14	2.57	2.57	6.91	0.00	54.42	57.75	64.23	49.71	47.51	57.75
				81.97%	100.00%	5.33%	0.00%					12.70%	0.00%			24.87%	19.25%	87.30%	100.00%
12	New Sethia	144.45	144.45	25.99	30.65	23.58	18.92	6.80	7.01	9.53	10.15	40.81	41.65	90.38	91.22	39.91	36.08	49.57	49.57
				28.76%	33.60%	26.09%	20.74%					45.15%	45.66%			27.63%	24.98%	54.85%	54.34%
13	Ghughus	1020.00	1020.00	267.70	258.74	55.38	73.22	135.00	136.64	84.91	125.20	35.77	26.89	358.85	358.85	275.29	335.06	323.08	331.96
				74.60%	72.10%	15.43%	20.40%					9.97%	7.49%			26.99%	32.85%	90.03%	92.51%
14	Pimplegaon	451.87	451.87	13.33	13.34	0.00	0.00	136.11	149.76	80.32	79.62	46.25	54.23	59.58	67.57	216.43	229.38	13.33	13.34
				22.37%	19.74%	0.00%	0.00%					77.63%	80.26%			47.90%	50.76%	22.37%	19.74%
15	Padampur	829.00	829.00	48.00	59.00	18.00	28.00	180.00	214.00	76.00	83.00	127.00	118.00	193.00	205.00	274.00	325.00	66.00	87.00
				24.87%	28.78%	9.33%	13.66%					65.80%	57.56%			33.05%	39.20%	34.20%	42.44%
	TOTAL (C)	3128.59	3128.59	399.63	419.48	99.86	120.14	516.67	554.55	257.92	308.17	283.56	291.33	783.05	830.95	874.45	982.86	499.49	539.62
				51.04%	50.48%	12.75%	14.46%					36.21%	35.06%			27.95%	31.42%	63.79%	64.94%
*GRAND TOTAL (A+B+C)		6597.53	6557.03	564.96	616.99	140.09	195.63	684.50	769.02	368.36	426.99	692.03	775.99	1207.81	1342.28	1352.71	1391.64	705.05	812.62
				46.78%	45.97%	11.60%	14.57%					57.30%	57.81%			20.50%	21.22%	58.37%	60.54%
*Grand Total (A+B+C) is the composite value of all 15 mines of WCL to be covered as per CIL Work Order (% is calculated with respect to Excavated Area as applicable)																			

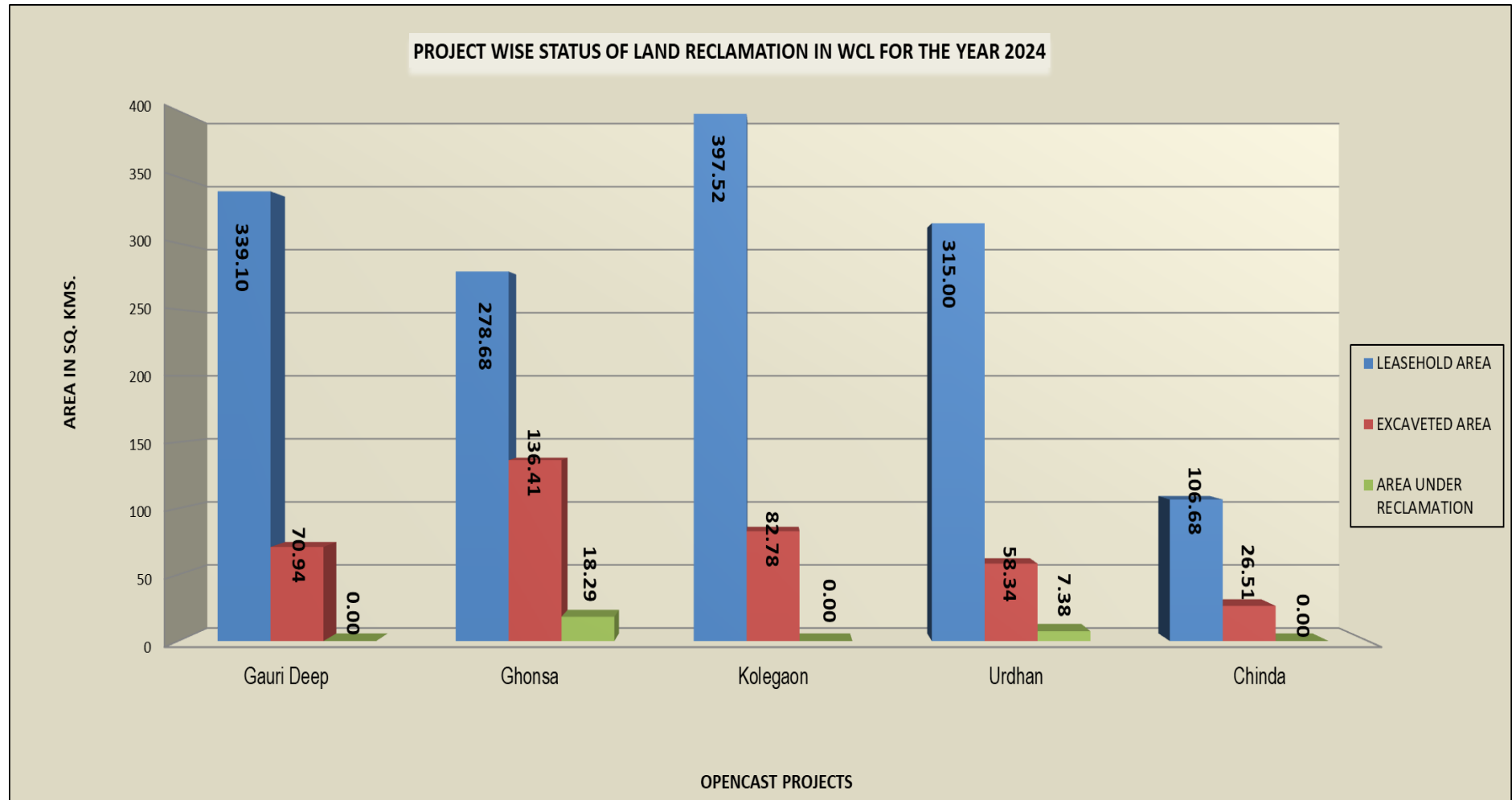


Chart 5.1 Bar Chart showing Land Reclamation Status in WCL

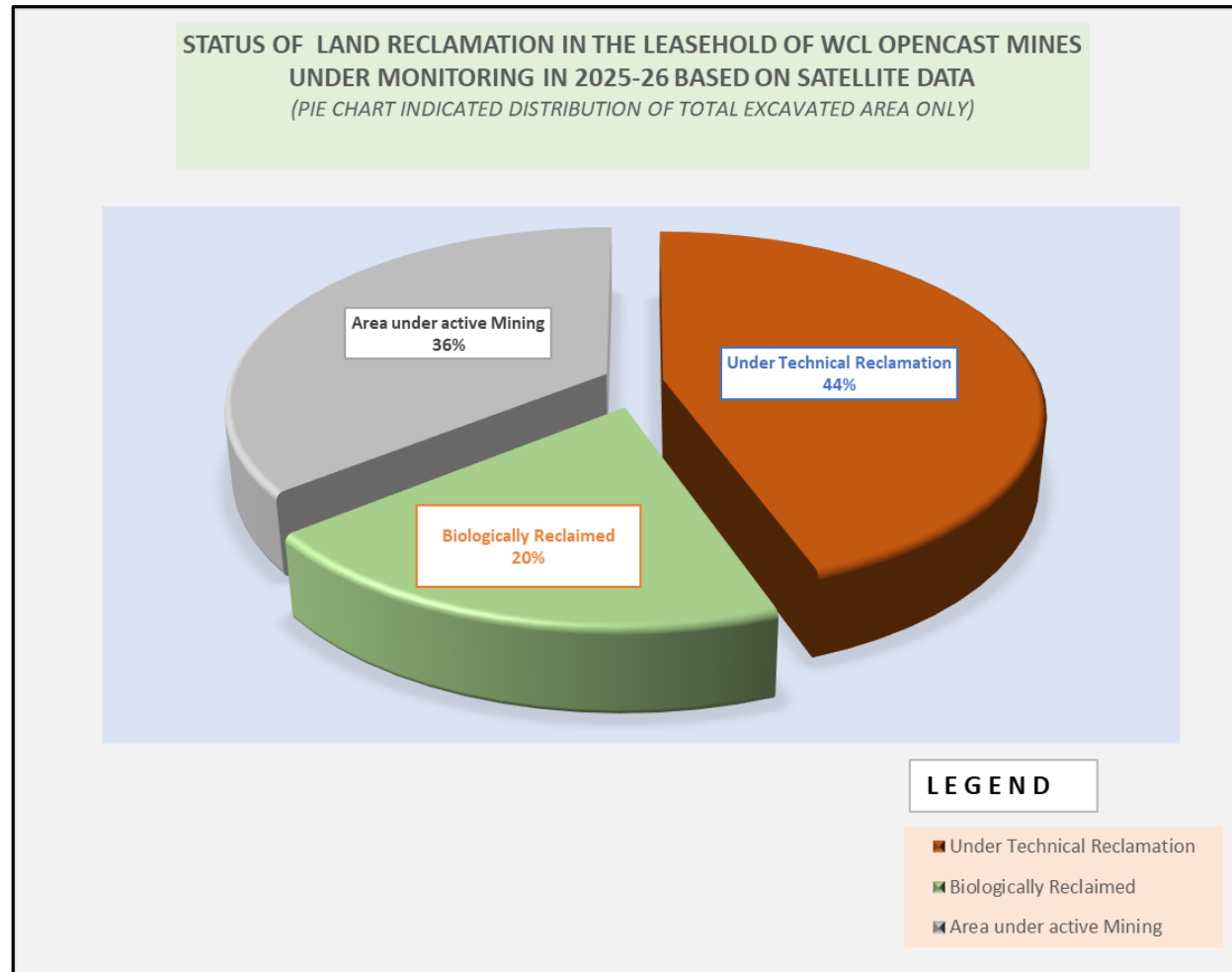


Figure 5.1: Land Reclamation Status of Total Excavated area in WCL

Table 5.3 Project-wise Land Reclamation Status in Opencast Projects of WCL (2025)

LAND USE / COVER CLASSES	CLR CODE	AMBARA		BARKUHI		GHORAWARI		SHIVPURI		TOTAL	
		Area	%	Area	%	Area	%	Area	%	Area	%
Urban Settlement		5.39	1.79	10.91	9.69	26.28	5.70	22.62	0.59	65.20	3.27
Rural Settlement		0.00	0.87	0.47	1.23	6.70	1.04	17.86	0.00	25.03	1.26
Industrial Settlement		0.00	0.55	0.00	1.40	0.00	1.26	0.00	1.13	0.00	0.00
Total Settlement (A)		5.39	3.21	11.38	12.32	32.98	8.00	40.48	1.72	90.23	4.53
Dense Forest		0.00	0.46	0.00	1.59	0.00	0.16	0.00	4.02	0.00	0.00
Open Forest		0.00	0.09	0.00	12.09	83.11	1.70	0.94	12.33	84.05	4.22
Total Forest (B)		0.00	0.55	0.00	13.68	83.11	1.86	0.94	16.35	84.05	4.22
Scrubs (C)		12.49	0.18	32.66	1.54	374.84	3.49	33.53	7.23	453.52	22.77
Social Forestry		6.76	22.07	14.44	11.18	11.23	13.47	19.66	1.87	52.09	2.62
Plantation on External OB Dump		0.00	9.29	0.00	9.21	38.02	11.68	20.53	9.45	58.55	2.94
Plantation over Backfilled Areas (<i>Biological Reclamation</i>)		28.38	3.31	0.43	6.39	25.18	14.98	21.50	7.61	75.49	3.79
Total Area under Plantation (Green Cover) (D)		35.14	34.67	14.87	26.78	74.43	40.13	61.69	18.93	186.13	9.35
Total Vegetation (B to D)		47.63	35.40	47.53	42.00	532.38	45.48	96.16	42.51	723.70	36.34
Crop Lands		9.87	2.53	86.05	1.59	91.49	1.01	18.29	0.71	205.69	10.33
Fallow Lands		9.91	0.83	20.96	5.44	381.05	0.69	62.37	0.54	474.29	23.82
Total Agriculture (E)		19.78	3.36	107.01	7.03	472.54	1.70	80.65	1.25	679.98	34.14
Waste Lands		8.54	1.06	10.69	3.68	103.59	1.45	25.67	2.30	148.48	7.46
Barren Rocky Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fly Ash Pond		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sand Body		0.00	0.00	0.00	0.00	1.42	0.00	0.00	0.00	1.42	0.07
Total Wasteland (F)		8.54	1.06	10.69	3.68	105.01	1.45	25.67	2.30	149.90	7.53
Coal Quarry		3.95	9.98	6.02	8.76	12.57	13.91	11.24	12.51	33.77	1.70
Advance Quarry Site		0.00	5.89	0.00	6.11	0.00	3.27	0.00	4.64	0.00	0.00
Quarry Filled With Water		21.16	0.32	10.38	0.20	36.47	0.44	26.46	0.38	94.47	4.74
Total Area under Active Mining (G)		25.11	16.19	16.40	15.07	49.03	17.62	37.70	17.53	128.23	6.44
Barren OB Dump (H)		0.09	14.25	17.18	3.94	16.54	1.38	5.36	4.18	39.17	1.97
Area under Barren Backfilling		55.62	25.84	20.89	15.46	43.99	22.83	49.10	30.28	169.60	8.52
Coal Dump		0.00	0.69	6.45	0.50	3.04	1.54	1.18	0.23	10.67	0.54
Total Area under Technical Reclamation (I)		55.62	25.84	20.89	15.46	43.99	22.83	49.10	30.28	169.60	8.52
Total Area under Mining Activity (G+H+I)		80.82	56.28	54.46	34.47	109.56	41.83	92.16	51.99	336.99	16.92
Reservoir, nallah, ponds		0.00	0.69	6.45	0.50	3.04	1.54	1.18	0.23	10.67	0.54
Total Waterbodies (J)		0.00	0.69	6.45	0.50	3.04	1.54	1.18	0.23	10.67	0.54
Grand Total (A to J)		162.15	100.00	237.52	100.00	1255.51	100.00	336.29	100.00	1991.46	100.00

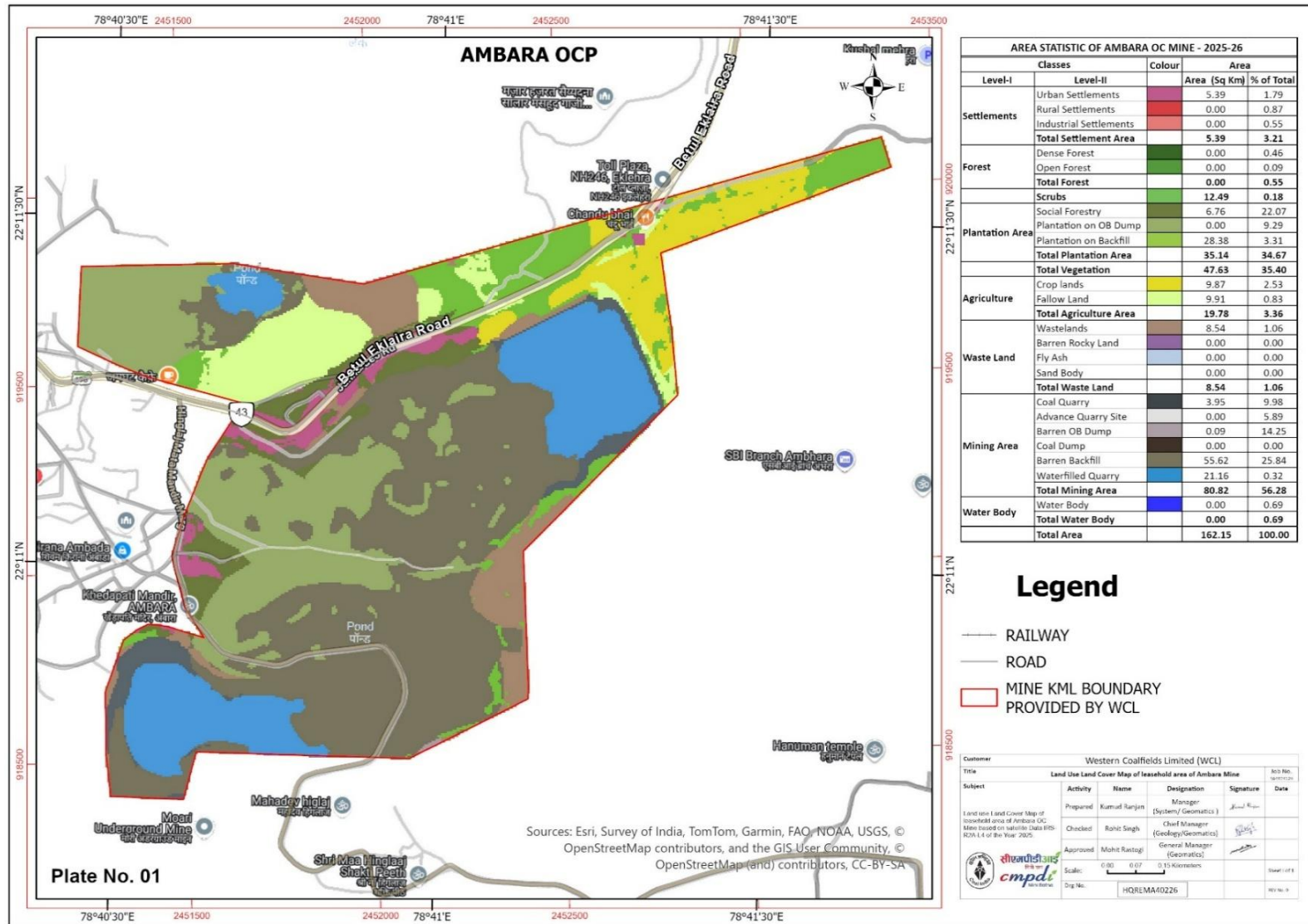


Plate 5.1: Land Use/Cover map of Ambara OCP

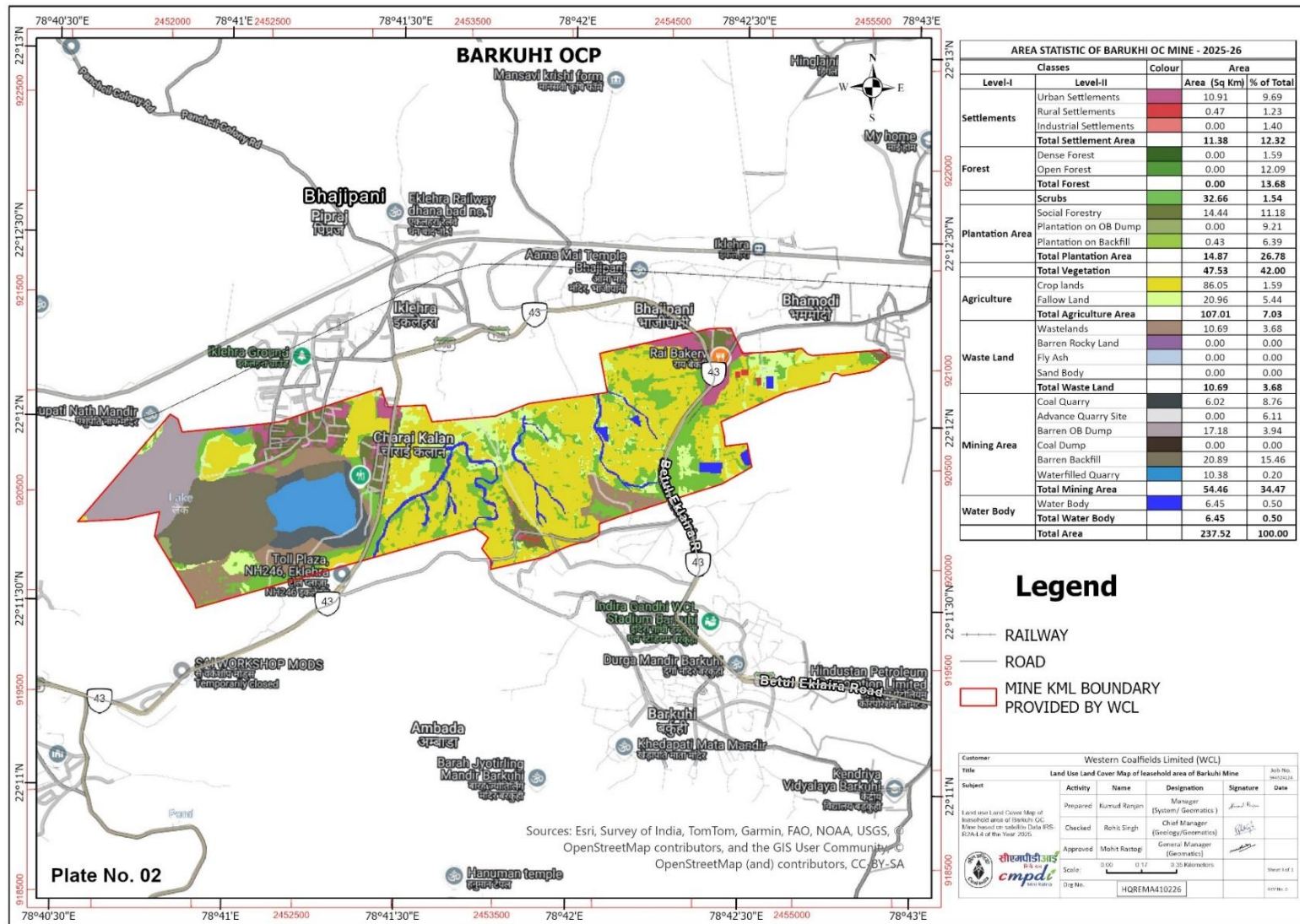


Plate 5.2: Land Use/Cover map of Barkuhi OCP

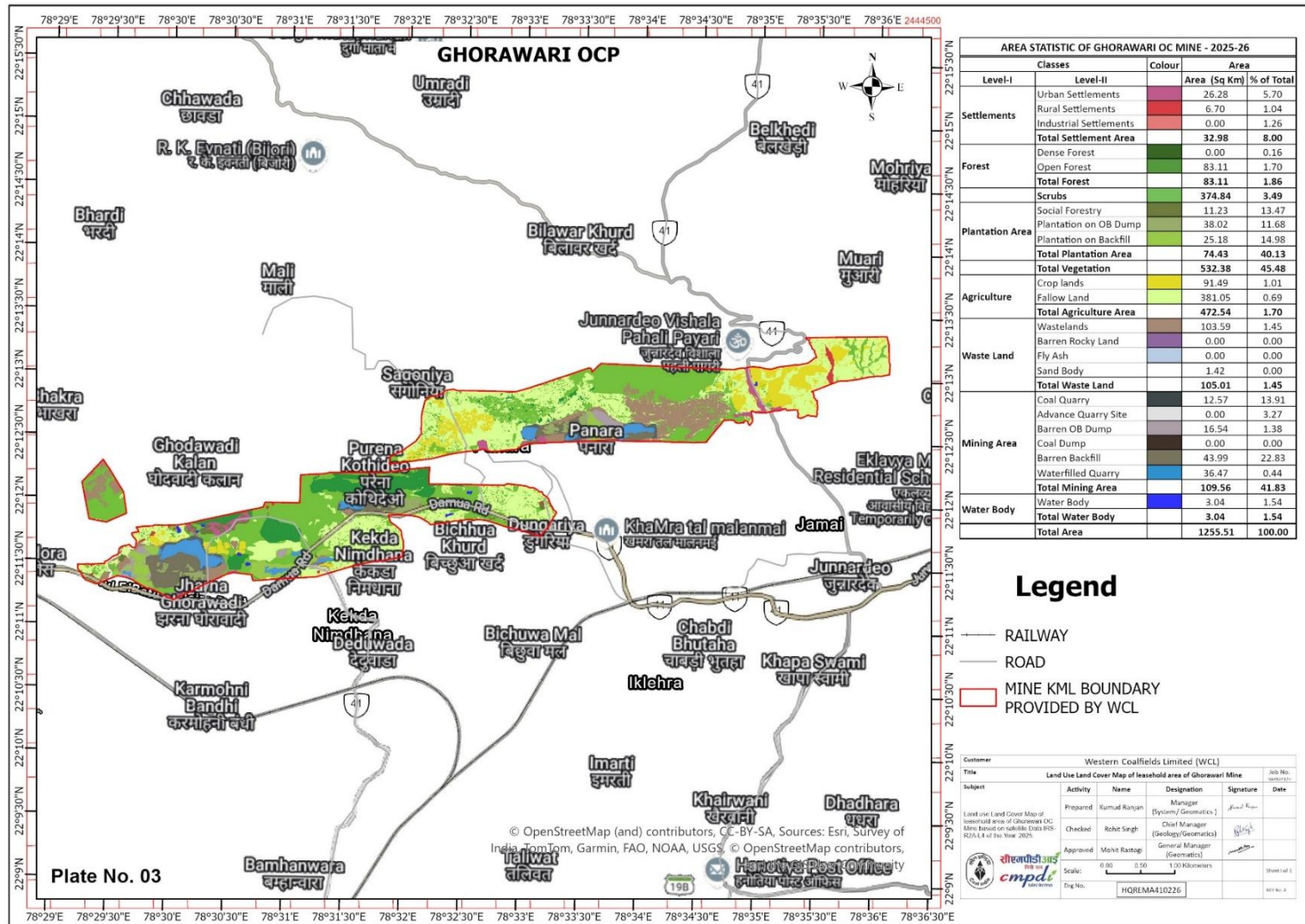


Plate 5.3: Land Use/Cover map of Ghorawari OCP

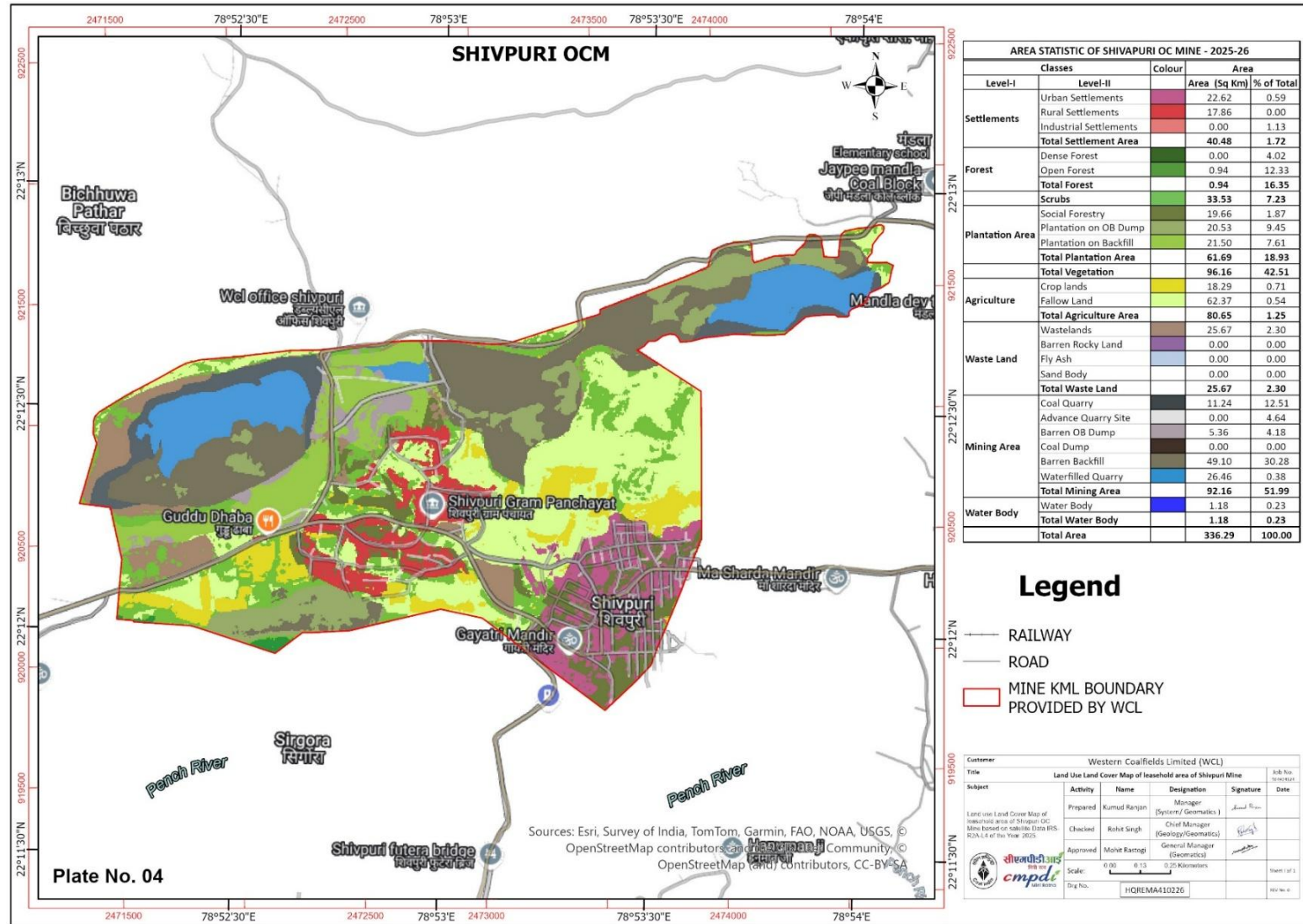


Plate 5.4: Land Use/Cover map of Shivpuri OCM

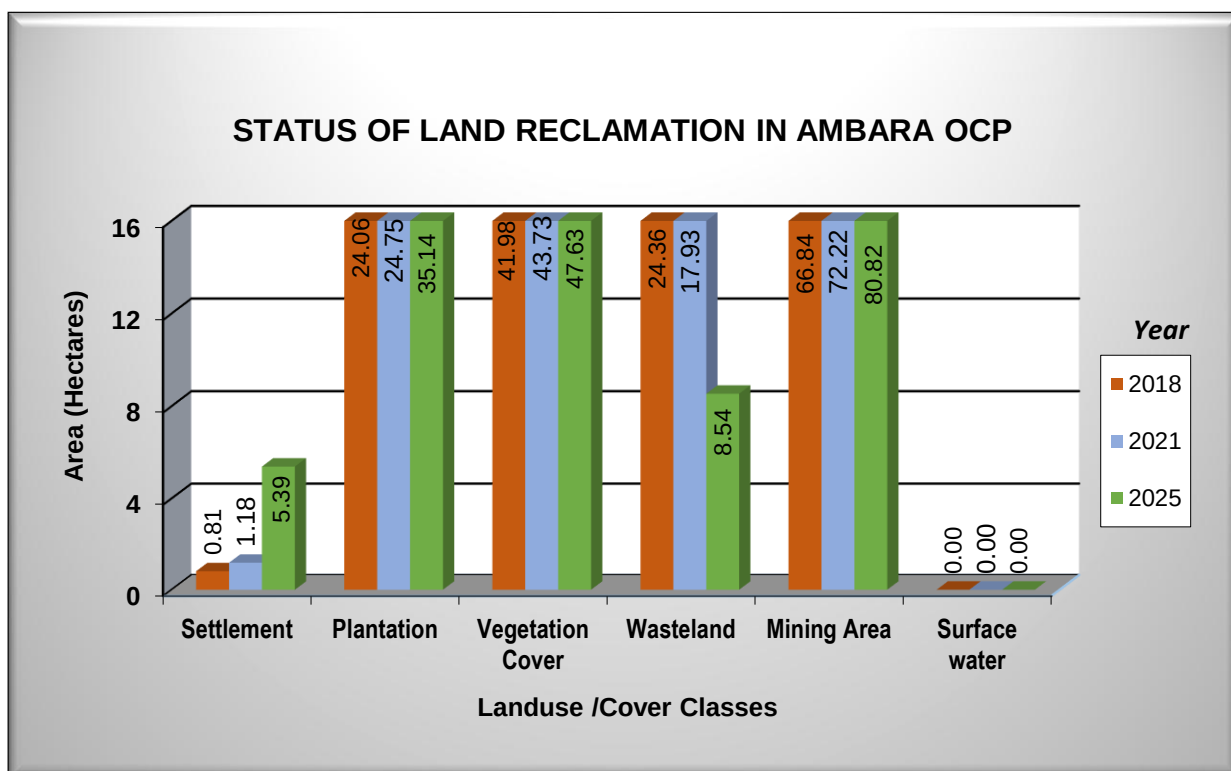


Chart 5.2: Status of Land Reclamation in Ambara OCP

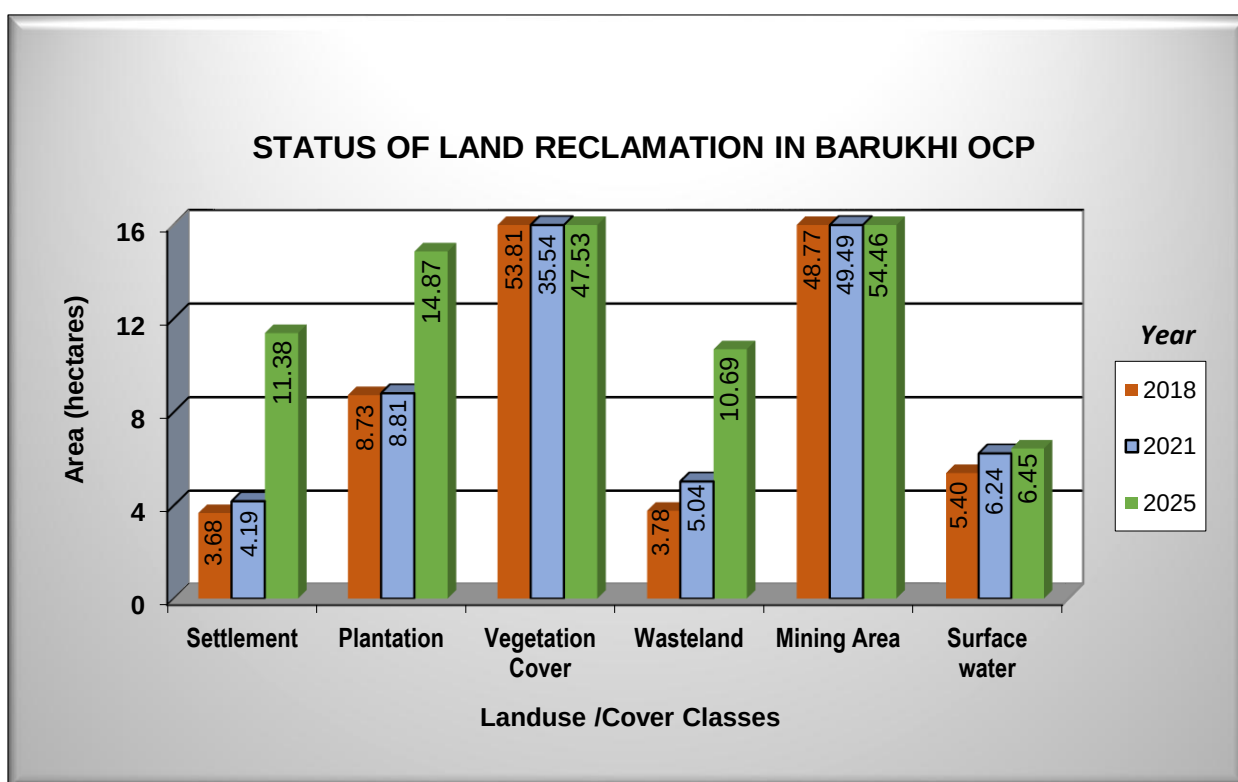


Chart 5.3: Status of Land Reclamation in Barukhi OCP

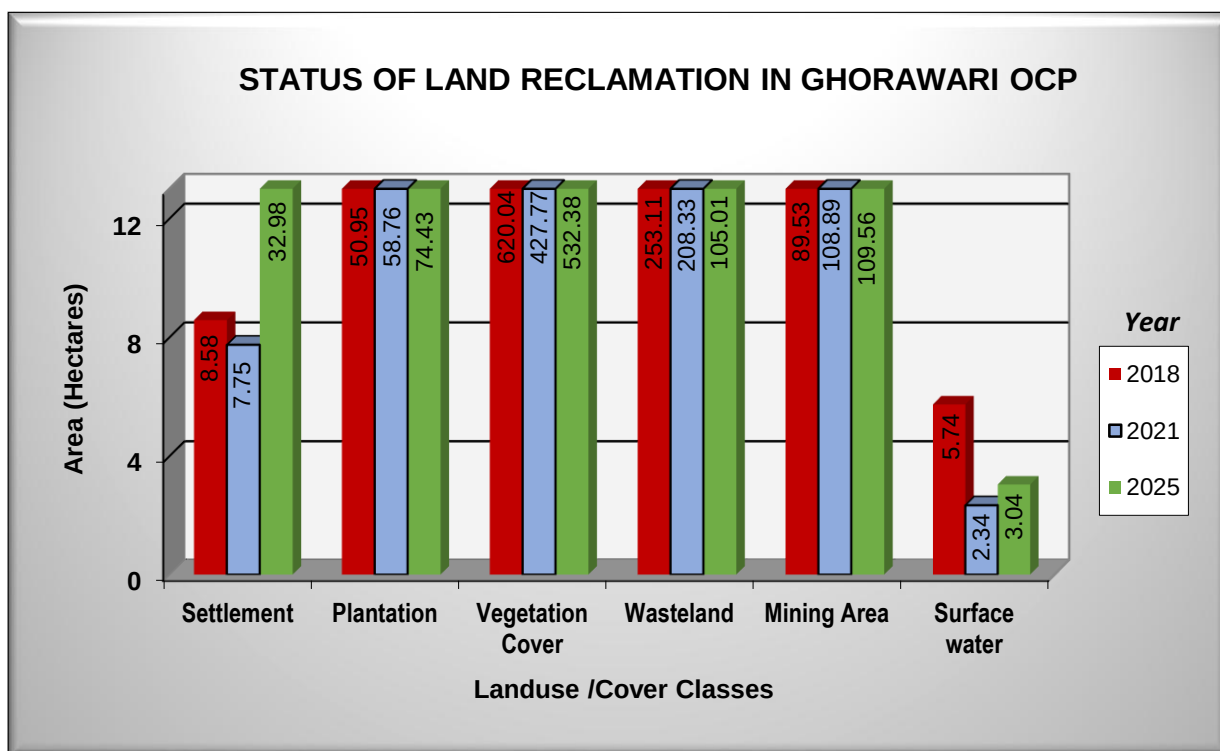


Chart 5.4: Status of Land Reclamation in Ghorawari OCP

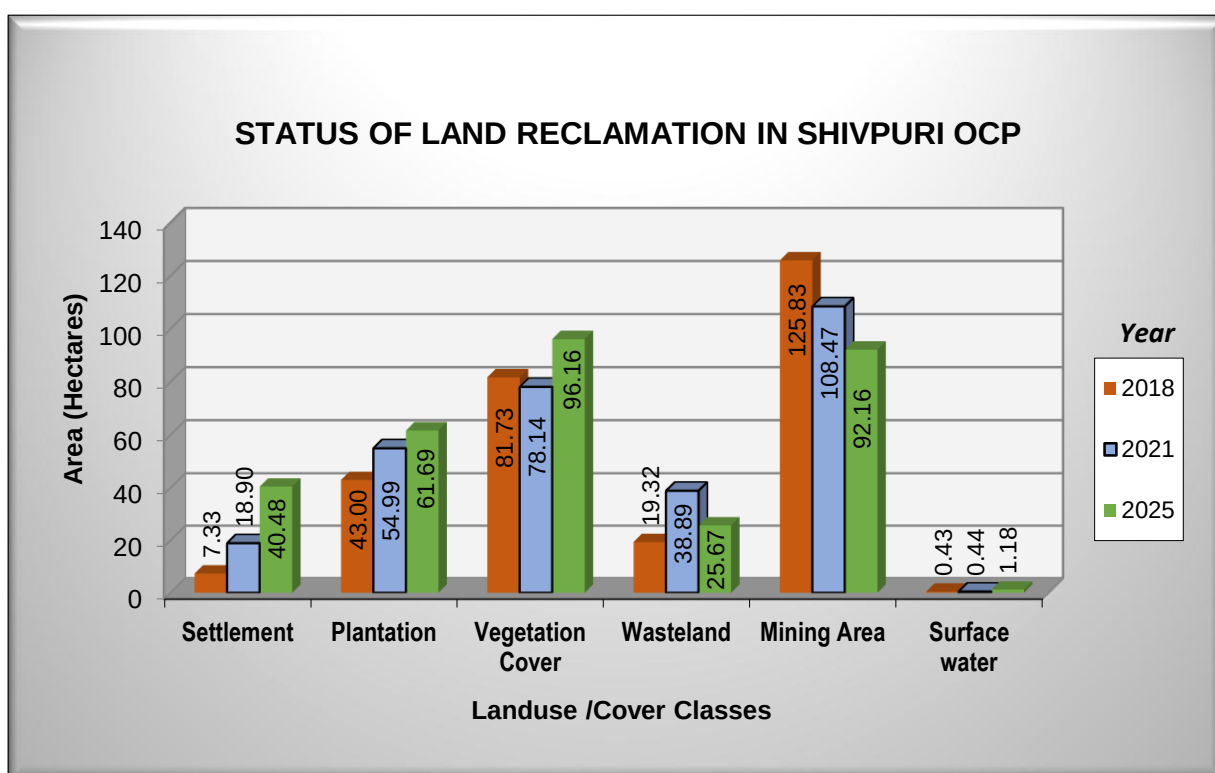


Chart 5.5: Status of Land Reclamation in Shivpuri OCP

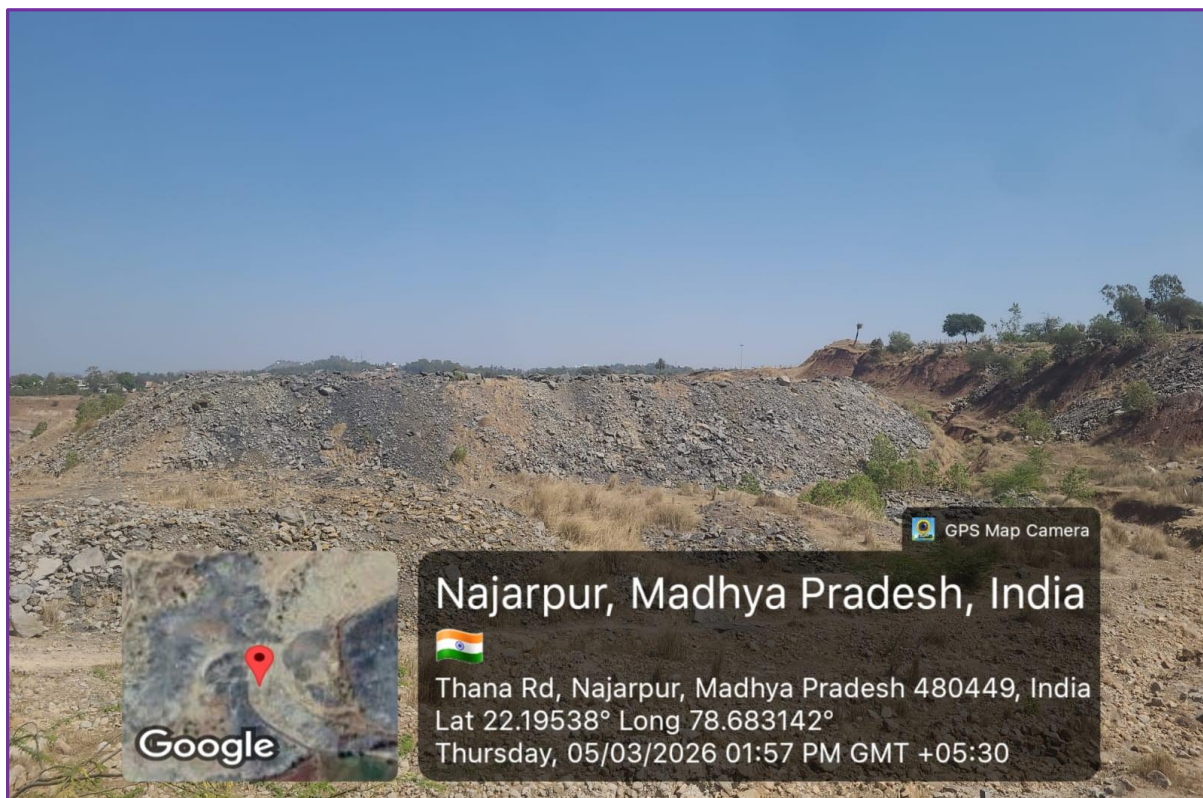


Photo 5.1: Backfill in Ambara OC Mine



Photo 5.2: Plantation in Ambara OC Mine

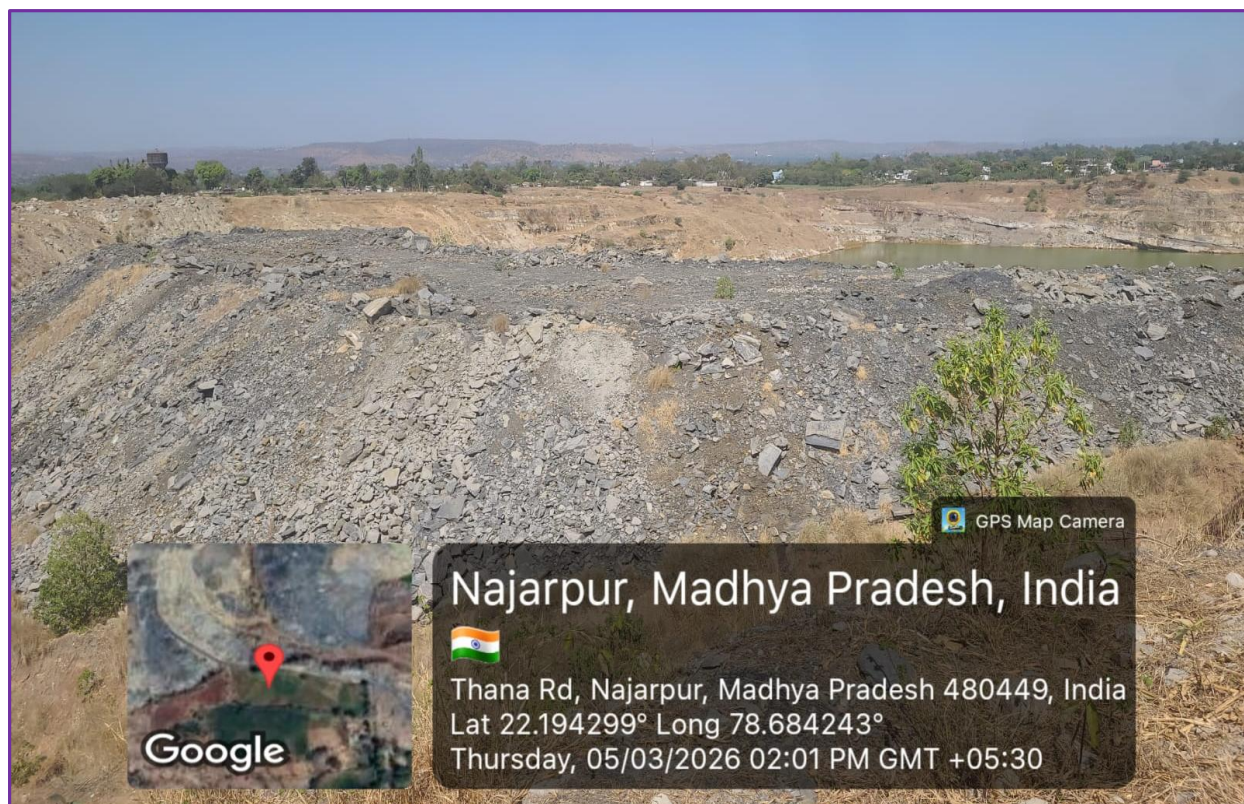


Photo 5.3: Backfill in Burkuhi OC



Photo 5.4: Plantation around Barkuhi OC mine



Photo 5.5: Plantation in Ghorawari OC mine



Photo 5.6: Plantation on Backfill in Ghorawari OC mine

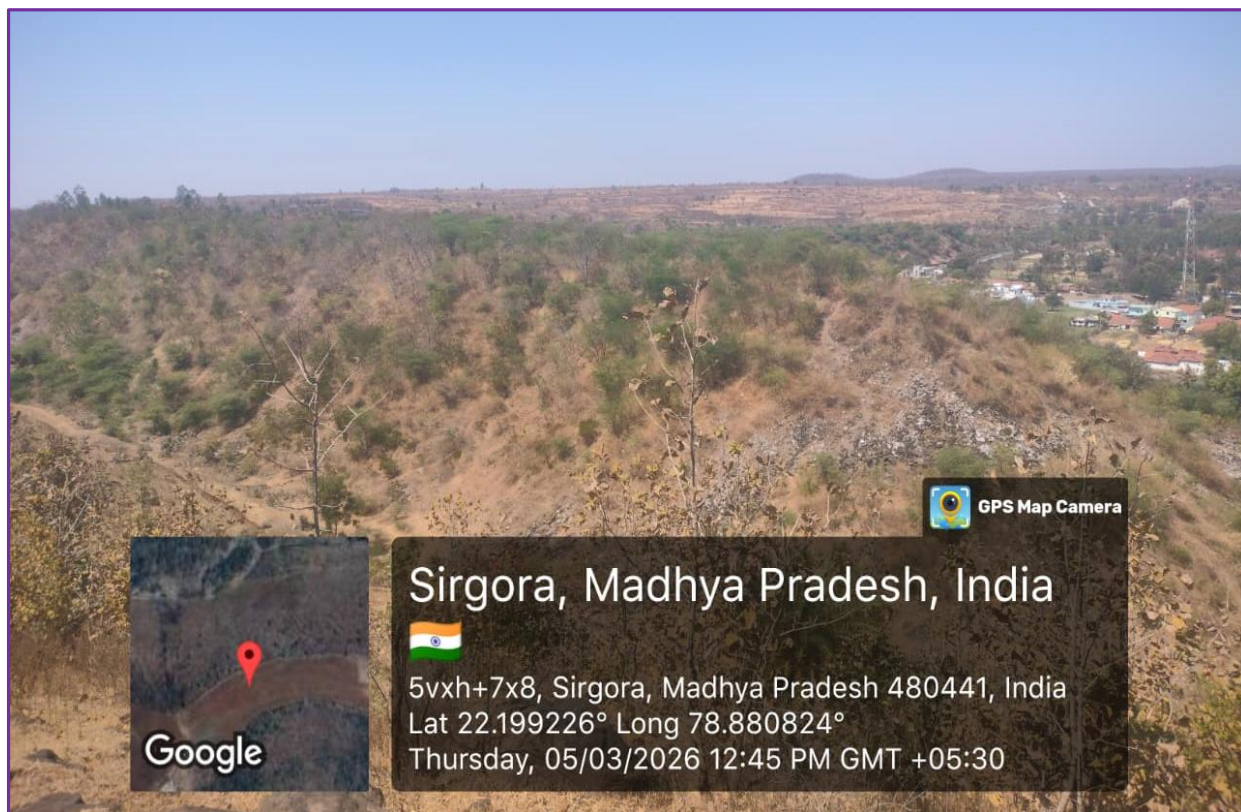


Photo 5.7: Plantation on OB Dump in Shivpuri OC mine

SOUTH EASTERN COALFIELDS LIMITED

6. Land Reclamation Status in South Eastern Coalfields Limited

6.1 Following fifteen (15) opencast and underground projects of SECL producing less than 5 million cubic m. (Coal+OB) together per annum were taken up for land reclamation monitoring based on satellite data during the year 2025-26:

- | | |
|----------------------|-------------------|
| 1. Kotma OC | 9. Vijay West U/G |
| 2. Mahan OC | 10. Jamuna U/G |
| 3. West Chirimiri OC | 11. Damni U/G |
| 4. Churcha RO U/G | 12. Khairaha U/G |
| 5. Katkona U/G | 13. Rajendra U/G |
| 6. Jhilimili U/G | 14. Dhelwadih U/G |
| 7. Pandavpara U/G | 15. Bagdewa U/G |
| 8. Kumda 7/8 U/G | |

6.2 Area statistics of different land use classes present in the mine leasehold of the above projects for the year 2025 are shown in Table – 6.2. Land use maps derived from satellite data are shown in Plate 6.1 – 6.15 and bar charts in Chart 6.1-6.15. This time both local grid and UTM grid is used for map preparation along with all essential boundaries and shape file such as EC Boundary, Coal Stock Boundary, OB Dump, Sump, Plantation area etc. as per the work order from CIL.

6.3 Out of 15 mines, many Leasehold areas has been modified in compliance with EC as provided by SECL. Leasehold area of Kotma OC has decreased from 826.11 Ha (Yr 2022) to 323.07 Ha (2025), for Jhilimili U/G & Pandavpara U/G, the decrease is from 1313.52 Ha (Yr 2022) to 972.06 Ha (2025). Marginal decrease is also there for Kumda 7/8 U/G from 500.56 Ha (Yr 2022) to 499.00 Ha (2025). For some mines, the leasehold area have increased as well, Mahan OC EC approved area has increased from 194.63 Ha (Yr 2022) to 201.28 Ha (2025), There is marginal increase in EC area for Vijay West U/G from 425.00 Ha (Yr 2023) to 425.14 Ha (2025), in Jamuna U/G, it has changed from 912.69 Ha

(Yr 2022) to 915.00 Ha (2025) and for Bagdewa U/G from 502.37 Ha (Yr 2022) to 502.60 Ha (2025).

- 6.4** Apart from above EC area changes, for mines like Churcha RO U/G, Katkona U/G, though the EC area remains same to that of previous cycle, the EC boundary has changed.
- 6.5** Study reveals that out of total leasehold area 12399.72 Ha, excavated area is 248.24 Ha. Total area under reclamation is 208.74 Ha (84.09% of excavated area), out of which 47.45 Ha. (19.11% of excavated area) is under technical reclamation and 161.29 Ha. (64.97% of excavated area) has been revegetated (Biologically Reclaimed). The study also reveals that technical reclamation & Biological reclamation both has been done in 4 projects, Kotma OC, Mahan OC, West Chirimiri OC and Kumda 7/8 U/G, missing in others, their reason being underground projects.
- 6.6** Now discussing individual mine wise, owing to Kotma OC's EC boundary change, active mining area can be seen to have increased to 6.08% causing reduction in similar area under reclamation. Same nature of change has occurred in Mahan OC, where due to EC boundary change & water inundation 21.36% decrease could be seen in area under reclamation activity.
- 6.7** In West Chirimiri OC, rain-water has increased the size of water filled quarry, causing increase in total excavated area, thus decreasing a marginal 1.06% land under reclamation.
- 6.8** After analysing the satellite data of year 2025, it is evident that Green Cover which includes plantation carried out on backfilled area, external OB dumps as well as under social forestry in all the mines of SECL taken up for study has increased 23.13 Ha & reached to 643.21 Ha (5.19% of entire leasehold area 12399.72 Ha) as compared to 620.08 Ha (4.57% of total leasehold area 13577.91) in the previous studies, despite decrease of

1178.19 Ha leasehold land. This is the result of the efforts made by SECL towards land reclamation and environmental protection even with constraints of Surface right availability, maximum LT5 mines being U/G.

- 6.9** Kumda 7/8 U/G being a underground mine doesn't have its own backfill or plantation class, but Bishrampur OCP's backfill is placed inside the Southern west boundary of Kumda's EC boundary resulting into a total excavated area of 20.74 Ha.
- 6.10** Study reveals that Vijay West U/G has dense mixed Sal Jungles on surface and in case of Damini U/G & Khairaha U/G the surface is in abundance with Agricultural land. Limited surface right approved to SECL in these projects & thus very less area available for land reclamation.
- 6.11** Out of the 15 projects of SECL producing less than 5million cubic m. (Coal+OB together) p.a., Kumda 7/8 U/G ranks on top for area under reclamation (100.00%) followed by West Chirimiri OC (87.55%) and Kotma OC (85.02%). It may be noted here that as Kumda 7/8 UG is an underground mine, the reclamation data is reflecting the data of the backfill and plantation on backfill of the nearby Bishrampur OC, which is falling inside the lease of the Kumda 7/8 UG as explained at point 6.9 above.

Table 6.1: Summarized Land Reclamation Status in SECL

Project wise Land Reclamation Status in Mines producing Less than 5 mcm (Coal+OB) annually of SECL based on Satellite Data of the year 2025																			
Table A																		(Area in Hectare)	
Sl. No.	Name of the Project	Total Leasehold Area		Technical Reclamation		Plantation						Area Under Active Mining	Total Excavated Area	Total Area under Plantation in the leaseholds (%Green Cover Generated)		Total Area Under Reclamation			
						Biological		Other Plantation											
				Area under Backfilling		Plantation on Excavated/ Backfilled Area		Plantation on External OB Dump		Social Forestry, Avenue Plantation Etc.									
1	2	3	4	5		6		7		8		9		10(=5+6+9)		11(=6+7+8)		12(=5+6)	
		2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025	2022/2023	2025
1	Kotma OC	826.11	323.07	3.17	2.73	60.49	53.20	0.00	0.00	42.98	1.82	6.22	9.86	69.88	65.78	103.47	55.02	63.66	55.93
				4.54%	4.15%	86.56%	80.87%					8.90%	14.98%			12.52%	17.03%	91.10%	85.02%
2	Mahan OC	194.63	201.28	44.88	20.75	4.61	25.31	7.75	1.00	0.00	20.31	3.20	17.41	52.69	63.47	12.36	46.61	49.49	46.06
				85.18%	32.69%	8.75%	39.88%					6.07%	27.43%			6.35%	23.16%	93.93%	72.57%
3	West Chirimiri OC	728.39	728.39	22.53	14.76	56.92	71.25	0.00	0.00	14.93	15.56	10.22	12.24	89.67	98.25	71.85	86.81	79.45	86.02
				25.13%	15.03%	63.48%	72.52%					11.40%	12.45%			9.86%	11.92%	88.60%	87.55%
4	Churcha RO UG	3590.15	3590.15	0.00	0.00	0.00	0.00	0.00	0.00	40.35	34.94	0.00	0.00	0.00	0.00	40.35	34.94	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			1.12%	0.97%	0.00%	0.00%
5	Katkona UG	1130.93	1130.93	0.00	0.00	0.00	0.00	0.00	0.00	0.66	34.91	0.00	0.00	0.00	0.00	0.66	34.91	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.06%	3.09%	0.00%	0.00%
6	Jhilimili UG	1313.52	972.06	0.00	0.00	0.00	0.00	0.00	0.00	8.73	30.85	0.00	0.00	0.00	0.00	8.73	30.85	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.66%	3.17%	0.00%	0.00%
7	Pandavpara UG	1313.52	972.06	0.00	0.00	0.00	0.00	0.00	0.00	8.73	30.85	0.00	0.00	0.00	0.00	8.73	30.85	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.66%	3.17%	0.00%	0.00%
8	Kumda 7/8 UG	500.56	499.00	16.85	9.21	9.7	11.53	0	0.00	165.45	161.91	0.00	0.00	26.55	20.74	175.15	173.44	26.55	20.74
				63.47%	44.41%	36.53%	55.59%					0.00%	0.00%			34.99%	34.76%	100.00%	100.00%
9	Vijay West UG	425.00	425.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.10%	0.00%	0.00%
10	Jamuna UG	912.69	915.00	0.00	0.00	0.00	0.00	0	0.00	157.05	71.84	0.00	0.00	0.00	0.00	157.05	71.84	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			17.21%	7.85%	0.00%	0.00%
11	Damni UG	335.00	335.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	1.30	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.39%	0.00%	0.00%
12	Khairaha UG	472.06	472.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.97	0.00	0.00	0.00	0.00	0.00	1.97	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.42%	0.00%	0.00%
13	Rajendra UG	590.00	590.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.55	0.00	0.00	0.00	0.00	0.00	39.55	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	6.70%	0.00%	0.00%
14	Dhelwadih UG	742.98	742.98	0.00	0.00	0.00	0.00	0.00	0.00	17.93	18.42	0.00	0.00	0.00	0.00	17.93	18.42	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			2.41%	2.48%	0.00%	0.00%
15	Bagdewa UG	502.37	502.60	0.00	0.00	0.00	0.00	0.00	0.00	23.80	16.29	0.00	0.00	0.00	0.00	23.80	16.29	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			4.74%	3.24%	0.00%	0.00%
Total SECL (LT5 - 15)		13577.91	12399.72	87.43	47.45	131.72	161.29	7.75	1.00	480.61	480.92	19.64	39.50	238.79	248.24	620.08	643.21	219.15	208.74
				36.61%	19.11%	55.16%	64.97%					8.22%	15.91%	1.76%	2.00%	4.57%	5.19%	91.78%	84.09%
(*) calculated is in respect to Total Excavated Area except for "Total Area under Plantation" where % is in terms of "Leasehold Area".																			
* Area under Active Mining Includes Coal Quarry, Advance Quarry Site and Quarry filled with water.																			
Note- The Land Reclamation Monitoring of Vijay West U/G mine was previously conducted in the year 2023-24, for all other 14 mines the previous cycle was 2022-23.																			

Table 6.2: Composite land reclamation status in remaining mines of SECL

(<5 MCM Coal+OB) as per clause 2.(ii) of the received work order from CIL

Sl.No.	Cluster No.	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological		Other Plantations											
				Area under Backfilling	Plantation on Excavated / Backfilled Area	Plantation on External OB Dumps	Social Forestry, Avenue Plantation Etc.												
1	2	3	4	5	6	7	8	9 (=4+5+8)	10 (=5+6+7)	11(=4+5)									
		2023	2024	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
16	Rani Atari U/G	361.50	361.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	2.34	2.20	2.34	2.20	0.00	0.28	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			0.00%	0.08%	0.00%	0.00%
	TOTAL (B)	361.50	361.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	2.34	2.20	2.34	2.20	0.00	0.28	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			0.00%	0.08%	0.00%	0.00%
		2021	2024	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
17	Kurasa OCP	523.00	523.30	86.00	36.65	140.00	189.35	0.00	0.00	80.00	82.96	0.00	0.00	226.00	226.00	220.00	272.31	226.00	226.00
				38.05%	16.22%	61.95%	83.78%					0.00%	0.00%			42.07%	52.04%	100.00%	100.00%
18	Kahani U/G	450.94	369.89	0.00	0.00	0.00	0.00	0.00	0.00	31.58	35.79	0.00	0.00	0.00	0.00	31.58	35.79	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			7.00%	9.68%	0.00%	0.00%
19	Shivani U/G	562.95	561.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94	0.00	1.94	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	100.00%			0.00%	0.00%	0.00%	0.00%
20	Chirimiri U/G	686.00	686.29	0.00	0.00	0.00	0.00	0.00	0.00	7.77	6.71	0.00	0.00	0.00	0.00	7.77	6.71	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			1.13%	0.98%	0.00%	0.00%
21	Rajnagar U/G	1848.11	1848.11	133.62	104.73	243.85	270.43	0.00	0.00	81.04	103.78	48.02	54.55	425.49	429.71	324.89	374.21	377.47	375.16
				31.40%	24.37%	57.31%	62.93%					11.29%	12.70%			17.58%	20.25%	88.71%	87.30%
22	Jhagrakhand U/G	1065.67	1065.67	112.98	133.88	111.00	110.90	3.84	3.38	35.46	36.09	62.39	34.29	286.37	279.07	150.30	150.37	223.98	244.79
				39.45%	47.97%	38.76%	39.74%					21.79%	12.29%			14.10%	14.11%	78.21%	87.71%
23	Vindhya U/G*	348.01	350.00	0.00	0.00	0.00	0.00	0.00	0.00	7.54	6.91	3.47	3.45	3.47	3.45	7.54	6.91	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			2.17%	1.97%	0.00%	0.00%
	TOTAL (C)	5484.68	5404.77	332.60	275.26	494.85	570.68	3.84	3.38	243.39	272.23	113.88	94.23	941.33	940.17	742.08	846.30	827.45	845.94
				35.33%	29.28%	52.57%	60.70%					12.10%	10.02%			13.53%	15.66%	87.90%	89.98%
		2020	2024	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
24	Bijuri U/G	216.15	216.15	0.00	0.00	0.00	0.00	0.00	0.00	11.04	21.31	0.00	0.00	0.00	0.00	11.04	21.31	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			5.11%	9.86%	0.00%	0.00%
25	Baherabandh U/G	770.13	770.13	0.00	0.00	0.00	0.00	0.00	0.00	24.19	24.70	0.00	3.23	0.00	3.23	24.19	24.70	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	100.00%			3.14%	3.21%	0.00%	0.00%
26	Jharia U/G	557.00	557.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.00%	0.00%	0.00%
27	Haldibari U/G	390.00	390.00	0.00	0.00	0.00	0.00	0.94	0.92	17.78	16.81	1.00	0.70	1.00	0.70	18.72	17.73	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			4.80%	4.55%	0.00%	0.00%
28	Singhali U/G	862.28	862.27	0.00	0.00	0.00	0.00	0.32	0.31	12.18	12.05	3.72	2.02	3.72	2.02	12.50	12.36	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			1.45%	1.43%	0.00%	0.00%
	TOTAL (D)	2795.56	2795.54	0.00	0.00	0.00	0.00	1.26	1.23	65.19	74.87	4.72	5.95	4.72	5.95	66.45	76.09	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			2.38%	2.72%	0.00%	0.00%
		2019	2024	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023
29	Gayatri U/G	531.59	608.41	0.00	0.00	0.00	0.00	0.00	0.00	6.64	19.58	2.47	2.21	2.47	2.21	6.64	19.58	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			1.25%	3.22%	0.00%	0.00%
30	Ketki U/G	497.49	548.65	0.00	0.00	0.00	0.00	0.00	0.00	1.02	20.83	0.00	0.97	0.00	0.97	1.02	20.83	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	100.00%			0.21%	3.80%	0.00%	0.00%
31	Umariya U/G	509.35	512.54	0.00	0.00	3.60	0.00	0.00	0.00	13.60	36.92	1.54	0.66	5.14	0.66	17.20	36.92	3.60	0.00
				0.00%	0.00%	70.04%	0.00%					29.96%	100.00%			3.38%	7.20%	70.04%	0.00%
	TOTAL (E)	1538.43	1669.60	0.00	0.00	3.60	0.00	0.00	0.00	21.26	77.33	4.01	3.83	7.61	3.83	24.86	77.33	3.60	0.00
				0.00%	0.00%	47.31%	0.00%					52.69%	100.00%			1.62%	4.63%	47.31%	0.00%
		2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
32	Ambika OC**	134.00	134.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			2.24%	2.24%	0.00%	0.00%
33	Mahan II OC**	297.00	297.00	100.00	101.00	53.00	54.00	5.00	5.00	4.00	7.00	69.00	69.00	222.00	224.00	62.00	66.00	153.00	155.00
				45.05%	45.09%	23.87%	24.11%					31.08%	30.80%			20.88%	22.22%	68.92%	69.20%
34	Jamuna OC**	885.00	885.00	67.00	54.00	516.00	530.00	0.00	0.00	0.15	15.00	79.00	79.00	662.00	663.00	516.15	545.00	583.00	584.00
				10.12%	8.14%	77.95%	79.94%					11.93%	11.92%			58.32%	61.58%	88.07%	88.08%
35	Dhanpuri OC ***		1268.00		340.00		239.00		180.00		17.00		72.00		651.00		436.00		579.00
					52.23%		36.71%						11.06%				34.38%		88.94%
	TOTAL (F)	1316.00	2584.00	167.00	495.00	569.00	823.00	5.00	185.00	7.15	42.00	148.00	220.00	884.00	1538.00	581.15	1050.00	736.00	1318.00
				18.89%	32.18%	64.37%	53.51%					16.74%	14.30%			44.16%	40.63%	83.26%	85.70%
		2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023
36	Sharda OC	871.21	871.21	62.00	72.15	124.00	135.68	34.20	34.20	3.39	3.39	63.38	47.54	249.38	255.37	161.59	173.27	186.00	207.83
				24.86%	28.25%	49.72%	53.13%					25.42%	18.62%			18.55%	19.89%	74.58%	81.38%
37	Vijay West UG*		425.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.00%	0.00%	0.00%
38	Rajnagar UG	3486.58	3486.58	0.00	0.00	0.00	0.00	0.00	0.00	37.53	46.70	0.00	0.00	0.00	0.00	37.53	46.70	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			1.08%	1.34%	0.00%	0.00%
	TOTAL (G)	4357.79	4782.79	62.00	72.15	124.00	135.68	34.20	34.20	40.92	50.09	63.38	47.54	249.38	255.37	199.12	219.97	186.00	207.83
				24.86%	28.25%	49.72%	53.13%					25.42%	18.62%			18.55%	19.89%	74.58%	81.38%
#GRAND TOTAL (A+B+C+D+E+F+G)		29431.87	29997.91	649.03	889.86	1323.17	1690.65	52.05	224.81	858.52	997.72	355.97	413.24	2328.17	2993.75	2233.74	2913.17	1972.20</	



Chart 6.1: Bar Chart showing Land Reclamation Status in SECL

(As per Digital Image Processing of Satellite Data of the year 2025)

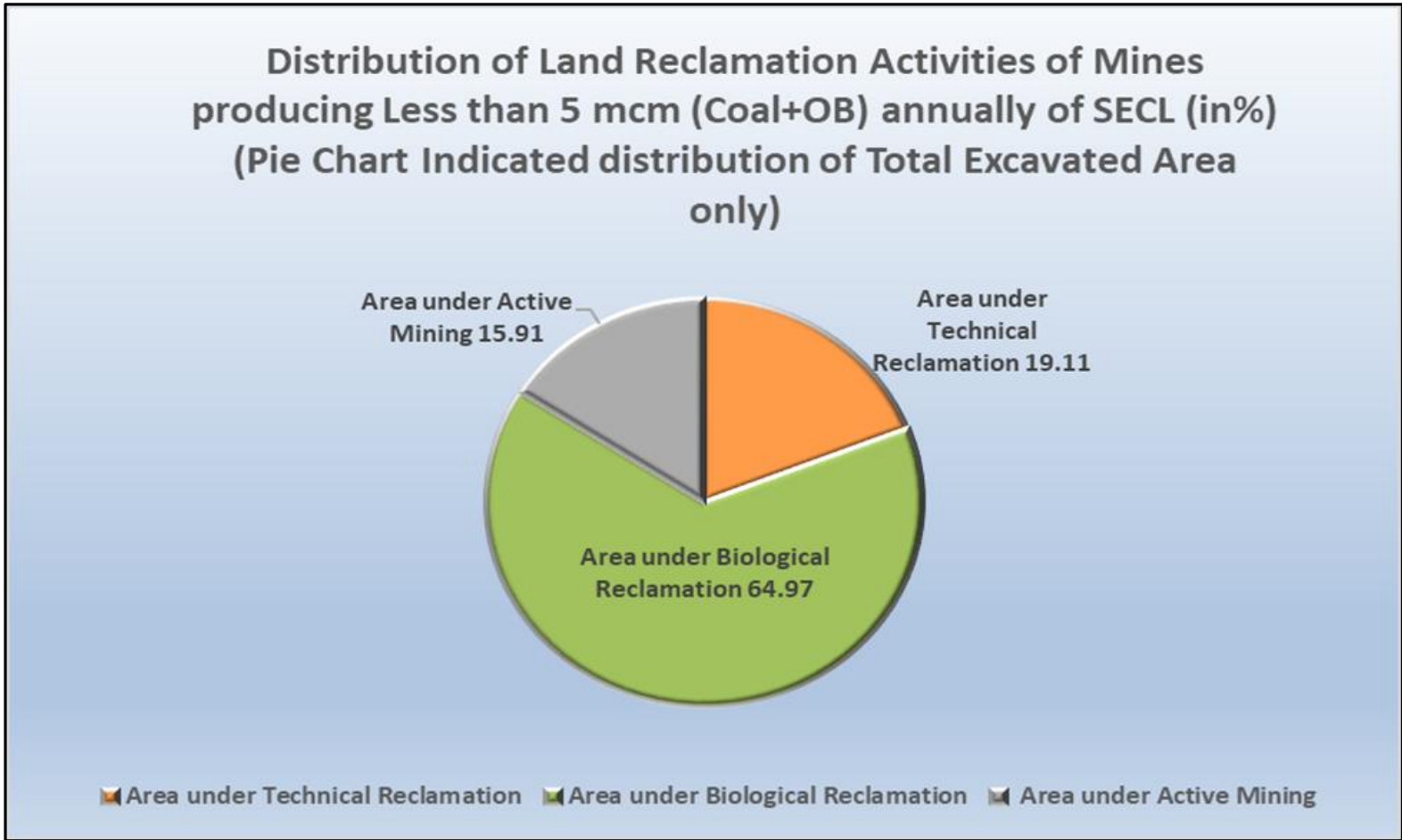


Figure 6.1: Pie Chart showing distribution of total Excavated area in SECL Mines

Table 6.3: Project-wise Land Reclamation Status in Opencast Projects of SECL (2025)

Project wise Area Statistics of Land Use / Cover & Reclamation in Mines producing Less than 5 mcm (Coal+OB) annually of SECL based on Satellite data of the Year 2025																		
(Area in Hectare)																		
	LAND USE / COVER CLASSES	CLR CODE	KOTMA OC		MAHAN OC		WEST CHIRIMIRI OC		CHURCHA RO UG		KATKONA UG		JHILIMILI UG		PANDAVPARA UG		KUMDA 7/8 UG	
SETTLEMENTS	Urban Settlement		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
	Rural Settlement		2.09	0.65	0.00	0.00	13.81	1.90	6.88	0.19	9.88	0.87	21.12	2.17	21.12	2.17	0.00	0.00
	Industrial Settlement		4.43	1.37	4.82	2.39	1.74	0.24	59.32	1.65	0.00	0.00	0.89	0.09	0.89	0.09	2.52	0.51
	Total Settlement (A)		0.00	0.00	0.00	0.00	0.48	0.07	4.71	0.13	0.21	0.02	4.05	0.42	4.05	0.42	1.89	0.38
FORESTS			6.51	2.02	4.82	2.39	16.04	2.20	70.91	1.97	10.09	0.89	26.05	2.68	26.05	2.68	4.41	0.88
	Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00	164.28	4.58	700.46	61.94	503.77	51.83	503.77	51.83	0.03	0.01
	Open Forest		38.94	12.05	0.01	0.00	473.61	65.02	612.44	17.06	208.41	18.43	178.31	18.34	178.31	18.34	43.29	8.67
GREEN COVER	Total Forest (B)		38.94	12.05	0.01	0.00	473.61	65.02	776.72	21.63	908.87	80.36	682.08	70.17	682.08	70.17	43.32	8.68
	Scrubs (C)		72.10	22.32	12.75	6.33	77.85	10.69	999.94	27.85	117.50	10.39	121.93	12.54	121.93	12.54	98.29	19.70
	Social Forestry		1.82	0.56	20.31	10.09	15.56	2.14	34.94	0.97	34.91	3.09	30.85	3.17	30.85	3.17	161.91	32.45
	Plantation on External OB Dump		0.00	0.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Orchard		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plantation over Backfilled Areas (Biological Reclamation)		53.20	16.47	25.31	12.57	71.25	9.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.53	2.31
	Total Area under Plantation (Green Cover) (D)		55.02	17.03	46.61	23.16	86.81	11.92	34.94	0.97	34.91	3.09	30.85	3.17	30.85	3.17	173.44	34.76
	Total Vegetation (B to D)		166.05	51.40	59.36	29.49	638.26	87.63	1811.60	50.46	1061.28	93.84	834.86	85.89	834.86	85.89	315.04	63.13
AGRICULTURE	Crop Lands		20.06	6.21	6.54	3.25	0.25	0.03	38.06	1.06	0.00	0.00	0.21	0.02	0.21	0.02	12.13	2.43
	Fallow Lands		97.58	30.20	72.50	36.02	15.89	2.18	1114.59	31.05	2.74	0.24	38.05	3.91	38.05	3.91	88.48	17.73
	Only crop Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Agriculture (E)		117.64	36.41	79.03	39.26	16.14	2.22	1152.65	32.11	2.75	0.24	38.26	3.94	38.26	3.94	100.60	20.16
WASTELANDS	Waste Lands		16.00	4.95	17.03	8.46	21.40	2.94	477.12	13.29	44.88	3.97	54.45	5.60	54.45	5.60	67.18	13.46
	Barren Rocky Land		0.00	0.00	0.00	0.00	8.70	1.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Gullied Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fly Ash Pond		3.23	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sand Body		0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.32	0.03	4.62	0.48	4.62	0.48	0.00	0.00
	Total Wasteland (F)		19.23	5.95	17.03	8.46	30.10	4.13	477.21	13.29	45.20	4.00	59.07	6.08	59.07	6.08	67.18	13.46
AREA UNDER ACTIVE MINING	Coal Quarry		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Advance Quarry Site		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coal Dump (G1)		0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.02	1.86	0.16	3.13	0.32	3.13	0.32	0.94	0.19
	Quarry Filled With Water		9.86	3.05	17.41	8.65	12.24	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Area under Active Mining Excluding Coal Dump (G)		9.86	3.05	17.41	8.65	12.24	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Barren OB Dump (H)		0.00	0.00	2.45	1.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Area under Barren Backfilling		2.73	0.84	20.75	10.31	14.76	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.21	1.85
	Total Area under Technical Reclamation (I)		2.73	0.84	20.75	10.31	14.76	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.21	1.85
	Total Area under Mining Activity (G+G1+H+I)		12.59	3.90	40.60	20.17	27.00	3.71	0.80	0.02	1.86	0.16	3.13	0.32	3.13	0.32	10.15	2.03
WATERBODIES	Reservoir, nallah, ponds		1.05	0.32	0.44	0.22	0.86	0.12	76.98	2.14	9.76	0.86	10.70	1.10	10.70	1.10	1.62	0.32
	Total Waterbodies (J)		1.05	0.32	0.44	0.22	0.86	0.12	76.98	2.14	9.76	0.86	10.70	1.10	10.70	1.10	1.62	0.32
	Grand Total (A to J)		323.07	100.00	201.28	100.00	728.39	100.00	3590.15	100.00	1130.93	100.00	972.06	100.00	972.06	100.00	499.00	100.00

Project wise Area Statistics of Land Use / Cover & Reclamation in Mines producing Less than 5 mcm (Coal+OB) annually of SECL based on Satellite data of the Year 2025																	
(Area in Hectare)																	
	LAND USE / COVER CLASSES	CLR CODE	VIJAY WEST UG		JAMUNA UG		DAMINI UG		KHAIRAHA UG		RAJENDRA UG		DHELWADIH UG		BAGDEWA UG		TOTAL
SETTLEMENTS	Urban Settlement		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area
			0.00	0.00	47.10	5.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.95	1.78	130.94
	Rural Settlement		1.07	0.25	6.31	0.69	9.01	2.69	1.04	0.22	22.56	3.82	36.03	4.85	3.09	0.61	153.70
	Industrial Settlement		3.29	0.77	4.91	0.54	1.39	0.41	4.94	1.05	5.67	0.96	7.70	1.04	4.33	0.86	47.59
	Total Settlement (A)		4.36	1.03	58.31	6.37	10.40	3.11	5.98	1.27	28.23	4.78	43.72	5.88	16.37	3.26	332.23
FORESTS	Dense Forest		186.09	43.77	0.00	0.00	0.00	0.00	0.00	0.00	4.84	0.82	2.05	0.28	0.00	0.00	2065.29
	Open Forest		100.44	23.63	435.03	47.54	0.00	0.00	0.00	0.00	124.69	21.13	149.97	20.18	83.56	16.62	2626.97
	Total Forest (B)		286.53	67.40	435.03	47.54	0.00	0.00	0.00	0.00	129.53	21.95	152.02	20.46	83.56	16.62	4692.26
GREEN COVER	Scrubs (C)		61.18	14.39	156.12	17.06	65.93	19.68	23.69	5.02	118.60	20.10	261.37	35.18	45.02	8.96	2354.19
	Social Forestry		0.41	0.10	71.84	7.85	1.30	0.39	1.97	0.42	39.55	6.70	18.42	2.48	16.29	3.24	480.92
	Plantation on External OB Dump		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Orchard		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.26	1.06	0.00	0.00	0.00	0.00	6.26
	Plantation over Backfilled Areas (Biological Reclamation)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	161.29
	Total Area under Plantation (Green Cover) (D)		0.41	0.10	71.84	7.85	1.30	0.39	1.97	0.42	45.81	7.76	18.42	2.48	16.29	3.24	649.47
	Total Vegetation (B to D)		348.11	81.88	662.99	72.46	67.22	20.07	25.67	5.44	293.94	49.82	431.81	58.12	144.87	28.82	7695.93
AGRICULTURE	Crop Lands		0.00	0.00	1.53	0.17	33.11	9.88	219.04	46.40	52.43	8.89	6.48	0.87	3.86	0.77	393.91
	Fallow Lands		28.21	6.63	102.54	11.21	####	59.11	208.90	44.25	157.74	26.74	193.03	25.98	274.02	54.52	2630.32
	Only crop Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Agriculture (E)		28.21	6.63	104.07	11.37	231.14	69.00	427.94	90.65	210.17	35.62	199.50	26.85	277.88	55.29	3024.23
WASTELANDS	Waste Lands		38.22	8.99	88.44	9.67	14.80	4.42	7.70	1.63	47.24	8.01	63.88	8.60	49.10	9.77	1061.89
	Barren Rocky Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70
	Gullied Land		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.65	0.53	2.65
	Fly Ash Pond		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.23
	Sand Body		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.65
	Total Wasteland (F)		38.22	8.99	88.44	9.67	14.80	4.42	7.70	1.63	47.24	8.01	63.88	8.60	51.75	10.30	1086.12
AREA UNDER ACTIVE MINING	Coal Quarry		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Advance Quarry Site		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coal Dump (G1)		3.73	0.88	0.00	0.00	1.93	0.57	3.70	0.78	1.00	0.17	2.58	0.35	5.18	1.03	27.97
	Quarry Filled With Water		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.50
	Total Area under Active Mining Excluding Coal Dump (G)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.50
	Barren OB Dump (H)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45
	Area under Barren Backfilling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.45
	Total Area under Technical Reclamation (I)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.45
	Total Area under Mining Activity (G+G1+H+I)		3.73	0.88	0.00	0.00	1.93	0.57	3.70	0.78	1.00	0.17	2.58	0.35	5.18	1.03	117.37
WATERBODIES	Reservoir, nallah, ponds		2.51	0.59	1.20	0.13	9.51	2.84	1.08	0.23	9.43	1.60	1.49	0.20	6.55	1.30	143.85
	Total Waterbodies (J)		2.51	0.59	1.20	0.13	9.51	2.84	1.08	0.23	9.43	1.60	1.49	0.20	6.55	1.30	143.85
	Grand Total (A to J)		425.14	100.00	915.00	100.00	335.00	100.00	472.06	100.00	590.00	100.00	742.98	100.00	502.60	100.00	12399.72

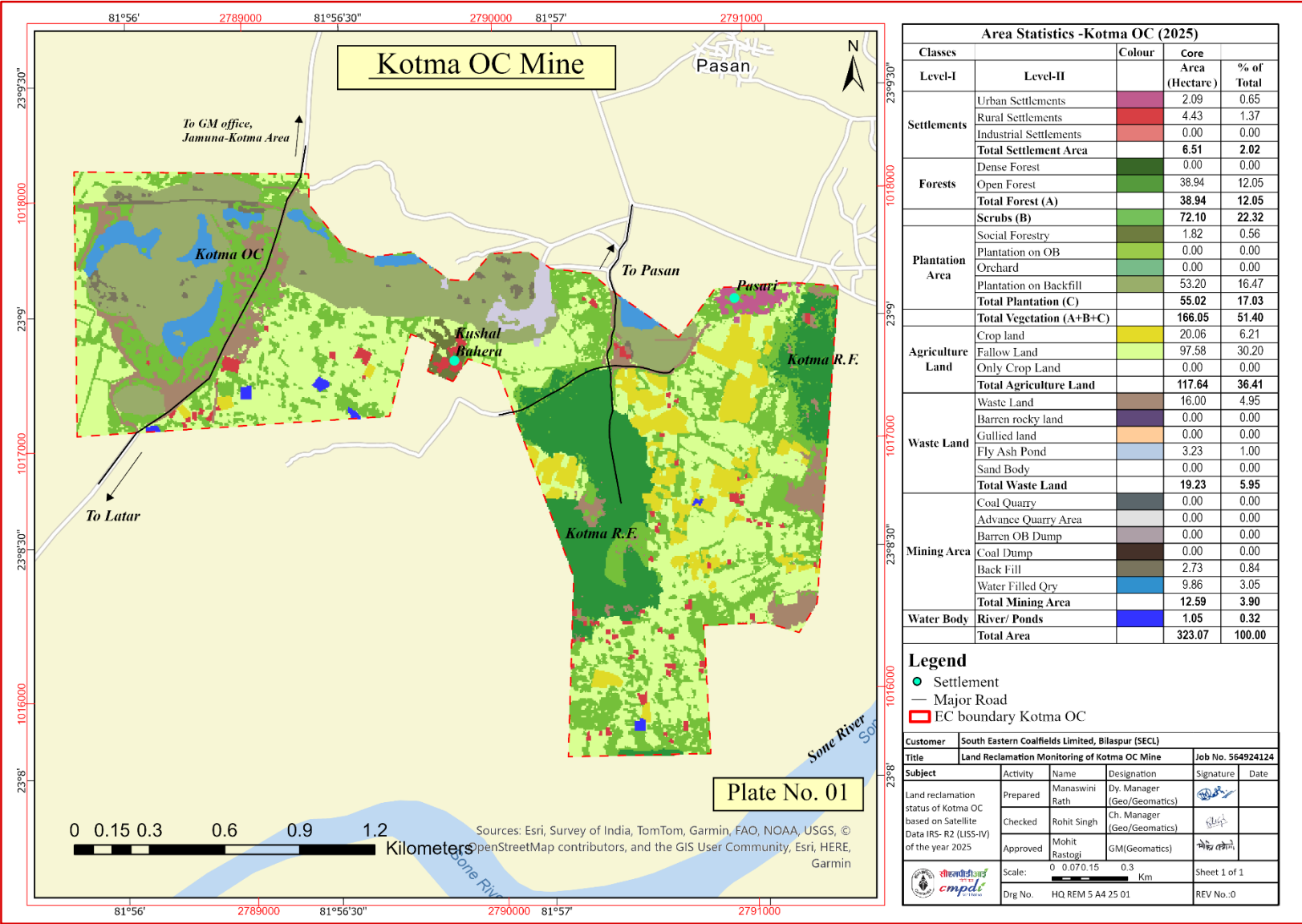


Plate 6.1: Land Use/Cover map of Kotma OCP

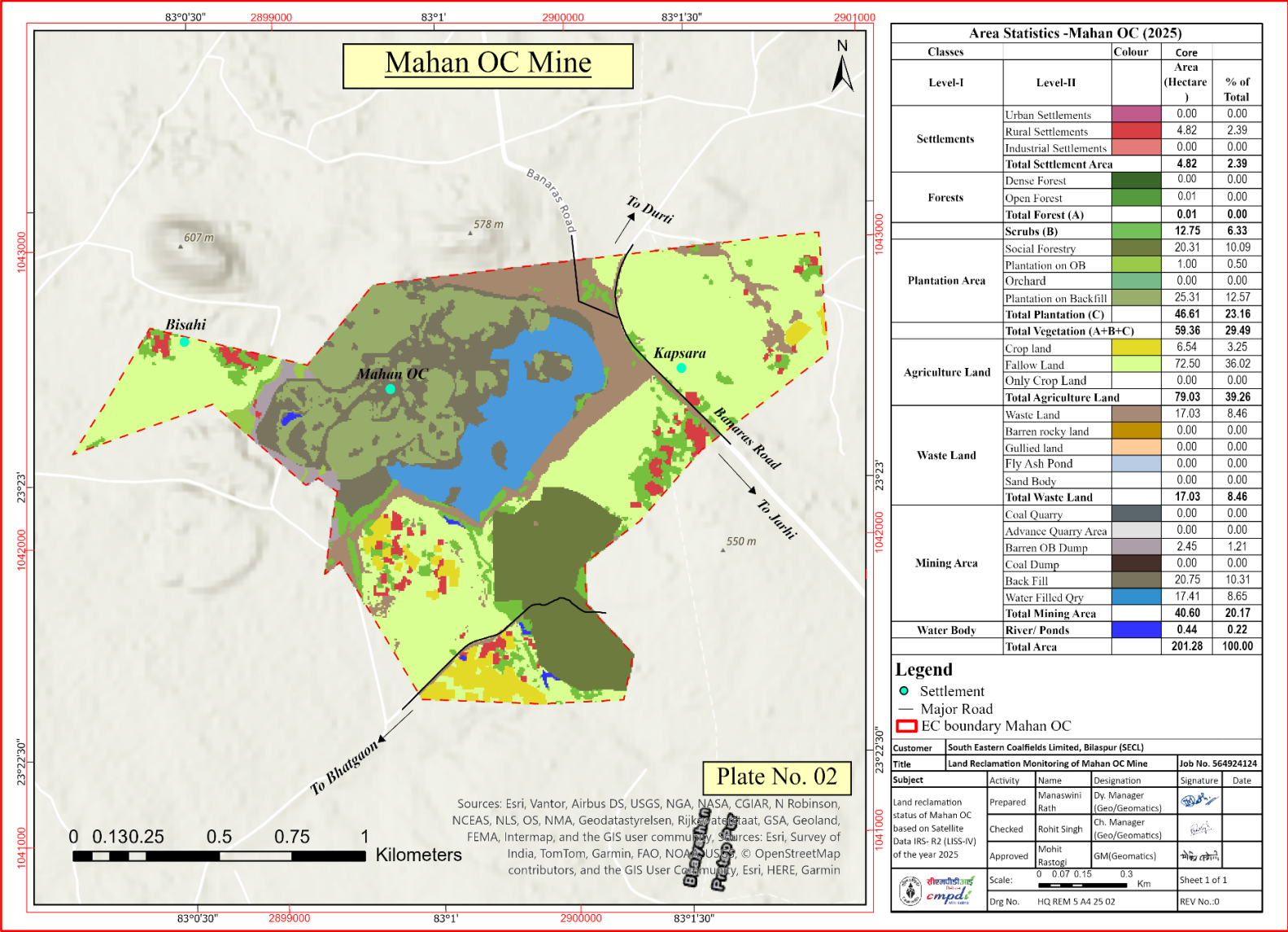


Plate 6.2: Land Use/Cover map of Mahan OC

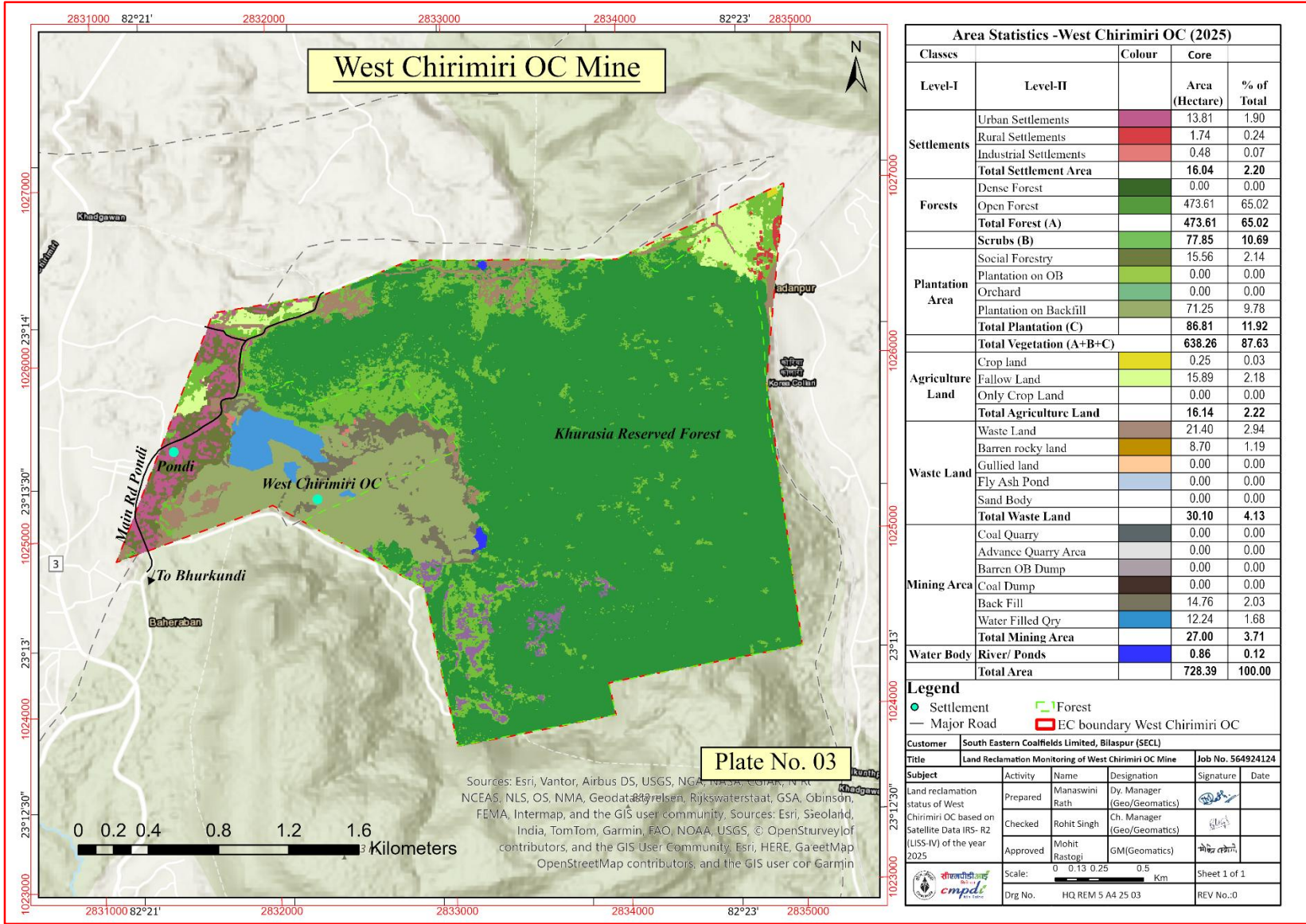
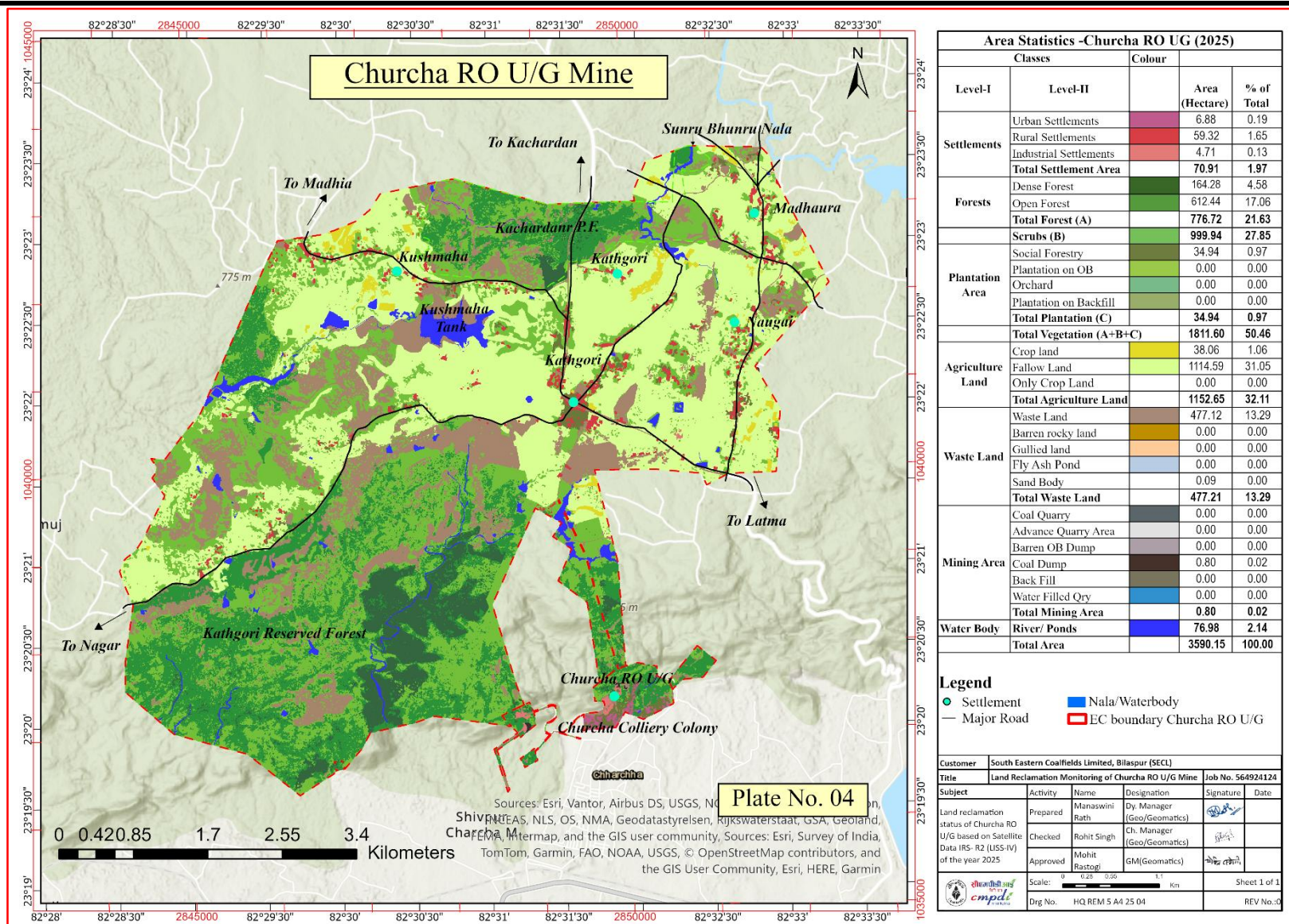


Plate 6.3: Land Use/Cover map of West Chirimiri OC



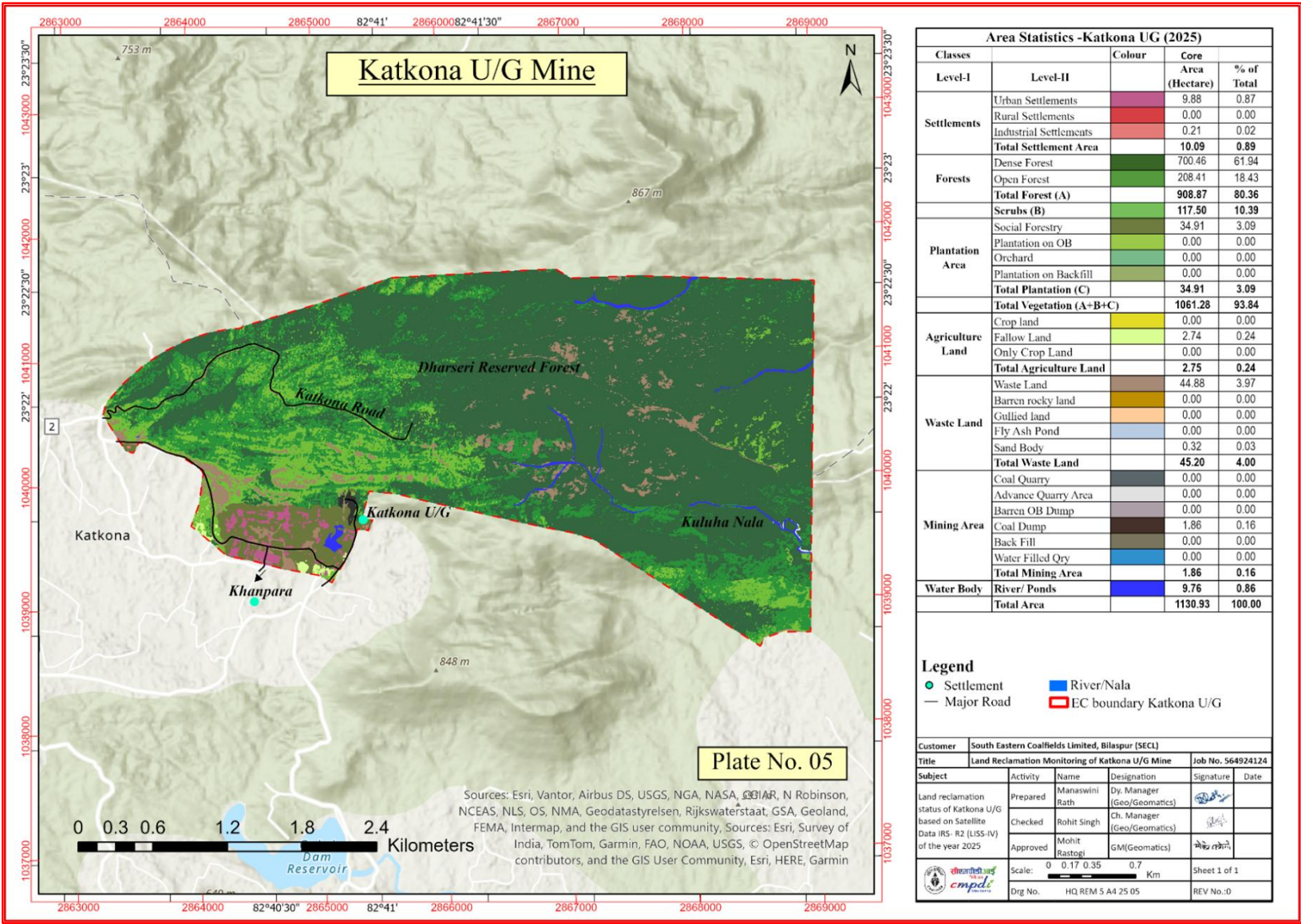


Plate 6.5: Land Use/Cover map of Katkona UG

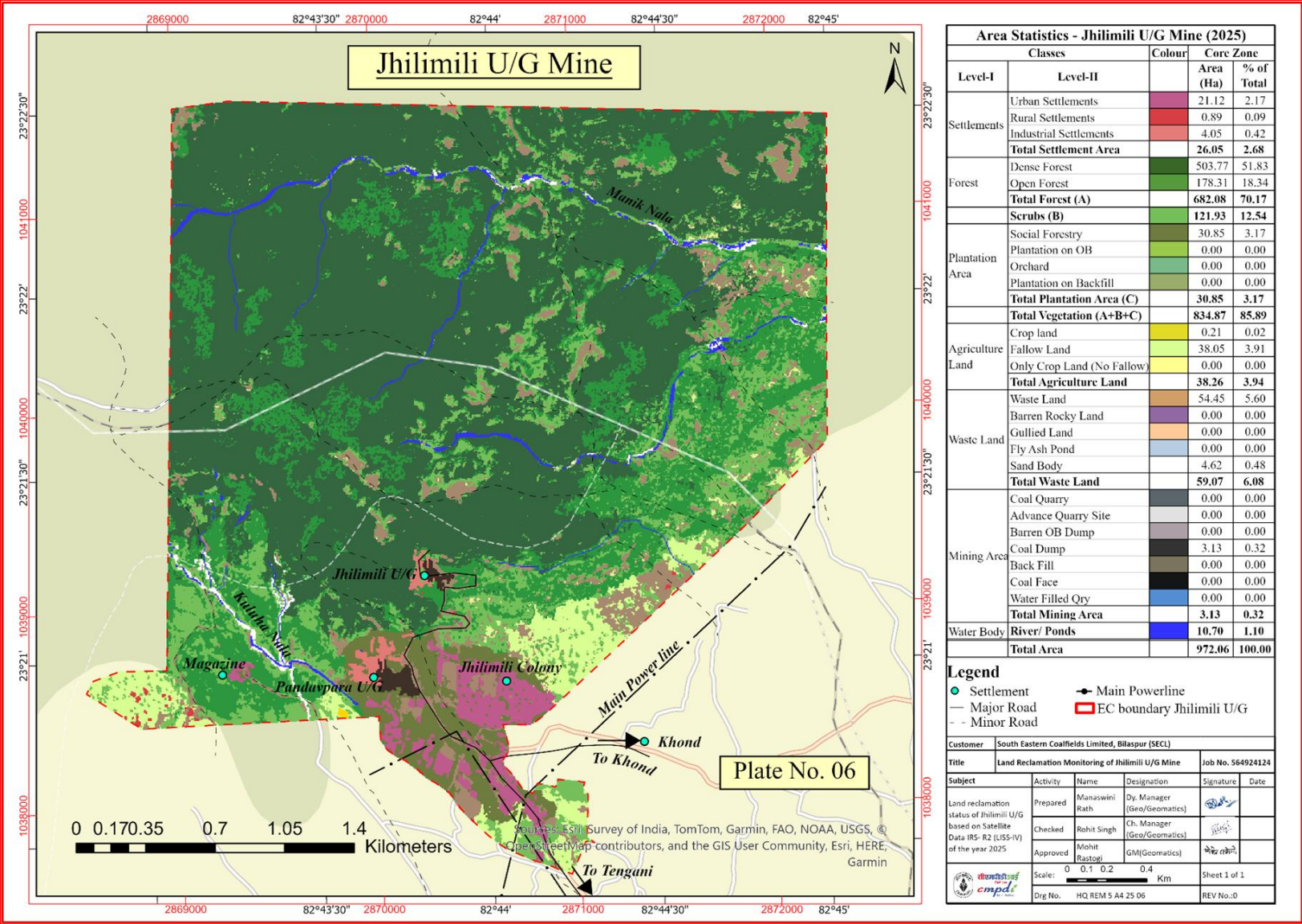


Plate 6.6: Land Use/Cover map of Jhilimili UG

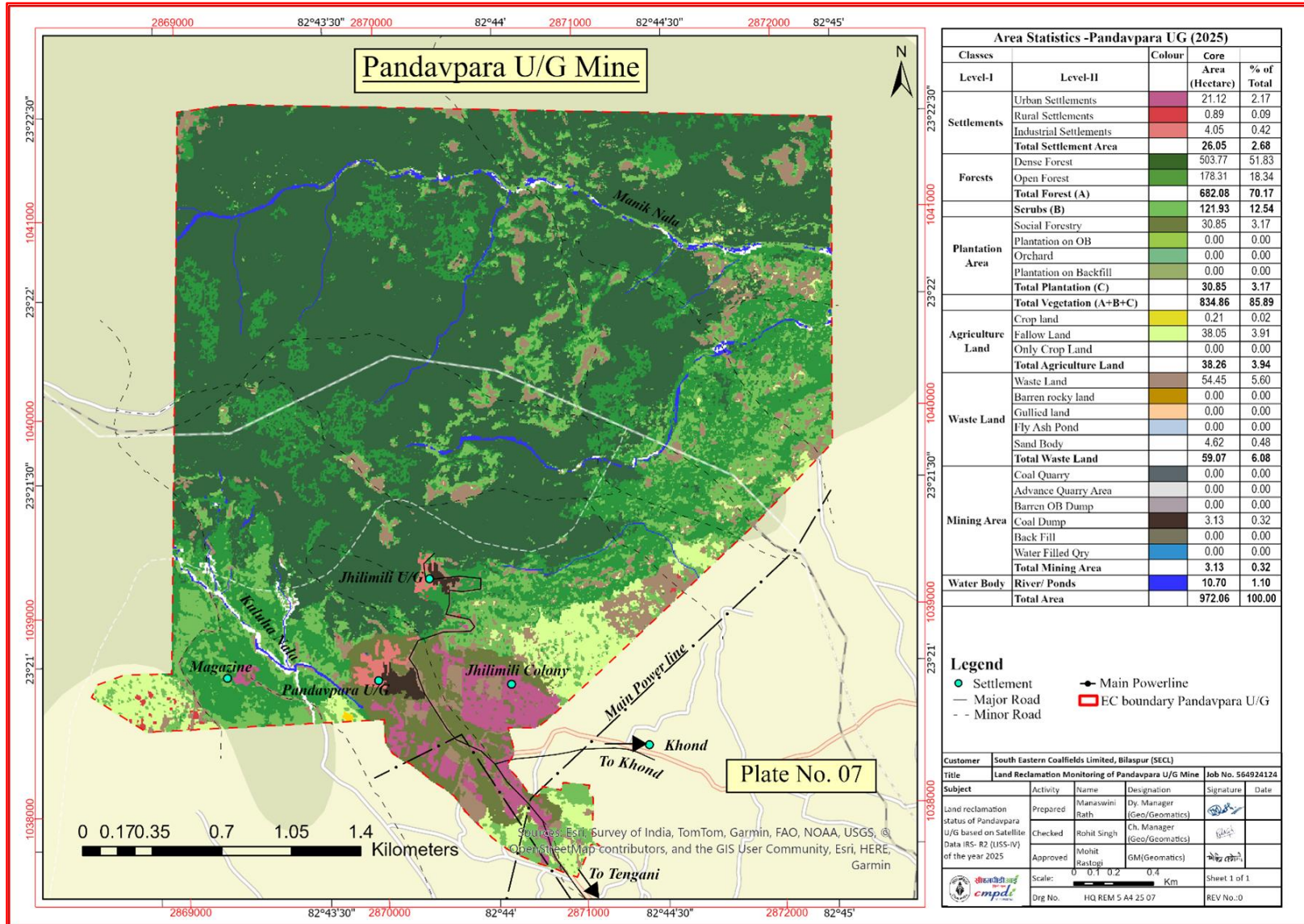


Plate 6.7: Land Use/Cover map of Pandavpara UG

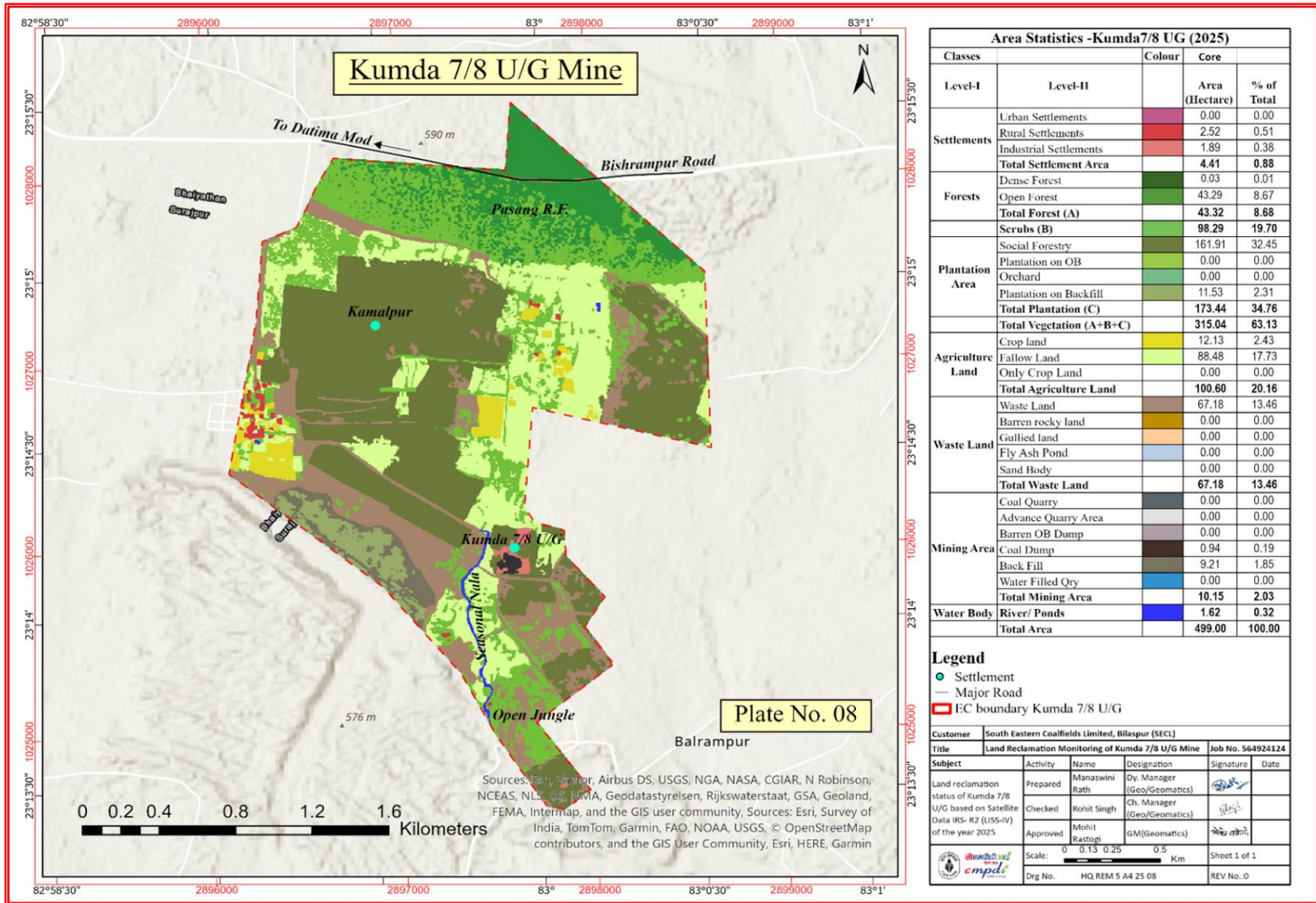


Plate 6.8: Land Use/Cover map of Kumda UG

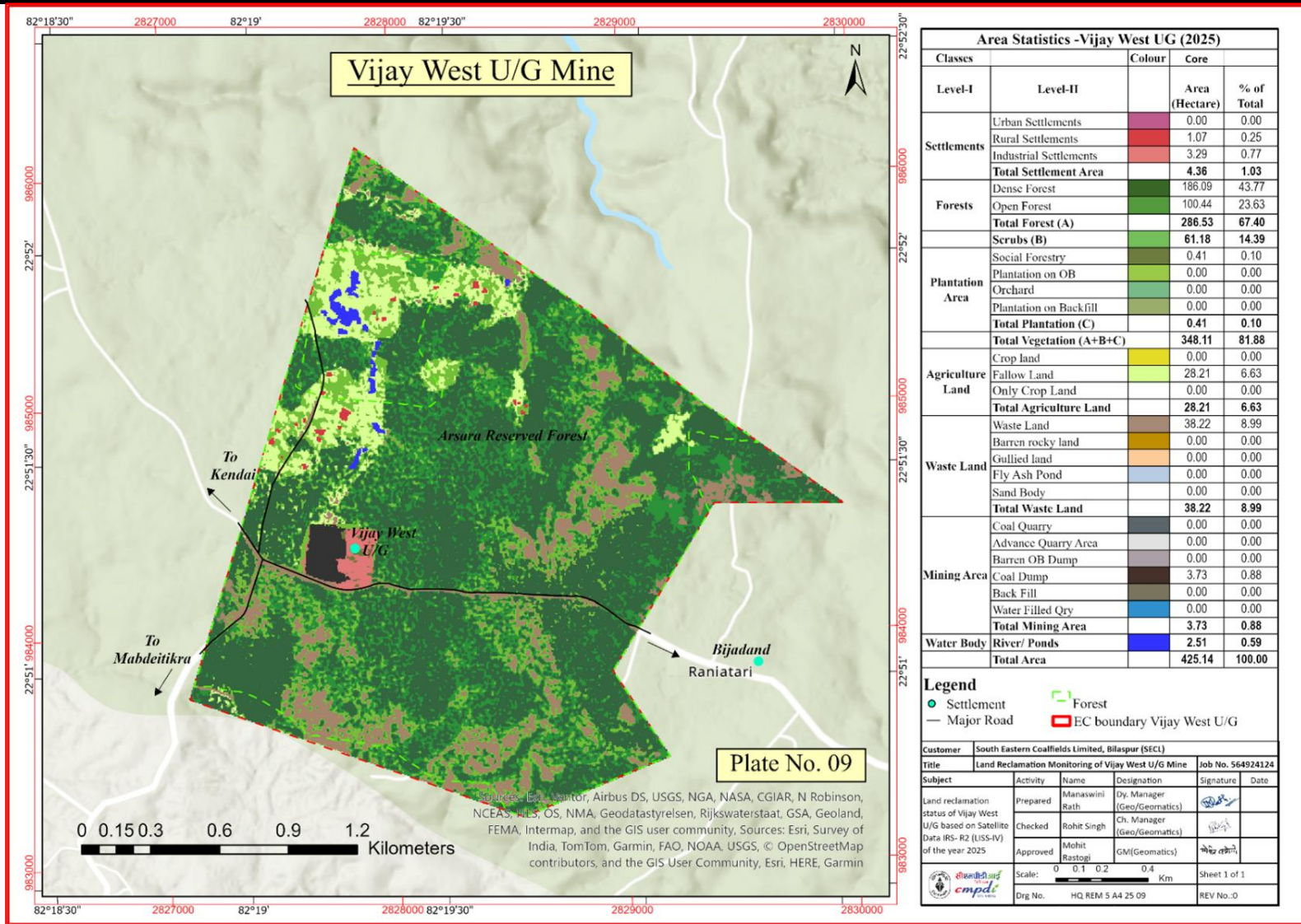


Plate 6.9: Land Use/Cover map of Vijay West UG

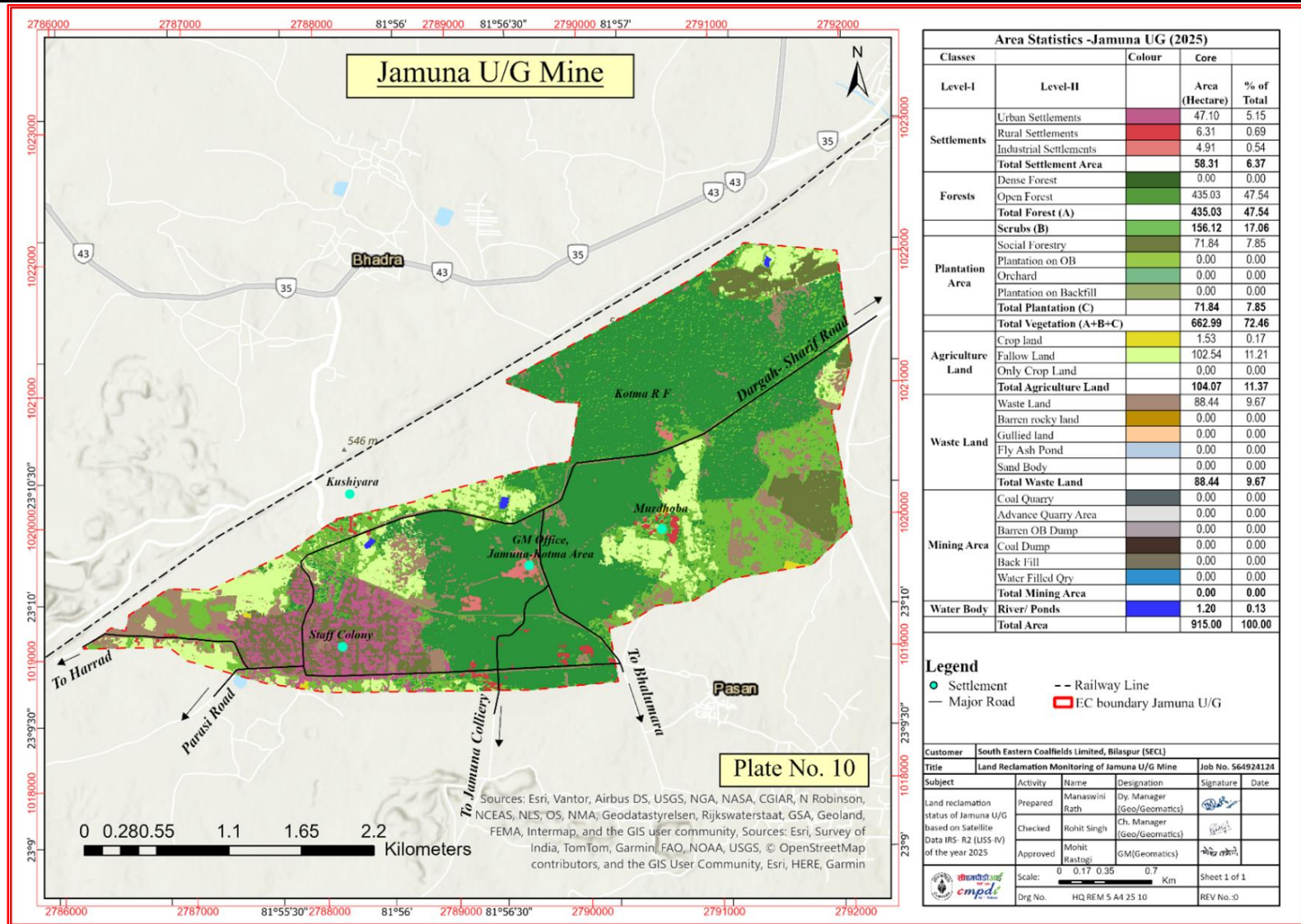


Plate 6.10: Land Use/Cover map of Jamuna UG

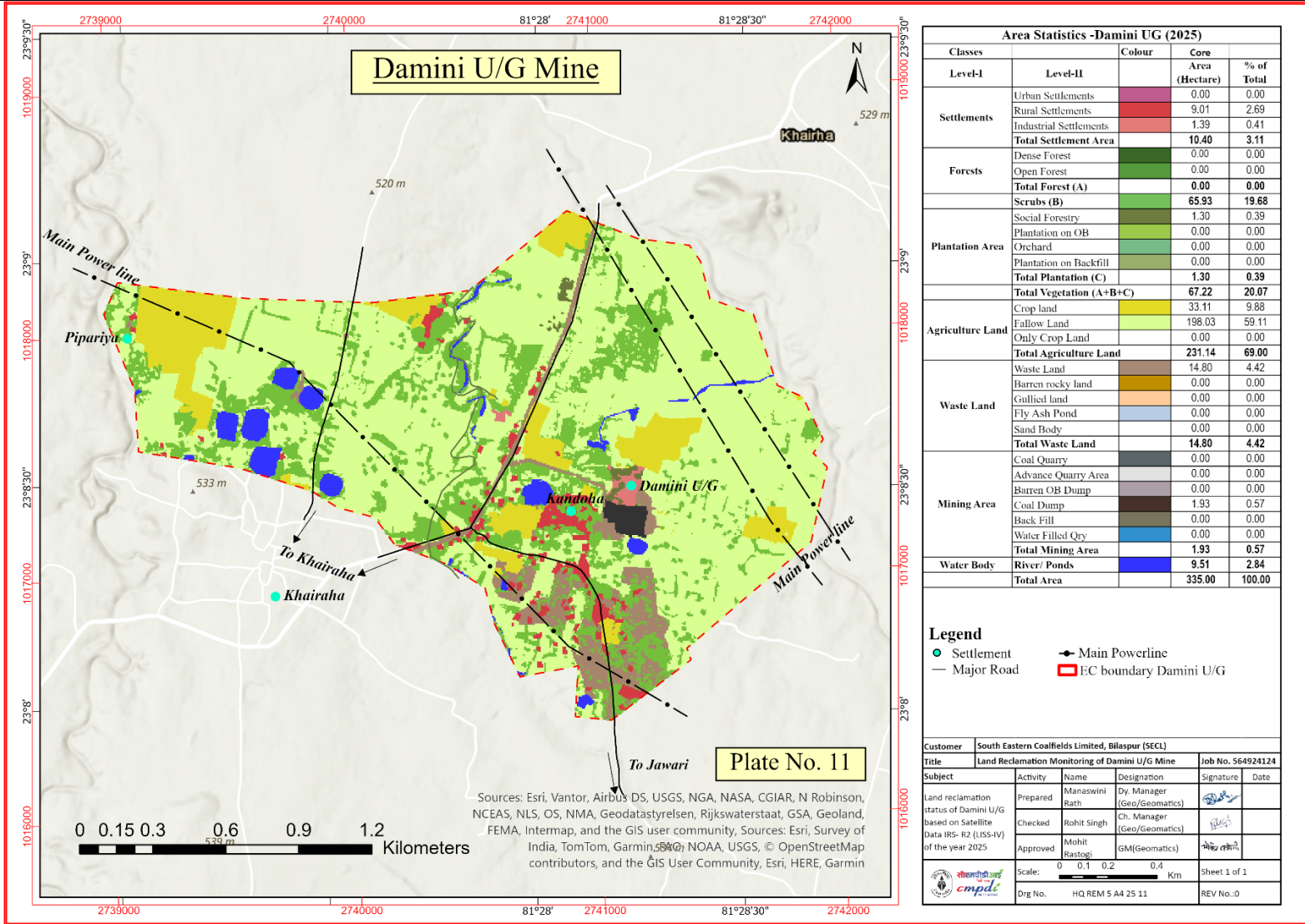


Plate 6.11: Land Use/Cover map of Damini UG

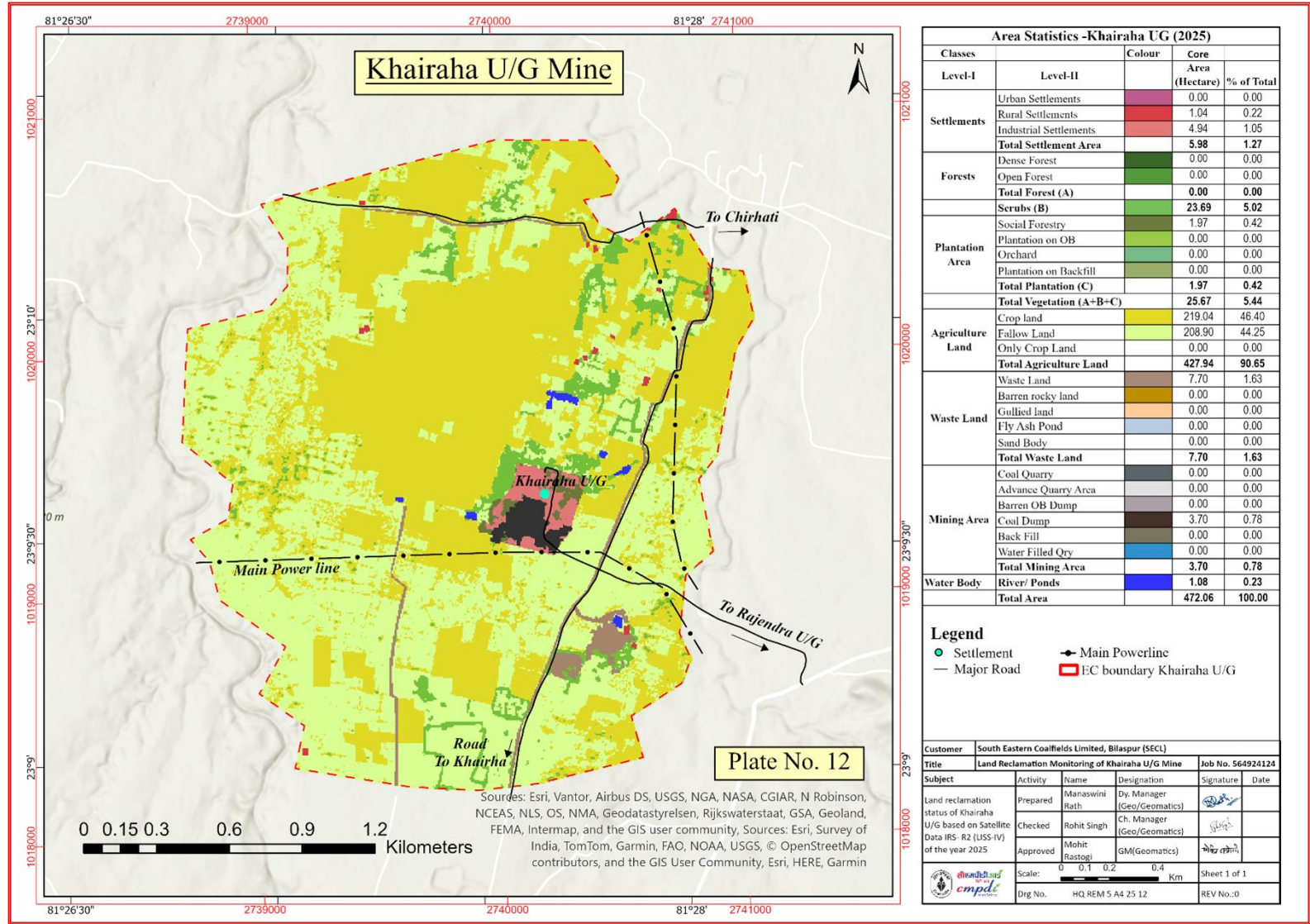


Plate 6.12: Land Use/Cover map of Khairaha UG

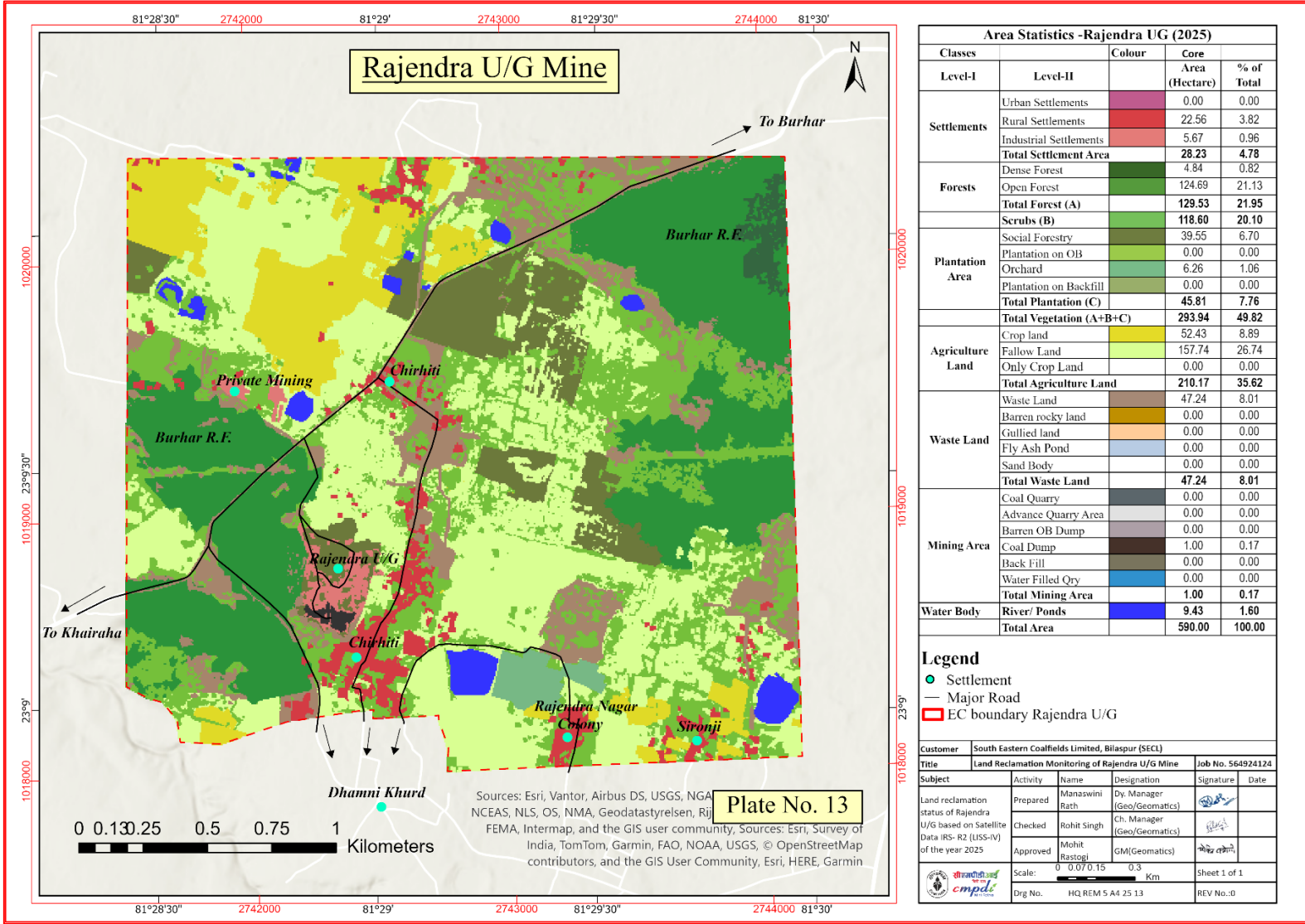


Plate 6.13: Land Use/Cover map of Rajendra UG

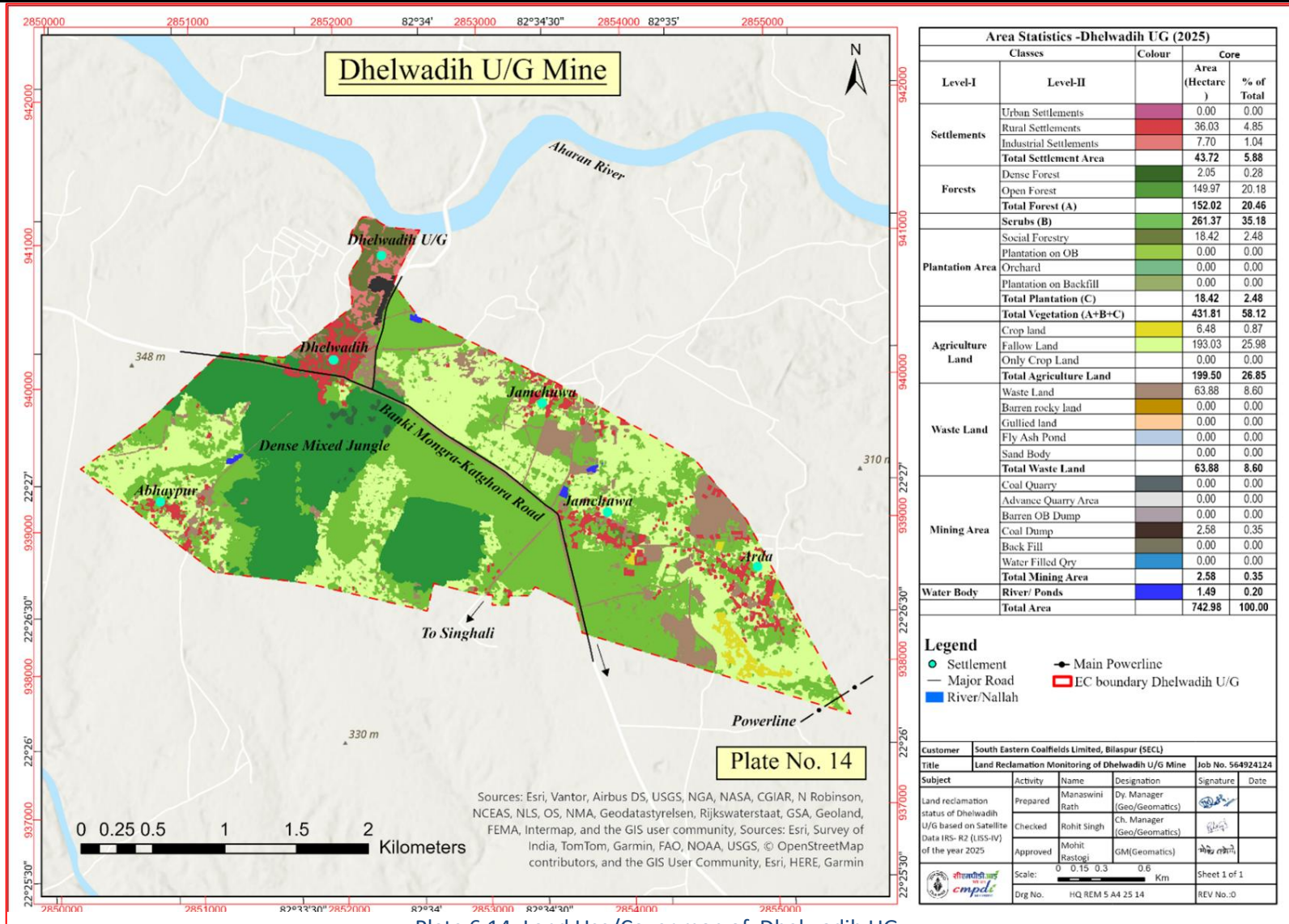


Plate 6.14: Land Use/Cover map of Dhelwadih UG

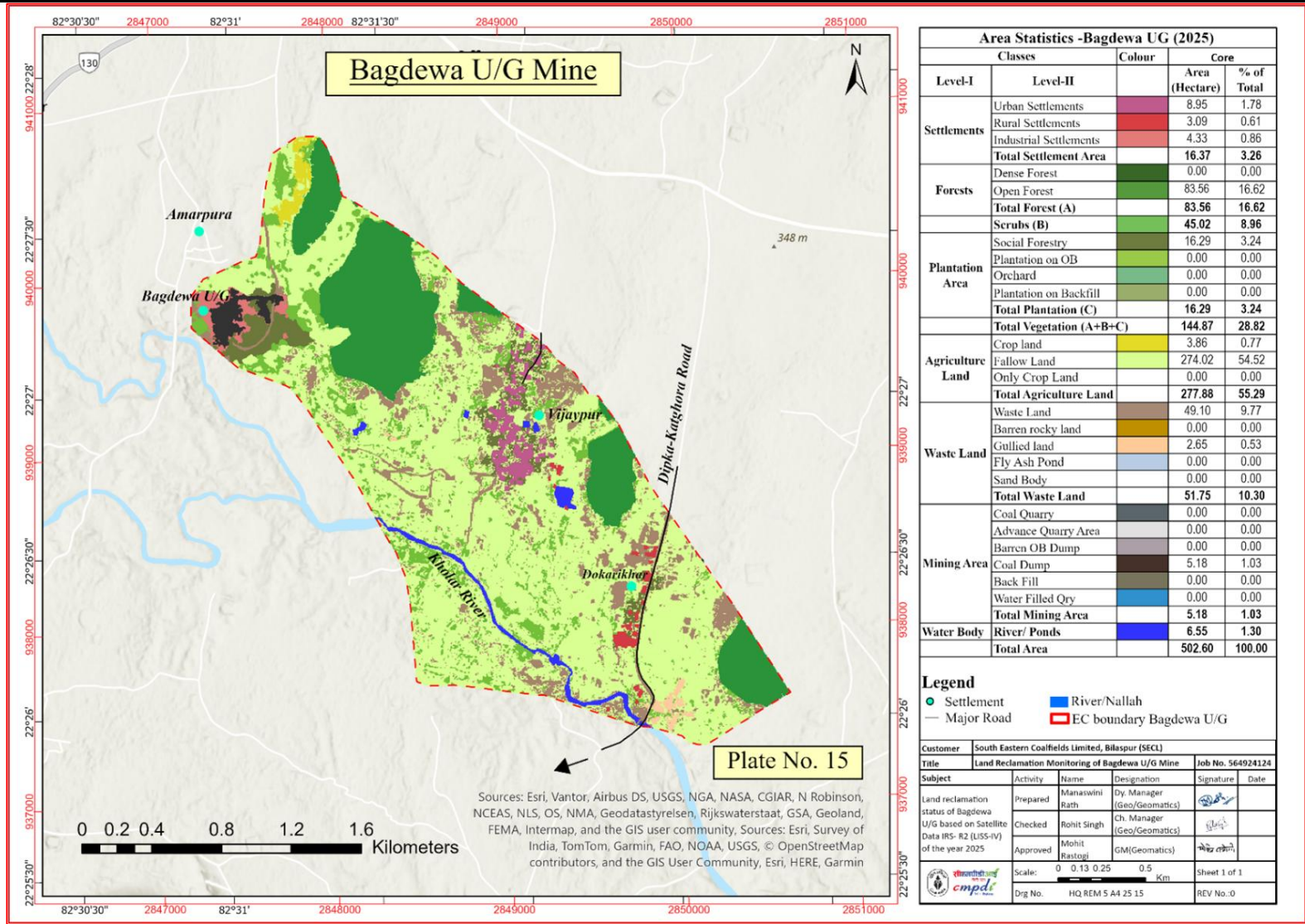


Plate 6.15: Land Use/Cover map of Bagdewa UG

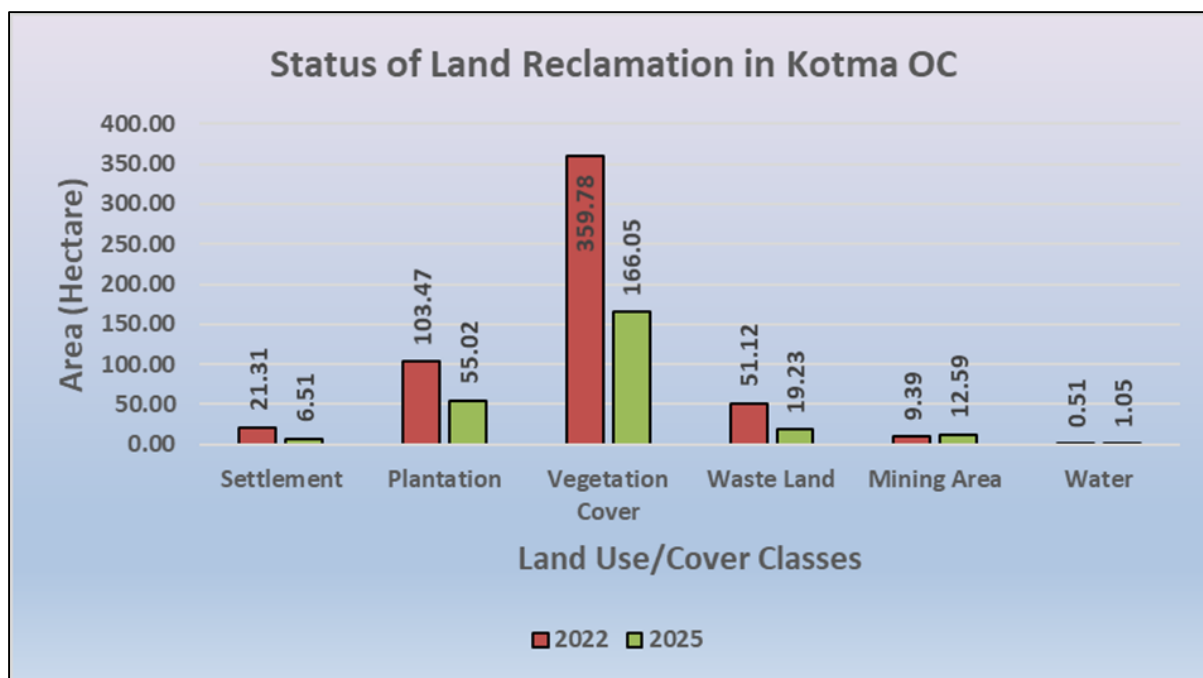


Chart 6.2: Status of Land Reclamation in Kotma OCP

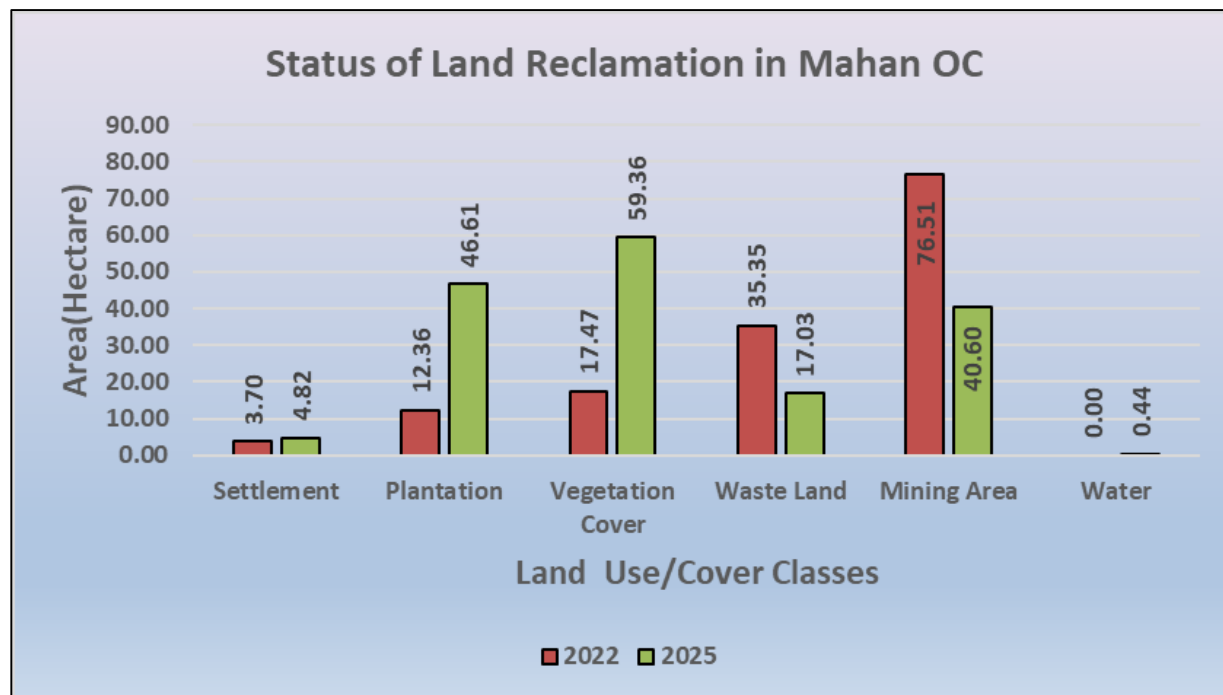


Chart 6.3: Status of Land Reclamation in Mahan OCP

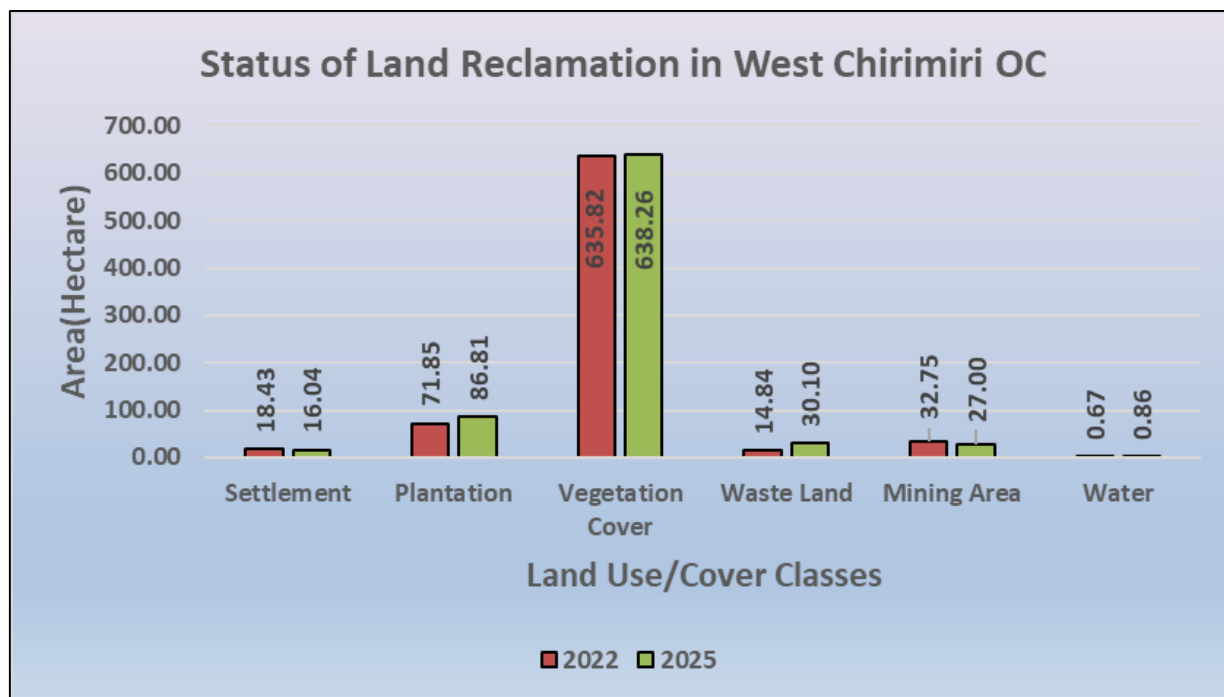


Chart 6.4: Status of Land Reclamation in West Chirimiri OCP

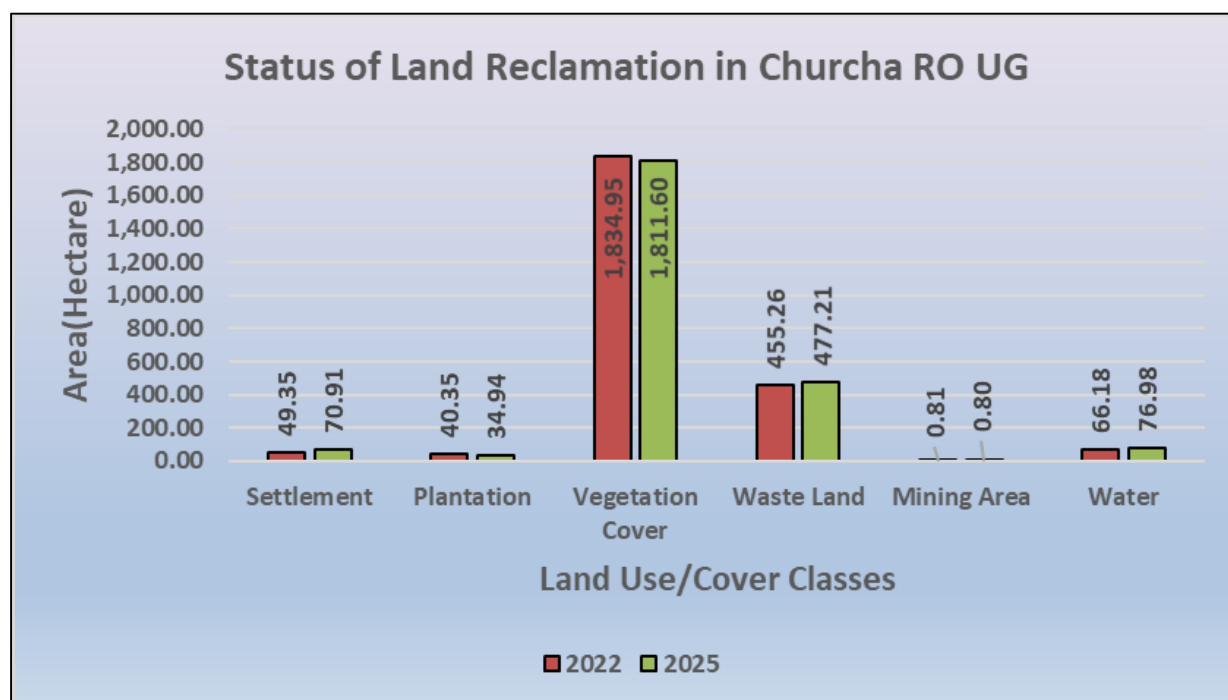


Chart 6.5: Status of Land Reclamation in Churcha RO UG

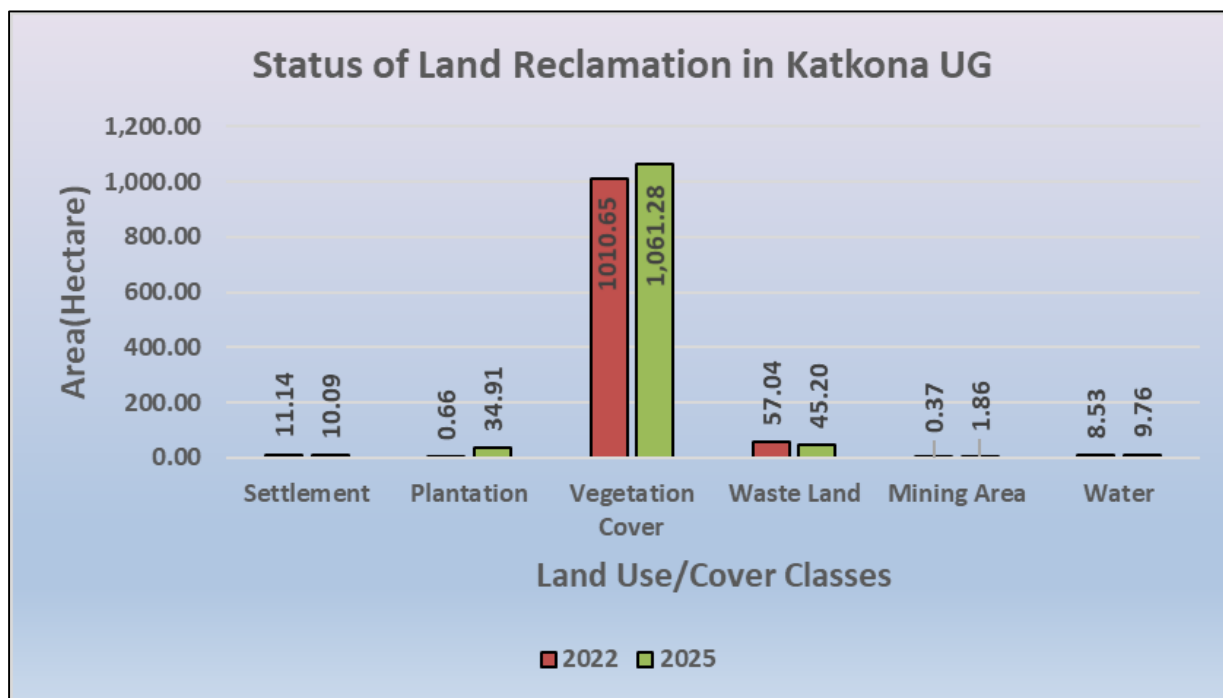


Chart 6.6: Status of Land Reclamation in Katkona UG

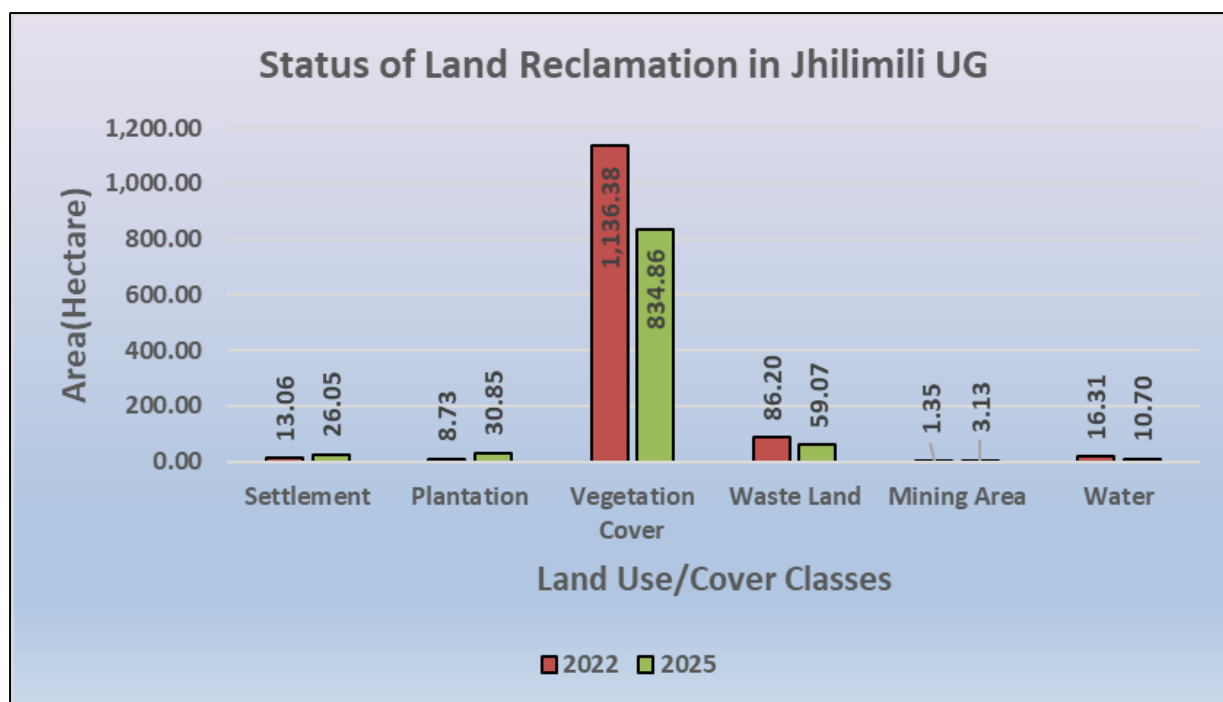


Chart 6.7: Status of Land Reclamation in Jhilimili UG

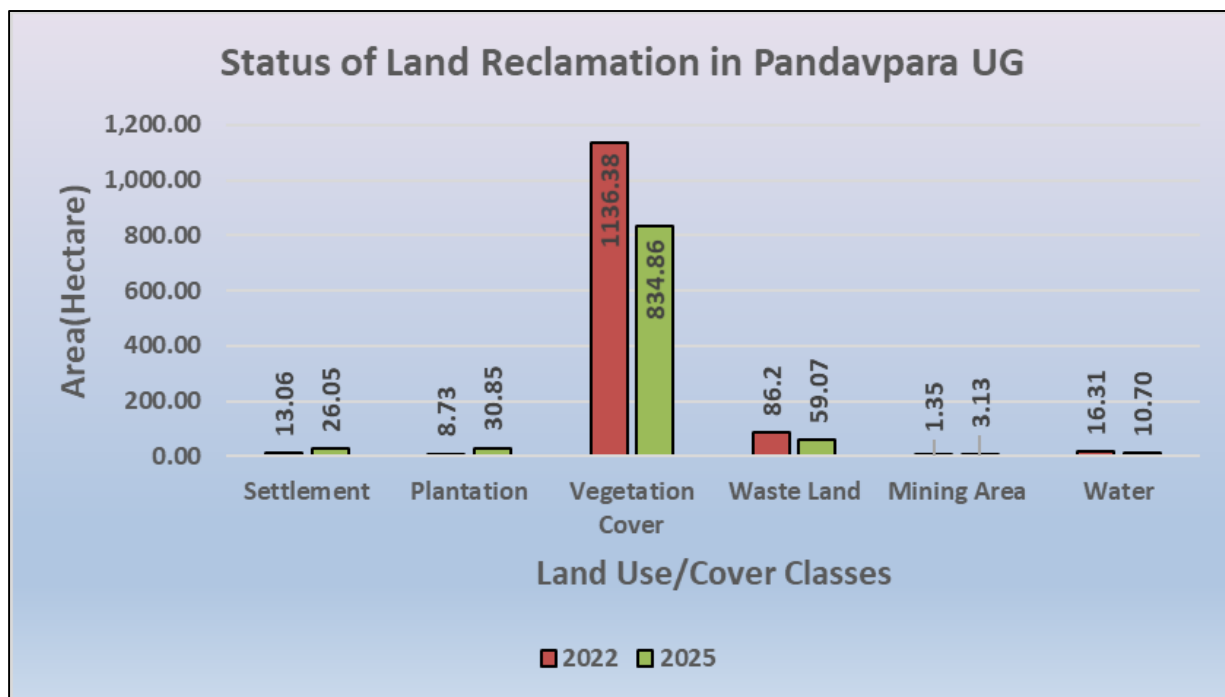


Chart 6.8: Status of Land Reclamation in Pandavpara UG

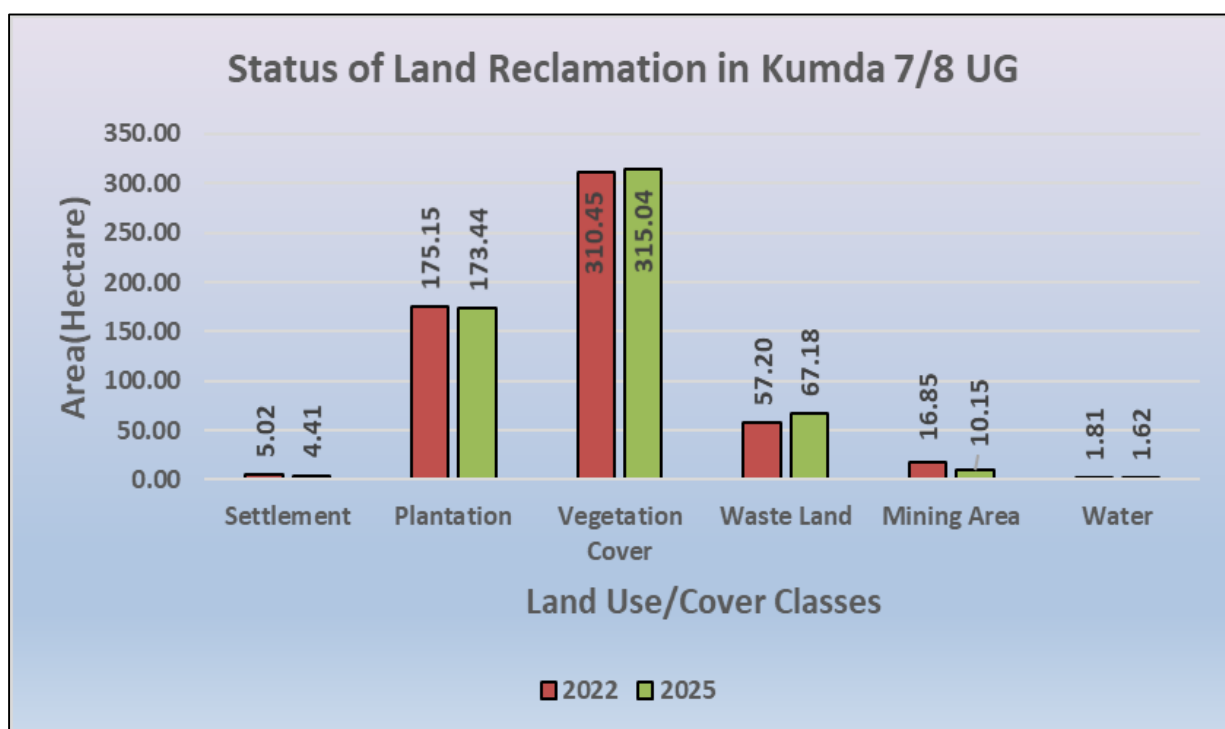


Chart 6.9: Status of Land Reclamation in Kumda 7/8 UG

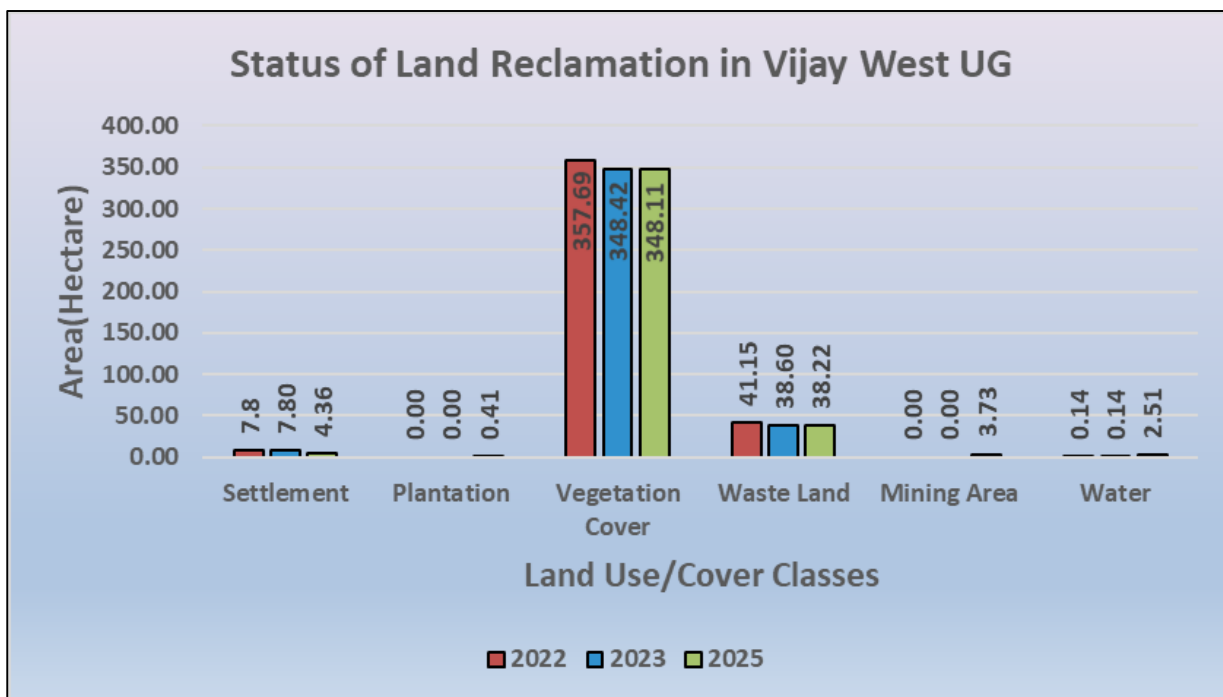


Chart 6.10: Status of Land Reclamation in Vijay West UG

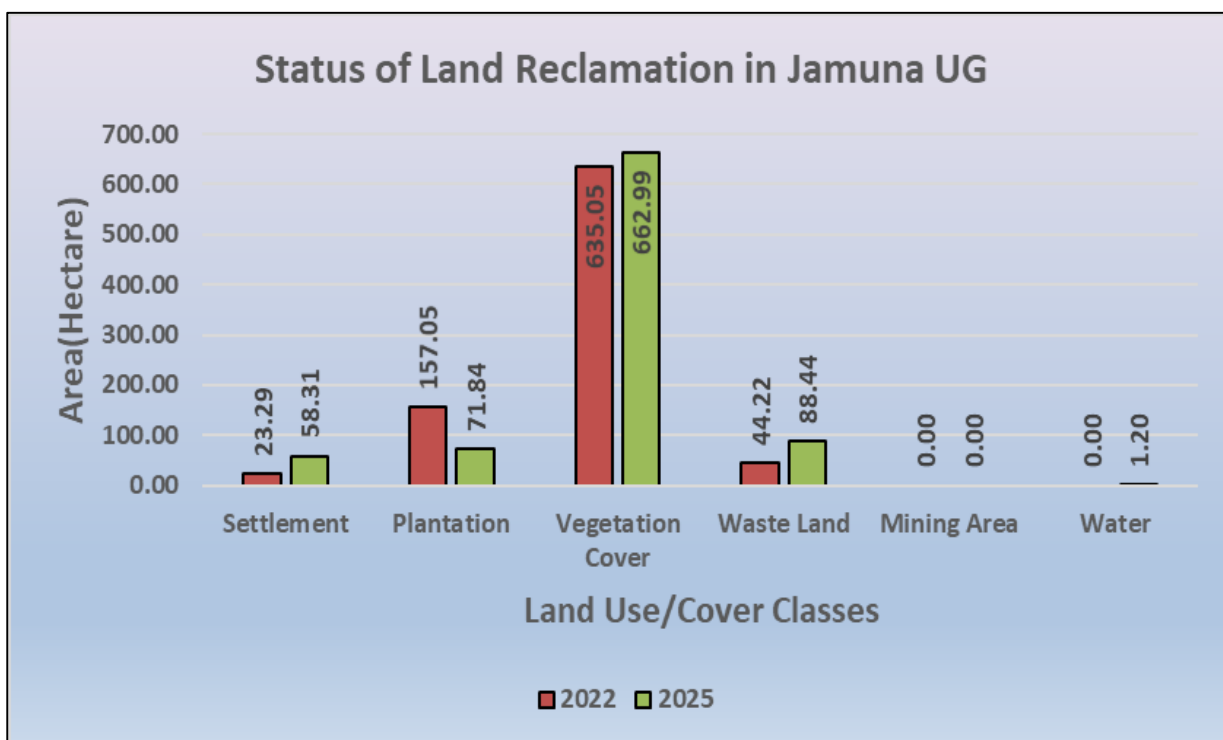


Chart 6.11: Status of Land Reclamation in Jamuna UG

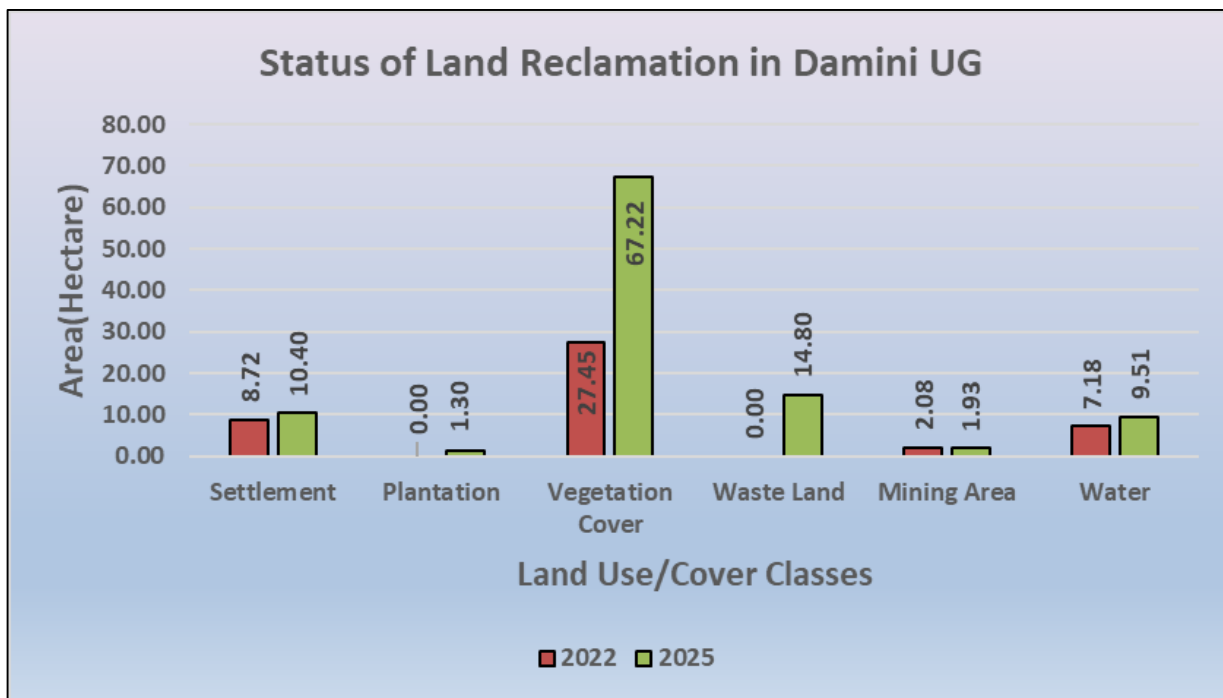


Chart 6.12: Status of Land Reclamation in Damini UG

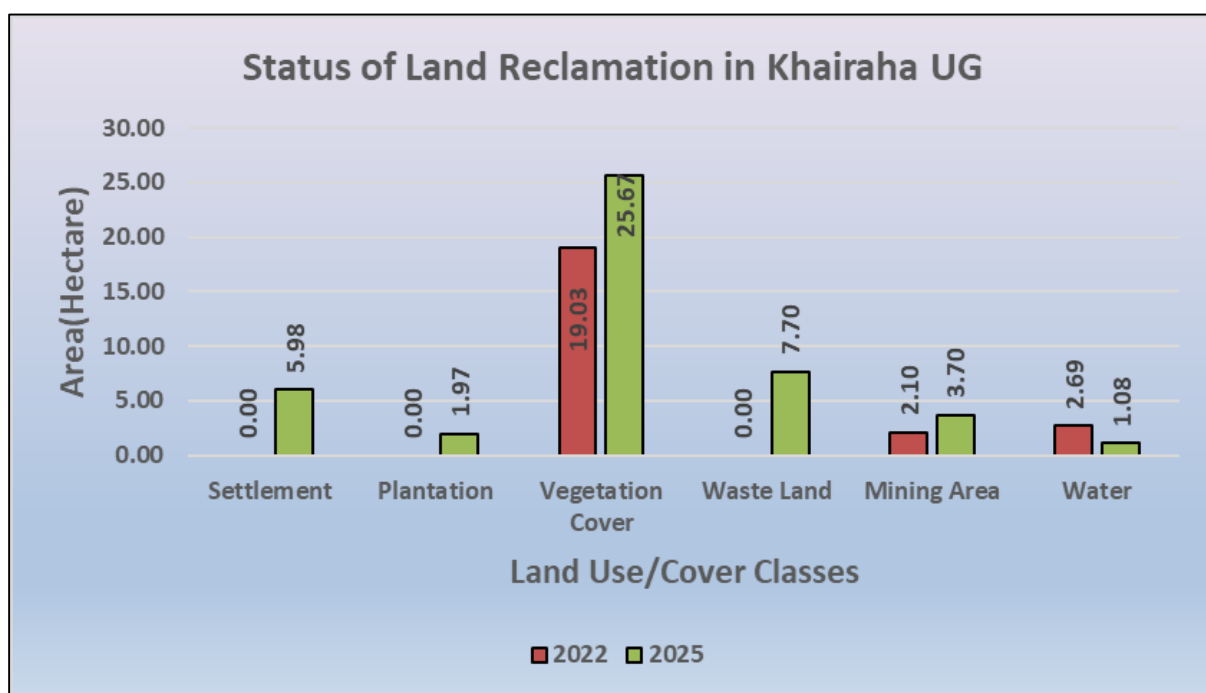


Chart 6.13: Status of Land Reclamation in Khairaha UG

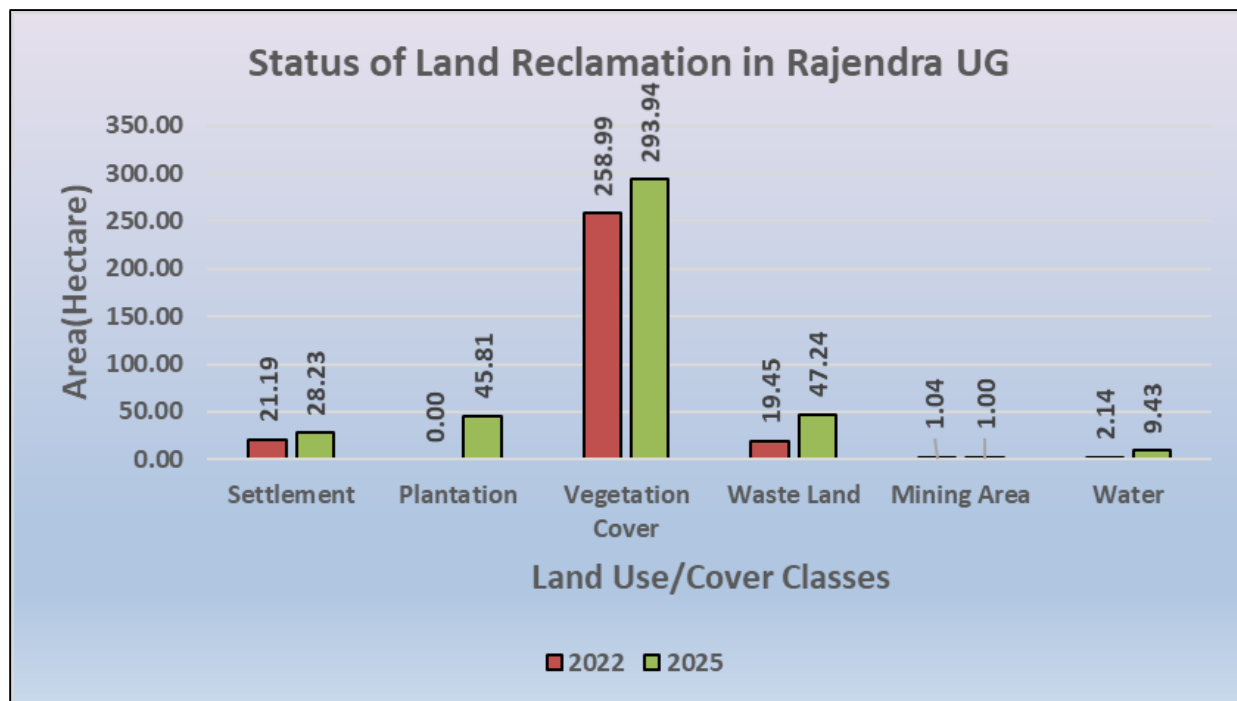


Chart 6.14: Status of Land Reclamation in Rajendra UG

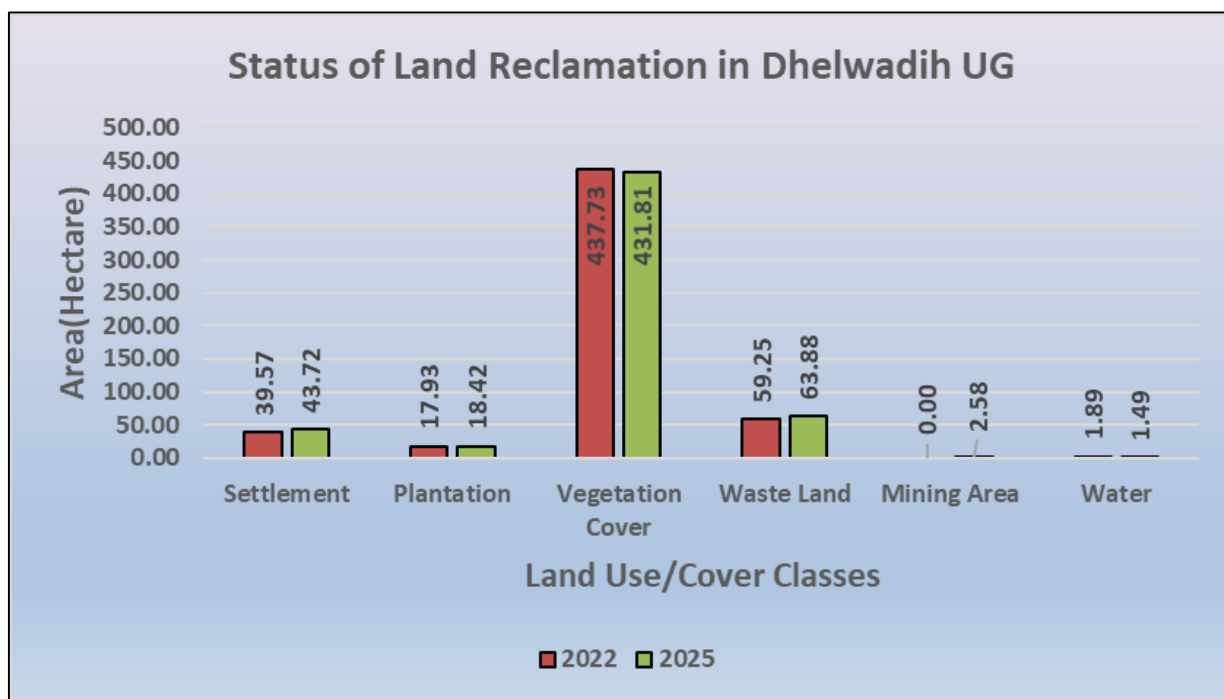


Chart 6.15: Status of Land Reclamation in Dhelwadih UG

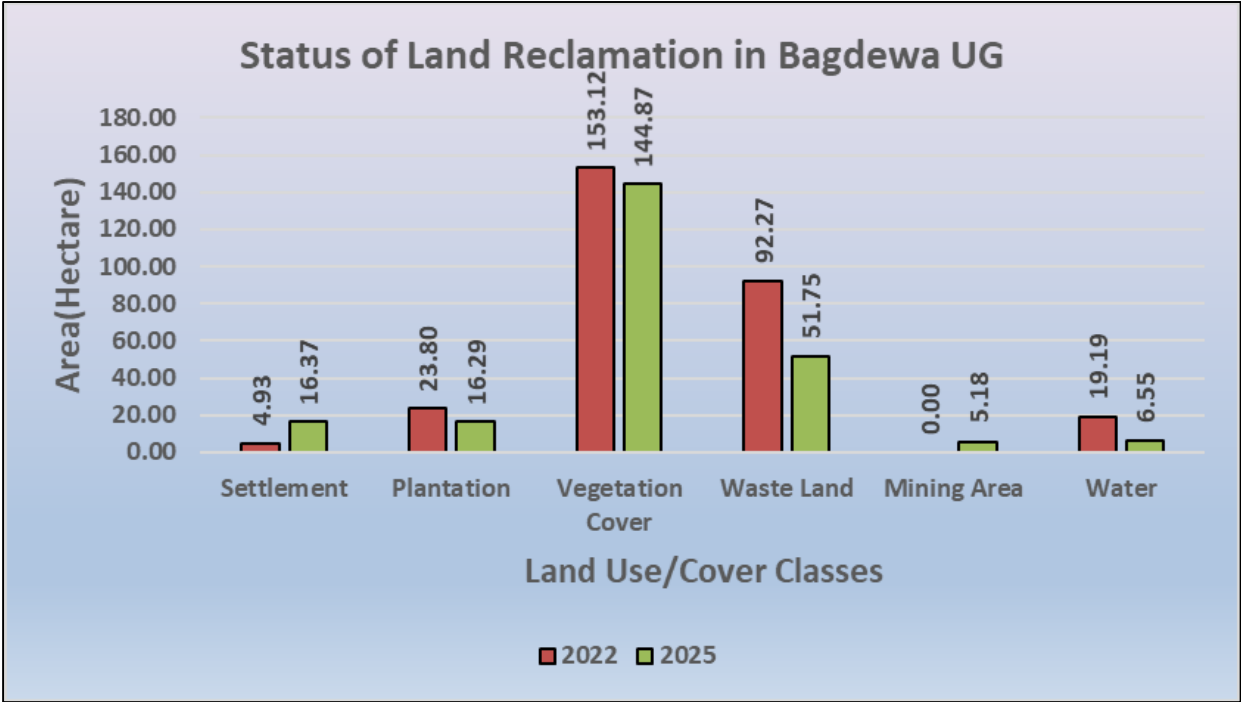


Chart 6.16: Status of Land Reclamation in Bagdewa UG

BHARAT COKING COAL LIMITED

7. Land Reclamation Status in Bharat Coking Coal Ltd

7.1 Following five (5) clusters of mines comprising both opencast and underground projects of Bharat Coking Coal Ltd. have been taken up for land reclamation monitoring during the year 2025-26:

- **Cluster II:** Amalgamated Block II OCP, Amalgamated Muraidih Phularitand Colliery
- **Cluster VI:** East Bassuriya Colliery, Bassuriya Colliery, Gondudih Khas Kusunda Colliery, Godhur Colliery
- **Cluster XIV:** Lohapati Colliery
- **Cluster XV:** Madhuband Colliery, Phularitand Colliery, Kharkharee Colliery, Dharmaband Colliery
- **Cluster XVI:** Dahibari OCP, Basantimata UG, New Laikdih OCP, Laikdih UG, Chanch UG

7.2 Cluster wise Land Reclamation status in BCCL for the year 2025 is given in Table 7.1 and shown graphically in Fig 7.1. Area statistics of different land use / cover classes present in the mine leasehold of the above projects for the year 2025 are shown in the Table – 7.2. Land use/cover maps derived from satellite data are shown in Plate 7.1 –7.5. Year wise changes in the different land use classes based on satellite data for the last three years are depicted in Bar Charts in Fig. 7.2 to 7.6.

7.3 Study reveals that out of total mine leasehold area of 8140.24 ha. of the 5 clusters of mines (Opencast + Underground) of BCCL mentioned above taken for this study in 2025-26, total excavated area is 1125.38 ha., out of which 132.31 ha. (11.76%) has been planted (Biologically Reclaimed), 676.47 ha. (60.11%) is under backfilling (Technically Reclamation) and balance 316.60 ha. (28.13%) is under active mining.

7.4 It is seen that technical reclamation in the above 5 Clusters has increased from 621.40 ha. (Year 2022) to 676.47 ha. (Year 2025).

7.5 Study indicates that Cluster II and Cluster XVI of BCCL considered for this study in the year 2025-26 indicate increasing trend in Biological Reclamation (plantation on backfill)

with respect to the year 2022. Whereas in Cluster VI there is no plantation on backfill. Cluster XIV and Cluster XV consists of UG mines only.

- 7.6** On comparing the status of plantation on OB dumps for the year 2025 with respect to the year 2022 in the above Cluster of mines of BCCL, it is evident from the analysis that area under plantation on OB dumps has increased from 47.29 ha. (Year 2022) to 54.60 ha. (Year 2025) in Cluster II and from 9.70 ha. (Year 2022) to 11.50 ha. (Year 2025) in Cluster VI. In Cluster XVI plantation on OB dumps has increased from 13.31 ha. (Year 2022) to 21.20 ha. (Year 2025).
- 7.7** It is seen that total plantation under social forestry has increased from 360.84 ha. (Year 2022) to 362.28 ha. (Year 2025).
- 7.8** It is seen that total excavated area has increased from 1030.85 ha. (Year 2022) to 1125.38 ha. (Year 2025).
- 7.9** After analyzing the satellite data of the year 2022 vs 2025, it reveals that area under total plantation (Green cover) carried out on backfilled area, OB dumps as well as under social forestry in the above clusters of BCCL has increased from 546.24 ha. (6.71%) to 581.89 ha. (7.15%) in span of last three years. This progressive increase is due to the sincere efforts taken by BCCL towards land reclamation process and environmental protection.
- 7.10** On comparing the status of land reclamation for the year 2025 with respect to the year 2022 it is evident from the analysis that total area under land reclamation has increased from 736.50 ha. (Year 2022) to 808.78 ha. (Year 2025). This increase of 72.28 ha. area under land reclamation is due to increase in reclamation activities in Cluster II, Cluster VI & Cluster XVI.
- 7.11** The area under total plantation (Green Cover) is maximum in Cluster II (13.53%) followed by Cluster XVI with (5.85%), Cluster XV with (4.76%), Cluster XIV with (4.59%) and Cluster VI with (4.52%).
- 7.12** Out of the 5 Clusters in BCCL considered for satellite data based land reclamation monitoring in 2025-26, Cluster VI tops with 78.27% reclamation followed by Cluster II with 74.01% and Cluster XVI with 54.72%.

Table 7.1: Summarized Land Reclamation Status in BCCL

Summarized Land Reclamation Status in Opencast Projects of BCCL based on Satellite Data of the year 2025

(Area in Hectare)

Sl. No.	Cluster No.	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological Reclamation		Other Plantations											
						Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External OB Dumps									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025
1	Cluster II	2025.71	2025.71	422.00	439.85	87.42	94.57	47.29	54.60	128.03	125.00	148.85	187.65	658.27	722.07	262.74	274.17	509.42	534.42
				64.11%	60.92%	13.28%	13.10%					22.61%	25.99%			12.97%	13.53%	77.39%	74.01%
2	Cluster VI	876.55	876.55	134.15	178.36	0.00	0.00	9.70	11.50	28.41	28.11	70.36	49.52	204.51	227.88	38.11	39.61	134.15	178.36
				65.60%	78.27%	0.00%	0.00%					34.40%	21.73%			4.35%	4.52%	65.60%	78.27%
3	Cluster XIV	1577.22	1577.22	0.00	0.00	0.00	0.00	0.00	0.00	72.42	72.42	0.00	0.00	0.00	0.00	72.42	72.42	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			4.59%	4.59%	0.00%	0.00%
4	Cluster XV	1696.55	1696.55	0.00	0.00	0.00	0.00	0.00	0.00	80.72	80.72	0.00	0.00	0.00	0.00	80.72	80.72	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			4.76%	4.76%	0.00%	0.00%
5	Cluster XVI	1964.21	1964.21	65.25	58.26	27.68	37.74	13.31	21.20	51.26	56.03	75.14	79.43	168.07	175.43	92.25	114.97	92.93	96.00
				38.82%	33.21%	16.47%	21.51%					44.71%	45.28%			4.70%	5.85%	55.29%	54.72%
	TOTAL (A)	8140.24	8140.24	621.40	676.47	115.10	132.31	70.30	87.30	360.84	362.28	294.35	316.60	1030.85	1125.38	546.24	581.89	736.50	808.78
				60.28%	60.11%	11.17%	11.76%					28.55%	28.13%			6.71%	7.15%	71.45%	71.87%
(% is calculated with respect to Excavated Area as applicable)																			

(% is calculated with respect to Excavated Area as applicable)

Note: In reference of the above Table, different parameters are classified as follows:

1. Area under Biological Reclamation includes Areas under Plantation done on Backfilled Area Only.
2. Area under Technical Reclamation includes Area under Barren Backfilling only.
3. Area under Active Mining Includes Coal Quarry, Advance Quarry Site and Quarry filled with water etc., if any.
4. Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the above Table.
5. (%) calculated in the above Table is in respect to Total Excavated Area except for "Total Area under Plantation" where % is in terms of "Leasehold Area".
6. Leasehold Boundaries of the above 5 clusters are as per EC.

Table 7.1.1: Composite Land Reclamation Status in remaining ten Clusters (Underground + Opencast Mines) of BCCL as per clause 2.(ii) of the received work order from CIL

(Area in Hectare)																			
Sl. No.	Cluster No.	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in		Total Area under Reclamation	
						Biological		Other Plantations											
						Area under Backfilling		Plantation on Excavated /		Plantation on External OB									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024
11	Cluster I	575.00	575.00	11.10	31.80	7.29	8.53	45.21	32.94	25.53	25.53	27.61	29.60	46.00	69.93	78.03	67.00	18.39	40.33
				24.13%	45.47%	15.85%	12.20%					60.02%	42.33%			13.57%	11.65%	39.98%	57.67%
12	Cluster IV	1123.79	1123.79	176.03	259.63	0.00	7.29	27.11	27.45	165.09	160.53	152.29	117.13	328.32	384.05	192.20	195.27	176.03	266.92
				53.62%	67.60%	0.00%	1.90%					46.38%	30.50%			17.10%	17.38%	53.62%	69.50%
13	Cluster VII	2127.70	2127.70	351.68	362.12	25.47	8.56	11.43	1.33	238.67	238.67	183.42	198.90	560.57	569.58	275.57	248.56	377.15	370.68
				62.74%	63.58%	4.54%	1.50%					32.72%	34.92%			12.95%	11.68%	67.28%	65.08%
14	Cluster X	2057.47	2057.47	143.64	217.71	29.16	54.25	66.09	36.00	140.75	140.75	45.71	74.17	218.51	346.13	236.00	231.00	172.80	271.96
				65.74%	62.90%	13.34%	15.67%					20.92%	21.43%			11.47%	11.23%	79.08%	78.57%
15	Cluster XI	3527.58	3527.58	30.45	52.22	0.00	2.43	0.00	0.97	187.14	187.14	34.33	37.43	64.78	92.08	187.14	190.54	30.45	54.65
				47.01%	56.71%	0.00%	2.64%					52.99%	40.65%			5.31%	5.40%	47.01%	59.35%
	TOTAL (B)	9411.54	9411.54	712.90	923.48	61.92	81.06	149.84	98.69	757.18	752.62	443.36	457.23	1218.18	1461.77	968.94	932.37	774.82	1004.54
				58.52%	63.18%	5.08%	5.55%					36.40%	31.28%			10.30%	9.91%	63.60%	68.72%
		2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023
6	Cluster III	1552.53	1420.61	60.37	68.71	3.89	4.96	21.11	28.67	162.33	141.36	104.79	84.88	169.05	158.55	187.33	174.99	64.26	73.67
				35.71%	43.34%	2.30%	3.13%					61.99%	53.54%			12.07%	12.32%	38.01%	46.46%
7	Cluster V	1724.52	1957.08	187.59	193.60	7.19	7.41	23.85	19.84	105.29	158.45	103.52	182.86	298.30	383.87	136.33	185.70	194.78	201.01
				62.89%	50.43%	2.41%	1.93%					34.70%	47.64%			7.91%	9.49%	65.30%	52.36%
8	Cluster VIII	1331.95	1183.92	206.91	198.08	9.93	4.08	21.97	16.86	24.70	22.63	124.49	151.45	341.33	353.61	56.60	43.57	216.84	202.16
				60.62%	56.02%	2.91%	1.15%					36.47%	42.83%			4.25%	3.68%	63.53%	57.17%
9	Cluster IX	1967.22	1942.12	77.53	108.00	6.80	3.23	41.79	22.40	168.58	151.33	217.24	240.24	301.57	351.47	217.17	176.96	84.33	111.23
				25.71%	30.73%	2.25%	0.92%					72.04%	68.35%			11.04%	9.11%	27.96%	31.65%
10	Cluster XVII	1412.00	1397.18	125.09	125.09	0.00	0.00	5.00	5.00	43.33	43.33	65.40	65.40	190.49	190.49	48.33	48.33	125.09	125.09
				65.67%	65.67%	0.00%	0.00%					34.33%	34.33%			3.42%	3.46%	65.67%	65.67%
	TOTAL (C)	7988.22	7900.91	657.49	693.48	27.81	19.68	113.72	92.77	504.23	517.10	615.44	724.83	1300.74	1437.99	645.76	629.55	685.30	713.16
				50.55%	48.23%	2.14%	1.37%					47.31%	50.41%			8.08%	7.97%	52.69%	49.59%
*GRAND TOTAL (A+B+C)		25540.00	25452.69	1991.79	2293.43	204.83	233.05	333.86	278.76	1622.25	1632.00	1353.15	1498.66	3549.77	4025.14	2160.94	2143.81	2196.62	2526.48
				56.11%	56.98%	5.77%	5.79%					38.12%	37.23%			8.46%	8.42%	61.88%	62.77%
*Grand Total (A+B+C) is the composite value of all 15 clusters of BCCL covered in 3 years cycle of Land Reclamation Monitoring (% is calculated with respect to Excavated Area as applicable)																			

**Grand Total (A+B+C) is the composite value of all 15 clusters of BCCL covered in 3 years cycle of Land Reclamation Monitoring (% is calculated with respect to Excavated Area as applicable)*

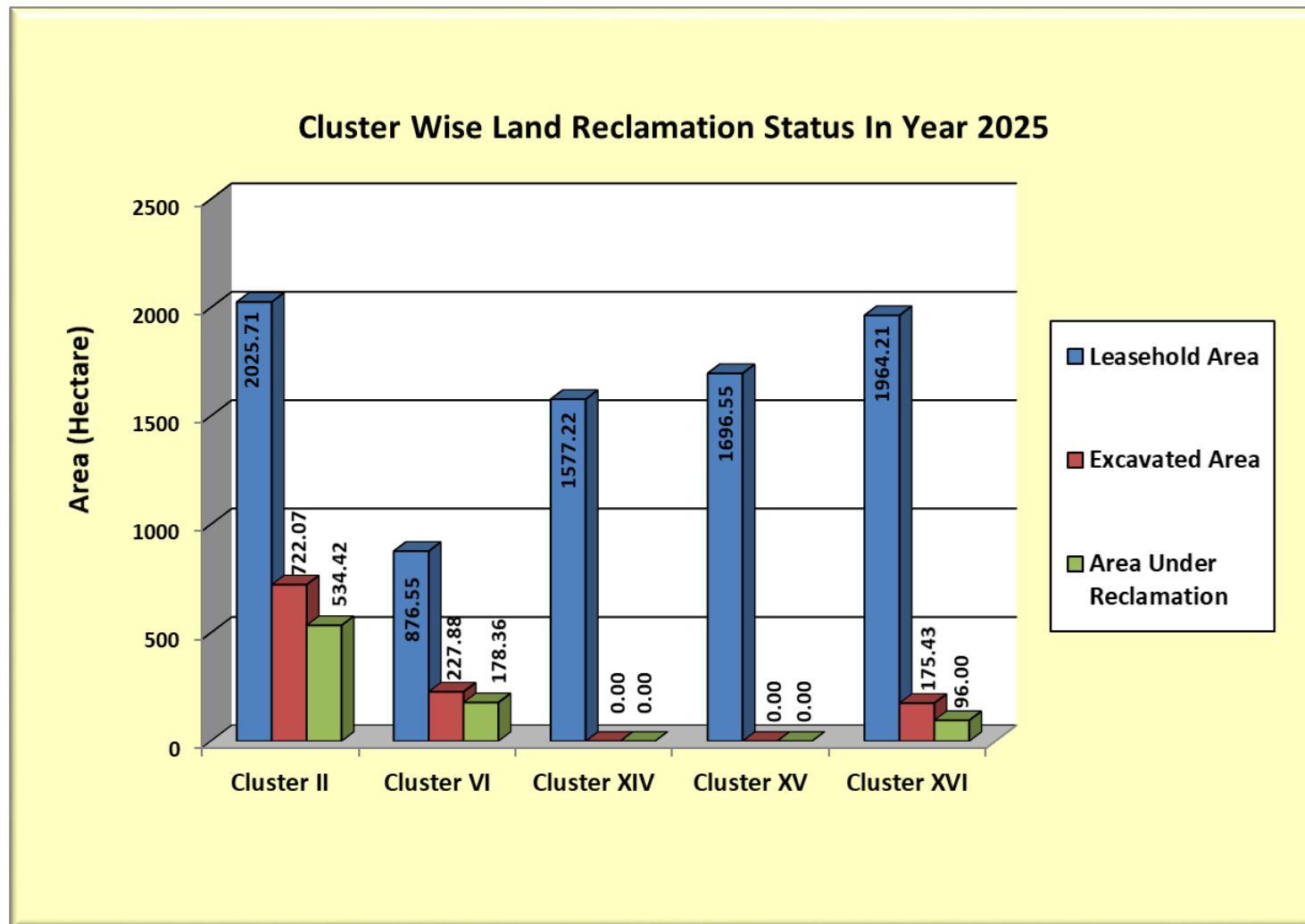


Chart 7.1: Bar Chart showing Land Reclamation Status in BCCL

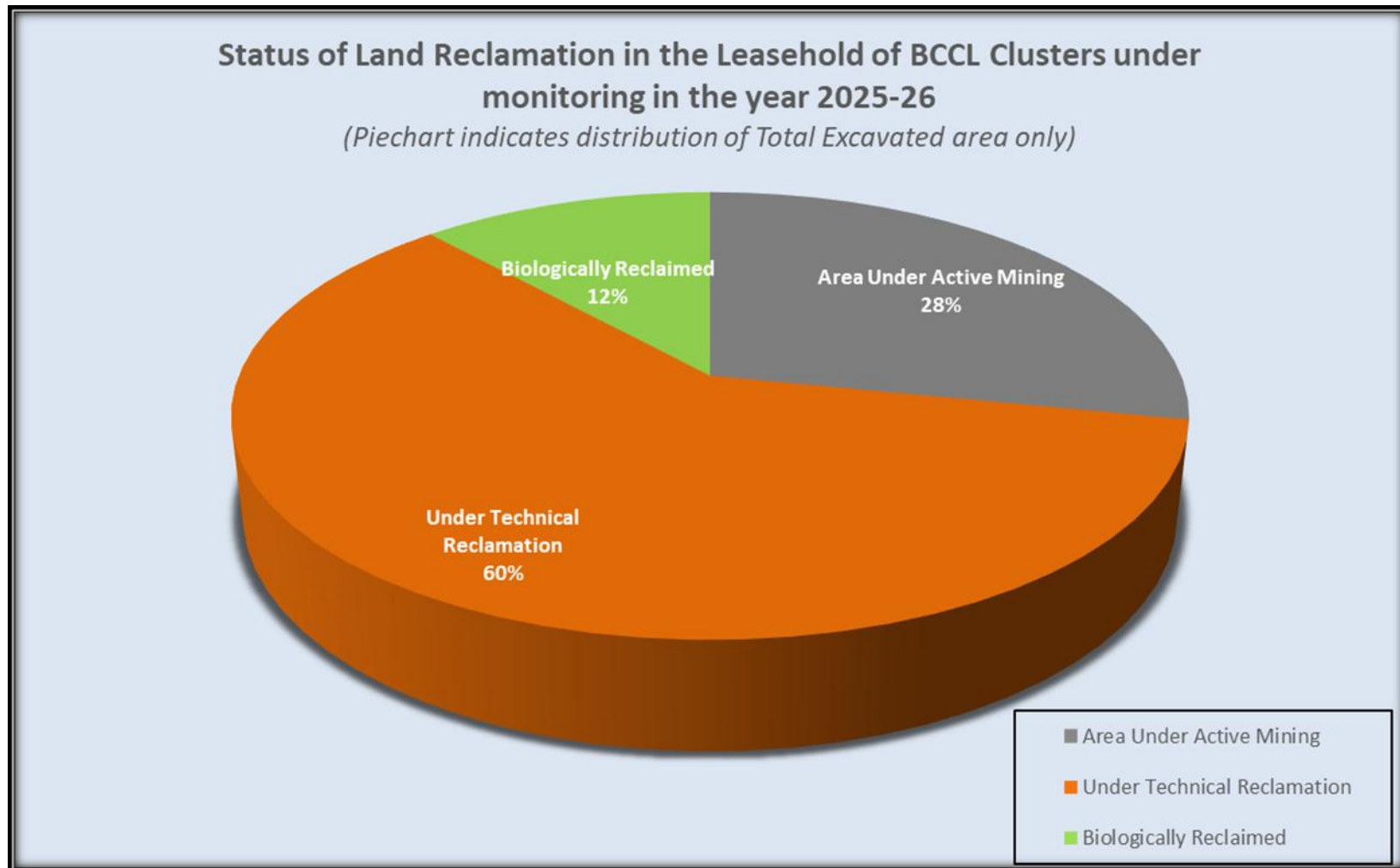


Figure 7.1: Pie Chart showing distribution of total Excavated area in BCCL Clusters

Table 7.2: Cluster-wise Land Reclamation Status in OC and UG Projects of BCCL (2025)

(Area in Hectare)														
			CLUSTER II		CLUSTER VI		CLUSTER XIV		CLUSTER XV		CLUSTER XVI		TOTAL	
			Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
SETTLEMENTS	Urban Settlement		111.11	5.48	68.18	7.78	0.00	0.00	85.25	5.02	134.33	6.84	398.87	4.90
	Rural Settlement		39.84	1.97	46.68	5.33	85.72	5.43	40.92	2.41	95.77	4.88	308.93	3.80
	Industrial Settlement		19.01	0.94	17.34	1.98	0.90	0.06	3.45	0.20	17.20	0.88	57.90	0.71
	Total Settlement		169.96	8.39	132.20	15.08	86.62	5.49	129.62	7.64	247.30	12.60	765.70	9.41
FORESTS	Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Open Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.30	1.34	26.30	0.32
	Total Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.30	1.34	26.30	0.32
SCRUBS	Scrubs		367.96	18.16	87.68	10.00	443.86	28.14	516.64	30.45	534.03	27.19	1950.17	23.96
PLANTATION	Social Forestry/Avenue Plantation		125.00	6.17	28.11	3.21	72.42	4.59	80.72	4.76	56.03	2.85	362.28	4.45
	Plantation on OB Dump		54.60	2.70	11.50	1.31	0.00	0.00	0.00	0.00	21.20	1.08	87.30	1.07
	Plantation on Backfill (Biological Reclamation)		94.57	4.67	0.00	0.00	0.00	0.00	0.00	0.00	37.74	1.92	132.31	1.63
	Total Plantation		274.17	13.53	39.61	4.52	72.42	4.59	80.72	4.76	114.97	5.85	581.89	7.15
	Total Vegetation		642.13	31.70	127.29	14.52	516.28	32.73	597.36	35.21	675.30	34.38	2558.36	31.43
AGRICULTURE	Crop Lands		2.51	0.12	0.00	0.00	8.45	0.54	5.75	0.34	128.97	6.57	145.68	1.79
	Fallow Lands		260.41	12.86	13.92	1.59	828.27	52.51	583.35	34.38	531.35	27.05	2217.30	27.24
	Total Agriculture		262.92	12.98	13.92	1.59	836.72	53.05	589.10	34.72	660.32	33.62	2362.98	29.03
WASTELAND	Waste Lands		188.13	9.29	292.13	33.33	56.04	3.55	353.62	20.84	108.32	5.51	998.24	12.26
	Fly Ash Pond / Sand Body		2.01	0.10	0.00	0.00	34.96	2.22	0.00	0.00	65.99	3.36	102.96	1.26
	Total Wasteland		190.14	9.39	292.13	33.33	91.00	5.77	353.62	20.84	174.31	8.87	1101.20	13.53
ACTIVE MINING	Coal Quarry		159.52	7.87	44.58	5.09	0.00	0.00	0.00	0.00	58.79	2.99	262.89	3.23
	Advance Quarry Site		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Quarry Filled With Water		28.13	1.39	4.94	0.56	0.00	0.00	0.00	0.00	20.64	1.05	53.71	0.66
	Total Area under Active Mining		187.65	9.26	49.52	5.65	0.00	0.00	0.00	0.00	79.43	4.04	316.60	3.89
	Barren OB Dump		89.94	4.44	67.33	7.68	0.00	0.00	1.33	0.08	30.75	1.56	189.35	2.33
	Coal Dump		15.58	0.77	2.08	0.24	0.00	0.00	0.00	0.00	7.49	0.38	25.15	0.31
RECLAIMED	Area Under Backfilling (Technical Reclamation)		439.85	21.71	178.36	20.35	0.00	0.00	0.00	0.00	58.26	2.97	676.47	8.31
	Total Area under Technical Reclamation		439.85	21.71	178.36	20.35	0.00	0.00	0.00	0.00	58.26	2.97	676.47	8.31
	Total Area under Mine Operation		733.02	36.19	297.29	33.92	0.00	0.00	1.33	0.08	175.93	8.95	1207.57	14.83
WATERBODIES	Reservoir, nallah, ponds		27.54	1.36	13.72	1.57	46.60	2.95	25.52	1.50	31.05	1.58	144.43	1.77
	Total Waterbodies		27.54	1.36	13.72	1.57	46.60	2.95	25.52	1.50	31.05	1.58	144.43	1.77
	Grand Total		2025.71	100.00	876.55	100.00	1577.22	100.00	1696.55	100.00	1964.21	100.00	8140.24	100.00

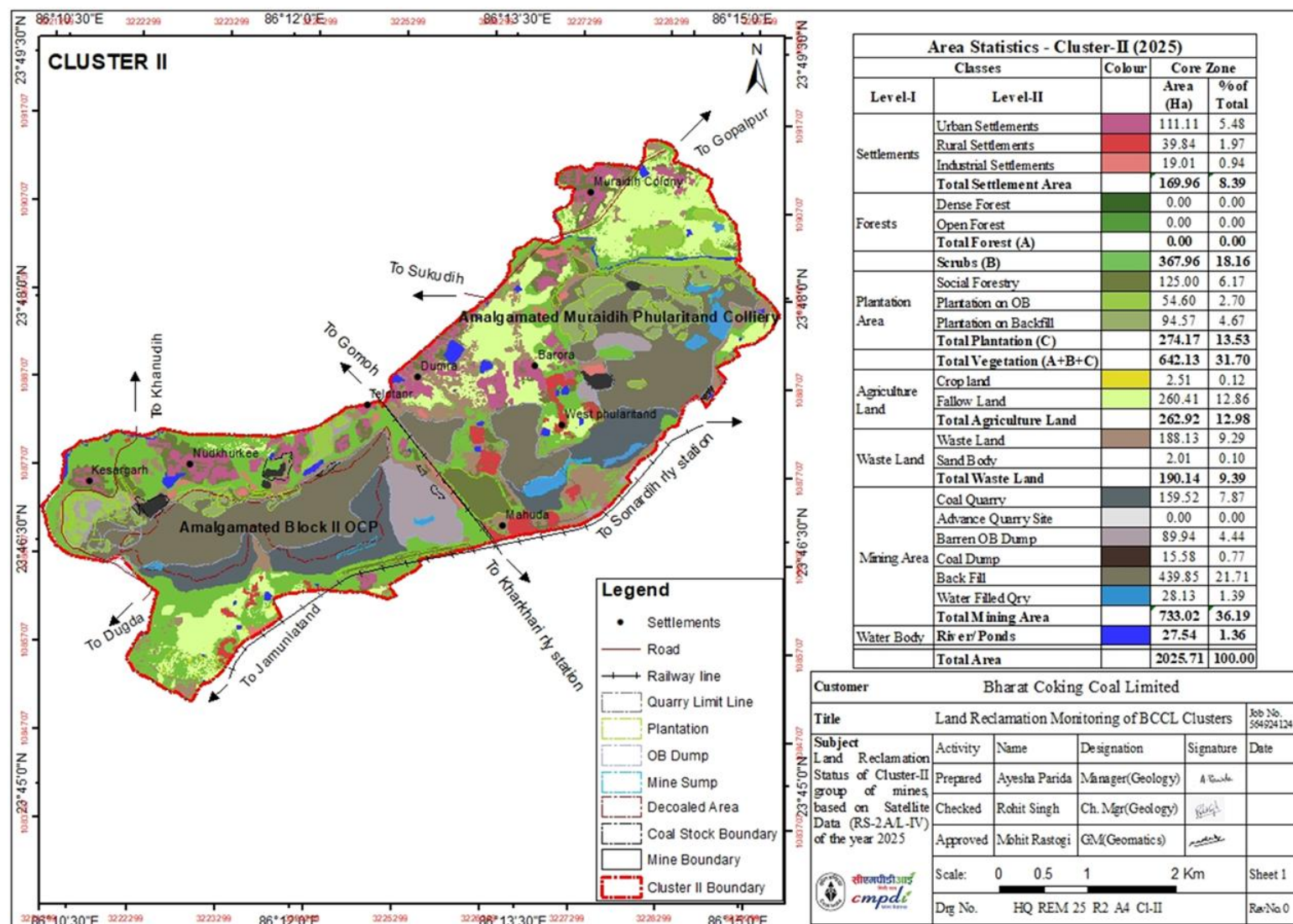


Plate 7.1: Land Use/Cover map of Cluster II

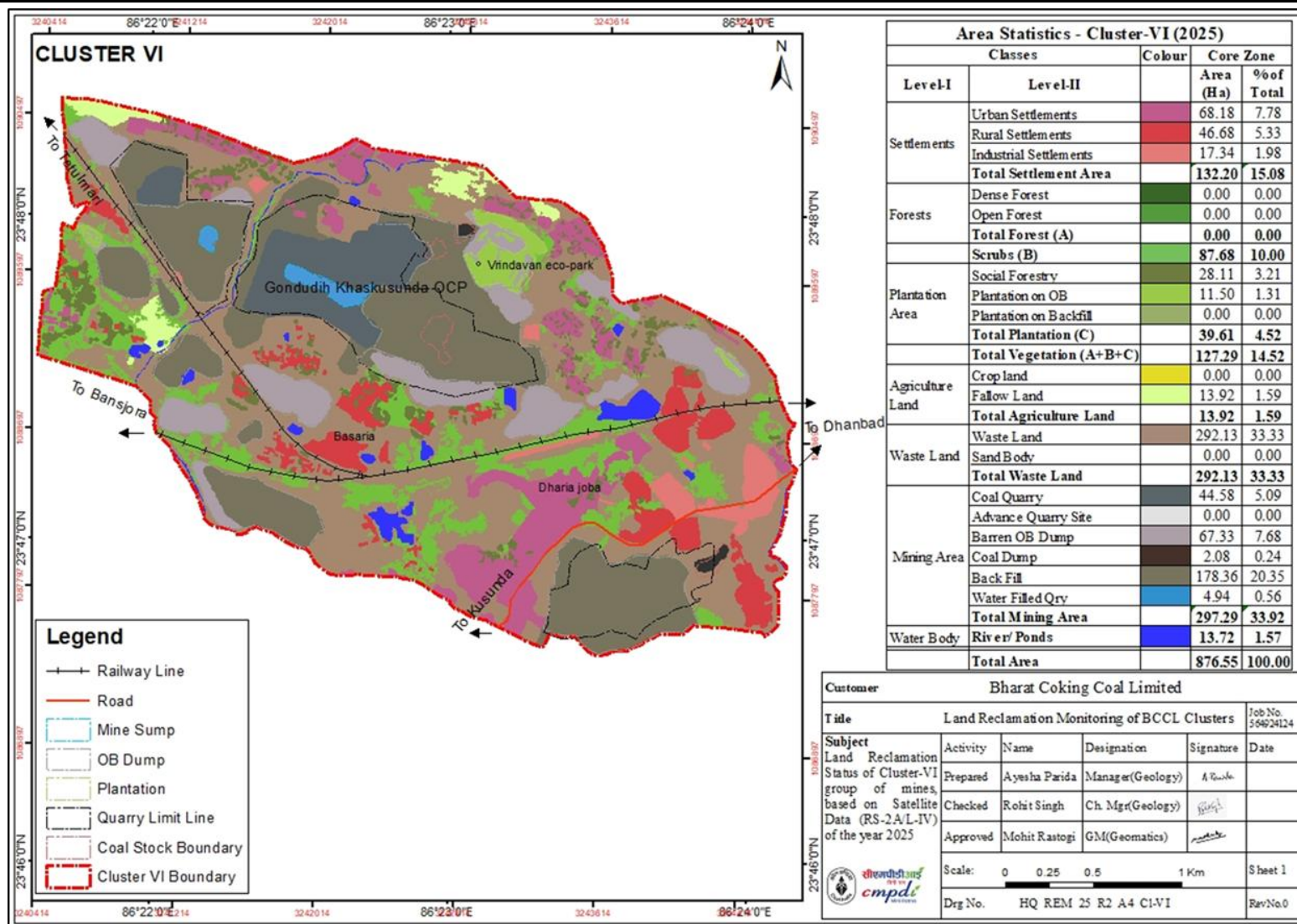


Plate 7.2: Land Use/Cover map of Cluster VI

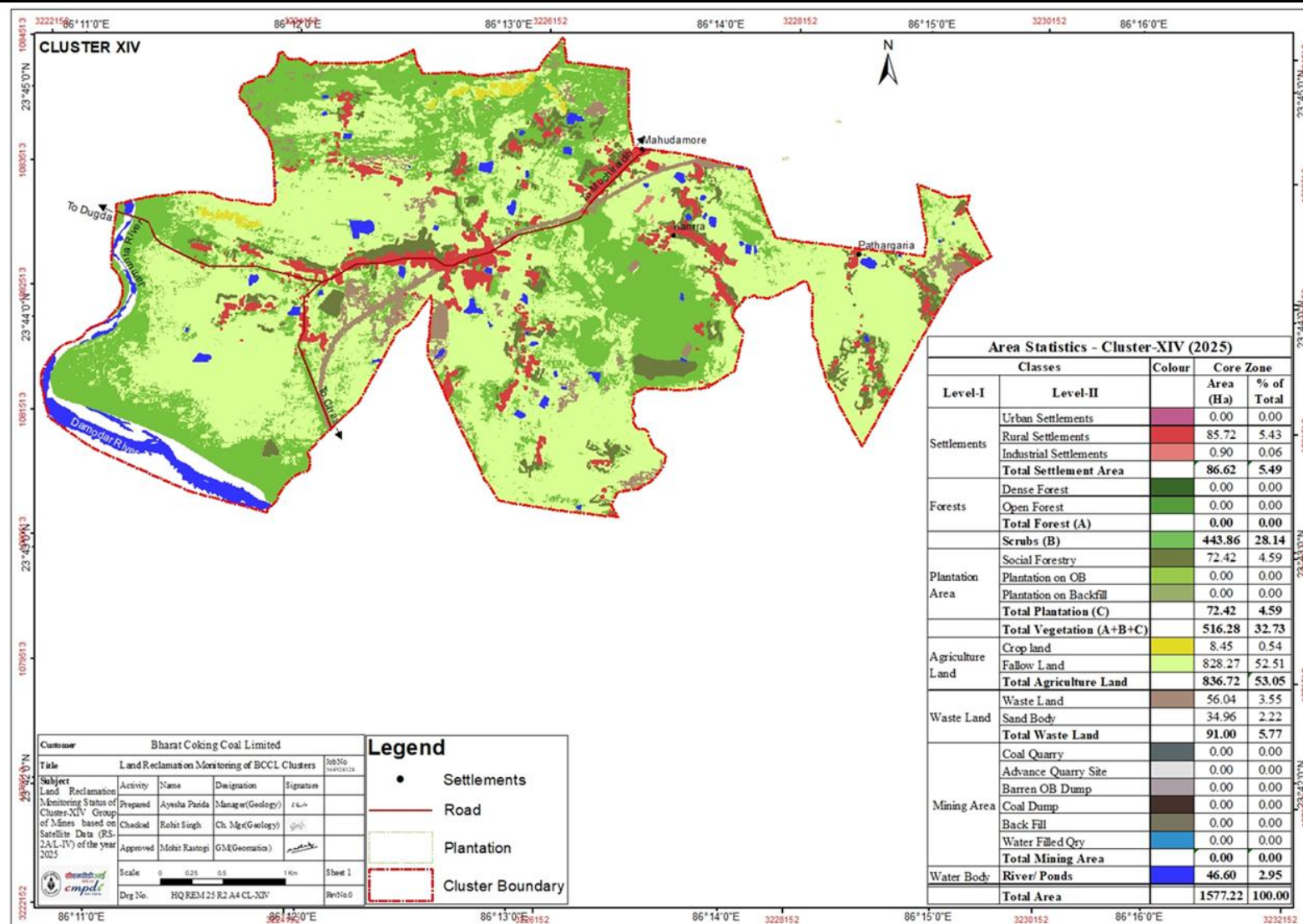


Plate 7.3: Land Use/Cover map of Cluster XIV

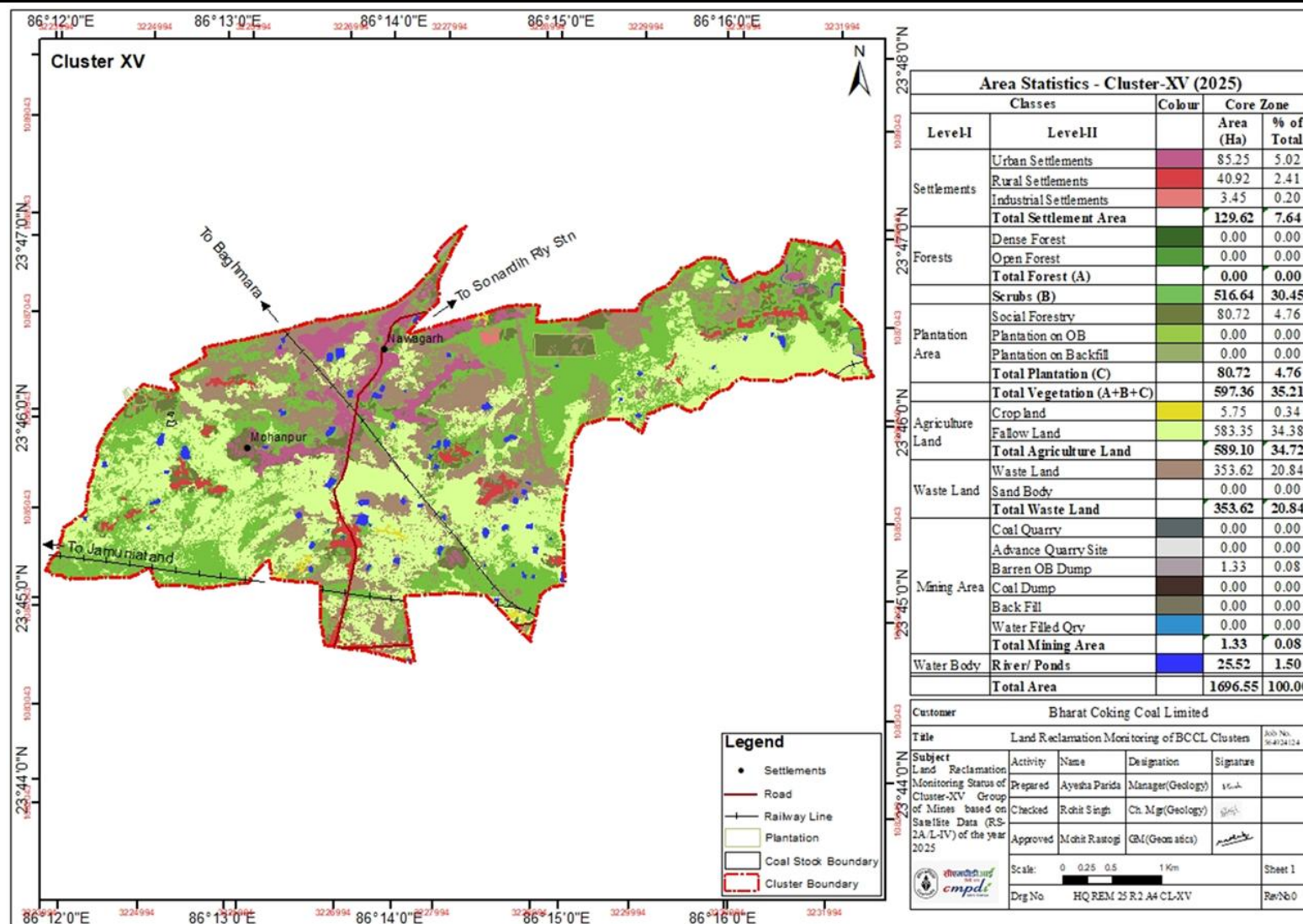


Plate 7.4: Land Use/Cover map of Cluster XV

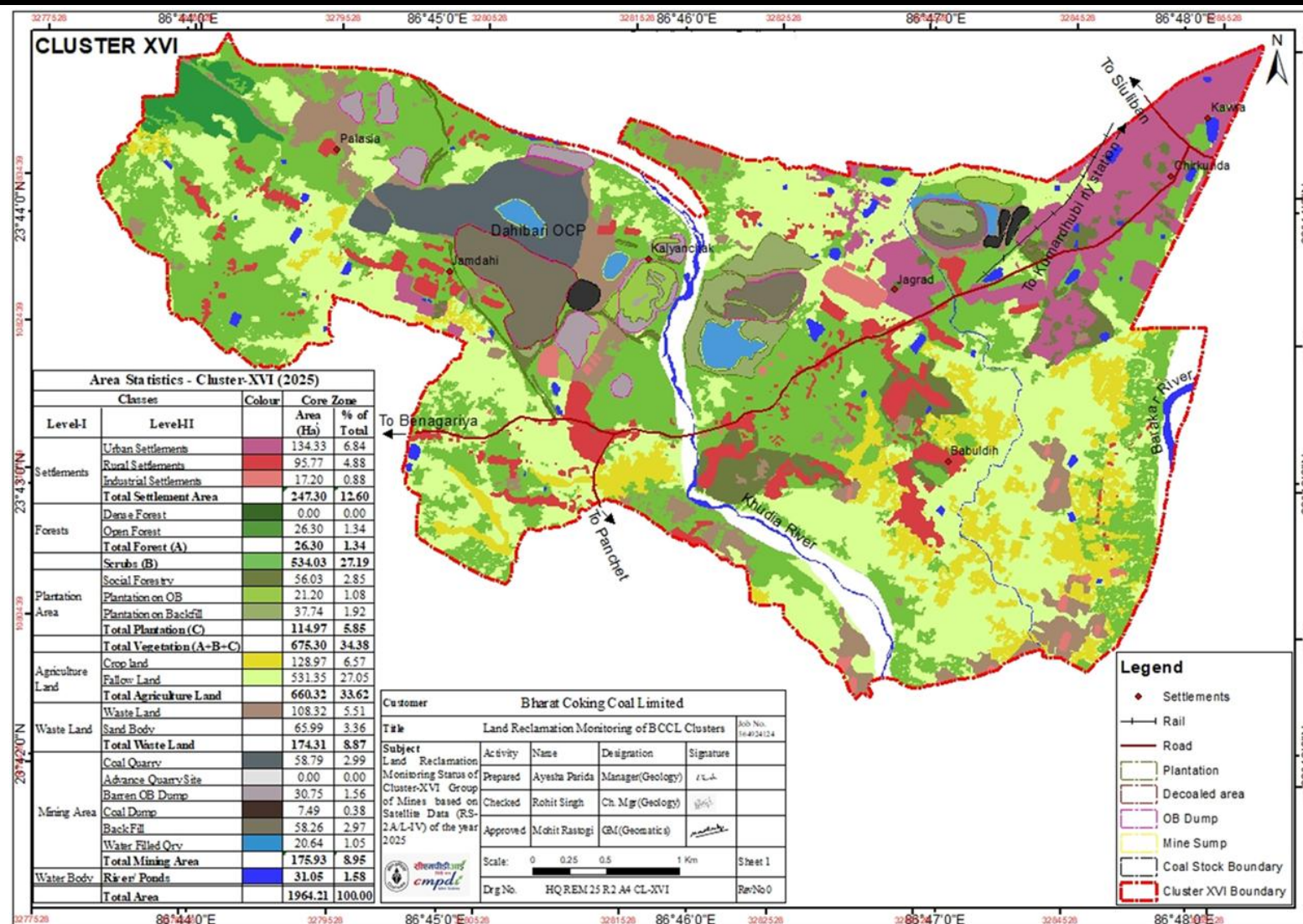


Plate 7.5: Land Use/Cover map of Cluster XVI

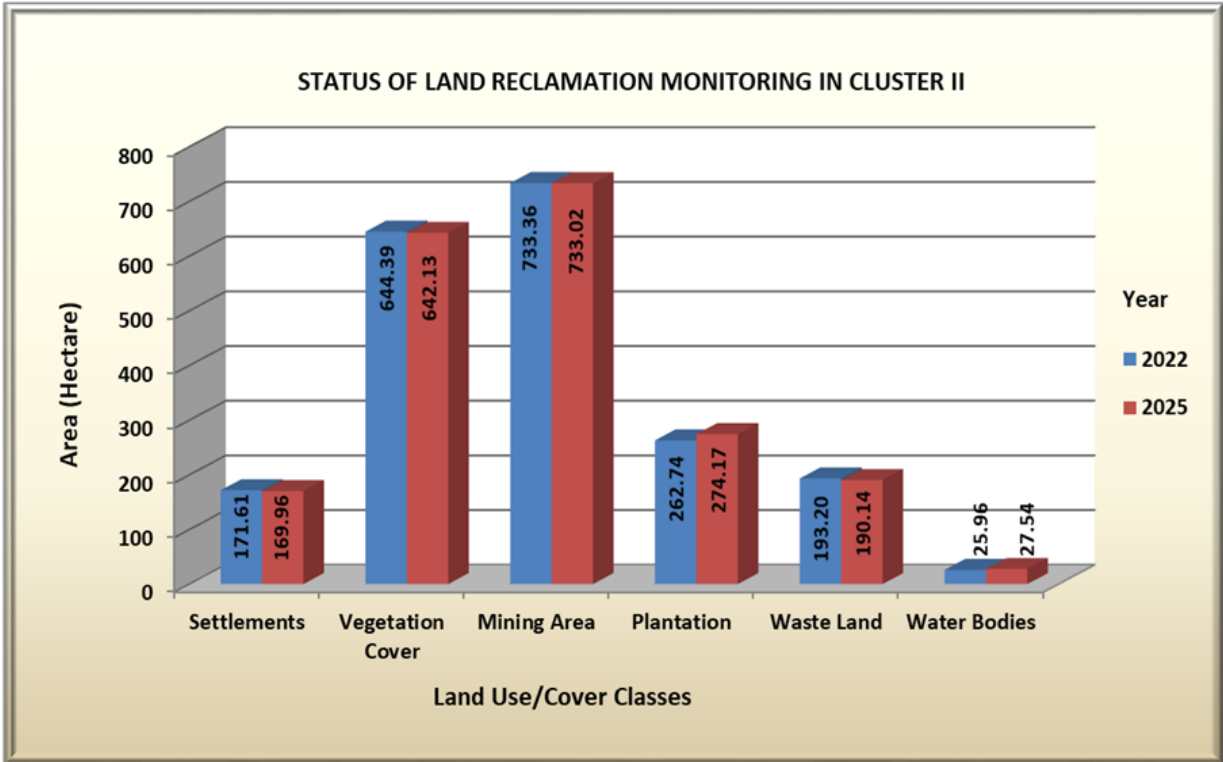


Chart 7.2: Status of Land Reclamation in Cluster II

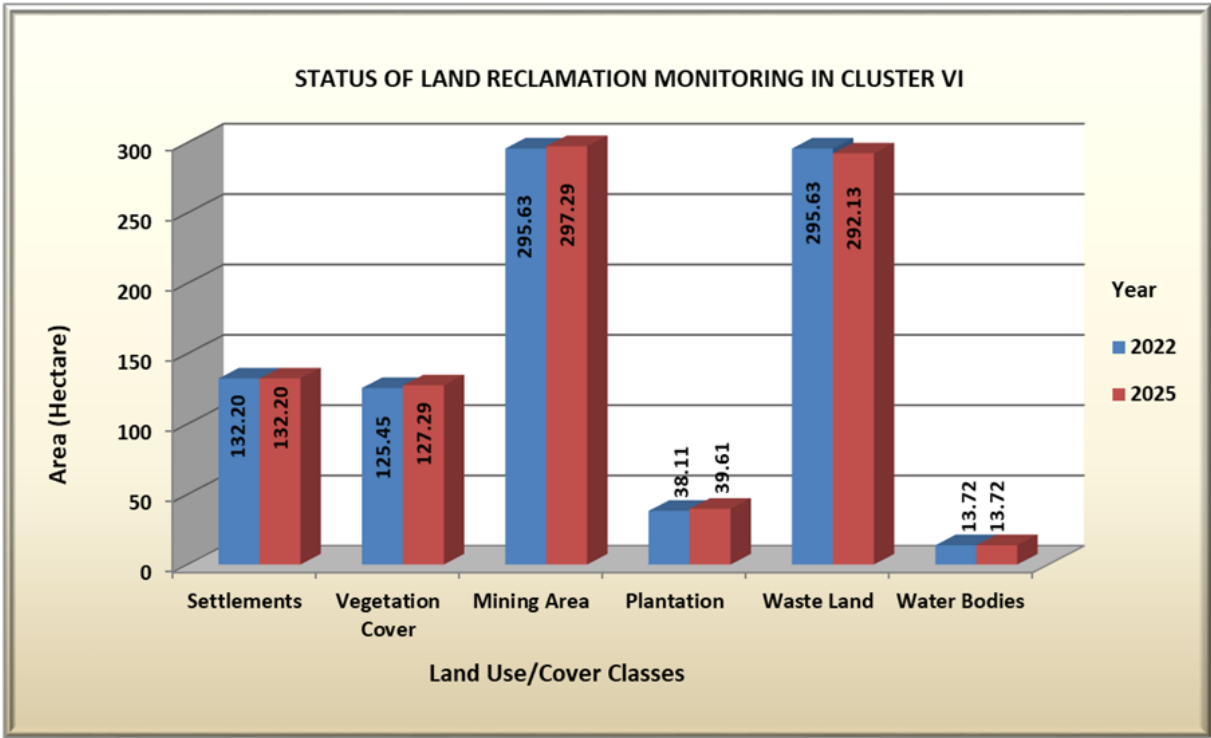


Chart 7.3: Status of Land Reclamation in Cluster VI

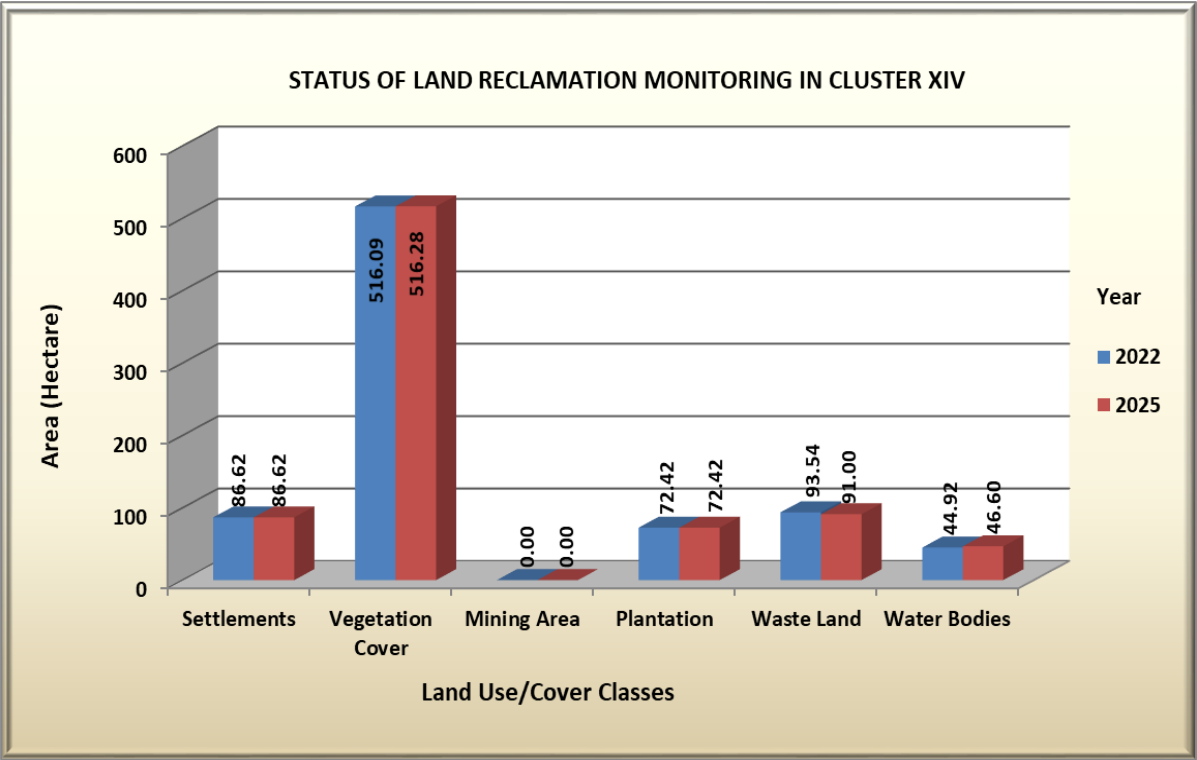


Chart 7.4: Status of Land Reclamation in Cluster XIV

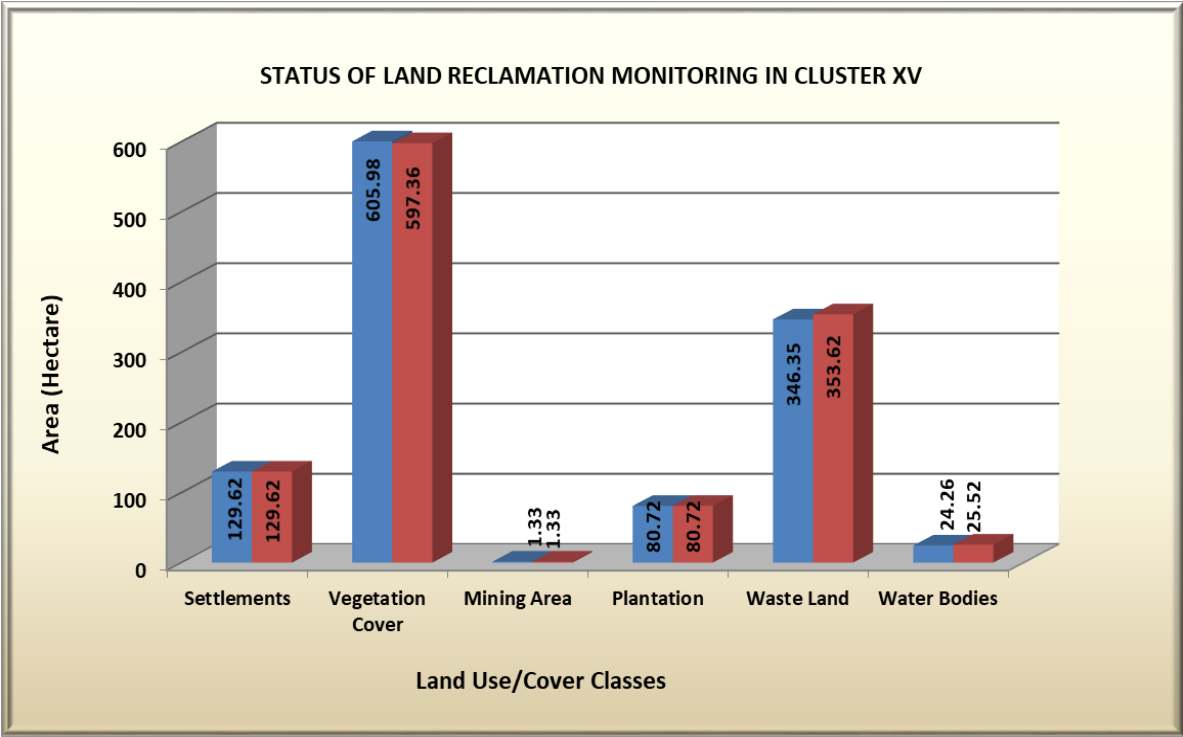


Chart 7.5: Status of Land Reclamation in Cluster XV

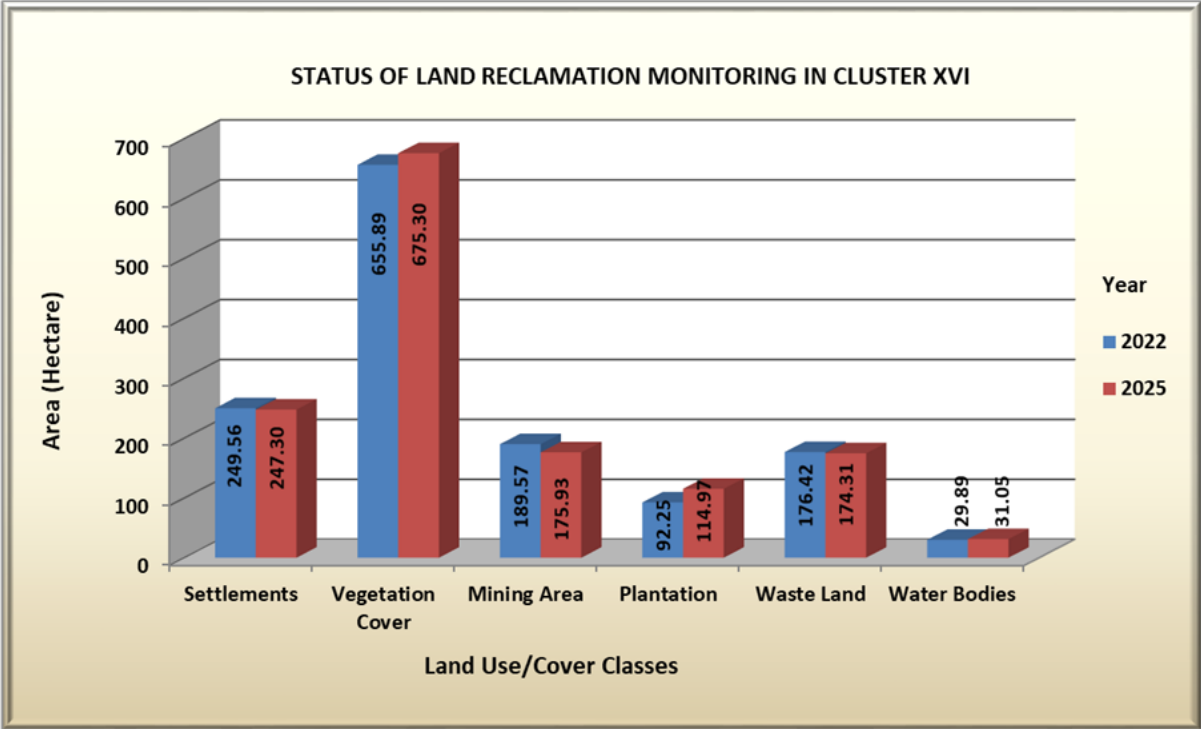


Chart 7.6: Status of Land Reclamation in Cluster XVI



Photo 7.1: Plantation on Backfill (TERI Site), Cluster II



Photo 7.2: Area Under Backfilling, Cluster II



Photo 7.3: Area Under Backfilling, Cluster VI

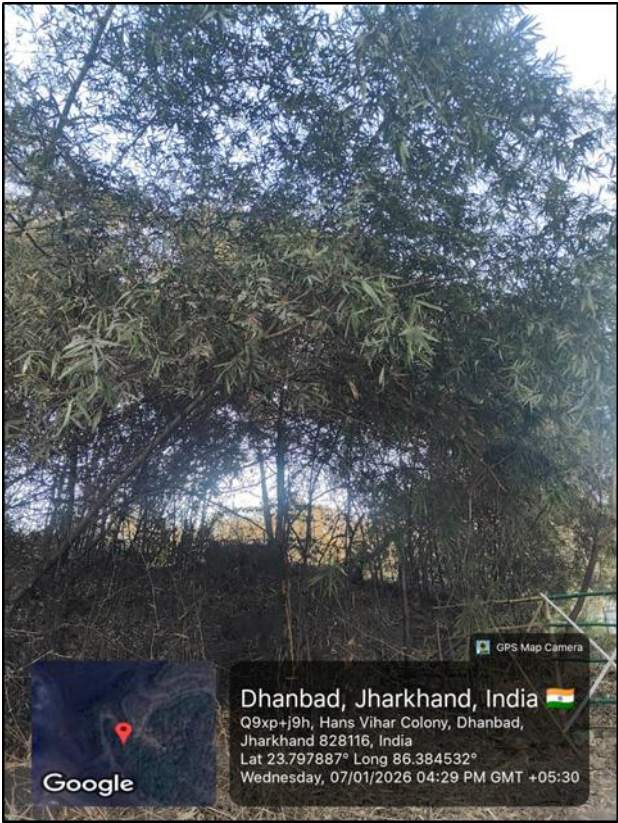


Photo 7.4: Plantation on OB Dump (Vrindavan Eco Park), Cluster VI

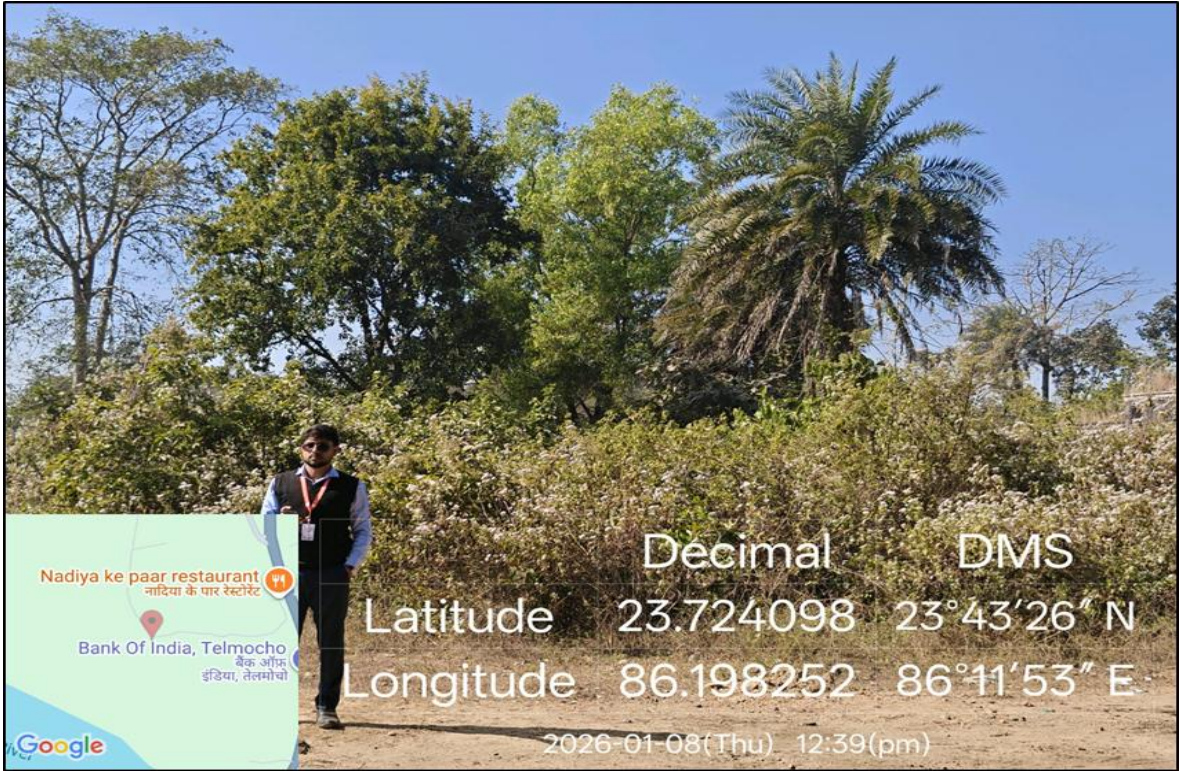


Photo 7.5: Social Forestry Plantation, Cluster XIV





Photo 7.8: Social Forestry Plantation, Cluster XV



Photo 7.9: Plantation on Bakfill, Cluster XVI



Photo 7.10: Social Forestry Plantation, Cluster XVI

MAHANADI COALFIELDS LIMITED

8. Land Reclamation Status in Mahanadi Coalfields Limited

8.1 Following 2 OC projects producing less than 5 million m³. (Coal + OB together) of Mahanadi Coalfields Ltd. has been taken up during the year 2025 for land reclamation monitoring:

- Basundhara West Extn.
- Gopalji

8.2 Project wise Land Reclamation status in MCL for the year 2025 is given in Table 8.1. Area statistics of different land use / cover classes present in the mine leasehold of the above project for the year 2025-26 are shown in the Table -8.2. Land use maps derived from satellite data are shown in Plate 8.1-8.2. Year wise changes in the different land use classes based on satellite data are depicted in Bar Charts in Fig. 8.2-8.3.

8.3 Mining operation of Basundhara West Extn. OCP and Gopalji OCP of MCL taken up for this study in the year 2025-26 has not been started yet. Study indicates that open forest covers an area of 172.49 ha., scrubs cover 415.62 ha. Waste land covers 89.27 ha., water bodies cover 22.03 ha. Total agricultural land covers an area of 736.67 ha. and settlements cover 26.65 ha. area. Study indicates that in Bashundhara West Extn. open forest covers an area of 79.79 ha., scrubs cover 133.08 ha., Social Forestry covers an area of 2.63 ha, Agricultural Land covers an area of 39.70 Ha., Waste land covers 64.30 ha., and water bodies cover 2.91 ha.

8.4 In Gopalji OC, open forest covers an area of 92.79 ha., scrubs cover 282.55 ha., Agricultural Land covers an area of 696.96 Ha., Waste land covers 24.97 ha. and water bodies cover 19.11 ha.

Table 8.1: Summarized Land Reclamation Status in MCL

Summarized Land Reclamation Status in Opencast Projects of MCL based on Satellite Data of the year 2025

Table - 1 Land Reclamation Status of 2 Projects of MCL																			
(Area in Hectare)																			
Sl. No.	Project	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological Reclamation		Other Plantations											
				Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External OB Dumps		Social Forestry, Avenue Plantation Etc.									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2023	2025	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025
1	Basundhara W Extn. OC	323.92	323.92	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.63	0.00	0.00	0.00	0.00	3.00	2.63	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.93%	0.81%	0.00%	0.00%
		2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025
2	Gopalji OC	1141.43	1141.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.00%	0.00%	0.00%	0.00%
	TOTAL (A)	1465.35	1465.35	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.63	0.00	0.00	0.00	0.00	3.00	2.63	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.20%	0.18%	0.00%	0.00%
(% is calculated with respect to Excavated Area as applicable)																			

(% is calculated with respect to Excavated Area as applicable)

Note: In reference of the above Table, different parameters are classified as follows:

1. Area under Biological Reclamation includes Areas under Plantation done on Backfilled Area Only.
2. Area under Technical Reclamation includes Area under Barren Backfilling only.
3. Area under Active Mining Includes Coal Quarry, Advance Quarry Site, Quarry filled with water etc., if any.
4. Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the Table above.
5. (%) calculated in the above Table is in respect to Total Excavated Area except for "Total Area under Plantation" where % is in terms of "Leasehold Area".
6. Leasehold boundary of Basundhara OC has been updated in year 2021 as per EC.

Table-8.1.1: Composite land reclamation status in remaining mines of MCL (<5 MCM Coal+OB) as per clause 2.(ii) of the received work order from CIL

Table - 1.1 Status of Land Reclamation in remaining 6 Projects of MCL																			
(Area in Hectare)																			
SL No.	Cluster No.	Total Leasehold Area		Technical Reclamation Area under Backfilling		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in		Total Area under Reclamation	
						Biological		Other Plantations		Social Forestry, Avarue									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024
3	Basundhara OC (Total B)	437.10	437.10	143.13	147.36	0.00	0.00	8.53	6.32	10.13	10.13	58.10	54.98	201.23	202.34	18.66	16.45	143.13	147.36
				71.13%	72.83%	0.00%	0.00%					28.87%	27.17%			4.27%	3.76%	71.13%	72.83%
		2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023.00
4	Chhendipada OC	24.30	24.30	6.86	0.52	4.46	10.80	2.84	2.84	2.07	2.07	3.97	3.97	15.29	15.29	9.37	15.71	11.32	11.32
				44.87%	3.40%	29.17%	70.63%					25.96%	25.96%			38.56%	64.65%	74.04%	74.04%
5	Balanda OC	351.22	351.22	31.11	32.79	196.90	195.22	0.00	0.00	6.66	6.66	18.21	18.21	246.22	246.22	203.56	201.88	228.01	228.01
				12.64%	13.32%	79.97%	79.29%					7.40%	7.40%			57.96%	57.48%	92.60%	92.60%
6	Orient 1&2 UG	1144.28	1144.28	0.00	0.00	0.00	0.00	0.00	0.00	21.73	21.73	0.00	0.00	0.00	0.00	21.73	21.73	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			1.90%	1.90%	0.00%	0.00%
7	Orient 3 UG	981.84	981.84	0.00	0.00	0.00	0.00	0.00	0.00	18.31	18.31	0.00	0.00	0.00	0.00	18.31	18.31	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			1.86%	1.86%	0.00%	0.00%
8	Nandira UG	474.00	370.00	0.00	0.00	0.00	0.00	0.00	0.00	4.15	3.42	0.00	0.00	0.00	0.00	4.15	3.42	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			0.88%	0.92%	0.00%	0.00%
	TOTAL (C)	2975.64	2871.64	37.97	33.31	201.36	206.02	2.84	2.84	52.92	52.19	22.18	22.18	261.51	261.51	257.12	261.05	239.33	239.33
				14.52%	12.74%	77.00%	78.78%					8.48%	8.48%			8.64%	9.09%	91.52%	91.52%
*GRAND TOTAL (A+B+C)		4878.09	4774.09	181.10	180.67	201.36	206.02	11.37	9.16	66.05	64.95	80.28	77.16	462.74	463.85	278.78	280.13	382.46	386.69
				39.14%	38.95%	43.51%	44.42%					17.35%	16.63%			5.71%	5.87%	82.65%	83.37%
*Grand Total (A+B+C) is the composite value of all 8 projects of MCL covered in 3 years cycle of Land Reclamation Monitoring (% is calculated with respect to Excavated Area as applicable)																			

Table 8.2: Project-wise Land Reclamation Status in Opencast Projects of MCL (2025)

(Area in Hectare)								
LAND USE / COVER CLASSES		Colour Code	BASUNDHARA WEST EXTN.		GOPALJI		TOTAL	
			Area	%	Area	%	Area	%
SETTLEMENTS	Urban Settlement		0.00	0.00	0.00	0.00	0.00	0.00
	Rural Settlement		1.51	0.47	25.14	2.20	26.65	1.82
	Industrial Settlement		0.00	0.00	0.00	0.00	0.00	0.00
	Total Settlements (A)		1.51	0.47	25.14	2.20	26.65	1.82
FOREST	Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00
	Open Forest		79.79	24.63	92.70	8.12	172.49	11.77
	Total Forest (B)		79.79	24.63	92.70	8.12	172.49	11.77
SCRUBS	Scrubs (C)		133.08	41.08	282.55	24.75	415.62	28.36
GREEN COVER	Social Forestry		2.63	0.81	0.00	0.00	2.63	0.18
	Plantation on External OB Dump		0.00	0.00	0.00	0.00	0.00	0.00
	Plantation on Backfill/Excavated Area(Biological Reclamation)		0.00	0.00	0.00	0.00	0.00	0.00
	Total Plantation (Green Cover) (D)		2.63	0.81	0.00	0.00	2.63	0.18
	Total Vegetation (B+C+D)		215.49	66.53	375.25	32.88	590.74	40.31
AGRICULTURE	Crop Lands		1.13	0.35	326.59	28.61	327.72	22.36
	Fallow Lands		38.57	11.91	370.37	32.45	408.94	27.91
	Total Agriculture (E)		39.70	12.26	696.96	61.06	736.67	50.27
WASTELANDS	Waste Lands		64.30	19.85	24.97	2.19	89.27	6.09
	Fly Ash Pond		0.00	0.00	0.00	0.00	0.00	0.00
	Sand Body		0.00	0.00	0.00	0.00	0.00	0.00
	Total Wasteland(F)		64.30	19.85	24.97	2.19	89.27	6.09
ACTIVE MINING	Coal Dump		0.00	0.00	0.00	0.00	0.00	0.00
	Coal Quarry		0.00	0.00	0.00	0.00	0.00	0.00
	Advance Quarry Site		0.00	0.00	0.00	0.00	0.00	0.00
	Quarry Filled with Water		0.00	0.00	0.00	0.00	0.00	0.00
	Total Area under Active Mining		0.00	0.00	0.00	0.00	0.00	0.00
	Barren OB dump		0.00	0.00	0.00	0.00	0.00	0.00
	Area Under Backfilling(Technical Reclamation)		0.00	0.00	0.00	0.00	0.00	0.00
	Total Area under Mine Operation		0.00	0.00	0.00	0.00	0.00	0.00
WATER	Reservoir, nallah, ponds etc.		2.91	0.90	19.11	1.67	22.03	1.50
	Total Waterbodies		2.91	0.90	19.11	1.67	22.03	1.50
	GRAND TOTAL		323.92	100.00	1141.43	100.00	1465.35	100.00

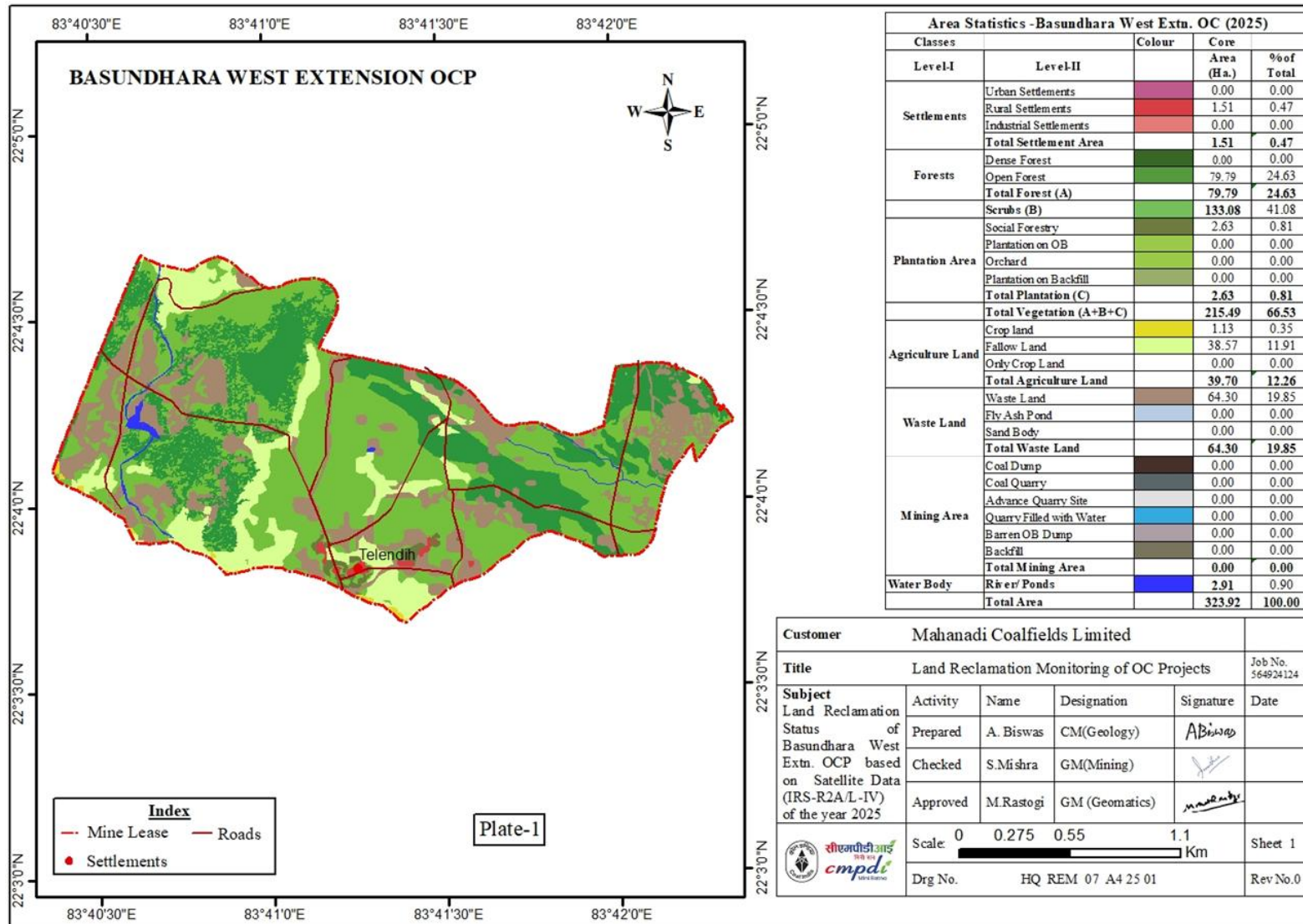


Plate 8.1: Land Use/Cover map of Basundhara West Extension OCP

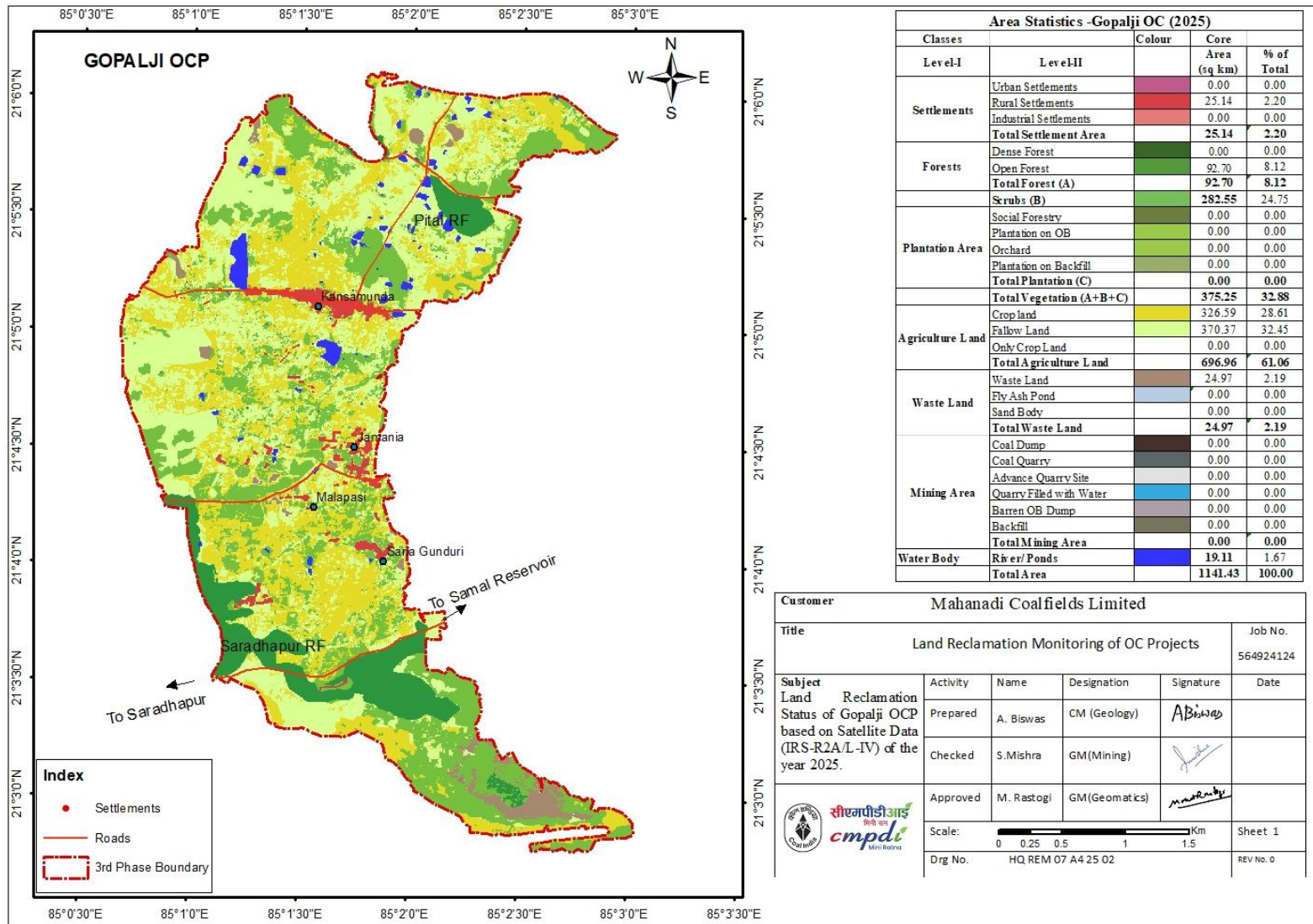


Plate 8.2: Land Use/Cover map of Gopalji OCP

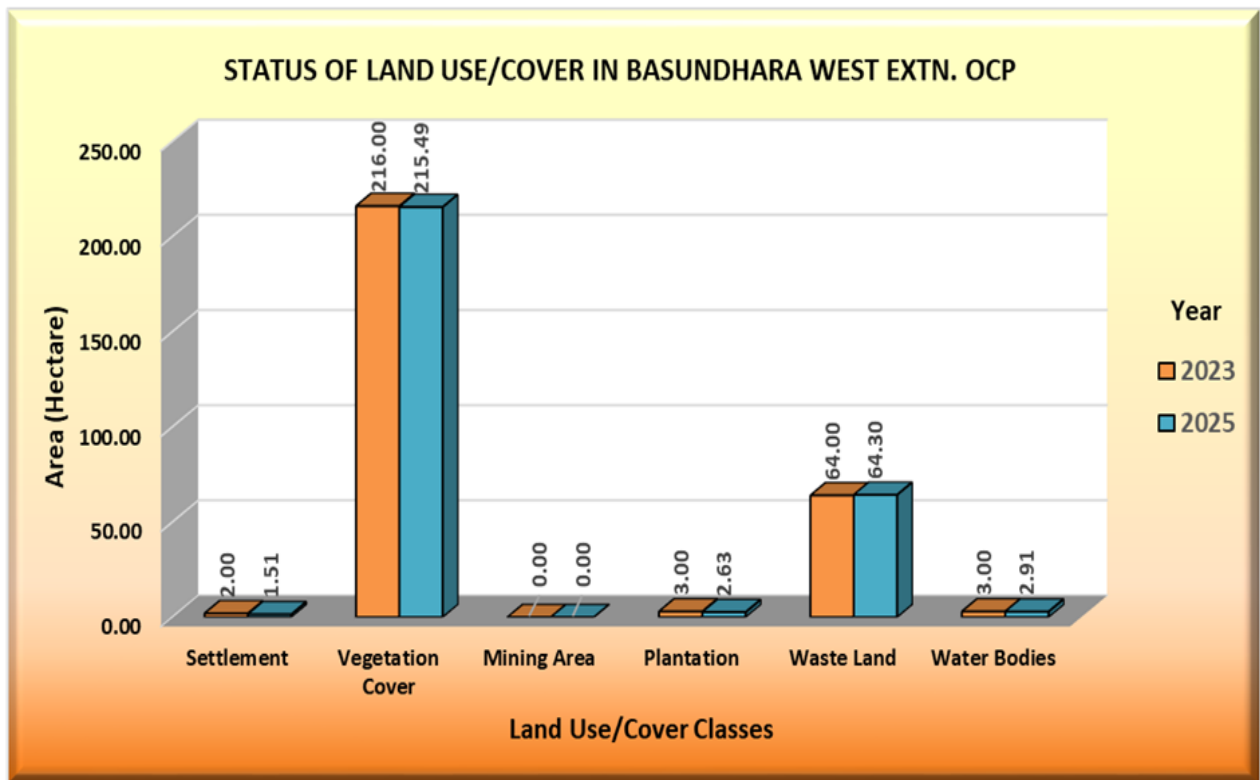


Chart 8.1: Status of Land Reclamation in Basundhara West Extn. OCP

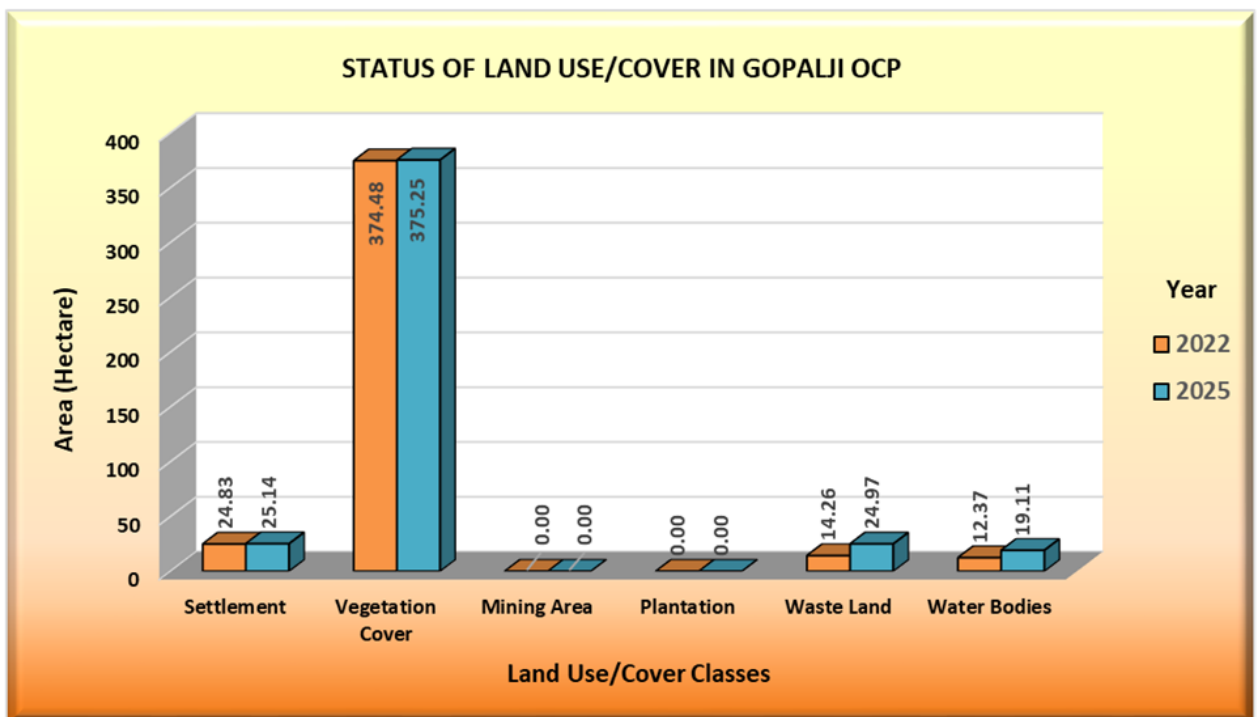


Chart 8.2: Status of Land Reclamation in Gopalji OCP



Photo 8.1: Miyawaki Plantation (Gopalji Project)

CENTRAL COALFIELDS LIMITED

9. Land Reclamation Status in Central Coalfields Ltd.

- 9.1** The following **5 OC** projects of Central Coalfields Ltd. producing less than 5 million m³. (Coal + OB) were taken up for land reclamation monitoring based on Satellite data of the year 2025.

No.	Name of OC Project	Name of Coalfield
1	Bhurkunda	South Karanpura
2	Religera	
3	Sirka	
4	Kedla	West Bokaro
5	Bokaro	East Bokaro

- 9.2** Area statistics of different land use/ cover classes present in the leasehold area of the above 05 projects of CCL for the year 2025 are shown in Table 9.1. Land use/ cover maps derived from satellite data are shown in Plate 9.1 – 9.5. Year wise changes in different land use/ cover classes in the last three years based on satellite data are shown in Bar charts in Fig. 9.2 – 9.6.
- 9.3** The leasehold boundary of Sirka and Kedla has been changed as per EC boundary. For Sirka OC the boundary is 110.94 Ha and for Kedla OC the boundary area is 189.05 Ha. This change has resulted in decrease of total leasehold area of 5 OC mines to 2286.90 Ha in year 2025 as compared to 3506.73 Ha in year 2022.
- 9.4** Study based on Satellite data of the year 2025 reveal that out of total excavated area of 625.71 Ha, an area of 352.40 Ha (56.32%) has come under the process of reclamation in the above 5 OC projects of CCL taken together. Out of which, 185.84 Ha (29.70%) area has come under backfilling (Technical Reclamation) and 166.56 Ha (26.62%) area has come under plantation (Biological Reclamation).
- 9.5** Study also reveals that the area under backfilling (Technical Reclamation) is 185.84 Ha for the year 2025 as compared to 268.62 Ha in 2022. The decrease is mainly in Bokaro, Sirka and Religera Projects.
- 9.6** Analysis of Satellite data also indicates that the area under plantation (Biological Reclamation) is 166.56 Ha in year 2025 as compared to 204.05 Ha. in year 2022. All the projects of CCL selected for monitoring is 2025 are showing decreasing trend in biological reclamation.

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- 9.7** It is also seen that the total area under plantation (Green Cover generated) which includes plantation carried out on backfilled area, OB dumps as well as plantation done on social forestry in all the 5 mines taken together of CCL is 541.61 Ha in the year 2025.
- 9.8** The total area under reclamation is 352.40 Ha in Yr. 2025 as compared to 472.67 Ha. In 2022 in the projects under monitoring. This decrease is due to reduction in technical and biological reclamation in the selected projects.
- 9.9** Out of 5 projects of CCL taken for land reclamation monitoring in 2025-26, Bokaro OC ranks on top for land reclamation (70.59%) followed by Religera (48.16%), Bhurkunda (45.02%), Sirka and Kedla.
- 9.10** Bhurkunda OCP has successfully carried out plantation on OB dumps and has developed Eco-park. With an initiative towards green sustainability it has also set up a 5MW solar power project.

Table 9.1: Summarized Land Reclamation Status in CCL

(Projects producing less than 5 mcm of Coal+OB annually)

(Area in Hectare)

SLNo	Project	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological Reclamation		Other Plantations											
				Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External Over Burden Dumps		Social Forestry, Avenue Plantation Etc.									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025
1	Bhurkunda	910.16	910.16	31.06	31.73	41.06	41.06	89.37	98.24	103.90	103.79	90.45	88.90	162.57	161.69	234.33	243.09	72.12	72.79
				19.11%	19.62%	25.26%	25.39%					55.64%	54.98%			25.75%	26.71%	44.36%	45.02%
2	Religera	301.75	301.75	41.55	44.11	0.00	0.00	9.95	24.88	32.32	32.76	61.17	47.49	102.72	91.60	42.27	57.64	41.55	44.11
				40.45%	48.16%	0.00%	0.00%					59.55%	51.84%			14.01%	19.10%	40.45%	48.16%
3	Bokaro	775.00	775.00	90.04	83.11	124.44	118.07	16.94	16.65	79.67	94.14	75.61	83.81	290.09	284.99	221.05	228.86	214.48	201.18
				31.04%	29.16%	42.90%	41.43%					26.06%	29.41%			28.52%	29.53%	73.94%	70.59%
4	Sirka [#]	362.40	110.94	22.69	12.06	5.96	0.00	0.00	0.00	6.07	4.58	70.75	15.40	99.40	27.46	12.03	4.58	28.65	12.06
				22.83%	43.92%	6.00%	0.00%					71.18%	56.08%			3.32%	4.13%	28.82%	43.92%
5	Kedla [#]	1157.42	189.05	83.28	14.83	32.59	7.43	20.24	0.01	1.35	0.00	48.35	37.71	164.22	59.97	54.18	7.44	115.87	22.26
				50.71%	24.73%	19.85%	12.39%					29.44%	62.88%			4.68%	3.94%	70.56%	37.12%
	TOTAL	3506.73	2286.90	268.62	185.84	204.05	166.56	136.50	139.78	223.31	235.27	346.33	273.31	819.00	625.71	563.86	541.61	472.67	352.40
				32.80%	29.70%	24.91%	26.62%					42.29%	43.68%			16.08%	23.68%	57.71%	56.32%

The EC area for these mines has been changed for the year 2025, as indicated.

(%) is calculated with respect to Excavated Area as applicable

Note: In reference of the above Table-1, different parameters are classified as follows:

- 1 Leasehold area as per the EC boundary. Change in Sirka and Kedla OC.
- 2 Area under **Biological Reclamation** includes Area under Plantation done on Backfilled area only
- 3 Area under **Technical Reclamation** includes Area under Backfilling only
- 4 Area under **Active Mining** includes Coal Quarry, Quarry filled with water & Advance Quarry Site, if any. Coal dump is excluded
- 5 Social Forestry and Plantation on External OB dumps are not included in Biological Reclamation, and are put under separate categories
- 6 (%) calculated in the above table is in respect of total excavated area except for "**Total area under Plantation**" where % is in terms of Leasehold Area.

Table 9.1.1: Composite land reclamation status in remaining mines of CCL (<5 MCM Coal+OB) as per clause 2.(ii) of the received work order from CIL

(Area in Hectare)																			
Sl. No.	Project	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining	Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation		
						Biological		Other Plantations											
				Area under Backfilling		Plantation on Excavated /Backfilled Area		Plantation on External OB Dumps		Social Forestry, Avannee Plantation Etc.									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024
6	Karma	298.96	298.96	7.74	18.28	0.00	0.00	9.62	8.67	1.27	1.27	41.29	41.95	49.03	60.23	10.89	9.94	7.74	18.28
				15.79%	30.35%	0.00%	0.00%					84.21%	69.65%			3.64%	3.32%	15.79%	30.35%
7	Jarangdih	179.05	179.05	29.51	28.33	7.19	7.20	3.44	2.93	17.83	17.52	22.24	24.23	58.94	59.76	28.46	27.65	36.70	35.53
				50.07%	47.41%	12.20%	12.05%					37.73%	40.55%			15.90%	15.44%	62.27%	59.45%
8	Dakra	249.72	249.72	47.98	56.02	37.86	37.86	1.11	0.10	15.77	18.51	22.38	25.14	108.22	119.02	54.74	56.47	85.84	93.88
				44.34%	47.07%	34.98%	31.81%					20.68%	21.12%			21.92%	22.61%	79.32%	78.88%
9	Giddi-A	510.00	510.00	90.81	91.55	84.88	83.14	40.61	40.62	13.84	14.13	67.74	63.15	243.43	237.84	139.33	137.89	175.69	174.69
				37.30%	38.49%	34.87%	34.96%					27.83%	26.55%			27.32%	27.04%	72.17%	73.45%
10	Tetariakhar	208.47	208.47	0.00	0.00	0.00	0.00	0.00	0.00	1.45	5.13	40.19	40.64	40.19	40.64	1.45	5.13	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					100.00%	100.00%			0.70%	2.46%	0.00%	0.00%
	TOTAL (B-a)	1446.20	1446.20	176.04	194.18	129.93	128.20	54.78	52.32	50.16	56.56	193.84	195.11	499.81	517.49	234.87	237.08	305.97	322.38
				35.22%	37.52%	26.00%	24.77%					38.78%	37.70%			16.24%	16.39%	61.22%	62.30%
11	Tapin South*	-	178.06	-	31.19	-	0.00	-	17.62	-	0.00	-	30.84	-	62.03	-	17.62	-	31.19
					50.28%		0.00%						49.72%				9.90%		50.28%
12	Kabribad*	-	93.34	-	30.80	-	6.10	-	6.20	-	0.00	-	23.20	-	60.10	-	12.30	-	36.90
					51.25%		10.15%						38.60%				13.18%		61.40%
13	Sayal-D*	-	398.00	-	0.51	-	0.00	-	0.00	-	18.73	-	36.89	-	37.40	-	18.73	-	0.51
					1.36%		0.00%						98.64%				4.71%		1.36%
	TOTAL (B-b)	-	669.40	-	62.50	-	6.10	-	23.82	-	18.73	-	90.93	-	159.53	-	48.65	-	68.60
					39.18%		3.82%						57.00%				7.27%		43.00%
	TOTAL (B) (a+b)	1446.20	2115.60	176.04	256.68	129.93	134.30	54.78	76.14	50.16	75.29	193.84	286.04	499.81	677.02	234.87	285.73	305.97	390.98
				35.22%	37.91%	26.00%	19.84%					38.78%	42.25%			16.24%	13.51%	61.22%	57.75%

		2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023
14	Urimari [#]	1443.50	243.09	91.58	73.61	48.80	17.62	0.06	0.00	42.67	0.88	63.74	102.97	204.12	194.20	91.53	18.50	140.38	91.23
				44.87%	37.90%	23.91%	9.07%					31.23%	53.02%			6.34%	7.61%	68.77%	46.98%
15	Govindpur	274.95	274.95	66.56	58.79	17.50	12.58	2.03	1.46	0.22	0.00	60.02	136.18	144.08	207.55	19.75	14.04	84.06	71.37
				46.20%	28.33%	12.15%	6.06%					41.66%	65.61%			7.18%	5.11%	58.34%	34.39%
16	Topa [#]	520.91	276.66	20.89	10.62	3.75	2.53	43.81	5.89	14.22	12.72	55.71	108.72	80.35	121.87	61.78	21.14	24.64	13.15
				26.00%	8.71%	4.67%	2.08%					69.33%	89.21%			11.86%	7.64%	30.67%	10.79%
17	Jharkhand [#]	323.88	261.84	91.21	61.14	38.25	34.98	0.33	0.32	2.48	0.96	48.93	136.45	178.39	232.57	41.06	36.26	129.46	96.12
				51.13%	26.29%	21.44%	15.04%					27.43%	58.67%			12.68%	13.85%	72.57%	41.33%
18	New Giddi-C	210.32	210.32	31.22	7.39	10.34	0.00	3.02	19.96	5.83	6.56	26.78	73.16	68.34	80.55	19.19	26.52	41.56	7.39
				45.68%	9.17%	15.13%	0.00%					39.19%	90.83%			9.12%	12.61%	60.81%	9.17%
19	Amlo	247.59	247.59	39.51	31.01	14.58	15.23	15.27	18.02	1.53	2.00	39.62	120.38	93.71	166.62	31.38	35.25	54.09	46.24
				42.16%	18.61%	15.56%	9.14%					42.28%	72.25%			12.67%	14.24%	57.72%	27.75%
	TOTAL (C)	3021.15	1514.45	340.97	242.56	133.22	82.94	64.52	45.65	66.95	23.12	294.80	677.86	768.99	1003.36	264.69	151.71	474.19	325.50
				44.34%	24.17%	17.32%	8.27%					38.34%	67.56%			8.76%	10.02%	61.66%	32.44%
	**	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
20	KDH [#]	620.00	489.00	177.00	156.00	139.00	139.00	3.00	3.00	21.00	18.00	52.00	33.00	368.00	328.00	163.00	160.00	316.00	295.00
				48.10%	47.56%	37.77%	42.38%					14.13%	10.06%			26.29%	32.72%	85.87%	89.94%
21	Parej East [#]	620.00	346.00	76.00	76.00	75.00	76.00	6.00	6.00	9.00	9.00	21.00	21.00	172.00	173.00	90.00	91.00	151.00	152.00
				44.19%	43.93%	43.60%	43.93%					12.21%	12.14%			14.52%	26.30%	87.79%	87.86%
22	Rajrappa	1982.00	1982.00	238.00	236.00	127.00	127.00	302.00	302.00	202.00	202.00	103.00	110.00	468.00	473.00	631.00	631.00	365.00	363.00
				50.85%	49.89%	27.14%	26.85%					22.01%	23.26%			31.84%	31.84%	77.99%	76.74%
23	Sel Dhori	265.00	265.00	35.00	38.00	3.00	5.00	7.00	7.00	1.00	3.00	67.00	60.00	105.00	103.00	11.00	15.00	38.00	43.00
				33.33%	36.89%	2.86%	4.85%					63.81%	58.25%			4.15%	5.66%	36.19%	41.75%
24	Kathara	771.00	771.00	68.00	68.00	32.00	32.00	108.00	108.00	80.00	80.00	68.00	68.00	168.00	168.00	220.00	220.00	100.00	100.00
				40.48%	40.48%	19.05%	19.05%					40.48%	40.48%			28.53%	28.53%	59.52%	59.52%
25	Rohini	256.00	256.00	133.00	134.00	48.00	50.00	11.00	11.00	0.00	0.00	46.00	45.00	227.00	229.00	59.00	61.00	181.00	184.00
				58.59%	58.52%	21.15%	21.83%					20.26%	19.65%			23.05%	23.83%	79.74%	80.35%
26	Purnadih	752.00	752.00	103.00	107.00	23.00	25.00	12.00	12.00	3.00	4.00	53.00	54.00	179.00	186.00	38.00	41.00	126.00	132.00
				57.54%	57.53%	12.85%	13.44%					29.61%	29.03%			5.05%	5.45%	70.39%	70.97%
27	Karo	526.00	526.00	74.00	71.00	26.00	27.00	10.00	10.00	27.00	22.00	32.00	36.00	132.00	134.00	63.00	59.00	100.00	98.00
				56.06%	52.99%	19.70%	20.15%					24.24%	26.87%			11.98%	11.22%	75.76%	73.13%
	TOTAL (D)	5792.00	5387.00	904.00	886.00	473.00	481.00	459.00	459.00	343.00	338.00	442.00	427.00	1819.00	1794.00	1275.00	1278.00	1377.00	1367.00
				49.70%	49.39%	26.00%	26.81%					24.30%	23.80%			22.01%	23.72%	75.70%	76.20%
	GRAND TOTAL (A+B+C+D)	13766.08	11303.95	1689.63	1571.08	940.20	864.80	714.80	720.57	683.62	671.68	1276.97	1664.21	3906.80	4100.09	2338.42	2257.05	2629.83	2435.88
				43.25%	38.32%	24.07%	21.09%					32.69%	40.59%			16.99%	19.97%	67.31%	59.41%
#Grand Total (A+B+C+D) is the composite value of all 27 mines of CCL (< 5 MTY capacity) covered in 3 years cycle of Land Reclamation Monitoring (% is calculated with respect to Excavated Area as applicable)																			
# The Leasehold area for these mines has been changed for the year, as indicated.																			
Sq.Kms to Ha.																			

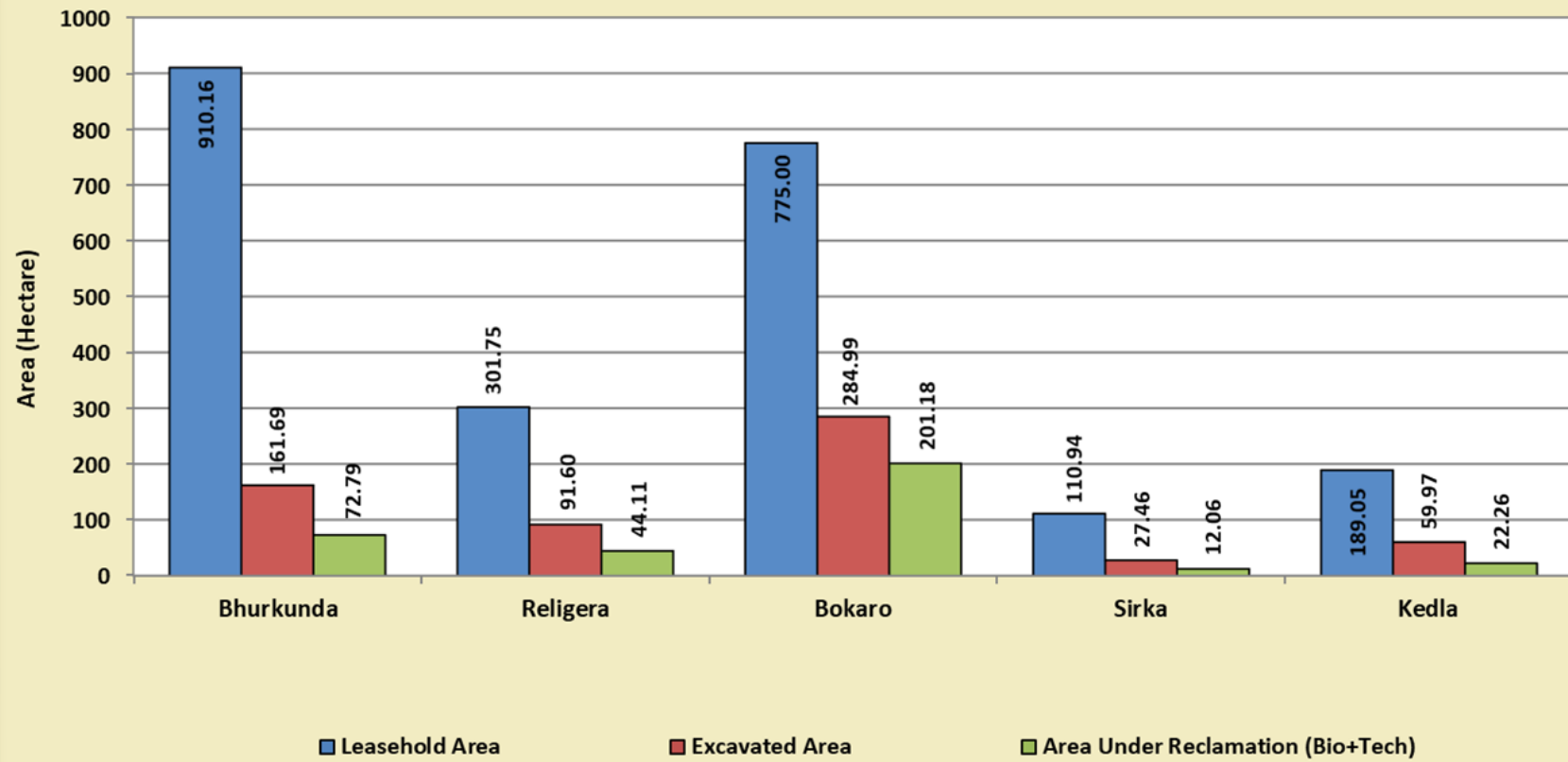


Chart 9.1: Bar Chart showing Land Reclamation Status in CCL

Table 9.2: Project-wise Land Reclamation Status in Opencast Projects of CCL (2025)

TABLE - 2													
Project wise Area Statistics of Land Use/ Cover Classes in OC Mines(< 5 m.cu.m) of CCL based on Satellite data of the Year 2025													
(Area in Hectare)													
		BHURKUNDA		RELIGERA		BOKARO		SIRKA		KEDLA		TOTAL	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
FORESTS	Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Open Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Forest (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Scrubs(B)	189.50	20.82	43.48	14.41	102.84	13.27	15.58	14.04	63.98	33.84	415.38	18.16
PLANTATION	Social Forestry	103.79	11.40	32.76	10.86	94.14	12.15	4.58	4.13	0.00	0.00	235.27	10.29
	Plantation on OB Dump	98.24	10.79	24.88	8.25	16.65	2.15	0.00	0.00	0.01	0.01	139.78	6.11
	Plantation on Backfill (Biological Reclamation)	41.06	4.51	0.00	0.00	118.07	15.23	0.00	0.00	7.43	3.93	166.56	7.28
	Total Plantation (C)	243.09	26.71	57.64	19.10	228.86	29.53	4.58	4.13	7.44	3.94	541.61	23.68
	Total Vegetation (A+B+C)	432.59	47.53	101.12	33.51	331.70	42.80	20.16	18.17	71.42	37.78	956.99	41.85
ACTIVE MINING	Coal Quarry	29.30	3.22	25.43	12.80	12.61	8.99	12.25	8.09	31.09	3.15	110.68	3.15
	Advance Quarry Site	0.00	0.00	3.80	0.45	0.45	0.17	0.00	0.67	0.89	0.36	5.14	0.36
	Quarry Filled With Water	59.60	6.55	18.26	0.28	70.75	0.11	3.15	1.31	5.73	8.87	157.49	8.87
	Total Area under Active Mining (D)	88.90	9.77	47.49	15.74	83.81	10.81	15.40	13.88	37.71	19.95	273.31	11.95
(E)	Coal Dump	1.57	0.17	4.32	1.60	6.67	1.21	0.00	1.18	0.00	0.57	12.56	0.57
	Barren OB Dump	136.34	14.98	53.32	7.14	16.90	10.89	31.72	0.23	1.17	3.59	239.45	3.59
	Area Under Backfilling (Technical Reclamation)	31.73	3.49	44.11	15.82	83.11	0.13	12.06	22.43	14.83	17.95	185.84	17.95
	Total Area under Mine Operation (D+E)	258.54	28.41	149.24	49.46	190.49	24.58	59.18	53.34	53.71	28.41	711.16	31.10
WASTE LANDS	Waste Lands	34.58	3.80	11.47	3.80	11.39	1.47	3.85	3.47	14.32	7.57	75.61	3.31
	Fly Ash Pond / Sand Body	4.21	0.46	0.00	0.00	41.01	5.29	0.00	0.00	0.00	0.00	45.22	1.98
	Total Wasteland	38.79	4.26	11.47	3.80	52.40	6.76	3.85	3.47	14.32	7.57	120.83	5.28
WATER BODY	Reservoir, Nallah, Ponds	16.24	1.78	0.28	0.09	41.63	5.37	0.01	0.01	6.00	3.17	64.16	2.81
	Total Waterbodies	16.24	1.78	0.28	0.09	41.63	5.37	0.01	0.01	6.00	3.17	64.16	2.81
AGRICULTURE	Crop Lands	0.00	0.00	0.00	0.00	0.00	0.00	1.45	1.31	2.03	1.07	3.48	0.15
	Fallow Lands	11.58	1.27	4.10	1.36	82.98	10.71	2.76	2.49	34.88	18.45	136.30	5.96
	Total Agriculture	11.58	1.27	4.10	1.36	82.98	10.71	4.21	3.79	36.91	19.52	139.78	6.11
SETTLEMENTS	Urban Settlement	140.25	15.41	11.69	3.87	46.09	5.95	22.43	20.22	0.48	0.25	220.94	9.66
	Rural Settlement	3.08	0.34	21.59	7.15	27.68	3.57	1.10	0.99	6.21	3.28	59.66	2.61
	Industrial Settlement	9.09	1.00	2.26	0.75	2.03	0.26	0.00	0.00	0.00	0.00	13.38	0.59
	Total Settlements	152.42	16.75	35.54	11.78	75.80	9.78	23.53	21.21	6.69	3.54	293.98	12.85
	Grand Total	910.16	100.00	301.75	100.00	775.00	100.00	110.94	100.00	189.05	100.00	2286.90	100.00

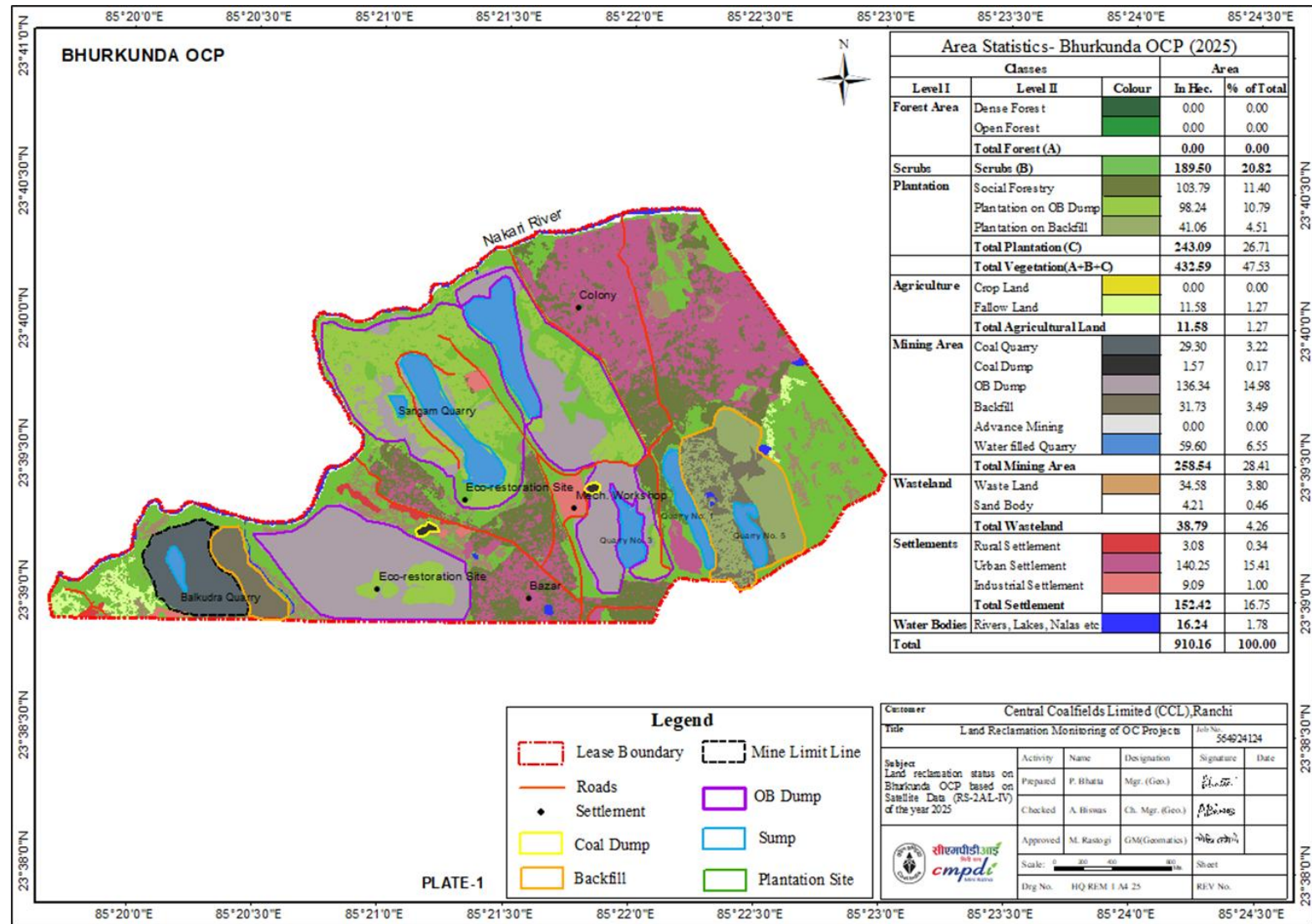


Plate 9.1: Land Use/Cover map Bhurkunda OCP

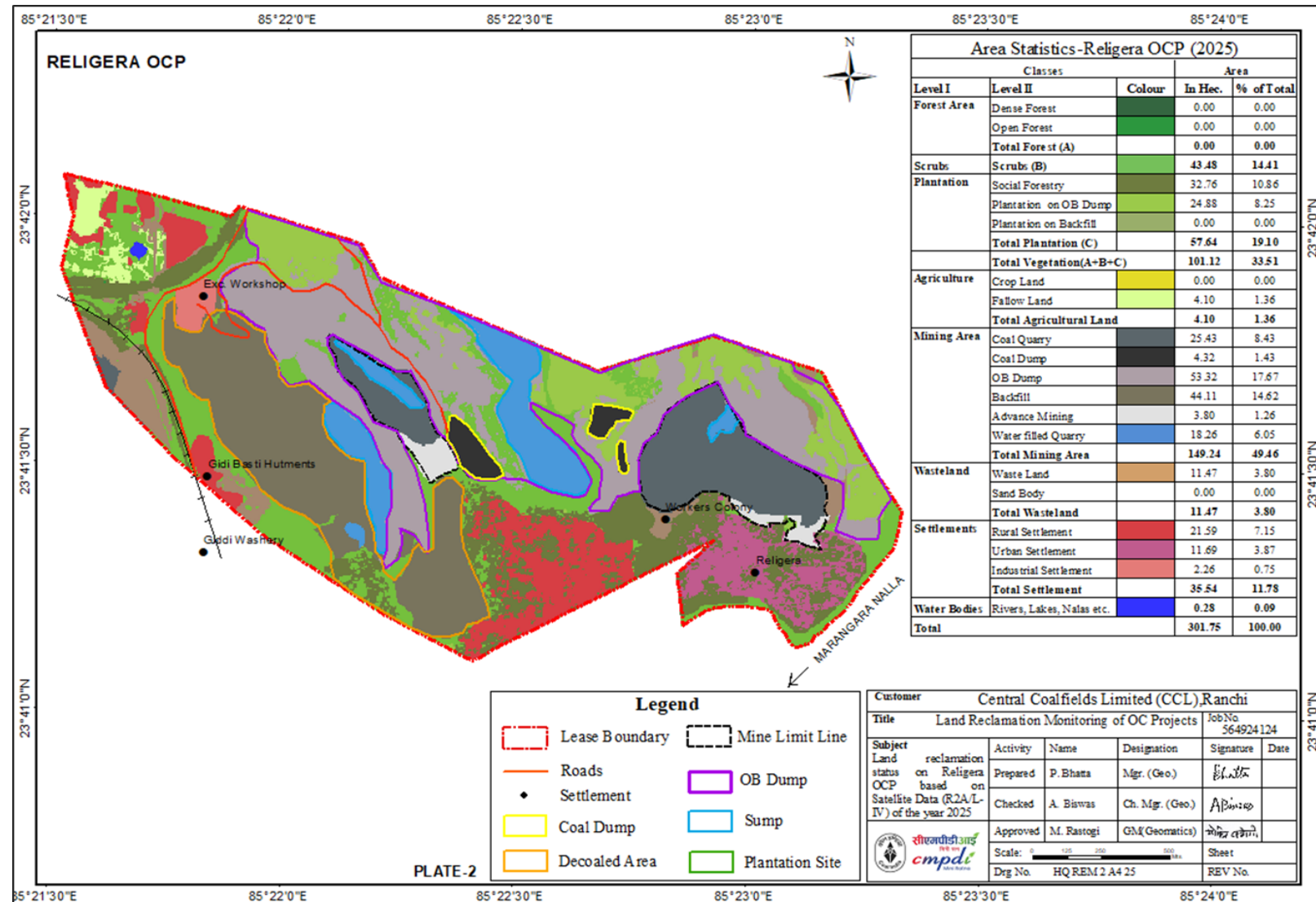


Plate 9.2: Land Use/Cover map of Religera OCP

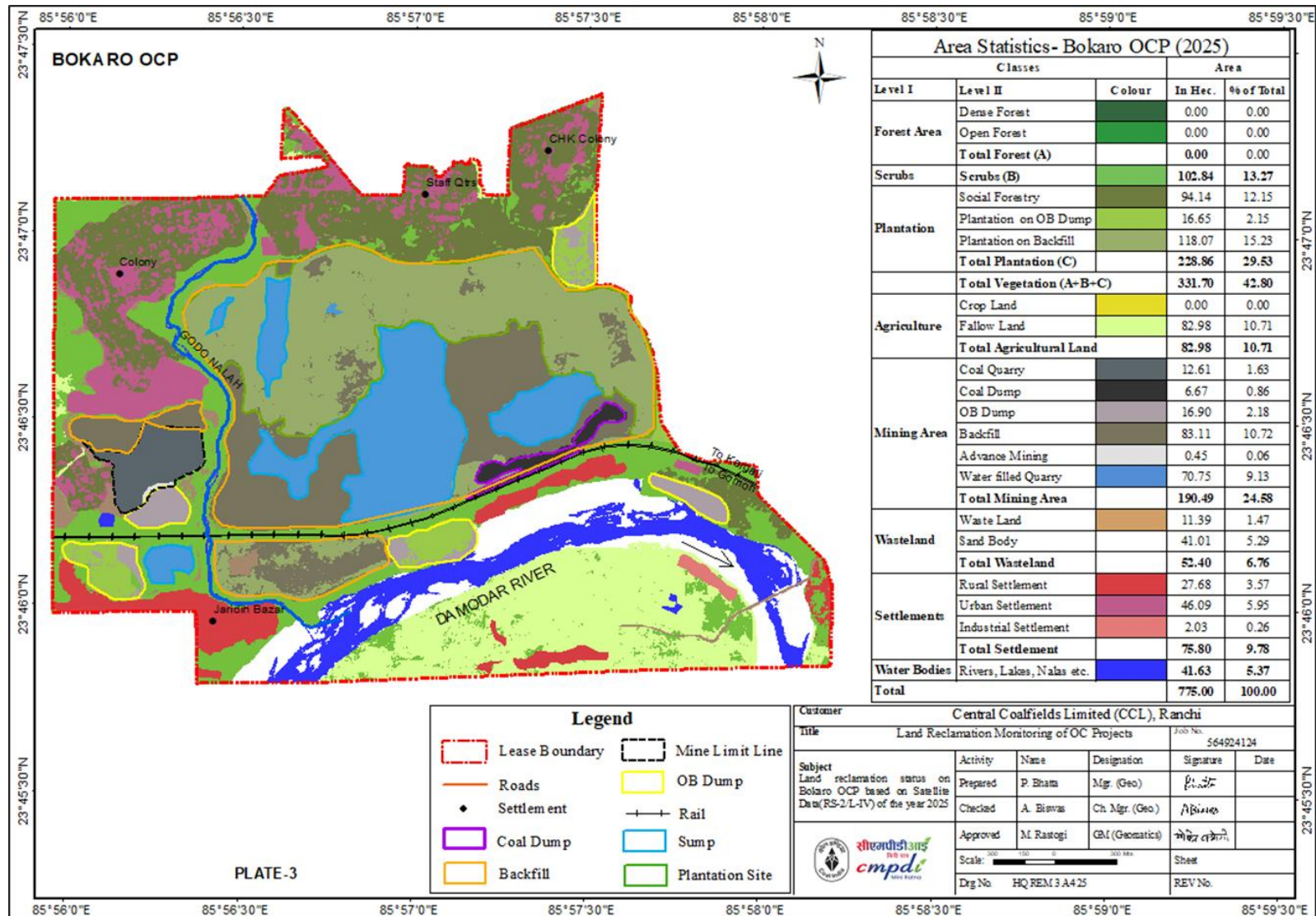


Plate 9.3: Land Use/Cover map of Bokaro OCP

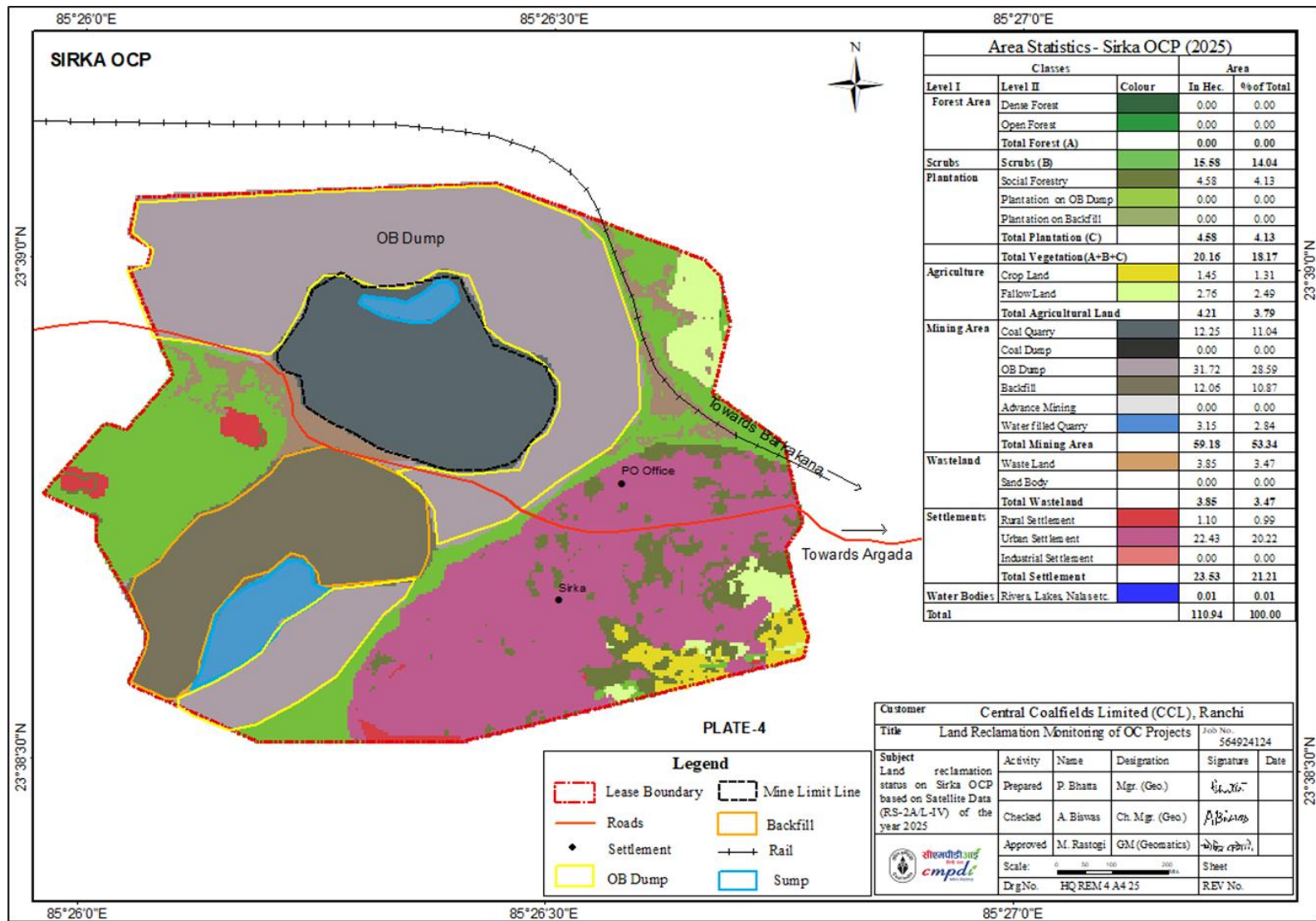


Plate 9.4: Land Use/Cover map of Sirka OCP

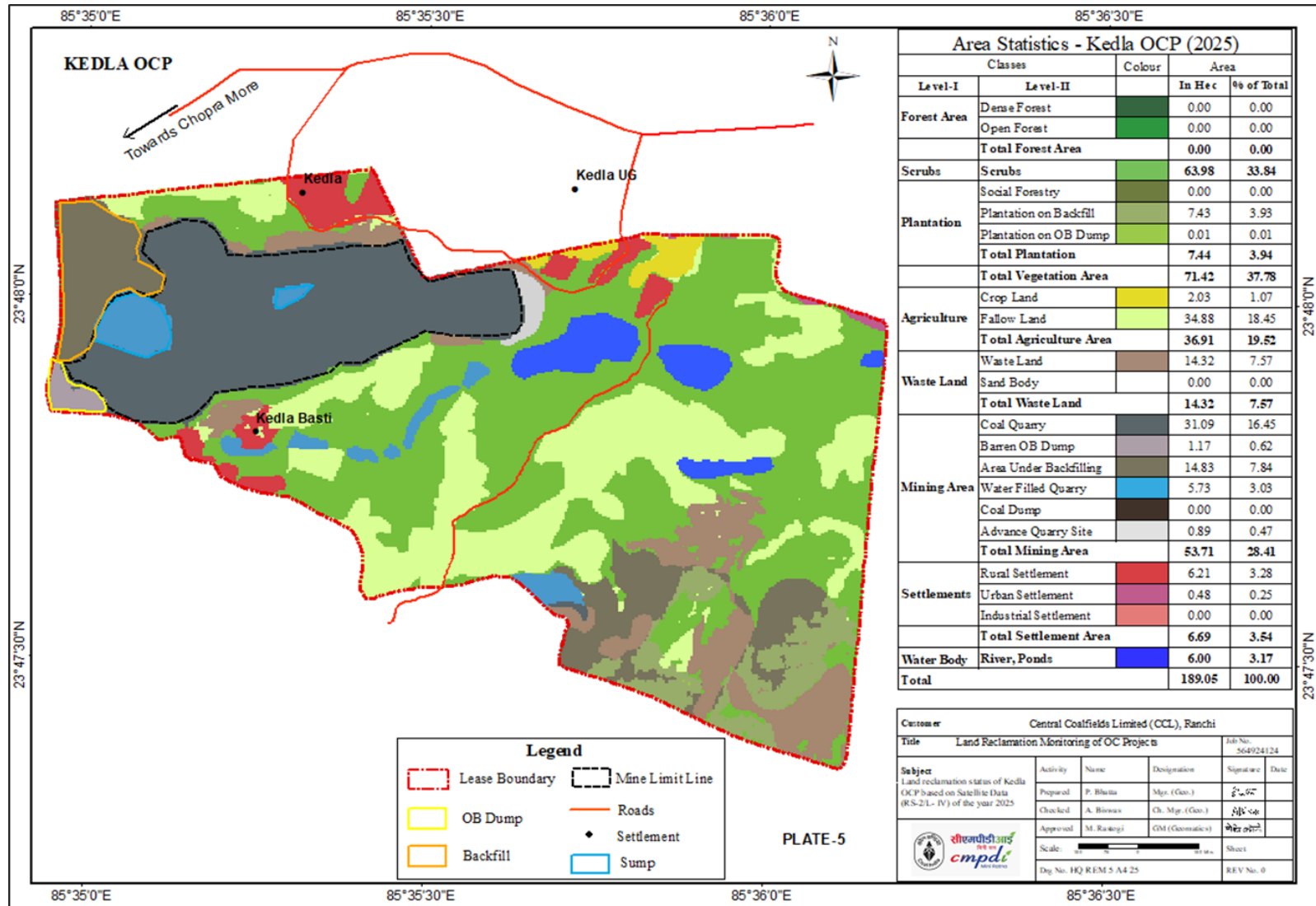


Plate 9.5: Land Use/Cover map of Kedla OCP

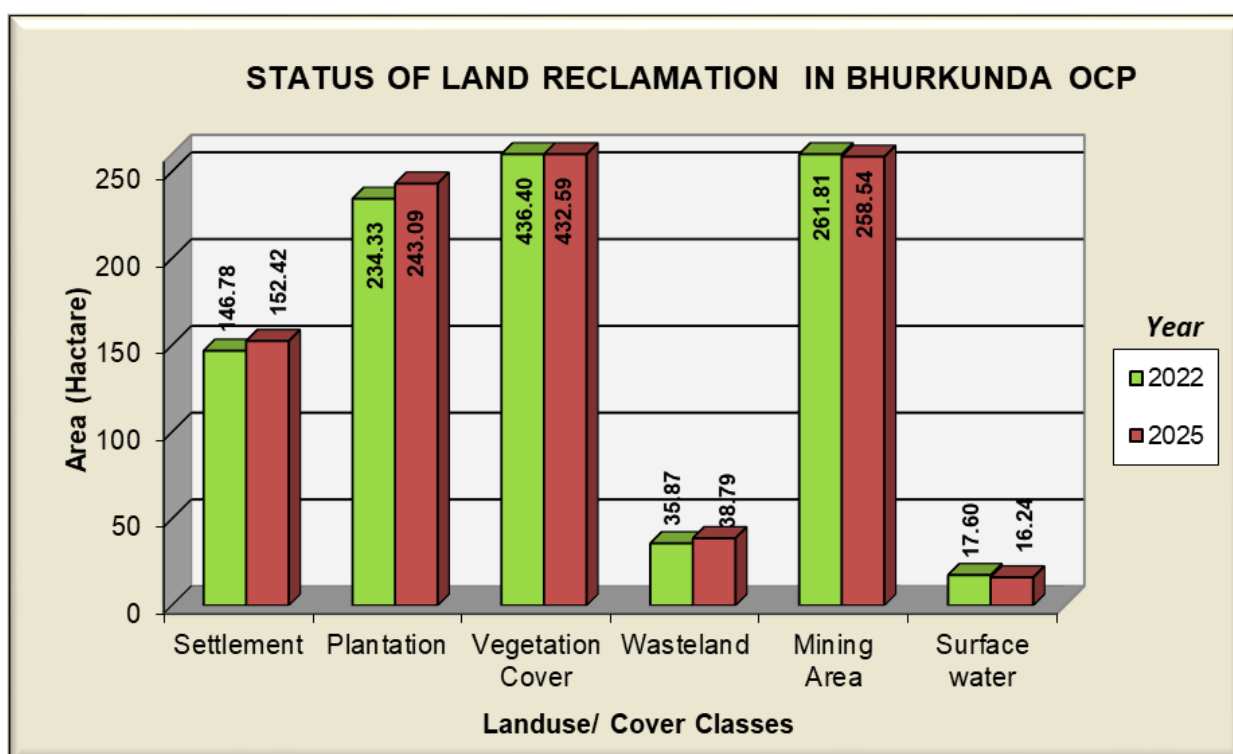


Chart 9.2: Status of Land Reclamation in Bhurkunda OCP

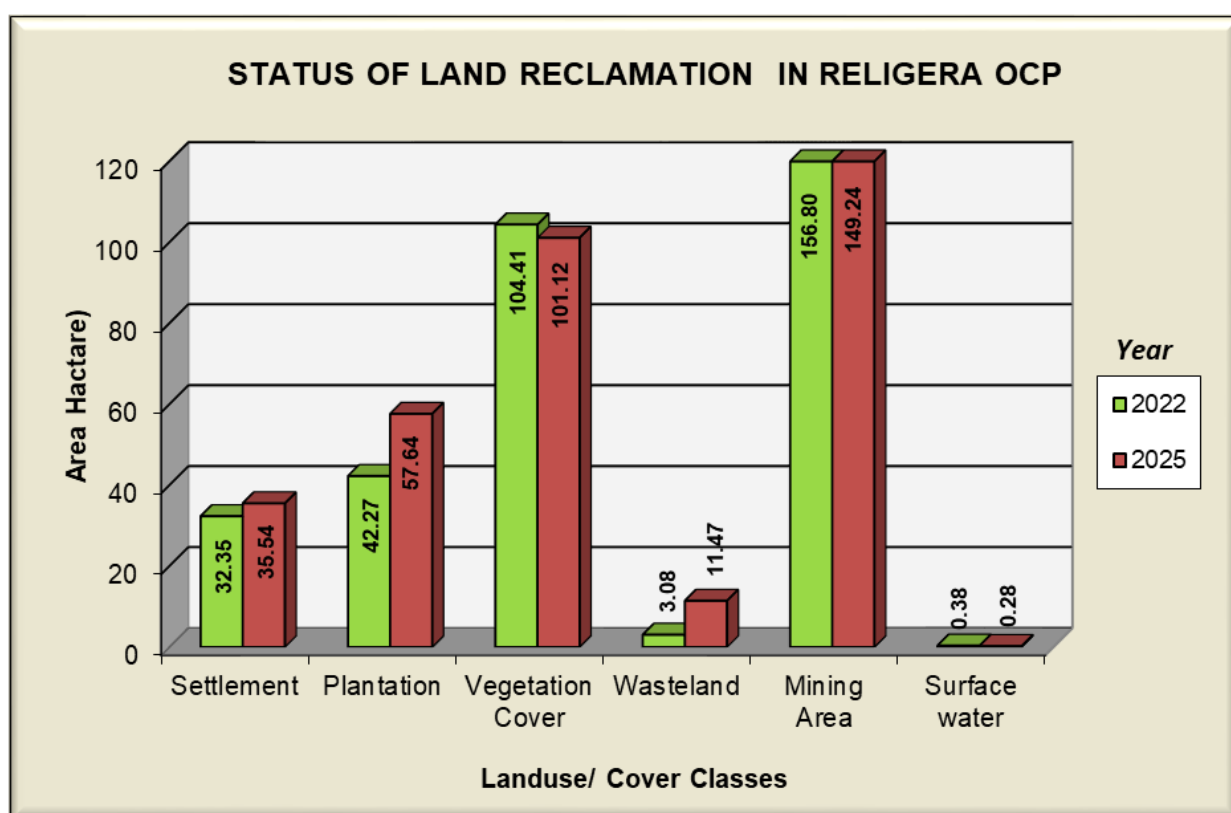


Chart 9.3: Status of Land Reclamation in Religera OCP

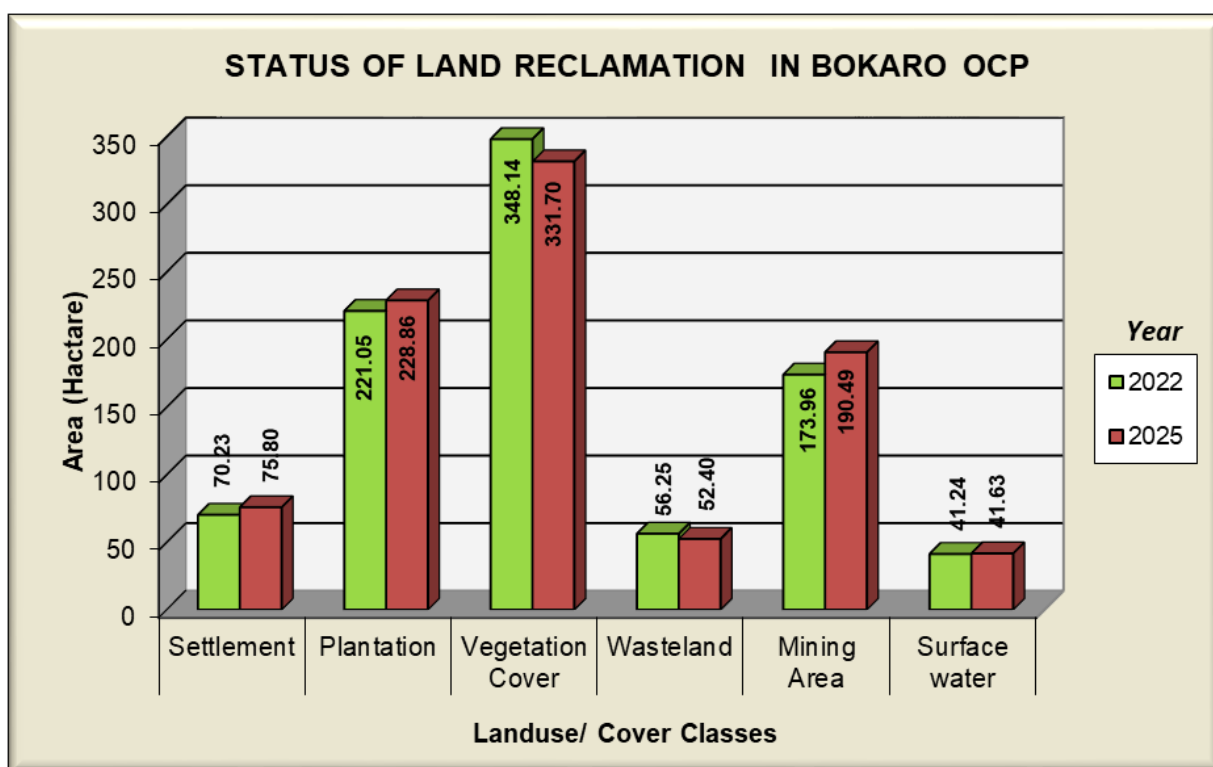


Chart 9.4: Status of Land Reclamation in Bokaro OCP

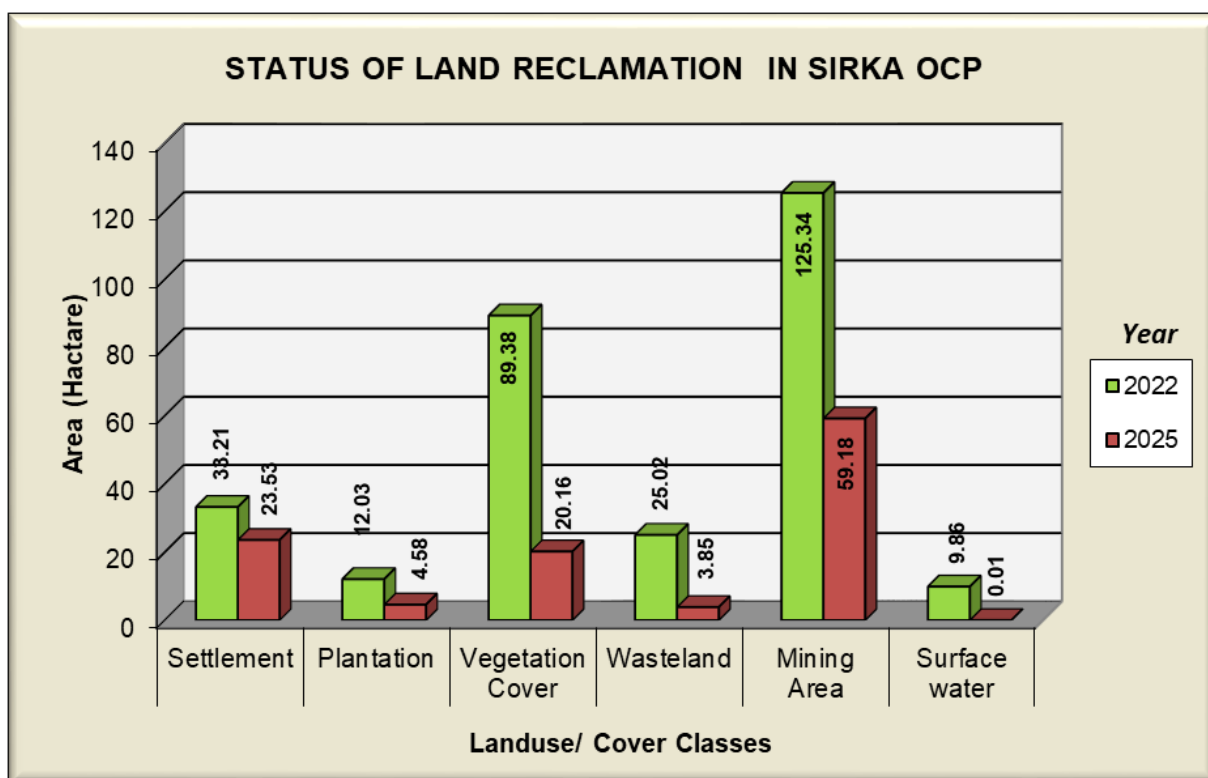


Chart 9.5: Status of Land Reclamation in Sirka OCP

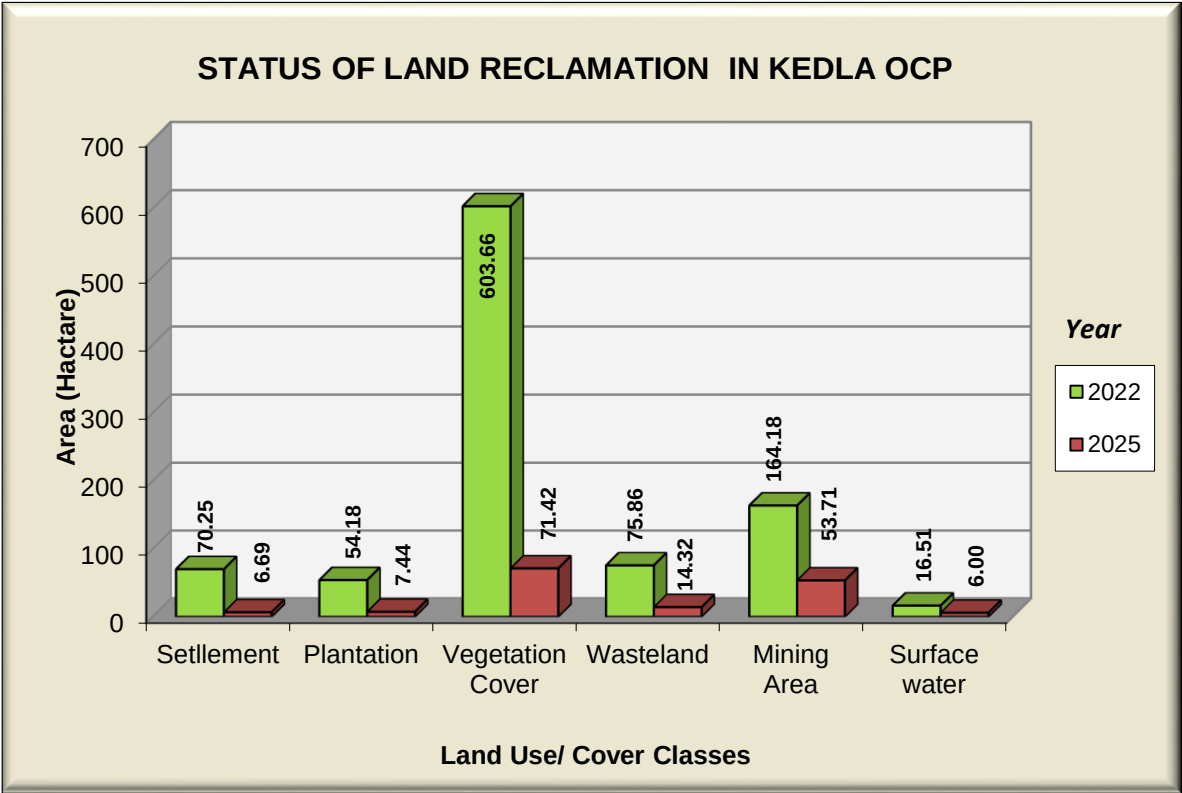


Chart 9.6: Status of Land Reclamation in Kedla OCP



Photo 9.1: Reclamation Activities taken on External OB Dump of Bhurkunda OC

(Eco-park along with 5MW Solar Power Plant)

Location : Latitude :23°39'6.18"N / Longitude :85°21'2.32"E

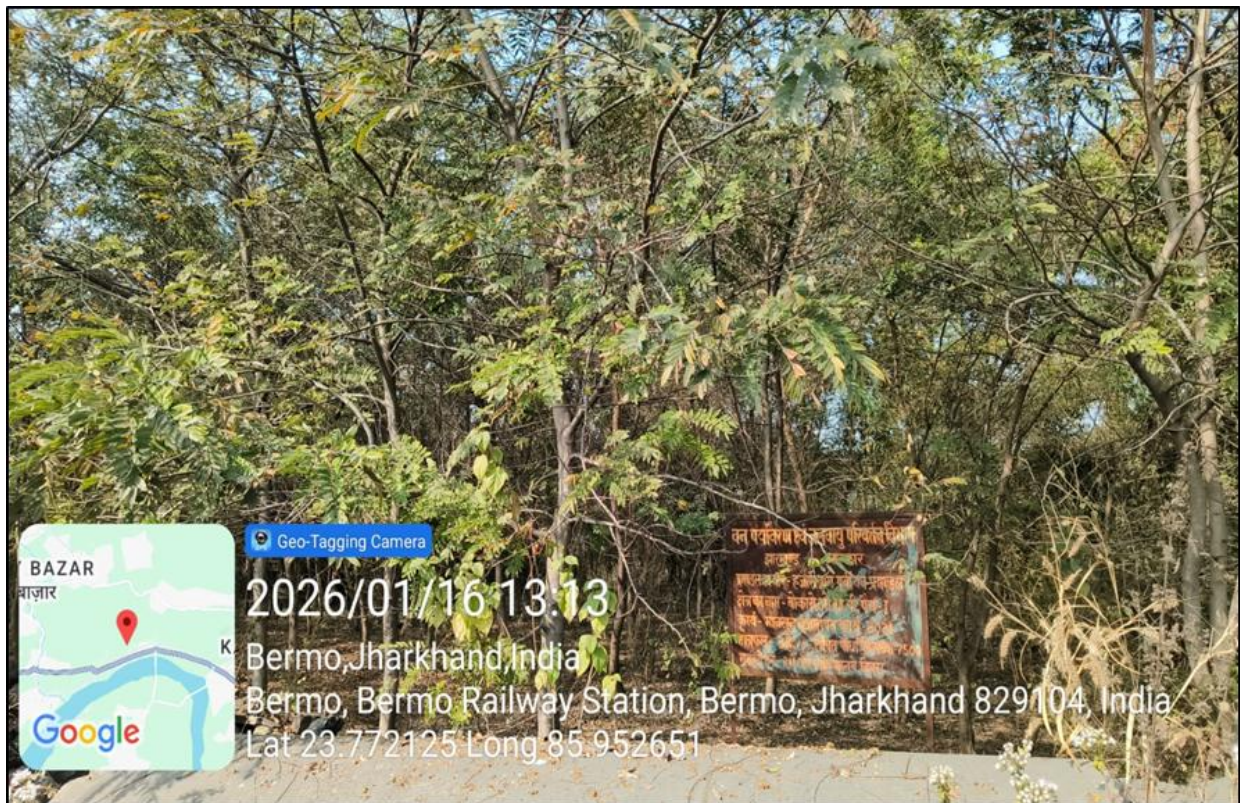


Photo 9.2: Plantation on Backfill near railway siding of Bokaro OCP



Photo 9.3: Plantation on OB Dump within old Sirka Boundary



Photo 9.4: Plantation taken up by DFO Ramgarh at Sirka OC



Photo 9.5: Plantation on Internal OB Dump at Kedla OC

EASTERN COALFIELDS LIMITED

10. Land Reclamation Status in Eastern Coalfields Ltd.

10.1 In ECL, there are a total of twelve clusters of mines. Following four clusters of mines comprising both underground and OC projects producing less than 5 million cubic m. (Coal+OB together) of Eastern Coalfields Ltd. were taken up for land reclamation monitoring based on satellite data in the year 2025-26, on once in three-year basis.

- **Cluster 9:** Amritnagar UG, J K Nagar UG & OC, Mahabir UG & Egara OC, Narainkuri OC, Nimcha UG & Amkola/Nimcha OC, Damra UG, Chapuikhas UG & OC, Ratibati UG, Jemehari UG, Ghusick-Muslia UG & OC, Kuardi-Tirat UG & OC, Kalipahari UG & OC
- **Cluster 10:** Moira UG, Khas Kajora UG, Parascole East UG & OC, Madhujore UG, Nabkajora-Madhabpur UGP & Madhabpur OC, Nabajambad UG & OC, Parasea-Belbaid UG & OC, Bansra UG & OC, Kunustoria & Amrasota UG, North Searsole UG & OC, Central Kajora UG, Lachipur UG, Madhusudanpur UG, Parascole West UG
- **Cluster 11:** Shankarpur UG, Krishnanagar OC, Khandra UG, New Kenda Group of Mines, Siduli UG, Haripur Group of Mines, Bahula Group of Mines
- **Cluster 12:** Sonpur Bazari OCP, Pandaveswar Dalurband UG & OC, Kendra UG, Samla UG, Kottadih UG & OC, Nakrakonda-Kumardihi B UG & OC, Manderboni-South Samla UG, Nutandanga UG, Madhaipur UG & OC, Kumardihi A UG, JhanjraUG, Bankola UG, TilaboniUG, Shyamsundarpur UG

10.2 All the above four clusters were mapped during the year 2022 and 2025, for assessing the changes in land use classes and monitoring the progress of land reclamation.

10.3 Area statistics of different land use classes present in the four clusters for the year 2025 is given in Table 10.2. Land use/ cover maps derived from the satellite data are given in Plate nos.10.1- 10.4. Both national grid and UTM grid are used in the maps. The status of land use in clusters is shown in Fig. 10.4 – 10.7. Distribution of total excavated area is shown in Fig.10. 2 (bar chart).

-
- 10.4** The analysis indicated that in the year 2025, total excavated area is 2774.04 Ha. out of which 1495.95 ha (53.83%) of total excavated area is under technical reclamation, 330.22 Ha (11.69%) is under biological reclamation and remaining 947.87 Ha (34.48%) is under active mining. Green Cover, which includes social forestry/ plantation over OB dumps covers an area of 6.40% of the total leasehold area of the four clusters.
- 10.5** The area under total plantation (Green Cover) is maximum in Cluster 10 (8.55%) followed by Cluster 12 with (6.40%), Cluster 11 with (5.88%) and Cluster 9 with (4.90%).
- 10.6** Study also reveals that the area under backfilling (Technical Reclamation) has increased from is 953.75 in the Year 2022 to 1495.95 Ha in the year 2025. As compared to year 2022 there has been an increase of about 542.20 Ha in 2025.
- 10.7** Analysis of Satellite data also indicates that the area under plantation (Biological Reclamation) is 330.22 Ha in year 2025 as compared to 199.10 Ha. in year 2022 which indicates an increase of 131.12 Ha. All the projects of BCCL selected for monitoring is 2025 are showing static or increasing trend in biological reclamation.
- 10.8** Out of the 4 Clusters in ECL considered for satellite data based land reclamation monitoring in 2025-26, Cluster 10 tops with 76.30% reclamation followed by Cluster 12 with 64.26%, Cluster 11 with 57.68% and Cluster 9 with 51.17%.

Table 10.1: Summarized Land Reclamation Status in ECL
Summarized Land Reclamation Status in 4 Clusters (UG+OC) Projects of ECL based on Satellite Data of the year 2025

Sl. No.	Cluster No.	Total Leasehold Area		Technical Reclamation	Plantation						Area under Active Mining	Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)	Total Area under Reclamation				
					Biological Reclamation	Other Plantations													
				Area under Backfilling	Plantation on Excavated / Backfilled Area	Plantation on External OB Dumps		Social Forestry, Avanne Plantation Etc.											
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025	2022	2025
1	Cluster 9	7145.00	7145.00	62.00	76.39	9.00	9.00	17.00	30.40	310.00	310.70	76.00	80.54	147.00	165.93	336.00	350.10	71.00	85.39
				42.18%	46.04%	6.12%	5.42%					51.70%	48.54%			4.70%	4.90%	48.30%	51.46%
2	Cluster 10	5979.00	5979.00	112.00	384.56	0.00	70.00	38.00	38.00	402.00	402.99	88.50	143.92	200.50	598.48	440.00	510.99	112.00	454.56
				55.86%	64.26%	0.00%	11.70%					44.14%	24.05%			7.36%	8.55%	55.86%	75.95%
3	Cluster 11	4218.00	4218.00	64.50	117.36	65.00	65.00	5.00	24.00	159.00	159.00	53.80	109.29	183.30	291.65	229.00	248.00	129.50	182.36
				35.19%	40.24%	35.46%	22.29%					29.35%	37.47%			5.43%	5.88%	70.65%	62.53%
4	Cluster 12	12736.00	12672.00	715.25	917.64	125.10	186.22	121.20	191.00	432.80	434.19	430.64	614.12	1270.99	1717.98	679.10	811.41	840.35	1103.86
				56.28%	53.41%	9.84%	10.84%					33.88%	35.75%			5.33%	6.40%	66.12%	64.25%
	TOTAL (A)	30078.00	30014.00	953.75	1495.95	199.10	330.22	181.20	283.40	1303.80	1306.88	648.94	947.87	1801.79	2774.04	1684.10	1920.50	1152.85	1826.17
				52.93%	53.93%	11.05%	11.90%					36.02%	34.17%			5.60%	6.40%	63.98%	65.83%

Note: In reference of the above Table, different parameters are classified as follows:

1. Area under Biological Reclamation includes Areas under Plantation done on Backfilled Area Only.
2. Area under Technical Reclamation includes Area under Backfilling only
3. Area under Active Mining Includes Coal Quarry, Advance Quarry Site and Quarry filled with water etc., if any.
4. Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the above Table.
5. (%) calculated in the above Table is in respect to Total Excavated Area only, except for "Total Area under Plantation" where % is in terms of "Leasehold Area".

Table 10.2: Composite Land Reclamation Status in remaining 8 Clusters (Underground + Opencast Mines) & 4 OCPs of ECL as per clause 2.(ii) of the received work order from CIL.

(Area in Hectare)

Sl.No.	Cluster No.	Total Leasehold Area		Technical Reclamation		Plantation						Area under Active Mining		Total Excavated Area		Total Area under Plantation (% Green Cover Generated in Leasehold)		Total Area under Reclamation	
						Biological		Other Plantations											
				Area under Backfilling		Plantation on Excavated / Backfilled Area		Plantation on External OB Dumps		Social Forestry, Avenue Plantation Etc.									
1	2	3		4		5		6		7		8		9 (=4+5+8)		10 (=5+6+7)		11(=4+5)	
		2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024	2021	2024
5	Cluster 5	2970.00	2970.00	0.00	0.00	0.00	0.00	0.00	0.00	123.00	123.00	0.00	0.00	0.00	0.00	123.00	123.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			4.14%	4.14%	0.00%	0.00%
6	Cluster 6	4775.00	4775.00	0.00	2.00	0.00	0.00	0.00	0.00	520.00	520.00	2.00	0.00	2.00	2.00	520.00	520.00	0.00	2.00
				0.00%	100.00%	0.00%	0.00%					100.00%	0.00%			10.89%	10.89%	0.00%	100.00%
7	Cluster 7	2313.00	2313.00	24.00	24.00	0.00	0.00	0.00	0.00	140.00	100.00	26.00	26.00	50.00	50.00	140.00	100.00	24.00	24.00
				48.00%	48.00%	0.00%	0.00%					52.00%	52.00%			6.05%	4.32%	48.00%	48.00%
8	Cluster 8	8281.00	8281.00	0.00	0.00	0.00	0.00	0.00	0.00	205.00	205.00	0.00	0.00	0.00	0.00	205.00	205.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	0.00%			2.48%	2.48%	0.00%	0.00%
9	Kalidaspur	-	600.00	-	5.00	-	0.00	-	0.00	-	13.00	-	12.00	-	17.00	-	13.00	-	5.00
					29.41%		0.00%						70.59%				2.17%		29.41%
	TOTAL (B)	18339.00	18939.00	24.00	31.00	0.00	0.00	0.00	0.00	988.00	961.00	28.00	38.00	52.00	69.00	988.00	961.00	24.00	31.00
				46.15%	44.93%	0.00%	0.00%					53.85%	55.07%			5.39%	5.07%	46.15%	44.93%
		2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023	2020	2023
10	Cluster 1	3692.00	3692.00	90.00	110.00	60.00	60.00	148.00	152.00	87.00	87.00	74.00	83.00	224.00	253.00	295.00	299.00	150.00	170.00
				40.18%	43.48%	26.79%	23.72%					33.04%	32.81%			7.99%	8.10%	66.96%	67.19%
11	Cluster 2	1018.00	1018.00	48.00	50.00	35.00	37.00	17.00	19.00	37.00	37.00	29.00	24.00	112.00	111.00	89.00	93.00	83.00	87.00
				42.86%	45.05%	31.25%	33.33%					25.89%	21.62%			8.74%	9.14%	74.11%	78.38%
12	Cluster 3	1628.00	1628.00	48.00	63.00	0.00	0.00	6.00	6.00	90.00	87.00	49.00	49.00	97.00	112.00	96.00	93.00	48.00	63.00
				49.48%	56.25%	0.00%	0.00%					50.52%	43.75%			5.90%	5.71%	49.48%	56.25%
13	Cluster 4	2721.00	2721.00	1.00	29.00	1.00	1.00	23.00	23.00	30.00	30.00	55.00	44.00	57.00	74.00	54.00	54.00	2.00	30.00
				1.75%	39.19%	1.75%	1.35%					96.49%	59.46%			1.98%	1.98%	3.51%	40.54%
14	Chitra East	714.00	714.00	31.81	47.13	0.00	0.00	14.90	14.90	27.99	27.00	77.74	70.86	109.55	117.99	42.89	41.90	31.81	47.13
				29.04%	39.94%	0.00%	0.00%					70.96%	60.06%			6.01%	5.87%	29.04%	39.94%
15	Mohanpur	164.91	397.00	22.00	29.60	0.00	0.00	11.00	12.50	6.00	0.60	18.00	43.00	40.00	72.60	17.00	13.10	22.00	29.60
				55.00%	40.77%	0.00%	0.00%					45.00%	59.23%			10.31%	3.30%	55.00%	40.77%
16	Hurra C	946.00	946.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	6.00	0.00	0.00	0.00	0.00
				0.00%	0.00%	0.00%	0.00%					0.00%	100.00%			0.00%	0.00%	0.00%	0.00%
	TOTAL (C)	10883.91	11116.00	240.81	328.73	96.00	98.00	219.90	227.40	277.99	268.60	302.74	319.86	639.55	746.59	593.89	594.00	336.81	426.73
				37.65%	44.03%	15.01%	13.13%					47.34%	42.84%			5.46%	5.34%	52.66%	57.16%
* GRAND TOTAL (A+B+C)		59300.91	60069.00	1218.56	1855.68	295.10	428.22	401.10	510.80	2569.79	2536.48	979.68	1305.73	2493.34	3589.63	3265.99	3475.50	1513.66	2283.90
				48.87%	51.70%	11.84%	11.93%					39.29%	36.38%			5.51%	5.79%	60.71%	63.62%

*Grand Total (A+B+C) is the composite value of all 12 clusters & 4 mines of ECL covered in 3 years cycle of Land Reclamation Monitoring (% is calculated with respect to Excavated Area as applicable)

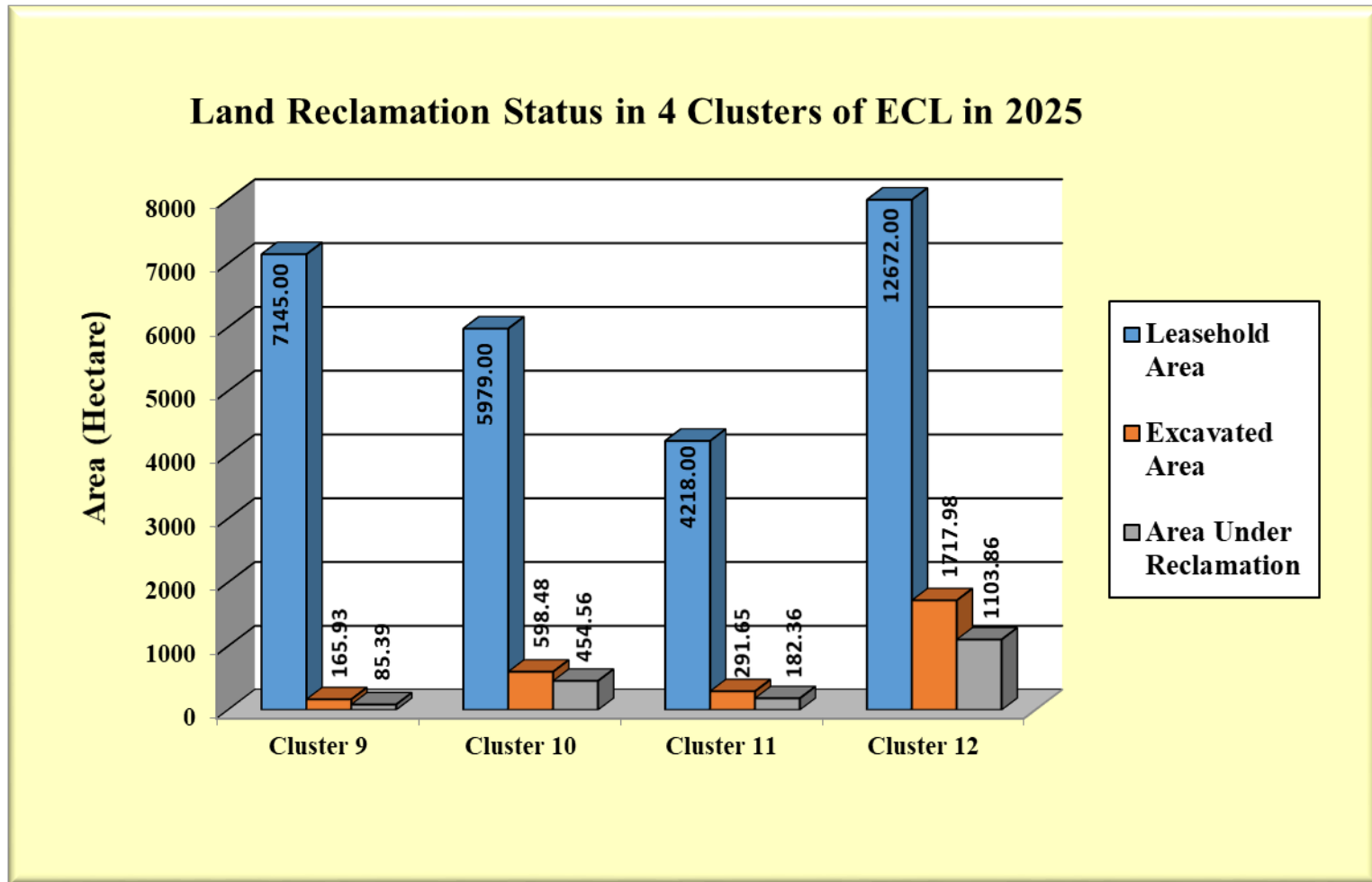


Chart 10.1: Bar Chart showing Land Reclamation Status in ECL

Table 10.2: Cluster-wise (UG+OC) Land Reclamation Status in OC Projects of ECL (2025)

(Area in Hectare)

			CLUSTER 9		CLUSTER 10		CLUSTER 11		CLUSTER 12		TOTAL	
			Area	%	Area	%	Area	%	Area	%	Area	%
SETTLEMENTS	Urban Settlement		522.02	7.31	424.16	7.09	419.09	9.94	303.86	2.40	1669.13	5.56
	Rural Settlement		200.79	2.81	45.74	0.76	74.46	1.76	883.16	6.97	1204.15	4.01
	Industrial Settlement		31.32	0.44	29.79	0.50	38.79	0.92	68.67	0.54	168.57	0.56
	Total Settlements		754.13	10.56	499.69	8.35	532.34	12.62	1255.69	9.91	3041.85	10.13
FORESTS	Dense Forest		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Open Forest		0.00	0.00	0.00	0.00	0.00	0.00	167.45	1.32	167.45	0.56
	Total Forest (A)		0.00	0.00	0.00	0.00	0.00	0.00	167.45	1.32	167.45	0.56
SCRUBS	Scrubs (B)		1079.05	15.10	598.23	10.00	301.25	7.14	998.33	7.88	2976.86	9.92
PLANTATION	Social Forestry/Avenue Plantation		310.70	4.35	402.99	6.74	159.00	3.77	434.19	3.43	1306.88	4.35
	Plantation on OB Dump		30.40	0.42	38.00	0.64	24.00	0.57	191.00	1.51	283.40	0.94
	Plantation on Backfill (Biological Reclamation)		9.00	0.13	70.00	1.17	65.00	1.54	186.22	1.47	330.22	1.10
	Total Plantation (C)		350.10	4.90	510.99	8.55	248.00	5.88	811.41	6.41	1920.50	6.40
Total Vegetation (A+B+C)			1429.15	20.00	1109.22	18.55	549.25	13.02	1977.19	15.61	5064.81	16.87
AGRICULTURE	Crop Lands		1451.80	20.32	1561.46	26.12	1026.85	24.34	967.59	7.64	5007.70	16.68
	Fallow Lands		2909.53	40.72	1751.89	29.30	1290.81	30.60	6039.56	47.66	11991.79	39.95
	Total Agriculture		4361.33	61.04	3313.35	55.42	2317.66	54.94	7007.15	55.30	16999.49	56.64
WASTELAND	Waste Lands		192.48	2.69	290.95	4.87	262.76	6.23	248.91	1.96	995.10	3.32
	Fly Ash Pond / Sand Body		0.00	0.00	0.00	0.00	0.00	0.00	47.25	0.37	47.25	0.16
	Total Wasteland		192.48	2.69	290.95	4.87	262.76	6.23	296.16	2.33	1042.35	3.47
ACTIVE MINING	Coal Quarry		50.71	0.71	58.96	0.99	65.21	1.55	516.67	4.08	691.55	2.30
	Advance Quarry Site		1.79	0.03	2.03	0.03	2.34	0.06	4.16	0.03	10.32	0.03
	Quarry Filled With Water		28.04	0.39	82.93	1.39	41.74	0.99	93.29	0.74	246.00	0.82
	Total Area under Active Mining		80.54	1.13	143.92	2.41	109.29	2.60	614.12	4.85	947.87	3.16
Barren OB Dump			57.20	0.80	71.06	1.19	222.22	5.27	371.02	2.93	721.50	2.40
Coal Dump			0.00	0.00	0.30	0.01	0.00	0.00	10.63	0.08	10.93	0.04
RECLAMED	Area Under Backfilling (Technical Reclamation)		76.39	1.07	384.56	6.43	117.36	2.78	917.64	7.24	1495.95	4.98
	Total Area under Mine Operation		214.13	3.00	599.84	10.04	448.87	10.65	1913.41	15.10	3176.25	10.58
WATERBODIES	Reservoir, Nallah, Ponds		193.78	2.71	165.95	2.77	107.12	2.54	222.40	1.75	689.25	2.30
	Total Waterbodies		193.78	2.71	165.95	2.77	107.12	2.54	222.40	1.75	689.25	2.30
Grand Total			7145.00	100.00	5979.00	100.00	4218.00	100.00	12672.00	100.00	30014.00	100.00

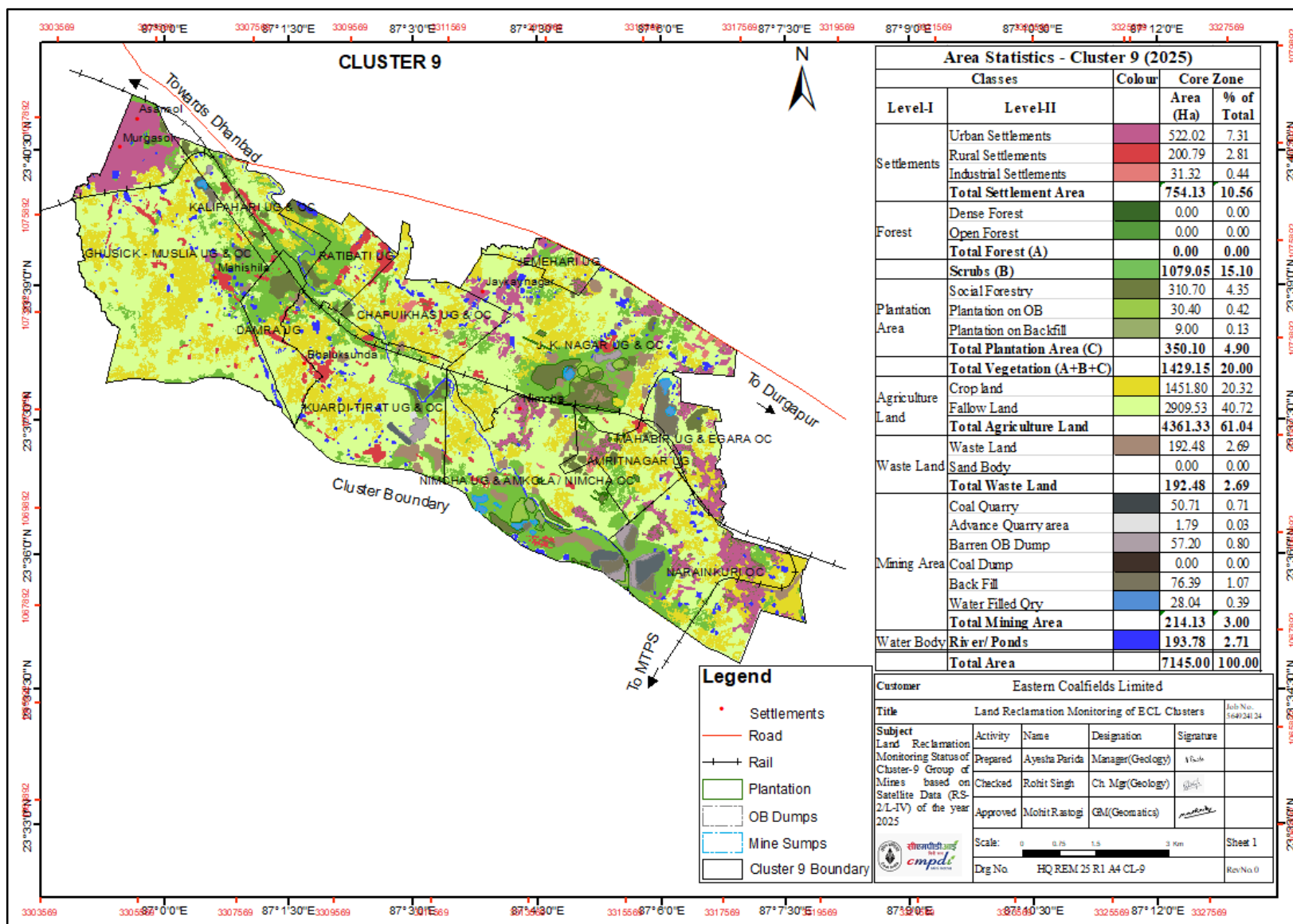


Plate 10.1: Land Use/Cover map of Cluster 9

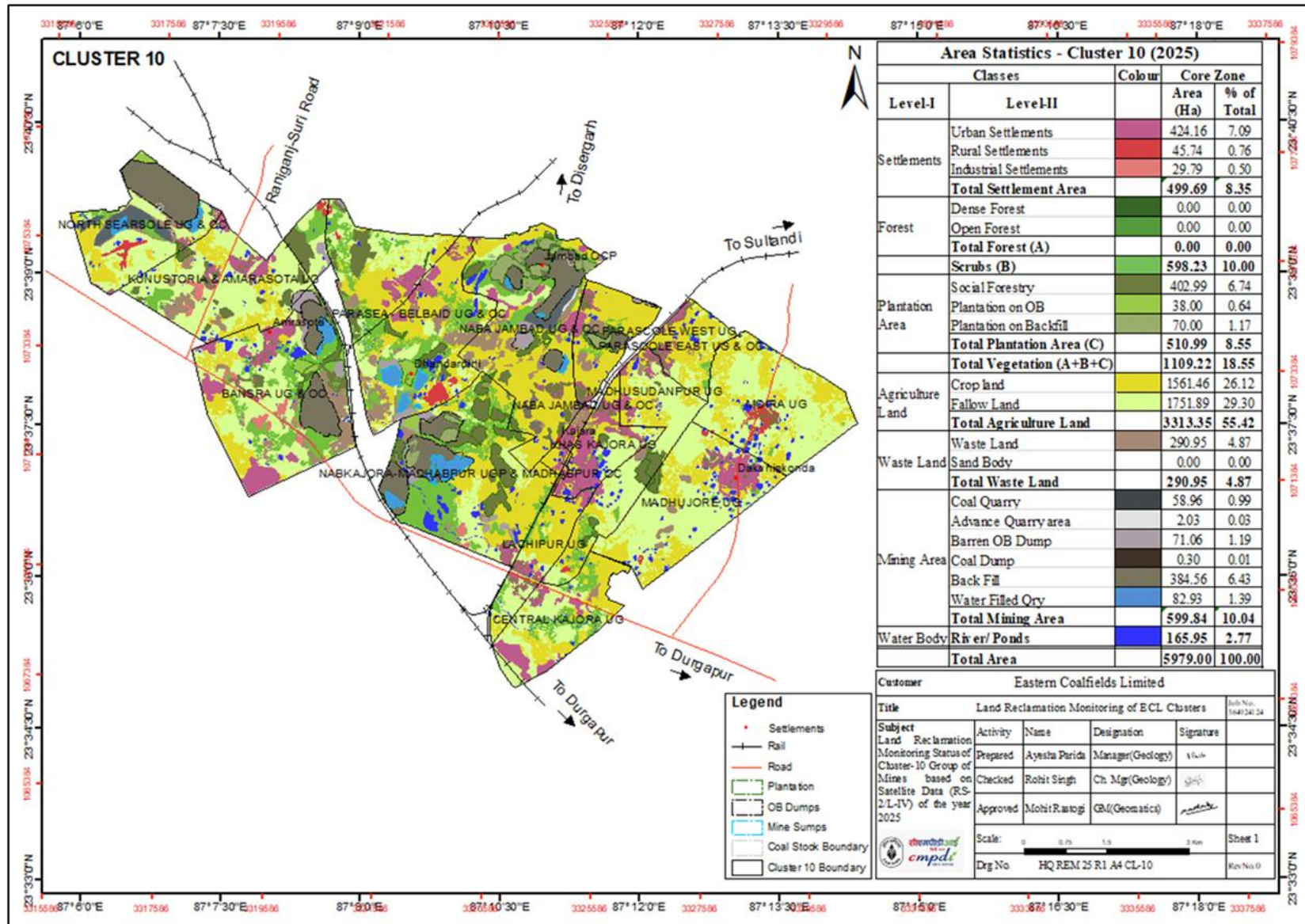


Plate 10.2: Land Use/Cover map of Cluster 10

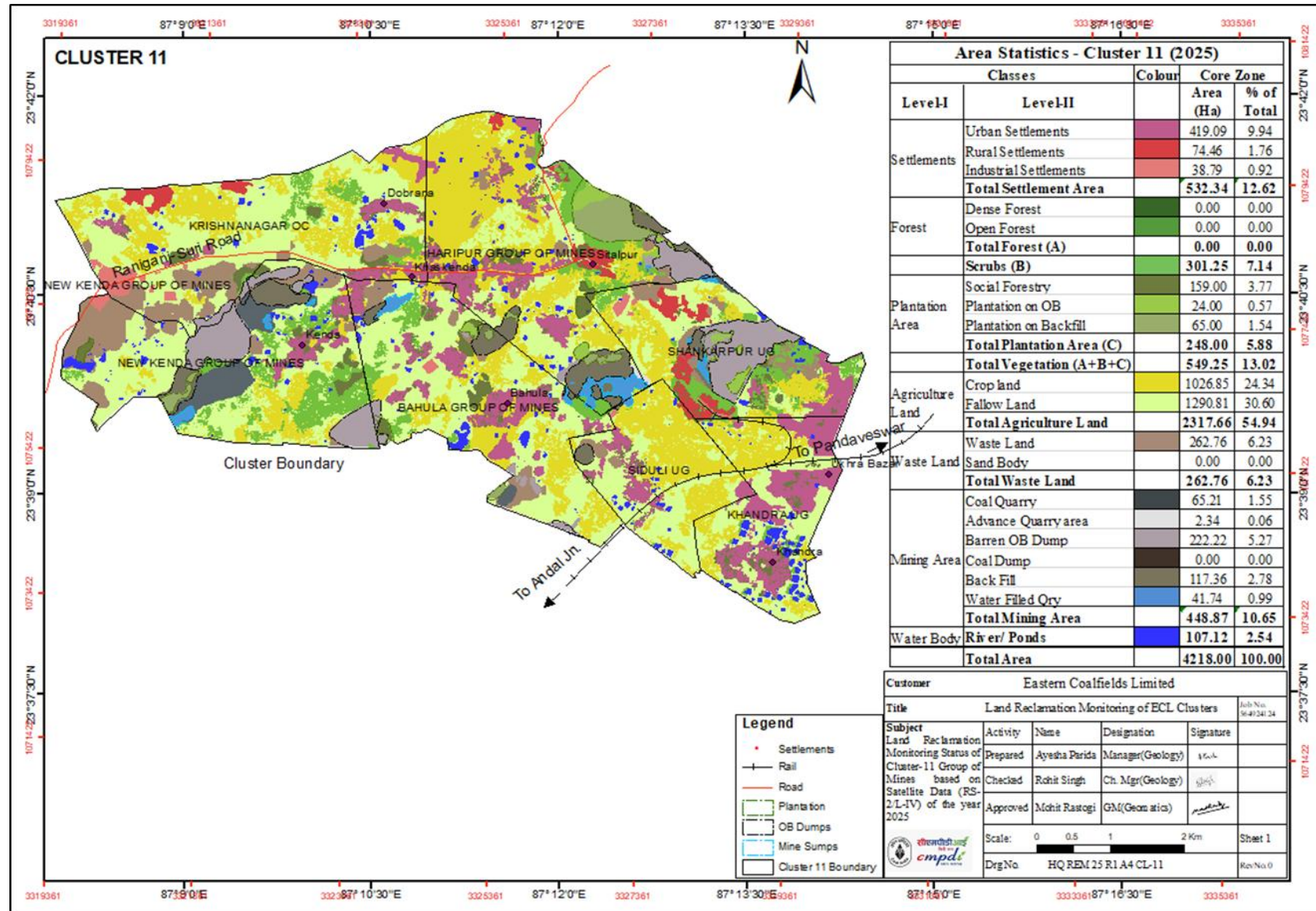


Plate 10.3: Land Use/ Cover map of Cluster 11

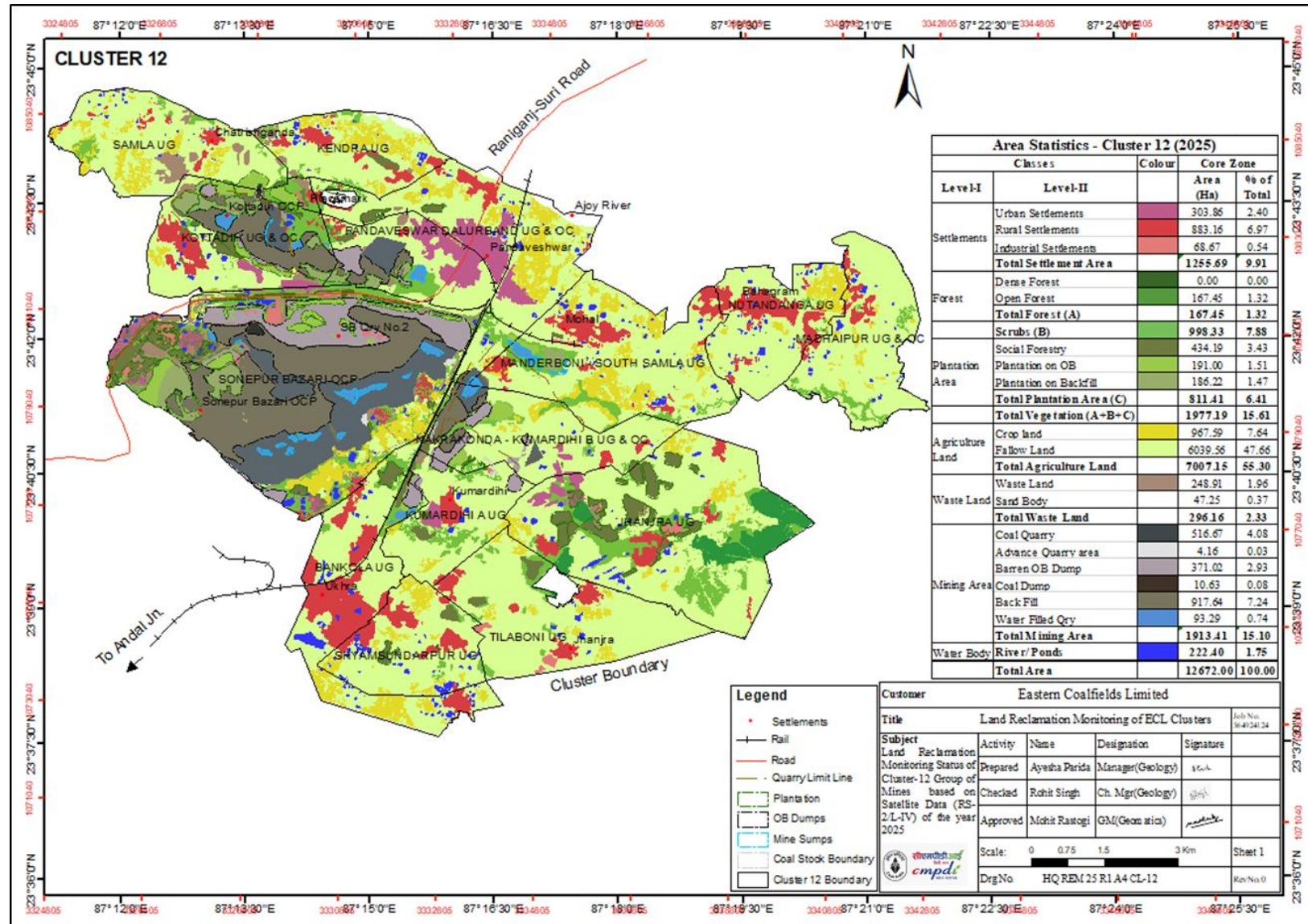


Plate 10.4: Land Use/Cover map of Cluster 12

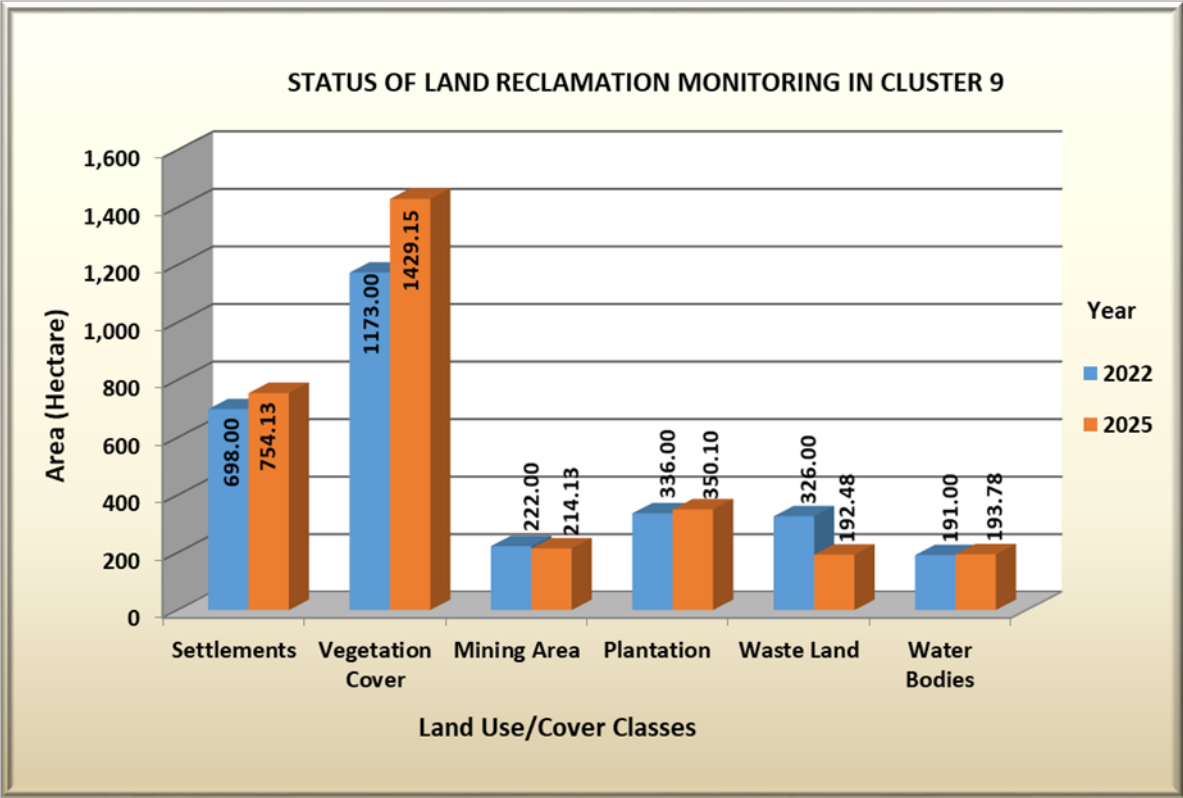


Chart 10.2: Status of Land Reclamation in Cluster 9

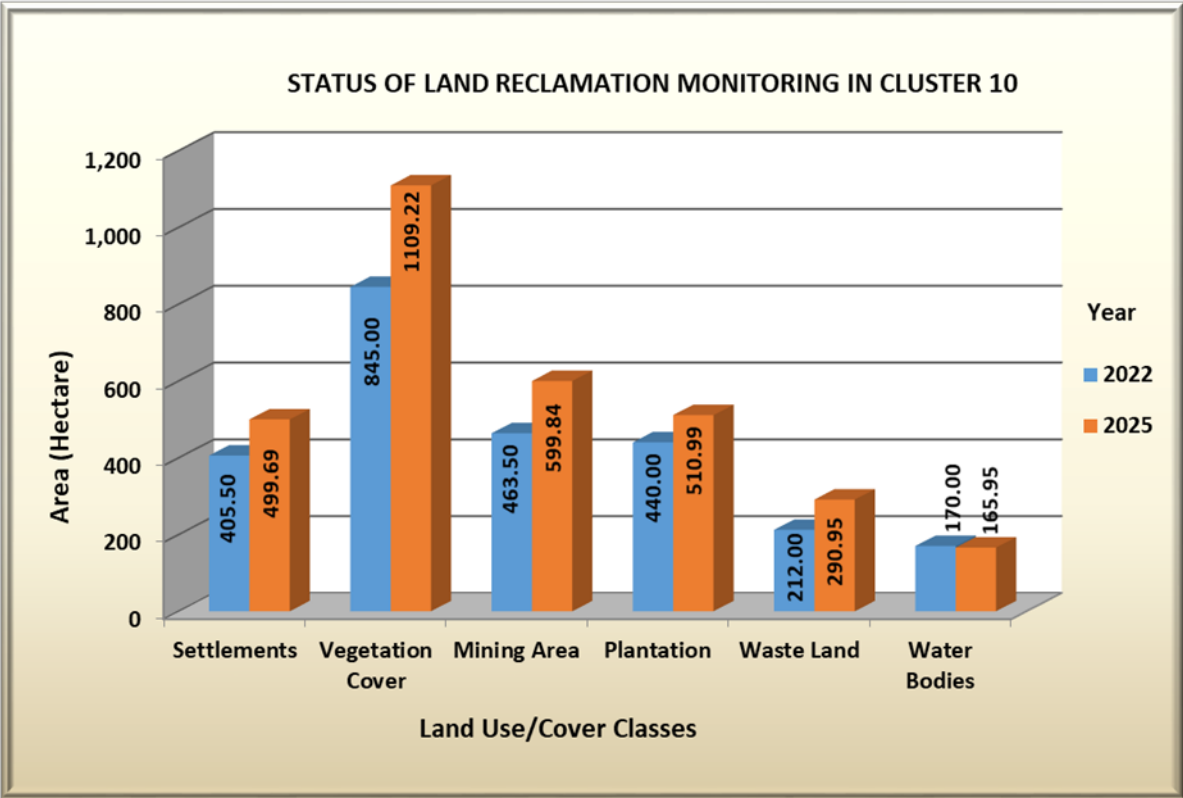


Chart 10.3: Status of Land Reclamation in Cluster 10

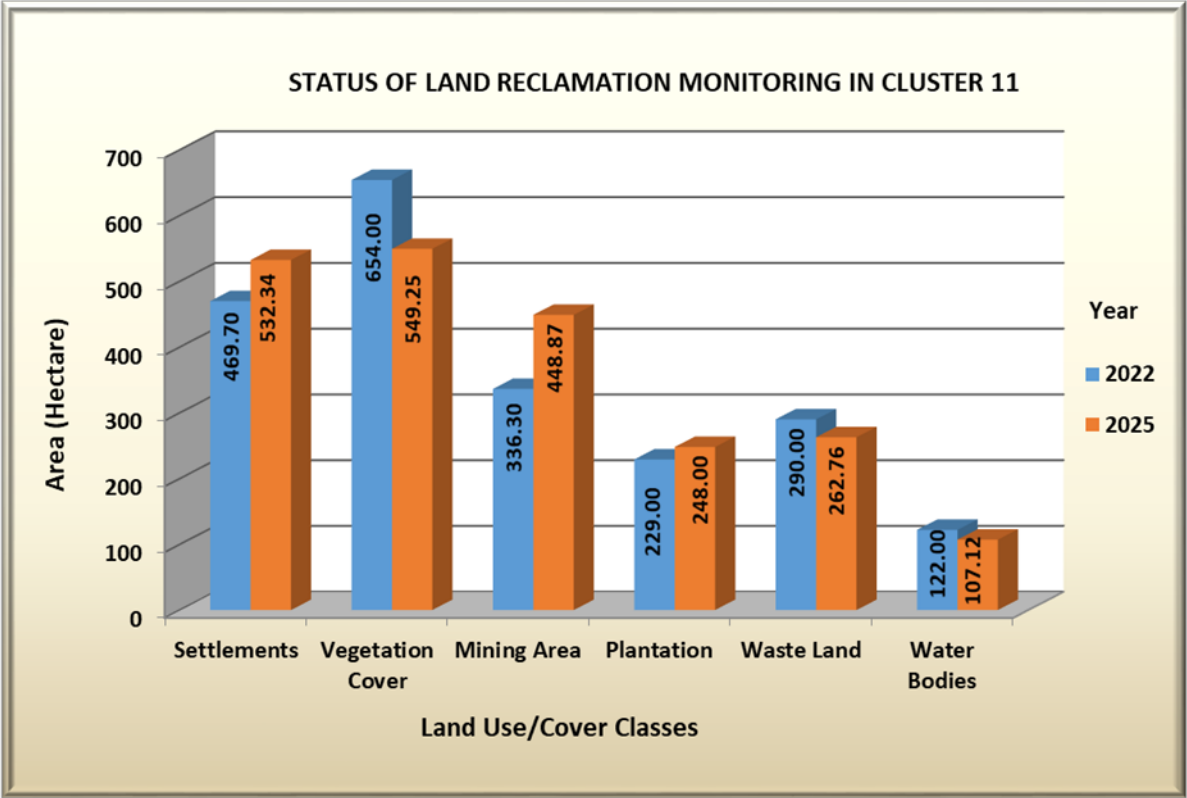


Chart 10.4: Status of Land Reclamation in Cluster 11

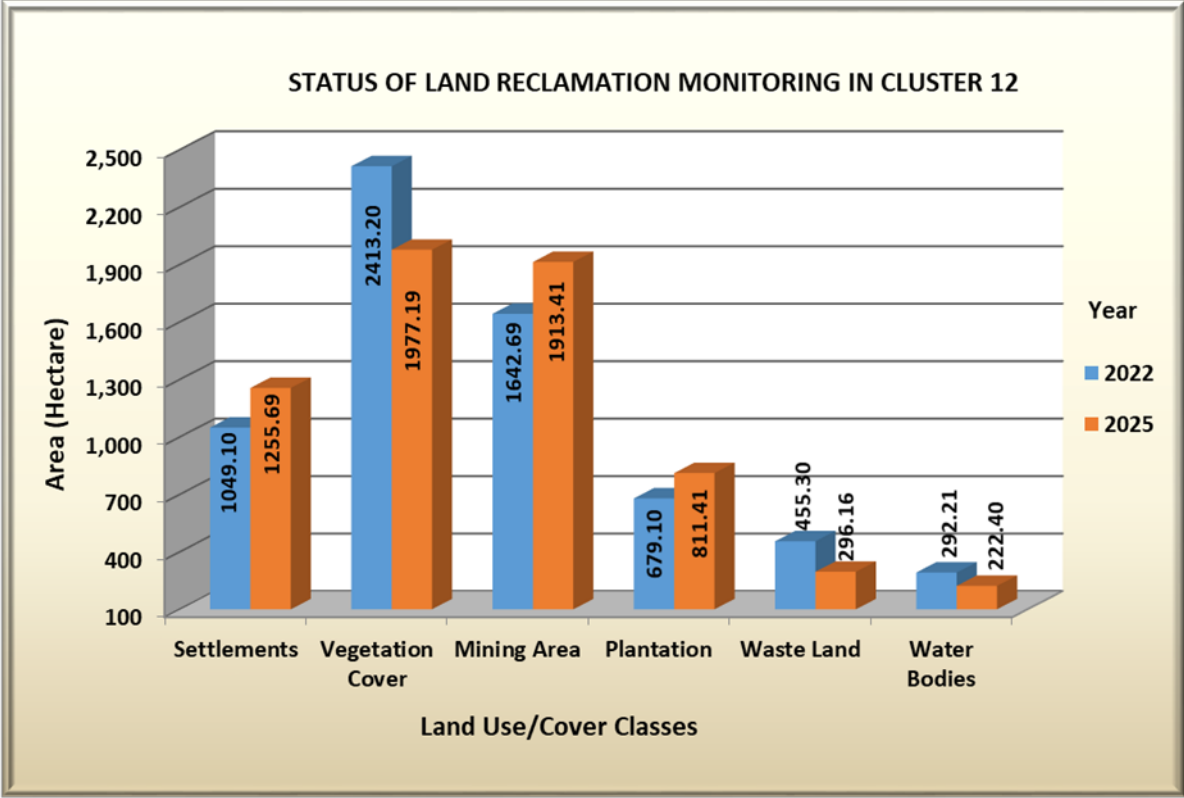


Chart 10.5: Status of Land Reclamation in Cluster 12



Photo 10.1: Plantation done in Satgram-Sripur area, Cluster 9



Photo 10.2: New plantation site in Satgram-Sripur area, Cluster 9



Photo 10.3: New plantation site in Kunustoria area, Cluster 10



Photo 10.4: Plantation done in Kajora area, Cluster 10



Photo 10.5: Plantation done in Kenda area, Cluster 11



Photo 10.6: Plantation done in Kenda area, Cluster 11



Photo 10.7: Plantation done in Pandaveswar area, Cluster 12



Photo 10.8: Plantation done in Bankola area, Cluster 12

शब्दकोष		
1	Land Reclamation	भूमि पुनरुद्धार
2	Over Burden	अधिभार
3	Monitoring	निगरानी
4	Report	प्रतिवेदन
5	Executive Summary	कार्यकारी सारांश
6	Opencast Mine	खुली खदान
7	Objective	उद्देश्य
8	Methodology	कार्य प्रणाली अथवा प्रक्रिया
9	Table	तालिका
10	List of Tables	तालिकाओं की सूची
11	Map	मानचित्र
12	Social Forestry	सामाजिक वानिकी
13	Plantation	पौधारोपण
14	Million	घनमीटर
15	Background	पृष्ठभूमि
16	Planning	योजनाबद्ध
17	Asses	आकलन
18	Status	स्थिति
19	Regularly	निरंतर
20	Satellite	उपग्रह
21	Subsidiary	अनुषांगिक

शब्दकोष		
22	Production	उत्पादन
23	Biological Reclamation	जैविक पुनरुद्धार
24	Technical Reclamation	तकनीकी पुनरुद्धार
25	Leasehold Area	पट्टा क्षेत्र
26	Excavated Area	उत्खनन क्षेत्र
27	Active mining	सक्रिय खनन
28	Environmental Protection	पर्यावरण संरक्षण
29	Remedial Measure	उपचारात्मक उपाय
30	Interval	अंतराल
31	Systematic Error	व्यवस्थित त्रुटियाँ।
32	Error	अशुद्धियाँ
33	Curvature	वक्रता
34	Geometric	ज्यामितिक
35	Distortion	विरूपण
36	Plantation	पौधारोपण
37	Capacity	क्षमता
38	Software	सॉफ्टवेयर
39	Class	वर्ग
40	Accuracy	सटीकता
41	Statistical Separation	सांख्यिकीय पृथक्करण
42	Cubic meter	घनमीटर

शब्दकोष		
43	Depicted	दर्शाया गया
44	Percentage	प्रतिशत
45	Salient Findings	मुख्य निष्कर्ष
46	Methodology	पद्धति
47	Data Procurement	डाटा क्रय
48	Satellite data Processing	उपग्रह डेटा प्रसंस्करण
49	Rectification and geo-referencing	सुधार और भू:सन्दर्भ
50	Image enhancement	छवि: गुण बृद्धि
51	Training set selection	प्रशिक्षण सेट का चयन
52	Classification and Accuracy assessment	वर्गीकरण और मूल्यांकन की सटीकता
53	Area calculation	क्षेत्र ना:गण
54	Temporal	लौकिक
55	Processing	प्रसंस्करण
56	Overlay of Vector data base	वेक्टर डेटा बेस का अरोपन
57	Area calculation	क्षेत्र:गणना
58	Pre-field map preparation	क्षेत्र जाने के पहले नक्शे की तैयारी
59	Ground Truthing	भू:सत्यापन
60	Ground Information	भू:सुचना
61	Interpretation	व्याख्या
62	Eco-system	पारिस्थितिकी तंत्र
63	Minor	मामुली

शब्दकोष		
64	Water Drainage	जल निकाय
65	Interval	अंतराल
66	Maximum	अधिकतम
67	Coal field	कोयला क्षेत्र
68	Design	परिकल्पना
69	Superimpose	आरोपित
70	Update	अद्यतनीकरणनवीनीकरण
71	Cumulative	संचयित
72	Embankment	तटबंध
73	Cluster	खुली तथा भूमिगत खदानों के समूह

ABBREVIATIONS

Sol	Survey of India
MoEF& CC	Ministry of Environment, Forest & Climate Change
CIL	Coal India Limited
ECL	Eastern Coalfields Limited
BCCL	Bharat Coking Coal Limited
CCL	Central Coalfields Limited
WCL	Western Coalfields Limited
SECL	South Eastern Coalfields Limited
NCL	Northern Coalfields Limited
MCL	Mahanadi Coalfields Limited
NEC	North Eastern Coalfields
CMPDIL	Central Mine Planning & Design Institute Ltd
NRSC	National Remote Sensing Centre
R2/ R2A	ResourceSat Satellite
LISS - 4	Linear Imaging and Self Scanning Sensor
FCC	False Colour Composite
OCP	Opencast Project
UGP	Underground Project
OB	Over Burden
GCP	Ground Control points
GIS	Geographic Information System
WGS-84	World Geodetic System
UTM	Universal Transverse Mercator

GLOSSARY

Sl.	Term	Definition
1.	Land Reclamation	To manage, reclaim and restore mined out/ degraded land as close as possible to its original stage.
2.	Over Burden	The material that lies above the coal seam/ deposit
3.	Monitoring	A process of evaluation to check or keep record for a period of time.
4.	Opencast Coal Mine	Open-pit mining, also known as opencast mining, is a surface mining technique that extracts minerals from an open pit in the ground.
5.	Social Forestry	Social forestry is the management and protection of forests and afforestation of barren and deforested lands with the purpose of helping environmental, social and rural development. Plantation (Social/ Avenue or other) carried out outside mining area.
6.	Biological Reclamation	Plantation on Backfilled areas (Stablised Internal Dumps)
7.	Technical Reclamation	Area under backfilling (Over burden dumped inside the mine voids) in mining area.
8.	Green Cover Generated	Total Plantation carried out in the lease area of Project. This includes Plantation on Backfill, Plantation on OB and Social Forestry.
9.	Leasehold Area	The area, for which lease is granted for the purpose of undertaking mining and allied operations.
10.	Excavated area	Mined out area which includes active mining, area under backfilling and plantation on backfilled areas
11.	Active Mining	Mining areas which include Coal Quarry, Advance Quarry, Quarry Filled with Water etc.
12.	Environmental Protection	It is the practice of protecting the natural environment by individuals, organizations and governments. Its objectives are to conserve natural resources and the existing natural environment and, where possible, to mitigate damage and reverse trends.

13.	Remedial Measure	Any measure or action required or undertaken to investigate, monitor, clean up, remove, treat, prevent, contain or otherwise remediate the presence or release of any hazardous substance or activity.
14.	Systematic Error	Every measurement differing from the true measurement in the same direction, and even by the same amount in some cases.
15.	Geometric Distortion	It refers to the improper positioning of any image with respect to their true geographic position when viewed in a properly scaled common image display plane.
16.	Land Use/ Cover Class	Land cover is what covers the surface of the earth and land use describes how the land is used.
17.	Accuracy	The closeness of agreement between a measured quantity value and a true quantity value.
18.	Environmental Clearance	Environmental Clearance (EC) for any developmental projects like coal mining projects etc. has been made mandatory by the Ministry of Environment, Forests and Climate Change (MoEF& CC) through its Notification issued on 27.01.1994 under the provisions of Environment (Protection) Act, 1986.
19.	Rectification and Geo-referencing	Geo-referencing is the assigning of absolute location of a data point or data points. Geo-rectification refers to the removal of geometric distortions between sets of data points, most often the removal of terrain, platform, and sensor induced distortions from remote sensing imagery.
20.	Image Enhancement	It is the process of modifying digital images so that the results are more suitable for processing or further image analysis.
21.	Training set selection	It is a portion of a data set used to fit or train a model for prediction or classification of values that are known in the training set, but unknown in other (future) data.
22.	Image Classification	It refers to the task of extracting information classes from a multiband raster image. The resulting raster from image classification can be used to create thematic maps.

23.	Temporal Changes	The 'temporal change' means the change in any entity with a period of time.
24.	Ground Truthing	Collection of primary/ basic information from ground realities for satellite image interpretation and thematic mapping.
25.	Cluster	Group of opencast and/ or underground mines clubbed together for administrative purposes.
26.	Arc GIS	GIS Software used for Map preparation
27.	ERDAS IMAGINE	Satellite Image Data Classification Software

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