

CHAPTER III
**Reporting of Mineral
Despatch and Sale**

This chapter contains audit findings on the reporting of mineral despatch and sale by leaseholders. Significant audit observations relate to the reporting of grade (per cent of iron content) and size (lumps or fines) of iron-ore produced, wide variations in the reported ex-mines prices of iron-ore, reporting of iron-ore fines as screened fines, and non-utilisation/ non-disposal of low grade iron and chromites in lease areas.

3.1 Introduction

Mineral ores occur with variations in chemical and physical form. In the case of iron-ore, the ores can be categorised, based on the *percentage* of mineral content, into different “grades”; and, on the basis of the size of the ore, into “lumps” and “fines”. As per Rule 45 of MCDR, 2017, all mining lease holders are required to submit monthly returns on production, despatch and sale of minerals, from their lease areas. The returns should contain data on the *ex-mine* prices of the various grades of lumps and fines, despatched from the mines. These *ex-mine* prices, as reported by the lessees, form the basis on which the average sale prices are notified by IBM, for the various grades of iron-ore lumps and fines. The royalty payable by the leaseholder, on the various grades of iron-ore lumps and fines despatched from the lease area, is worked out as a fixed *percentage* of the notified average sale prices for the respective grades. Thus, it is crucial for the State Government to monitor the *ex-mine* prices, grades, and classifications of iron-ores as lumps and fines, reported by leaseholders, in order to safeguard the mining revenues of the Government.

Audit observations, pertaining to the above aspects of reporting, are discussed in the following paragraphs.

3.2 System of calculation of royalty and premium

Iron-ore occurs with large variations in chemical composition, most important of which is the *percentage* of iron or ‘Fe’ content in the ore. Based on the iron/Fe content, iron-ore is categorized into different “grades”, with iron-ore having higher Fe content being regarded as a higher grade. The following standard grading is followed, as per IBM (as of March 2022): (i) 65% Fe and above (ii) 62-65% Fe (iii) 60-62% Fe (iv) 58-60% Fe (v) 55-58% Fe and (vi) below 55% Fe. The grade of iron-ore has implications for the degree of processing (if any), required for upgrading the ore for industrial use. In general, higher grades of iron-ore require lower (or no) processing, produce higher hot metal yields²², and require lesser quantity of coke in the blast furnace, thus reducing the costs of industrial production. For these reasons, higher grades of iron-ore fetch higher prices in the market, as compared to lower grades.

²² It is the hot, liquid, metallic iron product obtained upon reduction of iron ore (normally in Blast Furnace or in Corex Furnace)

Iron-ore also varies in physical form, and can be classified based on its size, as “lumps” and “fines”. As per IBM publications, the size of iron-ore lumps lies in the range of 10 mm and above, whereas iron-ore fines are of size less than 10 mm. Fines require sintering²³ (agglomeration into crude pellets), prior to their use in blast furnaces. Lump ore can bypass this process and be charged directly into the furnace. For this reason, lumps fetch higher price in the market, as compared to fines, for any particular grade of iron-ore.

IBM notifies an average sale price (ASP) for each grade of iron-ore lumps and fines, on a monthly and State-wise basis. In general, a higher grade of iron-ore has a higher ASP, as compared with a lower grade; and iron-ore lumps have a higher ASP, as compared with fines. The royalty on different grades of iron-ore lumps and fines is worked out as a fixed *percentage* (15 *per cent* for iron-ore) of the ASP notified by IBM, for the iron-ore lumps and fines of respective grades. Hence, the royalty payable on higher grades of iron-ore is higher than the royalty payable for lower grades. Similarly, the royalty payable on lumps would be higher than the royalty payable on fines. An example of the ASP, notified by IBM for different grades of iron-ore lumps and fines, for the month of March 2022, for Odisha, and the royalty (15 *per cent* of ASP) worked out thereon, is shown in **Table 3.1**,

Table 3.1: Average Sale Price for Lumps and Fines (March 2022), for Odisha

(in ₹ /MT)

Grade of iron ore	ASP notified by IBM		Royalty at the rate of 15 per cent of ASP	
	Lumps	Fines	Lumps	Fines
Below 55% Fe	3,763	1,838	564.45	275.70
55% to below 58% Fe	4,389	3,580	658.35	537
58% to below 60% Fe	5,780	3,764	867	564.60
60% to below 62% Fe	7,193	4,523	1,078.95	678.45
62% to below 65% Fe	8,341	5,215	1,251.15	782.25
65% Fe and above	8,695	5,974	1,304.25	896.10

Source: IBM publication of Average Sale Price for March 2022

As royalty is based on grade (the *percentage* of iron ore content) and size (lumps or fines) of the ore, the risk of misreporting of the grade and size of ore to avoid payment of higher royalty should be properly safeguarded against.

This risk is significantly higher in the case of fresh mining leases, granted through auctions conducted in FY 2019-20, in pursuance of the amended provisions²⁴ of MMDR Act, 2015, which required all expiring mining leases to be presettled through a fresh auction process. In such fresh mining lease cases, the lessees were committed, as per Rule 8(3) of the Mineral (Auction) Rules, 2015, to pay additional amount (premium), as a fixed *percentage* of the ASP as settled in auction, over and above the royalty payable. Data in regard to such auctions showed that the premia payable by the new lessees, ranged from 90.90 *per cent* to 150 *per cent* of the ASP. A sample calculation of the amount of royalty and additional amount (premium), payable per metric ton (MT), by various lessees, for March 2022, is shown in **Table 3.2**.

²³ Sintering is a process of compacting and forming a solid mass of material by pressure or heat without melting it to the point of liquefaction.

²⁴ Section 8A (4)(5)(6) of MMDR Amendment Act, 2015

Table 3.2: Calculation of royalty and additional amount (premium) per Metric Ton, in respect of the auctioned mines*(in ₹/ MT)*

Sl. No.	Lessee	Name of mine auctioned	Circle	Percentage of additional amount settled after auction	IBM ASP for 62-65% Fe lumps March 2022	Royalty (at the rate of 15 per cent of ASP)	Additional amount payable (E×F)	Total amount payable
A	B	C	D	E	F	G	H	I
1	Arcelor Mittal	Thakurani	Joda	107.55	8,341	1,251.15	8,971	10,222
2	JSW Steel	Jajang	Joda	110.00			9,175	10,426
3	JSW Steel	Nuagaon	Joda	95.20			7,941	9,192
4	Kashvi International	Jaribahal	Joda	150.00			12,512	13,763
5	Narbheram Power and Steel	Roida-II	Joda	90.90			7,582	8,833
6	Serajuddin and Co.	Balda	Joda	118.05			9,847	11,098
7	JSW Steel	Gonua	Koira	132.00			11,010	12,261
8	JSW Steel	Narayanposi	Koira	98.55			8,220	9,471

Source: IBM publication of Average Sale Price for March 2022 and bid per cent of auctioned mines

As can be seen from **Table 3.2**, for every MT of iron-ore produced and despatched, the lessees were required to pay an amount, in the form of royalty and additional amount (premium), which was much higher than the average sale price. For instance, **Table 3.2** indicates that, the ASP for March 2022, for Odisha, was ₹ 8,341 per MT, but different lessees were required to pay amounts, in the range of ₹ 8,833 to ₹ 13,763 per MT, to the State Government. Therefore, the risk of misreporting of the grades and classifications of the iron-ore produced, due to the difference in royalty and the premium amounts for each grade and classification, became significant.

In view of the above and considering the risk of misreporting of grade and size, Audit scrutinized the trend in reporting of iron-ore grades, by old (pre-auction) lessees, as well as new (post-auction) lessees, of eight iron-ore mines²⁵, under the two major²⁶ mining circles (Joda and Koira). The data, as reported by both the old and new lessees, to the State Government and IBM, for the FYs 2014-15 to 2021-22, was examined by Audit, with particular attention to the change-over of lessees due to the expiry of old leases and grant of fresh leases, following auctions in 2019-20. Findings in this regard, are detailed in the sub-paragraphs below:

3.2.1 Reporting of the grades of iron-ore produced

Scrutiny of data showed that, in the case of six out of the eight auctioned mines, there had been an abrupt and abnormal decline, in the grade of iron-ore (both lumps and fines), as reported by the new lessees, as compared with the old lessees. The methodology adopted to quantify the monetary impact on revenue and mine-wise observations are discussed in the following sub-paragraphs.

²⁵ (i) Jajang - Old Rungta Mines - New JSW; (ii) Roida-II - Old KN Ram - New Narbheram; (iii) Thakurani - Old Kaypee Enterprises - New Arcelor Mittal; (iv) Nuagaon - Old KJS Ahluwalia - New JSW; (v) Jaribahal - Old Patnaik Minerals - New Khashvi International; (vi) Narayanposi - Old AMTC - New JSW; (vii) Gonua - Old PK Ahluwalia - New JSW; and (viii) Balda-Old Seerajuddin - New Seerajuddin

²⁶ Total production of iron ore, in the State, during FY 2021-22, was 147.364 MT, out of which the production in Joda and Koira circles was 131.437 MT, which constituted 89.19 per cent of the total production

Methodology adopted to quantify the monetary impact on revenue due to reporting of lower grades of iron ore produced

- Percentage of reported quantity of different grades over the total production during six years (2014-20) reported by old lessees has been calculated.
- That *percentage* was considered for calculation on the total production during the years 2020-21 and 2021-22 by the new lessees of the same mines, to arrive at the grade-wise production.
- The royalty and premium leviable on the grade-wise production arrived at by Audit, has been calculated by using annual average of ASP published by Indian Bureau of Mines.
- The leviable royalty and premium have been compared with the actual royalty and premium (collected on the despatched quantities + to be collected on un-despatched/ closing balance of quantities, out of production of two years) on the reported grade-wise production by the new lessees during the years 2020-21 and 2021-22.

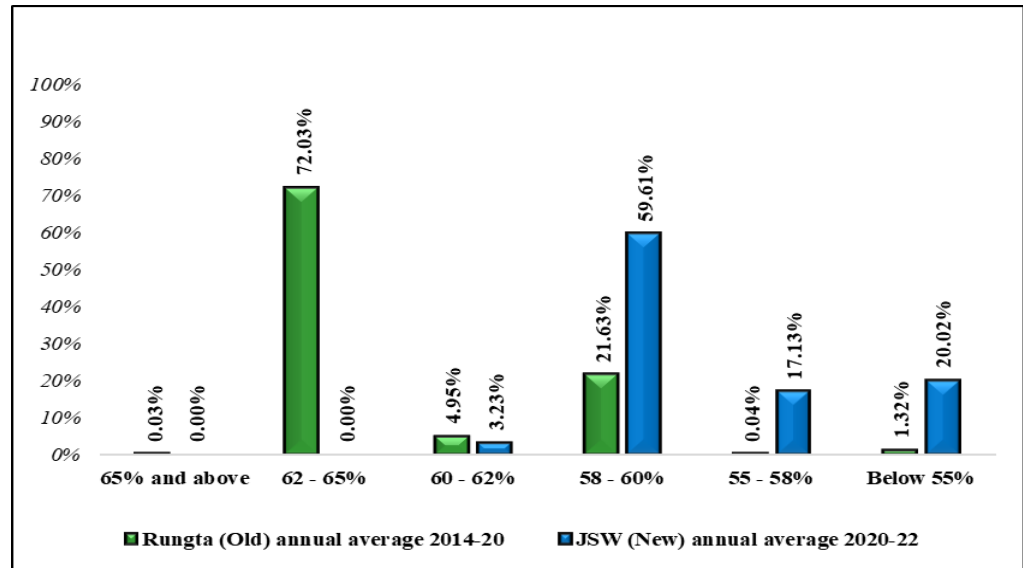
i. Jajang iron-ore mine (Joda circle)

Audit analysed the grade-wise production of iron-ore lumps in Jajang iron-ore mine as reported by the old lessee (Rungta Mines) and new lessee (JSW Steel), which is shown in **Table 3.3** and **chart 3.1** below:

Table 3.3: Grade-wise production of lumps

Lessee	Financial Year(s)	Production	Grade-wise production						
			65% and above	62 - 65%	60 - 62%	58 - 60%	55 - 58%	Below 55%	
Old	Rungta Mines	2014-20	Average production per year (in MT)	764.02	19,37,623.13	1,33,249.35	5,81,845.46	1,044.97	35,578.34
			Average <i>percentage</i> share of total production	0.03%	72.03%	4.95%	21.63%	0.04%	1.32%
			Range of year-wise <i>percentage</i> share of total production	0-0.33%	58-81%	0-16%	14-30%	0-0.14%	0-7.75%
New	JSW Steel	2020-21	Total production (in MT)	0	0	1,28,159	10,47,701	24,200	97,460
			<i>Percentage</i> share of total production	0%	0%	9.88%	80.75%	1.87%	7.51%
	2021-22	Total production (in MT)	0	0	0	13,14,725	6,54,679	6,96,032	
		<i>Percentage</i> share of total production	0%	0%	0%	49.32%	24.56%	26.11%	

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.1: Jajang: Grade-wise production of lumps

Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It is evident from **Table 3.3** above that, during 2014-20, the average production of lumps of grades above 60% Fe, reported by the old lessee (Rungta) was about 77 per cent. However, within a year of auction, under the new lessee (JSW Steel), this drastically reduced to a mere 9.88 per cent, in FY 2020-21, and further to 0 per cent during FY 2021-22. Moreover, the old lessee (Rungta) was consistently reporting the bulk of production of iron-ore lumps in the 62-65% Fe grade; but within a year, the new lessee (JSW Steel) did not report any production in this grade. Instead, the new lessee (JSW Steel) reported the bulk of production (nearly 81 per cent) in FY 2020-21 in the grade of 58-60% Fe; and significant production (totalling over 50 per cent) in 2021-22 in the lower grades of 55-58% Fe and below 55% Fe.

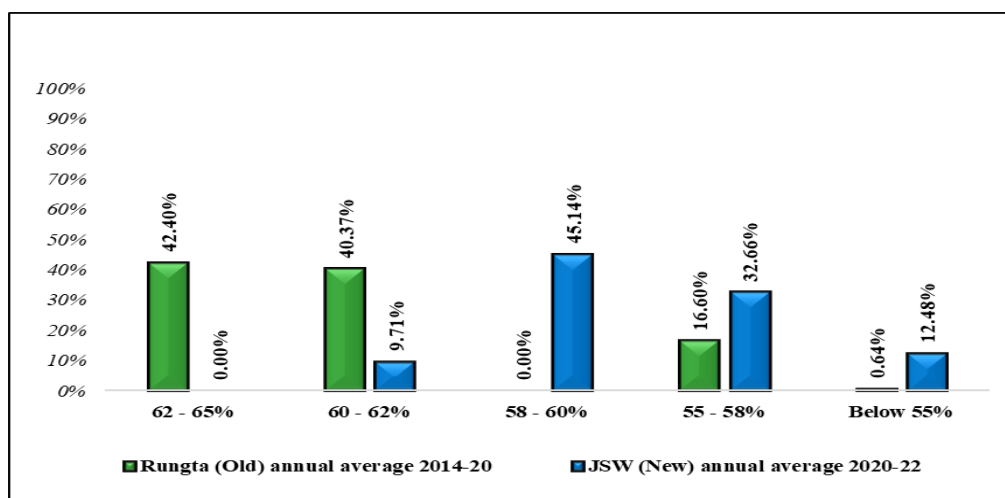
Audit also analysed the grade-wise production of iron-ore fines in Jajang iron-ore mine as reported by the old lessee (Rungta Mines) and new lessee (JSW Steel), which is shown in **Table 3.4** and **chart 3.2** below:

Table 3.4: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production				
			62 - 65%	60 - 62%	58 - 60%	55 - 58%	Below 55%
Old Rungta Mines	2014-20	Average production per year (in MT)	33,60,030.35	31,98,889.53	0.00	13,15,189.05	50,798.36
		Average percentage share of total production	42.40%	40.37%	0.00%	16.60%	0.64%
		Range of year-wise percentage share of total production	6-64%	28-53%	0%	0-44%	0-3%
New JSW Steel	2020-21	Total production (in MT)	0	8,68,748	34,38,592	5,45,220	6,300
		Percentage share of total production	0%	17.88%	70.77%	11.22%	0.13%
	2021-22	Total production (in MT)	0	5,29,338	30,58,291	41,56,173.90	17,90,094.10
		Percentage share of total production	0%	5.55%	32.08%	43.59%	18.78%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.2: Jajang: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, till the financial year 2019-20, the average production of fines of grades above 60% Fe was reported as more than 82 per cent by the old lessee (Rungta). However, within a year of auction of the mines, the new lessee (JSW Steel) reported production of fines above 60% Fe as only 17.88 per cent in FY 2020-21 and a mere 5.55 per cent in FY 2021-22. The old lessee had consistently been reporting the bulk of production of iron-ore fines, in the higher grades of 60-62 % Fe and 62-65% Fe. However, the new lessee (JSW Steel) did not report any production in the 62-65% Fe grade and only limited production in 60-62% Fe grade. The new lessee (JSW Steel) reported the bulk of production (nearly 71 per cent) in FY 2020-21 in the grade of 58-60% Fe; and significant production (totalling over 62 per cent) in FY 2021-22 in the lower grades of 55-58% Fe and below 55% Fe, as shown in **Table 3.4** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹2,877.27 crore²⁷, as compared to the amount payable based on its reported production, as detailed in **Appendix-I**.

ii. Roida-II iron ore mine (Joda circle)

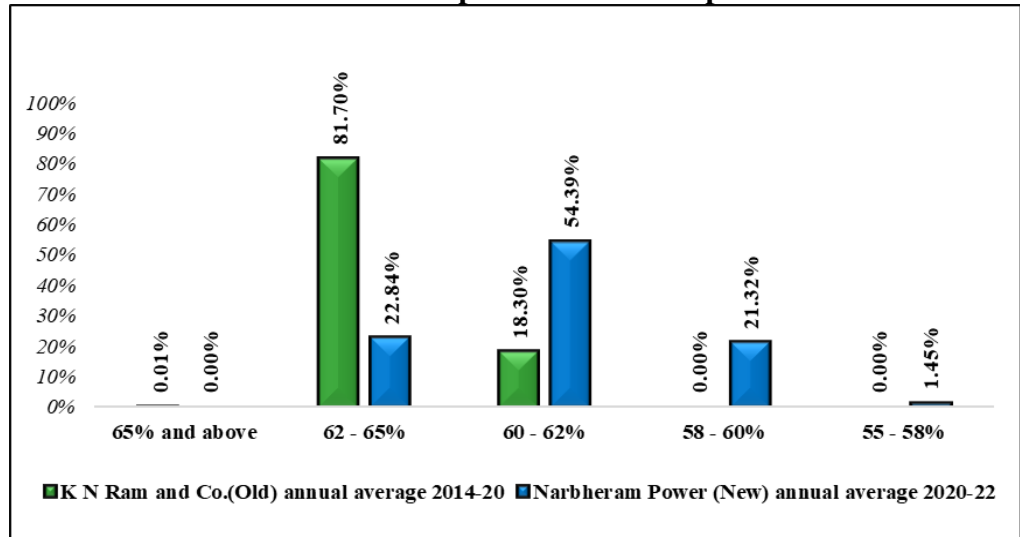
Audit analysed the grade-wise production of iron-ore lumps in Roida-II iron-ore mine as reported by the old lessee (K N Ram & Co.) and new lessee (Narbheram Power and Steel), which is shown in **Table 3.5** and **chart 3.3**:

²⁷ Worked out by calculating the estimated production during 2020-22, based on the percentage of average production (grade-wise) by the old lessee during 2014-20 and the royalty payable thereon, minus the royalty and premium payable by the new lessee, as per the reported production, using the average ASP for the relevant years

Table 3.5: Grade-wise production of lumps

Lessee	Financial Year(s)	Production	Grade-wise production				
			65% and above	62 - 65%	60 - 62%	58 - 60%	55 - 58%
Old K N Ram & Co.	2014-20	Average production per year (in MT)	37.39	3,94,972.99	88,453.41	0	0
		Average percentage share of total production	0.01%	81.70%	18.30%	0.00%	0.00%
		Range of year-wise percentage share of total production	0-0.04%	71-100%	0-29%	0%	0%
New Narbheram Power and Steel	2020-21	Total production (in MT)	0	80,487.24	55,822.91	0	0
		Percentage share of total production	0%	59.05%	40.95%	0%	0%
	2021-22	Total production (in MT)	0	6,384.31	1,51,107.4	81,114.39	5,515.07
		Percentage share of total production	0%	2.62%	61.90%	33.23%	2.26%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.3: Roida-II: Grade-wise production of lumps

Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that during the financial years 2014-15 to 2019-20, the average production of lumps of grades above 62% Fe as reported by the old lessee (K. N. Ram & Co.) was 81.71 per cent. However, within one year of auction, under the new lessee (Narbheram Power & Steel), this reduced to 59.05 per cent in FY 2020-21, and drastically to a mere 2.62 per cent in FY 2021-22. The old lessee (K. N. Ram & Co.) had consistently been reporting the bulk of production of iron-ore lumps in grades above 62% Fe. However, within two years' time, in FY 2021-22, the new lessee (Narbheram Power & Steel), reported the bulk of production (61.90 per cent) in the grade of 60-62% Fe and significant production (totalling over 35 per cent) in FY 2021-22 in the lower grades of 58-60% Fe and 55-58% Fe, as shown in **Table 3.5** above.

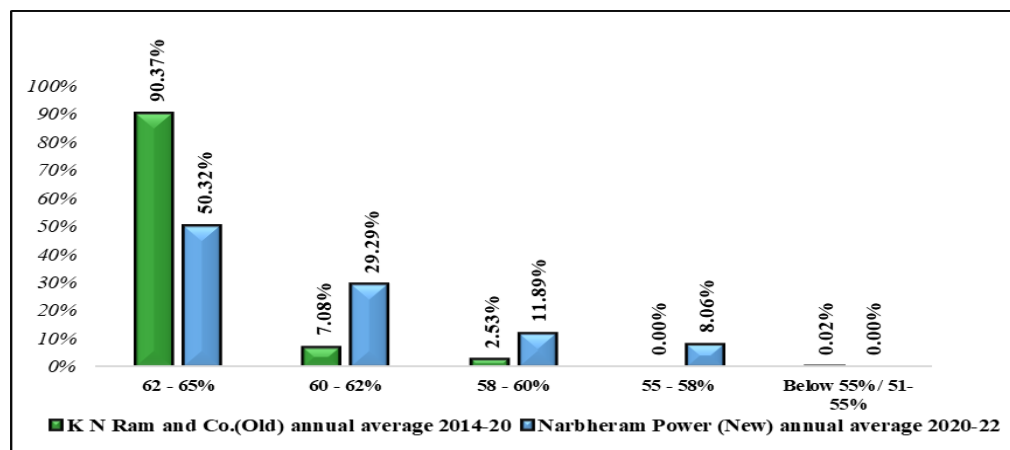
Audit also analysed the grade-wise production of *iron-ore fines* in **Roida-II iron-ore mine** as reported by the old lessee (K N Ram & Co.) and new lessee (Narbheram Power and Steel), which is shown in **Table 3.6** and **chart 3.4**:

Table 3.6: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production						
			62-65%	60-62%	58-60%	55-58%	Below 55%	51-55%	
Old	KN Ram & Co.	2014-20	Average production per year (in MT)	14,62,586.37	1,14,604.38	40,923.50	0	260.17	0.00
		Average <i>percentage</i> share of total production	90.37%	7.08%	2.53%	0.00%	0.02%	0.00%	
		Range of year-wise <i>percentage</i> share of total production	79-100	0-17%	0-11%	0%	0-3%	0%	
New	Narbheram Power and Steel	2020-21	Total production (in MT)	12,33,323.49	40,707.17	0	0	0	0
			<i>Percentage</i> share of total production	96.80%	3.20%	0%	0%	0%	0%
		2021-22	Total production (in MT)	4,72,678.15	9,52,095.55	4,03,194.86	2,73,164.7	0	14,917.66
			<i>Percentage</i> share of total production	22.34%	44.99%	19.05%	12.91%	0%	0.70%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.4: Roida-II: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that till 2020, as reported by the old lessee (K. N Ram), the average production of fines, for the 62-65% Fe grade, was more than 90 per cent, with very little production in the other lower grades. In FY 2021-22, however, the new lessee (Narbheram) reported only 22.34 per cent production in the 62-65% Fe grade, and significant production in the grade of 60-62% Fe (nearly 45 per cent), and the lower grades of 58-60% Fe and 55-58% Fe (both together totalling nearly 32 per cent), as shown in **Table 3.6** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹215.27 crore²⁸, as compared to the amount payable based on its reported production, as detailed in **Appendix-II**.

²⁸ Worked out by calculating the estimated production during 2020-22, based on the *percentage* of average production (grade-wise) by the old lessee during 2014-20 and the royalty payable thereon, minus the royalty and premium payable by the new lessee, as per the reported production, using the average ASP for the relevant years

iii. **Thakurani iron-ore mine (Joda circle)**

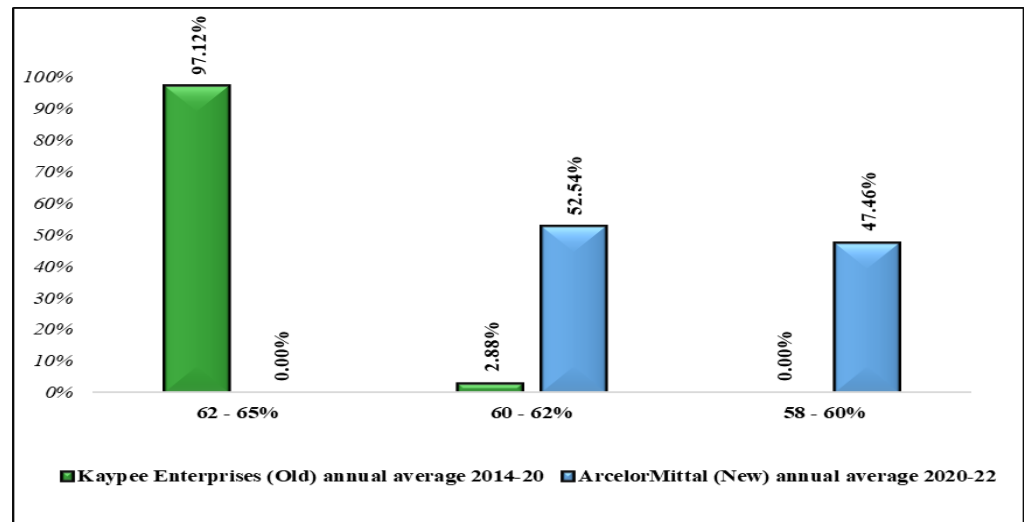
Audit analysed the grade-wise production of iron-ore lumps in Thakurani iron-ore mine as reported by the old lessee (Kaypee) and new lessee (Arcelor Mittal), which is shown in **Table 3.7** and **chart 3.5** below:

Table 3.7: Grade-wise production of lumps

Lessee		Financial Year(s)	Production	Grade-wise production		
				62-65%	60-62%	58-60%
Old	Kaypee	2014-20	Average production per year (in MT)	7,85,868	2,3269	0
			Average <i>percentage</i> share of total production	97.12%	2.88%	0.00%
			Range of year-wise <i>percentage</i> share of total production	91-100%	0-8%	0%
New	Arcelor Mittal	2020-21	Total production (in MT)	0	5,87,369.8	0
			<i>Percentage</i> share of total production	0.00%	100%	0.00%
	2021-22	Total production (in MT)	0	3,17,073	8,16,836.75	
		<i>Percentage</i> share of total production	0.00%	28%	72%	

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.5: Thakurani: Grade-wise production of lumps



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the years 2014-15 to 2019-20, the old lessee (Kaypee) was reporting almost the entire production of lumps, as being in the grade 62-65% Fe (over 97 per cent). However, under the new lessee (Arcelor Mittal), this drastically reduced to 0 per cent during next two financial years (i.e. 2020-21 and 2021-22). The new lessee (Arcelor Mittal) reported 100 per cent production in the 60-62% Fe grade during FY 2020-21, which further reduced to 27.96 per cent in FY 2021-22. During FY 2021-22, the bulk of production (72 per cent) was reported in the further lower grade of 58-60% Fe, as shown in **Table 3.7** above.

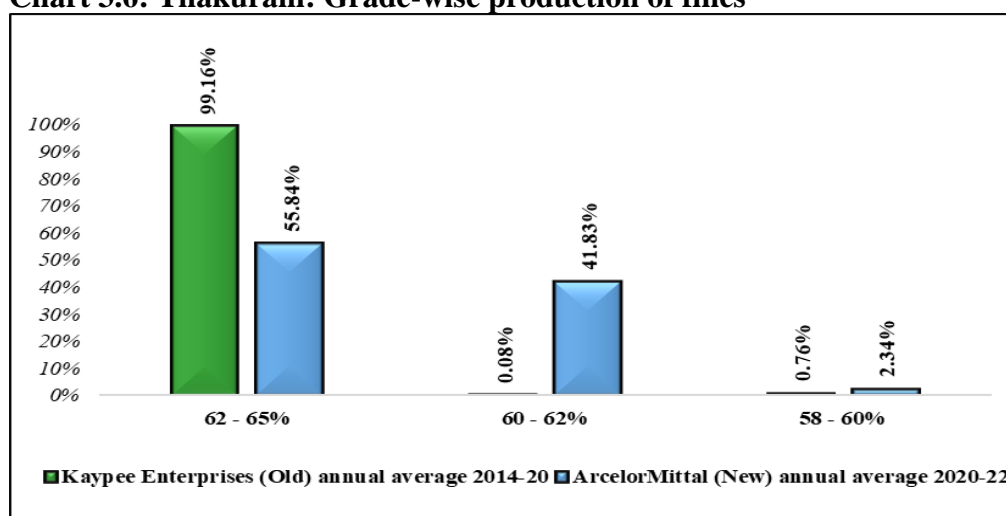
Audit also analysed the grade-wise production of iron-ore fines in Thakurani iron-ore mine as reported by the old lessee (Kaypee) and new lessee (Arcelor Mittal), which is shown in **Table 3.8** and **chart 3.6**:

Table 3.8: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production		
			62-65%	60-62%	58-60%
Old Kaypee	2014-20	Average production per year (in MT)	33,62,850	2,724	25,933
		Average <i>percentage</i> share of total production	99.16%	0.08%	0.76%
		Range of year-wise <i>percentage</i> share of total production	96-100%	0-0.35%	0-3.61%
New Arcelor Mittal	2020-21	Total production (in MT)	28,84,354.3	1,55,442	0
		<i>Percentage</i> share of total production	94.89%	5.11%	0%
	2021-22	Total production (in MT)	12,49,701	29,41,326.5	1,72,950
		<i>Percentage</i> share of total production	28.64%	67.40%	3.96%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.6: Thakurani: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2014-15 to 2019-20, the old lessee (Kaypee) was reporting almost the entire production of fines in the grade 62-65% Fe (over 99 *per cent*). Under the new lessee (Arcelor Mittal), this remained at par during FY 2020-21 but drastically reduced to 28.64 *per cent* in FY 2021-22, during which significant production (over 67 *per cent*) was reported in the grade 60-62% Fe, and production of nearly 4 *per cent* in the even lower grade of 58-60% Fe, as shown in **Table 3.8** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹27.65 crore²⁹, for the years 2020-21 and 2021-22 in the form of lesser royalty and premium as detailed in **Appendix-III**.

²⁹ Worked out by calculating the estimated production during 2020-22, based on the *percentage* of average production (grade-wise) by the old lessee during 2014-20 and the royalty payable thereon, minus the royalty and premium payable by the new lessee, as per the reported production, using the average ASP for the relevant years

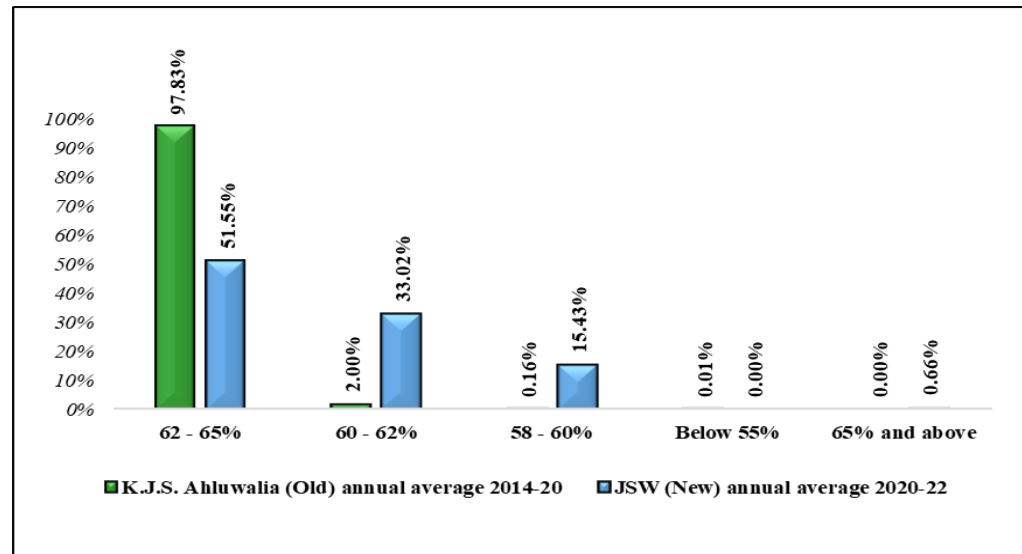
iv. Nuagaon iron-ore mine (Joda circle)

Audit analysed the grade-wise production of iron-ore lumps in Nuagaon iron-ore mine as reported by the old lessee (K.J.S. Ahluwalia) and new lessee (JSW Steel), which is shown in **Table 3.9** and **chart 3.7** below:

Table 3.9: Grade-wise production of lumps

Lessee		Financial Year(s)	Production	Grade-wise production			
				62-65%	60- 62%	58-60%	Below 55%
Old	K.J.S. Ahluwalia	2014-20	Average production per year (in MT)	15,22,243.30	31,111.67	2,508.33	173.33
			Average <i>percentage</i> share of total production	97.83%	2.00%	0.16%	0.01%
			Range of year-wise <i>percentage</i> share of total production	96-100%	0-4%	0-0.44%	0%
New	JSW Steel	2020-21	Total production (in MT)	7,41,181	2,22,561.85	0	0
			<i>Percentage</i> share of total production	76.91%	23.09%	0%	0%
		2021-22	Total production (in MT)	4,97,065	5,70,660	3,70,670	0
			<i>Percentage</i> share of total production	34.56%	39.67%	25.77%	0%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.7: Nuagaon: Grade-wise production of lumps

Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2014-15 to 2019-20, the old lessee (KJS Ahluwalia) was reporting almost the entire production (nearly 98 *per cent*) of lumps in the grade 62-65% Fe. However, under the new lessee (JSW Steel), this reduced to 76.91 *per cent* in FY 2020-21 and further down to 34.56 *per cent* in FY 2021-22. In FY 2021-22, the new lessee (JSW Steel) reported significantly high production in the grade 60-62% Fe (nearly 40 *per cent*) and the lower grade 58-60% Fe (over 25 *per cent*), as shown in **Table 3.9** above.

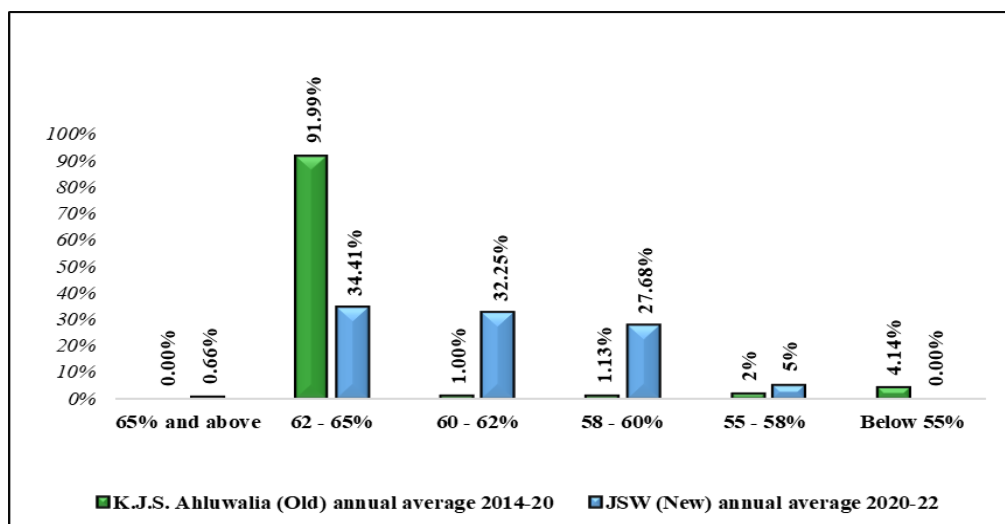
Audit also analysed the grade-wise production of iron-ore fines in Nuagaon iron-ore mine as reported by the old lessee (K.J.S. Ahluwalia) and new lessee (JSW Steel), which is shown in **Table 3.10** and **chart 3.8**:

Table 3.10: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production					
			65% and above	62-65%	60-62%	58-60%	55-58%	Below 55%
Old KJS Ahluwalia	2014-20	Average production per year (in MT)	0	28,10,678.43	30,625.79	34,658.33	52,978.43	1,26,533.33
		Average percentage share of total production	0%	91.99%	1.00%	1.13%	1.73%	4.14%
		Range of year-wise percentage share of total production	0	90-95%	0.1-8.3%	0-8%	0.4-4%	0-9%
New JSW Steel	2020-21	Total production (in MT)	0	17,01,925.25	14,81,433	0	0	0
		Percentage share of total production	0%	53.46%	46.54%	0%	0%	0%
	2021-22	Total production (in MT)	53,440	10,76,900	11,23,337	22,35,223	4,03,492	0
		Percentage share of total production	1.09%	22.01%	22.96%	45.69%	8.25%	0%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.8: Nuagaon: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2014-15 to 2019-20, the old lessee (KJS Ahluwalia) was reporting almost the entire production (nearly 92 per cent) of fines in the grade 62-65% Fe. However, under the new lessee (JSW Steel), this reduced to about 53 per cent in FY 2020-21 and further down to 22 per cent in FY 2021-22. In FY 2021-22, the new lessee (JSW Steel) reported production in the grades 60-62% Fe (nearly 23 per cent) and 58-60% (over 45 per cent), as well as some production in the 55-58% Fe grade (over 8 per cent), as shown in **Table 3.10** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately

₹153.79 crore³⁰, for the years 2020-21 and 2021-22 in the form of lesser royalty and premium as detailed in **Appendix-IV**.

v. **Jaribahal iron-ore mine (Joda circle)**

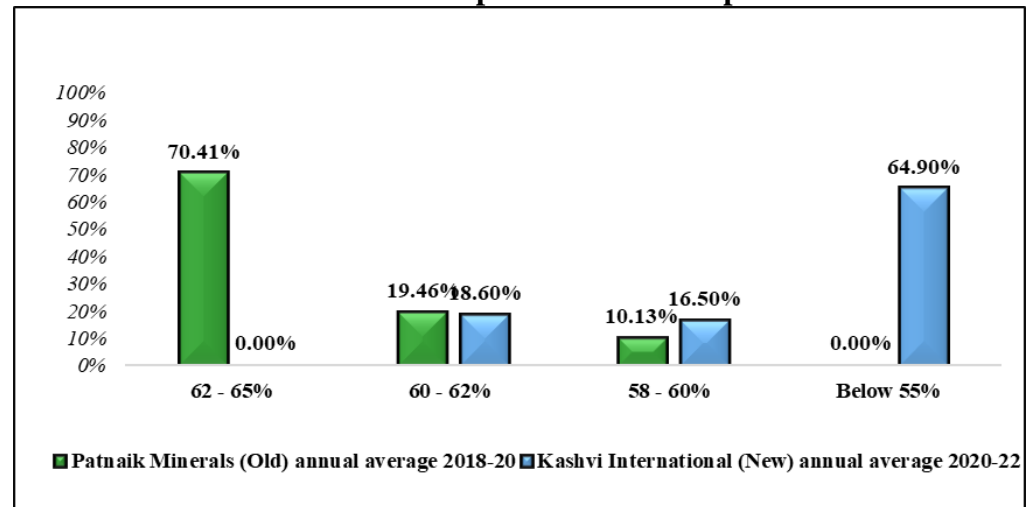
Audit analysed the grade-wise production of iron-ore lumps in Jaribahal iron-ore mine as reported by the old lessee (Patnaik Minerals) and new lessee (Kashvi International), which is shown in **Table 3.11** and **chart 3.9** below:

Table 3.11: Grade-wise production of lumps

Lessee	Financial Year(s)	Production	Grade-wise production			
			62- 65%	60-62%	58-60%	Below 55%
Old Patnaik Minerals	2018-20	Average production per year (in MT)	3,80,097.24	1,05,035.61	54,706.13	0
		Average <i>percentage</i> share of total production	70.41%	19.46%	10.13%	0
		Range of year-wise <i>percentage</i> share of total production	69-73%	16-26%	15-43%	0%
New Kashvi International	2020-21	Total production (in MT)	0	88,573.7	78,591.5	17,635
		<i>Percentage</i> share of total production	0%	47.93%	42.53%	9.54%
	2021-22	Total production (in MT)	0	0	0	2,91,447.5
		<i>Percentage</i> share of total production	0%	0%	0%	100%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.9: Jaribahal: Grade-wise production of lumps



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2018-19 and 2019-20, the old lessee (Patnaik Minerals) had reported significant production (over 70 *per cent*) of lumps in the grade 62-65% Fe. However, under the new lessee (Kashvi International), this was immediately reduced to 0 *per cent* in the next two financial years. Within two years, in FY 2021-22, the new lessee reported the entire production as being in the lowest grade of below 55% Fe, without any production in any of the higher grades, as shown in **Table 3.11** above.

³⁰ Worked out by calculating the estimated production during 2020-22, based on the *percentage* of average production (grade-wise) by the old lessee during 2014-20 and the royalty payable thereon, minus the royalty and premium payable by the new lessee, as per the reported production, using the average ASP for the relevant years

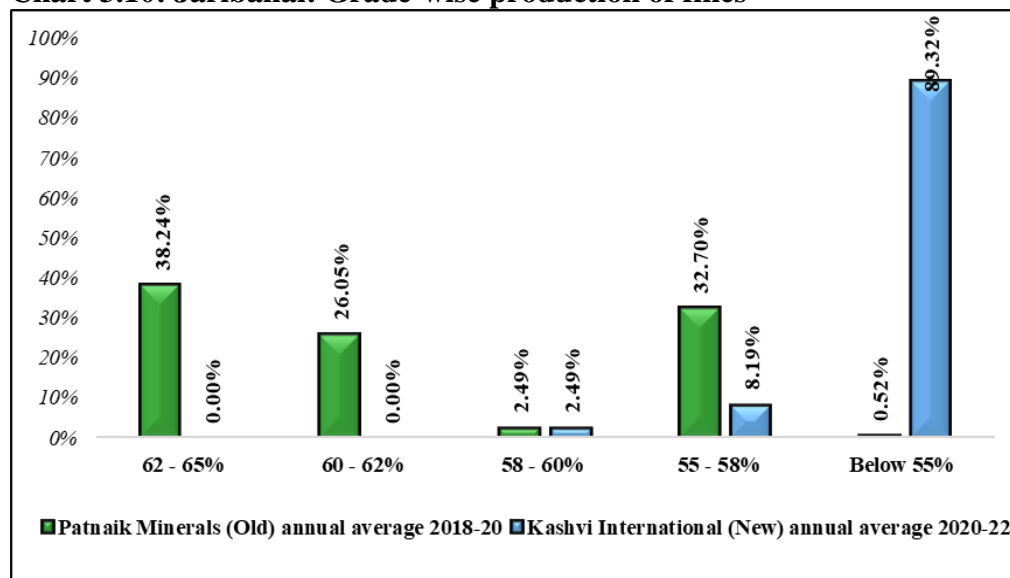
Audit also analysed the grade-wise production of iron-ore fines in Jaribahal iron-ore mine as reported by the old lessee (Patnaik Minerals) and new lessee (Kashvi International), which is shown in **Table 3.12** and **chart 3.10** below:

Table 3.12: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production				
			62-65%	60-62%	58-60%	55-58%	Below 55%
Old Patnaik Minerals	2018-20	Average production per year (in MT)	2,13,380.9	1,45,366	13,900.68	1,82,449.3	2,904.55
		Average <i>percentage</i> share of total production	38.24%	26.05%	2.49%	32.70%	0.52%
		Range of year-wise <i>percentage</i> share of total production	10-68%	22-30%	0.2-5%	0-64%	0-1%
New Kashvi International	2020-21	Total production (in MT)	0	0	26,620.2	1,07,827	4,61,784.6
		<i>Percentage</i> share of total production	0%	0%	4.46%	18.08%	77.45%
	2021-22	Total production (in MT)	0	0	6,102	0	7,13,774.5
		<i>Percentage</i> share of total production	0%	0%	0.85%	0%	99.15%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.10: Jaribahal: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2018-19 and 2019-20, the old lessee (Patnaik Minerals) reported significant production (about 64 per cent) of fines in the higher grades of 62-65% Fe and 60-62% Fe, with negligible production of the lowest grade of below 55% Fe. However, under the new lessee (Kashvi International), the trend immediately changed within two financial years, and in FY 2021-22, almost the entire production (99 per cent) was reported in the lowest grade of below 55% Fe, as shown in **Table 3.12** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported

grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹703.66 crore³¹, for the years 2020-21 and 2021-22 in the form of lesser royalty and premium as detailed in *Appendix-V*.

vi. **Gonua iron-ore mine (Joda circle)**

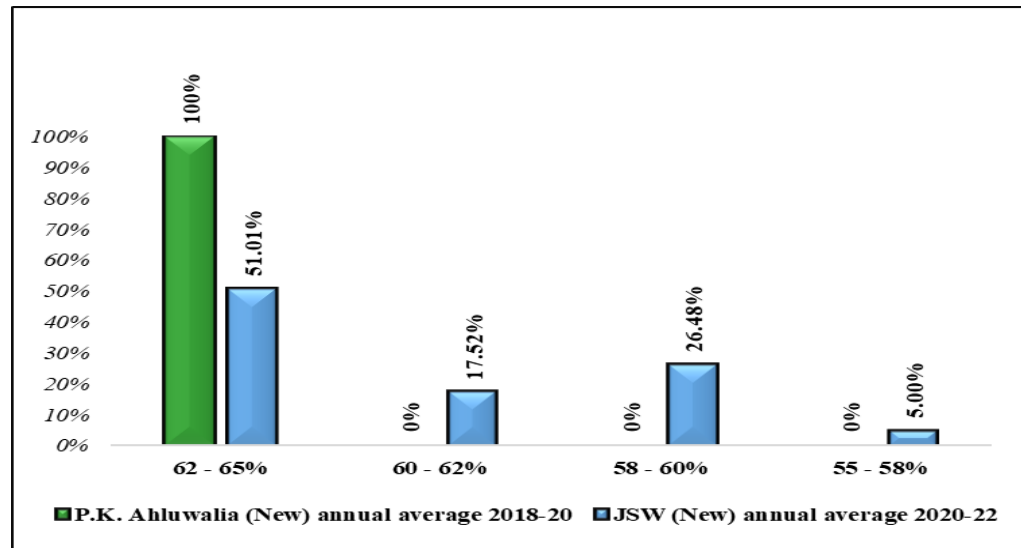
Audit analysed the grade-wise production of iron-ore lumps in Gonua iron-ore mine as reported by the old lessee (P K Ahluwalia) and new lessee (JSW Steel), which is shown in **Table 3.13** and **chart 3.11** below:

Table 3.13: Grade-wise production of lumps

Lessee		Financial Year(s)	Production	Grade-wise production			
				62-65%	60-62%	58-60%	55-58%
Old	PK Ahluwalia	2018-20	Average production per year (in MT)	2,05,690	0	0	0
			Average <i>percentage</i> share of total production	100%	0%	0%	0%
			Range of year-wise <i>percentage</i> share of total production	0-100%	0%	0%	0%
New	JSW Steel	2020-21	Total production (in MT)	78,097	34,574	0	0
			<i>Percentage</i> share of total production	69.31%	30.69%	0%	0%
		2021-22	Total production (in MT)	41,411	6,468	62,036	11,712
			<i>Percentage</i> share of total production	34.05%	5.32%	51.01%	9.63%

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.11: Gonua: Grade-wise production of lumps



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

³¹ Worked out by calculating the estimated production during 2020-22, based on the *percentage* of average production (grade-wise) by the old lessee during 2018-20 and the royalty payable thereon, minus the royalty and premium payable by the new lessee, as per the reported production, using the average ASP for the relevant years

It may be seen that, during the financial years 2018-19 to 2019-20, the old lessee (P K Ahluwalia) had reported the entire production (100 per cent) of lumps in the grade 62-65% Fe. However, under the new lessee (JSW Steel), this drastically reduced to 69.31 per cent in FY 2020-21 and 34.05 per cent in FY 2021-22. Further, in FY 2021-22, the new lessee reported the bulk of production (more than 51 per cent) in the grade of 58-60% Fe and some production (nearly 10 per cent) in the lowest grade of below 55% Fe, as shown in **Table 3.13** above.

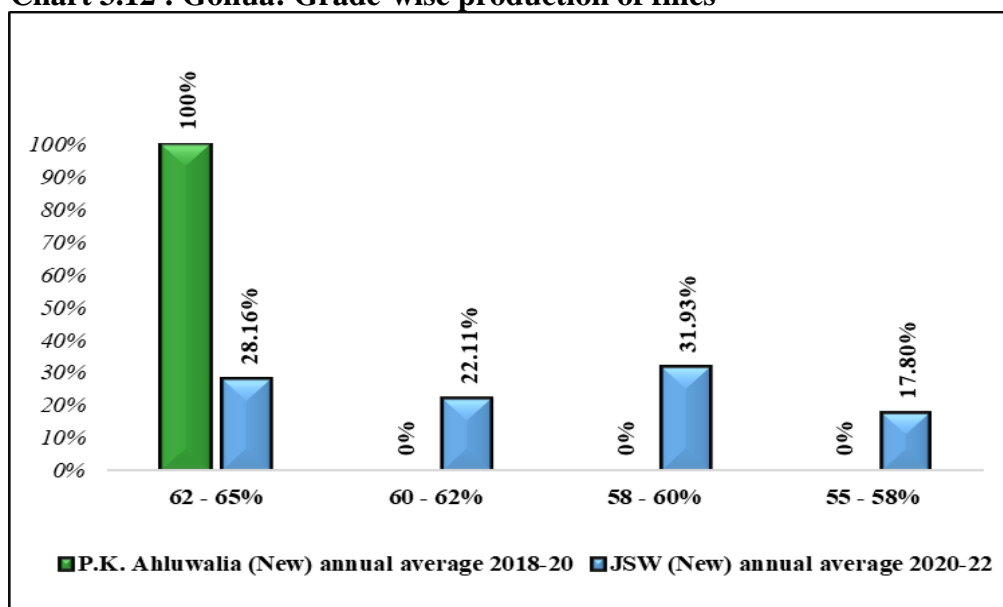
Audit also analysed the grade-wise production of iron-ore fines in Goua iron-ore mine as reported by the old lessee (P K Ahluwalia) and new lessee (JSW Steel), which is shown in **Table 3.14** and **chart 3.12** below:

Table 3.14: Grade-wise production of fines

Lessee	Financial Year(s)	Production	Grade-wise production				
			62 - 65%	60 - 62%	58 - 60%	55 - 58%	
Old	PK Ahluwalia	2018-20	Average production per year (in MT)	2,04,660	0	0	0
		Average <i>percentage</i> share of total production	100%	0%	0%	0%	
		Range of year-wise <i>percentage</i> share of total production	0-100%	0%	0%	0%	
New	JSW Steel	2020-21	Total production (in MT)	3,25,800	2,56,687	0	0
		<i>Percentage</i> share of total production	55.93%	44.07%	0%	0%	
	2021-22	Total production (in MT)	83,051	64,299	4,63,590	2,58,478	
		<i>Percentage</i> share of total production	9.55%	7.40%	53.32%	29.73%	

Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.12 : Goua: Grade-wise production of fines



Source : Calculation by Audit, based on the annual production reported in the i3MS portal

It may be seen that, during the financial years 2018-19 to 2019-20, the old lessee (P K Ahluwalia) had reported the entire production (100 per cent) of fines in the grade 62-65% Fe. However, under the new lessee (JSW Steel), this drastically reduced to 55.93 per cent in FY 2020-21 and further down to only

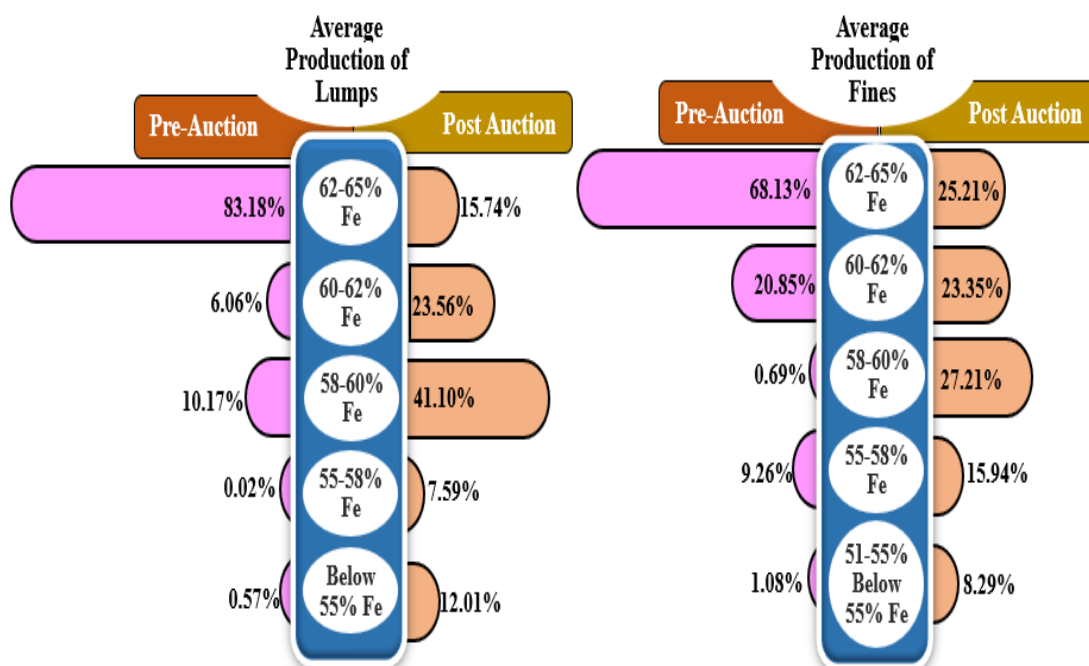
9.55 per cent in FY 2021-22. Further, in FY 2021-22, the new lessee reported the bulk of production (more than 53 per cent) in the grade 58-60% Fe and significant production (30 per cent) in the lowest grade of below 55% Fe, as shown in **Table 3.14** above.

Due to this abrupt and drastic decline in the grade (% of Fe content) of production of iron-ore lumps and fines, royalty payment was made on lower rates, for the lower grades reported by the new lessee. Changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹185.15 crore³², for the years 2020-21 and 2021-22 in the form of lesser royalty and premium as detailed in *Appendix-VI*.

Impact of reporting of lower grade of iron-ore

A summarised comparison of the production of iron-ore lumps and fines of different grades reported by the old and new lessees of the six iron-ore mines is shown in **Chart 3.13** below:

Chart 3.13: Flow chart showing grade-wise comparison of production of iron-ore lumps and fines



Source: Prepared by Audit, based on the annual production reported in the i3MS portal

It is evident from the above sub-paragraphs, tables and charts that, after auction of leases under MMDR (Amendment) Act, 2015, there was an inexplicable and steep decline, in the reported production of higher grade of iron-ore from the same mines, within a very short period of one-two years. It is highly improbable that the grades of mineral reserve, produced from all these

³² Worked out by calculating the estimated production during 2020-22, based on the percentage of average production (grade-wise) by the old lessee during 2018-20 and the royalty payable thereon, minus the royalty payable by the new lessee, as per the reported production, using average ASP for the relevant years

auctioned mines, would naturally witness an abrupt decline, within a short period of one or two years, especially when there was a consistent pattern in grade of iron-ore production (i.e. % of 'Fe' content) in the last six years' time under the old lessees. Thus, such a significant and sharp decline, in the production of higher grade of iron-ore lumps and fines, indicated a significant risk that the new lessees were misreporting the grade of iron-ore produced, in order to avoid the higher royalty that would have been payable on higher grades. Despite such abnormal decline in the grades of iron-ore lumps and fines, indicating the risk of misreporting, the State Government had not taken any steps to investigate the grades of iron-ore production reported by the new lessees as of March 2022.

For the six test-checked mines, changes in reported grades of production of lumps and fines after auction, as compared to the consistent pattern in the grade of production, as reported by the older lessees, have inevitably resulted in a revenue implication of approximately ₹4,162.77 crore for the years 2020-21 and 2021-22 in the form of lesser royalty and premium. The detailed figures and calculations in this regard, are contained in **Appendix-VII**.

In reply, the Government stated (September 2023) that a committee under the Chairmanship of Director of Mines and Geology was constituted (13 July 2021) to study the discrepancy in downgrading and misreporting of size of ore. Accordingly, the committee observed downgrading of ore in three leases and discrepancy in size of ore in six leases. On account of the violation an amount of ₹ 471.48 crore has been demanded. The lessees, against whom the demand has been made, have preferred revision of the cases before the Revision Authority. In addition, it was stated that drop of grade is noticed in present production system on the basis of sample drawn from working face of mines as per report of State Level Enforcement Squad (SLES) during their inspection of mines in Joda Circle.

It was noticed that the action as reported in the reply was taken after issue was raised in audit. Further, details of the basis of calculation of the demanded amount was not furnished to Audit. Regarding the report of SLES, it has been observed that the report points out difference of the overall average grade of the samples drawn from limited number of boreholes in the inspected mines and the average grades as mentioned in geological report, which ranged between 0% to 5.96%. However, Audit has pointed out the abrupt and abnormal decline in quantity and size of the ore production post-auction period by the new lessees vis-à-vis the average production of different grades reported themselves by the old lessees.

Therefore, the present status clearly indicates existence of system failure to timely detect the actual grades of lumps and fines produced, which adversely impacted the State Government revenue. Moreover, the Government also failed to develop an effective monitoring mechanism to ensure the actual grades of lumps and fines after auction in comparison to lumps and fines extracted by the previous lessees. Further, significant deficiencies were noticed by Audit in functioning of internal control and monitoring mechanism

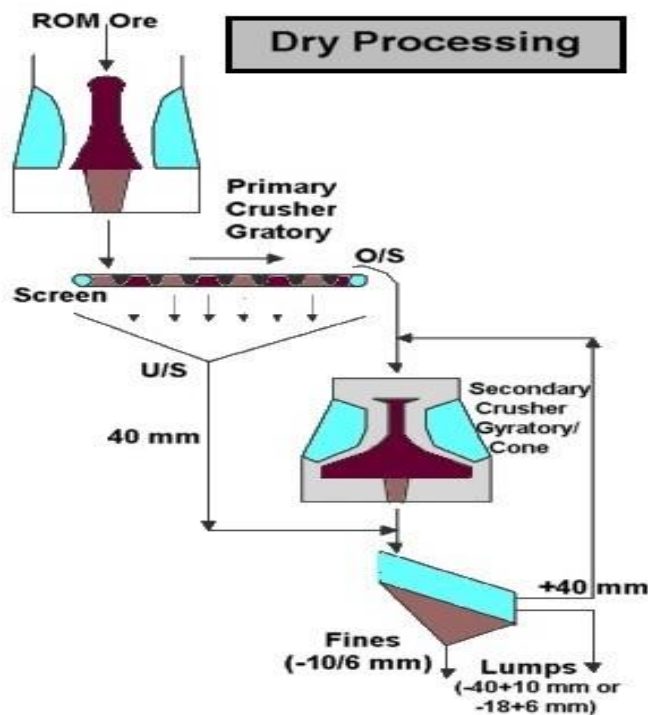
relating to inspection of mines by departmental officers (as commented in detail in Chapter VI of the report) and government may institute a 100% inspection and forensic audit of the abnormal decline that emerged in the test check conducted by Audit.

3.2.2 Reporting of iron-ore fines as screened fines

According to Section 9 of the MMDR Act, 1957, royalty is to be charged on minerals removed from or consumed within the lease area. Further, Rule 64-B of the Mineral Concession Rules, 1960, stipulates that, in cases where processing of Run-Of-Mine (ROM) ore is carried out within the leased area, royalty is chargeable on the processed mineral removed from the leased area.

Iron-ore, excavated from a mine, is termed as ROM ore and is usually found in the form of lumps. The ROM ores / lumps are processed in crushers. A typical crusher machine produces Calibrated Lump Ores (CLOs) (standard sized lumps of 5-18 mm, 10-30 mm, 10-40 mm *etc.*) and fines (0-10 mm), both of which are removed from the crusher, through separate screening systems. A schematic diagram of the process is shown below:

Chart 3.14: Flow chart showing dry processing of iron ore



Source: Indian Bureau of Mines, Vision 2020, published in the year 2011

Iron-ore CLOs, lumps and fines, are separately despatched from the lease areas and have different market prices. Typically, the market prices are the highest for CLOs, followed by lumps, and lowest for fines. As discussed previously, ASP for lumps is higher than the fines of the same grade of iron-ore and royalty is payable at a fixed *percentage* (15 *per cent*) of the ASP published by IBM. Therefore, for the same grade of iron-ore, the royalty payable on lumps is invariably higher than the royalty payable on fines.

As of March 2022, IBM had published ASP for lumps and fines, but not for CLOs. This issue was in the notice of the State Government, which had ordered (September 2010) that, “whenever Iron ore lump/ROM is subjected to

processing, iron fines are generated along with CLOs (Calibrated Lump Ores). In practice, iron ore lumps, CLOs and fines are separately despatched from the leasehold area. However, due to non-publication of rate for CLOs of iron ore by the IBM, royalty on CLOs is collected at the rate of lumps during despatch from the leasehold area. The sale prices of CLOs are always higher than the lumps. Due to non-publication of the rate of CLOs, the State Government loses huge sum of royalty. As there are separate rate of royalty for lumps and fines and the latter attracts less rate of royalty than the former, the generation of fines during processing of lumps causes loss of royalty to the Government with the CLOs being charged at the rate of lump. Thus, the lessee, if he had paid on ore without processing, could have paid a higher amount of royalty. After processing, he pays a lesser amount for fines, whereas for CLOs he pays at the same rate as lump ore. The Department has already taken up the matter with IBM to publish the sale price of CLOs with different Fe content, so that royalty on CLOs can be charged accordingly and royalty shall be assessed on iron ore lumps mined or on the processed from, *i.e.*, fines and CLOs whichever is higher”.

Audit conducted scrutiny of assessment records and monthly returns for 20 iron-ore mines (under 23 lessees) under two circles³³, and analysis of production data from FY 2007-08 onwards. Observations emerging from the scrutiny and analysis, are discussed below:

- i. After the State Government notification of September 2010, the DDMs of the mining circles had charged higher royalty for “crushed fines” equivalent to lumps, but charged lower royalty for “screened fines” equivalent to fines.
- ii. All mining leaseholders began to report production of fines separately as “crushed fines³⁴” and “screened fines³⁵”, starting from FY 2010-11, *i.e.* the year of issuance of the State Government notification of September 2010. During the previous period (2007-10), out of the 14 mines, for which production data was available, seven mines had not reported any production of “screened fines” – these leaseholders had reported production of only CLOs and “fines”/ “crushed fines”. Further, three mines had reported negligible production of “screened fines”, *viz.* less than five *per cent*; one mine had reported production of “screened fines” as 12 *per cent*; and three mines had reported production of “screened fines” as being between 25-38 *per cent*. However, after State Government notification of September 2010, the lessees of all these mines made a distinction between “screened fines” and “crushed fines” in their production reports.
- iii. In the above context, Audit observed a steadily declining trend in the reported proportion of CLOs and crushed fines (on both of which, royalty was charged at the higher rate of lumps), and an increasing trend

³³ DDM, Joda and DDM, Koira

³⁴ ROM processed by crushing to achieve specific size of lumps (Calibrated Lump Ore), the fines produced during the crushing process are called “crushed fines”.

³⁵ The screening process of ROM before crushing results in segregation of lumps (of various sizes) and fines, such fines are called “screened fines” or natural fines.

in the reported proportion of screened fines (on which royalty was charged at the lesser rate of fines), as detailed in **Table 3.15**.

Table 3.15: Proportion of production of CLO/Crushed fines (CF) and Screened fines (SF), by lessees

(Numbers: Percentage of total production)

Name of Mines	Name of the lessee	Proportion of	2007-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22		
Orghat	Rungta	CLO + CF	73	100	63	74	31	47	46	31	26	29	36	31	32		
		SF	27	0	37	26	69	53	55	69	74	71	64	69	68		
Nuagaon	Essel	CLO + CF	100	100	89	85	*NA	55	45	45	36	33	36	39	38		
		SF	0	0	11	15		45	55	55	64	67	64	61	62		
TRB	JSPL	CLO + CF	96	80	69	96	57	100	65	44	67	42	38	32	32		
		SF	4	20	31	4	43	0	35	56	33	58	62	68	68		
Petabada	MGM	CLO + CF	98	89	72	88	88	76	87	84	83	85	79	57	56		
		SF	2	11	28	12	12	24	13	16	17	15	21	43	44		
Nadidihi	BICO	CLO + CF	77	59	69	55	36	41	49	30	22	20	19	Lease expired			
		SF	23	39	31	45	64	59	51	70	78	80	81				
	ESL	CLO + CF	Operations started from February 2022 after auction												*NA		
		SF															
Thakurani	Kaypee	CLO + CF	*NA		42	45	30	46	32	24	23	17	17	Lease expired			
		SF			58	55	70	54	68	76	77	83	83				
	Arcelor Mittal	CLO + CF	Operations started from July 2020 after auction												*NA		
		SF															
Roida-II	K N Ram	CLO + CF	*NA	54	56	67	36	14	21	25	26	27	23	Lease expired			
		SF		46	44	33	64	86	79	75	74	73	77				
	Narbheram Power and Steel	CLO + CF	Operations started from October 2020 after auction												*NA		
		SF															
Balda	Serajuddin & Co.	CLO + CF	88	63	75	73	77	48	36	39	27	35	27	Lease expired			
		SF	12	37	25	27	23	52	64	61	73	65	73				
	Serajuddin & Co.	CLO + CF	Operations started from October 2020 after auction												*NA		
		SF															
Unchabali	Indrani Pattnaik	CLO + CF	93	48	*NA			47	49	45	36	30	28	14	18		
		SF	7	52				53	51	55	64	70	72	86	82		
Narayanaposi	AMTC	CLO + CF	58	70	53	49	42	17	39	56	44	42	49	Lease expired			
		SF	42	30	47	51	58	83	61	44	56	58	51				
	JSW	CLO + CF	Operations started from July 2020 after auction												35	30	
		SF													65	70	
Nuagaon	KJS Ahluwalia	CLO + CF	100	97	75	84	50	55	47	52	47	40	35	Lease expired			
		SF	0	3	25	16	50	45	53	48	53	60	65				
	JSW	CLO + CF	Operations started from July 2020 after auction												35	28	
		SF													65	72	
Jajang	Rungta	CLO + CF	100	100	*NA			50	43	33	38	35	31	36	30	Lease expired	
		SF	0	0				50	57	67	62	65	69	64	70		
	JSW	CLO + CF	Operations started from July 2020 after auction												27	25	
		SF													73	75	
Kurmitar	OMC	CLO + CF	100	100	100	100	*NA		76	66	76	76	77	76	71	32	
		SF	0	0	0	0			24	34	24	24	23	24	29	68	
Raikela	PTA	CLO + CF	100	90	93	97	*NA		96	97	97	95	94	87	67	73	
		SF	0	10	7	3			4	3	3	5	6	13	33	27	
Jaribahal	Patnaik Minerals	CLO + CF	100	69	100	Inoperative, no production						50	61	Lease expired			
		SF	0	31	0							50	39				
	Kashvi International	CLO + CF	Operations started from August 2020 after auction												*NA		
		SF															
Raikela	Geetarani	CLO + CF	100	95	89	67	Inoperative, no production						60	49	40		
		SF	0	5	11	33							40	51	60		
Gonua	PK Ahluwalia	CLO + CF	*NA												Lease expired		
		SF															
	JSW	CLO + CF	Operations started from July 2020 after auction												19	18	
		SF													81	82	

*NA : Data not available

Source: Audit analysis of the monthly returns of lessees

As can be seen from **Table 3.15**, out of the 14 mines for which production data for the period prior to 2010 was available, seven mines had not reported any production of screened fines, three mines had reported the same as being less than seven *per cent*, one mine as 12 *per cent*, and only three mines as between 23-42 *per cent*. However, the proportion of screened fines, produced from the same mines, as reported by the lessees, increased from FY 2010-11 onwards. By FY 2021-22, out of the 12 active mines, the reported proportion of screened fines ranged from 60 *per cent* to as high as 82 *per cent* in the case of 10 mines, 44 *per cent*, for one mine; and 27 *per cent*, for another mine.

It was further observed that 12 lessees³⁶, in their monthly returns for 122 months, had shown production of CLOs, but ‘nil’ production of “crushed fines”; all fines produced had been reported as “screened fines”. This could not be correct, as production of CLOs through crushing machines was not possible without production of “crushed fines”.

The significantly higher proportion of screened fines post notification should be viewed in the context of clear lower quantification of proportion of screened fines before the notification, where it ranged from two *per cent* to forty-two *per cent* compared to zero *per cent* to eighty-six *per cent* post notification. Since higher proportion of screened fines has a significant impact on royalty payable by the lessee to the government, a sudden inexplicable increase in screened fines is a clear and red flag as it creates risk of loss of potential revenue to the state exchequer and result in undue gain to the lessee.

It is also pertinent to mention in this regard that, during the same period, *i.e.*, FYs 2015-16 to 2021-22, an iron-ore mine in the same mining area, owned by SAIL (Central PSU), *viz.* Bolani (Koira circle), consistently reported ‘nil’ production of “screened fines” and its entire

Methodology adopted to quantify the monetary impact on revenue due to reporting of iron-ore fines as screened fines.

- Percentage of reported proportional quantity of CLO and Crushed fines to Screened Fines produced from 2007-10 (wherever available), *i.e.* prior to September 2010 notification reported by the lessees, has been calculated.
- That proportion was considered for calculation on the reported total production of CLO, Crushed Fines and Screened Fines during the years 2010-22, *i.e.*, after the notification of September 2010, to arrive at the CLO & Crushed fines to Screened Fines production.
- The royalty and premium leviable on category-wise production arrived at by Audit, has been calculated by using monthly ASP of the concerned actual grade (Fe content) published by Indian Bureau of Mines.
- The leviable royalty and premium have been compared with the actual royalty and premium levied on the reported category of production.

³⁶ (i) Unchabali-Indrani Patnaik (ii) Roida II-K N Ram (iii) Kurmitar-OMC (iv) Nadidih-BICO (v) Narayanposhi-AMTC (vi) Deojhar-Tarini Minerals (vii) Jaribahal- Patnaik Minerals (viii) Naibega Katupali-TP Mohanty (ix) Nuagaon-JSW (x) Jajang -JSW (xi) Gouua-JSW and (xii) Narayanposhi-JSW

production was reported as lumps and crushed fines, attracting higher royalty equivalent to lumps.

The separate reporting of “screened fines” by lessees; which attracted lesser royalty equivalent to fines, and abnormal increase in production of “screened fines” reported by the lessees, indicated that there had been the significant risk of misreporting of the “crushed fines” produced from processing of ROM ores/ lumps in crusher machines as “screened fines”. It can be concluded that this was done to avoid payment of higher royalty applicable on crushed fines equivalent to lumps in terms of the State Government order of September 2010.

Thus, post the State Government order of 2010, there was a significant decrease in reporting of crushed fines from the production pattern of crushed and screened fines as prevalent before the order, leading to revenue implication of ₹ 10,294.24 crore for the 20 test checked mines including royalty of approximately ₹5,841.80 crores and premium of approximately ₹4,452.44 crores (for four auctioned mines) for which complete information were available, as detailed in *Appendix-VIII*.

It may be highlighted that the increasing trend in reporting of “screened fines” had not been investigated by the department as of March 2022, which if conducted may lead to a substantial boost in revenue collection of the State.

In reply, the Government stated (September 2023) that iron ore produced from the quarry is generally fed to the screening/ crushing plant to separate the products into different size and the oversize products i.e. +30mm/ +40mm fed to the crusher unit to obtain the product -5mm, -10mm and 5-18mm/ 10-80mm size. Accordingly, all lessees have been instructed to maintain their Books of Account separately as screened fines as well as crushed fines.

The Government reply is not acceptable as it has not been intimated as to when the instructions for maintenance of separate books were issued and whether those were complied with by the lessees. The Government had not furnished the specific lessee-wise compliances to the audit observations and is silent on the core issue of misreporting of crushed fines as screened fines by the lessees to avoid payment of higher royalty. Further, it may also be mentioned that Audit found lapses in inspection of mines by departmental officers and specially constituted squads, shortage of testing chemicals and technical staff in mineral testing labs, inefficient functioning of check gates and monitoring of transportation of minerals, as discussed in detail in Chapter VI, on the subject of “Internal Controls and Monitoring”.

3.2.3 Reporting of size of iron-ore (lumps vs. fines)

While the previous section discussed the risk of misreporting of fines as skewed towards screened fines, in view of the differential royalty payable on the types of fines, this section examines the trend of reporting of lumps and fines in the period subsequent to the introduction of the auction methodology for allocation of mines.

Scrutiny of data, of eight auctioned mines, showed that, in case of five out of these eight mines, there had been a sharp decline in the proportion of lumps and increase in the proportion of fines, as reported by the new lessees, in

comparison to the old lessees. The mine-wise production of lumps and fines, as reported by the old and new (auctioned) lessees, is detailed in **Table 3.16**.

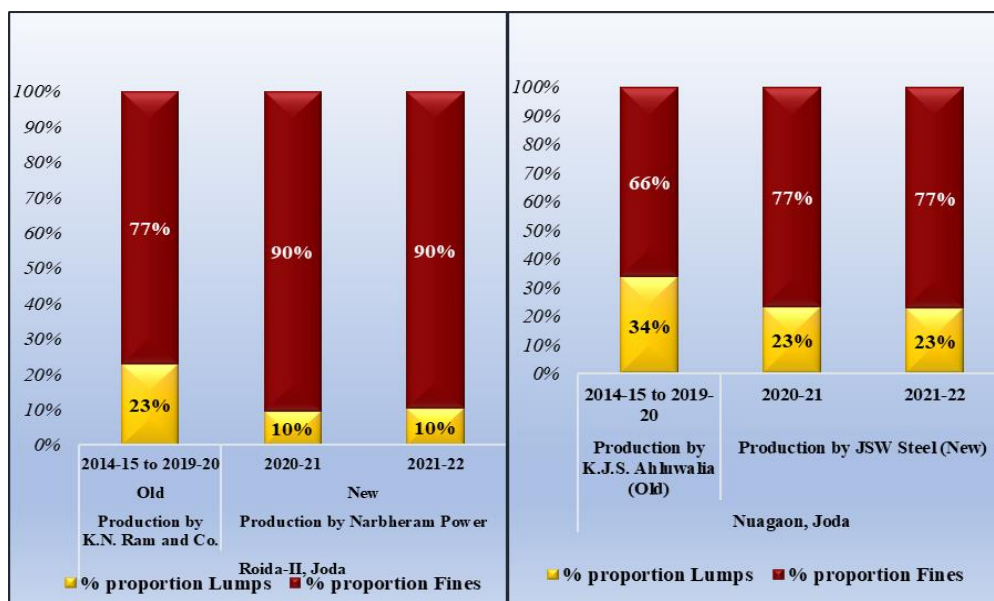
Table 3.16: Proportion of lumps and fines in regard to the old and new lessees

Sl. No.	Old/ Auctioned lessee	Lessee	Mine and Location	Financial Year	Average Production (MT)			Percentage of total production	
					Lumps	Fines	Total	Lumps	Fines
1	Old	K.N. Ram & Co.	Roida-II, Joda	2014-15 to 2019-20	4,83,463.789	16,18,374.41	21,01,838.2	23	77
	New	Narbheram Power & Steel		2020-21	1,36,310.15	12,74,030.66	14,10,341	10	90
				2021-22	2,44,121.12	21,16,050.88	23,60,172	10	90
2	Old	K.J.S. Ahluwalia	Nuagaon, Joda	2014-15 to 2019-20	15,56,036.63	30,55,474.32	46,11,510.95	34	66
	New	JSW Steel		2020-21	9,63,742.85	31,83,357.75	41,47,100.6	23	77
				2021-22	14,38,395	48,92,392	63,30,787	23	77
3	Old	Patnaik Minerals	Jaribahal, Joda	2018-19 to 2019-20	5,39,838.975	5,58,001.495	10,97,840.47	49	51
	New	Kashvi International		2020-21	1,84,800.2	5,96,231.8	7,81,032	24	76
				2021-22	2,91,447.5	7,19,876.5	10,11,324	29	71
4	Old	P.K. Ahluwalia	Gonua, Koira	2018-19 to 2019-20	2,05,690	2,04,660	4,10,350	50	50
	New	JSW Steel		2020-21	1,12,671	5,82,487	6,95,158	16	84
				2021-22	1,21,627	8,69,418	9,91,045	12	88
5	Old	AMTC	Narayanposi, Koira	2014-15 to 2019-20	12,86,718.68	17,04,452.66	29,91,171.34	43	57
	New	JSW Steel		2020-21	10,10,508	24,78,372	34,88,880	29	71
				2021-22	12,23,171.16	45,70,924.46	57,94,095.62	21	79

Source: Lessee-wise production data of i3MS

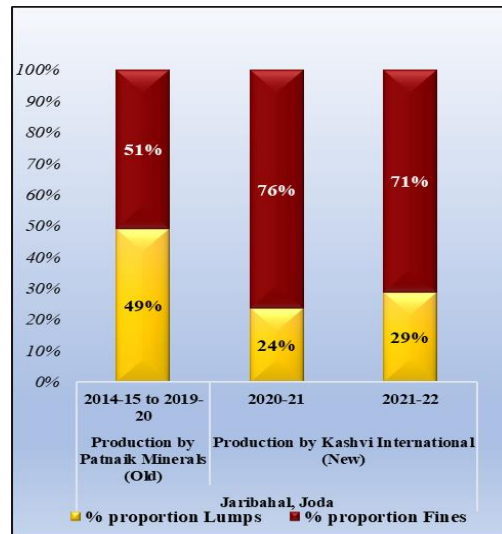
Chart 3.15: Proportion of Lumps and Fines in regard to the Roida-II iron ore mine

Chart 3.16: Proportion of Lumps and Fines in regard to the Nuagaon iron ore mine



Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.17: Proportion of Lumps and Fines in regard to the Jaribahal iron



Source: Calculation by Audit, based on the annual production reported in the i3MS portal

Chart 3.18: Proportion of Lumps and Fines in regard to the Gonua iron ore

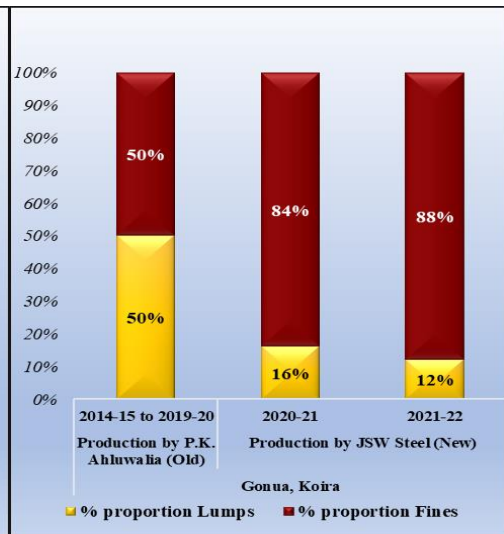
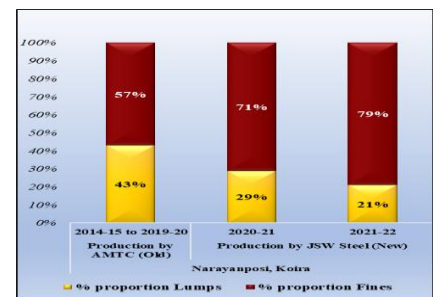


Chart 3.19: Proportion of Lumps and Fines in regard to the Narayanposi



Source: Calculation by Audit, based on the annual production reported in the i3MS portal ore mine

It can be seen from the above table and charts that, during the period 2014-20, the proportion of lumps produced in different mines, was reported by the old lessees, to be in the range of 23 per cent to 50 per cent. It declined abruptly in FY 2020-21, to between 10 per cent and 29 per cent, while the proportion of fines showed a concomitant increase. It may be noted that with the introduction of the auction regime, the abrupt change in the reported proportion of lumps and fines, for all of the above mines, was at least 10 per cent; and the change was a steep 25 per cent in case of Jaribahal (Joda), and 34 per cent in case of Gonua (Koira).

It is implausible that the nature of mineral reserves, produced from all these auctioned mines, would naturally undergo an abrupt variation, in a short period of one-two years. Thus, such a significant and sharp change in the reported proportion of lumps (decline) and fines (increase), indicates a high probability that lessees were misreporting the production of lumps, as fines, in order to avoid the higher royalty payable on lumps.

The lessees in these five cases are required to pay premium at higher rates as settled in auction (90.90% to 150% of the price of mineral notified by IBM) over and above payment of applicable royalty. In such a scenario, the risk of misclassification of ore produced to minimize the liability towards payment of premium cannot be ruled out.

In reply, the Government stated (September 2023) that a committee under the Chairmanship of Director of Mines and Geology was constituted (13 July 2021) to study the discrepancy in downgrading and misreporting of size of ore. Accordingly, the committee observed discrepancy in size of ore in six leases.

In addition, the State Government decided (28 April 2021) for modification of stacking and sampling exercise to be carried out for removal/ transportation of minerals from the Mines sources. As per the guidelines, the terms and expression introduced are required to tender online request through i3MS application interface in form "S" and the in-person mandatory supervision of the Junior Mining Officer/ Assistant Mining Officer for the sample collection process including random generation of sampling points, the collection of the ore via trenching and sectioning techniques, the mixing, bagging of primary, secondary and umpire samples have been introduced.

However, the fact remains that, despite constitution of a committee in July 2021, reporting of size of iron ore continued to be very different, with lesser share of lumps, from the previous lessees, as can be seen in the production data compiled in Table 3.16. Moreover, the working of internal control and monitoring mechanism of the State Government was very weak, as commented in detail in Chapter VI of the report. In this scenario, Audit could not draw any assurance that there was correct reporting of the actual sizes of lumps and fines extracted in post-auction period.

3.3 Wide variations in the reported *ex-mine* prices of iron-ore

As per Rule 64D of the Mineral Concession Rules, 1960, and Rule 39 (3) of the Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, wherever the royalty, in respect of any mineral, is to be paid on an *ad valorem* basis, it shall be calculated at the specified *percentage* of the average sale price of such mineral grade/ concentrate, for the month of removal/ consumption, as published by IBM. Under Rule 42 of the Rules *ibid*, the *ex-mine* price (EMP) (also termed Pit Mouth Value, *i.e.* PMV), reported by the lessees in their monthly returns, shall be used to compute the average sale price of the mineral grade/ concentrate.

In the case of iron-ore, royalty is to be paid *ad valorem*. Thus, in terms of the above rules, royalty on iron-ore is worked out as a fixed *percentage* of the average sale price (ASP) notified by IBM (on a monthly basis, State-wise) for different grades (having different iron/ Fe content) and the classification (lumps or fines) of iron-ore. IBM calculates the ASP³⁷ based on the grade-wise lumps and fines production and sales data, as reported³⁸ by the lessees every month, in a prescribed format³⁹. Thus, the production and sales data, reported by lessees, is the input on which the ASP is worked out, and there is a risk of underreporting of the sale price by lessees, which would lower the ASP, and, consequently, the royalty payable.

In the context of royalty being charged on *ad-valorem* basis from August 2009, the State Government had observed (February 2011) that it was important to ascertain the actual PMV of different mines, so that Government

³⁷ IBM calculates the ASP considering the *Ex-Mines* Price (EMP) of only non-captive sales of iron-ore using the weighted-average method

³⁸ Under Rule 42 of the Rules *ibid*, the *ex-mine* price, reported by lessees in their monthly returns, shall be used to compute the average sale price of the mineral grade/ concentrate

³⁹ All lessees are required to report the actual production and sales data, in the prescribed form F1, on a monthly basis, to IBM, with a copy to State Government.

does not stand to lose towards royalty on account of under reporting of the PMV, by lessees. The State Government stated that it had observed wide variations in prices, for identical types and grades of iron-ore, in the same region, after examining the returns submitted by some lessees for September 2010, and it had, accordingly, issued instructions to all DDMs/ MOs, to verify the actual PMV prices, at different mines, properly.

In order to examine the reporting of *ex-mine* prices by lessees, Audit scrutinised records relating to ASP, as published by IBM, and EMP/PMV in respect of iron-ore lumps and fines (grade-wise), as reported by 12 lessees, under two mining circles⁴⁰, in their F1 returns, in respect of the grade 62-65% Fe, for both lumps and fines, for the period 2015-22.

The audit observations are discussed below:

3.3.1 Wide variations in the *ex-mine* prices, reported by the same lessees, for the same grade of iron-ore, for the same months

It was observed that the same lessees had reported widely varying EMPs, for the same grades of iron-ore, as sold to different buyers, during the same months.

Some examples of the large variations in EMPs, as reported by lessees, for the iron-ore grade of 62-65% Fe Lumps, during the same months, are shown in **Table 3.17**.

Table 3.17: Lessee-wise variation in EMP, by more than 200 per cent, for 62-65% Fe Lumps (includes CLO⁴¹), during the same month (instances for the period 2015-22)

(₹ per MT)						
Sl. No.	Month	Name of Lessee/Mine	Minimum EMP	Maximum EMP	Variation percentage	ASP of IBM
1	May-2015	Serajuddin & Co., Balda	1,600	4,400	275	3,521
2	August-2015	Serajuddin & Co., Balda	1,500	3,550	237	2,823
3	October-2015	Serajuddin & Co., Balda	1,400	3,133	224	2,434
4	February-2016	Rungta, Jajang	1,200	2,414	201	1,900
5	June-2016	Rungta, Jajang	1,000	2,504	250	1,745
6	July-2016	Rungta, Jajang	1,000	2,392	239	1,746
7	September-2016	Rungta, Jajang	1,250	2,669	214	1,744
8	October-2016	B.I.CO, Nadidihi	1,000	3,229	323	2,020
9	November-2016	Feegrade Rengalibeda Nadikasira	800	3,245	406	2,119
10	February-2017	Feegrade Rengalibeda Nadikasira	1,950	8,018	411	2,376
11	April-2017	Serajuddin & Co., Balda	1,100	3,400	309	2,759
12	May-2017	Serajuddin & Co., Balda	1,100	3,400	309	2,710
13	September-2017	B.I.CO, Nadidihi	1,000	3,850	385	2,604
14	November-2017	Feegrade Rengalibeda Nadikasira	1,000	3,800	380	2,711
15	December-2017	Feegrade Rengalibeda Nadikasira	1,000	4,984	498	2,992
16	January-2018	B.I.CO, Nadidihi	1,000	5,547	555	3,825
17	June-2018	Feegrade Rengalibeda Nadikasira	1,000	5,500	550	4,094
18	September-2018	Serajuddin & Co., Balda	1,350	5,500	407	4,585

⁴⁰ Joda and Koira Mining Circles

⁴¹ Calibrated Lump Ores (CLO) which are of different sizes like 5-18mm 10-30mm, etc., produced after processing (crushing and screening) of iron-ore lumps

Performance Audit of Systems and Controls in Assessment and Collection of Revenue from Major Minerals for the year ended March 2022

Sl. No.	Month	Name of Lessee/Mine	Minimum EMP	Maximum EMP	Variation percentage	ASP of IBM
19	March-2019	K.J.S. Ahluwalia (Nuagaon)	1,855	9,148	493	3,703
20	June-2019	Feegrade Rengalibeda Nadikasira	1,700	4,800	282	3,468
21	August-2019	Feegrade Rengalibeda Nadikasira	1,600	4,300	269	3,417
22	November-2019	Feegrade Rengalibeda Nadikasira	1,700	4,350	256	3,189
23	February-2020	Feegrade Rengalibeda Nadikasira	1,700	5,045	297	3,672
24	September-2020	Rungta Sons, Oraghat	2,600	6,750	260	3,325
25	October-2020	Rungta Sons, Oraghat	2,714	6,750	249	4,285
26	May-2021	Rungta Sons, Oraghat	4,500	10,100	224	8,484
27	August-2021	Rungta Sons, Oraghat	4,720	11,700	248	10,711

Source: Calculation by Audit, based on EMP data from the F1 returns furnished by the lessees

As can be seen from **Table 3.17**, there were wide variations (ranging up to 555 per cent), between the minimum and maximum EMPs, reported by the same lessees, during the same months. For instance, during January 2018, the same lessee B.I. CO. (Nadidihi) (Sl.No.16), for the same grade of iron-ore (62-65% Fe Lumps), had reported minimum EMP of ₹1,000 per MT and maximum EMP of ₹5,547 per MT (variation of 555 per cent).

Some examples of large variations in EMPs, as reported by the lessees, for the iron-ore grade of 62-65% Fe Fines, during the same month, are shown in **Table 3.18**.

Table 3.18: Lessee-wise variations in EMPs, by more than 200 per cent, for 62 - 65% Fe Fines, during the same months (instances for the period 2015-22)

(₹ per MT)

Sl. No.	Month	Name of Lessee/Mine	Minimum EMP	Maximum EMP	Variation percentage	ASP of IBM
1	June-2015	K.N. Ram and Co. (Roida - II)	800	1,950	244	1,582
2	July-2015	Kaypee Enterprises (Thakurani)	1,600	4,105	257	1,598
3	March-2016	Feegrade Rengalibeda Nadikasira	836	1,865	223	1,180
4	April-2016	Feegrade Rengalibeda Nadikasira	831	1,781	214	1,132
5	September-2016	B.I.CO, Nadidihi	703	1,535	218	985
6	December-2016	Rungta Sons, Oraghat	695	1,565	225	1,113
7	January-2017	Kaypee Enterprises (Thakurani)	1,040	3,542	341	1,189
8	June-2017	Feegrade Rengalibeda Nadikasira	1,014	3,339	329	1,206
9	July-2017	Rungta Sons, Oraghat	802	1,769	221	1,161
10	December-2017	Rungta_Jajang Iron mines	1,115	2,662	239	1,435
11	January-2018	Rungta_Jajang Iron mines	1,103	2,720	247	1,875
12	April-2018	S.N. Mohanty KJST, Jaldihi	900	2,200	244	1,877
13	September-2018	Serajuddin & Co., Balda	950	2,700	284	2,344
14	November-2018	Serajuddin & Co., Balda	950	2,700	284	2,713
15	January-2019	Essel Nuagaon, Kadodih	1,658	4,915	296	1,956
16	December-2019	Rungta Sons, Oraghat	1,345	2,716	202	1,816
17	February-2020	Feegrade Rengalibeda Nadikasira	1,303	2,904	223	2,056
18	September-2020	Rungta Sons, Oraghat	1,081	3,749	347	2,157
19	January-2021	JSW Steel (Nuagaon)	2,157	6,431	298	4,916
20	April-2021	S.N. Mohanty KJST, Jaldihi	2,750	6,650	242	5,905

Source: Calculation by Audit based on EMP data from F1 returns furnished by the lessees

As in the cases of iron ore lumps, it can be seen from **Table 3.18** that there were wide variations (ranging up to 347 per cent), between the minimum and maximum EMPs, reported by the same lessees, during the same months. For

instance, during the month of September 2020, the same lessee, *i.e.* Rungta Sons (Oraghat) (Sl. No.18), for the same grade of iron-ore (62-65% Fe Fines), had reported minimum EMP of ₹ 1,081 per MT and maximum EMP of ₹ 3,749 per MT (variation of 347 *per cent*).

3.3.2 Wide variations in the *ex-mine* prices reported by different lessees, for the same grades of iron-ore, for the same months

There were also wide variations, in EMPs, amongst *different* lessees, for the same grades of iron-ore, during the same months.

Some examples of the large variation in minimum EMPs, as reported by different lessees, for the iron-ore grade of 62-65% Fe Lumps, during the same months are shown in **Table 3.19**.

Table 3.19: Variations in minimum EMPs, amongst different lessees, during the same months, for 62-65% Fe Lumps⁴² (instances for the period 2015-22)
(₹ per MT)

Month	Name of the Lessee/ Mine	Minimum EMP reported	Name of the Lessee/Mine	Minimum EMP reported	Variation percentage	ASP of IBM
June-2015	Seerajuddin & Co. (Balda)	1600	Rungta Sons, Oraghat	4,100	256	3,302
July-2015	Seerajuddin & Co. (Balda)	1600	Essel Nuagaon, Kadodih	3,893	243	3,139
October-2015	Seerajuddin & Co. (Balda)	1400	K.N. Ram & Co.(Roida -II)	2,800	200	2,434
February-2016	Rungta Jajang	1200	Feegrade Rbeda Nadikasira	2,170	181	1,900
June-2016	Rungta Sons Oraghat	1000	K.N. Ram & Co. (Roida -II)	2,075	208	1,745
July-2016	B.I.CO, Nadidihi	1000	K.N. Ram & Co. (Roida -II)	2,075	208	1,746
October-2016	B.I.CO, Nadidihi	1000	Essel Nuagaon, Kadodih	2,722	272	2,020
March-2017	Serajuddin & Co. (Balda)	1100	Essel Nuagaon, Kadodih	3,246	295	2,553
April-2017	Serajuddin & Co. (Balda)	1100	Essel Nuagaon, Kadodih	3,674	334	2,759
September-2017	Feegrade Rbeda Nadikasira	1000	Essel Nuagaon, Kadodih	3,494	349	2,604
December-2017	Feegrade Rbeda Nadikasira	1000	Essel Nuagaon, Kadodih	3,686	369	2,992
February-2018	B.I.CO, Nadidihi	1000	Essel Nuagaon, Kadodih	5,076	508	3,915
June-2018	Feegrade Rbeda Nadikasira	1000	Essel Nuagaon, Kadodih	4,788	479	4,094
September-2018	Serajuddin & Co. (Balda)	1350	Essel Nuagaon, Kadodih	6,257	463	4,585
October-2018	Serajuddin & Co. (Balda)	1350	Essel Nuagaon, Kadodih	6,001	445	4,672
January-2019	Serajuddin & Co. (Balda)	1800	B.I.CO, Nadidihi	4,600	256	3,947
June-2019	Feegrade Rbeda Nadikasira	1700	Essel Nuagaon, Kadodih	4,104	241	3,468
August-2019	Feegrade Rbeda Nadikasira	1600	Essel Nuagaon, Kadodih	3,931	246	3,417
October-2019	Feegrade Rbeda Nadikasira	1700	Essel Nuagaon, Kadodih	3,708	218	3,277
February-2020	Feegrade Rbeda Nadikasira	1700	Essel Nuagaon, Kadodih	4,809	283	3,672
June-2020	B.I.CO, Nadidihi	2000	Essel Nuagaon, Kadodih	3,208	160	3,128
September-2020	K.N. Ram & Co. (Roida - II)	1500	Essel Nuagaon, Kadodih	5,153	344	3,325
October-2020	K.N. Ram & Co. (Roida - II)	800	Essel Nuagaon, Kadodih	5,909	739	4,285
March-2021	Serajuddin & Co. (Balda)	1250	Essel Nuagaon, Kadodih	7,422	594	6,197
April-2021	Serajuddin & Co. (Balda)	1461	Essel Nuagaon, Kadodih	10,187	697	7,903
August-2021	Rungta Sons, Oraghat	4720	Essel Nuagaon, Kadodih	12,300	261	10,711
November-2021	K.J.S. Ahluwalia (Nuagaon)	2400	Essel Nuagaon, Kadodih	9,458	394	7,900
March-2022	Essel Nuagaon, Kadodih	4900	JSW Steel (Nuagaon)	6,921	141	8,341

Source: Calculation by Audit based on EMP data from F1 returns furnished by the lessees

As can be seen from **Table 3.19**, there were wide variations (ranging up to 739 *per cent*), between the minimum EMPs reported by different lessees, during the same months. For instance, based on various sale transactions for the same grade of iron-ore (62-65% Fe Lumps), during the month of October 2020, K N

⁴² Includes Calibrated Lump Ores (CLO), produced after sizing of iron-ore lumps

Ram & Co. (Roida-II) reported minimum EMP of ₹ 800 per MT, whereas Essel (Nuagaon, Kadodih) reported minimum EMP of ₹ 5,909 per MT.

Some examples of the variations in the minimum EMPs, as reported by different lessees, for the iron-ore grade of 62-65% Fe Fines, during the same months, are shown in **Table 3.20**.

Table 3.20: Variations in minimum EMPs amongst different lessees, during the same months, for 62-65% Fe Fines (instances for the period 2015-22)

(₹ per MT)						
Month	Name of the Lessee/Mine	Minimum EMP reported	Name of the Lessee/Mine	Minimum EMP reported	Variation percentage	ASP of IBM
June-2015	K.N. Ram & Co. (Roida-II)	800	Essel Nuagaon, Kadodih	2,096	262	1,582
September-2015	B.I.CO, Nadidihi	807	Feegrade Rbeda Nadikasira	1,962	243	1,455
December-2015	K.N. Ram & Co. (Roida-II)	1,025	K.J.S. Ahluwalia (Nuagaon)	1,700	166	1,436
January-2016	K.N. Ram & Co. (Roida-II)	1,093	K.J.S. Ahluwalia (Nuagaon)	1,630	149	1,399
June-2016	K.J.S. Ahluwalia (Nuagaon)	682	Rungta Jajang	1,357	199	1,086
September-2016	B.I.CO, Nadidihi	703	K.N. Ram & Co. (Roida – II)	1,150	164	985
December-2016	Rungta Sons, Oraghat	695	K.N. Ram & Co. (Roida – II)	1,350	194	1,113
January-2017	Rungta Sons, Oraghat	803	K.N. Ram & Co. (Roida – II)	1,350	168	1,189
April-2017	Rungta Sons, Oraghat	1,007	Indrani Patnaik, Unchabali	1,500	149	1,277
July-2017	Rungta Sons, Oraghat	802	K.N. Ram & Co. (Roida – II)	1,250	156	1,161
December-2017	S.N. Mohanty KJST, Jaldihi	900	K.N. Ram & Co. (Roida – II)	1,500	167	1,435
February-2018	S.N. Mohanty KJST, Jaldihi	900	Essel Nuagaon, Kadodih	2,198	244	2,050
April-2018	S.N. Mohanty KJST, Jaldihi	900	Essel Nuagaon, Kadodih	2,064	229	1,877
September-2018	Serajuddin & Co. (Balda)	950	Essel Nuagaon, Kadodih	3,138	330	2,344
November-2018	Serajuddin & Co. (Balda)	950	Essel Nuagaon, Kadodih	2,705	285	2,713
January-2019	Serajuddin & Co. (Balda)	950	Feegrade Rbeda Nadikasira	1,863	196	1,956
June-2019	Serajuddin & Co. (Balda)	1,600	Essel Nuagaon, Kadodih	2,283	143	1,931
September-2019	Rungta Sons., Oraghat	1,344	Essel Nuagaon, Kadodih	2,133	159	1,849
October-2019	S.N. Mohanty KJST, Jaldihi	1,200	Essel Nuagaon, Kadodih	2,138	178	1,764
February-2020	S.N. Mohanty KJST, Jaldihi	1,293	Essel Nuagaon, Kadodih	2,582	200	2,056
May-2020	Essel Nuagaon, Kadodih	1,588	K.J.S. Ahluwalia (Nuagaon)	2,595	163	1,696
September-2020	K.N. Ram & Co. (Roida-II)	800	Essel Nuagaon, Kadodih	3,064	383	2,157
October-2020	K.N. Ram & Co. (Roida-II)	800	Essel Nuagaon, Kadodih	3,513	439	2,562
January-2021	Serajuddin & Co. (Balda)	2,044	Essel Nuagaon, Kadodih	6,275	307	4,916
April-2021	Serajuddin & Co. (Balda)	1,166	Narbheram P&S (Roida II)	6,100	523	5,905
July-2021	Serajuddin & Co. (Balda)	4,000	Essel Nuagaon, Kadodih	10,115	253	8,364
November-2021	K.J.S. Ahluwalia (Nuagaon)	2,100	JSW Steel (Nuagaon)	7,116	339	5,799
March-2022	Rungta Sons, Oraghat	4,723	Essel Nuagaon, Kadodih	6,150	130	5,215

Source: Calculation by Audit based on EMP data from FI returns furnished by the lessees

As can be seen **Table 3.20**, there were wide variations (ranging up to 523 per cent), between the minimum EMPs reported by different lessees, during the same months. For instance, based on various sale transactions for the same grade of iron-ore (62-65% Fe Fines), during the month of April 2021, Serajuddin & Co. (Balda) reported minimum EMP of ₹1,166 per MT, whereas Narbheram Power & Steel (Roida-II) reported minimum EMP of ₹6,100 per MT.

Details of the lessee-wise minimum and maximum EMPs, in regard to the 12 test-checked lessees and ASPs published by IBM, for the period 2015-22, are given in **Appendix-IX**.

Impact of wide variations in ex-mine prices

These abnormal variations in ex-mine prices, across different grades, should have been a sufficient red flag, as highlighted in the State Government's

Circular of 2011. However, these variations were not analysed or taken up for examination/ investigation, and no action was initiated, at the level of the DDMs, Directorate or Government.

As the EMPs reported by the lessees were the determinant for calculation of ASPs by IBM, the reporting of low EMPs, by lessees, had the effect of lowering the ASPs of iron-ore, as published by IBM, and, consequently, the amount of royalty payable by the lessees.

In reply, the Government stated (September 2023) that the SLES team along with IBM has observed six mines who have reported lowering of Ex-Mines Price during the year 2022-23. The action as deemed proper is being taken by the IBM as per provision of MCDR, 2017. The details of the mines are (i) Badampahar Iron Ore Block of G. S. Mishra and Sons, (ii) Gorumahisani Iron Ore Block of G. S. Mishra and Sons, (iii) Patabeda Mines of MGM Minerals Ltd., (iv) Raikela & Tantra Mines of PTA Pvt. Ltd., (v) Raikela Mines of Geetarani Mohanty, and (vi) Sanindpur Mines of Rungta Sons Ltd. In consonance with audit observations, SLES team along with IBM also proved the lowering of Ex-Mines Price during the year 2022-23. However, the Government has not furnished the specific lessee-wise compliances on the Audit observations for the period 2015-22. Moreover, the fact remains that, Government failed to develop an effective monitoring mechanism to detect the wide variation in reporting and consequently lowering of Ex-Mines Price.

3.4 Non-utilisation/ non-disposal of low-grade iron-ore and chromite in lease areas

Rules 31 and 12 of the Mineral Conservation and Development Rules, 1988 and 2017, respectively, provide that mining operations should be carried out in a manner that ensures development of mineral deposits, conservation of minerals and protection of environment.

In this context, Audit examined records pertaining to lower grades of iron-ore and chromite, maintained in three mining circles (Joda and Koira for iron-ore, and Jajpur Road for chromite). The audit findings in this regard, are discussed below.

3.4.1 Non-utilisation of sub-grade iron-ore in violation of Mining plan

In the interest of systematic development of mineral deposits and conservation of minerals, IBM revised (October 2009) the threshold limit of iron-ore from 55% Fe to 45% Fe. This revision in the threshold limit implied that iron-ore of 45-55% Fe grade, earlier regarded as “mineral reject”, was to be deemed as useful for mineral recovery, utilisation, and marketability, either in its original mined grade, or in a higher grade produced after beneficiation⁴³. It was stated that mineral/ ore stacks above the 45% Fe limit should be properly maintained, indicating their quality and quantity, and inventories of such material should be updated monthly. In this context, DoM directed (December 2011) all DDMs / MOs to identify and submit reports, within two months, on all iron-ore resources with content of 45-55% Fe (termed “sub-grade” ores) lying

⁴³ Process of enrichment of mineral content, by which a higher grade of mineral can be produced from a lower grade of mineral, with volume loss

amongst the dumps of all mines. It was also directed that all lessees be instructed to maintain a separate account for the same.

Scrutiny of the monthly returns, furnished by the lessees, as well as of the approved mining plans of the 11 lessees, under two⁴⁴ circles, revealed the following –

- i. Identification of sub-grade iron-ore (45-55% Fe) from the dumps, in the lease areas of the lessees, had not been carried out, either by the lessees, or by the DDMs/ MOs, as of March 2022. In the absence of such identification, the department did not have information about the quantity of such useful ores lying unused in the dumps of various mining lease areas.
- ii. Study of the approved mining plans showed that these plans contained data on the existing dumps of sub-grade iron-ore, available in the mining lease areas. These stocks of sub-grade iron-ore (45-55% Fe), previously classified as mineral rejects, had accumulated in the mining lease areas, during production prior to FY 2015-16. Although these approved mining plans specified that such ore was to be despatched after processing / beneficiation or direct sale, it was observed that this sub-grade ore had not been disposed of as of March 2022, 4,29,09,486 MT of sub-grade iron ore, having average sale price of ₹7,886.78 crore, shown in the mining plans of eleven test-checked iron-ore mines⁴⁵ as having accumulated from mining prior to FY 2015-16, remained undisposed of and royalty amounting to ₹ 1,183.02 crore (as detailed in *Appendix-X*) remained unrealised. No action had been taken by the mining authorities against the lessees, in regard to the non-processing / beneficiation / sale of this sub-grade ore despite the stipulation made in the approved mining plans.
- iii. It was further noticed that the lessees had been directly selling sub-grade ore (45-55% Fe), out of their current production from mining activity, during 2015-22, in the market, without processing/ beneficiation. However, the sub-grade ore, already stocked in the dumps, from prior periods, had not been sold, as highlighted in point (ii) above. Further, no attempt was being made by the lessees, to enrich the mineral content of this sub-grade ore, for better utilisation in industry.

The mining of larger quantities of iron-ore (especially high-grade ores), without processing/ beneficiation of low-grade or sub-grade ore already mined and kept dumped in the lease areas for several years, was against the principle of sustainable use/ conservation of minerals in violation of Mining plan.

In reply, the Government stated (September 2023) that the ore having +45 to -55% Fe is stored separately because of its non-utilisation in the Plant.

⁴⁴ DDM, Joda and DDM, Koira

⁴⁵ Jajang of M/s Rungta Mines, Unchabali of M/s Indrani Patnaik, Balda Block of M/s Seerajudin & Co., Roida-II of M/s K. N. Ram & Co., Thakurani of M/s KayPee Enterprises, Nadidih of Feegrade & Co., Narayanposhi of M/s Aryan Mining & Trading Corporation, Kurmitar of M/s OMC, Sanindpur of M/s Rungta Sons, KJST Iron ore Mines of S N Mohanty, and Orghat of M/s Rungta Sons

These quantities of sub-grade Iron ore can be utilised in near future for pellet making, beneficiation or export.

However, the fact remains that without beneficiation of sub-grade ore already mined and kept dumped in the lease areas for several years, was against the principle of sustainable use/ conservation of minerals.

3.4.2 Non-accounting of excavated sub-grade iron-ore in auctioned mines

As per instructions of the Steel & Mines Department and DoM (October 2020), a committee [consisting of representatives from the Directorate of Mines, Odisha Mining Corporation (OMC), and lessees] was formed for identifying and taking over of undisposed assets/ stock of minerals and infrastructure, relating to 28 expired mining leases, which had been auctioned and settled in favour of new lessees. The entire stock of minerals was to be taken over by OMC, on an as-is-where-is basis, after conducting joint verification of the stock.

Audit noticed that, for the 28 leases that had expired in March 2020 and had been settled in favour of new lessees after auction, OMC had taken over the undisposed stock of mineral reported through the returns of these leases. However, this did not include the dumps of sub-grade iron-ore lying in the lease areas, as these had not been reported in the returns submitted by the lessees. As a result, these dumps of sub-grade iron-ore had neither been taken over by OMC, nor accounted for in official records. Hence, there was a risk of theft or unauthorised sale/ disposal of these dumped minerals, lying in the lease areas.

In reply, the Government stated (September 2023) that as per the previous mining plan of the ex-lessee, the sub-grade ore pertaining to +45 -55% Fe grade was stored separately which are the natural rights of the auction holder as per vesting orders issued in their favour. Thus, the sub-grade ore have been accounted for in favour of present lessee.

However, the fact remains that the dumps of sub-grade iron-ore lying in the lease areas, had not been reported in the returns submitted by the new lessees for which the dumps could not be accounted in the official records.

3.4.3 Non-utilisation of beneficiable and sub-grade chromite in violation of mining plan

Indian Minerals Yearbook 2019 published by IBM stated that more than 96 per cent of chromite resources in India are located in Odisha, mostly in Jajpur district.

As per the approved mining plans of South Kaliapani and Sukrangi chromite mines of M/s. OMC Ltd. for the period 2015-22, the beneficiable ore (30 to 40 per cent Cr₂O₃⁴⁶), in the South Kaliapani chromite mines, and the sub-grade

⁴⁶ Chemical name of Chromium Oxide

ore (10 to 30 per cent Cr₂O₃) of the South Kaliapani and Sukrangi chromite mines, were to be beneficiated, to obtain concentrate grade⁴⁷.

Scrutiny of records at the Jajpur Road mining circle, relating to assessment, as well as monthly returns and approved mining plans of the South Kaliapani and Sukrangi mines, revealed that:

- i. In the South Kaliapani mines, the stock of chromite of low-grade, up to 40 per cent Cr₂O₃, increased from 9,10,083.865 MT (as of 1 April 2015) to 11,37,125.07 MT (as of 31.03.2022). During 2015-17, only 77,589.70 MT (about seven per cent of the closing stock) of low-grade chromite had been beneficiated and converted to marketable concentrate ore grade. However, during 2017-22, no low-grade ore was beneficiated. This indicated that a huge quantity of low-grade ore had been lying in the lease area, without beneficiation for making it marketable for sale. Non-beneficiation and non-disposal of 11.37 lakh MT of low-grade chromite resulted in non-realisation of royalty of ₹36.76 crore⁴⁸.

In this context, it was further observed that M/s OMC Ltd. (lessee of the South Kaliapani mines) had sold 88,338.42 MT of low-grade chromite, during June to October 2020, without beneficiation and conversion to concentrate grade. Since the royalty payable on low-grade chromite (below 40% Cr₂O₃) is much lower than the royalty payable on beneficiated (concentrate) ore⁴⁹, chromite direct sale of low-grade ore, without beneficiation in violation of Mining plan, resulted in loss of royalty to the State Government, amounting to ₹2.72 crore, as detailed in *Appendix-XI*.

- ii. In case of the Sukrangi mines, no beneficiation of low-grade ore had been carried out. The closing stock of low-grade ore below 40 per cent Cr₂O₃ (produced during 2015-22), dumped without beneficiation, was 3,78,229.85 MT. Non-disposal of the 3.78 lakh MT of low-grade chromite resulted in non-realisation of royalty amounting to ₹12.23 crore⁵⁰ which was in violation of Mining plan.

In reply, the Government stated (September 2023) that, prior to 2015-17 and during 2015-17 the sub-grade ore produced in Kaliapani Chromite Mines was beneficiated in their beneficiation plant. Thereafter, beneficiation plant located at Kaliapani is under renovation. So, the sub-grade chromite ore could not be processed. After renovation of beneficiation plant the sub-grade chrome ore of both Kaliapani and Sukrangi mines shall be beneficiated for production of high-grade saleable chrome ore. However, the fact remains that, Government failed to develop an effective plan to ensure beneficiation of all low-grade ore below 40 per cent of Cr₂O₃ as of September 2023.

⁴⁷ Concentrate grade of chromite is obtained on beneficiation of low-grade chromite fines. Separate ASP is published by IBM for the concentrate grade

⁴⁸ 11,37,125.07 MT × ₹323.25 (lowest rate of royalty of chromite for March 2015) = ₹36,75,75,679

⁴⁹ For instance, in the month of October 2020, royalty on low-grade chromite below 40% Cr₂O₃ was ₹340.65 per MT, whereas the royalty of beneficiated ore (concentrate) was ₹1,884.60 per MT

⁵⁰ 3,78,229.85 MT × ₹323.25 (lowest rate of royalty of chromite for March 2015) = ₹12,22,62,799

Recommendations:

Government should:

- 2. carry out a complete and timely investigation across all auctioned mines into the sudden reporting of lower grades of iron-ore as found in test check by Audit, to ascertain willful or deliberate misreporting in order to avoid payment of higher royalty and premium.**
- 3. put in place a policy/ mechanism for preventing leakage of revenue due to the significant risk of misreporting of category and sizes of iron-ore when reported as fines and the rapid increase of screened fines on which the royalty and premium are lower.**
- 4. re-verify the grade-wise mineral production of all the mines, in coordination with IBM, to ascertain the actual grades and sizes of iron ore and mix of lumps, crushed fines and screen fines in order to arrive at the range for each mine and also to realise appropriate royalty and premium. This range should be integrated in i3ms to ensure system-based control over reporting of grade, size and mix of minerals by the respective lessee.**
- 5. investigate the reporting of low ex-mines prices by lessees, to ascertain whether this was being done deliberately in order to reduce the average sale price and, consequently, the royalty and premium payable.**
- 6. fix responsibility on the concerned officers for lack of adequate monitoring and inspection regarding exercising quality checks (grade, category and size) in production of minerals.**