

Chapter II

Production, Evacuation and Sale of Iron Ore

2.1 Production of Iron ore

The production of Iron ore in India is through captive mining (owned and operated by individual Steel Plants, both in public and private sectors mainly for their own use) as well as non-captive mining (for domestic consumption and exports). In the non-captive segment, major companies in the public sector are NMDC Limited, which is a Central Public Sector Enterprise (Production during 2016-17: 34 million tons) and Odisha Mining Corporation Limited, which is a State Public Sector Enterprise of Odisha Government (Production during 2016-17: 6.37 million tons).

The Company carries out production of Iron ore through seven operative mines with an aggregate production capacity of 44 million tons per annum (MTPA), as shown below:

Table 2.1 – Location and Capacity of Mines of NMDC Ltd

(Position as on 31 March 2017)

State	Location	Mine	Capacity (MTPA)
Chhattisgarh	Kirandul Complex, Bailadila Sector	Deposit-14	5
		Deposit-11C	7
		Deposit-11B	7
	Bacheli Complex, Bailadila Sector	Deposit-5	8
		Deposit-10 and 11A	5
Karnataka	Donimalai Sector	Donimalai Mine	5
		Kumaraswamy Mine	7

Iron ore is mined by drilling and blasting after removal of overburden, i.e., top soil. The ore is loaded into Dumpers through excavators and transported to a stationary crushing plant. The crushed ore is screened into different sizes in the Screening Plant and carried through conveyor belt to the respective stock yards. Thereafter, the ore is transported through rail, slurry pipeline and by road to the designated places of customers. Exports are made through MMTC Limited, a channelizing agency, from Visakhapatnam Port.

The Company produces various sizes of Iron ore products¹ and sells mainly through Long Term Agreements (LTAs) with domestic and international buyers except in Donimalai sector where the entire sales are made through e-auction as per the directions of the Hon'ble Supreme Court. A small quantity (about 10 per cent) is also sold through spot market in Bailadila sector.

¹ Run of Mine (ROM), Directly Reduced Calibrated Lump Ore (DRCLO), Lump and Fines. ROM means ore extracted directly from the mines with size of 10 millimeters (mm) to 150 mm having 65.5 per cent Iron (Fe) content. DRCLO is having 67 per cent Fe with size of 10 mm to 40mm. Lump ore is having 65.5 per cent Fe with size of 6 mm to 40 mm and Fine ore is having 64 per cent Fe with size less than 10 mm.

2.1.1 Under fixation of MoU targets for Iron ore production

The Company annually enters into a Memorandum of Understanding (MoU) with its Administrative Ministry i.e., Ministry of Steel (MoS) wherein the targets for production, sales, progress to be achieved in respect of projects undertaken etc., are fixed as per the guidelines issued by the Department of Public Enterprises (DPE) from time to time. The details of the targets fixed in the MoU in respect of production of Iron ore for the years 2011-12 to 2016-17 and actual achievement made thereof are as under:

Table 2.2 – MoU Targets for Production of Iron Ore and Actual Achievement

Year	MoU targets ² (Million Tons)	Actual Production achieved (Million Tons)	Achievement (In %)
2011-12*	-	27.26	-
2012-13	26.40	27.18	103
2013-14	26.00	30.02	115
2014-15	29.00	30.44	105
2015-16	33.00	28.57	87
2016-17	33.25	34.00	102

(* The actual production for 2011-12 has been taken for comparison with MoU target for 2012-13)

We observed that:

- The DPE guidelines on MoU stipulated that the targets should be realistic yet growth oriented. As such, the targets for a particular year should not have been less than the previous year's achievement. However, it may be seen from the above table that the MoU targets for production of Iron ore were fixed lower than the previous year's actual production upto the year 2014-15. For the year 2016-17, the target was set based on directions of Ministry in view of the ambitious growth plan projected by the Company in its Strategic Management Plan (SMP).
- The Company had total production capacity of 37 MTPA during the period 2012-16, which had increased to 44 MTPA after commissioning of 11-B project at Kirandul during August 2015. Against this capacity, the production target fixed by the company was 71, 70, 78, 89 and 76 *per cent* respectively for the years 2012-17.

Further, based on the suggestions of Ministry (27 October 2014), a Strategic Management Plan was prepared and finalized by the Company in September 2016 which envisaged production of 50 MTPA of Iron ore by the year 2018-19. Given the average annual growth rate of production at 5 *per cent* (approx.) only during the last five years (2012-17) and considering the unfinished stages of completion of the requisite facilities for enhancement of production, a further increase in production by 16 MTPA representing 47 *per cent* within a limited period of two years appears to be formidable.

² Very Good level targets are basic targets fixed in MoU by Administrative Ministry which are to be achieved by the concerned CPSE.

The Management reply (March 2018) was silent on the reasons for fixation of lower targets. The Ministry stated (July 2018) that the production capacity was 37 MTPA upto 2015-16 which was increased to 39 MTPA on commissioning of 4th line in Screening Plant of Bachel Complex and it did not consider 7 MTPA capacity of Deposit-11B of Kirandul Complex as other processing and evacuation facilities were planned in subsequent years. Accordingly, the production target worked out to 71, 70, 78, 89 and 85 per cent during 2012-17.

The reply is not acceptable as the production capacity of 7 MTPA relating to Deposit-11B should have been factored in while formulating the production target as the Crushing Plant and Downhill Conveyor were commissioned in August 2015 and production was carried out in 2015-16 and 2016-17. Accordingly, the production targets worked out to 71, 70, 78, 89 and 76 per cent only during 2012-17.

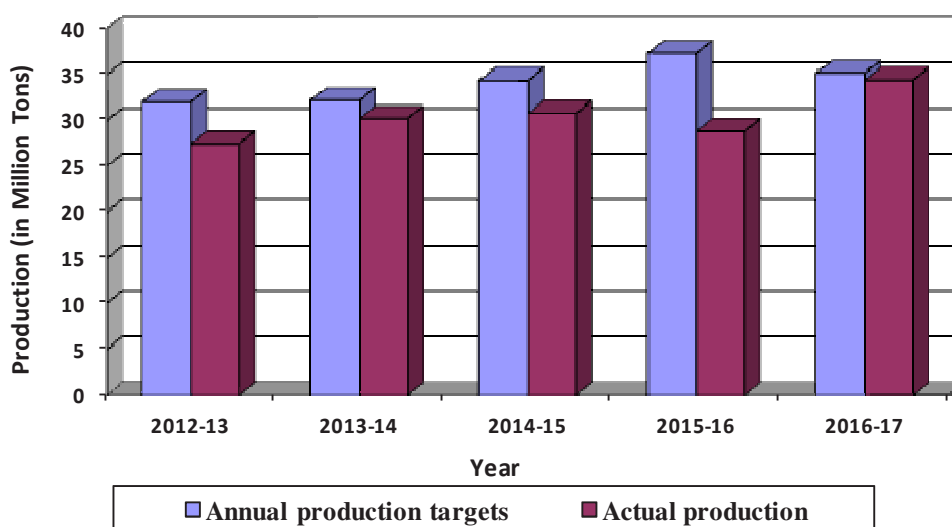
2.1.2 Shortfall in actual production vis-à-vis Corporate targets

Apart from the MoU targets, the annual production targets were also fixed internally in the Annual Corporate Meetings held by the CMD with Functional Directors and heads of projects. The actual production of the Company against the annual production targets and the production capacity during last five years ending 31 March 2017 was as under:

Table 2.3 – Internal Production Targets and Actual Achievement

Details	2012-13	2013-14	2014-15	2015-16	2016-17
Approved production capacity (in Million Tons)	37.00	37.00	37.00	37.00	44.00
Annual production targets - Internal (in Million Tons)	32.00	32.20	34.40	37.40	35.20
Actual Production (in Million Tons)	27.18	30.02	30.44	28.57	34.00
% of actual production to annual production targets	85	93	88	76	97
% of actual production to approved production capacity	73	81	82	77	77

Chart 2.1 - Internal Production Targets and Actual Achievement



We observe that the shortfall in actual production were due to non-availability of Essar Slurry pipeline (735 days in five years), stoppage of production due to saturation of stockpile³ (757 shifts in Kirandul and 807 shifts in Bacheli), lack of orders from the customers for lifting the quantities, Maoist problems (459 days in five years) and inadequate evacuation facilities i.e., short supply of railway rakes etc.

The above reasons for shortfall were accepted (March /July 2018) by the Management/ Ministry.

2.1.3 Unrealistic targets in Strategic Management Plan (SMP)

The Company had a Corporate Plan upto the year 2009-10. Thereafter, no Corporate Plan was formulated till the year 2015-16. Instead, production and other targets were fixed annually which was earlier commented upon in para 2.1 of CAG's Report No. 20 of 2012-13. In a review meeting held on 27 October 2014, the Administrative Ministry suggested for preparation of a vision document 'NMDC 2025' as the Company had intended to produce 75 MTPA by 2018-19 and 100 MTPA by 2021-22. The Consultant, M/s Accenture, appointed⁴ (January 2015) by the Company, after assessing the existing customers in the domestic market, potential volume of exports and captive consumption, suggested (May 2015) that the intended objective of achievement of production of 75 MTPA and 100 MTPA would be difficult in view of the following reasons:

- The global trend of over production of Iron ore would persist till the year 2025.
- The over-supply scenario of Iron ore would persist for the next 5 to 10 years owing to slump in Steel production capacity.

³ A stockpile is a pile or storage location for bulk materials, forming part of the bulk material handling process.

⁴ The Consultant, M/s Accenture was appointed for a fee of ₹ 0.57 crore.

- Even after taking into consideration the capacities of the proposed mines, the Company would be able to achieve a production of 87 MTPA only against the envisaged 100 MTPA.
- Further, to sell 75 / 100 MTPA the Company would need to look beyond the existing customers in domestic market for a volume of 29.2 MTPA and 45.2 MTPA over and above the requirement assessed for the Steel Plant that was being set up by the Company at Nagarnar, Chhattisgarh.

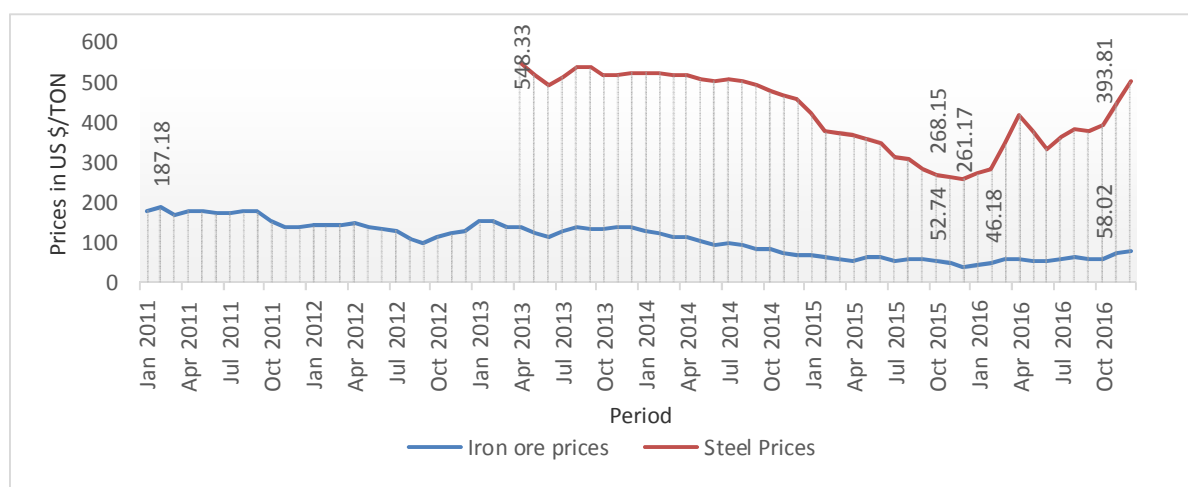
Despite the above opinion of the Consultant, the Company proceeded with the Strategic Management Plan (SMP) – Vision 2025 (October 2015) which envisaged to:

- Increase the Iron ore mining capacity to 75 MTPA by 2018-19 and 100 MTPA by 2021-22.
- Strengthen the exploration activities and forward integration to value added business (Pellet and Steel).
- Strategically diversify into other commodities based on growth potential relevant to NMDC and having significance to the country.
- Invest in other geographical locations selectively based on ‘mining and business potential’.

2.1.4 Revised Strategic Management Plan - Vision 2025

The projections and assumptions in SMP were revisited (February 2016) on account of likely continuance of subdued market condition in the foreseeable future, downward revision of long term price forecast of Iron ore by analysts and substantial increase of domestic Iron ore supplies particularly from Odisha. The trend of the international Iron and Steel prices for the years from 2011 to 2016 were as detailed below:

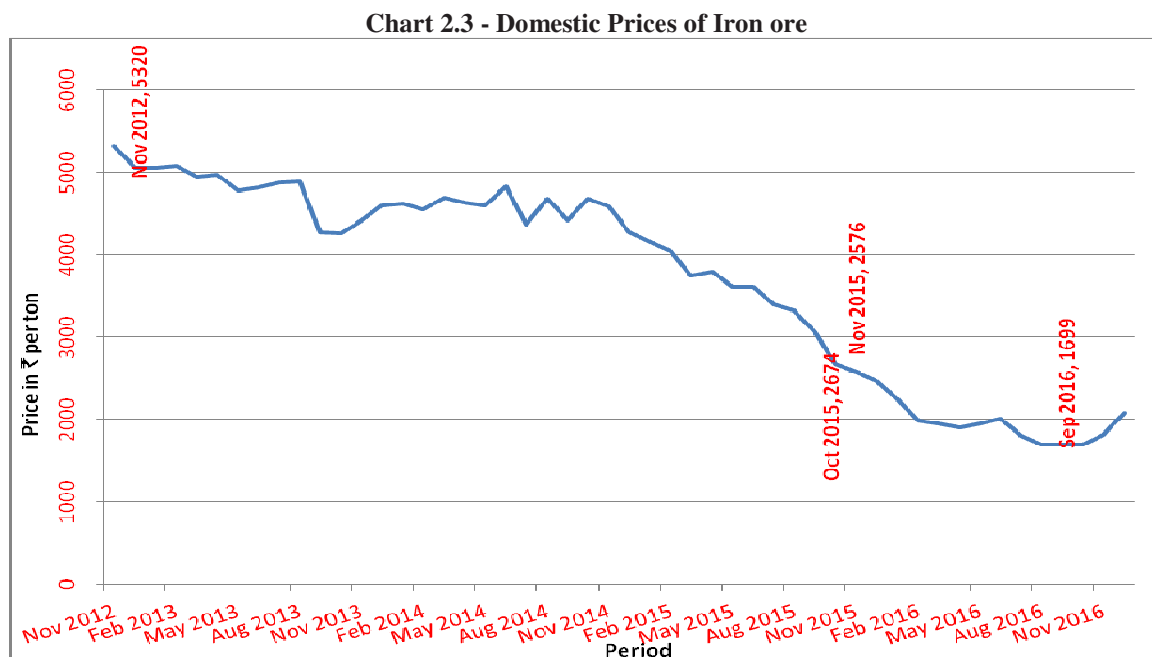
Chart 2.2 – International prices of Iron Ore and Steel



Source: Iron ore fines 62% Fe per metric ton rates and international steel prices (in USD) downloaded from Marketindex.com.au/iron_ore

It would be apparent from the above that at the time of preparation of the original SMP – Vision 2025 in October 2015, the international Iron ore prices had already fallen from its peak price of US \$187 (February 2011) to US \$53 (October 2015) indicating a downward trend. Similarly, the international Steel prices also showed a declining trend as the prices fell to US \$268 per ton during October 2015 from a peak level of US \$548 per ton in April 2013.

Domestic Iron ore price trend also showed that the prices were declining since November 2012 and the declining trend was continuing during October 2015 as shown below:



Source: Domestic Iron ore prices based on the average Iron ore prices reported by Joint Plant Committee (JPC)

This decline in international and domestic prices as indicated above was not factored in while finalising the targets in the original SMP. Therefore, the SMP was revised in September 2016. In the revised SMP, the targeted production capacity was reduced to 50 MTPA and 67 MTPA by 2018-19 and 2021-22 respectively against the original targets of 75 MTPA and 100 MTPA. In order to achieve the projections of the revised SMP, the Company planned for the following major facilities:

(i) Bailadila Sector:

- a) **Kirandul complex** – Construction of 12 MTPA Screening Plant⁵-III to cater to the capacity of Deposit-11B and Deposit-14
- b) **Bacheli complex** -
 - 4th line in Screening Plant of Deposit-10 & 11A to handle 7 MTPA
 - 5th line in Screening Plant of Deposit-5 to handle 10 MTPA
 - Upgradation of Downhill Conveyor System of Deposit-5 to handle 10 MTPA

⁵ Screening Plant segregates the extracted and crushed ore into fines and lump ore.

c) Development of Deposit-13 and Deposit-4 through Joint Venture Company

(ii) Donimalai Sector:

a) **Donimalai complex** – Construction of Screening Plant-II and Loading Plant-II.

(iii) Increase in evacuation facilities in Bailadila Sector:

- Doubling of Kirandul to Kothavalasa Railway line (KK Line)
- Construction of Railway line between Rowghat and Jagdalpur in Chhattisgarh
- 2nd slurry pipeline from Bachel to Nagarnar, Chhattisgarh

A review of the revised SMP and its implementation revealed that:

- Though the Company had made a clear projection of the enhanced production targets in the SMP which were to be achieved by 2018-19, the enabling action of setting up of various projects and infrastructure facilities were not in sync with the envisaged timelines.
- Appropriate initiative was not taken in formulating strategies to attract new customers except for floating Notice Inviting Tenders (NIT) in the webpage calling for potential buyers/bidders.
- Further, there were inordinate delays in securing statutory clearances and deficiencies in planning and execution of expansion projects.

The above deficiencies have been discussed in detail in the succeeding paragraphs/chapters.

The Management/Ministry stated (March/ July 2018) that stretched goals were fixed in view of the long construction time of mining projects, market trends were difficult to be forecasted in advance, efforts were being made to identify new customers through continuous e-auction in Bailadila sector and one intermediate stock pile having capacity of five lakh tons was being developed near Jagdalpur which was expected to be operational by December 2018. The SMP included a comprehensive integrated approach for capacity ramp up and all activities were planned accordingly, including the feasibility of completion of the intended projects by 2018-19 at the time of preparation of original and revised SMP – Vision 2025.

The reply is not acceptable as the feasibility of completion of the intended projects by 2018-19 was not assessed at the time of preparation of original/revised SMP – Vision 2025. Further, the existing downward trend in Iron ore and Steel prices was not taken in to consideration at the time of preparation of SMP. Thus, the targets set out in the revised SMP and the achievement thereof by the year 2018-19 was fraught with uncertainties.

2.2 Capital replacement/repairs

In order to carry out the production activities, the Company needed capital equipment such as Stackers, Re-claimers, Wagon Loaders and Heavy Earth Moving Machinery (HEMM).



Picture 2.1: Stacker



Picture 2.2: Reclaimer



Picture 2.3: Wagon Loader

Stackers are used for proper storage of the finished ore in the stockyard while the Re-claimers are used for drawing the finished ore from the stockyard onto the Wagon Loader. Wagon Loaders are used for loading finished ore into the Railway Wagons. All these equipment require customized designing, assembly, erection and commissioning at the identified locations, which needs co-ordination between various departments of the Company and the contractors. Our observations on the purchase of capital equipment are discussed below.

2.2.1 Purchase of Stackers, Re-claimers and Wagon loaders

During the period 2012-13 to 2016-17, the Company issued 12 purchase/work orders valuing ₹55.62 crore for supply of capital equipment other than HEMM, out of which six purchase orders with a value of ₹54.20 crore were examined in audit as detailed below:

Table 2.4 – Details of Purchase Orders for Capital Equipments covered in Audit

Project	Item	Value (₹ crore)	Date of placing purchase order	Scheduled date of supply
Bacheli complex	Lump Ore Stacker	7.87	15.11.2012	31.08.2014
	Lump Ore Reclaimer	11.35	01.02.2013	15.10.2014
	Wagon Loader	8.78	11.10.2013	10.07.2015
Kirandul complex	Lump Ore Stacker	7.85	15.11.2012	31.08.2014
Donimalai complex	Lump Ore Reclaimer	10.24	01.02.2013	17.07.2014
	Wagon Loader	8.11	11.10.2013	18.06.2015
	Total	54.20		

We observed that:

- Though the Company issued Notice Inviting Tenders (NITs) during November 2008/January 2009 calling for bids for supply of above equipment, it took four to five years to finalize the tenders and award the work orders in respect of all the six equipment. Though all the equipment were to be supplied between July 2014 and July 2015, only one Reclaimer was supplied and commissioned (April 2017) at Bacheli complex.
- In respect of Bacheli complex, though the Reclaimer was commissioned on 28.04.2017 i.e., after a delay of two and a half years from the scheduled date of supply, it was not working satisfactorily. The other equipment were yet to be commissioned (March 2018) due to non-supply of critical items by the contractor.
- As per the conditions of work orders, within a period of 60 days from the date of issue of Letter of Award of Contract, the drawings⁶ for erection and commissioning were to be submitted by the suppliers and approved by the Company. However, the actual time taken for the same ranged between 34 months and 38 months for all the equipment. As the drawings were required to be approved by various departments of the Company, time fixed for submission and approval of drawings did not appear to be realistic and justifiable.
- Due to delay in finalization of tenders and non-supply/erection/commissioning of these equipment, the Company had to incur an avoidable amount of ₹7.74 crore (Bacheli-₹4.93 crore, Kirandul-₹0.25 crore and Donimalai-₹2.56 crore) on repairs and maintenance for running the existing equipment during the period April 2012 to September 2017.

The Management/ Ministry accepted the audit observations and stated (March/ July 2018) that approval of drawings took time as the same were required to be examined by various technical departments and affirmed that the equipment would be commissioned by the first quarter of 2018-19.

⁶ Drawings include general arrangement drawings and assembly drawings for mechanical, structural and electrical components.

2.2.2 Procurement, Performance and Availability of Heavy Earth Moving Machinery

The requirement of Heavy Earth Moving Machinery (HEMM) viz. Shovels⁷, Dumpers⁸, Drills, Dozers, Graders⁹, Water Sprinklers, etc., used in mining operations is assessed based on the quantity of ore to be produced, quality of ore required, strike length¹⁰ of the mining benches, lead i.e., distance from mining area to crushing plant, waste mining and transportation, and other factors.



Picture 2.4 - Dumper

The HEMM play a key role in production of Iron ore and the availability and effective utilization of HEMM helps in achieving the set targets of production. Details of various HEMM equipment available with the Company at the end of each of the years from 2012-13 to 2016-17 in each of the mining projects are depicted in **Annexure-II**. During 2012-13 to 2016-17, the Company placed 34 purchase orders for procurement of HEMM amounting to ₹184.27 crore out of which 13 orders with a value of ₹140.64 crore were examined and observations made thereof are discussed below:

(a) Procurement of BEML BH 100S Model Dumpers

The Company floated (August 2014) tenders for procurement of three Dumpers for Bacheli Complex. In response, three bids¹¹ were received (September 2014) amongst which one bid was submitted by BEML Limited. At the time of finalization of bids (December 2014), the Company obtained feedback on the performance of existing BEML make BH 100S model Dumpers from Bacheli and Donimalai projects and it was found that the performance of the BEML Dumpers were not satisfactory. The Technical Committee appointed (January 2015) by the Company to examine the reasons for the failure of BEML Dumpers also opined (March 2015) that since the BH 100S model Dumpers of BEML were not proven products, therefore, NMDC should not opt for these. Director (Production) also accepted (July 2015) the opinion of the Technical Committee and recommended for procurement of Dumpers of other make. However, Director

⁷ A shovel is a tool for digging, lifting and moving bulk materials, such as soil, coal, gravel, sand or ore.

⁸ A dumper is a truck used for transporting loose material for construction. A typical dumper is equipped with an open-box bed, which is hinged at the rear and equipped with hydraulic rams to lift the front, allowing the material in the bed to be deposited (dumped) on the ground behind the truck at the site of delivery.

⁹ A grader is a construction machine with a long blade used to create a flat surface during the grading process.

¹⁰ Strike length is the distance between the ore extraction point and the Crushing Plant.

¹¹ GMMCO Ltd (authorised representative of Caterpillar), Hyderabad; BEML Ltd, Hyderabad and L&T Ltd, Hyderabad (authorised representative of Komatsu)

(Commercial) suggested for purchase of BH 100S model Dumpers of BEML citing that BEML was a Government Company, their offer was technically suitable conforming to the Pre-qualification Criteria (PQC), the tender is covered by the Integrity Pact¹² and that rejection of BEML's offer may attract litigation at Independent External Monitor level as well as legally causing further delays in procurement. In view of this, the Company procured (December 2015) three numbers of BH 100S BEML make Dumpers at a cost of ₹11.58 crore and commissioned them in Bachel complex in March 2016.

We observed that:

- (i) Against the norm of 85 *per cent* stipulated in the tender and accepted by all the bidders, the availability of these three Dumpers was 82.97 *per cent*, 85.23 *per cent* and 83.55 *per cent* during the first year of commissioning i.e., 2016-17.
- (ii) It would have been prudent on part of the Company to gather the performance feedback (from the user departments) on BEML Dumpers in fixing the PQC before floating the tenders with the aim of procuring better and reliable equipment. However, the feedback was obtained only after floating tenders and at the time of evaluation of bids. Despite being aware of unsatisfactory performance of Dumpers of BEML make, the Company failed to factor in the same as a parameter for evaluation of the Dumpers.
- (iii) Acceptance of recommendations of Director (Commercial) purely based on commercial terms without considering the technical desirability/ deficiencies brought out by the Tender Scrutiny Committee resulted in procurement of unreliable equipment.

The Management/Ministry stated (March/ July 2018) that the PQC was modified suitably during May 2016 and would be used for future procurement.

(b) Performance of Dumpers operated at NMDC

BEML and Caterpillar Dumpers were mainly used by the Company in its mining operations which were procured through open competitive bidding. The performance and utilization of these Dumpers were analyzed since the date of commissioning across all the three projects. Project-wise details of Dumpers and their average annual utilization in terms of actual number of hours are detailed in **Annexure-III**. It was observed that the performance and utilization of Dumpers of BEML make was low on account of frequent mechanical breakdowns/ failures. The following table summarizes the range of average

¹² *The Integrity Pact is a tool to help the Government fight corruption in public contracting. It consists of a process that includes an agreement between a Government or government agency/PSU and all bidders for a public sector contract, setting out rights and obligations to the effect that neither side will pay, offer, demand or accept bribes; nor will bidders collude with competitors to obtain the contract, or bribe representatives of the authority while carrying it out. An Independent External Monitor oversees implementation of Integrity Pact and ensures that all parties uphold their commitments under the Integrity Pact.*

annual utilization (in number of hours) of Dumpers of BEML make vis-a-vis Caterpillar make as at the end of August 2017 in all the three projects:

Table 2.5 – Average Annual Utilisation of Dumpers operated at NMDC Ltd

Name of Mining Complex	BEML make		Caterpillar make	
	Nos.	Range of average annual utilization (in No. of hours)	Nos.	Range of average annual utilization (in No. of hours)
Bacheli	19	1631 to 4106	1*	2703
Kirandul	12	610 to 1768	10	2367 to 2910
Donimalai	11	1269 to 3845	6	3875 to 4141

(Source: Monthly Performance Reports of Equipment compiled by the respective Projects)

* In Bacheli Complex only one Caterpillar Dumper is in operation

We observed that:

- (a) Of the 19 BEML make Dumpers in Bacheli, only one Dumper commissioned in March 2013 and three Dumpers commissioned in March 2016 had the higher average utilization per year than that of the Caterpillar Dumper (commissioned in June 2003). The performance of balance 15 BEML Dumpers commissioned during the period 2004-2009 was lower than the Caterpillar Dumper despite the fact that they were of a later acquisition than the Caterpillar Dumper.
- (b) It would be seen that the range of average annual utilization of Dumpers of Caterpillar make were better than the utilization of BEML make Dumpers. The Caterpillar make Dumpers that were commissioned in Kirandul complex during 2003, 2005, 2006 and 2011 had higher average utilization than the BEML make Dumpers commissioned during 2008, 2010 and 2012.
- (c) In respect of Donimalai complex, the average annual utilization of Caterpillar Dumpers procured in 2006 was higher than the average annual utilization of BEML 100S Dumpers procured during 2013.

The Management/Ministry did not offer any remarks on the audit observation.

(c) Availability of HEMM

An analysis of the availability and utilization of three major HEMM equipment viz., Shovels, Dumpers and Drills with respect to Scheduled Hours¹³, Available Hours¹⁴ and Utilized Hours¹⁵ across the three projects during 2012-13 to 2016-17 is detailed in **Annexure-IV**.

We observed that the utilization percentage was lesser compared to the availability of the HEMM. No norms had been fixed for availability and utilization of HEMM equipment for all the three projects even after 60 years of formation of the Company. The absence of benchmark norms had resulted in non-evaluation of the performance of the HEMM

¹³ *Scheduled (Production Shift) Hours = Scheduled shift hours – Scheduled Maintenance hours*

¹⁴ *Available Hours = Scheduled (Production Shift) Hours - Breakdown hours*

¹⁵ *Utilized Hours = Available Hours – Idle hours (hours for which the equipment is ready but not put to use)*

equipment. Hence, Audit was not able to assess whether the equipment performance was satisfactory.

The Management stated (March 2018) that benchmark norms for availability and utilization of HEMM equipment were fixed (2002-03) for all three Iron Ore Projects i.e. Kirandul, Bachel and Donimalai Complexes. Subsequently, Benchmark study was conducted (2017) by MECON and revised norms were recommended which were forwarded to all the projects in August 2017.

The reply is factually contrary to the findings of the study report (December 2016) prepared by the Central Mine Planning and Design Institute (CMPDI) reviewing the performance of major HEMM which observed that no norms were fixed for availability and utilization of HEMM in all the three units.

The Ministry stated (July 2018) that CMPDI had pointed out non-availability of benchmark norms based on scientific computation considering various factors affecting the performance of HEMM. Subsequently, MECON conducted (August 2017) benchmark study and the report was forwarded to all the projects.

2.3 Capacity Augmentation

The Company intended to develop the 11-B mine in Kirandul Complex of Bailadila and Kumaraswamy Iron ore mine in Donimalai complex to augment its production capacity by 14 MTPA as per its Corporate Plan 2001-2009 to meet the Iron ore demand. The delays in tendering and award of packages and their execution upto 31 March 2012 were highlighted in the CAG's Report No. 20 of 2012-13. The present Report covers the delays in execution and completion of balance works of 11-B and Kumaraswamy mines.

2.3.1 Execution of packages for development of Deposit-11B mine

The Company awarded (July 2005) Engineering, Contract Procurement Services & Project Management and Construction Management Services (EPCM) contract to MECON Limited for Bailadila Iron Ore Deposit-11B. The scheduled completion period was 35 months from award of contract i.e., by June 2008. The Consultant divided the total project into six main packages and four sub-packages. The progress made in each package during 2012-13 to 2016-17 is detailed in **Annexure-V**.

We observed that:

- a) Package III-Earth works and site preparation work was crucial for handing over of work fronts to other package contractors. However, the same could be completed only by December 2009 as against the scheduled completion date of November 2007. As a result, the work fronts could not be handed over to the other contractors. The delay was on account of inadequate estimation of quantum of work. This delay coupled with further delays in approval of drawings by the Consultant resulted in time overrun in execution of works.

- b) The execution of all the packages was delayed beyond their scheduled completion dates. The Company/Consultant attributed this delay on the part of contractor due to lack of proper planning, slow progress of work on account of inadequate deployment of manpower and material.
- c) The contractors lodged extra claims towards extension of bank guarantee, watch and ward of materials and deployment of additional manpower on account of multiple time extensions for each package coupled with additional scope of work required to be carried out.
- d) The Company so far (February 2018) paid an amount of ₹315.33 crore against the final contract cost of ₹358.23 crore (for all packages) including ₹10.54 crore for additional works.
- e) The Company could produce only 0.61 MTPA and 0.58 MTPA of Iron ore for the years 2015-16 and 2016-17 after commissioning the Crushing Plant and Downhill Conveyer System (Package-I and II) in August 2015 against the installed capacity of 7 MTPA, for want of screening facilities and non-completion of other package works.

The Management/ Ministry stated (March/July 2018) that the project was delayed mainly due to change of technology from soil nailing technique to grouted nailing technique in package-III (Earth works) due to site conditions which had a cascading effect on handing over of work fronts to other package contractors. Apart from this, there were delays due to change in design, approval of drawings, local disturbances, inadequate deployment of men and material by contractors.

2.3.2 Execution of packages for development of Kumaraswamy Iron Ore Project

Execution of Kumaraswamy Iron ore project (KIOP) up to March 2012 was covered in CAG's Report No. 20 of 2012-13. The present review covers the progress in execution of the packages and their delays from 31 March 2012 to 31 December 2017. The project was yet to be completed (December 2017) as against the revised schedule for completion by March 2012. The details of packages are given in **Annexure-VI**.

We observed that:

- a) The stipulated completion period of packages ranged between 9 months and 21 months from the date of letter of award of contract. However, the actual completion period ranged between 42 months and 81 months (except package-IV and VI).
- b) Package-IV (Telecommunication system) was pending completion due to poor mobilisation of manpower and material by the contractor. The work of package-VI (Approach road to mine) was awarded without ensuring Forest Clearance for 5.4 km of the entire stretch of 8.3 km. The work was pending as the Company received only Stage-I Forest Clearance (FC) in September 2017 and was yet to obtain Stage-II FC.

The Ministry stated (July 2018) that out of 8.3 km of road work, 5.3 km was completed in all respects and another 1.3 km would be completed by June 2018. For the balance 1.7 km, alternate technical solution was under finalization.

2.3.3 Production through out-sourcing in KIOP

In order to meet the production targets, the mining operations of the KIOP were carried out by outsourced private contractors who crush and screen the Iron ore in open mining area through small scale machinery and transport ore from hill top to customer's site through tippers in open condition (without cover) unlike in mechanized mining where such open area operations are lesser and consequently have lesser adverse impact on environment.



Picture 2.5: Transportation of Iron ore through trucks at Kumaraswamy Iron Ore Mine

The contribution of Kumaraswamy mine to the entire production of Donimalai sector ranged between 43 *per cent* (2013-14) and 49 *per cent* (2014-15 and 2016-17). The following table indicates the details of iron ore produced and cost of production per ton in Donimalai and Kumaraswamy Iron ore mines of Donimalai sector during the years 2012-13 to 2016-17.

Table 2.6 –Production and Cost of Production of Iron Ore at Donimalai and Kumaraswamy Mines

Year	Donimalai		Kumaraswamy		Overall		% of Kumaraswamy Production to overall Production
	Production (In lakh Ton)	Cost per ton (₹)	Production (In lakh Ton)	Cost per ton (₹)	Production (In lakh Ton)	Cost per ton (₹)	
2012-13	43.10	1198.65	39.27	503.87	82.37	867.42	48
2013-14	53.30	1590.41	39.91	437.66	93.21	1096.84	43
2014-15	52.84	1678.90	51.27	536.86	104.11	1116.39	49
2015-16	59.92	1394.18	56.27	342.07	116.19	884.65	48
2016-17	60.99	2241.07	58.99	537.18	119.98	1403.33	49

It could be seen that the cost of production of Kumaraswamy mine was lower than that of Donimalai mine during the five years period under review (2012-17). Further, the production through outsourcing from Kumaraswamy mine was more or less equal to the production of Iron ore from Donimalai mine.

As the works of KIOP have not been completed so far, the possibility of achieving the envisaged production target of 7 MTPA by 2018-19 as per the revised SMP-Vision 2025 by the Company seems to be remote. Further, due to non-availability of Screening plant, Loading Plant with railway yard for KIOP, the Company had to resort to outsourcing of mining till the completion of the requisite facilities at KIOP leading to environmental problems like air and water pollution, as pointed out (March 2018) by the Karnataka State Pollution Control Board.

The Management stated (March 2018) that the delay in execution of project was attributable to both the Company and contractors. The packages I & II were commissioned during May 2017 and Performance Guarantee Tests were conducted during December 2017. Approach road works would be completed by July 2018. In order to secure sustainable environment friendly mining activities, the requirement of KIOP crushing plant, downhill conveyor and Screening Plant (SP-II) facilities were justified which would help the organization in the long run rather than outsourcing the production. The Management also stated that there were complaints from local villagers and objections from State Government which necessitated transporting the ore either through rail or conveyor which was the need of the hour.

The Company had been carrying out production through outsourcing since 1992. Though the Company envisaged to establish 7 MTPA capacity Loading Plant with railway yard in Strategic Management Plan, so far the issue was still (March 2018) under discussions stage.

The Ministry stated (July 2018) that railway consultancy work was awarded (February 2018) to M/s Matha Track and Infra Tech., Secunderabad. The final submission of draft techno-economic feasibility report and detailed project report and obtaining approval of Railways was scheduled to be completed by December 2018.

2.4 Securing of Statutory Clearances

The Company had planned to construct the Screening Plant-III at Kirandul, Screening Plant-II at Donimalai, doubling of Kirandul to Kothavalasa (KK) railway line and construction of slurry pipeline, development of Deposit-13 and Deposit-4 to achieve the increased production of 50 MTPA by 2018-19. The pre-requisite for the construction activities for the above facilities was to obtain Environmental Clearance (EC) and Stage-I & Stage-II Forest Clearance (FC) from Ministry of Environment, Forest and Climate Change (MoEF&CC) and Consent for Establishment (CFE) from the concerned State Pollution Control Board. The prescribed procedure to secure EC and FC is summarised below:

(A) Environmental Clearance (EC)

MoEF&CC vide notification dated 14.09.2006 laid down the procedure for grant of Environment Clearance for construction of new projects/expansion projects with well determined timelines. Upon receipt of application from project proponent/user agency, the same would be appraised by Expert Appraisal Committee (EAC) which prescribes the terms of reference (ToR i.e., conditions to be complied by applicant). After receipt of ToR, State Pollution Control Board concerned has to conduct public hearing. The resolutions in public hearing along with Environment Impact Assessment and Environment Management Plan (prepared through Consultant) are to be submitted by the applicant to MoEF&CC. The application, thus received shall be appraised by EAC and based on the recommendations of EAC, MoEF&CC grants Environment Clearance to be finally issued to the applicant on award of Stage-I Forest Clearance in cases where the land involves forest land.

(B) Forest Clearance (FC)

Based on the Forest (Conservation) Act, 1980, the Forest (Conservation) Rules, 2003 were notified on 10.01.2003 (which were subsequently amended in 2004 and 2014) for granting prior approval for diversion of forest land within the timelines prescribed. These Rules provide, *inter alia*, that upon submission of application by the project proponent/user agency, the Nodal Officer of State concerned endorses the same to the District Forest Officer concerned. After due verification and satisfaction of information submitted, the application is forwarded to Nodal Officer through Chief Conservator of Forest. In turn, the Nodal Officer transmits the same to MoEF&CC through State Forest Department after scrutiny. The application, so received by the Ministry is required to be appraised by Forest Advisory Committee (FAC); and based on recommendation of FAC, MoEF&CC grants Stage-I Forest Clearance (in-Principle) which prescribes the terms and condition to be complied by the applicant. On receipt of compliance report from the State Government in respect of compliance of the conditions stipulated in Stage-I Clearance and upon payment of charges towards compensatory afforestation and Net Present Value (NPV), final Forest Clearance (Stage-II) would be accorded.

We verified the documents, pertaining to the above initiatives taken by the Company, in the MoEF&CC and Forest and Revenue Departments in the States of Chhattisgarh and Karnataka and observed that there were delays in obtaining the clearances for the proposals submitted by the Company as discussed in the succeeding paragraphs.

2.4.1 Screening Plant-II at Kumaraswamy Iron Ore Project (KIOP)

At the conceptualisation stage (April 2003), the Company envisaged development of KIOP as replacement of the existing Donimalai mine since the Iron ore reserves of the latter were depleting. It was proposed to utilize the existing Screening Plant (SP) of Donimalai mine instead of constructing a new SP for KIOP. However, MECON Limited

in its study report¹⁶ (2007) on production enhancement of Iron ore mines in Donimalai, recommended for new SP as the existing SP had outlived its life. This was initially not considered by the Company. However, in view of identification of additional reserves¹⁷ in Donimalai Iron Ore Project (DIOP), the Company decided for construction of a second Screening Plant (SP-II) for KIOP. MECON prepared the Techno-Economic Feasibility Report (TEFR) in June 2013 and due diligence was done (12.09.2014) by PricewaterhouseCoopers (PwC), with an estimated capital cost of ₹399.75 crore. The Board approved (28.11.2014) this proposal and engaged M.N. Dastur & Co as EPCM Consultant for the project.

(a) Environment Clearance for Screening Plant-II

The Company applied for Environmental Clearance (EC) for Screening Plant II for KIOP in March 2014. The sequence of events in seeking of EC by the Company, along with the reasons for delay at each stage, is summarized below:

Table 2.7 – Issues noticed in obtaining Environmental Clearance for Screening Plant-II

Requisite action as per the Environment Impact Assessment Notification 2006 of MoEF&CC	Time prescribed as per EIA Notification	Actual time taken	Remarks/ Reasons for delay
Terms of reference (ToR) were to be issued within 60 days of filing application.	60 days	234 days (10.03.2014 to 30.10.2014)	<p>The Expert Appraisal Committee (EAC) of MoEF&CC advised (May 2014) to change the name of the Plant from Screening Plant-II to Screening and Beneficiation Plant-II. Accordingly, the Company submitted (June 2014) the revised application. However, the same was not considered by MoEF&CC in view of introduction of online system with effect from 1 July 2014. Therefore, the Company re-submitted the application (September 2014) online. MoEF&CC issued ToR in October 2014.</p> <p><u>Request for revision of ToR:</u> After 10 months of receipt of ToR, the Company requested (August 2015) for revision of ToR on account of increase in land required for the project from 39.32 hectares to 75.92 hectares. Accordingly, revised ToR was issued by MoEF&CC in September 2015.</p>

¹⁶ Technical Report on Production enhancement of Iron Ore Mines- Vol-I Donimalai Iron Ore Mine

¹⁷ Additional reserves identified after 2010 was 94.70 MT

Requisite action as per the Environment Impact Assessment Notification 2006 of MoEF&CC	Time prescribed as per EIA Notification	Actual time taken	Remarks/ Reasons for delay
Submission of compliance to conditions in ToR by the Company (i.e., preparation of Draft Environmental Impact Assessment (EIA) Report, Environment Management Plan (EMP) and conduct of Gram Sabha through State Pollution Control Board).	90 days	318 days (28.09.2015 to 11.08.2016)	After receipt of revised ToR, the Company approached (October 2015) the State Pollution Control Board (PCB) for conduct of Gram Sabha. However, the State PCB conducted the Gram Sabha during March 2016 and forwarded the final proceedings to MoEF&CC in May 2016. Thus, the PCB took seven months time for Gram Sabha against 45 days prescribed in the EIA notification. The Company submitted the compliance to ToR in August 2016. The matter was put-up to EAC (non-coal) for consideration in October 2016. The same was transferred to EAC (Industry-I) and was reviewed by it in November 2016. The EAC observed non-compliance of certain conditions in ToR and desired that a sub-committee shall visit the project site and submit their recommendations for further consideration. The Company submitted the compliance report (in respect of conditions pointed out by EAC) in February 2017 i.e. after 17 months from the issue of ToR by MoEF&CC.
Submission of compliance to deficiencies pointed out by EAC. Clearance of proposal in EAC within 60 days of receipt of final EIA Report	60 days	110 days (20.02.2017 to 09.06.2017)	Based on the directions of EAC, a sub-committee of MoEF&CC made a site visit of the proposed project and submitted their satisfaction over the observations of EAC during May 2017. Based on this, EAC recommended (June 2017) grant of EC subject to obtaining Stage-I Forest Clearance by the Company.

Thus, the EC for Screening Plant-II for KIOP was received after more than three years of application made by the Company. Delay on part of State PCB in conducting Gram Sabha coupled with failure on part of the Company in taking prompt action for applying for revised ToR and delay in submitting the required information to the MoEF&CC contributed significantly to the time taken in receipt of EC.

(b) Forest Clearance for Screening Plant-II (Stage-I)

The Company applied for Forest Clearance (Stage-I) in December 2014. The disposal of application in MoEF&CC and State Forest and Revenue departments in line with the timelines prescribed in the Forest Rules are detailed below:

Table 2.8 – Issues noticed in obtaining Forest Clearance for Screening Plant-II (Stage-I)

Requisite action as per Forest (Conservation) Rules, 2003/2004/2014 notified by MoEF&CC	Time prescribed by the Forest Rules	Actual time taken	Remarks/ Reasons for delay
Acceptance of online application submitted by the Company	No time line prescribed as acceptance is dependent on completeness of the application	511 days (13.12.2014 to 07.05.2016)	<p>The Nodal Officer (APCCF, Bangalore) observed (December 2014) that the Company had not submitted the details of land surveyed using Differential Global Positioning System (DGPS) as per extant rules.</p> <p><u>Submission of fresh application by the Company:</u></p> <p>The Company conducted the DGPS survey in July 2015 and based on the survey, the land requirement was found to be 75.92 hectares instead of the proposed 39.32 hectares. Therefore, after conducting the DGPS survey, the Company submitted revised application in August 2015 and also requested to issue revised Terms of Reference (ToR) in view of increased requirement of land. The Nodal Officer observed further shortcomings in the submission of relevant information along with application which were communicated to the Company on 25.08.2015, 03.10.2015, 16.10.2015, 24.11.2015 and 16.02.2016. On receipt (April 2016) of all the requisite information, Nodal Officer accepted the application on 07.05.2016. Thus, the Company took additional 8 months in submission of information sought by the Nodal Officer.</p>
Disposal of proposal by Deputy Conservator of Forest (DCF), Bellary within 60 days.	60 days	Pending	On acceptance of online application by Nodal Officer, the Company submitted the hard copy of application along with enclosures to the DCF in May 2016. DCF, Bellary sought (August 2016) certain

Requisite action as per Forest (Conservation) Rules, 2003/2004/2014 notified by MoEF&CC	Time prescribed by the Forest Rules	Actual time taken	Remarks/ Reasons for delay
			<p>essential details viz., (i) allotment of revenue land by State Government for transfer to Forest Department for Compensatory Afforestation, (ii) certificate from District Collector under Forest Rights Act, 2006.</p> <p><u>Re-submission of application by the Company:</u> The Company re-submitted (December 2017) the application after 14 months to DCF, Bellary that too without the complete details sought as above.</p>

We observed that before submission of application for FC in December 2014, the Company did not conduct the detailed survey of proposed land. Before conducting the DGPS survey, the Company carried out (April 2015) the detailed survey of the proposed area as a result of which the area of land required was increased from 39.32 hectares to 75.92 hectares. Further the initial capacity of 13.40 million tons envisaged in respect of tailing dams 1 & 2 had been reduced to 8.52 million tons after conducting the life sufficiency calculations. After conducting the detailed survey, the Company conducted (July 2015) the DGPS survey for submission to Forest Department. Thus, the Company took 15 months (from the date of application for FC) in conducting the DGPS survey and submitting the information sought by the Nodal Officer. Further, the Company was yet (December 2017) to submit the essential details sought (August 2016) by the DCF, Bellary even after a lapse of 14 months.

The Management stated (March 2018) that it had to resubmit its application for EC/FC on account of change of name of project and due to introduction of online submission of application. This was further delayed due to the change of requirement of land from 39.32 hectares to 75.92 hectares due to planning of two tailing dams instead of one as proposed earlier.

The reply is not acceptable as the Company did not conduct the detailed survey before making application for FC and EC which led to delay in submission of DGPS map to Forest Department and re-submission of application for revision of ToR. Further, the requirement of land was not increased due to increase in tailing dams from one to two as the Company had submitted (December 2014) its initial FC application with two tailing dams already indicated.

The Ministry stated (July 2018) that the area was increased to 75.92 hectares on account of planning of tailing dams with more area for accommodating slimes generated due to wet process and taking into account the operational life of mines.

The reply needs to be viewed in the light of the fact that though the area of the project increased, the initial capacity of 13.40 million tons envisaged in respect of tailing dams 1 & 2 had been reduced to 8.52 million tons after conducting the life sufficiency calculations. Hence, the increase in area cannot be attributed to tailing dams.

(c) Efforts made in obtaining allotment of revenue land

Immediately on submission (August 2015) of online application with the Nodal Officer (Forest Department), for Stage-I Forest Clearance, the Company also submitted applications to the District Revenue Authorities of Bellary for allotment of revenue land for transfer to Forest Department and grant of Certificate under Forest Rights Act (FRA), 2006. In this connection, it was observed that:

- (i) The Company took six months in submitting the land details (June 2016) to Revenue authorities even though the land was identified for the above project in January 2016 itself. The delay was due to clubbing of the land requirement of other projects by the Company.
- (ii) After verification of the details through Tahsildar/Sub-Divisional Office, the proposal was forwarded (May 2017) to Revenue Department, Government of Karnataka by the District Revenue authorities.

The Management stated (March 2018) that it could get the revenue land transferred (February 2018) in name of Forest Department for raising of compensatory afforestation.

(d) Certificate under Forest Rights Act (FRA), 2006

District Authorities forwarded (March 2016) the application received from the Company in August 2015 to the Gram Panchayat concerned after seven months, the reasons for which were not on record. Further, the Gram Panchayat forwarded the resolution (January 2017) to Sub-Divisional Committee after eight months of conducting Gram Sabha in May 2016 without recorded reasons. The Gram Panchayat failed to submit the revised resolution clearly mentioning the survey number, area of land and certificate to the effect that no Forest Dwellers are affected on diversion, till date (January 2018) as advised by the Sub-Divisional Committee and District level Committee (April 2017). There was no follow up from the office of the District authorities. The follow up made by the Company in this regard was not on record. In view of this, the Company was yet to obtain (March 2018) the Stage-I Forest Clearance and Environment Clearance for Screening Plant-II.

The Management/ Ministry stated (March/ July 2018) that there was lack of coordination between Panchayat Development Officer and Panchayat Members as well as undue demands from the villagers which were beyond the control of the Company and continuous efforts were being made for getting the required certificate.

The Ministry failed to appraise delay in granting the FRA Certificate by District Revenue Authority and grant of Revenue Land for compulsory afforestation by State Revenue Department even while Joint Secretary, MoS addressed (May 2017) a letter to Chief Secretary of Government of Karnataka requesting to expedite grant of Forest Clearance. As a result, these problems could not be communicated in the aforesaid letter.

2.4.2 Screening Plant-III at Kirandul Complex

The Company, at the time of initiation of development of Project 11-B mine (with three MTPA capacity) in 2005, envisaged to construct only Crushing Plant and Downhill Conveyor and intended to utilize the existing screening and loading facilities of Deposit-14 and Deposit-11C. Later, in 2007, the Company felt the need to construct a new Screening Plant with a capacity of 12 MTPA to replace the existing Screening Plant in view of its obsolescence and also in view of the discovery of 160 million tons of additional Iron ore reserves in Deposit-14. The area required for the above Screening Plant was 74.236 hectares consisting of 65.936 hectares of forest land and 8.30 hectares of non-forest land. The process of obtaining the requisite clearances/consent for this project was examined by Audit and the audit observations are discussed below:

(a) Environment Clearance for Screening Plant-III

The Company submitted its application for Environment Clearance on 31 October 2008 for 74.236 hectares of land. Terms of Reference were issued by EAC in February 2009 and compliance to the same was submitted by the Company in January 2010. Though the same was considered in the EAC in its January 2010 meeting, it was recommended to de-list¹⁸ the proposal till the receipt of Stage-I Forest Clearance. The EC was granted by MoEF&CC in November 2013 even though the Company had applied for the same immediately after receipt of Stage-I Forest Clearance in January 2012. The delay was due to following reasons:

- (i) There was a delay of six months in MoEF&CC as the file was not traceable in the Ministry which directed (July 2012) the Company to submit the chronology of events with supporting documents.
- (ii) The file remained unprocessed in MoEF&CC till March 2013 though the Company submitted the information immediately in July 2012 resulting in further delay of six months.
- (iii) The Company was conveyed (November 2013) the final approval of Ministry (grant of EC) after four and half months of its clearance by EAC (in June 2013) which was beyond the prescribed timeline of 45 days.

¹⁸ MoEF&CC put a pre-condition of obtaining Stage-I Forest clearance prior to granting Environment clearance. Till such time, the proposal would be removed from the pending list being considered in EAC meetings.

- (iv) The mistake in the area of the land mentioned in the EC as 65.936 hectares against the total applied land of 74.236 hectares was not observed by the Company immediately until it was pointed out (October 2016) by the Chhattisgarh Environment Conservation Board (CECB) before issue of Consent for Establishment (CFE). The Company requested (December 2016) MoEF&CC for issue of a revised EC which was received in March 2017. As a result, CFE was granted by CECB in July 2017. Thus, there was an avoidable delay of 38 months (from November 2013 to December 2016) on the part of the Company.

The Management stated (March 2018) that it had correctly mentioned the area of land in its application.

The reply is not acceptable since Audit has commented upon the failure to notice the mistake in land area at the time of receipt of EC in November 2013 and not at the time of submission of application.

The Ministry stated (July 2018) that the Company applied for EC only for 65.936 hectares as the remaining 8.30 hectares of land was already a part of existing Deposit-14 NMZ Mining Lease area which was already in possession of the Company. Since, CECB insisted for EC for 8.30 hectares of land also, the Company had to obtain the amendment to EC in May 2017.

Para-1 of the EIA Notification 2006 dated 14.09.2006 stipulate that construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to that notification entailing capacity addition with change in process and/or technology would be undertaken only after the prior Environmental Clearance from the Central Government. Therefore, EC was required for the entire land. The inaction in obtaining EC for the entire land and doing it only on the insistence of CECB added to further delays on the part of the Company.

(b) Forest Clearances for Screening Plant-III (Stage-I)

The Company applied (September 2008) for diversion of 65.936 hectares of forest land to the Nodal Officer. The efforts made by the Company, MoEF&CC, State Forest and Revenue Departments in clearing the proposal in accordance with the timelines prescribed by the Forest Rules are detailed below:

Table 2.9 – Issues noticed in obtaining Forest Clearance for Screening Plant-III (Stage-I)

Requisite action as per Forest (Conservation) Rules 2003/2004/2014 notified by MoEF &CC	Time prescribed by the Forest Rules	Actual time taken	Remarks/ Reasons for delay
Acceptance of application submitted by the Company	No time line prescribed as acceptance is dependent on completeness of the application	5 days (25.09.2008 to 30.09.2008)	The Nodal Officer forwarded (September 2008) the application of the Company to Divisional Forest Officer (DFO), Dantewada and it was cleared by DFO and forwarded to Chief Conservator of Forest (CCF) in October 2008.
Disposal of queries of CCF by DFO	No time line prescribed	46 days (29.08.2009 to 14.10.2009)	CCF raised (June 2009) certain observations to which the Company submitted the information to DFO in August 2009. In turn, DFO forwarded the same to CCF only in October 2009.
Further observations of CCF	No time line prescribed	184 days (16.02.2010 to 19.08.2010)	After forwarding of requisite information by DFO in October 2009, CCF raised further queries (February 2010) which was replied by DFO after a delay of six months in August 2010.
Forwarding application by State Government to MoEF&CC	20 days	42 days (14.12.2010 to 25.01.2011)	The State Government forwarded the application to MoEF&CC in January 2011 after receipt of information from Additional Principal Chief Conservator of Forests (APCCF) in December 2010.
Further processing of proposal at MoEF&CC	85 days	205 days (02.02.2011 to 26.08.2011)	The application was registered by MoEF&CC in July 2011 after a delay of five months as against the mandated 10 days though it was received in February 2011. The application was put up to Forest Advisory Committee (FAC) in August 2011. The FAC recommended for grant of Stage-I Forest Clearance.
Grant of Stage-I Forest Clearance	30 days	144 days (26.08.2011 to 17.01.2012)	Though the proposal was cleared by FAC in August 2011, the final approval was accorded by the Ministry in January 2012 after a delay of about 5 months as against the mandated 30 days. Finally Stage-I Forest Clearance was granted on 17.01.2012

Thus, the time taken in receipt of Stage-I Forest Clearance was around 40 months against the stipulated period of 280 days under the Forest (Conservation) Rules. The delays were attributable to both the Forest Department of the State of Chhattisgarh and MoEF&CC.

(c) Forest Clearance for Screening Plant-III (Stage-II)

One of the conditions of Forest Clearance Stage-I was preparation of comprehensive wildlife plan. The Company's request for clarification (August 2012) regarding preparation of the wildlife plan for the entire division or for the affected area was not clarified by MoEF&CC and hence the Company prepared the same for the entire division in May 2013. This was approved by Chief Wild Life Warden, Raipur in December 2013 and ₹15.50 crore was paid in April 2014 to implement the Wild Life Plan. The Company submitted the final compliance report on 04 October 2014 which was forwarded by State Government to MoEF&CC on 10 December 2014. This was put up to the Competent Authority on 19 March 2015 after a delay of 99 days against the stipulated 20 days as prescribed by Forest Rules, without any recorded reasons. Finally, Forest Clearance Stage-II was granted in April 2015. However, the Company applied for Consent for Establishment (CFE) only in October 2016 i.e., after a delay of 18 months the reasons for which were not on record.

The Management/ Ministry stated (March/ July 2018) that it had submitted application for Consent for Establishment with Chhattisgarh Environment Conservation Board (CECB) in September 2009 itself.

The reply is not acceptable as CECB grants CFE only after submission of Forest Clearance/Environment Clearance. However, applying for CFE in September 2009 without obtaining any clearances by the Company was not in line with the prescribed norms.

(d) Award of construction contract prior to securing statutory clearances

As an advance action, the Company awarded (August 2008) the work for pumping and supply of 500 cum/hr of water from Malinger Pump House to Screening Plant Reservoir at Kirandul Complex to Technofab Engineering Limited (TFE), New Delhi, at a contracted price of ₹13.87 crore to be completed within 18 months i.e. by 10 February 2010. The contractor supplied material worth ₹5.64 crore by December 2010. However, the balance work could not be executed as the Company failed to secure mandatory forest and environmental clearances and the contract was foreclosed in January 2015 (11 January 2015) after seven years from the date of award of the contract. Materials worth ₹4.59 crore were still lying idle in the stores. Thus, imprudent action of the Company in awarding the work without securing statutory clearances resulted in idling of material worth ₹4.59 crore.

The Management/ Ministry stated (March/ July 2018) that the work did not progress mainly because of local issues and non-receipt of the required statutory clearances for laying the pipeline and that the idle stores would be used in Screening Plant-III project.

2.5 Enhancement of Evacuation facilities

Iron ore was supplied/ evacuated by the Company mainly through rail while a small quantity was transported by road to its customers. In Kirandul complex, the supply of iron ore to Essar Limited, a long term customer of the Company, was being made through conveyor ¹⁹ which was beneficiated²⁰ and transported to Essar's Visakhapatnam Plant through their own slurry pipeline. It was observed that there were serious shortfalls in evacuation facilities in the Bailadila sector. The total evacuation capacity of Iron ore in Bailadila sector was 24 MTPA viz. 16 MTPA through Kirandul-Kothavalasa (KK) railway line and 8 MTPA through slurry pipeline. The following table indicates the details of Iron ore evacuated through different modes during the five years period ending 31 March 2017.

Table 2.10 – Evacuation of Iron ore through various modes

(In Tons)

Year	Unit	By Rail	By Road	By Conveyor (Slurry Pipeline)	Total
2012-13	Bacheli	11606154.60	369805.50	0.00	11975960.10
	Kirandul	5380028.00	258357.00	886403.00	6524788.00
		16986182.60	628162.50	886403.00	18500748.10
2013-14	Bacheli	11925395.00	308775.40	0.00	12234170.40
	Kirandul	6999209.00	293047.00	1892673.00	9184929.00
		18924604.00	601822.40	1892673.00	21419099.40
2014-15	Bacheli	11090477.70	347505.00	0.00	11437982.70
	Kirandul	4959941.00	384838.00	3951550.00	9296329.00
		16050418.70	732343.00	3951550.00	20734311.70
2015-16	Bacheli	9315377.80	208871.70	0.00	9524249.50
	Kirandul	3233814.00	256532.00	3576737.00	7067083.00
		12549191.80	465403.70	3576737.00	16591332.50
2016-17	Bacheli	11457030.40	103253.10	0.00	11560283.50
	Kirandul	5046325.00	303471.00	6163243.00	11513039.00
		16503355.40	406724.10	6163243.00	23073322.50

It could be seen that the Company evacuated Iron ore in the range of 12.55 MTPA to 18.92 MTPA through railway line against its capacity of 16 MTPA. Further, the Company evacuated Iron ore in the range of 0.89 MTPA to 6.16 MTPA through the slurry pipeline owned by Essar Limited against its capacity of 8 MTPA during the above period.

During Exit Conference with the Ministry (June 2018), the Management stated that the evacuation capacity of Railway line (KK line) increased from 16 MTPA to 24 MTPA on

¹⁹ A conveyor belt is the carrying medium of a belt conveyor system

²⁰ The lower-grade sources of Iron ore generally require beneficiation, using techniques like crushing, milling and screening to improve the concentration of the ore and remove impurities

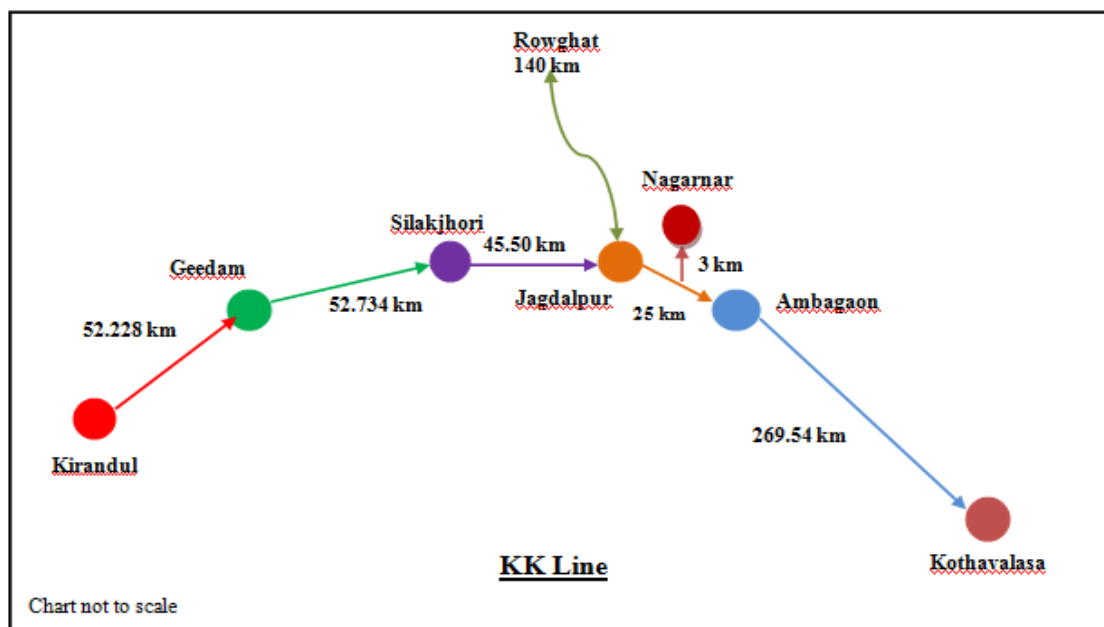
account of increase in wagon capacity from 70 tons per wagon to 78 tons per wagon from 01.04.2017.

We observed that during the years 2012-13 to 2016-17, the Company could transport a maximum of 18.92 million tons of Iron Ore in a year through KK line with 70 tons per wagon. Considering the increase of 8 tons per wagon, the total capacity of KK line would work out to 21.08²¹ MTPA only and not 24 MTPA as claimed by the Company. Thereby, the total evacuation capacity stood at 29 MTPA (KK line-21 MTPA and Essar Slurry line-8 MTPA) leading to shortfall of 7 MTPA against the total evacuation requirement of 36 MTPA²² in Bailadila sector.

In order to cater to the evacuation requirements of envisaged production targets as per the Strategic Management Plan – Vision 2025, the Company proposed to take up the projects viz., doubling of KK Railway line from Jagdalpur to Kirandul (150.462 km), construction of new railway line between Rowghat and Jagdalpur (140 km), construction of 2nd slurry pipeline in Bailadila sector in two parts viz., Part A- Bacheli to Nagarnar (138 km) by NMDC on its own and Part B- Nagarnar to Visakhapatnam (315 km) through Joint Venture with Rashtriya Ispat Nigam Limited (RINL). Further, it was decided to undertake doubling of Jagdalpur-Ambagaon line (25 km) under Participative Model through Railways.

The diagrammatic representation of these railway projects is given below:

Chart 2.4 – Graphical Representation of Kirandul-Kothavalasa Railway Line (KK Line)



The progress made in respect of these projects is discussed in succeeding paragraphs.

²¹ 18.92 million tons * 78 tons / 70 tons = 21.08 million tons

²² Out of total envisaged production of 50 MTPA to be achieved by 2018-19 as per SMP, 14 MTPA is envisaged from Donimalai sector. Therefore, the remaining 36 MTPA pertains to Bailadila sector.

2.5.1 Doubling of KK railway line from Jagdalpur to Kirandul

In order to enhance the evacuation facility for meeting the envisaged higher production targets, the Company decided to take the work of doubling of Kirandul to Jagdalpur section of the KK railway line and entered into Memorandum of Understanding (MoU) with Railways in December 2012 with an estimated cost of ₹826.57 crore (2011-12 level) subsequently revised (December 2015) to ₹1,160.83 crore to be executed and completed by the Railways by August 2018. The quantum of ore projected to be transported through this line was 12 MTPA. The doubling work was divided into three parts i.e. Jagdalpur to Silakjhorī - 45.50 km, Silakjhorī to Geedam - 52.734 km and Geedam to Kirandul - 52.228 km. The expenditure incurred by Railways amounting to ₹465.83 crore as against the amount of ₹525.00 crore deposited by the Company (December 2017) reflects overall financial progress (December 2017) of 40 *per cent* only.

We observed that:

- a) Despite the fact that 88 *per cent*²³ of the project execution timelines had elapsed (December 2017), the overall physical progress of work was only 41.50 *per cent*. Further, out of the above three parts, the work on Jagdalpur to Silakjhorī part was only completed while work in the other two parts was in their initial stages of execution (December 2017).
- b) The delay in completion of work is likely to adversely impact the Company's plans to enhance its evacuation capacity.
- c) The MoU did not incorporate any provision for project monitoring mechanism except for the requirement of a monthly progress report from Railways, to be appended to the demands for further release of funds.

The Management stated (March 2018) that the work in respect of Kirandul to Silakjhorī portion progressed only 16 *per cent* due to Naxal activities and the progress of work was monitored by Railways at Zonal, Division and Section Level and the same was being informed to NMDC every month.

2.5.2 Doubling of Railway line between Jagdalpur and Ambagaon

The Company decided to take up the work of doubling of railway line between Jagdalpur and Ambagaon (25 km) to meet the requirement of handling the anticipated twofold increase in the volume of traffic on account of the upcoming Integrated Steel Plant at Nagarnar (NISP). Accordingly, the Company entered into an agreement with the Ministry of Railways (MoR) in August 2016 for execution of the project with an estimated cost of ₹257.75 crore under participative model with a completion period of 2.5 years i.e. by January 2019. The Company so far deposited (December 2017) an amount of ₹114 crore.

²³ The project was scheduled to be completed by August 2018 i.e. within 68 months of entering into (December 2012) MOU with the Railways. Upto December 2017, 60 months had elapsed out of 68 months. This comes out to 88 *per cent* of the total time period for completion.

As per the progress report (December 2017) of Railways, the physical progress of 50 per cent was in line with the time taken so far on the project.

2.5.3 Dalli-Rajhara – Rowghat – Jagdalpur Rail Corridor

To meet their growth plans and to increase its customer base in the Central, Western and Northern India both for Iron ore supplies and delivery of finished products, NMDC and Steel Authority of India Limited (SAIL) decided to develop the above corridor in two phases viz. (i) Dalli-Rajhara – Rowghat line (95 km) in Phase-I and Rowghat - Jagdalpur line (140 km) in Phase-II. While the entire cost of the Phase-I part was funded by SAIL, for Phase-II, a Memorandum of Understanding (MoU) was entered into (11 December 2007) between Ministry of Railways, SAIL, NMDC and Government of Chhattisgarh with a cost sharing basis in the ratio of 57 per cent (MoR), 21 per cent (SAIL), 10 per cent (NMDC) and 12 per cent (Government of Chhattisgarh). Subsequently, on the advice of Ministry of Railways, it was decided (18 December 2014) to execute the project through a Special Purpose Vehicle (SPV). Consequently, a revised MoU (May 2015) was signed with revised cost sharing ratio of 43 per cent (NMDC), 21 per cent (SAIL), 26 per cent (MOR) and 10 per cent by Chhattisgarh Mineral Development Corporation (CMDC). As agreed to in the revised MoU, an SPV in the name of “Bastar Railway Private Limited (BRPL)” was incorporated on 05 May 2016 with the Registered Office at Raipur a year after the date of signing MoU.

The Management/ Ministry stated (March/ July 2018) that DPR prepared by BRPL was submitted (October 2017) to Railway Board for approval. Land acquisition works had been initiated. The project was expected to be completed by March 2023 and the iron ore proposed to be evacuated through this line was estimated at 15.30 MT.

2.5.4 Slurry Pipeline System

The developments relating to approvals for laying of slurry pipeline upto March 2012 were included in the CAG’s Report No. 20 of 2012-13. The project was proposed to be carried out in two phases. Phase-I consisted of establishment of 10 MTPA Iron ore Beneficiation Plant at Bailadila, Chhattisgarh (6 MTPA for Kirandul and 4 MTPA for Bacheli), 11 MTPA slurry pipeline from Kirandul to Bacheli, 15 MTPA slurry pipeline from Bacheli to Nagarnar, Chhattisgarh and 2 MTPA Pellet Plant at Nagarnar, with estimated capital expenditure of ₹4,000 crore. Phase-II works consisted of 13 MTPA slurry pipeline from Nagarnar to Vizag, Andhra Pradesh and 6 MTPA Pellet Plant at RINL, Vizag, with estimated capital expenditure of ₹6,000 crore. While Phase-I was proposed to be executed by the Company on its own, the Phase-II projects would be executed under Joint Venture with RINL. The progress made in implementation of the project is discussed below:

- **4 MTPA Beneficiation Plant at Bacheli** – The project received Environmental Clearance on 27 April 2017, Stage-II Forest Clearance and Consent for Establishment (CFE) from Chhattisgarh Environment Conservation Board

(CECB) were also obtained on 27 September 2017 and 16 October 2017 respectively. Further, permission from Railways for laying overhead conveyor gallery for transportation of Iron ore fines from Screening Plant of Deposit-5 to Beneficiation Plant was obtained on 12 September 2017.

- **6 MTPA Beneficiation Plant at Kirandul** – The field study was being done by the Consultant and the Company was yet to submit the application for statutory clearances (September 2018).
- **Slurry Pipeline System** – The Company had deposited (October 2015) the initial deposit towards entering into Way Leave agreement²⁴ with the Railways and the signing of Way Leave agreement was in process (July 2017). Stage-I Forest Clearance was received on 01 February 2018.
- **Pellet Plant at Nagarnar** – This project is the only one which has secured all the requisite clearances to commence its activity. Site leveling work was completed (July 2017).

In Phase-II, the Company completed 97 *per cent* of Detailed Route Survey of the pipeline route from Nagarnar to Visakhapatnam while various statutory clearances and permissions were yet to be obtained (July 2017).

2.6 Appointment of EPCM Consultants

The Company awarded in advance the Engineering, Procurement, Construction and Management (EPCM) consultancy contracts for execution of Screening Plant II at Donimalai, Screening Plant III at Kirandul and Slurry Pipeline System in Bailadila Sector. The deficiencies noticed in these contracts are discussed below:

2.6.1 Advance engagement of EPCM Consultant for Screening Plant-II

In spite of delays in getting the statutory clearances, the Company went ahead with awarding (December 2015) of EPCM consultancy contract to M.N. Dastur & Co. for ₹7.64 crore with a stipulated completion period of 39 months i.e, by March 2019. The Company had paid an amount of ₹57.01 lakh (till February 2017) to the Consultant. In view of the delays in getting Environmental and Forest Clearances and consequent delay in execution of SP-II, the Company had committed itself with the obligation of extending the EPCM contract with the liability to pay the Consultants at incremental rate of 5 *per cent*, 10 *per cent* and 15 *per cent* (of the contract fee for works to be executed during the extended period) for each of the year beyond the stipulated completion date as per the contractual terms.

²⁴ Way leave facilities/Easement rights on Railway land involve occasional or limited use of land by a party for a specified purpose like passage etc. without conferring upon the party any right of possession or occupation of the land and without in any way affecting the Railway's title, possession, control and use of the land.

The Management stated (March 2018) that awarding consultancy contract in advance would facilitate completion of basic engineering, preparation of technical specification and tender documents of the relevant packages by the time the required statutory clearances were obtained. This was a conscious business decision required to be taken for execution of large projects.

The Ministry stated (July 2018) that getting the statutory clearances involves multiple external agencies, State/Central Government agencies and depends on project location, nature of the project and response of the respective State Government and it is practically difficult to draw the timelines.

It would have been prudent on the part of the Company to award the EPCM contract with reference to an informed and predictable formulation of milestones so as to minimize the risk of being faced with the liability of having to incur expenses towards penal charges on account of delays in securing EC and FC. As this was not done, the Company faced the need to incur premature expenditure on EPCM contract service as well as the impending liability of having to bear future penal escalation cost commitments.

2.6.2 Advance engagement of EPCM Consultant for Screening Plant-III

The Company without waiting for receipt of statutory clearances appointed Tata Consulting Engineers as EPCM Consultant (July 2010) at a cost of ₹16.05 crore with completion period of 36 months. The contract was subsequently suspended (November 2013) for want of statutory clearances by which time the Company had paid ₹3.57 crore to the Consultant. After receipt of Stage-II FC and CFE, the Company revoked the suspension in March 2017 with a revised completion period by February 2021. The contract included a clause for payment at incremental rate of 5, 10 and 15 *per cent* of the balance of the contract value for each year's delay attributable to Company. This would have an additional financial commitment of ₹1.42 crore considering the revised completion period i.e., March 2017 to February 2021.

The Management stated (March 2018) that it was insisting for inclusion of cap on escalation in EPCM contract.

The reply corroborates the audit observation made under para 2.6.1 and points to the need for awarding contract with suitable saving clauses in case the reasons for delay were extraneous to the role of the Company.

2.6.3 Award of EPCM contract for evacuation facilities

The Company awarded (January 2015) EPCM contract for construction of Pellet Plant at Nagarnar, Beneficiation Plant at Bachel and Slurry pipeline system from Bachel to Nagarnar to MECON at a cost of ₹110 crore on nomination basis with a completion schedule of 48 months effective from January 2015.

We observed that:

- a) The value of the work was arrived at on the basis of previous and similar benchmarking of projects executed by MECON. By awarding the work on nomination basis instead of selecting the contractor through open tender, the Company was deprived of the competitive financial benefits that could have accrued through open tender enquiry.
- b) The EPCM contract cost was divided into two parts viz., Engineering Services– ₹58.69 crore and Project Management Services (PMC) - ₹51.31 crore. Each of these parts consists of milestone based payments and time based payments. The time based payments were to be made in 40 Equated Monthly Installments (EMIs) till the scheduled completion period i.e., January 2019 irrespective of the progress of work. The Company had paid ₹18.15 crore till June 2017 towards Engineering services (₹9.83 crore towards milestone based payments and ₹8.32 crore towards the time based EMIs). The payment of ₹8.32 crore towards time based EMIs without linking to progress of work was against the financial interest of the Company. Also, it was imprudent on part of the Company to award the contract in haste as the requisite clearances for the execution of the work were yet to be obtained.

Thus, the Company's plans for enhancing evacuation facilities by 2018-19 may not be fulfilled considering the progress of the works.

The Management stated (March 2018) that it awarded the EPCM contract on nomination basis after verifications of previous work credentials and quoted price of ₹135 crore were reduced to ₹110 crore after negotiations. Further, the Company invoked the deferment clauses contained in the contract and stopped EMI based payment from April 2017.

The reply is not acceptable as awarding of a high value contract on nomination basis was not in the financial interest of the Company. Though the Company invoked the deferment clause in April 2017, it had paid ₹8.32 crore towards engineering services which was avoidable.

The Ministry stated (July 2018) that MECON was the only Consultant who met the qualification criteria on individual facility and on overall basis.

Our view is that the Company should have floated open tenders to ascertain whether any other qualified bidder existed in the market in order to obtain a competitive quote in respect of a high value contract.

2.7 Sales and fixation of Iron ore prices

The Company entered into long-term contracts (valid for three to five years) with customers assuring supply of agreed quantities of Iron ore, and these contracts were renewable on expiry of the validity period. Apart from the long-term customers, the Company supplied Iron ore to Chhattisgarh based Sponge Iron producers as per the recommendations of the State Investment Promotion Board of Chhattisgarh from time to time. The customer base of the Company as on 01.04.2012 included 27 Iron ore

customers and 65 Sponge Iron companies. Major customers were Rashtriya Ispat Nigam Limited, Essar Steel Limited, JSW Steels Limited, JSW Ispat Limited etc. In addition, the Company also sold Iron ore in spot markets. The customer base of the Company in respect of Bailadila and Donimalai sectors during the five years period ending 31 March 2017 is detailed below:

Table 2.11 – Customer Base in Bailadila and Donimalai sectors

Sector	2012-13		2013-14		2014-15		2015-16		2016-17	
	Bld	Dnm	Bld	Dnm	Bld	Dnm	Bld	Dnm	Bld	Dnm
Customers excluding Chhattisgarh (CG) customers*	21	34	22	32	33	32	19	51	20	51
CG customers recommended by SIPB	67	---	54	---	60	---	63	---	41	---
Total	88	34	76	32	93	32	82	51	61	51

Bld- Bailadila; Dnm- Donimalai

*This includes export customers of POSCO, South Korea and Japanese Steel Mills respectively

It could be seen that the number of long term customers remained more or less the same. There was no increase in the customer base indicating that tangible efforts were not initiated by the Company except issuing notifications calling for interested customers.

The Company in its SMP – Vision 2025 considered it crucial to find new markets and customers to market the envisaged higher production and decided to initiate the following action plan:

- a) Sales to new customers/enhancing share of business with existing customers through market penetration strategy initiatives like quantity based freight subsidies, sales on delivered basis, etc.
- b) Developing intermediary stockpiles at strategic locations such as Jagdalpur, Raipur or Visakhapatnam to move close to the customers.
- c) Aligning product mix with the requirements of customers e.g., 8-18 mm for the Sponge Iron customers instead of 10-40 mm with proper evaluation.
- d) Developing marketing strategy for low grade ores and tailings including export option considering the constraints in evacuation capacity and subdued sales.
- e) Continuing efforts to pursue for removal of export tax to facilitate export of Iron ore in order to increase its export sales.
- f) Bringing down logistics cost by continuing to pursue for complete removal of inflated mileage on Kirandul-Kothavalasa (KK) line and construction of 140 km long Rowghat-Jagdalpur rail route.
- g) Aligning product mix and pricing strategy continuously to customer requirements and market realities to retain existing customers.
- h) Enhancing quality management process to meet customer needs within the constraints of dry processing.

Though the above action plan was formulated based on sound market analysis, the efforts made by the Company in implementing the same were not found in the records made available to Audit.

The Management stated (March 2018) that steps such as creation of intermediary stock pile, introduction of 10-20 mm size ore to meet the needs of Sponge Iron customers, delinking the Donimalai prices with Bailadila prices etc., were taken in line with the SMP – Vision 2025. Efforts were being made for removal of export freight and inflated railway freight with the concerned authorities.

Despite the above contention and measures taken by the Company, during the financial year 2016-17 the Company could sell Iron ore of 35.62 million tons only. Hence, suitable measures would need to be taken to sell an additional quantum of 15 million tons Iron ore by the year 2018-19 to reach the targets of 50 MTPA projected in SMP – Vision 2025.

The Ministry stated (July 2018) that the measures taken by the Company would take some more time to be operationalized.

2.7.1 Fixation of prices of Iron ore

The Company took positive initiatives based on recommendations made in the CAG's Report No. 20 of 2012-13 addressing the issues of optimum price realization for NMDC's ore, assured supply to domestic steel producers, and predictability of price. The Company changed their price fixation from quarterly basis to monthly basis factoring in the average prices prevailing in Odisha region (obtained through Joint Plant Committee (JPC) working under the Ministry of Steel, reference prices derived on the basis of formula suggested by KPMG (pricing Consultant), steel prices trend and market conditions i.e., movement of the ore. The Company also de-linked the prices of Donimalai sector from Bailadila sector. Further, the Ministry of Steel also constituted (October 2016) a Committee to suggest for a suitable pricing mechanism. We appreciate the measures taken by the Company in implementing the recommendation made in C&AG Report No.20 of 2012-13 which resulted in revision of prices on regular basis duly taking into consideration the market conditions.

2.8 Production & operational efficiency of NMDC Limited vis-à-vis its competitors

NMDC Limited is the largest Iron ore producer in India. Nevertheless, Audit made an attempt to review the position where NMDC Limited stands in the Iron ore industry in India in terms of production of Iron ore and cost of production. The audit findings are discussed below:

(a) Production of Iron ore

The production²⁵ of Iron ore by NMDC Limited and its share in the total domestic production of Iron ore during the years 2015-16 to 2017-18 is given in the following table:

Table 2.12: NMDC's share in total domestic production of Iron ore

Particulars	2015-16	2016-17	2017-18
Production of Iron ore in India (in million ton):			
Production by Public Sector	62.86	70.36	71.38
Production by Private Sector	95.25	124.22	129.58
Total Production	158.11	194.58	200.96
Production by NMDC Limited	28.57	34.00	35.58
Share in Production (in percentage)			
Share of Public Sector in Total Production	40	36	36
Share of Private Sector in Total Production	60	64	64
Share of NMDC in Public Sector Production	45	48	50
Share of NMDC in Total Production	18	17	18

It may be seen from the above table that while NMDC's share in the total public sector production of Iron ore registered a modest increase from 45 *per cent* in 2015-16 to 50 *per cent* in 2017-18, its share in the total domestic production remained around 18 *per cent* during this period. This is due to the fact that the share of private sector in the total domestic production has increased by 4 *per cent* during 2017-18 as compared to that in 2015-16. Thus, even though the production of NMDC Limited, in absolute terms, has slightly increased over the three year period 2015-18, its share in the total domestic production has remained static.

(b) Cost of production of Iron ore

It was observed that NMDC Limited produces Iron ore with an average of 64 *per cent* ferrous (Fe) content. This grade of Iron ore is produced mainly by the Iron ore producers based in Odisha, which is the highest Iron ore producing State in India. Audit, therefore, attempted to make a comparative analysis of the cost of production of NMDC Limited with that of its competitors in the private and public sector, based in Odisha State. Five major competitors in the private sector, viz. Rungta Mines Limited, Serajuddin & Co., Essel Mining & Industries Ltd, M/s Kamaljeet Singh Ahluwalia, and M/s Indrani Patnaik, and one major competitor in the public sector, viz. Odisha Mining Corporation Limited (a State Government company) were selected for the purpose of comparative analysis.

²⁵ The data relating to total production of Iron ore by public and private sectors have been obtained from the Monthly Statistics of Mineral Production for the months of March 2017 and March 2018, as brought out by the Indian Bureau of Mines.

The cost²⁶ of production of Iron ore (exclusive of royalty and taxes) of NMDC Limited and that of the six competitors during 2015-16 to 2017-18 was as follows:

Table 2.13: Cost of production of NMDC Limited and its competitors

		(₹ per ton)		
Sl. No.	Entity	2015-16	2016-17	2017-18
1	NMDC Limited	684	867	846
2	Rungta Mines Limited	446	384	379
3	Serajuddin & Co.	642	687	656
4	Essel Mining & Industries Limited	521	439	453
5	M/s Kamaljit Singh Ahluwalia	734	865	1504
6	M/s Indrani Patnaik	657	463	421
7	Odisha Mining Corporation Limited	741	706	682

It may be seen from the above table that the cost of production of NMDC Limited was higher than that of most of its competitors in the public as well as private sector during the years 2016-17 and 2017-18. The cost of production of Odisha Mining Corporation Ltd (OMC) was higher than that of NMDC during 2015-16, but NMDC's cost increased sharply during 2016-17 followed by a marginal reduction during 2017-18 while that of OMC consistently decreased during this period. Consequently, NMDC's cost of production was 23-24 per cent higher than that of OMC during 2016-18. As compared with the private sector competitors, NMDC's cost of production was higher by 53 per cent (2015-16), 126 per cent (2016-17) and 123 per cent (2017-18), than that of Rungta Mines Limited which had the lowest cost of production during all the three years.

Considering the fact that NMDC is the largest Iron ore producer in India, contributing around one-half of the total production by public sector and nearly one-fifth of the total domestic production, Audit is of the opinion that NMDC needs to rationalize its cost of production for achieving higher levels of operational efficiency.

While appreciating the audit suggestion to further rationalize the operations, the Management stated (February 2019) that the cost of production depends on various factors such as scale of operations, strata of mines, stripping ratio of ore and waste, nature of mining operations and social & environmental obligations. These factors starkly vary across the companies selected for comparison. Further, cost of production of NMDC is higher due to certain factors specific to the Company such as expenditure incurred on CISF/security guards, local area development, mine closure obligations and Corporate Social Responsibility, etc. After excluding the expenditure specific to the Company, the

²⁶ The cost of production of all the entities (except NMDC Limited) was obtained from the Indian Bureau of Mines and the data available online on the Integrated Mines and Mineral Management System of the Department of Steel and Mines, Government of Odisha. In respect of Rungta Mines Limited and Odisha Mining Corporation, which have more than one operating mines in Odisha State, average cost of production has been considered.

net cost per ton comes out to ₹520 during 2015-16, ₹486 during 2016-17 and ₹486 during 2017-18.

After considering the cost of production exclusive of expenditure specific to the Company, it was seen that as compared to the cost of production of Serajuddin & Co., M/s Kamaljit Singh Ahluwalia, and Odisha Mining Corporation Limited, NMDC's cost of production was lower by 19-30 *per cent* (2015-16), 29-44 *per cent* (2016-17) and 26-68 *per cent* (2017-18). However, NMDC's cost of production was higher by 16 *per cent* (2015-16) to 28 *per cent* (2017-18), as compared to that of Rungta Mines Limited, which had the lowest cost of production. Further, during 2016-17 and 2017-18, NMDC's cost of production was higher by 11 *per cent* and 7 *per cent* respectively as compared to that of Essel Mining & Industries Limited. NMDC Limited could, therefore, make more concerted efforts to bring down its cost of production of Iron ore.

The reply of the Ministry on the above audit observations was awaited (April 2019).