

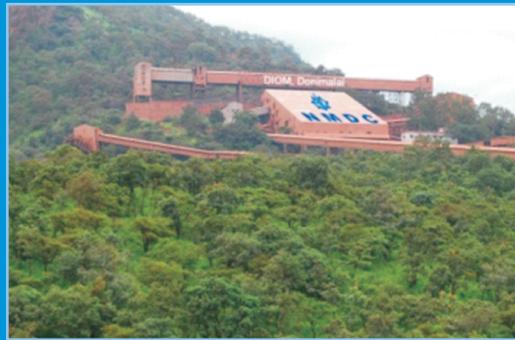
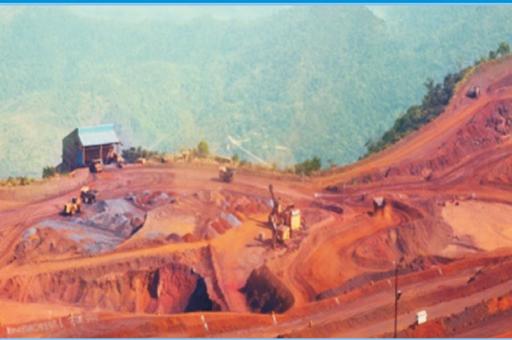


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Report of the Comptroller and Auditor General of India on Operational Performance of NMDC Limited



लोकहितार्थं सत्यनिष्ठा
Dedicated to Truth in Public Interest



Union Government (Commercial)
Ministry of Steel
No. 5 of 2019
(Performance Audit)

**Report of the
Comptroller and Auditor General of India
on
Operational Performance of NMDC Limited**

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Laid on the table of Lok Sabha and Rajya Sabha on

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PREFACE

The Performance Audit Report on Operational Performance of NMDC Limited has been prepared under the provisions of Section 19-A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The Audit has been carried out in line with the Regulations on Audit and Accounts, 2007 and Performance Audit Guidelines, 2014 of the Comptroller and Auditor General of India.

The Audit covered the period from 2012-13 to 2016-17. The Report is in furtherance to Report No. 20 of 2012-13 (Commercial) of the Comptroller and Auditor General of India, which covered the production and sale of Iron ore by NMDC Limited during the period 2005-06 to 2011-12. This Report examines the production, evacuation and sale of Iron ore, business diversification activities and investment in Joint Ventures by NMDC Limited during the period from 2012-13 to 2016-17.

Audit wishes to acknowledge the co-operation and assistance extended by the Officers and Staff of NMDC Limited, Ministry of Steel, Ministry of Environment, Forest and Climate Change, and the Forest and Revenue Departments of the States of Chhattisgarh and Karnataka during the Performance Audit.

Executive Summary

Background

NMDC Limited was incorporated in November 1958 with the main objective of exploring the mineral resources in the country. The production capacity of the Company was 44 million tons per annum (MTPA) of Iron ore as on 31 March 2017. The Company produces Iron ore through its open cast mines located at Kirandul (3 mines) and Bachelu (2 mines) in Bailadila sector of Dantewada district in Chhattisgarh State, and at Donimalai (2 mines) in Bellary district of Karnataka State. Apart from the production of Iron ore, the Company has taken several business diversification initiatives such as establishment of a Steel Plant at Nagarnar, Chhattisgarh, Diamond mining in Panna, Madhya Pradesh, setting up of a Captive Power Plant at Nagarnar, acquisition of a Sponge Iron unit at Paloncha, Telangana, establishment of a Pellet Plant at Donimalai, Karnataka, etc. Further, the Company has made investments in Joint Ventures with Central/State Government undertakings and private companies in India and abroad for establishment of Steel Plants and development of Coal and Iron ore mines. The production and sale of Iron ore by the Company was reviewed by the Comptroller and Auditor General of India and the audit findings were included in Report No. 20 of 2012-13 (Commercial). This Report examines the production, evacuation and sale of Iron ore, business diversification activities and investment in Joint Ventures by NMDC Limited during the period from 2012-13 to 2016-17.

Production, Evacuation and Sale of Iron Ore

In its Strategic Management Plan (SMP) – Vision 2025, the Company fixed (October 2015) over-ambitious targets for production of Iron ore viz. 75 MTPA by 2018-19 and 100 MTPA by 2021-22. The targets were fixed without giving due cognizance to adverse findings of the Consultant appointed for the purpose and without taking into consideration the declining trend in the domestic and international prices of Iron ore. Subsequently, the SMP was revised (September 2016) wherein the targeted production capacity was reduced to 50 MTPA and 67 MTPA by 2018-19 and 2021-22 respectively. However, the enabling action of setting up of various projects and infrastructure facilities to achieve the targeted production capacity were not in sync with the envisaged timelines.

(Paras 2.1.3 and 2.1.4)

The execution of all the packages for development of Deposit-11B mine in Bailadila sector was delayed beyond their scheduled completion dates. As a result, the project was still under implementation (March 2018) as against the scheduled completion time of June 2008. Against the installed capacity of 7 MTPA of the 11B mine, the Company could produce only 0.61 MTPA and 0.58 MTPA of Iron ore during the years 2015-16 and 2016-17 after commissioning the Crushing Plant and Downhill Conveyer System in August 2015, for want of screening facilities and non-completion of other package works.

(Para 2.3.1)

The execution of Kumaraswamy Iron Ore Project (KIOP) was still under implementation (March 2018) though the same was scheduled to be completed by March 2012. As such, 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 and 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, which was not an environment friendly step.

(Paras 2.3.2 and 2.3.3)

The Environmental Clearance for Screening Plant-II for KIOP was recommended (June 2017) by the Expert Appraisal Committee of the Ministry of Environment, Forest and Climate Change (MoEF&CC) subject to receipt of Stage-I Forest Clearance, after more than three years of application made (March 2014) by the Company. The delay was partly attributable to the Company as it failed to take prompt action for applying for revised Terms of Reference on account of increase in land requirement and submitted the requisite information to the MoEF&CC belatedly. Further, the Forest Clearance which was applied for in December 2014 was still awaited (March 2018) due to undue delay in conducting Differential Global Positioning System (DGPS) survey and non-submission of essential details sought by the Deputy Conservator of Forests, Bellary.

(Para 2.4.1)

In respect of Screening Plant-III for Kirandul complex, the Environmental Clearance (EC) was received by the Company in November 2013. However, the mistake in the area of the land mentioned in the EC as 65.936 hectares, against the land area of 74.236 hectares applied for, was not observed by the Company 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.

(Para 2.4.2)

In order to enhance the evacuation facility for Iron ore, the Company entered into (December 2012) Memorandum of Understanding (MoU) with the Railways for doubling of Kirandul to Jagdalpur section of the Kirandul-Kothavalasa railway line. The project was to be completed by the Railways by August 2018. Despite the fact that 88 *per cent* of the project execution timelines had elapsed (December 2017), the overall physical progress of work was only 41.50 *per cent*. The MoU did not incorporate any provision for project monitoring except for the requirement of a monthly progress report from the Railways.

(Para 2.5.1)

Diversification Activities

The Company proceeded (January 2010) with the establishment of an Integrated Steel Plant at Nagarnar, Chhattisgarh and awarded various packages based on the tentative details given in the Techno-Economic Feasibility Report (TEFR) instead of preparing a Detailed Project Report (DPR). As a result, the estimates were revised upwards and technical specifications were modified after the tenders were floated. This led to delays in tendering and award of packages. Further, the cost of the project was increased by 43 *per cent* from the estimated cost of ₹15,525 crore to ₹22,196 crore. The increase in cost amounting to ₹6,671 crore included ₹3,842 crore on account of change in scope of work, which could have been avoided if the Company had prepared the DPR. The project was still under execution (March 2018) even though it was scheduled to be completed by March 2014.

(Para 3.1)

In respect of Diamond mining at Panna, Madhya Pradesh, considerable quantity of unsold stock of Diamonds ranging between 39 *per cent* and 80 *per cent* of their production was lying at the end of each year during 2012-13 to 2016-17. The average production cost of Diamonds remained higher than the Net Realizable Value (NRV) during all these years. In view of this, the net loss of the Diamond Mining Project (DMP) as at the end of 2016-17 was ₹27.16 crore.

(Para 3.2)

The Company formed (June 2008) a Joint Venture Company viz., NMDC-CMDC Limited (NCL) with Chhattisgarh Mineral Development Corporation Limited (CMDC) for development of Deposit-13 situated in Bailadila Iron ore range. Forest Clearances for the project were received (January 2017) after 14 years from application (January 2003). The delay was partly attributable to the Company as it took four years time to submit the Indian Bureau of Mines (IBM) approved mine plan to the concerned authorities and also did not comply with some of the conditions of Stage-I Forest Clearance. Further, the Consent for Establishment and Consent to Operate were yet to be obtained from Chhattisgarh Environment Conservation Board (March 2018). Thus, the prospects of achieving the targeted production of 2 MTPA of Iron ore from Deposit-13 by 2018-19 as envisaged in the SMP 2025 appear to be bleak.

(Para 3.3)

The Company acquired loss making Sponge Iron India Limited in July 2010. The Sponge Iron production turned unviable due to higher cost of production and the losses of Sponge Iron Unit (SIU) accumulated to the tune of ₹194.77 crore as on 31 March 2017. The Company in its turnaround plan (01.10.2015) proposed to conduct a study for reduction in production cost and to utilize the available land (428.98 acres) for setting up of Thermal and Solar Power Plants which was yet to take off. The Company had not implemented the turnaround plan as envisaged and as of July 2017, the unit had idle staff strength of 167 (both executive and non-executive).

(Para 3.4)

The Company proposed (May 2009) to set up 1.2 MTPA Pellet Plant at Donimalai at a cost of ₹572 crore for production of Pellets by utilizing slimes (1.59 MTPA) and fines (0.30 MTPA) through beneficiation and pelletisation process. However, due to non-synchronization of major package works, commissioning of the project was abnormally delayed. The Pellet Plant was proposed to be set up on the strength of slimes available free of cost. However, in view of the directions of the Hon'ble Supreme Court regarding Iron ore sales in Karnataka State through e-auction under the supervision of the Monitoring Committee appointed by Central Empowered Committee, the Company had to procure the slimes/fines through e-auction at market price at par with others. On account of this, the production cost of Pellets was bound to increase which, in turn, had a negative impact on the viability of the project.

(Para 3.6)

Strategic Investment in Joint Ventures

The Company formed (May 1989) a Joint Venture Company (JVC) named J&K Mineral Development Corporation Limited (J&KMDC) with J&K Minerals Limited for setting up a 30,000 TPA (tons per annum) capacity Dead Burnt Magnesite (DBM) manufacturing plant at Panthal village in Jammu & Kashmir. The mining lease was transferred (April 2011) in the name of the JVC and the JVC received the Environment Clearance in May 2011. However, in October 2016, MoEF&CC withdrew the Environmental Clearance citing that open cast mining in close proximity to holy shrine of Shri Mata Vaishno Devi may lead to irreversible damage to pristine, fragile and environmentally sensitive area. Thus, amount of ₹42.37 crore spent by the Company on the project proved infructuous and was written off from the books of accounts in 2016-17.

(Para 4.1)

The Company made an investment of ₹100.60 crore in the equity of Neelachal Ispat Nigam Limited (NINL) in anticipation of allotment of Mankadanacha Iron ore deposit in its favour which was under dispute. However, the dispute over the mining lease was still unresolved (March 2018). Thus, the investment made by the Company did not yield any returns so far.

(Para 4.2)

With the objective of securing Metallurgical Coking Coal and Thermal Coal supplies from overseas, a Special Purpose Vehicle (SPV) viz., 'International Coal Ventures Limited (ICVL)' was formed in May 2009 wherein NMDC Limited was one of the participating PSUs. In July 2014, ICVL decided to acquire the ownership portion of Rio Tinto Plc., UK in the Coal mine and Coal assets located in Mozambique. It was observed that the investment made by Company to the extent of ₹376.36 crore (on which there was no return so far) by relying upon the incorrect/ improper and unrealistic business plan of ICVL for acquisition of loss making Mozambique mining assets was not prudent.

(Para 4.4)

The Company decided (May 2011) to acquire 50 *per cent* shares in Legacy Iron Ore Limited, (LIOL), Australia to secure management control on the mining tenements that would be acquired by LIOL. The Company made a total investment in LIOL to the extent of ₹168.53 crore (Aus \$31.01 million) despite the fact that the Consultant appointed for conducting evaluation study had opined that it was a negative Net Present Value (NPV) project and was a marginal asset in the short to medium term. The share value of LIOL eroded to 0.30 Aus cents per share (3 November 2017) from the initial acquired price of 6.55 Aus cents per share. On account of this, the value of investment made by the Company also declined to ₹17.13 crore from ₹168.53 crore. Further, the Company was bound to spend ₹89.67 lakh annually till the year 2030 to retain the tenements in addition to the expenditure for development of infrastructure facilities.

(Para 4.5)

Internal Control and Monitoring

The internal control mechanism of the Company was weak as evident from the fact that - (a) the Sub-Committee for reviewing ongoing Projects did not fix any timelines with clear milestones to be achieved which could be reviewed in its subsequent meeting; (b) the decisions on major investments such as acquisition of disputed Iron ore mine in Odisha (Neelachal Ispat Nigam Limited), investment in International Coal Ventures Limited, etc. were made without conducting proper due diligence on its own; (c) periodical mid-term review of implementation of Strategic Management Plan – Vision 2025 as prescribed by the Board was not done, due to which corrective action in plugging shortfalls in achievement of the projected targets were not addressed.

(Para 5.1)

Recommendations:

- 1) The Company needs to factor in market trends while fixing the targets in its periodic plans so that the set targets are realistic and achievable.
- 2) The Company may ensure timely submission of required documentation and follow up with the concerned statutory authorities with a view to secure statutory clearances within the timelines prescribed.
- 3) The Company needs to conduct proper due diligence and pay due cognizance to the risk factors before embarking on national and international investment ventures.

- 4) The Company needs to strengthen its project execution mechanism/ strategy to avoid delays in implementation of projects/construction works and to avoid time and cost overruns so that envisaged benefits are realized.
- 5) The Board of the Company may strengthen its monitoring mechanism with a view to ensure timely completion of projects.

Response of the Ministry on the audit recommendations:

The Ministry of Steel was in agreement with the Recommendations No. (2), (3) and (4) above. In respect of Recommendation No. (1), the Ministry stated that it is very difficult to forecast the exact market trends in advance in the Iron ore industry, in view of volatile market conditions. In respect of Recommendation No. (5), the Ministry stated that the Sub-Committee of Board of Directors reviews the progress of ongoing projects and gives its advice and remedial actions for completing the projects.

The above responses of the Ministry on Audit Recommendation Nos (1) and (5) have been duly considered and incorporated under the respective paras of this Report (Paras 2.1.4 and 5.1) along with further views of Audit thereon.

Chapter I

Introduction

1.1 Profile of the Company

NMDC Limited was incorporated in November 1958 with the main objective of exploring the mineral resources in the country and started its operations with a production capacity of two Million Tons Per Annum (MTPA) of Iron ore, which has grown to a capacity of 44 MTPA as of 31 March 2017. The Registered office as well as the Corporate Office of the Company is located at Hyderabad. The Company was granted Navratna status in 2008 and has been in profit since 1989-90 onwards. It earned a profit (before tax) of ₹4,293.68 crore on an income of ₹9,738.45 crore during the year 2016-17. Production and sale of Iron ore is the main activity of the Company, constituting about 98.63 *per cent* (₹8,708.90 crore) of the turnover during 2016-17 and the balance 1.37 *per cent* (₹120.74 crore) was through sale of Diamonds, Power, Pellets and services.

NMDC caters mainly to domestic demand and produces high quality Iron ore through its open cast mines located at Kirandul (3 mines) and Bacheli (2 mines) in Bailadila sector of Dantewada district in Chhattisgarh State, and at Donimalai (2 mines) in Bellary district of Karnataka State. The maximum allowable capacity of the mines located at Kirandul, Bacheli and Donimalai was 19 MTPA, 13 MTPA and 12 MTPA respectively.

The world's Iron ore production during the calendar year 2016 stood at 2,230 million tons (MT), of which India's production was 160 MT, representing 7 *per cent* of the same and NMDC's share was 34 MT, representing 21 *per cent* of total production in India. The Company had proven Iron ore reserves of 2,407.76 MT as on 31 March 2017 out of total proven Iron ore reserves of 33,276 MT (22,487 MT Hematite and 10,789 MT Magnetite) in the country.

Apart from the production of Iron ore, the Company has taken several business diversification initiatives such as establishment of a Steel Plant at Nagarnar, Chhattisgarh; Diamond mining in Panna, Madhya Pradesh; setting up of a captive Power Plant at Nagarnar; acquisition of a Sponge Iron unit at Paloncha, Telangana; establishment of a Pellet Plant at Donimalai, Karnataka, etc. Further, the Company has made significant investments in joint ventures with Central/State Government undertakings and private companies in India and abroad for establishment of Steel Plants and development of Coal and Iron ore mines. The geographical spread of all the projects of the Company in the country is depicted in **Annexure-I**.

1.2 Organizational set-up

The Company is headed by Chairman-cum-Managing Director (CMD) who is assisted by five Functional Directors for Production, Technical, Commercial, Finance and Personnel divisions. There were two Government of India Nominee Directors and six Independent Directors on the Board of the Company (March 2017). The mines are headed by Executive Directors/ General Managers who report to Director (Production)/ Director (Commercial) for day to day operations.

1.3 Audit objectives

The main objectives of the Performance Audit were to assess whether:

- (i) the Company achieved its targets for production, augmentation of production capacity, improvement in evacuation facilities and sale of Iron ore and other products;
- (ii) the Company achieved its targets for diversification initiatives like setting up of Integrated Steel Plants, Power Plant, Pellet Plant, Diamond mining and manufacturing of Sponge Iron;
- (iii) the Company realized expected benefits from its investments in joint ventures with State Governments and with International partners for acquisition of Iron ore mines as well as other minerals like Coal, etc.; and
- (iv) the Company had an adequate internal control mechanism suitable to its size of operations and whether these controls operated effectively.

1.4 Scope of audit

The Performance Audit covered (i) planning for achieving the targets set for production and sale of Iron ore and other products, (ii) progress made against the projects undertaken for expansion of production capacity, evacuation capacity, and acquisition of mineral reserves both within the country and abroad, (iii) progress made in setting up of Integrated Steel Plants, Pellet Plant and Power Plant envisaged under diversification and strategic investment plans of the Company, and (iv) effectiveness of internal controls.

A Performance Audit on 'Production and sale of Iron ore by NMDC Limited' was conducted covering the period from 2005-06 to 2011-12 and the CAG's Report (No. 20 of 2012-13) was placed in the Parliament on 20 December 2012. The present Performance Audit covers the activities of the Company from 2012-13 to 2016-17. The instances which came to notice in earlier years, but which could not be included in the earlier Audit Reports and the matters relating to the period subsequent to the year 2016-17 have also been included wherever necessary.

1.5 Audit criteria

The performance of the Company was assessed against the following criteria:

1. Project cost and timelines for expansion/diversification projects as approved;
2. Targets set in the Memorandum of Understanding (MoU) signed with the Ministry of Steel (MoS) annually and in the Corporate Plan of the Company;
3. Decisions taken in the meetings of Board of Directors of the Company;
4. Guidelines of Central Vigilance Commission for tendering and procurement;
5. Provisions of the manuals/policies laid down by the Company;
6. Provisions of the Mines and Minerals (Development and Regulation) Act, 1957 and Mineral Concession Rules, 1960, as amended from time to time;
7. Observations made by the Indian Bureau of Mines and the State Pollution Control Boards (PCBs) in their review reports on the mining activities of NMDC; and
8. Guidelines issued by Ministry of Environment, Forest and Climate Change (MoEF&CC) for Environmental/Forest Clearances.

1.6 Audit methodology

An Entry Conference was held with the Company on 13 June 2017 to discuss the audit objectives, scope, methodology and criteria for audit. Audit teams conducted the field audit during June 2017 to January 2018 and examined the records of the production units (i.e. Mines) and Corporate Office of the Company, Ministry of Environment, Forest and Climate Change and Ministry of Steel of the Government of India and the Forest and Revenue Departments of the States of Chhattisgarh and Karnataka.

During the course of audit, we reviewed all records pertaining to production of Iron ore and other products, procurement files relating to HEMM and Capital Equipment, all long term contracts for sale of Iron ore, contracts awarded for planning and execution of NISP steel plant and Pellet plant, and Joint Venture agreements.

The draft Performance Audit Report was issued to the Company on 22 February 2018 for confirmation of facts and figures and their response. An Exit Conference with the Company was held on 8 March 2018. The reply of the Company (received on 3 April 2018) and the views expressed during Exit Conference were suitably incorporated in the draft Report and the same was issued to the Ministry of Steel on 23 April 2018. An Exit Conference was held with the Ministry on 8 June 2018 to discuss the audit findings. The reply of the Ministry (23 July 2018) and the views expressed during the Exit Conference have been appropriately incorporated while finalizing this Report.

1.7 Structure of the Report

This Report contains Chapters on Production, Evacuation and Sale of Iron ore, Diversification Activities, Strategic Investment in Joint Ventures, Internal Control and Monitoring, and Conclusion and Recommendations. The Report also contains Annexures I to VIII and a list of Abbreviations.

1.8 Acknowledgement

Audit appreciates and acknowledges the cooperation and assistance extended by the Management of NMDC Limited, Ministry of Steel, Ministry of Environment, Forest and Climate Change, and the Forest and Revenue Departments of the States of Chhattisgarh and Karnataka at various stages of the Performance Audit.

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.

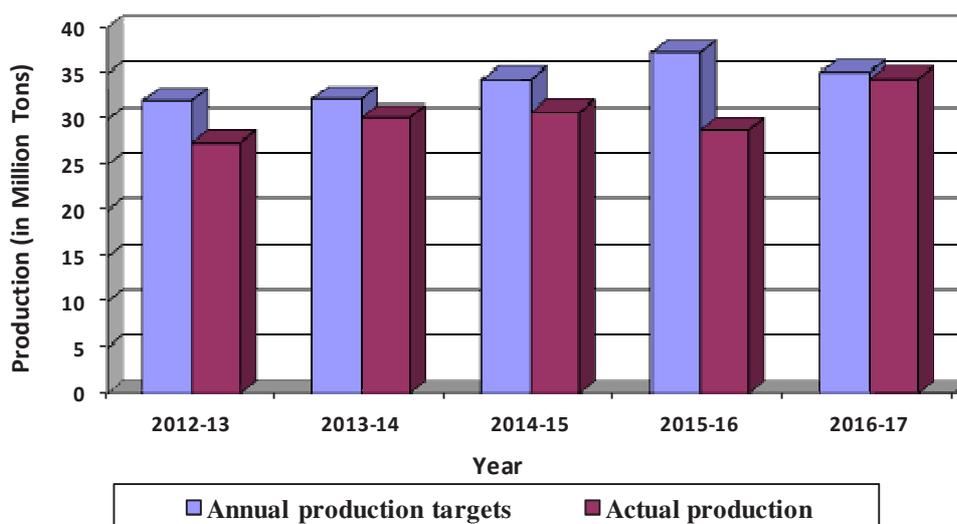
2.1.2 Shortfall in actual production vis-à-vis Corporate targets

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.

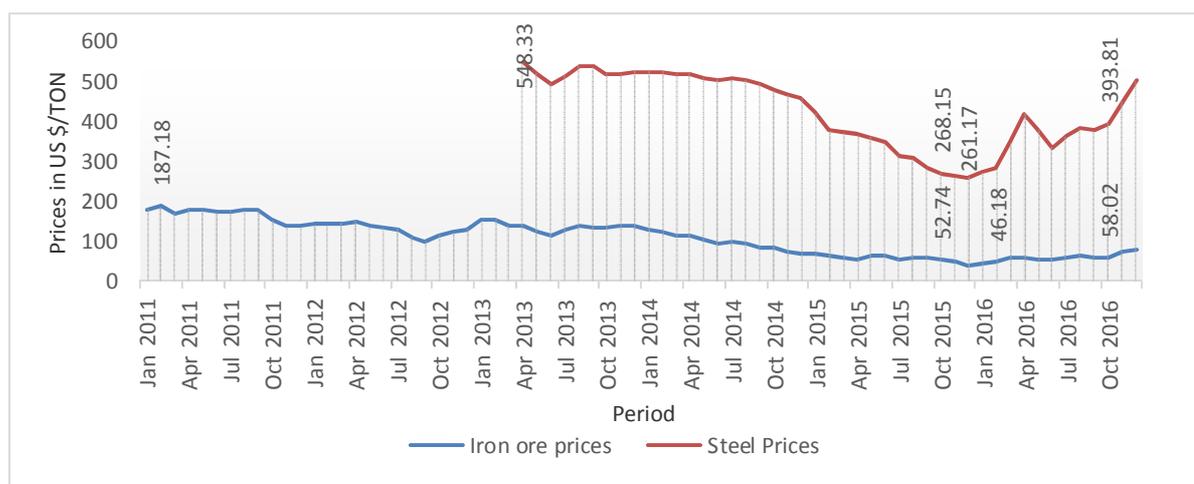
Despite the above opinion of the Consultant, the Company proceeded with the Strategic Management Plan (SMP) – Vision 2025 (October 2015) which envisaged to:

- 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:

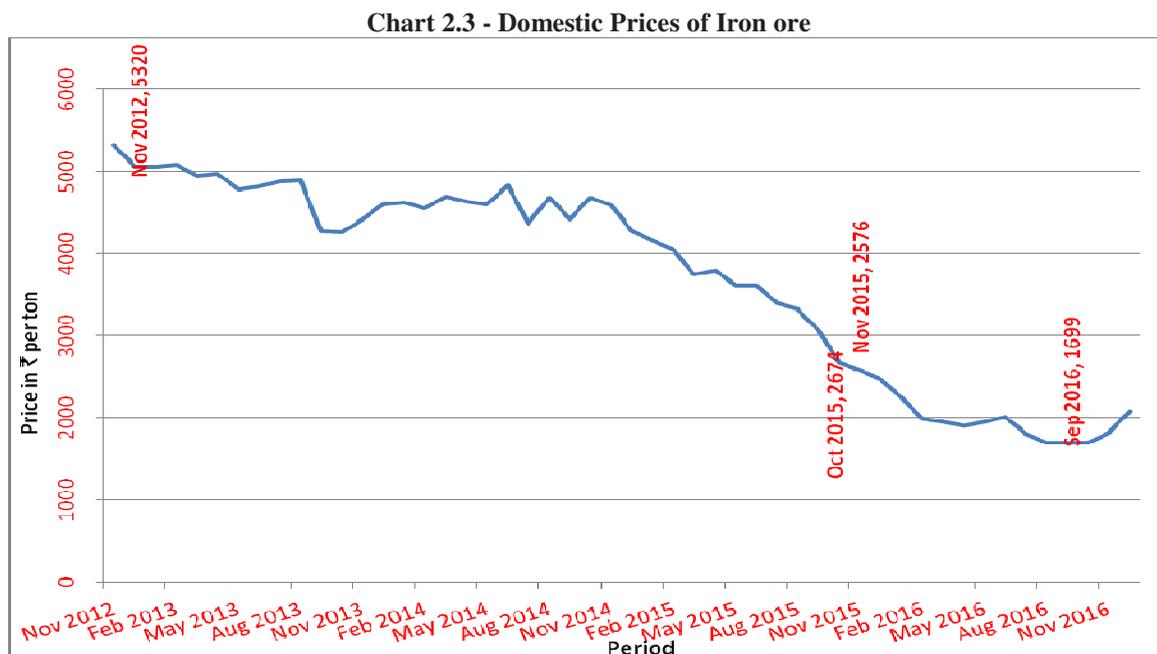
Chart 2.2 – International prices of Iron Ore and Steel



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 Bacheli 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:

- 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.
- 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.
- 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

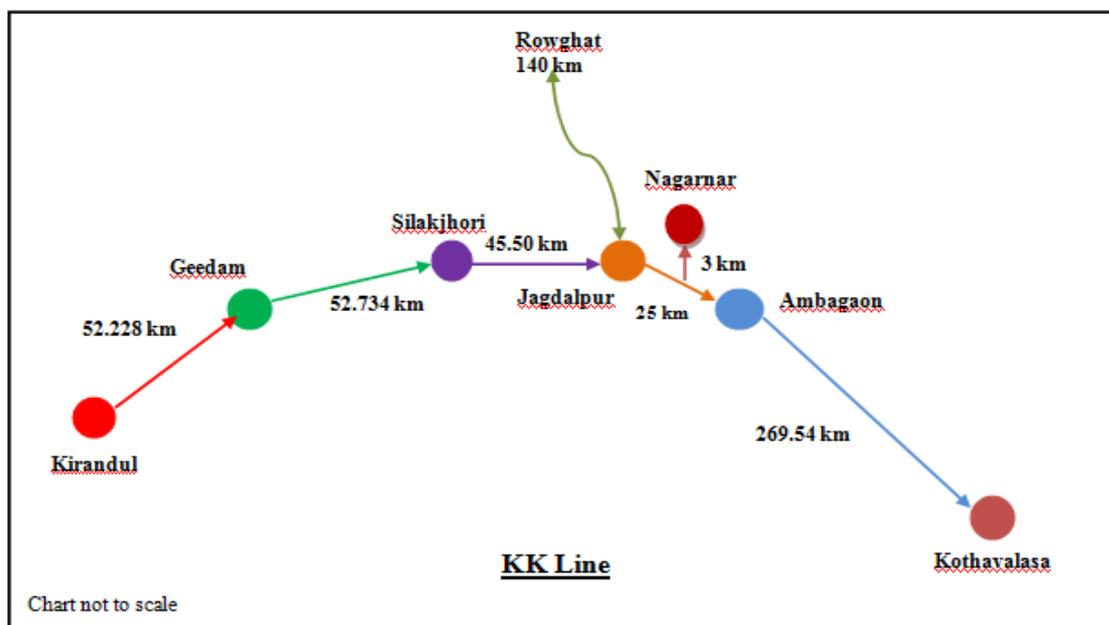
account of increase in wagon capacity from 70 tons per wagon to 78 tons per wagon from 01.04.2017.

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								
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).

Chapter III

Diversification Activities

As part of its diversification drive, the Company ventured into Diamond mining in Panna in the State of Madhya Pradesh as well as establishment of Steel Plants, Power Plant, Pellet Plant and acquisition of a Sponge Iron Plant, etc. The audit findings on the various diversification initiatives taken by the Company are discussed in this Chapter.

3.1 Setting up of Integrated Steel Plant at Nagarnar in Chhattisgarh (NISP)

National Steel Policy, 2005 projected a compounded annual growth rate of 7.3 per cent of annual steel production during the period 2004-2020. To tap the opportunities of steel growth in India, the Company signed (August 2007) a Memorandum of Understanding (MoU) with Steel Authority of India Limited (SAIL) and Rashtriya Ispat Nigam Limited (RINL) for setting up of a Steel Plant through a Joint Venture (JV) Company. In a review meeting held (13 March 2008) by the Ministry of Steel, it was projected that it would require capital of ₹12,000 crore with debt-equity ratio of 2:1 (₹8,000 crore for debt and ₹4,000 crore towards equity) for establishment of a 3 MTPA Steel Plant. After discussing various options for setting up of the Plant, it was decided (13 March 2008) that NMDC may set up the Plant on its own in view of its adequate cash reserves and easy access to the primary raw material i.e. Iron ore. The Company informed (20 March 2008) the Ministry that the entire cost of the Plant would be met through its internal sources. As decided, the Board approved (July 2008) the appointment of MECON Limited as Consultant for preparation of Techno Economic Feasibility Report (TEFR) for the project. MECON submitted (December 2008) the TEFR for the following product mix of various capacities:

Table 3.1 – Product mix of the proposed Integrated Steel Plant at Nagarnar

Sl. No.	Product Description	Size (thickness *width) in mm	Annual production capacity in tons
1	Hot rolled plates	5-10*1030-1650 mm	4,00,000
2	Hot rolled plates	5-10*1030-1650 mm	4,00,000
3	API-5L quality plates upto 80 mm	6-12*1550 mm	5,00,000
4	Hot rolled plates	2-4*1030-1650 mm	2,00,000
5	LPG cylinders	2.0-3.15*1000-1665 mm	2,00,000
6	Hot rolled coils	1.6-10*900-1650 mm	9,46,000
7	High carbon steel	205-11.5mm	50,000
8	Silicon steel	1.81-3.5 mm	1,00,000
9	Automotive steel		1,00,000
	Total		28,96,000

Subsequently, the Company awarded (March 2009) the work of carrying out due diligence of TEFR submitted by MECON to PricewaterhouseCoopers who submitted the due diligence Report in May 2009. Accordingly, NMDC Board accorded (January 2010) approval for setting up of the Integrated Steel Plant at Nagarnar, Chhattisgarh and

sanctioned an estimated amount of ₹15,525 crore, including interest during construction (IDC) of ₹403.65 crore with scheduled completion by March 2014. The Company was in possession of 884.189 hectares (2,184.83 acres²⁷) of land for the project at Nagarnar. Basic raw materials required for the Plant were Iron ore, Coking Coal, Lime and Dolomite. Bailadila Deposit-4 was identified as a source for Iron ore. Coking Coal was planned to be imported from China, New Zealand and Australia. Lime and Dolomite were planned to be sourced domestically. Forest Clearance Stage-II involving the forest land of 36.483 hectares was received by May 2011.

The Company was new in the field of establishment of a Steel Plant and a DPR would have given a better insight and control to the Company in implementation of the project. The Detailed Project Report (DPR) is normally prepared based on the data and results obtained from studies. All vital aspects are covered in much greater detail in DPR. The basic difference between the TEFR and DPR is the level of accuracy and degree of detail.

We observed that the Company proceeded with the execution of project and awarded various packages based on the tentative details given in TEFR without preparing a DPR. As a result, the estimates were revised upwards and technical specifications were modified after the tenders were floated. This led to delay in tendering and award of packages as detailed in subsequent paragraphs.

The Management stated (March 2018) that TEFR provided a conceptual framework with assessment of available technologies, preparation of general layout with requirement of raw material, land, water, power and other infrastructure and would be the basis for investment decision. With passage of time, the concept of preparation of DPR had lost its relevance, as considerable time lapses on its preparation which ultimately leads to increase in project time schedule and thereby cost itself.

The contention of the Management that preparation of DPR leads to increase in time schedule and cost of the project is not acceptable as the DPR helps in effective control and monitoring of the project implementation. The TEFR is prepared to assess whether the proposed project is technically and economically viable and forms the basis for taking a decision to take up the project. The DPR provides details like scope of work, estimated cost of the project, details of packages, technology to be opted, technical specifications, etc., which are necessary for execution of the project along with the timelines for completion of each packages. A clear distinction of the purpose between TEFR and DPR, was imperative in the interest of the Company. The same was substantiated by the fact that the technical specifications were subsequently modified, cost estimates were revised upwards and a number of packages initially not envisaged at the time of TEFR were added later on and this had finally led to delay in awarding/execution of majority of the packages.

²⁷ One hectare is equivalent to 2.471 acres

While accepting our contention, the Ministry stated (July 2018) that preparation of DPR might be possible for simple projects where complexity was not there. Though DPR gives more in-depth estimate, it was difficult to finalize the scope, specifications etc., some of the facilities were mostly dependent on other packages, operational philosophy, maintenance and strategy. Further, some private players executed their expansion projects/new projects based on TEFR.

Had the Company prepared the DPR the cost and time overruns could have been minimized or avoided as discussed in the succeeding paragraphs.

3.1.1 Appointment of MECON Limited as Consultant for Engineering Services

The Company resolved in its 404 Board meeting (24 July 2008) to engage MECON on lump sum basis for Engineering, Procurement, Construction Management and Project Management (EPCM) services on nomination basis. Accordingly, consultancy contract was awarded (23 February 2011) at a cost of ₹351 crore with a completion period of 60 months from the effective date of 25 March 2009 i.e., March 2014. The terms of contract, *inter alia*, stipulated that 40 per cent of the contract value amounting to ₹140.40 crore would be paid in 60 monthly installments from the effective date and the balance amount of ₹210.60 crore (60 per cent) was to be paid on the achievement of the milestones set for completion of the engineering services. Against this, the Company had paid the entire 40 per cent payment of ₹140.40 crore towards monthly installments by March 2014 and as against ₹210.60 crore for 60 per cent milestone payments, the Company had paid ₹173.80 crore upto August 2017.

3.1.2 Performance of Consultant

As per the TEFR, the placement of orders for major technological packages was to be completed within 19 months of the effective date, and this was to be reckoned as the zero-date of the project. The project was to be commissioned in 42 months time from the zero-date. Further, awarding of auxiliary packages was to be completed within 17 months from the zero date. Accordingly, major packages were to be awarded by October 2010 (i.e. 19 months from the effective EPCM contract date of March 2009) and auxiliary packages were to be awarded by March 2012. The Company placed 44 work orders (March 2017) out of which 38 work orders valuing ₹5 crore and above were selected and examined by us as detailed below:

Table 3.2 – Details of packages awarded for construction of Nagarnar Integrated Steel Plant

Category of package	Total number of contracts	Value (₹ in crore)	No. of contracts selected	Selected contracts value (₹ in crore)
Major packages	9	11878.47	9	11878.47
Auxiliary packages	14	2316.23	13	2313.12
Infrastructure packages	7	311.69	5	304.62
Enabling packages	11	236.94	8	231.28
Railway packages	3	446.39	3	446.39
Total	44	15189.72	38	15173.88

The details of dates of issue of tender and award of contract, delay in award of purchase orders together with reasons for delay with reference to above implementation schedule in respect of 38 selected purchase orders are given in **Annexure-VII**.

3.1.3 Delay in awarding of major packages

The award of nine major packages was to be completed by the month of October 2010. It was observed that the Company could not float even a single Notice Inviting Tenders (NIT)/ Limited Tender Enquiry (LTE) till April 2010 though action for preparation of cost estimates and finalization of tender specification work was initiated way back in July 2009. The same were issued during the period from April 2010 to July 2011. Further, the Company placed purchase orders for nine major packages within a period of 9 months to 25 months post NIT/LTE. The delay was attributed to changes made to the Standard Bidding Documents, revision of cost estimates/price bids, changes in technical specifications, addition or deletion of certain facilities after discussion with prospective bidders, etc. The analysis of package-wise delay in placing the purchase orders is given in **Annexure-VII**. During the tendering stage, an amount of ₹1,211.80 crore was added to the estimated cost in respect of six out of nine packages on account of change in scope, change in volume/quantity, under-estimation. For instance, in case of Package-1 i.e. Raw Material Handling System (RMHS), estimated cost was increased by ₹279.35 crore due to change of specification of Wagon Tippler, Stream capacity and stock yard etc., and in respect of Package-2 i.e. Coke Oven Battery, the estimate was increased by ₹173.90 crore on account of increase in scope towards demineralisation water plant, pushing emission control system, refractories, etc. The fact that there was revision of estimates and technical specifications, addition/ deletion of facilities raises doubts on the efficiency and expertise in project formulation and cost estimation on part of the Consultant.

The Management/Ministry stated (March/July 2018) that it could get all the necessary clearances by February 2011. Accordingly, zero date was fixed as March 2011 with completion schedule of May 2015. Prior to clearances, as a parallel action, preparation of specifications and cost estimates for the major packages was done during 2009-10. All the nine major packages were finalized by May 2012 within 14 months from the zero date of the Project.

The reply is factually incorrect as the effective date of EPCM contract was declared as March 2009 and as per TEFR pre-ordering activities of major packages were to be completed within 19 months i.e., by October 2010 which should be reckoned as the zero date. As the major packages were finalized by November 2012, the time taken by the Company in awarding these packages was 44 months as against 19 months stipulated in TEFR.

3.1.4 Delay in award of auxiliary and other packages

The auxiliary packages were to be awarded by March 2012 i.e. within 17 months of the zero date. However, the Consultant floated NIT/EoI for these packages even till July 2016. Further, the Company took 5 months to 46 months for award of packages from the date of NIT/EoI (December 2010 and April 2017) as detailed in **Annexure-VII**. These delays were attributed to delay in finalization of specifications, revision of specifications, evaluation time taken by the Consultant/Tender Scrutiny Committee, retendering due to receipt of single bid, getting approval of Empowered Committee of Directors/Board where L1 prices were much higher than estimates, etc. During tendering stage an amount of ₹1,413.28 crore was added to the estimated cost of the packages on account of change in volume/quantity. For instance, in Power & Blowing Station package, there was increase in capacity of Steam Turbine & Generator, Electricals and Demineralised Water Plant etc., to the tune of ₹70 crore and in respect of Plant Power Distribution System package, due to change of technology of switch gears from Air Insulated Substation to Gas Insulated Substation facility, to the tune of ₹79 crore.

The Management stated (March 2018) that tendering of the auxiliary packages was to be planned based on the progress of execution of main packages as various inputs were required from the main technological package contractors to finalize the specifications for auxiliary packages. Further, some of the auxiliary/infrastructure packages were re-tendered due to poor response/ no bidders meeting the eligibility requirement/ high prices quoted by the L-1 bidder. The above processes took time in some of the tenders.

The TEFR envisaged awarding of auxiliary and other packages within 17 months from zero date. However, the works for these packages were awarded within a period ranging from 5 to 46 months. The delays could have been avoided had the Company prepared DPR which would have frozen the complete scope of work, technical specifications and cost estimates. Failure to prepare the DPR resulted in avoidable delays in tendering and award of the packages.

The Ministry stated (July 2018) that new facilities were added during tender stage considering ease of operations and maintenance of facilities. As such the observation made by Audit that failure to prepare DPR led to avoidable delay in tendering and award of packages was misleading, which is substantiated by the procedure followed in other steel PSUs where implementation of project was proceeded on TEFR basis.

The reply needs to be viewed in light of the fact that the total cost of auxiliary packages was revised from ₹1,557.05 crore to ₹3,333.30 crore indicating an increase of ₹1,776.25 crore. Of this, increase of ₹1,413.28 crore was towards change in volume/quantity of work. This indicates that inadequate projections were made in the TEFRR. Had the Company prepared a DPR, the complete scope could have been more accurately estimated and the need for change of scope could have been avoided.

3.1.5 Revision of total project cost

The Board approved (January 2010) ₹15,525 crore as the project cost. However, in view of the increase in costs of awarded works, a proposal was submitted to the Board (December 2016) for approval of revision in cost estimates to ₹22,196 crore representing an increase of ₹6,671 crore (43 *per cent*) over the original estimate. The revision in estimated cost was on account of change in scope and increase or decrease of volume/quantity of work (₹3,842 crore) and price escalations, foreign exchange variations and change in duties and taxes (₹2,829 crore). The Revised Cost Estimate (RCE) was yet to be approved by the Board (March 2018). Further, the increase in volume/quantity of work included increase in the cost of External power transmission line from ₹70 crore to ₹404.96 crore (net increase of ₹334.96 crore) due to laying of 331 km length 400 KV line instead of 90 km length 220 KV line, Railway packages value from ₹134 crore to ₹557.71 crore (net increase ₹423.71 crore) due to increase of length from 40 km to 65 km and addition of new facilities at the behest of East Coast Railways, and Township packages from ₹300 crore to ₹1,870.27 crore (net increase ₹1,570.27 crore) due to inclusion of construction of quarters for all the employees (instead of 75 *per cent* of manpower as envisaged in TEFRR) and cost towards public buildings like schools, hospitals and guest house.

The Management stated (March 2018) that the cost estimates were revised on account of firmed up prices with detailed final scope of work for awarded packages/ estimated cost for balance packages of various facilities which included technological/ auxiliary/ enabling packages, external infrastructure, townships, railway track & siding work, detailed engineering, consultancy fee & project management, land and site development, etc. In addition, RCE consisted of Interest during construction (IDC), contingencies, preliminary & pre-operative expenses, provision for price escalation on INR (Rupee) portion and foreign exchange variation, social commitment towards Rehabilitation and Resettlement (R&R), etc. RCE worked out to ₹22,610.35 crore which was yet to be approved by the Board.

The increase in cost estimates could have been restricted to change in taxes and duties and foreign exchange variations had the Company prepared the DPR.

The Ministry stated (July 2018) that audit observation is not clear as future changes in taxes and duties, and foreign exchange variations cannot be foreseen at initial stage.

While variations in cost estimations on account of volatile nature of taxes/duties and Foreign Exchange variations/fluctuations cannot be discounted, the major revisions on project cost estimates could have been minimized had the Company formulated a DPR.

3.1.6 Execution of Project

As per TEFRR, the entire project (tendering, execution and commissioning) should be completed within 60 months i.e., by March 2014 (effective date being March 2009). In order to execute the project, the Company awarded two consultancy contracts viz., EPCM contract, awarded in February 2011, for tendering and awarding of packages, and Project Management and Construction supervision services (PMC) contract awarded in April 2012. Both the contracts were awarded to MECON. In line with the timeline stipulated in TEFRR, the scheduled completion period of EPCM contract was March 2014. However, the scheduled completion period of PMC contract was provided upto March 2015 which was beyond the scheduled completion period of March 2014.

The PMC contract provided for payment of 40 *per cent* of the contract price (₹244 crore) amounting to ₹97.60 crore on monthly basis (from January 2011 to December 2014) from the effective date (07 January 2011) and the balance amount of ₹146.40 crore (60 *per cent*) to be paid on the milestone completion of the project. The Company so far (17 February 2018) paid ₹161.48 crore to the Consultant towards execution of PMC Contract which included ₹97.60 crore towards monthly payments without linking to actual progress.

3.1.6.1 Execution of major packages

The Company awarded nine major packages during the period from January 2011 to November 2012 with scheduled completion period between November 2013 and April 2015 as detailed in **Annexure-VIII**. We observed that, none of the major packages was completed (as on 31 December 2017) even after delays ranging from 32 months to 49 months beyond the scheduled completion dates. The physical progress achieved ranged between 85 *per cent* and 98 *per cent* except for Package-8 (Lime and Dolomite Plant) which was 45 *per cent* only. Submission and approval of civil/structural drawings was not completed in full for any of the packages. As per the latest Project Evaluation and Review Technique (PERT) network schedule prepared (December 2017) by the Consultant, these packages were expected to be completed by August 2019 in all respects. The delay in completion was attributed to slow progress on account of inadequate deployment of manpower and material, non-sequential supply of materials by suppliers and non-availability of work fronts. The Contracts contained penal clauses such as imposition of penalty/ LD upto a maximum of 10 *per cent* and risk and cost clause towards delay/lapses attributable to contractors. Action will be taken according to these clauses after completion of contracts based on delay analysis done by the Consultant. Major audit findings in execution of these packages are discussed in the subsequent paragraphs.

The Company did not offer (March 2018) any remarks on execution of major packages in respect of time delays.

The Ministry, while accepting the audit observation, stated (July 2018) that the delay in completion of such packages would be dealt with as per the provisions in the contract.

(a) Package-1 Raw Material Handling System (RMHS)

BHEL, the main contractor of RMHS package awarded the works relating to sub-packages of Conveyor and Junction house (to M/s. Tecpro Systems) and Civil and Structural works for buildings (to M/s Prasad & Co.). Due to stoppage of execution of Conveyor and Junction house work by M/s. Tecpro Systems in June 2013, BHEL divided the remaining scope of work into six sub-packages and re-tendered (December 2013) and awarded (between September and November 2014) to six different contractors. This took 17 months of time leading to overall delay in execution of works apart from slow progress of work due to inadequate deployment of manpower and material and non-sequential supply of equipment by the contractors.

The Management did not respond on efforts made to reduce the delays in re-tendering of unexecuted portion of Conveyor and Junction house work by M/s Tecpro.

The Ministry stated (July 2018) that untimely exit of M/s Tecpro to a large extent created mismatch/ unavailability of mechanical and structural design inputs which had delayed the finalization and award of subsequent multiple contracts against the Tecpro's scope of work despite best efforts.

(b) Package-8 Lime and Dolomite Calcination Plant

As per the contract (April 2013), the work was divided in parts and was to be executed by Consortium of Sinocalci Corporation, China, Chongqing Chuanyi Automation Co Ltd, China and Laxsons Automation Private Limited, Mumbai. As the work pertaining to supply of electrical equipment by Chongqing Chuanyi Automation Co Limited, China was not initiated by the contractor even after several reminders, the Company issued termination notice to the contractor in December 2015. The contractor contested against the termination notice and sought for arbitration. The work was transferred to another consortium partner (11 November 2016) viz. Sinocalci Corporation, China (supplier of mechanical works), without re-tendering. This process took nine months and was one of the main reasons for delay, apart from slow progress of work.

The Management stated (March 2018) that the delay was on account of delayed submission of credentials for similar works executed by Sinocalci and its scrutiny by MECON.

The Ministry stated (July 2018) that the delay would be appropriately dealt with at the time of final delay analysis as per the provisions of the contract.

3.1.6.2 Execution of auxiliary packages

Audit reviewed 13 auxiliary packages (like power blowing, compressed air system and water for supply to Plant and outside the Plant etc.) awarded during the period from November 2012 to January 2017. The scheduled completion period of these 13 packages ranged between December 2014 and July 2018 as detailed in **Annexure-VIII**. Of these, nine packages were to be completed by February 2017. It was observed (31 December 2017) that none of these nine auxiliary packages were completed even after a delay ranging from 10 months to 36 months. The physical progress achieved ranged between 68 *per cent* and 98.5 *per cent*. As per the latest PERT network schedule prepared (December 2017) by the Consultant, these packages were expected to be completed between August 2018 and April 2019 in all respects. Further, it was observed that the Company was to place orders for some of the packages like Ambient Air Monitoring System, Plant Wide Networking etc., and the time estimated for completion of these works as per PERT chart was upto March 2020. However, the Company had committed to the Ministry to commission the project by December 2017 which appeared to be unrealistic.

The Management stated (March 2018) that the delays were on account of inadequate resources and manpower deployed by contractor, delay in Engineering, delay in supply in sequential manner, wash out of coffer dam during construction of intake well and delay in making available the work fronts to contractors etc.

We observed that the delays on account of Engineering, non-sequential supply of material, making available the work fronts etc., are factors which were controllable in nature, and which could have been addressed or curtailed with proper co-ordination and monitoring by PMC Consultant/Company.

The Ministry stated (July 2018) that presently works in most of the packages were progressing at a good pace. Regular high-level meetings, discussions across the table between MECON and contractor, day to day follow up at site were some of the efforts made to control the delay by execution team/Consultant.

3.1.6.3 Execution of Infrastructure packages

Five infrastructure packages awarded during the period from June 2011 to April 2017 with a schedule completion period from June 2012 to September 2018 were examined. One of the package i.e., Studio Apartment-2 which was due for completion by June 2012 was not completed as the contractor did not initiate construction works despite extension of time upto November 2015. The issue was under arbitration and the work was yet to be entrusted to another contractor. Two out of remaining four packages which were scheduled to be completed before October 2017 were still pending and the progress achieved was only 52 *per cent* upto December 2017.

The Management/Ministry stated (March/July 2018) that in respect of Studio Apartment-2, on termination of the contract and engagement of new contractor, the balance works were expected to be completed by December 2018.

3.1.6.4 Execution of enabling packages

Eight enabling packages awarded during the period from December 2010 to August 2016 were reviewed. The scheduled completion period of these eight packages ranged between December 2011 and September 2017 as detailed in **Annexure-VIII** and three packages were completed with a delay ranging from 12 months to 41 months. One package i.e., construction water contract was terminated in June 2016 after completion of 95 *per cent* of works. The Company was yet to award balance work to another contractor. Another package i.e. construction of boundary wall and watch tower was terminated in May 2015 after completion of 64 *per cent* of work. The award of work for completion of remaining work was yet to be done. The progress of the remaining three package works ranged between 29 *per cent* and 52 *per cent* even after delays in targeted completion dates ranging from 3 to 16 months.

The Management stated (March 2018) that work orders in respect of construction water and boundary wall were terminated and re-tendering was in progress. The Management did not offer any remarks on delay in execution of the remaining three packages.

The Ministry stated (July 2018) that the delay in completion of such packages would be dealt with as per stipulation in the respective contracts.

3.1.6.5 Execution of Railway packages

Three railway packages awarded during the period from September 2015 to April 2016 were to be completed by May 2017 as detailed in **Annexure-VIII**. It was seen that none of these packages were completed as on 31 December 2017. The physical progress of work ranged from 35 *per cent* to 51 *per cent* only.

The Management stated (March 2018) that the railway packages were delayed due to site clearance to be given by Railways, delay in handing over of work fronts due to water logging during monsoon and change in design and foundation drawings as per site conditions.

The Ministry stated (July 2018) that the execution delays attributable to contractors would be appropriately dealt with as per the provisions of contract.

3.1.7 Incorrect assessment of construction power for NISP

Based on the suggestion of the Consultant, the Company approved (May 2009) an assessment of maximum construction power requirement at 27 Mega Volt Amperes (MVA) for erection and fabrication works and 17 MVA for erection works alone and entered (March 2010) into a contract with Chhattisgarh State Power Distribution

Corporation Limited (CSPDCL) for drawing of power of 27 MVA progressively through 132 Kilo Volt (KV) line as detailed below.

Table 3.3 – Phase-wise construction power proposed to be drawn for Nagarnar Integrated Steel Plant

Phase	Units of power to be drawn	Date of commencement
1st phase	5 MVA	Agreement date
2nd phase	10 MVA	After two months from Agreement date
3rd phase	27 MVA	After 11 months from Agreement date

CSPDCL informed the Company (July 2013) that the energy meter had been installed on 24 July 2013 and therefore power would be made available in accordance with the agreement, and failure to draw electricity by 23 October 2013 would entail levy of minimum guarantee charges effective from the date following the date of expiry of the notice. CSPDCL raised bills for the contracted demand for 5 MVA (October 2013 to December 2013), and 10 MVA (January 2014 to October 2016). However, actual power drawn for construction ranged between 1.08 MVA and 2.70 MVA during the period from December 2013 to November 2016. In view of the above stipulation by CSPDCL, NMDC directed (February 2014) the Consultant to review the power requirement for construction. Based on the Consultant's advice, NMDC requested (March 2014) for reduction of contracted demand for power from 27 MVA to 8 MVA. However, CSPDCL informed (April 2014) that in terms of contractual agreement/ supply code regulations of Central Electricity Regulatory Commission (CERC), NMDC could seek downward reduction only by 50 *per cent* i.e., only upto 13.5 MVA, during the initial period of two years from the date of commencement of agreement. NMDC, therefore, entered into (November 2014) a Supplementary Agreement with maximum contracted demand of 13.5 MVA with effect from 01 October 2014. Later, the maximum contracted demand was reduced from 13.5 MVA to 5 MVA with effect from December 2016.

We observed that the actual consumption of power for construction during the period from December 2013 to November 2016 ranged from 1.08 MVA to 2.70 MVA. There was glaring inaccuracy in projecting the power requirement for construction by the Company which is corroborated by the fact that NMDC sought to reduce its power requirement down to 5 MVA from initial projection of 27 MVA eventually. Consequently, the Company incurred an avoidable expenditure of ₹8.91 crore²⁸ towards minimum demand charges for the period from December 2013 to November 2016.

The Management/ Ministry stated (March/July 2018) that power demand of 27 MVA was assessed by MECON (Consultant) considering the peak demand based on the previous experiences in similar projects. However, due to various reasons, the project execution period were extended over longer period of time resulting in reduction of peak power

²⁸ Difference between minimum chargeable demand i.e. 75 % of Contracted Maximum Demand (CMD) as per agreements (i.e 10 MVA, 13.5 MVA) and the minimum chargeable demand on CMD of 4 MVA required to be fixed as per Tariff notification on the basis of supply voltage drawn from 132 KVA sub-station.

demand for construction work. As per CERC supply code, the minimum power demand was reduced to 5 MVA gradually based on the re-assessment of MECON.

The above contention of the Company notwithstanding, the Company had the option to enter into agreement with CSPDCL with minimum contracted demand of 4 MVA²⁹ as the code provides for any subsequent increase in the power demand could be allowed on payment of additional security deposit and entering into a supplementary agreement. By not utilizing the opportunity, the Company had to incur an avoidable expenditure of ₹8.91 crore towards minimum demand charges.

3.2 Diamond mining in Panna, Madhya Pradesh

Apart from sale of Iron ore, the Company also undertakes Diamond mining at Majhgawan village in Panna district of Madhya Pradesh State with a production capacity of one lakh carats of Diamonds per year. The Diamonds produced consist of Gem individual/ packets, off-colour individual/ packets, industrial individual/ packets. The Diamond Mining Project (DMP) consisted of a Main Mining Lease (113.332 hectares) and a Supplementary Lease (162.631 hectares including 74.018 hectares of forest land). Both the leases were under the Wildlife sanctuary area i.e. Panna Tiger Reserve. Extraction of 'Tuff'³⁰ was from main mining lease area and Tuff processing plant and other infrastructure facilities were located in the supplementary lease area. The mining activities in DMP commenced from 15 July 1965. The main lease and the supplementary lease were valid upto 14 July 2025 and December 2020 respectively. Thus, though the Company may be able extract Tuff from main mining lease area up to July 2025, it would not be able to process the same beyond December 2020 as the validity of supplementary mining lease would be valid up to December 2020.

3.2.1 Physical Performance

The table below indicates the physical targets set vis-à-vis actual performance during the period from 2012-13 to 2016-17:

Table 3.4 – Physical targets and Actual Achievement in Diamond Mining

Year	Overburden (Cubic Meter)		Tuff (Ore) in Tons				Production of Diamonds (in carats ³¹)	
	Target	Actual	For Mining		For Treatment		Planned	Actual
			Target	Actual	Target	Actual		
2012-13	Nil	213379	Nil	240604*	Nil	187128*	Nil	31533.39
2013-14	Nil	873	500000	225057*	450000	200499*	45000	37081.70*
2014-15	Nil	64518	500000	269764*	450000	199239*	45000	35085.46*
2015-16	Nil	687	350000	278522*	350000	300693*	35000	35558.31*
2016-17	Nil	167	350000	298993*	350000	280752*	35000	35611.07*

(*) Actuals are taken from the Financial Statements

²⁹ Chhattisgarh State Electricity Supply Code provides for a minimum and maximum power supply of 4 MVA to 40 MVA on 132 KV power supply system (which is operated in the plant)

³⁰ Run of Mine extracted during diamond mining is called Tuff. On processing of Tuff, Diamonds are obtained.

³¹ One Carat is equal to 0.2 grams

We observed that targets were not fixed for removal of overburden. The unit could achieve the targeted Diamonds production during 2015-16 and 2016-17 only and had not achieved the targets fixed for mining and treatment of Tuff in any of the years.

The Management/ Ministry stated (March/ July 2018) that no targets were fixed for overburden removal during 2014-15 to 2016-17 as no waste mining was required in view of the fact that there was no scope for periphery/lateral expansion of the pit as per the restrictions imposed by the Monitoring Committee appointed by the Hon'ble Supreme Court and hence mining was done only in the lower benches of the pit. Hence, the project could not achieve the targets in respect of mining and treatment of Tuff although the targets of Diamonds production were achieved.

3.2.2 Heavy accumulation of closing stock

The following table indicates the details of unsold stock of Diamonds and unprocessed quantity of Tuff lying at the end of each year:

Table 3.5 – Year-wise details of closing stock of Diamonds and Tuff

Year	Diamonds In Carats				Value of unsold stock ₹ in crore	Tuff (in tons)		
	Production	Sales	Unsold stock	% to production		Production	Quantity Processed	Un-processed stock
Opening Balance	---	---	11603.06					
2012-13	31533.39	17862.57	25273.88	80	25.27	239925	187128	528273
2013-14	37081.70	43487.63	18867.95	51	25.03	225057	200499	552831
2014-15	35085.46	38788.58	15164.83	43	27.19	269764	199239	623356
2015-16	35558.31	36682.93	14040.21	39	26.02	278522	300693	601185
2016-17	35611.07	25631.46	24019.82	67	32.94	298993	280752	619425
Average quantity of tuff processed per annum							233662	

It could be seen that considerable quantity of unsold stock of Diamonds ranging between 39 per cent and 80 per cent of their production, apart from unprocessed quantity of Tuff were lying at the end of each year. The annual average rate of processing of Tuff during the five years was 2.33 lakh tons and it requires two years eight months of time to process the quantity of Tuff available as at the end of 31 March 2017.

The Management/Ministry stated (March/July 2018) that:

- In view of poor off-take of Industrial grade Diamonds and surplus availability of lab grown Diamonds in the market, the unsold quantity available in stock had increased.
- On account of existing old technology and sticky nature of white Tuff, the unprocessed stock of white Tuff was high (67 per cent of the total closing stock) and action was being taken to implement an alternative technology for processing the same.

Our view is that the Company needs to strengthen its processing plan so as to complete the processing of all the remaining Tuff extracted before the termination of supplementary mining lease in 2020.

3.2.3 Financial Performance

As a result of non-achievement of targets, the average production cost of Diamonds remained higher than the net realizable value (NRV) in all the years under review. In view of this, the net loss of the Diamond Mining Project (DMP) as at the end of 2016-17 was ₹27.16 crore which was the highest loss as compared to the losses sustained during the period 2012-13 to 2016-17 as detailed below:

Table 3.6 – Year-wise Average Cost of Production and Net Realized Value of Diamonds

Year	Average Cost of production per carat (₹)	Net Realized Value per carat (₹)	(Loss)/ Profit per carat (₹)	Net Profit/ (Loss) (₹ In lakh)
2012-13	16,820	15,960	-860	237.05*
2013-14	16,725	11,463	-5,262	(1679.75)
2014-15	15,816	12,906	-2,910	116.07*
2015-16	16,829	14,341	-2,488	(1274.73)
2016-17	20,420	16,505	-3,915	(2716.34)

(*There was a net profit during 2012-13 and 2014-15 due to the positive impact of non-operational income and expenses and adjustments for changes in the inventory of finished goods and work-in-progress)

The net loss was mainly because of lack of consistent policy in conducting the auctions for sale of Diamonds. The DMP conducted 26 auctions during the five year period ending 31 March 2017. Further, the quantity sold during the last 5 years ranged between 22,006 carats and 40,831 carats as against the quantity offered which ranged between 36,606 carats and 51,071 carats indicating meager sales. No efforts were made for conducting periodical auctions (i.e. monthly/quarterly etc.). Only three auctions were conducted during the year 2015-16.

We observed that:

- (i) As on 31 March 2017, there was unsold stock of 24,019.82 carats with the Company comprising individual, off colour, dark brown colour Diamonds.
- (ii) In order to make Diamond sales more transparent and ensure wider participation and increase in sales, the Company decided to conduct sales through e-auctions from March 2015 onwards instead of conducting the conventional physical auctions by engaging e-auction service provider on Limited Tender Enquiry (LTE) basis. It was observed that despite implementation of e-auction sales, the sales during 2015-16 and 2016-17 were indicating a declining trend due to the reasons of availability of lab grown Diamonds (artificial Diamonds) with uniform quality at cheaper rate than the natural Diamonds.
- (iii) The recommendations (October 2014) made by the Board on SOP (Standard Operating Procedure) prepared in October 2014 with regard to sale of unsold

stock through tenders/special tenders and re-fixation of reserve price, if the same stock remains unsold repeatedly in 5 successive auctions, were not implemented.

- (iv) Based on the suggestions of the Vigilance Department for benchmarking and comparative assessment of internal valuation of Diamonds, the Commercial Department proposed (April 2014) to seek the assistance of third party in valuation of rough Diamonds. Based on the suggestions of the Gem & Jewellery Export Promotion Council, the Company decided to opt for Expression of Interest (EOI) for empanelment of independent valuers. The outcome of this move was, however, not taken to its logical end.

The Management stated (March 2018) that:

- The reasons for lesser e-auctions were due to delay in appointment of service provider and other factors like availability of rough Diamond, market demand including sale cycle. Considering these, four to five auctions are conducted in a year.
- The Board level sub-committee appointed for reviewing the existing SOP (2012-14) suggested various measures on frequency, venue of e-auction, maintaining optimum level of 10,000 carats and valuation by third party valuer.
- The independent valuers could not be finalized due to difficulties in ensuring non-participation of employee/relative of the valuer and difficulty in maintaining confidentiality of reserve price.

We are of the opinion that the Company needs to evolve a procedure duly incorporating suitable safeguarding clauses for maintaining confidentiality which ensures selection of reliable third party Diamond valuers.

The Ministry stated (July 2018) that the Company was in the process of implementing the revised SOP for Diamonds. The SOP would address the issues of transparency and confidentiality in the auction and valuation process.

3.3 NMDC-CMDC Limited

The Company formed (June 2008) a Joint Venture Company viz., NMDC-CMDC Limited (NCL) with Chhattisgarh Mineral Development Corporation Limited (CMDC), a State Public Sector Undertaking (PSU) of Chhattisgarh with shareholding of 51:49 respectively for development of Deposit-13 situated in Bailadila Iron ore range in South Bastar District. The purpose of development of Deposit-13 was to meet the Iron ore requirement/ demand for Steel, Sponge and Pellet Plants located in the State. The Company applied for mining lease in March 2004 for which Forest Clearances were received only in January 2017 after a delay of 13 years. The SMP envisaged production of 2 MTPA from this mine from 2018-19. The reasons for the delay in obtaining Environment and Forest Clearances for Deposit-13 are discussed in the subsequent paragraphs.

3.3.1 Delays in getting Forest Clearance Stage-I for Deposit-13

The Company submitted application (January 2003) for Stage-I Forest Clearance for 613.24 hectares of land. Against the stipulated period of 90 days as provided in Rule 6 of Forest Conservation Rules, 2003, DFO, Dantewada took more than 15 months for attending to the deficiencies pointed out (May 2003) by the Additional Principal Chief Conservator of Forests (APCCF), Raipur. Submission of Indian Bureau of Mines (IBM) approved mine plan was a pre-requisite as per MoEF&CC directions (February 1999). Upon the State Government's insistence (November 2004) of this requirement, the Company could submit the same in October 2008 only i.e., after a delay of four years. Further, after submission of wildlife conservation plan in January 2010, the proposal was forwarded (November 2010) by PCCF/State Government after 10 months to MoEF&CC. There was a delay of 9 months on part of MoEF&CC in processing/forwarding the proposal to Forest Advisory Committee (FAC) in August 2011 against the stipulated time line of three months. The proposal was rejected on the ground that the area is located deep in the undisturbed forest area with high biodiversity value and hilly terrain. The rejection was communicated by MoEF&CC in January 2012 after a delay of 135 days against the stipulated 60 days period. Despite the initial rejection, the Company re-submitted its case to FAC during April 2014 after which Stage-I FC was issued in November 2014. The FAC while evaluating the Stage-II FC proposal observed non-compliance of certain conditions in Stage-I Forest Clearance. After carrying out field inspections by Regional Office, Nagpur of MoEF&CC, the Department imposed penalty in the form of penal compensatory afforestation charges of ₹14.31 crore for improper management of overburden dump of Deposit-11 and Deposit-14 which had resulted in damage to adjoining forest land. On payment of afforestation charges in July 2016, Stage-II Forest Clearance was finally granted by MOEF&CC in January 2017. Thus, due to delays on the part of the Company, the State Forest Department and MoEF&CC, it took nearly 14 years for obtaining mining lease for Deposit-13.

3.3.2 Delays in Environment Clearance for Deposit-13

The Company could obtain the Environmental Clearance (EC) in May 2015. Though the issue of EC was recommended by the Expert Appraisal Committee (EAC) of MoEF&CC way back in February 2011, the EC was issued only on securing Stage-I Forest Clearance which was received in November 2014. Thus, the delay in obtaining the Stage-I Forest Clearance had resulted in delay in obtaining Environment Clearance. The Company had transferred the mining lease in the name of NCL. However, transfer of all other permission such as EC/FC in the name of NCL was yet to be made. Further, at the time of audit, it was observed that the JV Company was yet to obtain Consent for Establishment and Consent to Operate from Chhattisgarh Environment Conservation Board. Also the action to appoint Consultant for preparation of Detailed Project Report (DPR) for the proposed mine was still pending. As a result, the prospects of achieving the targeted production of 2 MTPA of iron ore from Deposit-13 by 2018-19 as envisaged in the SMP-Vision 2025 appear to be bleak.

The Management stated (March 2018) that:

- The penal compensatory afforestation charges in respect of Deposit-13 were paid to fulfill the condition (iii) of Stage-I FC on insistence by Director General of Forests, MOEF&CC that Forest Conservation Act, 1980 will prevail over IBM rules and regulation, the area being Forest Land.
- The Consent for Establishment in respect of Deposit-13 was obtained on 17 October 2017 and the mining lease was transferred to the JV Company. The application for transfer of EC was submitted to MoEF&CC and the JVC would obtain consent to operate after transfer of EC and consent to establish.
- Appointment of Mine Developer cum Operator was under process and mining operations were likely to start in FY 2018-19 and the existing Iron ore mines at Bailadila would cater to the Iron ore requirement for Steel Plant at Nagarnar.

The reply is not acceptable as the payment of penal compensatory afforestation charges was made for violation of provisions of FC Act which was an outcome of the site inspection carried out by the RO, Bhopal and Nagpur, MoEF&CC. The penal charges could have been avoided had the overburden dumps been properly managed. Further, the Company applied (September 2015) for statutory clearances (EC/FC) in respect of land measuring 99.466 hectares for creation of infrastructure facilities. As these clearances were pending, it is unlikely that the mine developer-cum-operator would be able to commence operations without the infrastructure facilities being provided for. Also, non-completion of evacuation facilities such as doubling of KK Line and Slurry pipe line would have an adverse impact on supply of ore from existing mines.

The Ministry stated (July 2018) that Bailadila area was prone to high rainfall and erosion of material from waste rock dumps had taken place during rainy season inspite of all efforts made to contain the same within lease area. Mine Developer cum Operator (MDO) being appointed was for a period of 25 years and within initial 5 years infrastructure facilities would be created by MDO. Till such period, production through small scale Mining would be carried out.

3.4 Sponge Iron Unit at Paloncha, Telengana

The Company at the instance of Ministry of Steel, acquired (July 2010) loss making Sponge Iron India Limited (SIIL) a CPSE established with an installed production capacity of 60,000 tons per annum of Sponge Iron. The Sponge Iron production turned unviable due to higher cost of production, lower realization, aging of the plant and poor marketability and losses of Sponge Iron Unit (SIU) accumulated to the tune of ₹194.77 crore as on 31 March 2017. On account of these reasons, the SIU stopped production from November 2016 onwards. The Company in its turnaround plan (01 October 2015) proposed to conduct a study by the Committee of Directors for reduction in production cost by reducing the transportation cost of Iron ore to SIU from Bailadila sector of the Company, reducing the repairing and maintenance cost and aggressive marketing for Sponge Iron, etc. Further, it was intended to utilize the

available land (428.98 acres) for setting up of Thermal and Solar Power Plants which was yet to take off. It was noticed that the Company had not implemented the turnaround plan as envisaged and as of July 2017 the unit had idle staff strength of 167 (both executive and non-executive).

The Management stated (March 2018) that stock of Iron ore at SIU was exhausted and ore could not be supplied due to cancellation of transportation contractor. The appointment of new contractor was in process. In respect of existing idle staff, it was stated that efforts were on to gainfully utilise manpower by either reassigning or deploying them to other units. Voluntary Retirement Scheme for surplus manpower was also contemplated.

The reply was, however, silent on the implementation of turnaround plan for SIU Paloncha.

The Ministry stated (July 2018) that as per the discussions held at Ministry of Steel in November 2017, a technical Consultant was being appointed for preparation of feasibility report for setting up of a Steel Plant or steel related unit for the revival of the unit.

3.5 Karnataka Vijayanagar Steel Limited (KVSL), Bellary

As an expansion measure and with the motive of securing Ramandurg Iron ore deposit, NMDC entered into an MoU with Government of Karnataka (GoK) in June 2010 for setting up a green field Steel Plant with 2 MTPA capacity initially and expandable upto 5 MTPA. State High Level Clearance Committee (SHLCC) chaired by the Chief Minister of Karnataka approved (August 2009) allotment of 5,000 acres of land by Karnataka Industrial Areas Development Board (KIADB- a channelizing agency), Bangalore in a Special Industrial Zone to be set up by Vijayanagar Area Development Authority (VADA). The Company deposited (till March 2017) an amount of ₹639.61 crore with KIADB towards 2,857.54 acres of land in Janekunte and Veniveerapura villages near Bellary. Meanwhile, the Company incorporated (29 December 2014) a wholly owned subsidiary Company in the name of 'Karnataka Vijayanagar Steel Limited (KVSL)' as a Special Purpose Vehicle (SPV) in Karnataka and the proposed project was transferred (June 2015) in the name of the SPV. We observed that the Company spent ₹639.61 crore for acquisition of land without ensuring the grant of Ramandurg Iron ore mining lease. Considerable time of eight years (i.e. from August 2009 to date) had lapsed since the land acquisition process was initiated with no tangible results due to public interest litigations filed by the land owners. The Company was also yet to secure permission for drawl of water for the proposed Steel Plant which was pending with the Water Resources Department of Government of Karnataka since August 2011.

The Management/Ministry stated (March/July 2018) that:

- Fresh application for allocation of Ramandurg Mine was submitted in February 2017 and request for reservation of Iron ore blocks for the SPV was made through Ministry of Steel in October 2017.

- The possession of private land (2,857.54 acres out of total land of 2,975 acres) was made in favour of the Company on 11 January 2018 and the possession of balance 117.46 acres of government land was under consideration for allotment by the district authorities.
- Formal approval for permission to draw water from proposed drawl point for the Steel Plant was still awaited from Government of Karnataka.

3.6 Pellet Plant at Donimalai

In order to utilize the available (six million tons) and expected additional (16 million tons) quantity of slimes (low grade ore containing more than 50 *per cent* Fe) that are generated during wet screening of Iron ore from both the Iron ore mines of Donimalai sector, the Company proposed (May 2009) to set up 1.2 MTPA Pellet Plant at Donimalai for production of Pellets by utilizing slimes (1.59 MTPA) and fines (0.30 MTPA) through beneficiation and pelletisation process. The process of manufacture of Pellets includes conversion of slimes into high grade ore through the process of beneficiation. The ore so beneficiated would be converted into Balls and Pellets in the kilns. In principle approval for investment of ₹572 crore was accorded (29 May 2009) as per the TEFRR prepared by the Consultant, M.N.Dastur & Co. and the approved estimated cost of the project was ₹545.27 crore, which was inclusive of foreign exchange component of ₹98.88 crore. The project was divided into six packages. Further, the consultancy work for Engineering, Procurement, Construction and Management (EPCM) of the project was also awarded (16 June 2009) to Dastur & Co. for ₹13 crore (subsequently revised to ₹13.74 crore) with scheduled completion by March 2012 including performance guarantee test. However, on account of reasons attributable to the contractors, the project work could not be completed as scheduled. The package wise details of contracts awarded and its latest status are given below:

Table 3.7 – Package-wise details of contracts awarded for Pellet Plant and their present status

Description of package	Name of the contractor	Contract value (₹ in crore)	Date of award & Scheduled date of completion	No. of extensions and revised date for completion	Remarks
Site leveling work	AMR Constructions Ltd.	1.06	05.10.2010 04.02.2011	(2) / 30.11.2011	Completed on 30.11.2011
Miscellaneous building including boundary wall works	IVRCL Infrastructure & Projects Ltd.	15.80	01.12.2010 31.12.2011	(8) / 30.04.2014	Completed on 30.04.2014
Construction of 1.2 MTPA capacity Pellet Plant	Tata Projects Ltd.	288.53*	17.01.2011 16.07.2012	(13) / 30.06.2017	Partly (99 <i>per cent</i>) commissioned on 31.01.2017
Construction of Beneficiation Plant	Hindustan Dorr Oliver Ltd. (HDOL)	128.77#	08.06.2011 07.11.2012	(11) / 31.12.2016	96 <i>per cent</i> work completed till April 2016, but erection and commission was due.
Construction of 110/6.6 KV Main Receiving and	Larsen & Toubro Ltd.	35.68	18.12.2010 17.04.2012	(10)/ 30.06.2016	Commissioned on 30.09.2016 and Performance Guarantee

Description of package	Name of the contractor	Contract value (₹ in crore)	Date of award & Scheduled date of completion	No. of extensions and revised date for completion	Remarks
Step down Substation (MRSS) and Plant Communication System					test on 10.11.2016.
Consultancy Services	MN Dastur & Co.	13.74 (revised)	16.06.2009 15.03.2012		
Mobile equipment					100 per cent delivered.

(*) Include foreign component of US \$2,06,10,000 excluding customs duty & other taxes

(#) Include foreign component of US \$5,41,433 excluding customs duty & other taxes

We noticed that due to non-synchronization of major package works, commissioning of the project was abnormally delayed as detailed below:

- The consortium of contractors of beneficiation package (M/s HDOL and others) could not complete the work awarded (08 June 2011) within the scheduled date of 07 November 2012 mainly due to their financial crisis. The Company arranged financial assistance to the contractor by issuing comfort letters and made payments directly to their sub-vendors/contractors for executing the work and recovering the same from the running bills of HDOL with interest. Despite this, the contractor turned insolvent and the National Company Law Tribunal (NCLT), Mumbai Branch had ordered (April 2017) the commencement of Corporate Insolvency Resolution against HDOL.
- As the Beneficiation Plant was not ready, at the insistence of the contractor for Pellet Plant, trial run was conducted in June 2015 using fines purchased through e-auction after which the certificate of commissioning was issued to the contractor (31 January 2017).

We further observed that:

- The Pellet Plant was proposed to be set up on the strength of slimes available free of cost. However, in view of the directions of the Hon'ble Supreme Court regarding Iron ore sales in Karnataka State through e-auction under the supervision of the Monitoring Committee appointed by Central Empowered Committee, the Company had to procure the slimes/ fines through e-auction at market price at par with others. On account of this, the production cost of Pellets was bound to increase which, in turn, had a negative impact on the viability of the project.
- The Company had periodically made payments in excess amounting to ₹11.42 crore (as on May 2017) to the sub-contractors of Beneficiation Package contractor, the recovery of which was doubtful given the insolvency status of the contractor.

- On account of abnormal delay in completion of the project, all the contractors (except contractor of Beneficiation Package) of the project including EPCM Consultant made extra claims amounting to ₹132.57 crore (July 2017) which were yet to be settled.
- The Company entrusted (07 January 2015) the Operation and Maintenance (O&M) contract of Pellet Plant to KIOCL Limited, Bangalore for a period of three years in view of their expertise in this field. The contract included undertaking of pre-commissioning, commissioning services (including integrated commissioning), operation and maintenance including training to the staff of the Company in addition to imparting of training and induction of NMDC employees. The Company paid ₹82.87 crore to KIOCL towards commissioning and O&M from August 2015 to June 2018.

The Management stated (March 2018) that:

- Nearly 70,500 tons of Pellets have been produced till date of which 62,000 tons had been sold.
- Though the TEFRR envisaged utilization of slimes free of cost for manufacture of Pellets, NMDC had to procure the slimes/fines through e-auction as per the directives of Hon'ble Supreme Court applicable for Karnataka State.
- The amount recoverable from HDOL was ₹2.49 crore, that too after levying liquidated damages of ₹5.52 crore towards delay in completion of works. The same would be recovered from the contractor through legal procedure after completion of the balance works.
- The delay analysis for miscellaneous building and MRSS Package was finalized and liquidated damages were imposed on both the package contractors. The extra claims in respect of other contractors of other packages would be finalized after completion of delay analysis.

The production level of 70,500 tons of Pellets stated by the Company only accounted for a meagre 5.88 *per cent* of the annual capacity of 12 lakh tons of the Pellet Plant. Further, an amount of ₹11.42 crore recoverable from HDOL includes cost towards unexecuted portion of works apart from liquidated damages and advance payments made to HDOL. The Company did not prepare cost sheet pertaining to the manufacture of pellets and hence, we could not comment upon the cost benefit analysis.

The Ministry, while reiterating the views of Management, further stated (July 2018) that the Company could produce 1,05,000 tons of Pellets so far.

Chapter IV

Strategic Investment in Joint Ventures

The Company entered into Joint Venture (JV) agreements with various Central Government and State Government Public Sector Undertakings apart from private companies in India and abroad for establishing Steel Plants and for development of Coal and Iron ore mines. The following table indicates the details of equity contribution made by the Company in the JVs as at the end of 31 March 2017:

Table 4.1 – Details of Equity Contribution of NMDC Ltd in Joint Ventures

Name of the Associate / Joint Venture	Date of Association/ Acquisition	Shareholding of NMDC (%)	Investment of Equity (₹ in crore)
J&K Mineral Development Corporation Ltd.	19.05.1989	95.86	28.51
Neelachal Ispat Nigam Ltd.	08.12.2004	12.87	100.60
Krishnapatnam Railway Company Ltd.	13.10.2006	14.82	40.00
International Coal Ventures (P) Ltd.	14.01.2009	26.47	376.36
Legacy Iron Ore Ltd., Perth, Australia	21.12.2011	78.56	168.53
Total			714.00

The deficiencies observed in the investments made by the Company in the JVs are discussed in the subsequent paragraphs.

4.1 Investment in J&K Mineral Development Corporation Limited, Jammu

The Company had lease for mining low silica magnesite deposit at Panthal in Jammu & Kashmir (extending over an area of 4.853 sq. km). For development of the mine and for setting up a 30,000 TPA (tons per annum) capacity Dead Burnt Magnesite (DBM³²) manufacturing plant at Panthal village (about 9 km away from the deposit), the Company formed (19 May 1989) a Joint Venture Company (JVC) named J&K Mineral Development Corporation Limited (J&KMDC) with J&K Minerals Limited (J&KML – a Government of Jammu & Kashmir Undertaking) with envisaged equity participation between NMDC and J&KML in the ratio of 74 per cent and 26 per cent respectively. The proposed project is located in proximity to the holy shrine of Shri Mata Vaishno Devi. The Shrine Board issued right of entry (18 July 1990) with respect to the land owned by them and falling within the Mining Lease area subject to provisions of MMDR³³ Act and the lease deed. The Company initially intended to sell the raw Magnesite but could not proceed due to decline in demand. Further efforts of the Company for producing value added products such as Calcined Magnesite were not taken up due to high freight charges,

³² DBM (Magnesium Oxide-MgO), is a hard/ rock solid/ high temperature-resistant and high load bearing capacity (under high temperature) material, produced from Magnesite (MgCO₃) by heating at a temperature of 1700⁰C to 2300⁰C for eliminating carbon dioxide content and used as refractory material with wide spread application in steel making / non-ferrous metal extracting / glass making furnaces.

³³ Mines and Minerals Development & Regulation Act, 1957

locational disadvantage, high taxes and customer base being small scale producers besides over supply from overseas markets till 2005-06. Subsequently, when the market for Dead Burnt Magnesite increased, the Company appointed (April 2010) M.N. Dastur & Co. Pvt. Ltd. Kolkata as an EPCM Consultant for the project at a total cost of ₹4.54 crore and paid ₹2.36 crore towards Net Present Value (NPV)/ compensatory afforestation charges etc. to the Shrine Board, as the ownership of the land vested with the Shrine Board. The mining lease was transferred (April 2011) in the name of the JVC and the JVC received the Environment Clearance (03 May 2011) and clearance under Wildlife Protection Act (13 March 2012) for the project. The EPCM Consultant was to complete the entire work within a period of 38 months (i.e. by 12 June 2013) from the date of issue of Letter of Award of Contract which was divided into five packages viz. (i) Technology Package, (2) Electrical system, (3) Soil Investigation, (4) Balance Civil & Structural works and (5) Appointment of agency for operations and maintenance (O&M) for the project. The capital cost of the project was ₹243.70 crore (revised) and the works for all the packages except O&M Package (No.5) were awarded between November 2011 and May 2015.

We observed that:

- (a) The Company abnormally delayed³⁴ the award (21 May 2015) of Technology Package (Pkg. No.1) to the consortium of FL Smidth Pvt. Limited, Chennai for a value of ₹119.40 crore (plus US \$45,50,675) with a completion period of 18 months i.e. by 20 November 2016.
- (b) Meanwhile, in October 2016, the MoEF&CC withdrew the Environmental Clearance granted to the project citing that the open cast mining in close proximity to the holy shrine of Shri Mata Vaishno Devi may lead to irreversible damage to pristine, fragile and environmentally sensitive area.
- (c) The withdrawal of EC was done without considering the study report (February 2015) of Central Institute for Mining and Fuel Research, Dhanbad engaged by the Company which concluded that there would be no noise pollution, no vibration and no fly rock incident due to blasting.
- (d) The amount of ₹42.37 crore already invested by NMDC in the JVC including the advances made to JVC (₹17.97 crore) was written off from the books of accounts in 2016-17. Thus, the entire amount spent by the Company proved infructuous.

The Management/Ministry stated (March/July 2018) that:

- The delay in finalization of Technology Package was due to repeated tendering for three times on modifications required to be carried out in the technical specifications, commercial clauses and issues pertaining to performance of one of the bidders viz. M/s HDOL.

³⁴ Technology package was awarded in May 2015 i.e. after five years from award (April 2010) of EPCM contract to M.N. Dastur & Co. Pvt. Ltd.

- Further, the Task force constituted for exploring the possible alternate use of the land including setting up of Solar Plant, other mineral based industry, industrial park etc. could not identify any alternate project which could utilize the infrastructure and site developed at Panthal.
- The Company was still pursuing the matter vigorously for revival of the project by utilizing the latest mining technology without blasting and hence, the amount of ₹42.37 crore spent by the Company on various package could not be considered as infructuous.

The Task Force did not find any alternate use of project facilities.

4.2 Investment in Neelachal Ispat Nigam Limited (NINL), Odisha

During the year 2002, NMDC invested ₹49 crore in Konark Met Coke Limited (KMCL), an Odisha Government PSU in anticipation of allotment of Mankadanacha Iron ore deposit in its favour which was under dispute. KMCL was taken over by Neelachal Ispat Nigam Limited (NINL), a Central Public Sector Enterprise, in the year 2004 and the Company further invested ₹51.60 crore (during 2010-11) of equity in NINL by subscribing to the Rights Issue³⁵ including unsubscribed portion (₹7.07 crore) of other shareholders, thus raising the total investment to ₹100.60 crore.

We noticed that:

- a) Without exercising due diligence, the Company had invested on a disputed mining lease which remained unresolved till date.
- b) The subsequent investment of ₹51.60 crore was made without conducting due diligence on its own on the financial position of NINL as it has been incurring continuous losses and its net worth for 2016-17 stood at ₹(-)175.14 crore.

Thus, the investment of ₹100.60 crore did not yield any returns so far.

The Management did not furnish any specific reply to the audit para. The Ministry stated (July 2018) that the investment in the Rights Issue of NINL was made after review by two independent Consultants whose reports were duly considered by NMDC, apart from internal diligence process by a high-level committee.

The reply was, however, silent on the reasons for investment despite being aware of the disputed mining lease.

4.3 Investment in Krishnapatnam Railway Company Limited

In view of Government's decision to discontinue the Iron ore exports from Chennai port from 2004-05 onwards, Iron ore exporters including NMDC/ the FIMI (Federation of Indian Mineral Industries) identified Krishnapatnam port in Nellore district of Andhra

³⁵ Rights Issue is an issue of shares offered at a special price by a company to its existing shareholders in proportion to their holding of old shares.

Pradesh as the preferred alternative port. It was proposed to develop a new railway line between Krishnapatnam and Obulavaripalle in Kadapa district of Andhra Pradesh (113 km) in two phases at an estimated cost of ₹587.49 crore with a completion period of 5½ years through SPV viz. Krishnapatnam Railway Company Limited (KRCL) formed (October 2006) jointly by Rail Vikas Nigam Limited, Krishnapatnam Port Company Limited and Government of Andhra Pradesh with an equity ratio of 30:30:13 respectively. The balance 27 per cent of the equity was left to Iron ore exports/strategic investors of which 15 per cent was acquired by NMDC, by contributing ₹40 crore to receive control over transport cost and to get preferential treatment in allocation of rail rakes. Phase-I works (20 km section of Venkatachalam and Krishnapatnam port) were completed in all aspects by March 2013 and the works under Phase-II (93 km stretch between Obulavaripalle to Venkatachalam) were still in progress which was proposed to be completed by March 2018.

We observed that the SPV could not get the full-fledged share from the revenue generated through operation of Phase-I from the Railways thereby there was delay in execution of Phase-II works. Further, NMDC did not get any returns on its investments and further exports from Bellary sector were unlikely in the foreseeable future in view of the ban imposed (March 2012) by the Hon'ble Supreme Court of India on Iron ore export sales from Karnataka.

The Management/Ministry stated (March/July 2018) that NMDC had written to the Railway Board for releasing the due share of revenue to KRCL and also indicated that it would not invest further in KRCL.

4.4 Investment in International Coal Ventures Limited

With the objective of sourcing Metallurgical Coking Coal and Thermal Coal supplies from overseas, an MoU was signed (August 2007) among Coal India Limited (CIL), Steel Authority of India Limited (SAIL), NTPC Limited, Rashtriya Ispat Nigam Limited (RINL) and NMDC Limited and accordingly a Special Purpose Vehicle (SPV) viz., **“International Coal Ventures Limited (ICVL)”** was formed (May 2009) with an initial equity capital of ₹3,500 crore to be contributed by all the five entities in the ratio of 2:2:1:1:1 respectively. Accordingly, the Company was required to invest ₹500 crore proportionate to its share in ICVL. NTPC (February 2012) and CIL (February 2015) exited from ICVL after making initial contribution of ₹1.40 crore and ₹2.80 crore respectively. As a consequence, the ratio of share capital in ICVL among the remaining three partners was revised to 48:26:26 between SAIL, RINL and NMDC respectively (September 2015).

In July 2014, ICVL decided to acquire 65 per cent of Coal mine and Coal assets located in Mozambique, viz. Rio Tinto Coal Mozambique (RTCM) through its subsidiary viz., ‘ICVL Mauritius’ incorporated in September 2014. The balance 35 per cent of RTCM was held by M/s Tata Steel. The asset portfolio of RTCM, Mozambique comprised of an

operating mine at Benga, the Zambeze and the Tete East Greenfield assets³⁶. The Benga mine produced Coking Coal and Thermal Coal and had an operational loss at the time of acquisition. From the above overseas Coal mining asset at Mozambique, ICVL projected production of 2.3 million tons (MT) of Hard Coking Coal (HCC) in 2014. Against this projected output, it was estimated that the purchase consideration would be ₹300.69 crore (US \$50 million³⁷) plus the need to provide an additional amount of ₹481.10 crore (US \$80 million) towards accumulated loss till the SPV starts earning profits by 2017-18 for which Tata Steel was also to contribute its share. The total expected capex was worked out to be around ₹4,588.45 crore (US \$763 million) for the three years' period i.e. from 2014 to 2016 besides the requirement of ₹811.85 crore (US \$135 million) towards rolling stock over the years from 2015 to 2021. The Company had invested ₹213.36 crore³⁸ in ICVL as of March 2015.

The Company appointed (August 2015) an Internal Committee to examine further investment proposal in ICVL. The Committee in its report (February 2016) observed that the initial projections made during 2014 by ICVL on the production and revenue were overestimated. It was also observed that the Project was falling into the fourth quartile³⁹ (Q-IV) of the international Met-Coal industry cost curve. The risks referred by the Technical Consultant with reference to the operational risks were not heeded to by ICVL. Besides, the projected loss of ₹481.10 crore (US \$80 million) for three years (2014-2016) was underestimated as the actual loss computed by the Internal Committee for the year 2013 alone was ₹668.49 crore (US \$108 million⁴⁰). Further, Internal Committee viewed and noted high cost of delivery at Port and the project falling into the fourth quartile of the industry cost curve, high ash content in Run-of-Mine (ROM) leading to lower yields, inability to increase mine output for want of logistic infrastructure involving significant capital investment and competitive disadvantage of cost to the similar grade of Australian coal. Further, no contribution was received from Tata Steel (post-acquisition) despite their commitment of 35 per cent in Benga Mine and as such the Committee projected the NMDC's exposure to ₹2,598.20 crore towards debt and equity upto the year 2019. The Internal Committee had opined that the Company was aware that ICVL was taking over a loss-making project and that Investment in ICVL would not yield returns both in short and medium term in the present market conditions (February 2016) and in the long-term, cost of sustaining the project and further investment in ICVL would prove to be significantly high and would entail very high risk.

³⁶ ICVL primarily focussed on the Benga Mine and is currently not pursuing the Zambeze and Tete East assets.

³⁷ RBI declared exchange rate of ₹60.1370 per US\$ as on 1st July 2014 was adopted for conversion of purchase consideration and proposed capex and rolling stock.

³⁸ ₹2.41 crore (2011-12), ₹1.89 crore (2012-13), ₹0.70 crore (2013-14), and ₹208.36 crore (2014-15)

³⁹ Fourth Quartile of the Coal Industry cost curve refers to the segment of the coal producers who are the first and worst affected producers by fall in International Coking Coal prices.

⁴⁰ The loss was for the calendar year 2013 therefore, exchange rate of ₹61.8970 per US\$ as on 31st December 2013 was adopted.

Further, Tata Steel in its letter to ICVL (July 2017) expressed their apprehensions that Benga Coal Mine is inherently in a disadvantageous position as compared to its Australian Peers and is projected to continue to lag behind other major Coal producers in the medium to long term. Besides, as a last quartile (Q-IV) Coal mine producer which is invariably the first and the worst to get affected by a fall in international coking coal prices, it would struggle to make profits even in the best case scenario in the long run.

We observed that:

- a) The capital commitment of NMDC Ltd increased from the present ₹500 crore to ₹910 crore due to restructuring of equity sharing ratio.
- b) Despite having appointed (August 2015) an Internal Committee to examine further investment proposal in ICVL, by which time the Company had already invested ₹213.36 crore in ICVL, further investment of ₹107.97 crore was made by the Company before the Internal Committee submitted (February 2016) its report. Besides, contrary to the Committee's recommendations to refrain from making further investments in ICVL and recover the investments already made during the last 3-5 years, the Company proceeded with further investment of ₹15.03 crore (June 2016) bringing the total investment in ICVL to ₹376.36 crore⁴¹. In addition, the Company also issued a Letter of Comfort for US \$30 million which may be availed by ICVL for obtaining working capital loan from EXIM Bank.
- c) The concerns raised by the Internal Committee were also confirmed by the Consultant (RPM-Runge Pincock Minarco) appointed (March 2015) by Tata Steel, who opined (July 2017) that the accumulated losses till 2016-17 stood at ₹8,300 crore (US \$1.28 billion) and assessed that breakeven point of Benga Coal mine was still at a distance in view of the long-term price forecast of Coking Coal in international market.

Thus, the investment of ₹376.36 crore made by the Company based on the unrealistic business plan of ICVL has not yielded any returns so far and uncertainty of earning reasonable profits in the medium or long term persists.

Management stated (March 2018) that:

- A high-level team⁴² visited ICVL in May 2016 and found that operations at low cost would still render the project viable. The Company further invested ₹15.03 crore in the equity of ICVL.
- While the restructuring of equity share capital among SAIL, RINL and NMDC Ltd was approved by NMDC Board in September 2015, the capex for the project as envisaged was not approved. The mining operations remained closed from January 2016 to October 2017. Additionally, the view of Audit on the increase in capex commitment over the years was unrealistic as the business plan had

⁴¹ Including advance against equity amounting to ₹40 crore.

⁴² Consisting of Chairman, SAIL; Joint Secretary, MoS; Director (Technical), NMDC; Director (Commercial), RINL and Chief Executive Officer, ICVL

changed and ICVL continued with the same rated capacity by a new set of contractual agencies at reduced cost.

The contention of the Management that low cost operations at Mozambique would be viable was contradictory to the observation of the Internal Committee that the project was falling into the fourth quartile (Q-IV) of the international Met-Coal industry cost curve. Also, the report of Consultant of Tata Steel (JV partner in RTCM) corroborates the above fact that the Benga mine was in a disadvantageous position compared to its Australian peers. It was precisely due to this that Tata Steel had refrained from further contribution in RTCM post acquisition.

The Ministry stated (July 2018) that the accumulated losses were due to steep fall in coking coal prices and higher cost of production compared to the initial estimates during acquisition. With the present price of Coking Coal at Aus \$180-\$190, the project seemed viable.

The reply is not convincing since the project was supposed to turn profitable from 2017-18 and this would require wiping out of the accumulated losses of ₹8,300 crore (US \$1.28 billion) up to the year 2016-17, which may take considerable time.

4.5 Investment in Legacy Iron Ore Limited, Australia

In response to the Global Expression of Interest (GEoI) floated during October 2009 for acquiring mineral properties abroad, Legacy Iron Ore Limited (LIOL), Australia (a listed entity in Australian Stock Exchange), holding mining rights in a number of mineral/ metal deposits in Australia, approached (August 2010) the Company for exploration of its Iron ore tenements⁴³ in Robertson Range and Hamersley Projects situated in Pilbara region, Australia. The Company decided in its 432 Board Meeting (29 April 2011) to acquire 50 *per cent* stake in Robertson Range and Hamersley Projects of LIOL. The Company noticed in May 2011 that LIOL had a farm-in⁴⁴ JV agreement for 60 *per cent* interest with another company viz. Hawthorn Resources Limited, the owner of Mt. Bevan project tenement. Hence, in May 2011, the Company decided to acquire 50 *per cent* shares in LIOL to have management control in it as the major shareholder which would serve as a growth platform in Australia. With an expected internal rate of return of 12 *per cent*, an MoU was signed on 21 May 2011 and the Company concluded a binding Share Subscription Agreement (20 October 2011) with LIOL and acquired 28,83,62,699 shares at a cost of ₹99.63 crore (Aus \$18.89 million at 6.55 Aus cents per share) which were listed on the Australian Stock Exchange (ASX) (21 December 2011) and 15,56,49,619

⁴³ Tenement is an exploration license which provides an entity the permission to explore the availability of mineral bodies.

⁴⁴ Farm-in agreements are contractual arrangements common in the Australian exploration sector. Typically, the owner of an interest in a tenement (farmor) agrees to transfer a percentage of their interest to another party (farmee) if the farmee meets specified exploration commitments or contributes a defined level of expenditure towards exploration activities.

options⁴⁵ of LIOL (49.61 *per cent* of total equity). The move of the Company was also brought (22 November 2012) to the notice of Cabinet Committee on Economic Affairs (CCEA). Further, McKinsey & Co., was appointed as a Consultant in May 2013 for preparation of strategy forward on LIOL at a cost of ₹3.40 crore approx. (Aus \$ 6,17,980) who opined that Mt. Bevan was a negative Net Present Value (NPV) project and recommended to scale down the investments and even advised the Company to defer the purchase of stake in Hawthorn Resources Limited. However, the Company proceeded (March 2014) to subscribe to the Rights issue of LIOL justifying the move as a potential long-term resource augmentation strategy and with a view to strengthening its international operations. The Company subscribed to the Rights issue of LIOL (at 3 shares for each share) at an offer price of 1.40 Aus cents per share amounting to ₹68.90 crore (Aus \$12.12⁴⁶ million), bringing the total investment in LIOL to the extent of ₹168.53 crore (Aus \$31.01 million i.e., Aus \$18.89 million at the time of acquisition and Aus \$12.12 million in August 2014 i.e. during the Rights issue). The Company so far did not exercise any of the options. Thus, the equity holding in LIOL rose from 49.61 *per cent* to 78.56 *per cent*. As of March 2017, LIOL had 22 tenements comprising of one Iron ore tenement, 18 Gold tenements, and three Base metal tenements.

We observed that:

- a) The acquisition proposal was approved based on inferred resources⁴⁷ of Iron ore and Gold and not on the proven reserves since the entire LIOL projects were still in their exploratory stages. These indicate that the projects were yet to undergo long gestation period before actual exploitation.
- b) In addition to the expenditure of Aus \$9.995 million incurred up to June 2011 (up to the date of acquisition), LIOL incurred a further expenditure of Aus \$11.9 million on exploration of 58 tenements upto March 2017. Further, 36 tenements were surrendered after incurring a total expenditure of Aus \$12.88 million which included three Coal tenements, bringing the total tenements to 22 as on March 2017.
- c) At the time of acquisition of LIOL tenements, the Board's Sub-Committee of the Company in August 2011 observed that the estimated landing cost (CIF value) of Iron ore concentrate in India would be around ₹3,391.73 per ton to ₹3,611.97 per ton (US \$77⁴⁸ per ton to US \$82 per ton) which would prove to be much higher than the production cost⁴⁹ of the Company from its domestic mines rendering the import of ore to India costlier.

⁴⁵ Options are to be invoked and converted into equity before the expiry of the prescribed period on future date at a fixed price, irrespective of the actual market price. Acquisition of Options does not involve cash outgo until it is exercised within the validity period.

⁴⁶ $28,83,62,699 \text{ existing shares} * 3 * 1.4 \text{ cents per share}/100 = \text{Aus } \$ 12.12 \text{ million}$

⁴⁷ Inferred resources need to be further explored for classification as indicated resources and then to measurable or proven resources as per Joint Ore Reserves Committee (JORC) basis of classification.

⁴⁸ RBI reference rate of one US\$ = ₹44.0485 as on 1 August 2011 was considered for conversion

⁴⁹ The production cost of Iron ore in Bailadila Sector was less than ₹1,000 per ton, whereas the landing cost of imported ore was around ₹3,465 per ton by considering exchange rate of ₹45 per US \$ prevailing in 2011.

- d) As per the evaluation study of Mckinsey & Co., Mt. Bevan Iron ore project was a negative NPV project and was a marginal asset in the short to medium term and that it would potentially be strategic for NMDC only in the long term i.e. from the year 2030 onwards for which the Company would need to incur minimum exploration commitment expenditure of ₹89.67 lakh (Aus \$1,77,000⁵⁰) every year to retain the holding of these tenements and invest further as LIOL does not have its own revenue stream.
- e) Further, in view of low grade quality of Iron ore (Fe 30.60 *per cent*), the viability of the project was highly questionable since it would not be feasible given the present technology level of the Indian Steel industry as IBM stipulated (July 2009) that iron ore below 45 *per cent* Ferrous (Fe) grade be treated as waste.
- f) The share value of LIOL as on 03.11.2017 fallen to 0.30 Aus cents per share from the initial acquired price of 6.55 Aus cents per share resulting in erosion of ₹151.40 crore (Aus \$27.55 million) as the initial investment of ₹168.53 crore (Aus \$31.01 million) stood reduced to ₹17.13 crore (Aus \$3.46 million⁵¹) as on that date.

Thus, the investment made by the Company in LIOL was not based on rational assessment of financials which was devoid of informed risk and return profiling and future projections. The imprudent investment move of the Company was reflected in terms of the need to make annual recurring exploration commitment cost and erosion of share value etc.

The Management/Ministry stated (March/July 2018) that:

- The valuation of exploration properties increase manifold when even one out of many tenements are converted to mines.
- The Company projected to import Iron ore from Mt. Bevan to feed the domestic Steel Plants subject to the detailed feasibility studies in view of projections of shortage of Iron ore by 2025 and beyond as per National Steel Policy.
- The Ferrous (Fe) content of 30.60 *per cent* of Mt Bevan can be beneficiated to more than 69 *per cent* (results of Davis tube recovery test) to produce the product fetching premium over blast furnace grade product subject to detailed feasibility studies.
- The exploration companies like LIOL did not have a continuous revenue stream, until project was brought to production which would take several years and the current market capitalisation of LIOL was Aus \$8.81 million at 0.60 Aus cents per share. Any positive news flow in LIOL will result in significant variation in market capitalisation.

⁵⁰ RBI reference rate of one Aus\$ = ₹50.6585 as on 18 December 2018 was considered for conversion

⁵¹ RBI reference rate of one Aus\$ = ₹49.5045 as on 3 November 2017 was considered for conversion

- LIOL submitted applications for allocation of three Tungsten tenements and was in discussions with other Tungsten companies which had completed feasibility studies and hence, the presence of NMDC in Australia would help in targeting important resources beneficial to the country and the Company.

The reply is not acceptable in view of the fact that the Company's projections are based on expectations and assumptions rather than on scientific and reasonably acceptable grounds. Further, the Company is bound to spend annually ₹89.67 lakh (Aus \$1,77,000) to retain the tenements besides expenditure to be incurred for development of infrastructure facilities like creation of Port, Railway line and Road ways to transport the ore from the mine to the Port, Power and Desalination Plant, ore beneficiation cost and lack of own revenue stream significantly impacting the viability of the project as well as the import of the ore to India.

Chapter V

Internal Control and Monitoring

5.1 Monitoring and effectiveness of internal control

Internal control is an important management tool and comprises methods and procedures adopted by the Management of an entity to assist in achieving Management's objective of ensuring orderly and efficient conduct of its business, including adherence to policies, safeguarding of assets, prevention and detection of fraud and error. A well-defined monitoring mechanism is imperative to make available timely, adequate and accurate information to the relevant authority for decision making.

The following internal control mechanisms were in place:

- a) Audit Committee consisting of five members, viz., four Independent Directors and Director (Technical) as member. The other Functional Directors were invited on need basis. The functions of Audit Committee was to oversee the financial reporting process of the Company, approval of financial statements before its submission to Board, reviewing and monitoring the work of Independent Auditors', Internal Auditors' scrutiny of investments, evaluation of internal controls and risk management, discussion with the Internal Auditors with regard to any significant audit findings etc.
- b) Sub-Committee consisting of Joint Secretary, Director (Technical) and two Independent Directors to review all ongoing projects. The mandate of the committee was to review the progress of all ongoing projects like KIOP, NISP, Pellet Plant etc.
- c) The Company had devised manuals for Procurement, Human Resources, Contracts, Works and Sales etc.
- d) The internal audit function of the Company, covering both the Head Office and its units, were outsourced to firms of Chartered Accountants which covered transaction audit as well as the audit of systems and procedures adopted in different units of the Company. High and medium risk internal audit observations would be reviewed by the Audit Committee.

Though a system of control mechanisms existed as stated above, it was noticed that:

- (i) The Sub-Committee for reviewing ongoing projects did not fix any timelines with clear milestones to be achieved which could be reviewed in its subsequent meeting. Although it was seen that some broad remedial actions were suggested on the bottlenecks projected to it in respect of ongoing projects, the monitoring by the Sub-Committee did not reflect the progress in achievement of these projects in quantifiable terms. Further, the Sub-Committee was not properly apprised of the delays in getting statutory clearances for Screening Plant-II, Screening Plant-III and Deposit-13 which were pending for a long time and hence, the Sub-

Committee could not suggest any remedial action on these delays. Consequently, the Board too was not kept abreast of the developments in this regard.

- (ii) No specific milestones were fixed with accountability despite 11B mine and KIOM project works crossing the scheduled completion dates by April 2012 itself. Even after completion of major packages viz., Crushing Plant and Downhill Conveyor System Packages in respect of 11B mine (August 2015), remaining packages were yet to be completed indicating lack of proper monitoring by Board level Sub-Committee.
- (iii) For Screening Plant-II, delay on the part of the Company in submission of the required information was not acted upon by Board Sub-Committee.
- (iv) The decision taken by the Management on major investments like ₹100.60 crore for acquisition of disputed iron-ore mine in Odisha (NINL), investment of ₹376.36 crore in ICVL were made without conducting proper due diligence on its own before making such investment. These issues were subsequently referred to the advisory committees when the Management noticed the risks involved in such investments.
- (v) Further, the decisions/ suggestions made for turning around the loss making Sponge Iron Unit (SIU), Paloncha at the time of its acquisition (prior to July 2010) into profit making unit had not been implemented so far. As a result, the envisaged benefits expected at the time of acquisition were not achieved and the SIU was under continuous losses, which had accumulated to the tune of ₹194.77 crore as on 31 March 2017.
- (vi) The Management did not obtain the feedback of the user department about the performance of BEML make Dumpers prior to finalization of pre-qualification criteria for subsequent tenders and went ahead with their procurement. This resulted in procurement of poor performing equipment, the availability of which were less than 85 per cent, as prescribed in the tender documents for procurement, during the first year of operation.
- (vii) Periodical mid-term review of implementation of Strategic Management Plan – Vision 2025 as prescribed by the Board was not done as a result of which corrective actions for plugging shortfalls impeding the achievement of the projected targets were not carried out.
- (viii) A reference is also invited to the Recommendation No. 2 of CAG in Report No. 20 of 2012-13 wherein, it was recommended that the Company needs to enhance its project management capability by focusing on project planning, implementation and monitoring. The Company needs to specify the timeframes and milestones for all project activities and ensure their strict adherence through continuous monitoring and requisite remedial action. It was also recommended that the Board of Directors of the Company need to review the progress of ongoing projects periodically and suggest remedial action wherever warranted so that the projects are completed as envisaged. Though the Company accepted the recommendation, specific milestones and timeframes indicating the work planned

to be completed, actually completed, reasons for delay, if any, and the proposed work to be completed after the meeting date was not fixed in respect of all the ongoing projects in the 17 review meetings which were held during the period between April 2012 and December 2017.

The Company contended (March 2018) that internal control mechanism was in place in NMDC, and the Board of Directors had constituted a Sub-Committee for review of various ongoing projects and the minutes of the said Sub-Committee are placed for the information of Board at regular intervals.

We observed that despite the constitution of Sub-Committee for review of the ongoing projects, almost all the projects continued to be delayed due to lack of effective monitoring and appropriate follow-up action by the Sub-Committee.

Further to the reply of the Management, the Ministry stated (July 2018) that the Recommendation No.2 of the CAG's Report No. 20 of 2012-13 was settled in February 2015 by considering the steps taken for monitoring and speedy implementation of the projects.

The reply needs to be viewed in the light of the fact that the para pertaining to Recommendation No. 2 of CAG's Report No. 20 of 2012-13 was decided not to be pursued further, based on the Company's submission of timelines with milestones for implementation of 11B project, KIOM project and Donimalai Pellet Plant, with a rider that the same would be watched and verified in the subsequent audits. During the course of the current Performance Audit, we noticed that the Sub-Committee on Reviewing the Progress of the On-going Projects did not fix any milestones with timelines, revision of timelines and monitoring of the achievement of the same in respect of development of 11B Mine, KIOM Project and Pellet Plant though there were delays in completion of these projects.

Chapter-VI

Conclusion and Recommendations

6.1 Conclusion

As the largest producer of Iron ore in the country, the Company has been consistently performing well with a profit before tax of ₹4,293.68 crore on an income of ₹9,738.45 crore in 2016-17. On review of the operating performance of the Company covering the period 2012-17, there were, however, certain observations and concerns which are as follows.

The maximum allowed production capacity of the Company was at 37 million tons per annum (MTPA) upto 2015-16 and 44 MTPA during 2016-17. The capacity utilization fluctuated between 73 *per cent* (2012-13) and 82 *per cent* (2014-15) with corresponding shortfalls of 27 *per cent* and 18 *per cent* due to reasons viz., non-availability of Slurry pipeline, non-availability of screening facilities, saturation of stock pile, lack of orders from the customers etc. The SMP – Vision 2025 was framed with optimistic and ambitious targets. This was done despite the down trend projection in prices of iron ore and steel both at domestic and international markets. Though the Company envisaged various facilities (Complex-wise) for enhancing its production to 50 MTPA by 2018-19 and 67 MTPA by 2021-22, the timelines for completion of these facilities seems unrealistic which is reflected in the shortcomings in achieving its targets in terms of production and adherence to timeline as well.

Development of 11B mine in Bailadila Sector and Kumaraswamy Iron Ore Project in Donimalai Sector which were meant for augmenting production capacity were unduly delayed with reasons attributable to both Company/Consultant and Contractors. Though major packages of these projects were completed by August 2015 and May 2017 respectively, full capacity production could not be achieved due to non-installation of Screening Plants. There were delays (14 years) in obtaining statutory clearances in respect of Deposit-13 in Bailadila Sector which ultimately resulted in delay in development of the mine. The Company could not get the required statutory clearances for Screening Plant-II at Donimalai due to delay in submission of essential details sought by the Karnataka State Forest Department and for Screening Plant-III at Kirandul complex, which has taken nine years for obtaining statutory clearances owing to reasons attributable to the Company, the Ministry of Environment, Forest and Climate Change and Chhattisgarh State Forest Department. The evacuation capacity expansion project works remained incomplete or were yet to secure statutory clearances impeding the progress in achieving the targets set out in the revised SMP – Vision 2025.

The construction of Integrated Steel Plant at Nagarnar, Chhattisgarh scheduled to be completed by March 2014 encountered unreasonable delays which necessitated an upward revision of cost estimates for the project. Various reasons behind the delay have

been highlighted in this report of which non-preparation of Detailed Project Report has been underscored. There were inordinate delays in securing allotment of land for the Integrated Steel Plant in Karnataka. The delay of eight years in obtaining the title to land had a cascading effect in setting up of the Plant. The Company was yet to get mining lease for Ramandurg mine intended to use as a captive mine for this Integrated Steel Plant at Karnataka (March 2018).

Pellet Plant at Donimalai was commissioned in June 2017 against the scheduled completion date of March 2012, that too with a production achievement below six *per cent* of the installed capacity during 2017-18. Due to expiry of supplementary mining lease of Diamond Mine at Panna, Madhya Pradesh, the Company is faced with a situation where it would no longer be able to process the Tuff in its possession beyond 2020.

The Performance Audit also revealed that there were significant shortcomings in the joint venture projects embarked upon by the Company. The investment of ₹714 crore made in five Joint Venture Companies have not yielded any returns so far. The Company was yet to implement the recommendation of CAG in Report No. 20 of 2012-13 relating to fixation of timeframes with clear milestones for ongoing projects and as a result, the progress of the various projects underway continued to be plagued with time overruns despite the Company's claim that the projects and packages under execution were being monitored by Board level Sub-Committee.

6.2 Recommendations

- 1) The Company needs to factor in market trends while fixing the targets in its periodic plans so that the set targets are realistic and achievable.
- 2) The Company may ensure timely submission of required documentation and follow up with the concerned statutory authorities with a view to secure statutory clearances within the timelines prescribed.
- 3) The Company needs to conduct proper due diligence and pay due cognizance to the risk factors before embarking on national and international investment ventures.
- 4) The Company needs to strengthen its project execution mechanism / strategy to avoid delays in implementation of projects/construction works and to avoid time and cost overruns so that envisaged benefits are realized.
- 5) The Board of the Company may strengthen its monitoring mechanism with a view to ensure timely completion of projects.

Response of the Ministry of Steel on the audit recommendations:

The Ministry of Steel was in agreement with the Recommendations No. (2), (3) and (4) above. In respect of Recommendation No. (1), the Ministry stated that it is very difficult to forecast the exact market trends in advance in the Iron ore industry, in view of volatile market conditions. In respect of Recommendation No. (5), the Ministry stated that the Sub-Committee of Board of Directors reviews the progress of ongoing projects and gives its advice and remedial actions for completing the projects.

The above responses of the Ministry on Audit Recommendation Nos (1) and (5) have been duly considered and incorporated under the respective paras of this Report (Paras 2.1.4 and 5.1) along with further views of Audit thereon.

New Delhi
Dated: 30 May 2019


(VENKATESH MOHAN)
Deputy Comptroller and Auditor General
(Commercial)

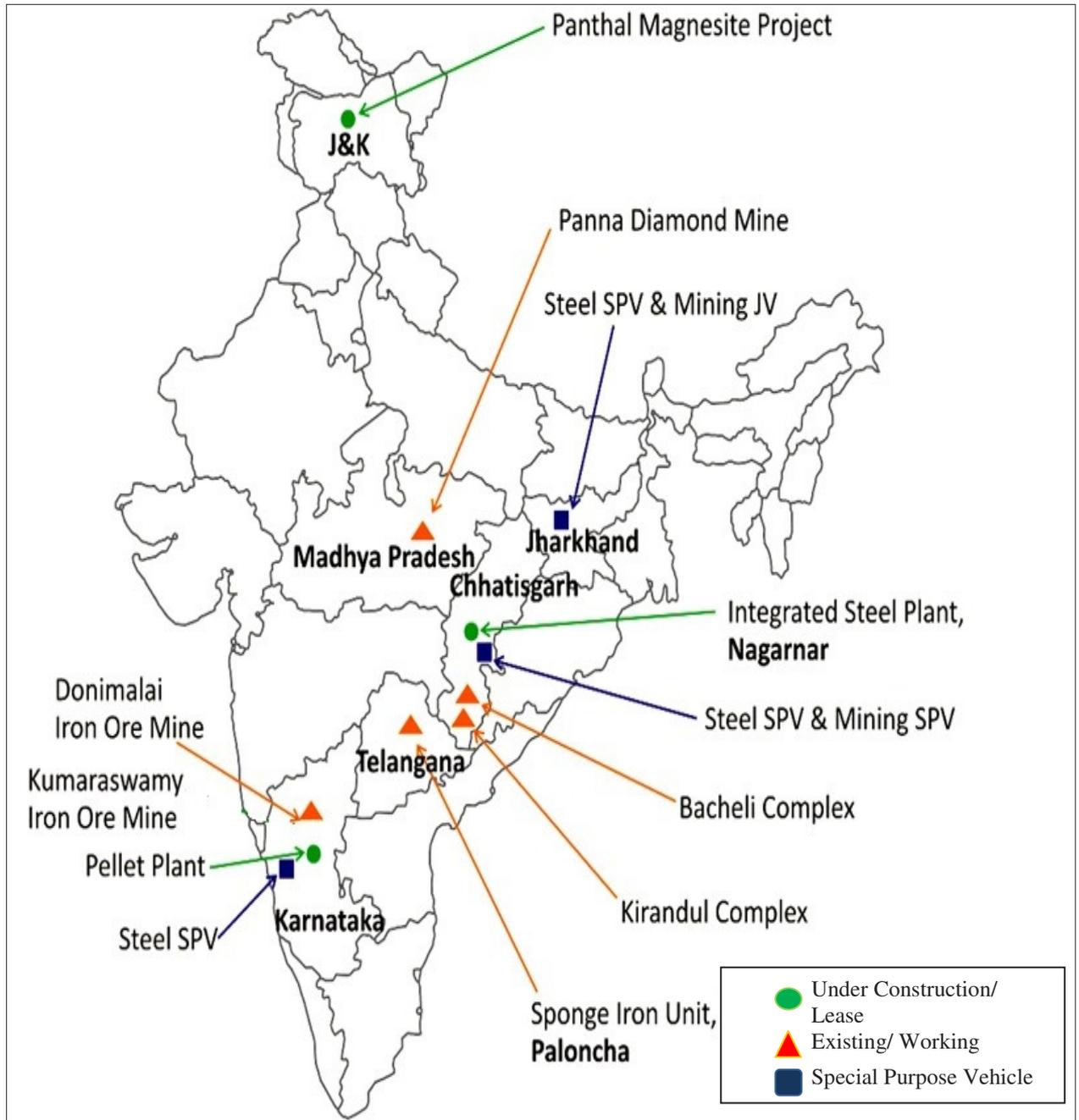
Countersigned

New Delhi
Dated: 31 May 2019


(RAJIV MEHRISHI)
Comptroller and Auditor General of India

**Annexure-I
(Para 1.1)**

Geographical spread of the Projects of NMDC Limited



(Source: Annual Report of NMDC Limited for the year 2016-17)

**Annexure-II
(Para 2.2.2)**

Details of various HEMM equipment available as at the end of March during the five-year period from 2012-13 to 2016-17 in each of the mining project

Equipment	Bacheli					Kirandul					Donimalai					Panna				
	March 2013	March 2014	March 2015	March 2016	March 2017	March 2013	March 2014	March 2015	March 2016	March 2017	March 2013	March 2014	March 2015	March 2016	March 2017	March 2013	March 2014	March 2015	March 2016	March 2017
Dumpers	20	20	20	23	20	30	24	24	23	21	18	17	17	17	17	7	6	6	6	7
Shovels	11	11	11	10	10	13	11	10	9	12	8	8	8	8	9	2	3	2	2	2
Dozers	13	13	13	13	13	11	11	11	11	11	9	9	8	9	8	3	3	2	2	4
Drills	12	12	13	13	13	15	15	14	15	15	8	8	7	7	8	3	3	3	3	3
Graders	4	4	4	4	4	5	5	5	5	5	2	2	3	3	3	1	1	1	1	0

**Annexure-III
(Para 2.2.2(b))**

Statement showing comparative performance of Dumpers of BEML make vis-a-vis others

Sl. No.	Serial No. of Equipment	Make & Model	Capacity of Dumper (In Tons)	Date of Commissioning	Cumulative Hours Meter Reading (HMR) as on 31-08-2017	Mine at which Deployed	No. of Months of Utilization	Average Utilization per month in Hours	Average Utilization per Year in Hours
1	2	3	4	5	6	7	8	9=Col.6/Col.8	10=Col.6*12/Col.8
BACHELI COMPLEX									
1	HP-1C	BEML 85T	85	10-Mar-2013	12248	Dep. 5	53	231	2773
2	HP-2B	BEML 85T	85	15-Dec-2005	19033	Dep. 5	140	136	1631
3	HP-3B	BEML 85T	85	3-Oct-2008	19535	Dep. 5	106	184	2212
4	HP-4C	BEML 85T	85	25-Mar-2016	5730	Dep. 5	17	337	4045
5	HP-5C	BEML 85T	85	25-Mar-2016	5817	Dep. 5	17	342	4106
6	HP-6B	BEML 85T	85	3-Oct-2008	17821	Dep. 5	106	168	2017
7	HP-8B	BEML 85T	85	3-Oct-2008	22190	Dep. 5	106	209	2512
8	HP-9C	BEML 85T	85	25-Mar-2016	5696	Dep. 5	17	335	4021
9	HP-10B	BEML 85T	85	3-Oct-2008	18945	Dep. 5	106	179	2145
10	HP-11B	BEML 85T	85	15-Dec-2005	27920	Dep. 5	140	199	2393
11	HP-12B	BEML 85T	85	19-Aug-2004	25584	Dep. 5	156	164	1968
12	HP-13B	BEML 85T	85	6-Nov-2009	13074	Dep. 5	93	141	1687
13	HP-34	BEML 85T	85	1-Apr-2006	21686	Dep. 10/11A	136	159	1913
14	HP-35	BEML 85T	85	6-May-2006	20308	Dep. 10/11A	135	150	1805
15	HP-36	BEML 85T	85	18-Mar-2006	18965	Dep. 10/11A	137	138	1661
16	HP-37	BEML 85T	85	11-Apr-2006	18648	Dep. 10/11A	136	137	1645
17	HP-38	BEML 85T	85	1-Apr-2006	18752	Dep. 10/11A	136	138	1655
18	HP-39	BEML 85T	85	18-Mar-2006	20987	Dep. 10/11A	137	153	1838
19	HP-40	BEML 85T	85	1-Apr-2006	19121	Dep. 10/11A	136	141	1687
20	HM-7B	CAT	100	12-Jun-2003	38298	Dep. 5	170	225	2703
DONIMALAI COMPLEX									
1	HP-3A	BEML BH-85-1	85	14-Sep-2005	22526	DIOM	143	158	1890
2	HP-7B	BEML BH-85-1	85	19-Aug-2004	22294	DIOM	156	143	1715

Sl. No.	Serial No. of Equipment	Make & Model	Capacity of Dumper (In Tons)	Date of Commissioning	Cumulative Hours Meter Reading (HMR) as on 31-08-2017	Mine at which Deployed	No. of Months of Utilization	Average Utilization per month in Hours	Average Utilization per Year in Hours
1	2	3	4	5	6	7	8	9=Col.6/Col.8	10=Col.6*12/Col.8
3	HP-10	BEML BH-85-1	85	17-Jun-2009	12854	KIOM	98	131	1574
4	HP-11	BEML BH-85-1	85	1-Aug-2009	10154	KIOM	96	106	1269
5	HP-12	BEML BH-85-1	85	20-Dec-2005	16691	DIOM	140	119	1431
6	BH-4B	BEML BH-100S	100	6-Dec-2012	14742	DIOM	56	263	3159
7	BH-14	BEML BH-100S	100	8-Mar-2013	16258	DIOM	53	307	3681
8	BH-15	BEML BH-100S	100	8-Mar-2013	15279	DIOM	53	288	3459
9	BH-16	BEML BH-100S	100	28-Mar-2013	16932	DIOM	53	319	3834
10	BH-17	BEML BH-100S	100	20-Mar-2013	15249	DIOM	53	288	3453
11	BH-21B	BEML BH-100S	100	18-Mar-2013	16984	DIOM	53	320	3845
12	HM-1A	CAT 777D	100	21-Jan-2006	44888	DIOM	139	323	3875
13	HM-2A	CAT 777D	100	19-Jan-2006	47962	DIOM	139	345	4141
14	HM-5A	CAT 777D	100	19-Jan-2006	47575	DIOM	139	342	4107
15	HM-6A	CAT 777D	100	12-Apr-2006	45865	DIOM	136	337	4047
16	HM-8A	CAT 777D	100	6-Feb-2006	46672	DIOM	138	338	4058
17	HM-9A	CAT 777D	100	17-Jan-2006	47860	DIOM	139	344	4132
KIRANDUL COMPLEX									
1	HP-49A	BEML BH 50 M	50	1-May-2010	5847	Dep. 11B	87	67	806
2	HP-60	BEML BH 85-1	85	10-Nov-2008	8812	Dep. 11B	105	84	1007
3	HP-61	BEML BH 85-1	85	16-Oct-2008	6278	Dep. 11B	106	59	711

Sl. No.	Serial No. of Equipment	Make & Model	Capacity of Dumper (In Tons)	Date of Commissioning	Cumulative Hours Meter Reading (HMR) as on 31-08-2017	Mine at which Deployed	No. of Months of Utilization	Average Utilization per month in Hours	Average Utilization per Year in Hours
1	2	3	4	5	6	7	8	9=Col.6/Col.8	10=Col.6*12/Col.8
4	HP-62	BEML BH 85-1	85	16-Oct-2008	9385	Dep. 11B	106	89	1062
5	HP-63	BEML BH 85-1	85	30-Nov-2008	7540	Dep. 11B	105	72	862
6	HP-37A	BEML BH 50 M	50	1-May-2010	4839	Dep. 14	87	56	667
7	HP-53A	BEML BH 50 M	50	1-May-2010	4422	Dep. 14	87	51	610
8	HP-17B	BEML BH 60 M	60	25-May-2012	6216	Dep. 14	63	99	1184
9	HP-24B	BEML BH 60 M	60	25-May-2012	5381	Dep. 14	63	85	1025
10	HP-66	BEML BH 60 M	60	18-Nov-2012	7878	Dep. 14	57	138	1659
11	HP-67	BEML BH 60 M	60	18-Nov-2012	7096	Dep. 14	57	124	1494
12	HP-68	BEML BH 60 M	60	18-Nov-2012	8397	Dep. 14	57	147	1768
13	CP-54	CAT 777D	100	20-Jun-2003	33530	Dep. 11C	170	197	2367
14	CP-55	CAT 777D	100	14-Nov-2005	31178	Dep. 11C	141	221	2653
15	CP-56	CAT 777D	100	14-Nov-2005	29985	Dep. 11C	141	213	2552
16	CP-57	CAT 777D	100	5-Jan-2006	32976	Dep. 11C	139	237	2847
17	CP-58	CAT 777D	100	5-Jan-2006	32976	Dep. 11C	139	237	2847
18	CP-64	CAT 777D	100	5-Apr-2011	18427	Dep. 11C	76	242	2910
19	CP-65	CAT 777D	100	5-Apr-2011	17788	Dep. 11C	76	234	2809
20	CP-22B	CAT 773D	60	24-Jun-2011	15904	Dep. 14	74	215	2579
21	CP-23B	CAT 773D	60	24-Jun-2011	15271	Dep. 14	74	206	2476
22	CP-52A	CAT 773D	60	24-Jun-2011	16926	Dep. 14	74	229	2745

Annexure-IV
(Para 2.2.2(c))

Availability and utilization of three major HEMM equipment viz., Shovels, Dumpers and Drills with respect to Scheduled Hours, Available Hours and Utilized Hours across the three projects during the period from 2012-13 to 2016-17

Sector & Mine		Percentage with reference to	2012-13	2013-14	2014-15	2015-16	2016-17
Bailadila Sector			In percentage				
Kirandul	Shovels	Available Hours on Scheduled hours	82.26	84.52	77.56	78.72	72.86
		Utilized hours on Available Hours	20.21	26.52	32.81	32.89	43.10
	Dumpers	Available Hours on Scheduled hours	87.48	83.62	74.42	73.88	66.01
		Utilized hours on Available Hours	21.65	25.60	31.55	33.67	43.35
	Drills	Available Hours on Scheduled hours	83.85	87.41	83.99	75.16	73.01
		Utilized hours on Available Hours	16.62	15.16	16.47	16.64	20.79
Bacheli	Shovels	Available Hours on Scheduled hours	81.53	81.30	76.98	76.52	73.07
		Utilized hours on Available Hours	31.19	36.62	42.04	41.53	47.92
	Dumpers	Available Hours on Scheduled hours	82.36	79.03	72.77	71.29	71.60
		Utilized hours on Available Hours	35.02	35.96	39.29	43.55	54.22
	Drills	Available Hours on Scheduled hours	84.67	81.72	82.14	74.75	67.91
		Utilized hours on Available Hours	21.27	21.73	26.27	24.37	30.77
Donimalai Sector							
Donimalai	Shovels	Available Hours on Scheduled hours	80.34	77.00	76.22	74.10	73.25
		Utilized hours on Available Hours	49.66	51.38	54.36	51.66	52.11
	Dumpers	Available Hours on Scheduled hours	73.63	72.91	70.76	68.07	78.77
		Utilized hours on Available Hours	62.15	51.81	49.13	56.87	65.91
	Drills	Available Hours on Scheduled hours	85.77	72.87	79.14	74.19	58.36
		Utilized hours on Available Hours	27.39	33.99	43.05	36.75	54.12

Annexure-V
(Para 2.3.1)

Package-wise progress made during 2012-17 in respect of development of Deposit-11B mine

Package No.	Description of package	Name of the contractor	Value (₹ in crore)	% of completion as on 31.03.2012	Actual completion	Time taken to complete balance works
I	Crushing and Stacking section	TRF Limited	115.19	72.12	August 2015	40 months
II	Downhill Conveyor System	Sandvik Asia Pvt. Limited	115.71	77.28	August 2015	40 months
III	Earthwork and site preparation	Ratna Infrastructure projects Pvt. Limited	76.78	97.53	December 2009	--
IV	Electrical substation and distribution system	Siemens Limited	10.99	91.16	August 2015	40 months
V A	Water supply	KP Antony/APJ Constructions	1.76	79.38	October 2011	--
V B	Service Centre Building	BCC Infracon Pvt Limited	17.33	29.16	Terminated during October 2014	Remaining work split into 4 sub-packages and yet to be completed (January 2018)
V C	Supply of indoor electrical	Lalitha Engineering Pvt. Limited	2.36	56.12	Terminated May 2016	Erection to be done after completion of package V B works
V D	Electric Overhead Travelling Cranes	Alpha Services	1.54	17.54	Suspended till April 2018	Erection to be done after completion of package V B works
VI	Telecommunication system	Infonet Asia Pvt. Limited	1.78	50.47	*PAC done in May 2017	Yet to be commissioned
VII	Fire Protection System	New Fire Engineers Pvt. Limited	7.36	70.45	*PAC done in May 2017	Yet to be commissioned

*PAC: Preliminary Acceptance Certificate

**Annexure-VI
(Para 2.3.2)**

Package-wise progress made during 2012-17 in respect of development of Kumaraswamy Iron Ore Project

Package No.	Description of package	Name of the contractor	Value ₹ in crore	Stage completion as on 31.03.2012	Actual completion	Reasons for delay
I	Crushing Plant (LSTK)	FLSmith Pvt. Ltd., Chennai	165.49	Major Drawings and materials were approved	May 2017	Due to problems with sub-contractors and delay in submission and approval of drawings.
II	Downhill conveyor system (LSTK)	Elecon Engg. Gujrat	190.86	Major Drawings and materials were approved	July 2017	Due to poor planning of the contractor in mobilizing sufficient resources like manpower and materials, delays in submission of drawings, etc.
III	Electrical works (LSTK)	Schneider Elec. Infrastructure Bangalore	10.95	Drawings approved and dispatch clearance given to materials	March 2017	Delay in obtaining statutory clearances and poor mobilization of resources by the contractor
IV	Telecommunications (LSTK)	Infonet Asia, Chennai	3.14	Tendering yet to be initiated	---	Poor mobilization of resources by contractor
V A	Water Supply Pipeline (Item Rate)	Dee Tech Projects P. Ltd.Chennai	4.51	Drawings yet to be approved	December 2015	Work front was not available for want of finalization of downhill conveyor corridor. Further, it was also delayed due to delay in shifting of construction material through PWD road which was under construction etc.
V B	Service Centre (Item Rate) & auxiliary buildings	BCC infracon Pvt. Ltd., Hyderabad	29.59 (revised)	Majority of drawings approved	September 2015	Improper assessment/estimate of Bill of Quantities (BoQ) by the Company before issuing the work order (increase from 20,000 cum to 65,000 cum).

Package No.	Description of package	Name of the contractor	Value ₹ in crore	Stage completion as on 31.03.2012	Actual completion	Reasons for delay
VC	Supply & Erection of EOT cranes (LSTK)	AMT International, Gobindgarh	1.35	Work order placed	September 2015	Equipment supplied but could not be erected due to unavailability of fronts from package V B and power from package IV.
VI	Approach road to mine (Item Rate)	Suryodaya Infra Projects (I) Pvt. Ltd., Hyderabad	47.82	Work order yet to be placed	---	Stage-I Forest Clearance for 5.4 km out of 8.3 km was granted in December 2017

Annexure-VII
(Paras 3.1.2, 3.1.3 and 3.1.4)

Details showing time taken for award of packages for Nagarnar Integrated Steel Plant (NISP)

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
Major Packages – 19 months period for placement of LAC from Limited Tender Enquiry (LTE) for each package as per PIP (Project Implementation Plan)						
1	RMHS- (PKg-1)	07.07.10	1395.00	01.08.11	13	Tender notice was issued 07.07.10. Techno-commercial discussions held between December 2010 and January 2011. MECON submitted cost estimates on 24.05.11. Price bids were received on 02.06.11. Tender Scrutiny Committee (TSC) met on 07.06.11 and 08.06.11
2	Coke Oven- (PKg-2)	21.05.10	1978.36	24.08.11	15	Tender enquiry was issued May 2010. Price bids were opened on June 2011.
3	By Product- (PKg-3)	01.07.10	509.00	15.12.11	17	GEoI was issued in March 2009. There was revision of cost estimates due to addition/deletion of certain facilities in the package due to which bids were extended from time to time. Finally LAC was issued on 15.12.11, i.e. after a time gap of 17 months from the date of tender and more than 32 months from issue of GEoI.
4	Sinter Plant-PK- (Pkg-4)	13.04.10	764.79	24.01.11	10	Expression of Interest was issued in March 2009. LTE was issued on 13.4.10. LOA was issued on 24.01.11.
5	Blast Furnace- (Pkg-5)	22.04.10	1813.93	30.04.11	12	LTE was issued in April 2010. LOA was issued in April 2011.
6	SMS-PK-(Pkg-6)	20.05.10	2054.00	25.04.12	23	GEoI was issued in December 2009. LTE was issued 20.05.10 for two out of eight bidders on meeting eligibility. As MECON had not submitted the cost estimates, it was decided to accept the price evaluation report of MECON dated 06.01.12 as approved by Board and LAC was issued in April 2012 with a delay of 23 months from date of tender and 40 months from issue of GEoI.

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
7	Thin Slab Caster & HSM-(Pkg-7)	08.04.10	2633.00	04.05.12	25	Limited Tender (LT) was issued on 08.04.10 with submission date on 23.9.10. Bids were evaluated in December 2011 due to changes in Standard Bidding Document (SBD). LOA was issued in May 2012.
8	Lime & Dolomite Calcination Plant-(Pkg-8)	05.07.11	148.45	23.11.12	16	Tenders were issued on 05.07.11. Techno-commercial discussions were held between November/December 2011. Revised price bids were opened on 17.02.12. NMDC team visited China in July 2012 to verify the credentials of one of the bidders and after Board approval, contract was awarded.
9	Oxygen Plant-(Pkg-9)	10.08.11	582.00	16.04.12	9	EOI was issued in July 2009. The delay was due to deliberations whether to go for the Plant on Build, Own and Operate (BOO)/ Build, Own and Maintain (BOM) basis or for installation. Global tender was issued on 10.08.2011. Cost estimates were prepared on 08.04.11. Based on change in technical specifications, revised price bids were opened on 27.01.12 and LAC was issued on 16.04.12. Thus, there was an overall delay of 37 months from the issue of EoI.
Auxiliary Packages- (17 months period for placement of LAC from LTE for each package as per PIP)						
1	Power Blowing Station (Pkg-10)	11.06.11	502.76	23.11.12	17	Tender was issued 11.06.11. Work awarded on 23.11.12. No delay.
2	Main Receiving Station (Pkg- 42)	16.06.11	140.45	21.04.14	34	NIT issued in June 2011 after submission of cost estimates in March 2011. Technical Bid received in July 2011. However, Tender Scrutiny Committee (TSC) vetted the offers in May 2012 due to revision in Pre-qualification criteria, discussion with bidders and evaluation time taken by MECON. After Board's approval, work order issued in April 2014 (delay due to clarifications sought by Board).
3	Turbo blowers (Pkg- 10A)	11.06.11	226.37	03.05.14	35	Tender notification issued 11.06.11. Standard Bidding Document was revised several times between 03.08.11 to 25.06.13. Price bids were opened on 03.07.13. TSC meeting was held 21.09.13. Board approval sought on 14.03.14.

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
4	IPPL-(Pkg-20)	10.01.12	141.10	01.08.14	31	Tender issued on 10.01.12. Tenders opened on 12.03.12. Tender Appraisal Report (TAR) modified due to number of deviations taken by the bidders. Revised TAR issued on 24.07.12. TSC again met on 09.08.12 and 10.08.12 (originally on 26.06.12 and 27.06.12). 3 out of 4 offers were selected for finalisation. MECON proposed changes to approved technical specifications. Due to delay in receipt of price implications from MECON, price bids of qualified bids were received on 12.03.2013. TSC met finally on 02.05.2013 and L1 bidder selected. Due to delay in price reduction negotiations with L1 bidder and clarifications on changes in contractual quantity beyond +/-5%, issue of LOA (01.08.2014) to L1 bidder is abnormally delayed.
5	PPDS-(Pkg-32)	08.05.12	358.62	10.09.14	28	After issue of Tender Enquiry in May 2012, due to change in technical modifications, the Technical evaluation of offers TAR was issued on 01.06.13 and as per the TSC recommendations of July 2014, LOA was issued on L1 (BHEL) in September 2014.
6	Water Package Inside Plant(Pkg-17-01)	22.06.11	356.85	22.12.14	42	Tender floated on 22.06.11 and opened on 05.09.11. MECON submitted revised tender appraisal report on 26.04.12. Director (Finance) opined that PQ criteria envisaged was not in consonance with financial and technical competency required. Referred to a sub-committee on 02.01.13, which did not agree with the opinion of Director (Finance). The package was divided into 17 (1) and 17 (2). Suggested for re-tender. Global tenders issued 18.10.13. Pre-bid meeting held on 01.11.13. TAR submitted on 28.02.14. Task force met on 28.02.14. Five bids received. Complaints received on 17 (1) part. Committee constituted by the Company visited China on 26.09.14. The contract was awarded in December 2014.
7	Water Package outside Plant (Pkg-17-02)	22.06.11	314.58	22.12.14	42	

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
8	Compressed Air System (Pkg- 11)	01.09.12	56.51	23.01.15	29	Cost estimates were prepared on 27.04.12. LTE was issued in September 2012. TSC held on 20.05.14. Letter of award of contract issued in January 2015.
9	Central Fire Station, Fire Post & telephone exchange building (Pkg- 26)	08.09.14	15.35	27.10.15	13	--
10	Diesel Generator (Pkg-12)	08.12.15 (RT)	37.18	27.09.16	28	In May 2014, global tender was issued. Only one offer was received. Therefore, retendered in December 15. Tender opened on 12.01.16 and contract was awarded on 27.09.16
11	Central Laboratory Building (Pkg-16)	04.02.16	17.61	19.01.17	25	In response to Open tender enquiry floated in December 2014 two offers were received which were technically unqualified. Re-tenders were floated (February 2016) with revised technical specifications. In response, six offers were received by April 2016 and TSC in September 2016 qualified all the six bids. After evaluation of price bids in December 2016 work order placed in January 2017. Thus, total time taken for award of work order was 25 months.
12	Building for Central Workshop (Pkg-28A)	06.04.15	92.89	10.06.16	43	MECON prepared detailed cost estimates in November 2012 which were revised and approved in July 2014 due to changes in technical specification. NIT floated in April 2015 after approval of cost estimated by Board in March 2015. 4 bids received were evaluated by TSC in October /December 2015 and three firms were qualified. Price bids opened in January 2016 and quotes were compared with updated price estimates and found that L1 bidder price was higher by 9.2%. After negotiations with L1 bidder, work order issued in June 2016 with the approval of Board. Thus total time taken was 43 months.

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
13	Plant Illumination (Pkg-33)	19.01.16	19.20	11.01.17	12	Original tender issued in December 2014 was cancelled as only one bid was technically qualified. Re-tender was floated in January 2016 and LOA was issued in January 2017.
Infrastructure Packages						
1	Studio Apartment -2	15.12.10	28.36	22.06.11	6	After initiation of proposal in September 2010 NIT floated in December 2010. TSC qualified all the 3 bids in March 2011 and price bid of L1 bidder was evaluated in April 2011 and approved by competent authority in June 2011.
2	Storm Water Drain sewerage Plant – (Pkg-43A)	25.03.14	124.92	08.03.16	46	MECON submitted detailed cost estimates in May 2012 which were approved by the Company in August 2012. However, NIT was issued in March 2014 due to non-finalization of PQ criteria. Three bids received (June 2014) were technically disqualified by TSC in November 2014. Re-tenders floated in April 2015. Two bids received were evaluated and L1 bidder was selected with the approval of Board in February 2016. Work order issued in March 2016. Thus total time taken was 46 months.
3	Steel Loading Flat form (Pkg-53)	24.06.16 (RT)	9.78	10.04.17	10	No delay.
4	Purchase of Locomotives (Pkg-48)	10.11.11 (OT) 30.07.16 (RT)	104.91	28.12.16	5	Originally proposed to have on lease basis and enquired with RITES & DLW Varanasi and finally LTE was issued in July 2016 and LOA issued in December 2016.
5	Central Stores Building (Pkg-52)	06.05.14	27.26	02.06.16	25	MECON submitted cost estimates in September 2011 which were revised in August 2012. The Company accepted the cost estimates in March 2013. However, NIT floated in May 2014. Bids of 3 firms opened in August 2014 and TSC qualified one firm in December 2014. However, it was decided to re-tender the package and NIT floated in

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
						October 2015. After technical and price bid evaluation, work order was issued in June 2016. Thus, the time taken was 25 months to award the package.
Enabling Packages						
1	Construction Water	26.03.10	31.16	06.12.10	8	No issue
2	Site Levelling Phase-I	05.06.10	23.66	31.12.10	6	No issue
3	Construction Power	17.04.10	39.58	17.01.11	9	No issue
4	Plant Road Network & Temporary Drainage Phase-I	25.06.10	26.35	18.05.11	10	No issue
5	Boundary wall & watch tower	26.02.11	22.83	02.11.11	9	No issue
6	Site Levelling Phase-II	17.12.11	15.80	14.08.15	44	After issue of NIT in December 2011, the Company/Consultant took one year i.e., up to December 2012 to finalise the L-1 bidder. However, site related requirements were not frozen by the Company. Hence, re-tender was floated in August 2014 after finalization of requirements as selected L1 bidder was not willing to extend its price bid. Out of 8 bids received by September 2014 three bids were shortlisted in December 2014. Though price bids were evaluated in January 2015, work order was issued in August 2015 as left over works in Phase-I were proposed for inclusion in this work order. Thus, failure of the Company/Consultant in finalization of site requirements resulted in delay of 44 months in finalization of work order.

Sl. No.	Name of the Package	Date of Tender	Value of the contract (₹ in crore)	Date of LAC (Letter of award of contract)	Time taken for tendering from the date of tender (months)	Reasons for delay
7	Plant Road Network Phase-II	07.01.15	40.43	17.02.16	13	No issue
8	Retaining wall for railway embankment	09.12.15	31.45	29.08.16	21	MECON submitted the initial cost estimates in November 2014, but open tender enquiry was floated in December 2015 due to revision of specifications and estimated price. Out of four bids (received in January 2016) two bids were qualified as per the Tender Scrutiny Committee (TSC) in April 2016. After evaluation of Price bids in July 2016 work orders were placed in August 2016 with approval of competent authority. The awarded work order was 0.55% lower than estimate. Thus, the time taken for award of this package was 21 months.
Railway Packages						
1	Railway siding Package-I	26.03.14	283.32	21.09.15	18	One of the five bidders moved the Hon'ble High Court of Hyderabad. After clearing of the case, the work order was awarded to L1. Therefore, time taken for awarding was 18 months.
2	Railway siding Package-II	29.12.14	78.92	01.03.16	14	TSC conducted in May 2015 qualified IRCON technically. Price bid was opened in July 2015 and observed that the L1 price was 24% higher than the estimate, negotiations were held with bidder and got reduction in price which took time.
3	Railway siding Package-IV	15.04.15	84.15	19.04.16	12	Bids reviewed during June 2015 and sole bidder was qualified. After opening of price bid, quoted price was much higher than estimate. Hence, work order placed after negotiation with bidder and approval from Committee of Directors which took time.

(OT – Original Tender; RT – Revised Tender; LT – Limited Tender)

Annexure-VIII

(Paras 3.1.6.1, 3.1.6.2, 3.1.6.4 and 3.1.6.5)

Details showing the time taken for execution of packages for NISP

Sl. No	Name of Package	Value of the contract (₹ in crore)	LAC date	Effective date	Scheduled completion date	Completed / extended upto	Progress of work and reasons for delay
Main Packages							
1	RMHS- (Pkg-1)	1395.00	01.08.11	30.08.11	28.02.14	31.07.18	Overall progress as on December 2017 was 88 <i>per cent</i> . Non-sequential supply of structures for fabrication as well as slow erection of structures due to less manpower deployment were the reasons for delay.
2	Coke Oven-(Pkg-2)	1978.36	24.08.11	06.09.11	05.06.14	30.06.18	Overall progress as on December 2017 was 88.43 <i>per cent</i> . Insufficient manpower and material were the reasons for delay.
3	By Product- (Pkg-3)	509.00	15.12.11	10.01.12	09.07.14	31.12.17	Overall progress as on December 2017 was 91 <i>per cent</i> . Insufficient manpower and material and slow progress of work were the reasons for delay.
4	Sinter Plant-(Pkg-4)	764.79	24.01.11	22.02.11	21.11.13	21.12.17	Overall progress as on December 2017 was 94.92 <i>per cent</i> . Slow progress of work was the reason for delay.
5	Blast Furnace-(Pkg-5)	1813.93	30.04.11	29.05.11	28.02.14	15.03.18	Overall progress as on December 2017 was 86 <i>per cent</i> . Insufficient manpower and material and slow progress of work were the reasons for delay.
6	SMS-PK-(Pkg-6)	2054.00	25.04.12	23.05.12	22.04.15	31.12.17	Overall progress as on December 2017 was 85 <i>per cent</i> . Non-sequential supply of material as well as slow progress of work due to less manpower deployment were the reasons for delay.

Sl. No	Name of Package	Value of the contract (₹ in crore)	LAC date	Effective date	Scheduled completion date	Completed / extended upto	Progress of work and reasons for delay
7	Thin Slab Caster & HSM-(Pkg-7)	2633.00	04.05.12	03.06.12	02.05.15	31.12.17	Overall progress as on December 2017 was 90 <i>per cent</i> . Slow progress of work due to less manpower deployment was the reasons for delay.
8	Lime & Dolomite Calcination Plant-(Pkg-8)	148.45	23.11.12	22.12.12	21.12.14	31.12.18	Overall progress as on December 2017 was 44.91 <i>per cent</i> . Unavailability of civil and structural drawings, inadequate manpower and material and not engaging sub-contractor for civil works were the reasons for delay.
9	Oxygen Plant-(Pkg-9)	582.00	16.04.12	15.05.12	14.11.14	31.12.17	Overall progress as on December 2017 was 97.80 <i>per cent</i> . Finishing works were pending.
Auxiliary packages							
1	Power Blowing Station (Pkg-10)	502.76	23.11.12	22.12.12	21.12.14	31.03.18	Overall progress as on December 2017 was 76 <i>per cent</i> . Slow progress of work due to less manpower deployment was the reasons for delay.
2	Main Receiving Station (Pkg-42)	140.45	21.04.14	20.05.14	19.05.16	31.05.17	Overall progress as on December 2017 was 93 <i>per cent</i> . Slow progress of work due to insufficient manpower deployment was the reason for delay.
3	Turbo blowers (Pkg-10A)	226.37	03.05.14	01.06.14	31.08.16	31.12.17	Overall progress as on December 2017 was 85 <i>per cent</i> . Slow progress of work due to less manpower deployment was the reason for delay.
4	IPPL-(Pkg-20)	141.10	01.08.14	31.08.14	30.08.16	31.12.17	Overall progress as on December 2017 was 94.60 <i>per cent</i> . Slow progress of work due to less manpower deployment and machinery was the reason for delay.
5	PPDS-(Pkg-32)	358.62	10.09.14	10.10.14	09.10.16	09.04.18	Overall progress as on December 2017 was 95 <i>per cent</i> . Non-availability of adequate construction material, machinery and manpower was the reason for delay.

Sl. No	Name of Package	Value of the contract (₹ in crore)	LAC date	Effective date	Scheduled completion date	Completed / extended upto	Progress of work and reasons for delay
6	Water Package Inside Plant (Pkg-17-01)	356.85	22.12.14	20.01.15	19.01.17	31.03.18	Overall progress as on December 2017 was 98.50 <i>per cent</i> . Slow progress of work due to less manpower deployment was the reason for delay.
7	Water Package outside Plant (Pkg-17-02)	314.58	22.12.14	20.01.15	19.01.17	19.12.17	Overall progress as on December 2017 was 67.69 <i>per cent</i> . Slow progress of work due to less manpower deployment was the reason for delay.
8	Compressed Air System (Pkg-11)	56.51	23.01.15	21.02.15	20.02.17	20.02.18	Overall progress as on December 2017 was 92 <i>per cent</i> . Slow progress of work due to less manpower deployment and irregular supply of concrete were the reasons for delay.
9	Central Fire Station, Fire Post & telephone exchange building (Pkg-26)	15.35	27.10.15	26.11.15	25.11.16	31.03.18	Overall progress as on December 2017 was 83 <i>per cent</i> . Slow progress of work due to less manpower deployment and machinery was the reason for delay.
10	Diesel Generator (Pkg-12)	37.18	27.09.16	27.10.16	26.02.18	26.02.18	Overall progress as on December 2017 was 41.62 <i>per cent</i> .
11	Central Laboratory Building (Pkg-16)	17.61	19.01.17	19.01.17	18.07.18	18.07.18	Basic engineering and detailed engineering completed only 66.67 <i>per cent</i> and 9.80 <i>per cent</i> respectively.
12	Building for Central Workshop (Pkg-28A)	92.89	10.06.16	09.07.16	08.04.18	08.04.18	Excavation work completed and RCC work and structure supply was under progress.
13	Plant Illumination (Pkg-33)	19.20	11.01.17	10.02.17	09.02.18	09.02.18	Site mobilization by contractor was under progress.
Infrastructure packages							
1	Studio Apartment -2	28.36	22.06.11	22.06.11	21.06.12	22.11.15	The work has not been completed. The issue was under arbitration.

Sl. No	Name of Package	Value of the contract (₹ in crore)	LAC date	Effective date	Scheduled completion date	Completed / extended upto	Progress of work and reasons for delay
2	Storm Water Drain sewerage Plant – (Pkg-43A)	124.92	08.03.16	08.04.16	07.07.17	30.06.18	Overall progress as at the end of December 2017 was 52.40 <i>per cent</i> . Slow progress of work due to less manpower deployment and front availability was the reason for delay.
3	Steel Loading Platform(Pkg-53)	9.78		10.04.17	09.04.18	09.04.18	RCC work was under progress.
4	Purchase of Locomotives (Pkg-48)	104.91	28.12.16	28.12.16	27.09.18	---	Purchase was under progress.
5	Central Stores Building (Pkg-52)	27.26	02.06.16	02.07.16	01.11.17	---	Structure supply was under progress.
Enabling packages							
1	Construction Water	31.16	06.12.10	06.12.10	05.12.11	30.06.16	Contract was terminated in June 2016. Hydro testing of balance pipe line was pending.
2	Site Leveling Phase-I	23.66	31.12.10	31.12.10	30.12.11	30.04.13	Work completed.
3	Construction Power	39.58	17.01.11	17.01.11	17.10.11	30.03.15	Performance Guarantee Test conducted on 30 March 2016.
4	Plant Road Network & Temporary Drainage phase-I	26.35	18.05.11	18.05.11	17.05.12	30.04.13	Work completed.
5	Boundary wall & watch tower	22.83	02.11.11	02.11.11	01.11.12	30.05.15	After completion of 64 <i>per cent</i> work, contract terminated on 22.12.15.
6	Site Leveling Phase-II	15.80	14.08.15	14.08.15	13.08.16		52 <i>per cent</i> works completed by 31.12.17.
7	Plant Road Network Phase-II	40.43	17.02.16	17.02.16	16.02.17		Road work under progress.
8	Retaining wall for railway embankment	31.45	29.08.16	30.09.16	29.09.17	31.03.18	29 <i>per cent</i> work completed by 31.12.17.

Sl. No	Name of Package	Value of the contract (₹ in crore)	LAC date	Effective date	Scheduled completion date	Completed / extended upto	Progress of work and reasons for delay
Railway packages							
1	Railway siding Package-I	283.32	21.09.15	20.10.15	19.04.17	31.12.17	Progress as on 31.10.17 was 51 per cent only
2	Railway siding Package-II	78.92	01.03.16	30.03.16	29.03.17	31.03.18	Progress as on 31.10.17 was 35 per cent only
3	Railway siding Package-IV	84.15	19.04.16	18.05.16	17.05.17	31.12.18	Progress as on 29.10.17 was 51 per cent only

List of Abbreviations

APCCF	Additional Principal Chief Conservator of Forests
ASX	Australian Stock Exchange
BHEL	Bharat Heavy Electricals Limited
BRPL	Bastar Railway Private Limited
CCEA	Cabinet Committee on Economic Affairs
CCF	Chief Conservator of Forests
CECB	Chhattisgarh Environment Conservation Board
CERC	Central Electricity Regulatory Commission
CFE	Consent for Establishment
CIL	Coal India Limited
CMD	Chairman and Managing Director/ Contracted Maximum Demand
CMDC	Chhattisgarh Mineral Development Corporation
CMPDI	Central Mine Planning and Design Institute
CPSE	Central Public Sector Enterprise
CSPDCL	Chhattisgarh State Power Distribution Company Limited
DBM	Dead Burnt Magnesite
DCF	Deputy Conservator of Forest
DFO	Divisional Forest Officer
DGPS	Differential Global Positioning System
DIOP/DIOM	Donimalai Iron Ore Project/ Doinimalai Iron Ore Mine
DMP	Diamond Mining Project
DPE	Department of Public Enterprises
DPR	Detailed Project Report
DRCLO	Directly Reduced Calibrated Lump Ore
EAC	Expert Appraisal Committee
EC	Environmental Clearance
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
EOI	Expression of Interest
EPCM	Engineering, Procurement, Construction and Management
FAC	Forest Advisory Committee
FC	Forest Clearance
FIMI	Federation of Indian Mineral Industries
FRA	Forest Rights Act
GEoI	Global Expression of Interest
GoK	Government of Karnataka
HCC	Hard Coking Coal
HEMM	Heavy Earth Moving Machinery
IBM	Indian Bureau of Mines

ICVL	International Coal Ventures Limited
IDC	Interest During Construction
JORC	Joint Ore Reserves Committee
JPC	Joint Plant Committee
JV/JVC	Joint Venture/ Joint Venture Company
KIADB	Karnataka Industrial Areas Development Board
KIOP/KIOM	Kumaraswamy Iron Ore Project/ Kumaraswamy Iron Ore Mine
KK line	Kirandul-Kothavalasa Railway Line
KRCL	Krishnapatnam Railway Company Limited
KVSL	Karnataka Vijayanagar Steel Limited
LAC	Letter of Award of Contract
LTA	Long Term Agreement
LTE	Limited Tender Enquiry
MDO	Mine Developer cum Operator
MMDRA	The Mines and Minerals (Development and Regulation) Act
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoR	Ministry of Railways
MoS	Ministry of Steel
MoU	Memorandum of Understanding
MRSS	Main Receiving and Step Down Substation
MTPA	Million Tons Per Annum
NCL	NMDC CMDC Limited
NINL	Neelachal Ispat Nigam Limited
NISP	Nagarnar Integrated Steel Plant
NIT	Notice Inviting Tender
NPV	Net Present Value
O&M	Operation and Maintenance
PCB	Pollution Control Board
PERT	Project Evaluation and Review Technique
PFCCCL	Power Finance Consulting Company Limited
PIP	Project Implementation Plan
PMC	Project Management and Construction Supervision
PQC	Pre-Qualification Criteria
PSU	Public Sector Undertaking
PwC	PricewaterhouseCoopers
RCE	Revised Cost Estimates
RINL	Rashtriya Ispat Nigam Limited
RMHS	Raw Material Handling System
ROM	Run of Mine
RTCM	Rio Tinto Coal Mozambique
SAIL	Steel Authority of India Limited

SBD	Standard Bidding Document
SHLCC	State High Level Clearance Committee
SIU	Sponge Iron Unit
SMP	Strategic Management Plan
SOP	Standard Operating Procedure
SP	Screening Plant
SPV	Special Purpose Vehicle
TAR	Tender Appraisal Report
TEFR	Techno-Economic Feasibility Report
TFE	Technofab Engineering Limited
ToR	Terms of Reference
TPA	Tonnes Per Annum
TSC	Tender Scrutiny Committee
VADA	Vijayanagar Area Development Authority

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