		Total	8145457	61.29 %
	Feasibility Mineral Resource (222)	Flank	85748	61.46 %
		Float	1398880	53.85 %
		Total	**1484628**	**54.29 %**
4	Remaining measured resource (331)	All areas	NIL	NA
5	Indicated Resource (332)	All areas	NIL	NA
6	Inferred Resource (333)	All areas	NIL	NA
7	Reconnaissance Resource (334)	All areas	NIL	NA

4. MINING

a) Existing / proposed method for developing / working the deposit with all design parameters.

The Gandhamardan-A block comes under Category-A (Fully Mechanized category) as per the IBM guidelines. The deposit is worked by opencast mining method with formation of benches by drilling and blasting. The proposed height of bench at hilltop quarry is 10 m with 10 m width at the ultimate stage. Whereas, in the float quarry, height of the bench has been considered as 5 m with 5 m width at the ultimate stage. Bank slope angle for both the quarries has been considered as 75^0. Ultimate pit slope for hill top quarry & float quarry are 35^0 and 38^0 respectively.

The conventional mining method using 115 mm diameter drilling and blasting with low density (LD) explosives in combination with 20 t dumper/ tipper with matching capacity hydraulic excavators/ loaders for drilling, loading and transportation of ore to crusher and transportation of waste/ sub grade materials to their respective dumps as envisaged in this scheme of mining. The minimum working width of the benches will be 20 m.

2.5- 4.0 cu.m bucket capacity hydraulic excavators (diesel powered) will be put to use in conjunction with 20 t struck capacity dumpers. The ROM will be transported to a mobile screening plant for segregating the CLO (10-40mm), fines (-10mm) & the oversize (+40mm). The ROM will be fed to a screening plant using 2.5- 4.0 cu.m hydraulic excavators. Waste & sub grade materials generated will be transported to respective dumping/ stacking locations. Front end loader of 1.5- 2.0 cu.m bucket capacity will be deployed to load & haul the oversize of the screen to a crusher located nearby. The oversize will then be

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fed to a crusher using 1.5 – 2.0 cu.m hydraulic excavators. The CLO & fines generated after screening the crushed product will be loaded by loader of 2.5- 4.0 cu.m capacity & transported through 20 t tippers/ dumpers to the respective stockyard at the foothill.

Adequate capacity of screening & crushing plant will be installed at the hilltop quarry/ float workings. The screening & crushing plants will be located within the broken area of the quarry.

Only float quarry V-D & V-D1 located on the western side of the lease and hill top quarry will be operated w.e.f 2014-15, after acquiring the stage-II forestry clearance. Besides, sub-grade dump stacked at hilltop quarry – 1A & float quarry-4D has also been planned to be evacuated in a phased manner within 3 years of the plan period as per the order made by the Mining officer, Keonjhar (Copy of the letter of mining officer for the same is enclosed as Annexure -14.

b) Quantum of development and tonnage of production expected pit-wise.

A summary of the quarry-wise quantum of ore, waste & sub-grade generation is given below.

Year	Quarry	Waste	Ore	Subgrade	Mineral Rejects	Stripping Ratio
		cu. m	Tonnes	Tonnes	Tonnes	cu.m/tonne
2013-14	Hilltop Quarry	0	0	0	0	0.00
	Float (Quarry-VD & VD1)	0	0	0	0	0.00
	Total	**0**	**0**	**0**	**0**	**0.00**
2014-15	Hilltop Quarry	6836	188814	0	0	0.04
	Float (Quarry-VD & VD1)	79200	163200	0	0	0.49
	Total	**86036**	**352014**	**0**	**0**	**0.24**
2015-16	Hilltop Quarry	13313	106371	7980	0	0.12
	Float (Quarry-VD & VD1)	84000	242400	46400	0	0.29
	Total	**97313**	**348771**	**54380**	**0**	**0.24**
2016-17	Hilltop Quarry	9828	216033	0	0	0.05
	Float (Quarry-VD & VD1)	73200	134256	0	0	0.55
	Total	**83028**	**350289**	**0**	**0**	**0.24**
2017-18	Hilltop Quarry	20566	348941	18002	0	0.06

Detailed year-wise production plan from FY 2013 – 14 to FY 2017-18 is given below.

Year	Quarry	Ore				Subgrade	Waste	Stripping Ratio
		Tonnes	Fe%	SiO2%	Al2O3%	Tonnes	Cu. M	cu.m/tonne
2013-14	Hilltop Quarry	0	0	0	0	0	0	0
	Float Quarry	0	0	0	0	0	0	0
	Total	0	0.00	0.00	0.00	0	0	0.00
2014-15	Hilltop Quarry	188814	65.94	1.53	0.69	0	6836	0.04
	Float Quarry	163200	62.43	2.68	3.51	0	79200	0.49
	Total	352014	64.31	2.06	2.00	0	86036	0.24

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