

Exploration Performance Overview

The objective of Hindustan Zinc's exploration team is to upgrade its resources to reserves, and replenish every ton of mined metal to sustain more than 25 years at current rate of metal production, by fostering innovation & new technologies with Zero Harm. The Company has an aggressive exploration program, focused on delineating and upgrading Reserves and Resources (R&R) within our license areas. The Company feels proud to report the highest ever R&R addition in FY2021 within the last decade.

Our exploration team consists of 24 geologists, geophysicists and analysts, responsible for designing and executing exploration programs complemented by outsourced service providers. Technology adoption and innovations play a key role in enhancing exploration success.

In FY2021, we implemented many of the latest technologies including:

Hindustan Zinc conducted a trial based on focused loop Borehole Electromagnetic Survey (FLBHEM) for time domain borehole electromagnetic survey to filter the conductive orebodies from formational response. The approach gave desired results and filtered the effect of formation to resolve the conductors associated with orebodies for optimization of drilling in exploration.

Development of a resource model at Zawar Group of Mines enabled the Company to identify the exploration targets. Undertaking focused exploration, along with re-configuration of mineralization, led to enhancement of the resources. Further upgradation of mineral resources (from 'inferred' to 'indicated') by surface / underground drilling followed by improved mining methodology, 3D designing of stopes and development of life-of-mine (LOM) boosted the ore reserves.

Hindustan Zinc partnered with service firm Objectivity, Canada, to optimize exploration drilling using DRX drill hole targeting system. It is a drill-hole optimization algorithm that allows geologists to create multiple drill hole layout plans, and subsequently optimizes drilling meters required to achieve the desired target. Initially, it is targeted to reduce 25% of UG exploration drilling meters.

ATV/OTV & Wireline Logging: Hindustan Zinc is gearing up to measure the in-situ physical properties for orebody and host lithologies across all mine sites for precise geophysical survey planning and to explore opportunities for non-core drilling based on data analytics for cost optimization. Furthermore, ATV/OTV survey will be utilized systematically across all deposits for automation of geotechnical logging and to delineate the major/minor structures for effective and safe mine planning.

Hindustan Zinc conducted test runs of Tunnel Seismic Profiling (TSP) survey for orebody delineation in underground mines based on density and velocity contrast. Trial has shown promising results, which could potentially lead to reduction in cost of infill drilling in underground mines.

Motorized directional drilling (MDD) has been extensively used to enable more targets to be tested more efficiently at less cost. This technique involves drilling 'leg' holes at depth off a mother hole, with technical innovation now enabling up to six legs from a single mother hole.

Gross resource addition of 61.9 Mt with contained metal of 3.1 Mt is the highest resource addition in last one decade. This exploration success during FY2021 has added 45 Mt to Hindustan Zinc's R&R, thus providing opportunities for extended mine life and production growth. All the Company's deposits remain 'open' and exploration identified several new targets on mining leases having potential to increase R&R over the next 12 months. Across all the sites, the Company successfully completed 107.7 km of surface drilling and 248.7 km of underground drilling during the year to add new resources and support in upgrading Resources to Reserves.

In line with previous years, Mineral Resources are reported on an exclusive basis to Ore Reserves and all R&R statements have been independently audited by SRK Consulting (UK).

On an exclusive basis, Hindustan Zinc's Reserves at the end of FY2021 totaled 150 Mt and Resources amounted to 298 Mt. The contained metal in Ore Reserves comprised of 9.2 Mt of zinc, 2.6 Mt of lead and 295.5 Moz of silver while Mineral Resources contained 14.9 Mt of zinc, 6.3 Mt of lead and 618.7 Moz of silver. At current mining rates, the R&R underpins metal production for more than 25 years.



Ore Reserve and Mineral Resource (R&R) as on 31st March, 2021 (based on SRK audit)

Hindustan Zinc Assets	Total Reserve				Total M&I				Inferred				Total R&R Mt	Total Metal Mt
	Mt	Zn %	Pb %	Ag g/t	Mt	Zn %	Pb %	Ag g/t	Mt	Zn %	Pb %	Ag g/t		
Rampura Agucha	42.7	11.9	1.4	48	10.4	14.6	2.2	64	24.1	8.5	3.1	88	77.2	10.2
Rajpura Dariba	28.2	5.0	1.7	57	8.1	6.4	2.0	73	33.0	6.5	1.9	97	69.4	5.4
Sindesar Khurd	45.3	3.3	2.1	105	46.7	3.9	2.0	99	19.5	3.5	2.1	113	111.5	6.3
Bamnia Kalan					21.2	3.2	1.1	40	20.8	3.4	1.4	45	41.9	1.9
Zawar	31.5	3.1	1.6	23	35.9	3.8	2.0	28	75.2	4.2	2.5	40	142.6	8.6
Kayad	2.6	6.8	0.8	14	0.5	11.9	1.6	27	2.3	6.8	1.2	16	5.4	0.4
Total	150.3	6.1	1.7	61	122.9	4.9	1.9	63	174.8	5.1	2.3	66	447.9	32.9

Mineral resources reported exclusive of ore reserves, reported at variable cut-off grade per mineral asset