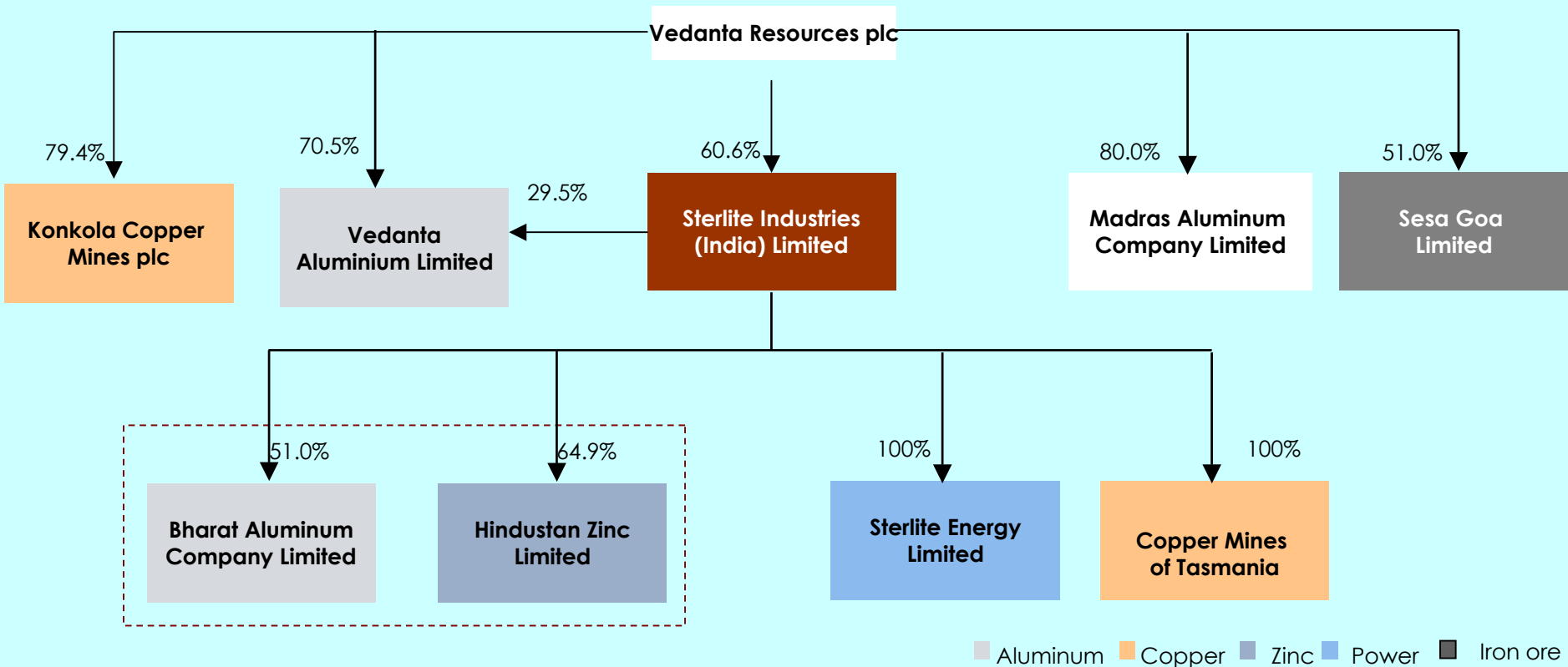


An Overview of Hindustan Zinc Current Mining Operations & Upcoming Expansion Projects

Kabir Ghosh

Associate Vice President (Projects)

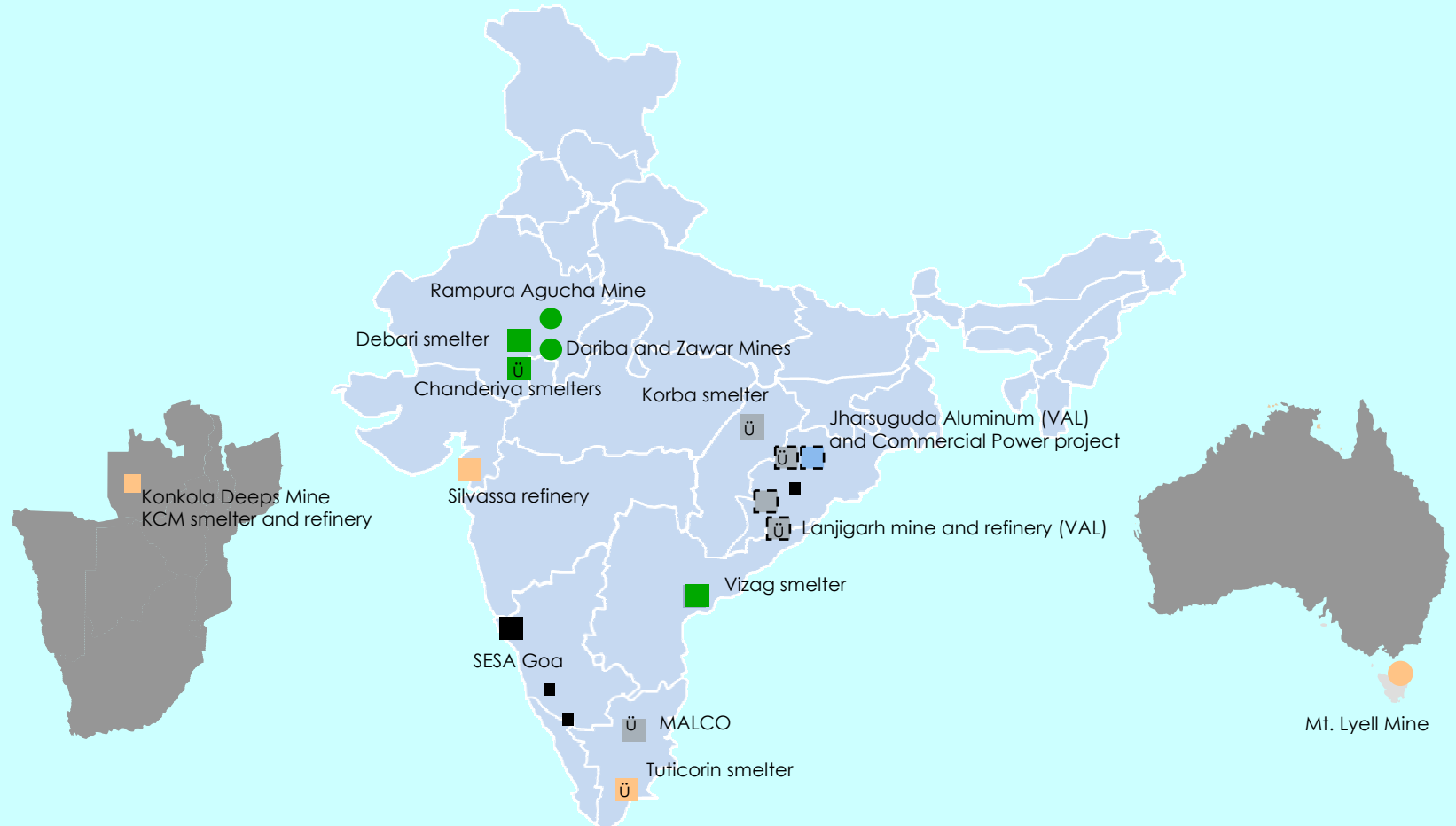


- Call option to acquire Government of India's 49% stake in BALCO exercised, mediation process underway
- Call option to acquire Government of India's remaining 29.5% stake in HZL exercisable anytime after April 2007

Zambia

India

Australia



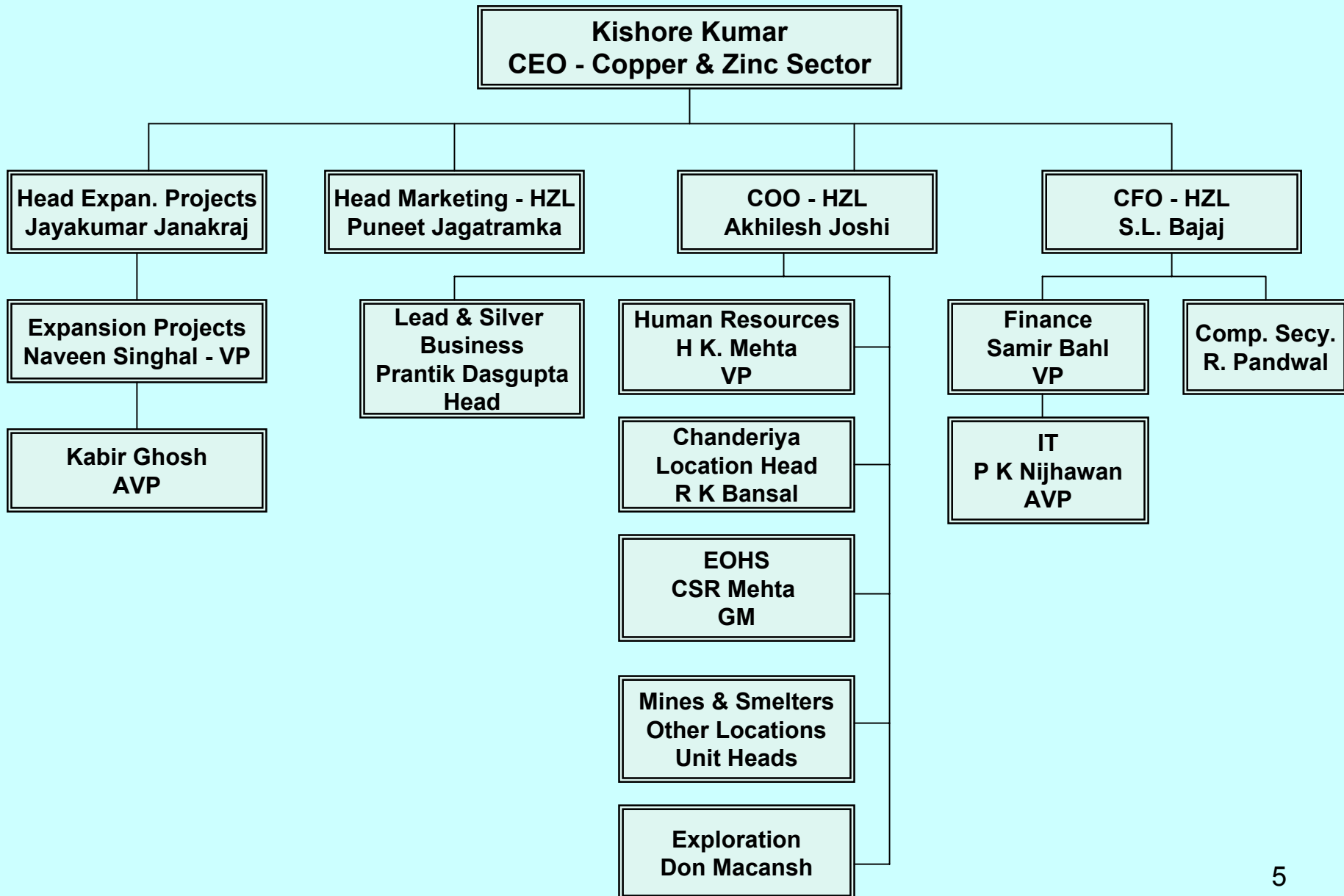
- Aluminum
 - Copper
 - Iron Ore
 - Zinc
 - Power
 - ▭ Projects Under Development
- U Captive Power Plant

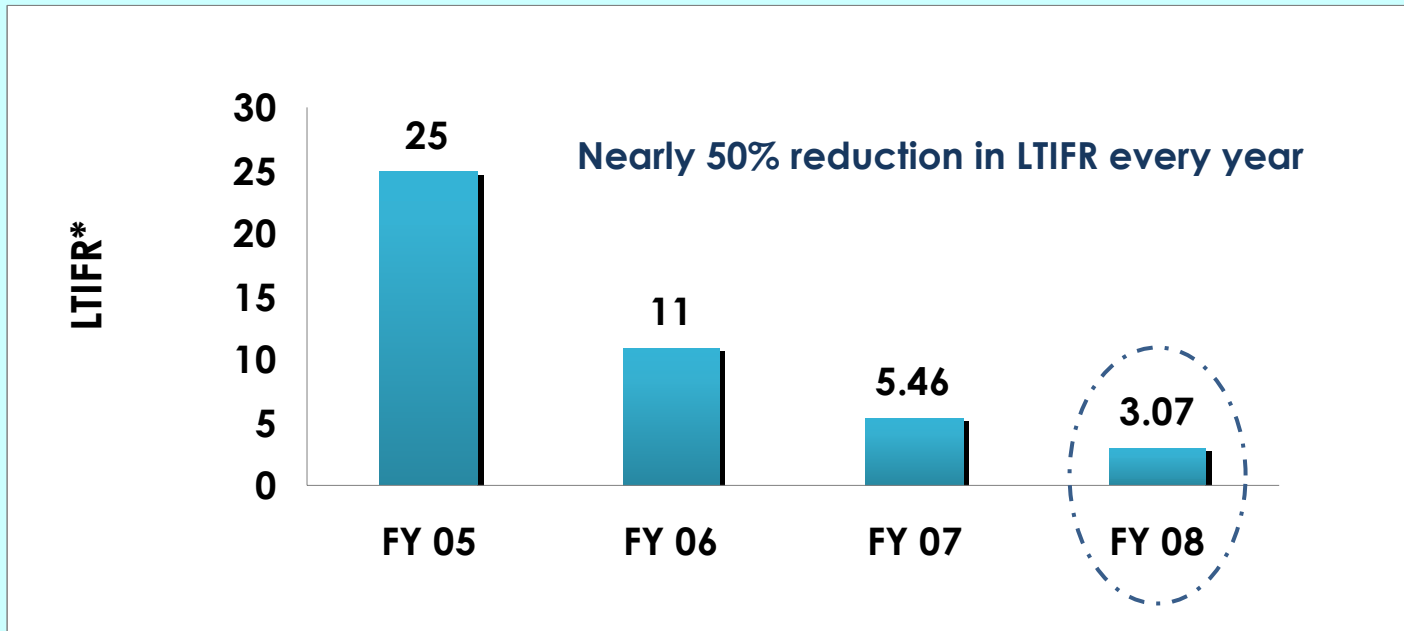
VISION

- **Be a world-class company, creating value, leveraging mineral resources and related core competencies**

MISSION

- **Be a globally lowest cost zinc producer, maintaining market leadership**
- **One million tonne Zinc-Lead metal capacity by 2010**
- **Be innovative, customer oriented, and eco-friendly maximizing stake-holder value**





- Robust safety policy, practices organization - supported by safety stewards
- Increased focus on the behavior based safety program of all employees
- Daily Safety performance review in unit meetings with total engagement of employees.
- External HSE audits are being done by agencies of international repute – PwC, E& Y, B.S.C
- Proactive actions like analysis of near miss incidences, periodical independent reviews, regular training etc
- Equal focus on contract workmen’s safety
- Compulsory use of Personal Protective Equipment (PPE) including by contract workmen
- No cases of occupational health diseases

Rajpura Dariba Mine

Lead-Zinc Ore R&R:
 Reserves: 7.1 Mt
 Resources: 17.6 Mt
 Zinc Grade: 6.6%
 Lead Grade: 1.7%
 Ag Grade: 82 ppm (65 Moz)
 Ore Production Capacity:
 0.60 mtpa. Will increase to
 0.9 mtpa

Rampura Agucha Mine

Lead-Zinc Ore R&R:
 Reserves: 63.6 Mt
 Resources: 43.8 Mt
 Zinc Grade: 13.9%
 Lead Grade: 2.0%
 Ag Grade: 63 ppm (208 Moz)
 Ore Production Capacity:
 5.0 mtpa. Will increase to 6.0
 mtpa

Kayar Mine

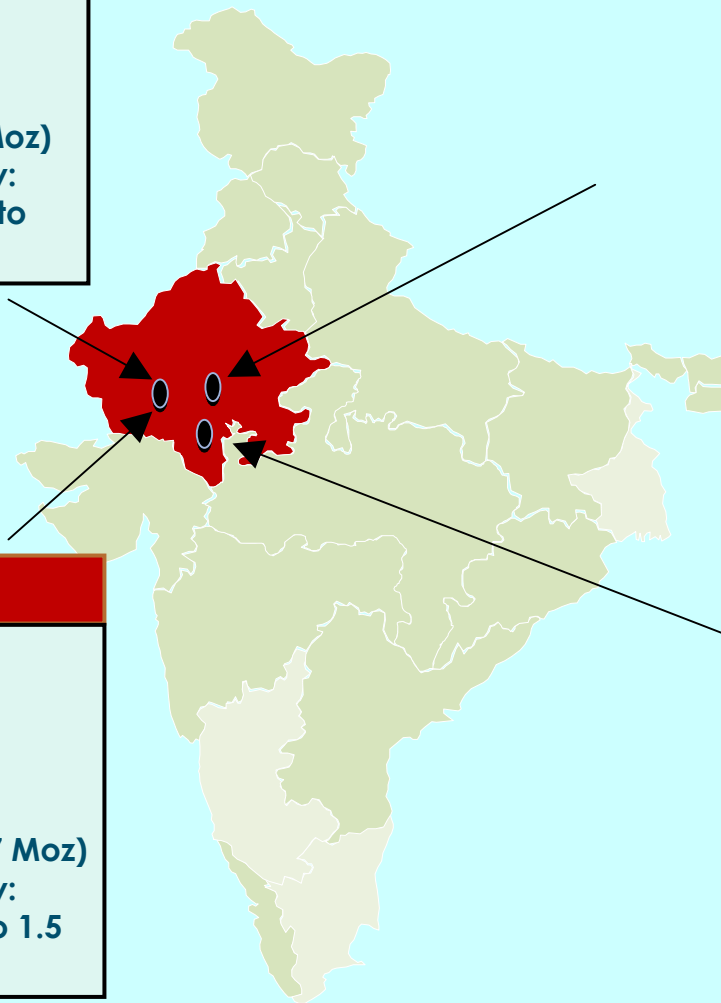
Resources: 9.01 Mt,
 Grade: 10.6%, Zn, 1.7% Pb 39
 ppm Ag (11 Moz)
 0.3 mtpa Capacity

Sindesar Khurd Mine

Lead-Zinc Ore R&R:
 Reserves: 1.96 Mt
 Resources: 35.2Mt
 Zinc Grade: 5.8%
 Lead Grade: 3.8%
 Ag Grade: 215 ppm (257 Moz)
 Ore Production Capacity:
 0.3 mtpa. Will increase to 1.5
 mtpa

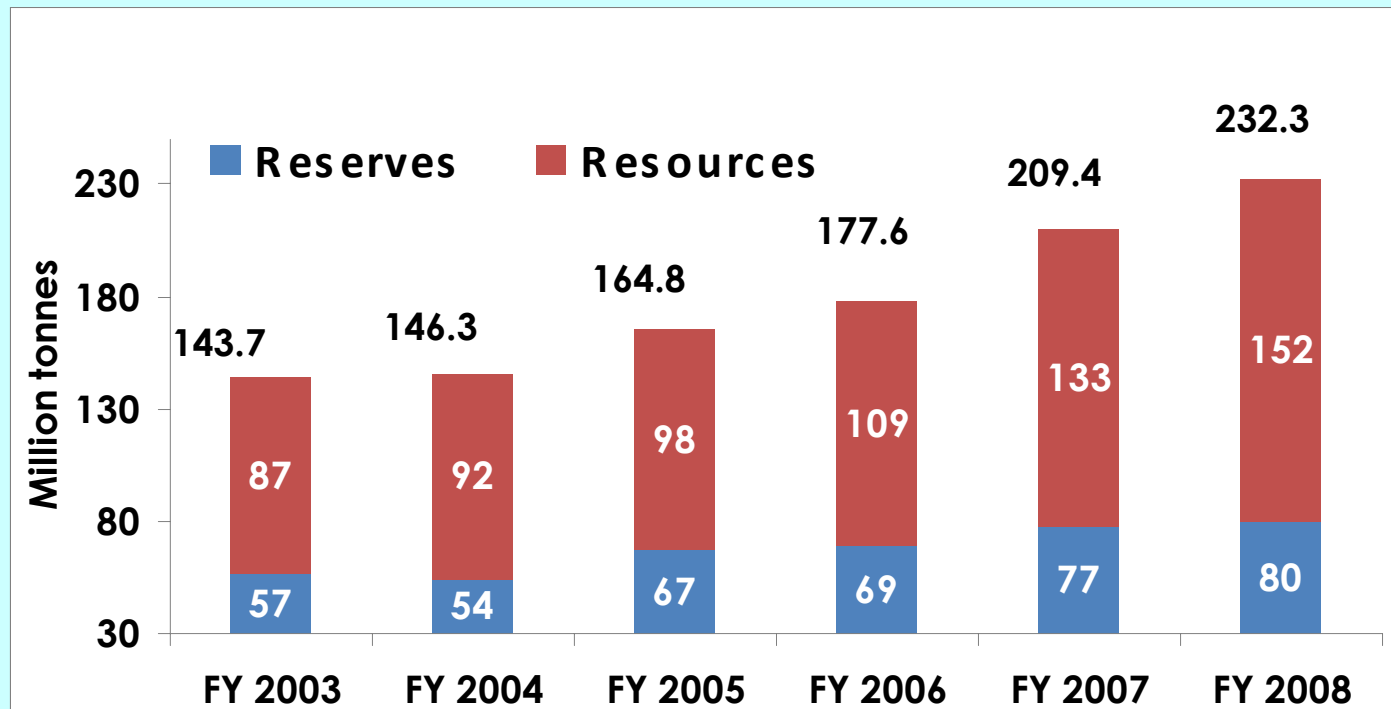
Zawar Mining Complex

Lead-Zinc R&R:
 Reserves 7.2 Mt
 Resources: 41.9 Mt
 Zinc Grade: 4.4%
 Lead Grade: 2.3%
 Ag Grade: 40 ppm (63 Moz)
 Ore Production Capacity:
 1.2 mtpa
 CPP: 80 MW



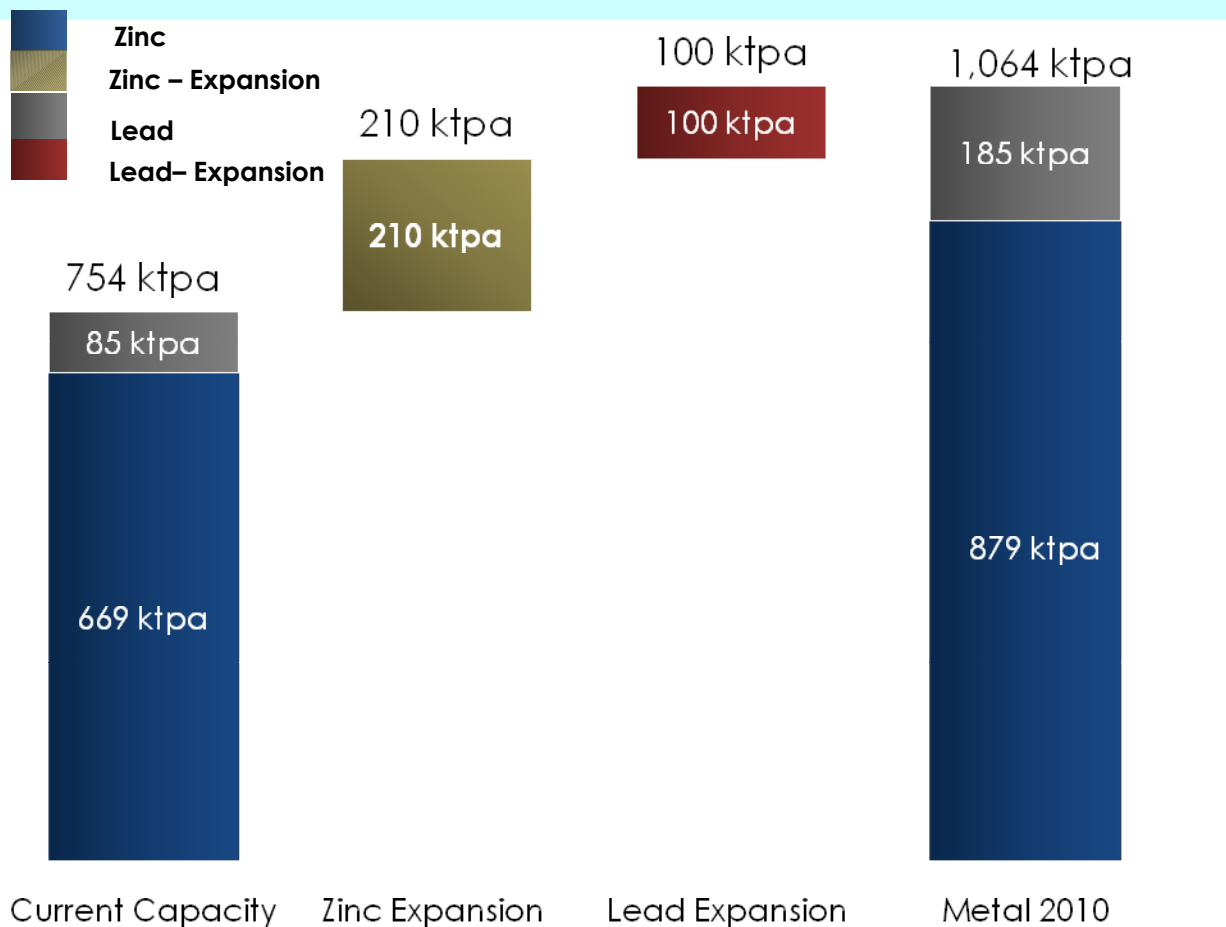
HZL R&R - Three pronged approach

- In mine exploration
- Near mine exploration
- Greenfield exploration (area applied in India – zinc rich belt)



- Metal content - 27.5 million tonnes of zinc-lead & 620 Moz of silver*
- Rampura Agucha mine achieves landmark of crossing 100 million tonnes of R&R

Zinc/Lead – Capacity



Phase III

Project capex: US \$ 900 million

- 210,000 tonnes Hydro Zinc Smelter at Rajpura Dariba
- 100,000 tonnes Lead Smelter at Rajpura Dariba
- 350 tonnes Silver Refinery at Uttaranchal
- 80 X 2 MW Captive Power Plant at Rajpura Dariba
- Sindesar Khurd Mine expansion to 1.50 mtpa from 0.30 mtpa
- Rampura Agucha Mine expansion to 6.0 mtpa from 5.0 mtpa
- Opening of a new mine at Kayar with an initial capacity of 0.3 mtpa

Mine	Current Production (2008-09)	Expanded Scenario	Time Line to Achieve Targeted Prod. (Years)
	Ore (Mt)	Ore (Mt)	
RA Mine	5.00	6.00	2010-11
Zawar Mine	1.07	1.50	2012-13
RD Mine	0.60	1.15	2011-12
SK Mine	0.40	2.00	2011-12
Kayar Mine	0.00	0.35	2013-14
Total	7.07	11.00	

				08-09	09-10	10-11	11-12	12-13	13-14	Total
S.No.	Development Particulars	Size	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
1	Portal construction	30 Sq.m.	m	200	200	0	0	0	0	400
2	Decline	9-26 Sq.m	m	1125	7615	9250	5310	3550	2600	29450
3	Incline 15°		m		1000	200				1200
4	Shaft Shinking, furnishing and winder commissioning	5-6 m Dia.	m	0	300	1050	550	0	0	1900
5	Lateral Development	9-25 Sq.m	m	3850	24275	28517	32022	37017	32660	158341
6	Vertical Development (Raise and Winze)	4-13 Sq.m.	m	400	2960	3910	5250	5620	4840	22980
	Total			5575	36350	42927	43132	46187	40100	214271

- **World class deposit having resource & reserves of 107.4 Mt with 13.9%Zn, 2.0%Pb, 63g/t Ag.**
- **Strike length is approx. 1500 m and width varying from 20 to 120 m. Dip is varying from 60 to 80 degree.**
- **Deposit is already explored up to 1065 m depth and the ore body is still open.**
- **Production is 5 Mt with strip ratio of 1:7.**
- **Equipments are**
Dumpers - 105 ton , ITH drills - 165 mm,
Excavators - 6 to 12 cu ,Track dozers 410 HP -550 HP
Water Sprinkler - 40 KL .

- **Production will be increased from present level of 5 Mt to 6 Mt per annum by 2010-11**
- **Underground development of the mine will start from 2009-10 and the underground operation will be commissioned by 2013-14 with rated production 2 Mt / annum.**
- **Opencast operation will continue up to 440 m depth and it is expected that from 2013-14 underground & opencast production will run simultaneously which will increase the open cast life.**

- **Deposit having resource reserves of 24.68 Mt with 6.59 %Zn, 1.70%Pb, 82g/t Ag.**
- **Strike length is approx. 1600 m and width varying from 6 to 30 m. Dip is varying from 60⁰ to 70⁰.**
- **Deposit is already explored up to 800m depth and the ore body is still open.**
- **Access is through two shafts. Mining methods are VRM & SLOS with post hydraulic filling**
- **Production is 0.6 Mt per annum.**
- **Equipments are :-**
165 mm high pressure ITH drills, 3.5 cu yard LHDs, Electric Haulage with Loco & 5 ton Granby Cars, Koepe winders for 6 ton counter balanced skips and man/material cage.

- **Production will be increased from present level of 0.6Mt to 1.15 Mt per annum by 2011-12**
- **Development of the new block of main lode below '0' mRL and East lode of the mine is in progress and production will commence by 2011-12**
- **Lower level below "0" mRL will be accessed by ramp to facilitate ore transportation by LPDT up to existing dumping level.**

- **Silver rich deposit having reserves/ resource of 37.17Mt with 5.85%Zn, 3.79% Pb, 215g/t Ag.**
- **Strike length is about 1300 m and width varying from 10 to 60m. Dip is varying from 45⁰ to 80⁰.**
- **Deposit is already explored upto 800m depth and the ore body is still open.**
- **Access through a ramp and incline upto 200m depth**
- **Production is 0.4Mt**
- **Equipments are :-**
Drill jumbo, 20 ton LPDTs, 3.5 cu yard LHDs, ITH drill and personnel carrier.

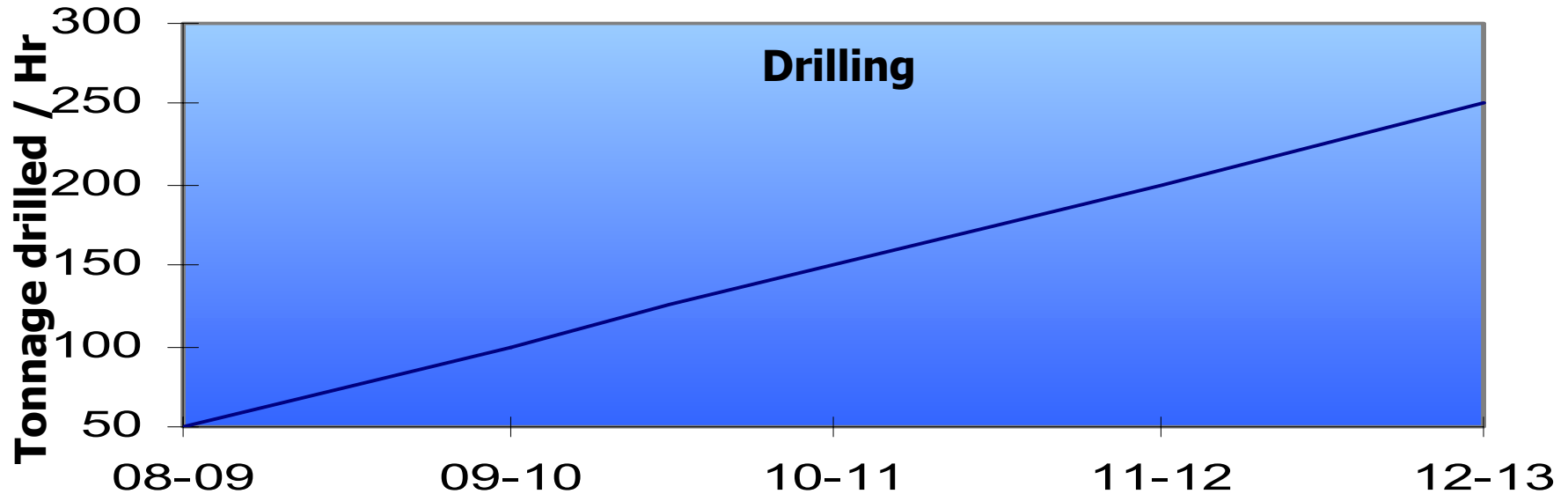
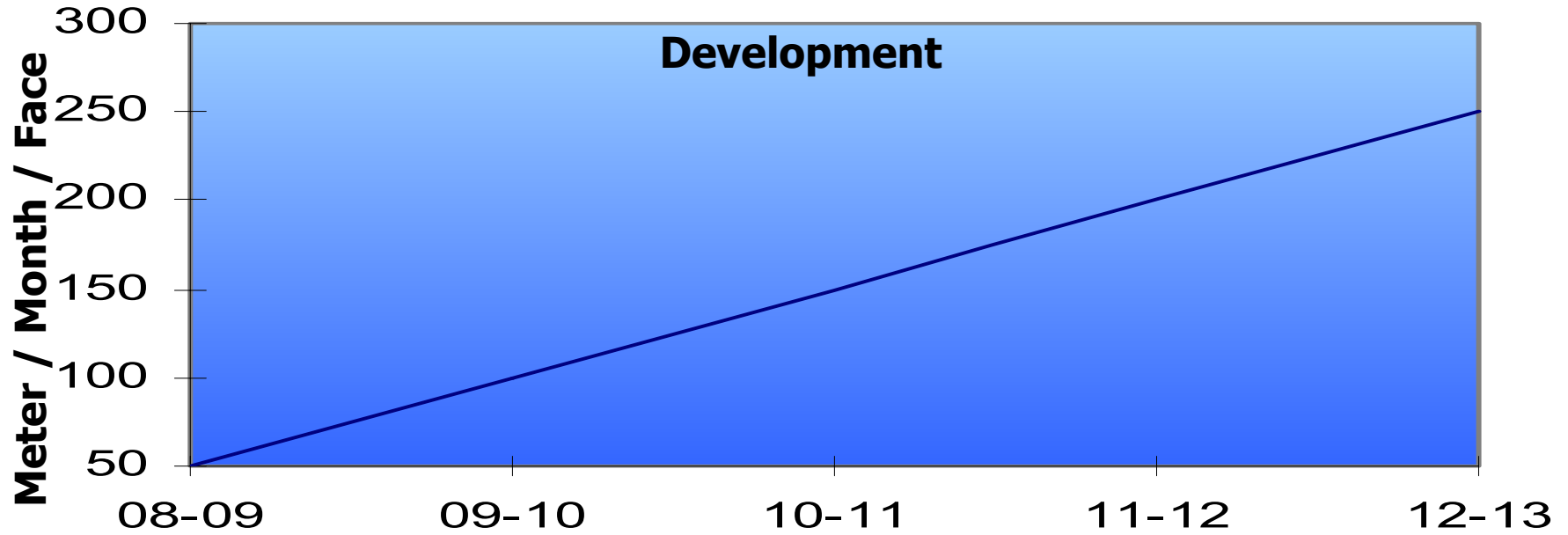
- **Production will be increased from present level of 0.4 Mt to 2.0 Mt per annum by 2011-12.**
- **Underground development of the mine is in progress. Development of an additional large size ramp from surface will be commenced from Jan 09. A shaft is planned to access the deeper levels.**
- **15-20 ton LHD, 50/55t LPDTs, double boom jumbo, Electro hydraulic drills with other service equipments will be added to ramp up the development and production.**
- **Matching capacity beneficiation plant will be constructed at the site for beneficiation of ore and cater the requirement of fill for filling the mine voids.**

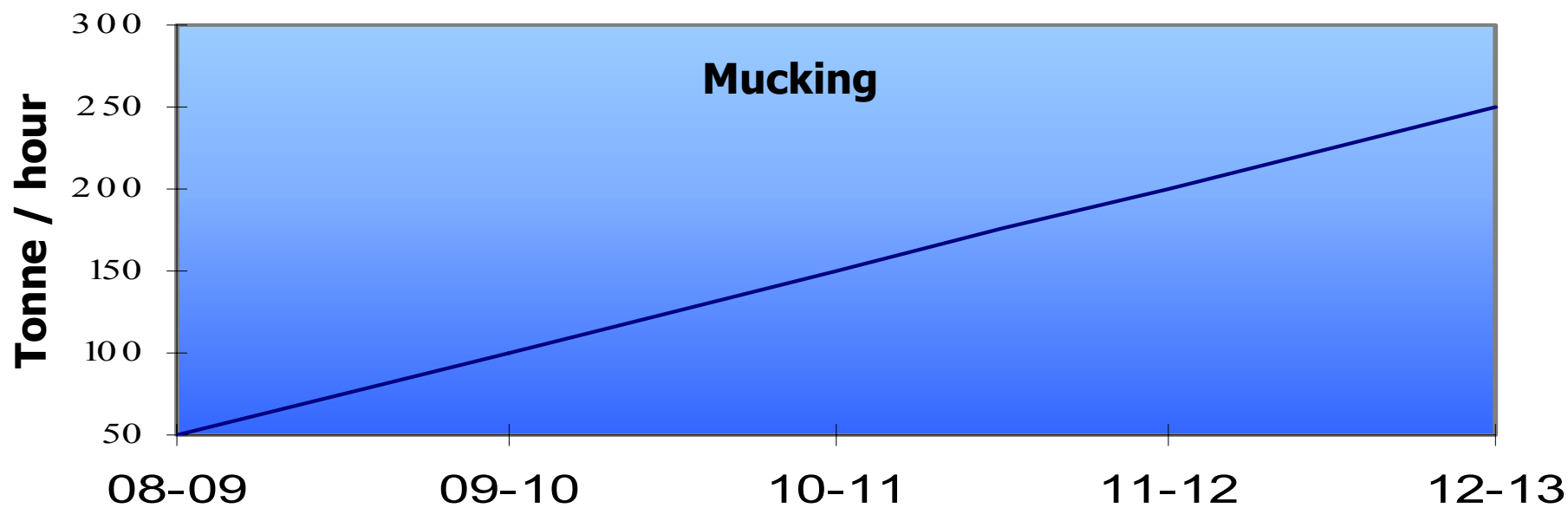
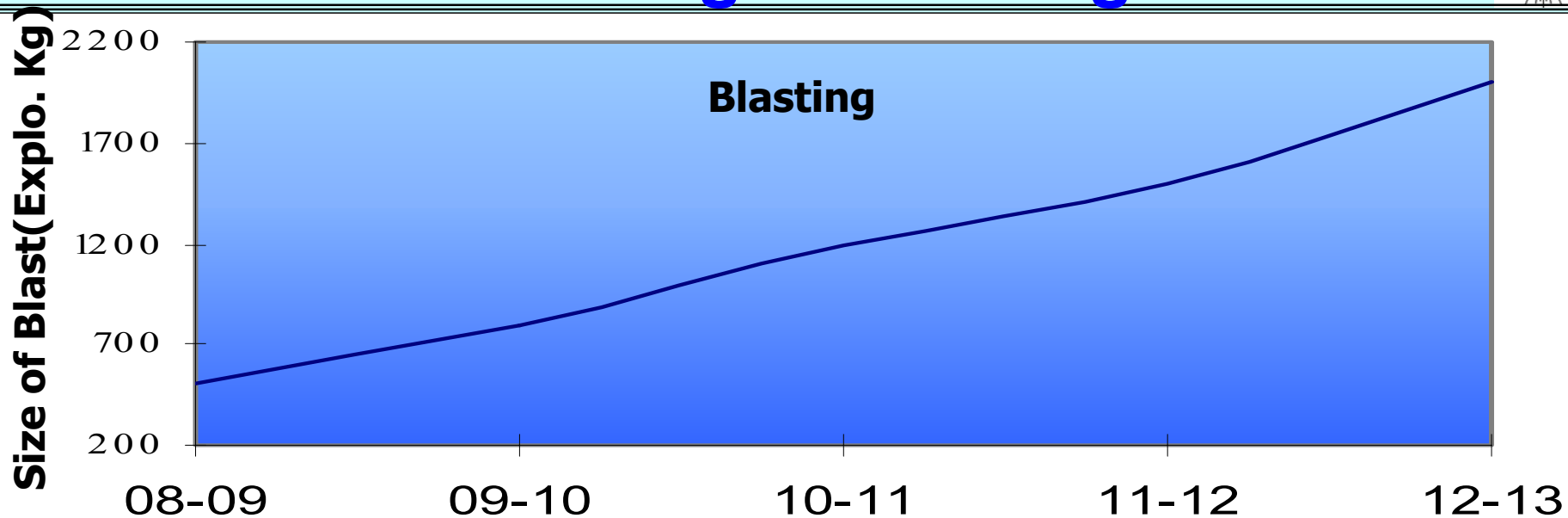
- **4 operative underground mines Mochia, Balaria, Zawarmala & Baroi with a cumulative production capacity of 1.2 Mt/ year with one integrated beneficiation plant of matching capacity**
- **Deposits having reserve/resource of 49.10 Mt with 4.40% Zn, 2.3% Pb & 40g/t Ag.**
- **Width of the deposits are varying from 5-50 m and dip varies from 40 – 80 degree.**
- **1.075 Mt of production & ore beneficiation planned from all the four mines during 2008-09**
- **Main UG mining equipments ;-**
LHD (2 & 3.5 Cu Yd), LPDT (20 MT), Electro hydraulic Simba(76mm). DTH (115mm), Pneumatic Simba(57mm), Electric locomotives 8 – 10 tons

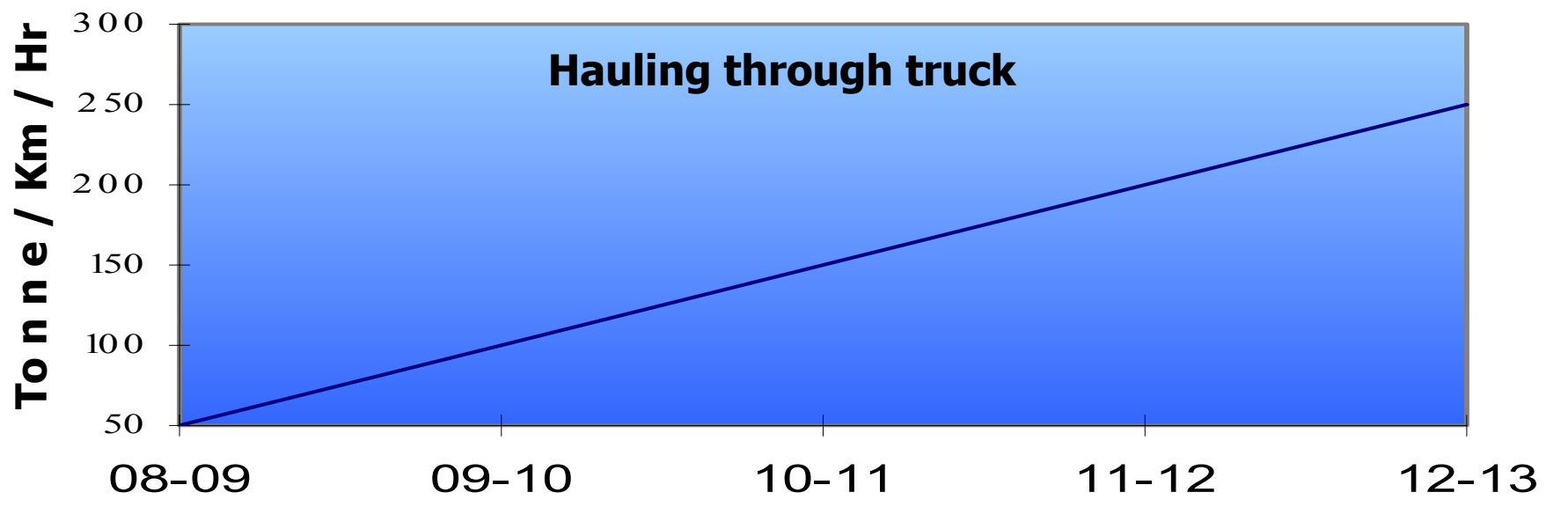
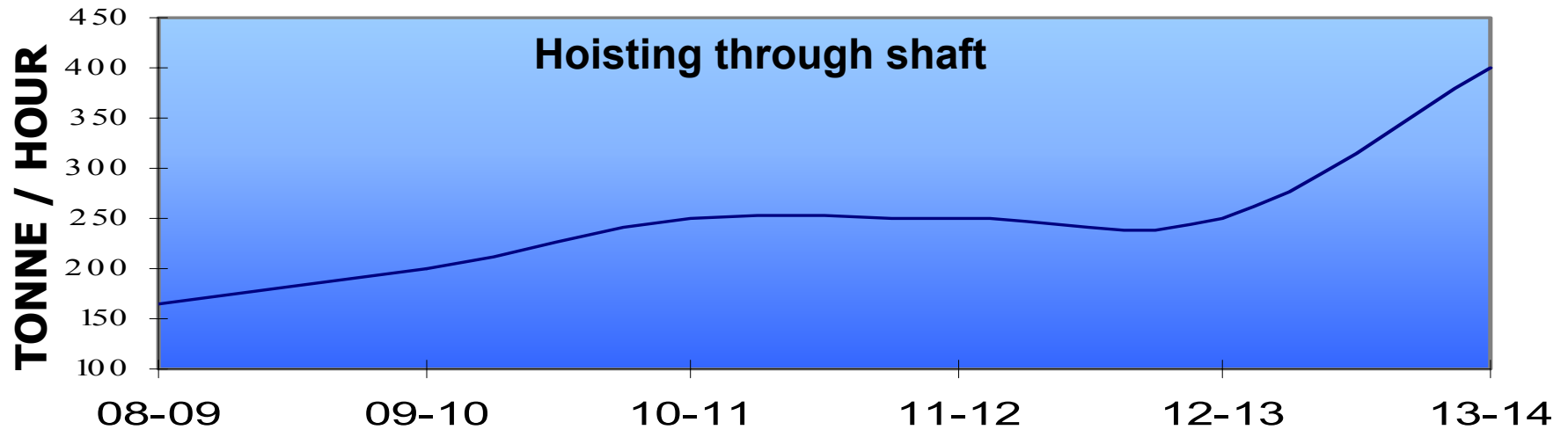
- **Production is planned to be increased from present level of 1.075 Mt to 1.5 Mt per annum by 2012-13.**
- **Surface exploration for depth extension of existing mines up 200 m below present explored depth. Also, partially / unexplored dolomite within the lease hold in progress to identify new mine prospects.**
- **Planning for De-bottlenecking / capacity expansion under progress. The main activity includes infrastructure extension of all the mines and introduction of higher capacity machines**

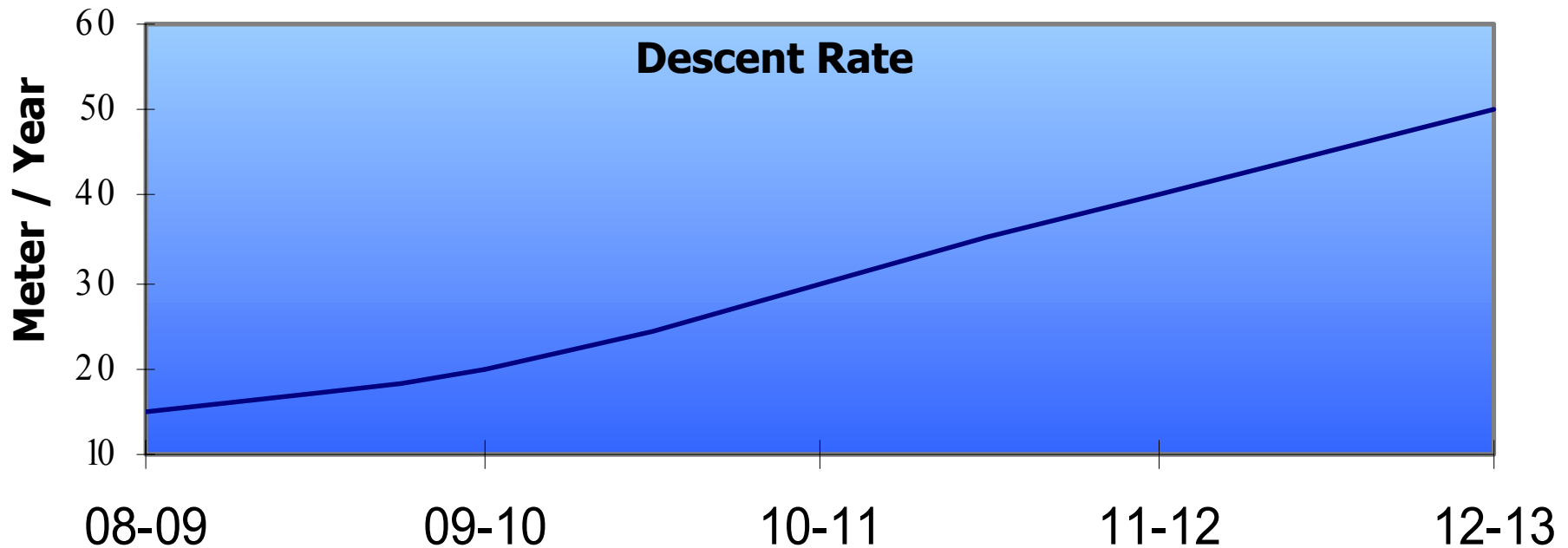
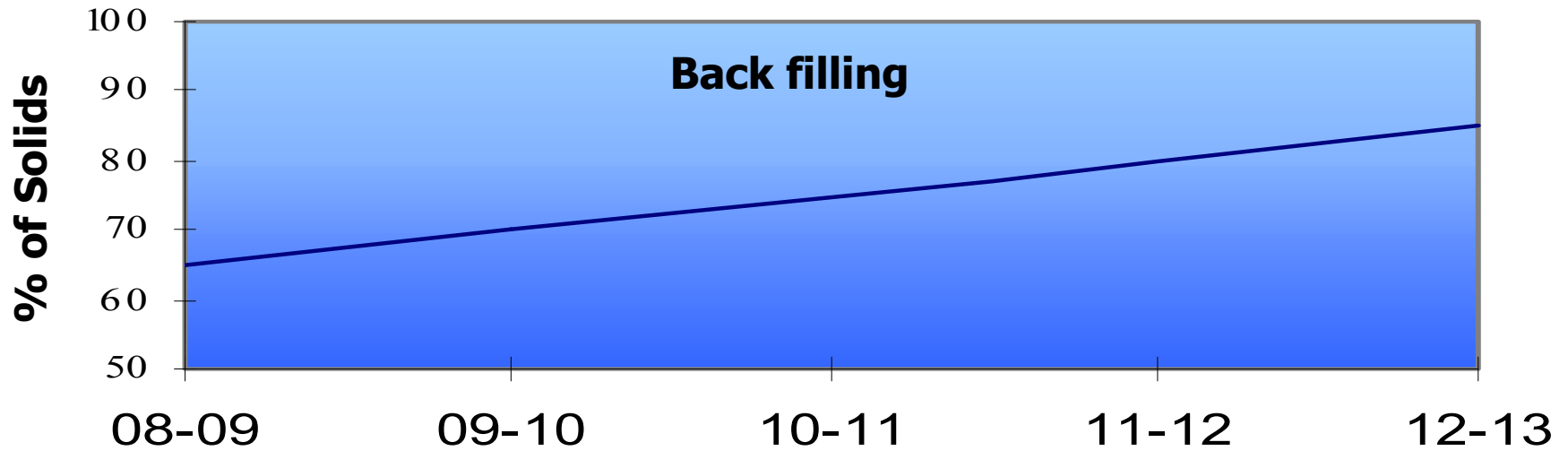
- This deposit is situated approx. 9 kms from Ajmer town.
- Deposit having reserves/ resource of 9.01 Mt with 10.60 %Zn, 1.70%Pb, 39g/t Ag.
- Strike length is approx. 800 m consist of 12 minor & major ore lenses.
- An underground mine is planned for Production capacity of 0.3 Mt per annum.
- Deposit will be accessed through decline from surface & planned production will be attained by 2013-14.
- The main underground equipments will be 6 t LHD LPDT and electro hydraulic drills.

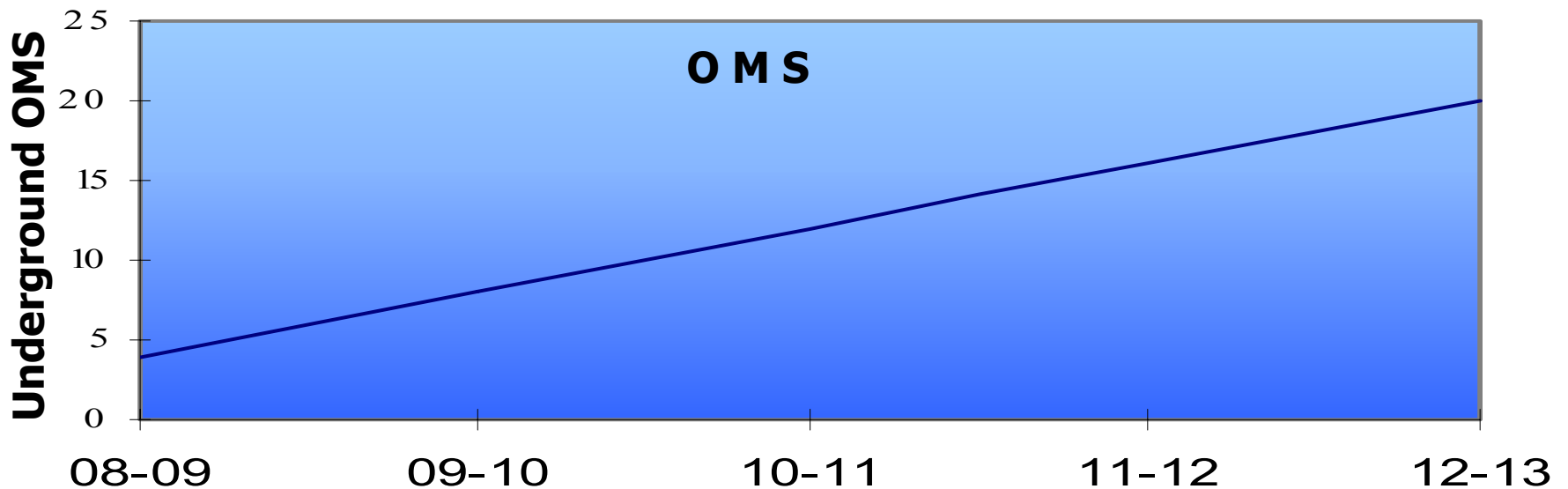
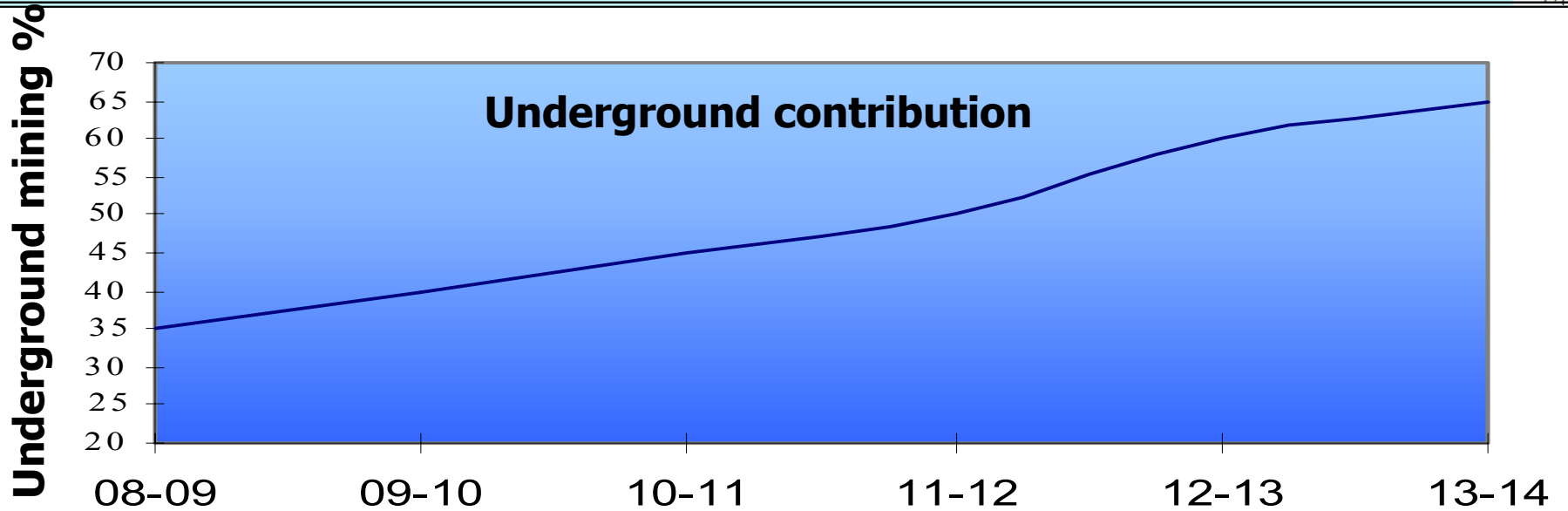
PRODUCTIVITY IMPROVEMENT THROUGH TECHNOLOGICAL UPGRADATION











SN	Activity	Present	Target
1.	Shaft Sinking/ Boring	20-25 m /month with hand held drill and manual mucking	100m/ month advance with drill jumbo, JCB ,grab/ Boring
2.	Development	40-50 m/ month/ face with hand held drill and 2cu yd LHD	150-200 m/month/face with double boom jumbo,10 ton LHD, 20-50 tons LPDT
3.	Production Drilling	Down the hole drills/ITH	Hydraulic top hammer drill
4.	Mucking	3 – 6 ton LHD	10-15 tons LHD.
5.	Hauling	20 tons LPDT & 8-10 tons locos	50-60 tons LPDT. 16-20 tons Locos

SN	Activity	Present	Target
6.	Hoisting	Thyrister control with analogue controller,	Modern Koepe winder with Thyrister control, digital controller,
7.	Filling	Hydraulic Fill	High density paste fill .
8.	Support	Hand held stopper/ Pneumatic Simba	Rock/cable bolter & short creting machine.
9.	Communi- -cation	Telephones	Leaky feeder or any other wireless system.
10.	Utility Services		Personal carrier, Utility vehicles, Explosive chargers, etc.
11.	Safety		Self rescuer, underground refuge chambers.

SN	Activity	Present	Target
12.	Open Cast Dumpers	100 ton class	200-225 ton class
13.	Excavator	6 – 15 cu m	25 cu m

SN	Equipment	Requirement					
		09-10	10-11	11-12	12-13	13-14	Total
1	Single Boom Jumbo	4	2	1	1	1	9
2	Double Boom Jumbo	2	3	3	1	1	10
3	Rock Bolter/ Cable Bolter	2	1	0	1	0	4
4	Short Creating Machine	2	2	0	0	0	4
5	L H D						0
	a) 2 Cu Yd	3	2	1	2	2	10
	b) 3.5 Cu Yd	5	6	2	3	2	18
	c) 6-8 Cu Yd	3	2	2	5	2	14
6	L P D T						0
	a) 20/30 Ton	3	5	4	2	2	16
	b) 50 Ton	4	1	6	7	1	19

SN	Equipment	Requirement					
		09-10	10-11	11-12	12-13	13-14	Total
1	Excavator	1	0	1	1	0	3
2	Dumpers	0	5	0	5	5	15
3	Drills	0	2	2	0	0	4
4	Track Dozers	2	2	2	0	0	6
5	Wheel Dozers	1	0	0	0	0	1
6	Water Sprinklers	1	0	0	0	0	1

- **Winders**

- a) **Two no of koepe winders for skip hoisting from a depth of approx 800 mts @ of 400 tons/hour**

- b) **Two nos cage winder for hoisting man and material from a depth of 800 mts, Cage capacity 35-40 persons, pay load 6000 kgs, winding speed 6-8mts/sec**

All these winders will be required in 2012-13 & 2013-14

- **Communication**

Two sets of underground wireless communication systems in underground may be leaky feeder or equivalent to that for S K Mine & Rampura Agucha underground by the year 2011-12

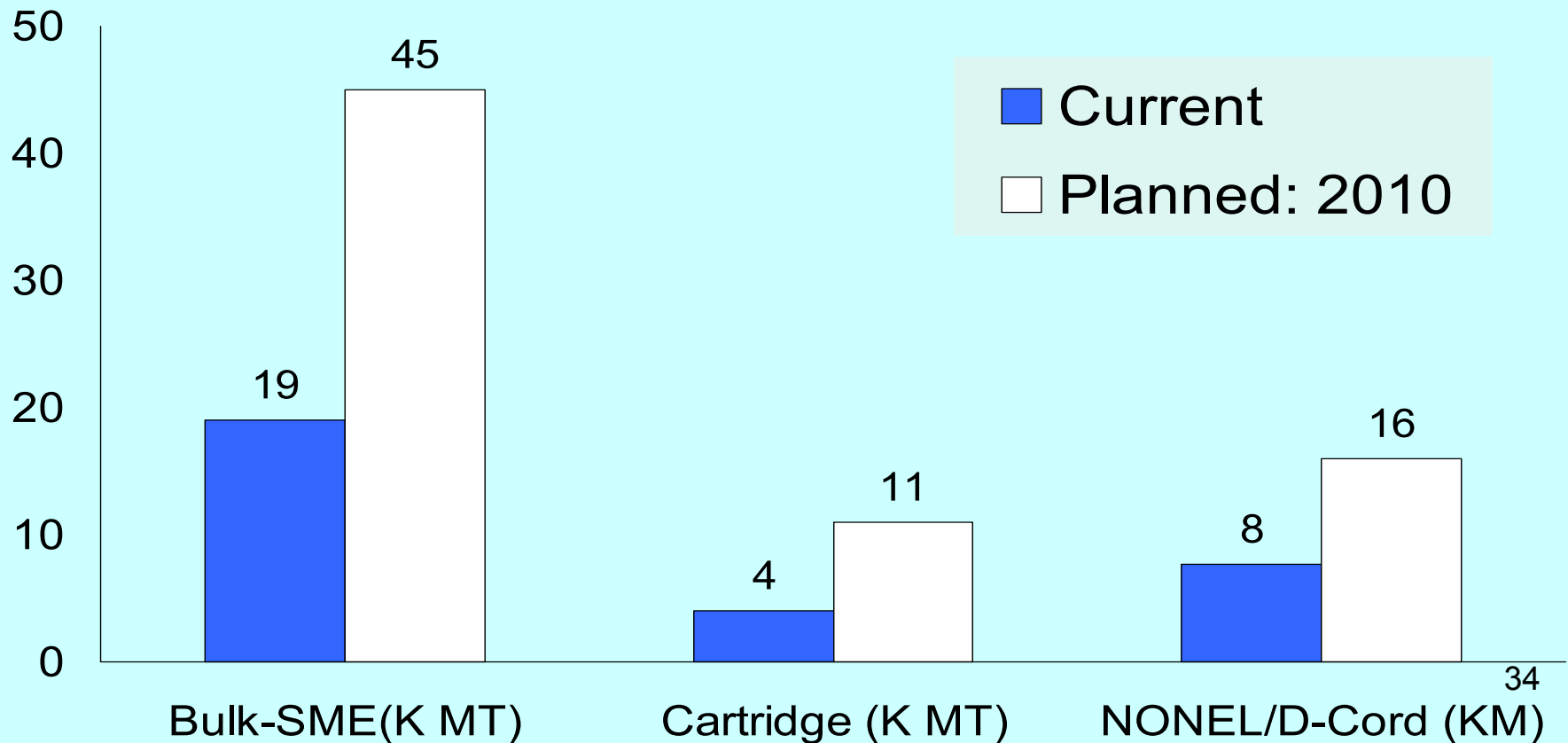
Beneficiation Plant

- **One new 2 Mtpa beneficiation plant for S K Mine along with primary , secondary & tertiary crusher, ball mills with high volume floatation cell and high rate thickeners**

Filling Plant

- **Modular type paste fill plant able to supply fill @ of 200 cu m per hour at two location one at S K Mine and another at Rampura Agucha Mine in 2012-13 & in 2014-15.**

- **Current spend base on explosives and accessories is about Rs 80 cr**
- **Likely to go over Rs 130 cr by 2010**



Equipment		capacity	Nos.	HMR as on	Year				
					09-10	10-11	11-12	12-13	13-14
Excavator	RH-120 E	15 cu.m	3	21145				Replacement	
				9316					
				NA	1 Addition				
	RH-90C	10 cu.m	2	25983	Replacement with 1 no excavator				
				26816					
PC-1250C	6.1 cu.m	1	5983						
Dumpers	777D-II	95 t	8	19604	Repalcement with higher capacity				
			9	9986			Replacement		
			6	3408					
			2	NA					
Drills	RECP	165 mm dia	4	17803		2 Replacment	2 Replacment		
	Sandvik (DI-600)		2	2000					
	Atlas (ROC L-8)		1	5514					
Pre-split Drills	Sandvik (DI-300)	115mm dia	1	1443					
	Atlas (ROC L-6)		1	1976					
Track Dozer	D- 375		1	5386	2 Addition				
	D- 355		4	20000		2 Replacement	2 Replacement		
Wheel Dozer			1	10534	1 Addition				
Motor Grader			2	678					
Water Sprinkler			1	847	1 Addition				
Tyre Handler			1						

Already Ordered



Future Replacement

