PRE FEASIBILITY REPORT

Iron Ore Pelletization Plant

Capacity 1.2 MTPA

Survey no. 2, 8, 9, 12 to 15, 132, 136 & part of 5, 6, 7, 16, 17.Village: Halavarthi, Tahsil: Koppal, District: Koppal.

Submitted to

MINISTRY OF ENVIRONMENT & FORESTS

ENVIRONMENTAL APPRAISAL COMMITTEE

(New Delhi)

*

Project Proponent

M/s. MSPL Ltd.

Baldota Enclave, Abheraj Baldota Road,
Hospet, Karnataka. India.

*

EIA Consultant

Pollution & Ecology Control Services

Near Dhantoli Police Station, Dhantoli, Nagpur-440012
(Maharashtra) 0712-2293225

EXECUTIVE SUMMARY

1	Name of the project	M/s MSPL Limited
2	Schedule	As per EIA Notification dated 14th September 2006, the project activity falls under Category 'A', S. No. 3 (a).
3	Registered office	Baldota Bhavan, 117, Maharshi Karve Road, Mumbai - 400020
4	Name of proponent	Dr. Meda Venkataiah
5	Area of plant	Total area in possession: 113 Acres. Area of pelletization plant: 41Acres.
6	Toposheet no.	57A/3
7	Coordinates	**Latitude** / **Longitude** N15° 19'49.9" / E76°12'29.9" N15° 19'35.9" / E76°12'29.5" N15° 19'35.8" / E76°12'12.0" N15° 19'49.4" / E76°12'12.0"
8	Capacity	Iron ore pelletization plant – 1.2 MTPA (In Operation)
9	Water requirement	Quantity : 330 m^3/day Source: Tungabhadra river
10	Power requirement	Power requirement for the Pellet Plant is 6.6kV Source: Karnataka State Electricity Board
11	Nearest town	Koppal, 6 km(NW) Hospet, 21 km
12	Nearest Station	Ginigera 4.5 km(NE)

1.1 **Project details:**

M/s MSPL Ltd. installed 1.2 MTPA pellet plat (in operation) on Survey no. 2, 8, 9, 12 to 15, 132, 136 & part of 5, 6, 7, 16, 17.Village: Halavarthi, Tahsil: Koppal, District: Koppal.

1. Government of Karnataka has issued Environmental Clearance for Establishment of new pelletization plant under letter no. FEE 28 ECO 2010 dated: 1/10/2010.

2. Karnataka State Pollution Control Board has granted consent for operation, combined consent order no. 97/ PCB/ MINI CFO/ 2014-15/ 538 Dated: 11 August 2014.

Now, Karnataka State Pollution Control Board has issued a letter no.PCB/MINI/LIMESTONE/2014-15/3579 Dated 16 Oct 2014 to MSPL Ltd, to apply for TOR to the 'stand-alone' Pelletization Plant within 7/12/2014 and shall obtain EC by the MoEF within one year.

1.2 Water requirement:

The Pellet plant (in operation) requires 330 m^3/day water. M/s MSPL Ltd meets their water requirement from Tungabhadra river.

1.3 Power Requirement:

Power requirement for the in operation Pellet Plant is 6.6kV. Source: Karnataka State Electricity Board.

1.4 Man power:

M/s MSPL Ltd has recruited 168 local people for operation of pellet plant.

2. INTRODUCTION OF THE PROJECT

2.1 Identification of project and project proponent

M/s MSPL Ltd is engaged in the business of mining and marketing of minerals and also in industrial and medical gases and power generation through non- conventional energy routes. In an endeavor to add further value to the business activities, M/s MSPL Ltd has set up a pelletization plant of 1.2 MTPA capacity, utilizing the iron ore fines available from the mines being operated by them in the Bellary Hospet area of Karnataka. Total capital investment for the project is envisaged to be around Rs. 300.50 Cr.

2.2 Brief description of nature of the project

The pellet plant is set up at Halvarti villages of the Koppal district in the State of Karnataka. The study area is covered between 15° 19' 35.8" to 15° 19’ 49.9" North latitude and 76° 12' 12.0" to 76° 12’ 29.9" East longitude respectively.. The site is adjacent to NH-13 Hubli-Hospet Bellary section (old) and new NH-63 and is easily accessible from District places of Koppal and Hospet, which are situated at a distance of 6 km and 21 km from the project site in west and east directions respectively. Ginigera (on the Hubli-Bellary section) is the nearest railway station at a distance of 4.5 km from plant site.

2.3 Need of the project and its importance to the country

Crude steel production in Asia has seen a phenomenal increase with its share increasing to 47% during 2004 from a level of 37% during 1994. With an annual production of 272.5 million tonnes in 2004, the global steel consumption reached 935 Mt of finished steel in 2004 recording a growth of 8.8% over the previous year.

With the increase in consumption and trade or steel products, the prices have also increased sharply and rapidly in 2004 helping the world steel industry to return to strong profitability, despite substantial increase in raw materials and transportation costs.

Due to availability of very high-grade iron ore in the country, iron ore lumps have been the main iron bearing raw material for blast furnaces. The use of pellets is restricted in the Indian Blast Furnaces mainly due to high cost of pellets compared to lump ore and sinter. In the face of shrinking reserves of high-grade ores; ores must now be concentrated before further processing. Pellets form one of the best options, due to their excellent physical and metallurgical properties. Moreover, due to their high strength and suitability for storage, pellets can be easily transported over long distances, with repeated transshipments if necessary.

In view of the encouraging economical growth in the country, which is likely to continue in the future M/s MSPL Ltd has taken the decision and set up a pellet plant.

Secondly the Hospet-Bellary region in the state of Karnataka is a high potential zone in terms of Iron and steel and allied industries because of natural resources like water and raw materials like rich Iron ore, Dolomite etc. The easy availability of rich iron ore from nearby mines and water from Tungabhadra reservoir makes it a suitable place.

2.4 Demand and supply gap

The Pellet market consists of a group of sellers controlling a majority of Pellet capacity worldwide. Long term contracts for supply of Pellets are the norm in the industry. Some of the largest Pellet manufacturers are from Latin America & Sweden. The market leader in the industry is CVRD (Brazil) whose prices are generally considered as benchmark price for pellets.

In the export market, the present and future DRI/HBI producers in Southeast Asia, Middle East and North Africa have given them a definite advantage over the suppliers from Brazil, North America and Sweden.

The Pellet deficiency in the target market is being currently met from South America (CVRD, Samarco) and Europe. In view of potential market in South East Asia region and export of iron ore Pellets by India in the past, a provision of 40% of total

anticipated domestic demand of Pellets is kept for export demand for iron Pellet has been worked out and given in Table.

Table-Project demand of Indian Iron ore Pellets

Demand	Year	
	2006-07	**2011-12**
Domestic	13	26.5
Export	5.28	10.5
Total	18.48	37.1
* Extrapolated from Demand of Metallic & Compilations from various data sources.		

Resultant demand-supply scenario

Based on the demand and availability discussed in the previous paragraphs, the resultant gaps/surpluses of Pellets have been worked out and presented in the following table:

Table- Demand, Availability and resultant gap (-)/surplus (+) for pellets (MTPA)

Years	**Demand**		**Total**	**Availabilit**	**Gaps(-)/surpluses** (+)	
	Domestic	**Export**		**y**	**Domestic**	**Export**
2006-07	13200	5280	+18480	4800	+4800	-480
2011-12	26500	10600	37100	20800	-5700	-16300

From the above table, it may be observed that country is likely to face a shortage of about 5.7 Mt of pellets by 2011-12.With export demand, the gap may further widen. Under the circumstances, addition of Pellet plant capacity in the country is necessary. As discussed above Pellet is considered to be a superior feed stock for any primary Iron making process. While Smelting Reduction Processes and Direct Reduction Processes is currently utilizing Pelletized ore, Blast Furnace based process still prefers to use sinter as it is produced in-house. However sinter plants are not very environment friendly, as such it is predicted that slowly Blast Furnace will start using

a part of its burden as Pellet. With increasing trends of Pellet usage in Blast Furnaces there shall be great demand from steel in next few years. The steel demand and its growth are as given below:

Steel Demand Forecast by Gross Domestic Products (GDP)

Domestic demand for steel can be related to GDP. Analysis of data for the last several years shows a very high level of correlation between GDP and steel demand. On conservative basis, assuming present growth rate of 8% to be constant (as projected by Finance Ministry) the projected demand with respect to this growth rate is as shown below.

(Sensitivity with Table: Steel Demand Forecast Respect to constant GDP to constant GDP Growth Rate)

Year	Project Demand of Finished Steel (In Million Tones)
2006-07	39.30
2009-10	49.50
2011-12	57.70

Projections are based on base year 2006-07 apparent consumption i.e. 38MT

In India 90% of steel is consumed by 15% of the population while the balance 10% goes to remaining 85% population. India being a developing country, it is definite that moderate urbanization of some rural area is to take place in the near future, thereby boosting the consumption of steel to a considerable extend. In view of this authors opine that the projected demand of steel by year 2012 would be around 60 million tones.

Also out of 60 million tonnes of steel it has been estimated that around 45 million tonnes of steel shall be produced through Blast Furnace route. With a moderate use of iron ore pellet (20% in burden) the demand for pellet would be around 20 million tones.

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Pellet Demand

Considering the projected production of DRI and share of iron ore pellets in iron bearing feed materials in coal based DRI units, demand of iron ore pellets works out to 0.64 Mt in 2006-07 and 2.6 Mt. in 2011-12.

Anticipated total demand of DR Grade for gas based units as well as coal based units works out to 7.6 Mt in 2006-07 and 11 Mt. in 2011-12. Aggregate domestic demand of iron ore pellets is furnished in Table:

Table- Average domestic demand of Pellets (SF + DR grade) ('000 Tons)

Year	SF Grade	DRI Grade	Total
2006-2007	5600	7600	13200
2011-12	15500	11000	26500

The world sponge iron production has increased from 0.79 million Mt in 1970 to over 43.2 million Mt in 2000. Worldwide the sponge iron production increased by 2.5% to 43.2 million. tones in 2000 despite a slump in steel market. The increase was due to a number of large DRI plants started in late 1997 & early 1998 and heavy demand from steel manufacturers. The high quality of this product is the main factor affecting growth in production of sponge iron.

Table- World DRI Production by year

Year	Quantity (in Million Tonnes)	Year	Quantity (In Million Tonnes)
2000	43.3	2006	59.79
2001	40.32	2007	67.22
2002	45.08	2008	68.45
2003	49.95	2009	64.4
2004	54.60	2010	70.4
2005	56.99	2011	

The sponge iron requirement & its production are increasing day by day due to increase in metallic requirement for steel making. India became the third largest producer of sponge iron with the production of 5.40 million Mt in 2000 and the largest producer in the year 2001 with a production of 5.7 million Mt. Venezuela has been the largest producer of sponge iron in 2000 with production of 6.41 million Mt. Mexico has placed second with 5.90 million Mt production, India was third with 5.40 million Mt production and Iran was fourth with 4.54 million Mt production. These four countries are sharing almost 53% of the world's total sponge iron production.

2.5 Domestic /export market

Domestic

Looking after the domestic demand of Pellets the 1.2 MTPA of Pellets produced in this plant is having a ready domestic market.

Export Market – DR Pellets

In the export market, the present and future DRI / HBI producers in Southeast Asia and the Middle East / North African regions are the potential destinations, as they would be natural markets for pellets. Supplies from Bahrain, Brazil and Sweden are meeting the present DR pellet requirements Middle East/North African countries. With transportation costs being a competitive factor, MSPL's proximity to Southeast

Asia, Middle East and North Africa have given a definite advantage over the suppliers from Brazil, North America and Sweden. DR pellet supply position to SE Asia, Middle East and North Africa is given below.

TABLE - DR PELLET SUPPLY STATUS
(In million tons)

Country	**DRI /HBI Capacity**	**DR Pellet Requirement**	**DR pellet**	**Capacity** **Pellet Deficiency**
SE Asia	4.90	4.60		. (-) 4.60
Middle East	9.95	5.75	3.70	(-) 2.05
North Africa	4.10	4.55		(-) 4.55
Total	**18.95**	**14.90**	**3.70**	**(-) 11.20**

The pellet deficiency in the target market is being currently met by South America (CURD, Samarco) and Europe. MSPL Ltd can replace part of these supplies, as the location advantage of the plant to the end users will provide a minimum freight advantage of US$ 4 to US$ 5 per metric ton. Further, Indian pellet producers will grant the customer the benefit of lower lead-time for supplies, lower voyage time and lesser inventory holding costs.

2.6 Employment generation

MSPL Ltd has recruited about 168 local people for in operation pellet plant.

3. PROJECT DESCRIPTION

3.1 Type of Project

The project is a Greenfield independent project envisaged to produce BF and DRI grade iron ore pellet through pellet plant. Plant is based on Advanced Process technology. The plant is also equipped with the most efficient auxiliary sub systems, material handling facilities and pollution control equipment.

3.2 Location & Accessibility

The project site is located at Halvarti villages of the Koppal district in the State of Karnataka.

I. Road connectivity: the project site is adjacent to NH-13 and new NH-63

II. Rail connectivity: The nearest railway station is Ginigera Station 4.5 km, Bangalore 300 km, Hubli 120 km.

Figure 3.1: Plant Location

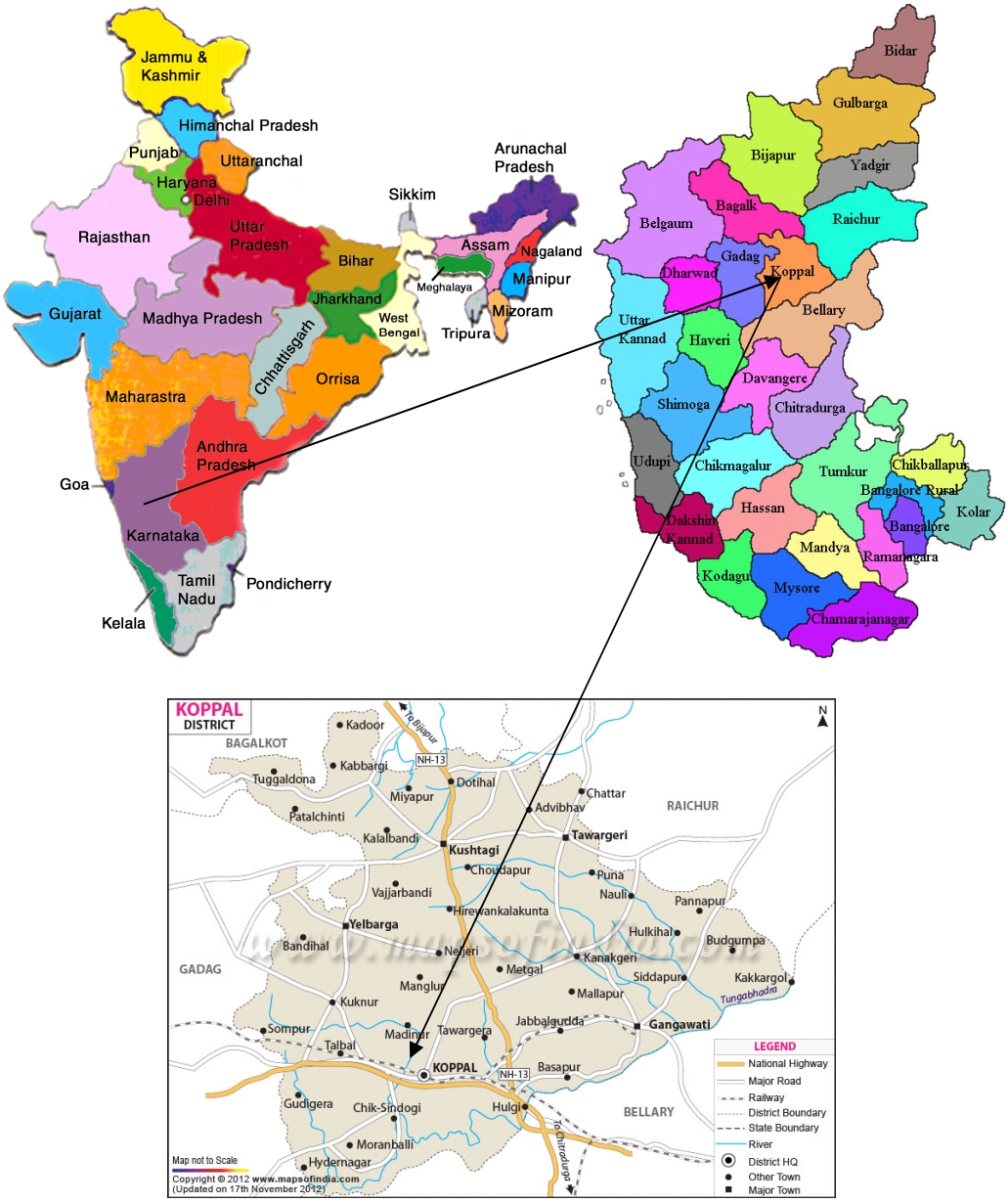
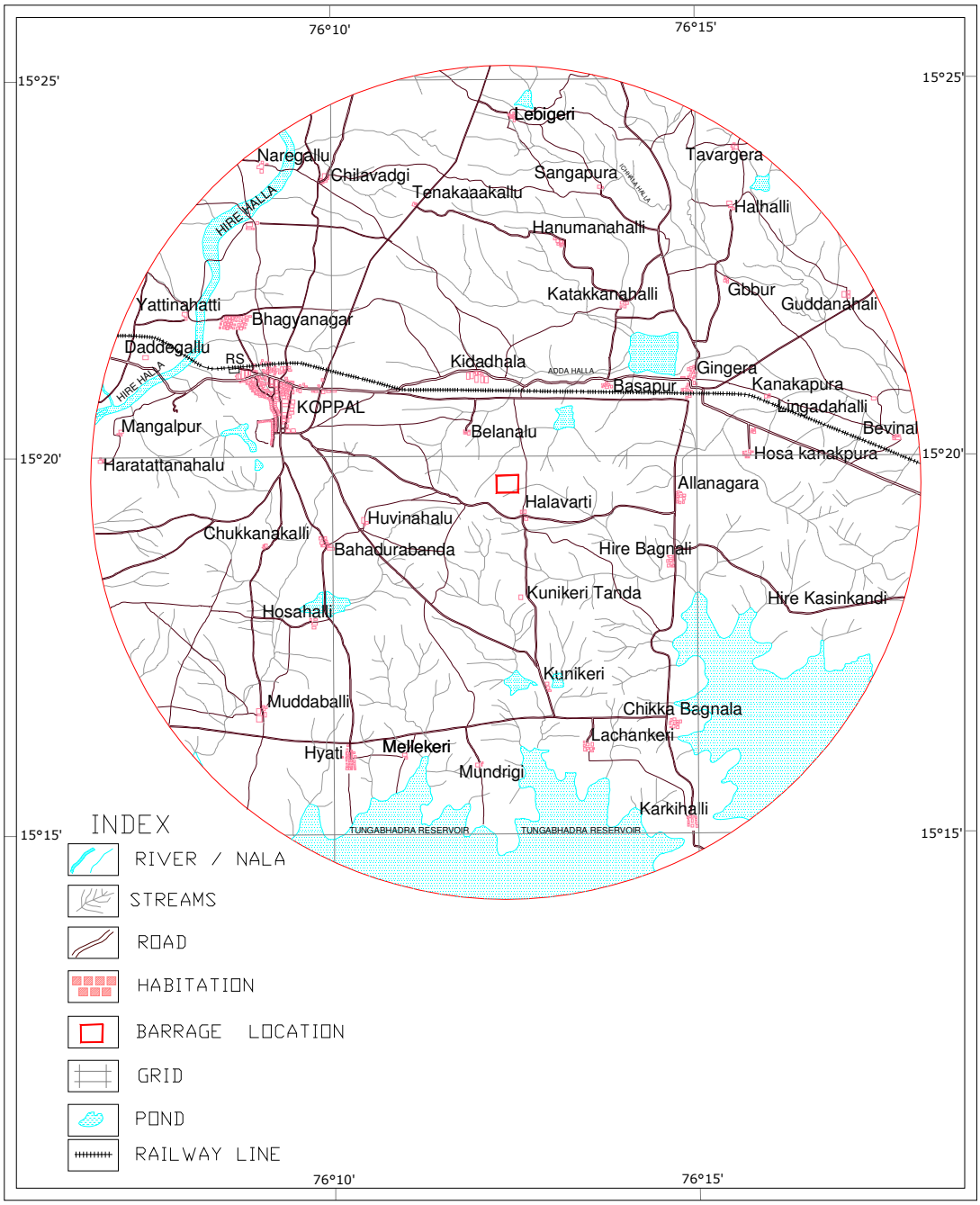


Figure 3.2: Study Area Map



3.3 Site selection

The selection of project site/location was based on the following considerations.

i. Proximity to the sources of raw material (iron ore fines)

ii. Availability of Infrastructure.

iii. Land for project does not involve any displacement of habitation nor any diversion of forest/ vegetation,

iv. Availability of land, with common approach road connected to NH–13 and NH63

v. Access to high growth domestic steel markets.

vi. Availability of water from Tungabhadra River.

3.4 Magnitude of operation

Table 3.0 Production capacity

Sr.no	Units	Products	Capacity
1	**Iron Ore Pelletization plant**	**Iron ore pellets**	**1.2 MTPA**

3.5 Process Description

1. MSPL has adopted the Grate-kiln process for production of acid pellets without any fluxing materials (limestone/dolomite) in line with the process know-how being offered by M/s BSDI (Beijing Shougang Design Institute). Major part of the equipment is also procured from M/s BSDI, China. The process flow diagram is presented.

2. Pellet plants of 1.2 million-tons/ year capacity is on the Grate-kiln process route.

3. The plant is working for 330 days in 3 shifts.

4. The entire layout of the plant is designed in such a way that the material flow is unidirectional and the material enters the plant from north side and the product goes out from the east side.

5. Fuel oil is used as a fuel for drying the raw materials. As and when the iron making plant based on Tecnored process comes on stream, the gas from the iron making plant is being used.

6. Bentonite quantity being very small. Separate drying of bentonite is not envisaged and shall be charged to Ball mill for grinding along with iron ore fines.

7. Dried iron ore fines along with bentonite in proportioned quantities is ground together in dry system open circuit in a Ball mill. Due to the availability of high Alumina & Silica in the iron ore fines, dry grinding system is selected as high alumina & silica are detrimental to iron ore slurry filtration efficiency.

8. Ground powder of Iron ore and Bentonite is mixed thoroughly by addition of water in the mixer.

9. Mixed material having moisture of about 9% is sent to Pelletising discs, where green balls of required size are formed.

10. Before feeding to induration area, green balls are screened. The process adopts reliable screening and distributing system to ensure uniform distribution and high qualification of sizes of the pellet so that air penetration in the material layer can be improved.

11. Drying of pellets is done on a traveling grate of 4m wide and 45 m long ($180m^2$) Retention time of material is approx. 17-18min. Hot air from circular cooler is circulated to the traveling grate area for drying of pellets. The traveling grate does not require the provision of a Hearth layer.

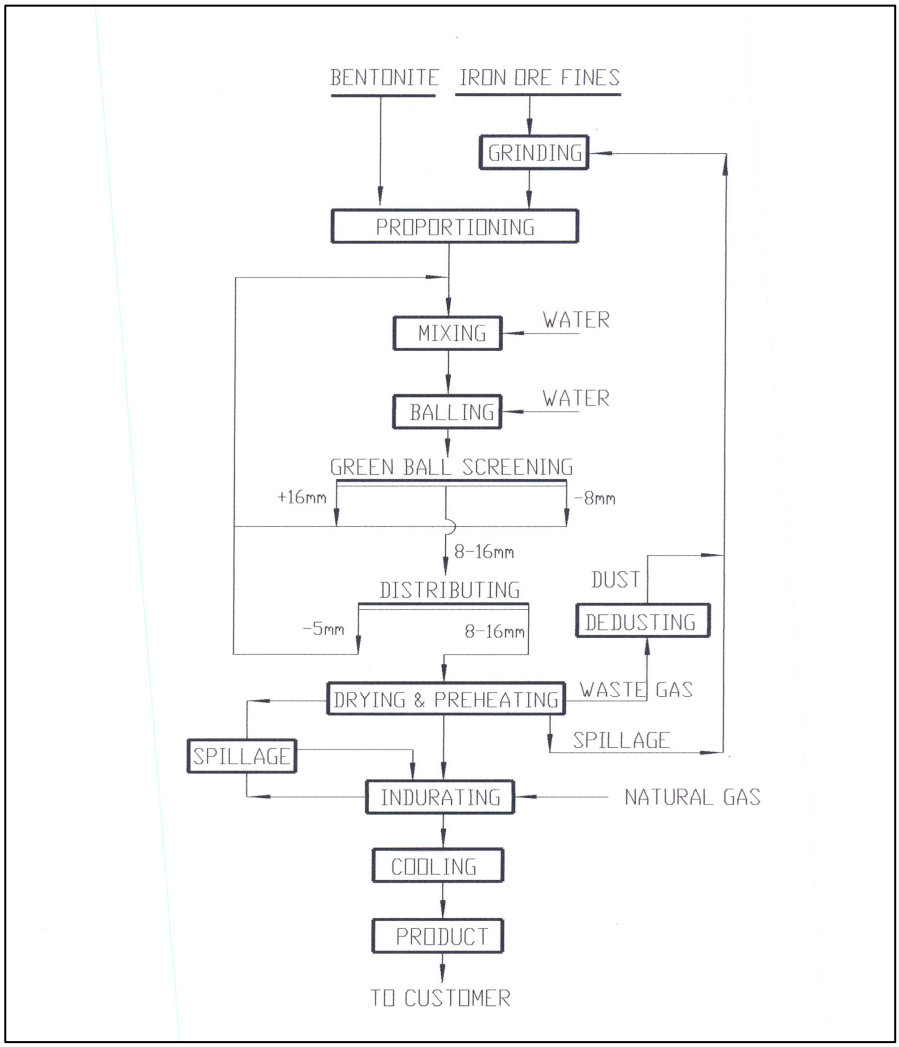
12. Dried pellets are indurated in a rotary kiln. Firing temperature is about 1250^0 C to 1300^0 C. Pulverised coal is the fuel for the heat required. The rotary kiln is of 4.85m

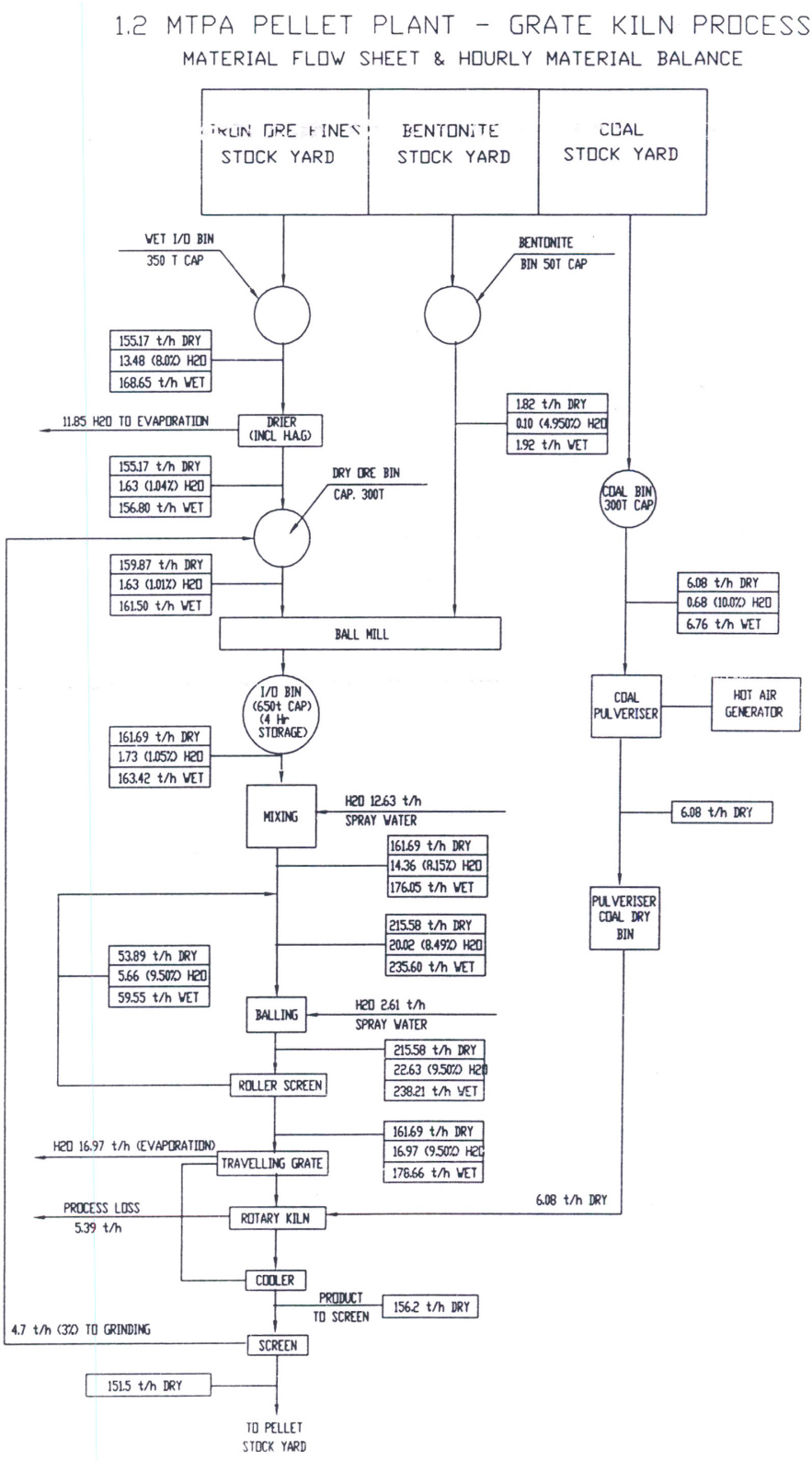
dia x 35m long, slope 4.25%. Retention time of material in the kiln is approx. 28-32min.

13. Pulverised Coal is used as fuel for firing in the rotary kiln. Coal is dried and pulverized in a vertical mill and pneumatically transported for injection into the burners of rotary Indurated pellets are cooled in a circular cooler from approx. 1250 ^{0} C to 100 ^{0} C. Diameter of the circular cooler is 12.5m having an effective area of 59m^2.

14. Whenever low grade ore is fed the ground material is beneficiated through hydro cyclones.

Figure 3.3: Flow chart of process




1.2 MTPA PELLET PLANT - GRATE KILN PROCESS
MATERIAL FLOW SHEET & HOURLY MATERIAL BALANCE
IRON ORE FINES STOCK YARD
BENTONITE STOCK YARD
COAL STOCK YARD
WET I/D BIN 350 T CAP
BENTONITE BIN 50T CAP
155.17 t/h DRY
13.48 (8.0%) H2O
168.65 t/h WET
11.85 H2O TO EVAPORATION
DRIER (INCL H.A.G)
1.82 t/h DRY
0.10 (4.95%) H2O
1.92 t/h WET
155.17 t/h DRY
1.63 (1.04%) H2O
156.80 t/h WET
DRY ORE BIN CAP. 300T
COAL BIN 300T CAP
159.87 t/h DRY
1.63 (1.01%) H2O
161.50 t/h WET
6.08 t/h DRY
0.68 (10.0%) H2O
6.76 t/h WET
BALL MILL
I/D BIN (650t CAP) (4 Hr STORAGE)
COAL PULVERISER
HOT AIR GENERATOR
161.69 t/h DRY
1.73 (1.05%) H2O
163.42 t/h WET
MIXING
H2O 12.63 t/h SPRAY WATER
6.08 t/h DRY
161.69 t/h DRY
14.36 (8.15%) H2O
176.05 t/h WET
PULVERISER COAL DRY BIN
215.58 t/h DRY
20.02 (8.49%) H2O
235.60 t/h WET
53.89 t/h DRY
5.66 (9.50%) H2O
59.55 t/h WET
BALLING
H2O 2.61 t/h SPRAY WATER
215.58 t/h DRY
22.63 (9.50%) H2O
238.21 t/h WET
ROLLER SCREEN
161.69 t/h DRY
16.97 (9.50%) H2O
178.66 t/h WET
H2O 16.97 t/h (EVAPORATION)
TRAVELLING GRATE
6.08 t/h DRY
PROCESS LOSS 5.39 t/h
ROTARY KILN
COOLER
PRODUCT TO SCREEN
156.2 t/h DRY
4.7 t/h (3%) TO GRINDING
SCREEN
151.5 t/h DRY
TO PELLET STOCK YARD

3.6 Raw material

Production of every ton of pellet for the pellet plant require about 1.075 ton of raw materials. The cost of transportation of different raw materials, particularly the iron ore fines, which constitute about 92 % of total raw materials requirement, becomes an important aspect while identifying the sources with respect to location of plant. Further, the raw materials must fulfill the quality specification desired by the process and technological parameters.

The raw materials required for the pellet plant are iron ore fines, pulverized coal (non coking) that has a calorific value of 6800 Kcal/kg and 14% of ash content and Bentonite, which is used as binder. A brief description of potential sources of raw materials and quality are presented below.

The average chemical composition of raw materials are shown in **Table**

TABLE
CHEMICAL COMPOSITION OF RAW MATERIALS

- Iron Ore Fines

Chemical Composition %						
TFe	**SiO_2**	**Al_2O_3**	**CaO**	**MgO**	**S**	**P**
63.5-67	2.58	2.78	-		0.006	0.044
Physical Properties						
Grain Size mm	**Moisture (%)**		**Density (t/m^3)**		**L01%**	
<10	<10		2.2		-	

- Coal

Calorific value K Cal/Kg	**Grain size**	**Volatility**	**Ash**	**S**	**Melting Temp. of ash Deg. C**
6800-7200	0-25mm	10-20%	<14 %	<5%	>1400

- Bentonite

Chemical Composition %					Physical Property
SiO_2	**Al_2O_3**	**MgO**	**CaO**	**Lol**	**Grain Size**
38	38	0.80	6.70	<8	-50mm

The Iron Ore fines for the pellet plant is being supplied from the captive mines of MSPL, situated near Hospet, which is about 21 km away from the plant site. These fines is being transported from mine by trucks.

High calorific value coal is being used as fuel for induration of the pellets. Coal is being imported and from the port of import is being transported to the plant site by trucks. Bentonite is transported by road from Gujarat.

The specific requirements of raw materials (Dry & Net) Kg / t of Pellets and Annual requirement are given in Table A & B respectively.

A. Raw materials (dry & net), kg/t of pellets

Table A: Raw Materials Requirement

Sr. No	Material	Sp. Cons (Kg/T)
1	Iron Ore Fines	1023.55
2	Bentonite	12
3	Pulverised coal	40

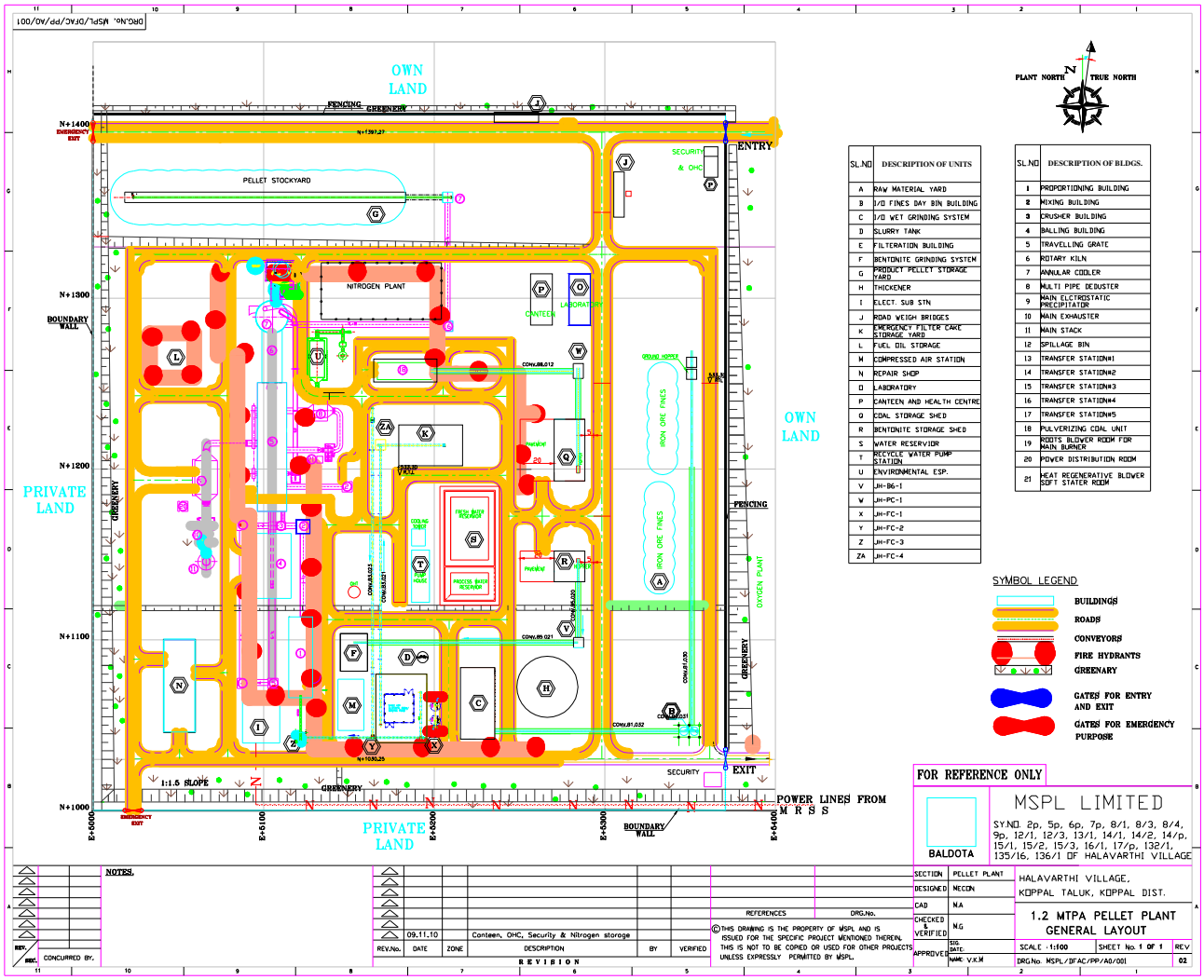
B. Consumption

Grate Bars	0.005 nos/t
Refractories	1.5 Kg/t
Grinding Balls	25 gms/t

Table B: Annual Requirements Of Raw Materials

Sr. No.	Item	Unit	Annual Requirement
1	Iron ore fines	Tons	1348600
2	Coal	Tons	53900
3	Bentonite	Tons	15300
4	Fuel oil	Tons	15600
5	Make up water	Cum	61320
6	Grinding Media Balls	Tons	30
7	Refractories	Tons	1800

Figure 3.4: Layout plan



SL.NO	DESCRIPTION OF UNITS
A	RAW MATERIAL YARD
B	I/O FINES DAY BIN BUILDING
C	I/O WET GRINDING SYSTEM
D	SLURRY TANK
E	FILTERATION BUILDING
F	BENTONITE GRINDING SYSTEM
G	PRODUCT PELLET STORAGE YARD
H	THICKENER
I	ELECT. SUB STN
J	ROAD WEIGH BRIDGES
K	EMERGENCY FILTER CAKE STORAGE YARD
L	FUEL OIL STORAGE
M	COMPRESSED AIR STATION
N	REPAIR SHOP
O	LABORATORY
P	CANTEEN AND HEALTH CENTRE
Q	COAL STORAGE SHED
R	BENTONITE STORAGE SHED
S	WATER RESERVIOR
T	RECYCLE WATER PUMP STATION
U	ENVIRONMENTAL ESP.
V	JH-BG-1
W	JH-PC-1
X	JH-FC-1
Y	JH-FC-2
Z	JH-FC-3
ZA	JH-FC-4

SL.NO	DESCRIPTION OF BLDGS.
1	PROPORTIONING BUILDING
2	MIXING BUILDING
3	CRUSHER BUILDING
4	BALLING BUILDING
5	TRAVELLING GRATE
6	ROTARY KILN
7	ANNULAR COOLER
8	MULTI PIPE DEDUSTER
9	MAIN ELCTROSTATIC PRECIPITATOR
10	MAIN EXHAUSTER
11	MAIN STACK
12	SPILLAGE BIN
13	TRANSFER STATION#1
14	TRANSFER STATION#2
15	TRANSFER STATION#3
16	TRANSFER STATION#4
17	TRANSFER STATION#5
18	PULVERIZING COAL UNIT
19	ROOTS BLOWER ROOM FOR MAIN BURNER
20	POWER DISTRIBUTION ROOM
21	HEAT REGENERATIVE BLOWER SOFT STATER ROOM

REV.No.	DATE	ZONE	DESCRIPTION	BY	VERIFIED
	09.11.10		Canteen, OHC, Security & Nitrogen storage		

REVISION

REFERENCES DRG.No.

SECTION	PELLET PLANT
DESIGNED	NECCN
CAD	M.A
CHECKED & VERIFIED	M.G
APPROVED	SIG. DATE: NAME: V.K.M

SYNO. 2p, 5p, 6p, 7p, 8/1, 8/3, 8/4, 9p, 12/1, 12/3, 13/1, 14/1, 14/2, 14/p, 15/1, 15/2, 15/3, 16/1, 17/p, 132/1, 135/16, 136/1 OF HALAVARTHI VILLAGE

SCALE - 1:100 | SHEET No. 1 OF 1 | REV

DRG.No. MSPL/DFAC/PP/A0/001 | 02

3.7 Water requirement and its sources:

The water requirement is met from surface water resources. The water from Tungabhadra Dam is being pumped to the RCC Filtered water storage tank. The Tungabhadra Dam Board had sanctioned a total of 2.5 MGD.

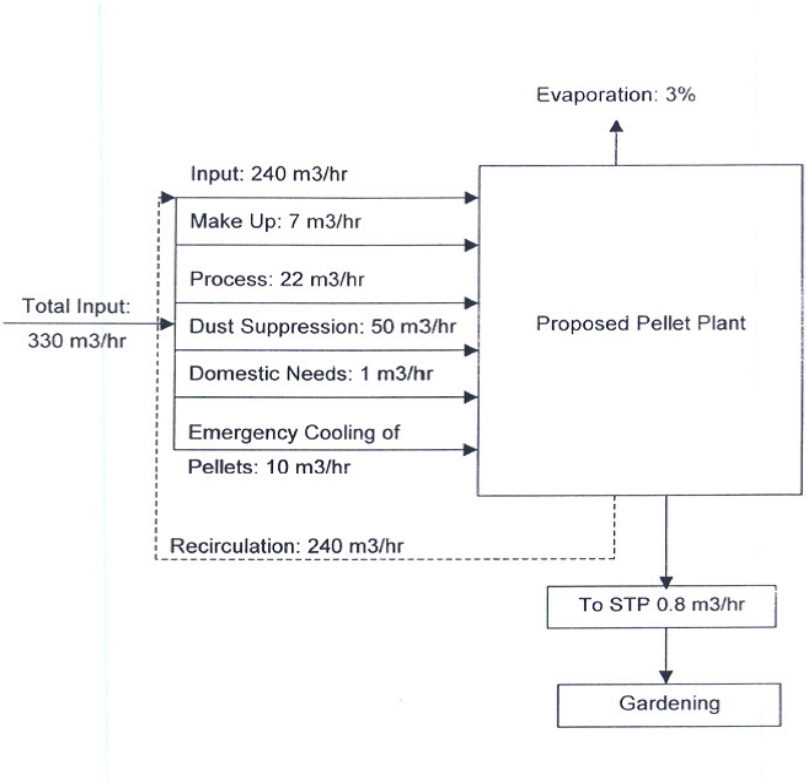
In order to meet the above requirement an RCC Filtered water storage tank of total capacity: 2000 m^3, a pump house with sumps, a cooling tower of 300 m^3/h capacity and supply and distribution piping networks are well established.

WATER REQUIREMENT FOR THE PLANT

Sr. No.	Purpose	Qty (m^3/h)	Remarks
1	Indirect cooling of equipment	240	Recirculated
2	Make-up	7	Lost in the cooling water recirculation system
3	Process and drinking	30	Totally consumed

Water balance:

Figure 3.5: Water balance flow sheet



3.8 Electricity Requirement

The power requirement for the Pellet Plant is 6.6kV and is being met by the Karnataka State Electricity Board. Power received at 110kV from Utility (HESCOM) and stepped down to 6.6kV for further distribution. The maximum demand of the total plant covered under this report is about 12 MW at 0.95 p. f. with an annual energy consumption of 71 million units.

3.9 Pollution Control Measures

Air pollution

All dust creating areas within the pellet plant is covered with hoods or casings and connected to the dedusting systems. Vertical pulverization of coal is done in a completely closed system. This is reduce any chances of fugitive emissions

An ESP, installed nearer to the traveling grate, to collect the dust content of the waste gases. Bag filter is installed for dedusting the traveling grate feed and discharge area, the product transfer points and the screening area. The dust collected is re-circulated back to the mixer.

Water Pollution

water pollution due to unit as the manufacturing process is not going to generate the effluent however accidental spillage, leakage and washing if any may likely to generate waste water which may be comprises of traces of iron ore fines, bentonite and coal fines, as product is acid pellets the generation of pollutant is very low.

Noise Pollution

Intense noise level due to equipment is confined to the work zone area only. The impact of noise is assessed on background noise level and it is found within acceptable limits. This is further attenuated by development of vegetation.

Solid Waste

The solid waste generated from the pelletization plant is reused and recycled. The dust from de-dusting equipment is reused in the process. The sludge generated from the sewage treatment plant is used as a manure for green belt development which enriches the soil quality.

Plantation

Apart from the aforesaid pollution control measures the management has developed green belt covering more than 33% of total acquired area. During plantation landscaping pattern is considered. The plantation scheme covers the plantation of ornamentals plants and some local fruit bearing species.

Selection Criteria of plant species for Green Development Plant

The selection of plant species for the development depends on various factors such as climate, elevation and soil. Area falls under the tropical region and thus the plants that area adapted to this condition should be selected. The plant should exhibit following characteristics in order to be selected for plantation.

1. The species should be fast growing and providing optimum penetrability.

2. The species should be wind firm and deep rooted

3. The species should form a dense canopy.

4. As far as possible, the species will be locally available

5. Species tolerance to air pollutants like PM, SO_2, and NOx should be preferred.

6. The species should be permeable to help create air turbulence and mixing within the belt.

7. There should be no large gaps for the air to spill through.

8. Tree with high foliage density, leaves with larger leaf area and hairy on both the surface.

9. Ability to withstand conditions like inundation and drought.

10. Soil improving plants (Nitrogen fixing, rapidly decomposable leaf litter).

11. Attractive appearance with good flowering and fruit bearing.

12. Bird and insect attracting tree spacing.

4. Site Analysis

4.1 General

The pellet plant is set up at Halvarti villages of the Koppal district in the State of Karnataka, is in the vicinity of the existing plant of the Scan Ispat Ltd. The site is adjacent to NH-13 Hubli-Hospet Bellary section (old) and new NH-63 and is easily accessible from Taluka places of Koppal and Hospet, which are situated at a distance of 6 km and 21 km from the project site in west and east directions respectively. Ginigera (on the Hubli-Bellary section) is the nearest railway station at a distance of 3 km from plant site.

4.2 Connectivity

i. Road connectivity: the project site is adjacent to NH-13 and new NH-63

ii. Rail connectivity: The nearest railway station is Ginigera Station 3km, Bangalore 300 km, Hubli 120km.

4.3 Topography

The topography of the land is undulating contour vary from 517.30 to 540 m.

4.4 Existing Infrastructure

The pellet plant is located in conjugation with iron and steel plant having an area of 418 ha, Out of this the land under pellet plant is around 14ha.

4.5 Utilities

- **Fuel Oil Facilities**

Fuel Oil storage system is designed as standalone facility to cater to the requirement of furnace oil for Pellet plant. Storage capacity is designed to meet the oil requirement for a maximum period of 15 days. The storage system consists of 2 numbers of main storage tanks, heaters, dykes around the storage tanks, unloading pumps, transfer pumps and piping network along with heat tracing and insulation,

valves and fittings for unloading oil into tank and distribution of furnace oil to consumers.

- **Requirement**

5. Fuel Oil 13 Liters It
6. Make up water 0.15 m^3/t
7. Electric power 58.25 kWh/t
8. Compressed air 15.25 Nm^3/t

- **Water Supply Facilities**

In the pellet plant, water is required for process; cooling of equipment, dust suppression, fire fighting and drinking and sanitary needs the estimated water requirement is briefly summarized below:

TABLE —EXPECTED WATER REQUIREMENT FOR THE PLANT

Sr. No.	Purpose	Qty (m^3/h)	Remarks
1	Indirect cooling of equipment	240	Recirculated
2	Make-up	7	Lost in the cooling water recirculation system
3	Process and drinking needs	30	Totally consumed

In order to meet the above requirement an RCC Filtered water storage tank of total capacity: 2000 m^3, a pump house with sumps, a cooling tower of 300 m3/h capacity and supply and distribution piping networks are envisaged.

The water requirement is met from surface water resources. The water from Tungabhadra Dam is being pumped to the RCC Filtered water storage tank. The Tungabhadra Dam Board had sanctioned a total of 2.5 MGD.

- **Electricity Facilities**

  The power requirement for the Pellet Plant is 6.6kV and met by the Karnataka State Electricity Board sanctioned quota. Power received at 110kV from Utility (HESCOM) and stepped down to 6.6kV for further distribution.

  110kV supply stepped down to 6.6kV through 2 Nos. of 12.5/16MVA, 110/6.9kV power transformers, which installed in a 110kV switchyard at MRSS. The control and Relay panels for the 110 kV bays has been installed in the control/switchgear building adjacent to the switchyard. A 6.6kV switchboard installed in the switchgear Room to feed the loads of Ball

  The 6.6kV switchboard also feed a separate 6.6kV substation to feed the Mixing, Balling, induration and screening areas. 6.6/0.433kV substations located at different load centers to cater to LT loads of the plant Reactive power compensating equipment provided in the 6.6kV buses at MRSS to maintain a power factor of 0.95. Illumination of the plant for the required level of illumination is as per industry standards.

- **Operating Regime**

  The pellet plant is being operated on the basis of three shifts a day and 330 days in a year in consideration the shutdowns required for the planned maintenance and unscheduled breakdowns.

  The break-up of the planned maintenance and unscheduled stoppages and shut down of the plant are given below in Table.

TABLE —BREAK-UP OF THE PLANNED MAINTENANCE

Repair type	Duration in days/year	Frequency
Major capital repair	**10**	Once in an year
Scheduled maintenance	**11**	2 shut downs of 12 hours each in a month for 11 months
Unscheduled stoppages and shut downs	**14**	-
Total	35	

- **Repair Shop Facilities**

A repair shop is envisaged to meet the day to day repairs and maintenance requirements of various units of the plant The shop is equipped with machine tools like, Lathe, Milling machine, Drilling machine, Grinding machines etc. Other accessories like Workbench, tool cabinet, and surface plate and tool trolley table are also envisaged. Operations like Turnir d' Milling, Drilling, Grinding, Jig boring etc. can be performed on these machines.

- **Air Conditioning and Ventilation Facilities**

Air-cooled packaged type air conditioning plant is provided for the control room for the switchyard. Split A/C units are envisaged in the Executives rooms, Conference room & Laboratory. Appropriate ventilation facilities are provided for Main Substation for the switchyard & L T Sub-Stations in the pellet plant area to supply fresh air inside the premises and letting out the hot air.

- **Compressed Air Facilities**

The total estimated requirement of Compressed Air for the pellet plant is 2500 Nm^3/hr at 7.0 Kg/cm^2 g. To meet the above requirement it is proposed to install 3 air compressors of 1250 Nm^3/hr out of which 2 shall be working and 1 will be standby. Necessary cooling towers, cooling water pumps, interconnecting air and water lines shall be installed in the compressed air facilities. To meet the air quality requirement of instrument and pneumatic conveying system 3 air dryers each of 1250 Nm^3/hr will also be installed. Inter plant air pipe

fines will be laid from the Compressed Air Station to various production units to supply compressed air.

- **Ventilation Facilities**

These facilities are provided for Main Substation for the switchyard & L T Sub-Stations in the pellet plant area to supply fresh air inside the premises and letting out the hot air.

5. INFRASTRUCTURE

5.1 Industrial Area

The Main Plant has Facilities of Raw Material Storage, Raw Water Storage Reservoir & Treatment, Auxiliary facilities, viz. Admin. Bldg, Tech. Bldg, Workshop, QC Lab, Switch Yard, etc. & Green belt (33%). Company is using nearest road and rail facility for goods transportation and equipped with all other required facilities.

5.2 Green Belt

A greenbelt development plan has been prepared and implemented. Total green belt area is 33% of total area. The main objective of the greenbelt is to provide a barrier between the plant and the surrounding areas. The species selection was depend upon canopy, surface of bark and leaves, flower, color, capacity of growth in the wide variations of ecological conditions etc.

5.3 Social Infrastructure

M/s MSPL has commence a lot of infrastructure developmental works in the periphery area. Some glimpses of the developmental activities are presented below:

- Improving and building road network in the adjoining villages.
- Strengthening School buildings with playgrounds.
- Social awareness programme improved by the local authority such as sanitation and hygiene.
- Through this project, adult education and female education had been provided to the illiterate adults and backward females of the villages in the project surrounding area.
- The proposed project had set up training centre tie up with Industrial Technical Institutes to educate local youth as skilled labour.

5.4 Connectivity

Project is well connected to NH-13 & SH-63 and also connected to the Ginigera Railway Station.

5.5 Drinking Water Management

Drinking water facilities had provided to employees & to nearby villages. A fresh water tank was constructed for drinking purpose.

5.5.1 Waste water treatment system

The unit has adopted zero discharge concepts. There is no effluent generation from the pellet plant. Water is being used in the process to maintain the moisture content of 8-10% in the raw material. Cooling water completely recycled in a closed loop. Effluent generated from backwash of filtration plant and clarifier underflow is being treated in settling tank and taken to common monitoring basin. From common monitoring basin treated effluent to reused for ash handling, dust suppression and greenbelt development.

5.6 Sewerage System

A garland drain around the plant is envisaged to collect surface run-off during rainy season. Separate Internal drainage system will be constructed to collect domestic and industrial effluent.

5.7 Hazardous Wastes

Majority of the wastes (spend oils, lubricants and oily sludges etc.) sold to the potential users with necessary authorization for reprocess/reuse.

5.8 Power Requirement & Supply/Source

Power requirement for the Pellet Plant is 6.6kV

Source: Karnataka State Electricity Board

6. REHABILITATION AND RESETTLEMENT (R & R) PLAN

The project came up on 41 Acres area. Total land 113 Acres is already in Industrial Use.

7. ANALYSIS OF PROJECT

7.1 Financial and Social Benefits

In order to meet the growing demand of iron ore pellets required as raw material in steel plants, M/s MSPL produces 1.2 MTPA iron ore pellets. In view of the increasing demand for Iron Besides, there are immense social benefits of the project, to the region.

7.1.1 Improvements in the Physical Infrastructure

MSPL has envisaged a lot of infrastructure developmental works in the periphery area.

i. Improving and building road network in the adjoining villages.
ii. Strengthening School buildings with playgrounds.
iii. Providing the Drinking Water Facilities.

7.1.2 Improvements in the Social Infrastructure

i. Employment, direct and indirect for the local predominantly tribal people.

ii. Social awareness programme improved by the local authority such as sanitation and hygiene, health, immunization etc.

iii. Through this project, adult education and female education is provided to the illiterate adults and backward females of the villages in the project surrounding area. Sponsor the education to Poor Students of the Area.

iv. The project has set up training centre & tie up with Industrial Technical Institutes to educate local youth as skilled labour.

v. Provide & conduct the Free Eye & Health Check up Programmes.