

1.1 GREEN BELT DEVELOPMENT

The green belt shall be developed as per approved eco-friendly mine lease plan and as per CPCB guidelines. The project proponent shall also develop greenbelt in the premises of the schools, hospitals and also carry out the avenue plantation in the vacant areas along roads. The greenbelt shall be developed by planting saplings per year. Indigenous species with the consultation of the State Forest Department shall be planted and maintained.

1.1.1 Plan for Link road and haulage road

This mining site is located near Bhaursha village district Nainital and connected with the metalled road. There one village is already available for mineral transportation which is connect mine site with District road and The total length of haul road 2.51 Km which will be maintained by the PP. Its annual maintenance cost is 0.50 Lakhs this amount will be utilized from the EMP budget.

Under the afforestation plan, plantation in nearby villages and connecting roads will be done. The implementation for development of greenbelt will be of paramount importance as it will not only add up as an aesthetic feature but will also act as a pollution sink. The species to be grown in the areas will be dust tolerant and fast growing species so that a permanent greenbelt is created. Plantation in the barrier zone and roads is necessary as these areas will contain fine particulates resulting from mining operation and vehicle movement Plantation will also be carried out as social forestry program in village, school and the areas allocated by the Panchayat/State authorities. Native plants and other local species will be planted. A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt. It is proposed to plant **2970 Nos** of native species along with some fruit bearing and medicinal trees. The greenbelt development program is given in **Table 10.1**.

Table -1: Plan for Afforestation

Year	Saplings to be planted	Survival (@ 70%)	Species	Place of Plantation
1 st	2970	2376	Peepal, Ber, Shisham, Jamun and other native species as per DFO Nainital.	<ul style="list-style-type: none">• Along the motorable road• Plantation in nearby Village. Plantation in schools, panchayat land and in surrounding office & rest shelter and other social forestry program.
2 nd	2970	2376		
3 rd	2970	2376		
4 th	2970	2376		
5 th	2970	2376		
Total	14850	11880		

1.2 Guidelines for plantation

The plant species identified for greenbelt development shall be planted using pitting technique. The pit size will be either 45 cm x 45 cm x 45 cm or 60 cm x 60 cm x 60 cm. bigger pit size will be considered at marginal and poor quality soil. Soil used for filling the pit should be mixed with well decomposed farm yard manure or sewage sludge at the rate of 2.5 kg (on dry weight basis) and 3.6 kg (on dry weight basis) for 45cm x 45 cm x 45 cm and 60 cm x 60 cm x 60 cm size pits respectively. The filling of soil should be completed at least 5-10 days before actual plantation. Healthy sapling of

identified species should be planted in each pit with the commencement of monsoon. Provision for regular and liberal watering during the summer period during the commissioning stage of the plant will be arranged from the local available resources. The authorities responsible for plantation will also make adequate measures for the protection of the saplings. While making choices of plant species for cultivation in green belt, weightage has been given to the natural native species, bio climatic condition, plants which can be grown as per normal horticultural practices. Plant species identified for greenbelt development, considering the bio-climatic and soil condition.

1.2.1 Selection of Plants for Greenbelts

The main limitation for plants to function as scavenger of pollutants are, plant's interaction to air pollutants, sensitivity to pollutants, climatic conditions and soil characteristics. While making choice of plants species for cultivation in green belts, due consideration has to be given to the natural factor of bio-climate. Xerophytes plants are not necessarily good for greenbelts; they with their sunken stomata can withstand pollution by avoidance but are poor absorber of pollutants. Character of plants mainly considered for affecting absorption of pollutant gases and removal of dust particle are as follows.

A. For absorption of gases:

- Tolerance towards pollutants in question, at concentration, that are not too high to be instantaneously lethal
- Longer duration of foliage
- Freely exposed foliage
- Adequate height of crown
- Openness of foliage in canopy
- Big leaves (long and broad laminar surface)
- Large number of stomatal apertures

B. For Removal of Suspended Particular matter:

- Height and spread of crown.
- Leaves supported on firm petiole
- Abundance of surface on bark and foliage
- Roughness of bark
- Abundance of axillaries hairs
- Hairs or scales on laminar surface
- Protected Stomata

C. Objective of Plan:

The main purpose of this plan is to develop greenbelt and landscape at project site so that following specific purpose is met with after completion of the project:

- a- General pollution abatement.
- b- Air pollution attenuation.
- c- Dust absorption.

As envisaged in the National Forest Policy 1988 that one third of the total area should be under green cover to maintain ecological balance in the country. It is very difficult target to attain agricultural state but their enormous scope for attaining this target under the developmental projects where the project is designed as fresh and there is change of land use from agriculture primarily to other uses.

Therefore, to attain the target as envisaged under State Forest Policy and National Forest Policy, the provision of green belts/avenue plantations is made under developmental projects. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species proposed should be long rotation, ornamental, evergreen, hardy, wind firm. The species suitable for urban areas should have capacity to combat pollution.

The detail of the areas proposed under various components is given below:

- i. Plantation along the Haul Road starting from core area to mottled road= 2510
- ii. Total no. of plants to be planted: 2970 Nos.

Table-2 List of Species for Greenbelt Development

S. No.	Scientific Name	Common Name	Type	Effective in Control
1.	<i>Pinus roxburghi</i>	Chir	Tree	Air Pollution
2.	<i>Acacia nilotica</i>	Babool	Tree	Air Pollution
3.	<i>Zizyphus mauratiana</i>	Ber	Tree	Air Pollution, noise pollution
4.	<i>Aegle marmelos</i>	Bel	Tree	Air Pollution, noise pollution
5	<i>Delbergia sissoo</i>	Shisham	Tree	Air Pollution, noise pollution
6.	<i>Ficus religiosa</i>	Pipal	Tree	Air Pollution, noise pollution
7.	<i>Ficus bengalensis</i>	Bargad	Tree	Air Pollution, noise pollution
8.	<i>Ficus glomerata</i>	Gullar	Tree	Air Pollution, noise pollution
9.	<i>Melia azedarch</i>	Bakain	Tree	Air Pollution, noise pollution
10.	<i>Syzygium cumini</i>	Jamun	Tree	Air Pollution, noise pollution

Table-3: Budgetary outlets of greenbelt development for five years

S. No.	Year	No. of plants	Budget (Rs. in Lakhs)
1.	I	2970	0.50
2.	II	2970	0.50
3.	III	2970	0.50
4.	IV	2970	0.50
5.	V	2970	0.50
Total		14850	2.50

Total budget for the project=2.50 lakhs for 5 year

D. Plantation program

In this mining project we are proposed to plant 2970 numbers of native species per year along with some fruit bearing and medicinal trees during the plan period. The name of species with their

importance is given in the **Table no-10-4**. The plantation will be done on the 1980 m area and the spacing between the trees is 3m.

Table Error! No text of specified style in document.-4: Plantation Program

Mine Lease Area (Ha.)	6.00
33% Plantation area (Ha.)	1.98
Total No of plants @ 1500/ha	2970
Life of Mine (Yrs.)	5 yr
Total Length of Road for Plantation (m)	2510
Plantation on both side of the road (3mt spacing)	$(2510 \text{ m} * 2) / 3\text{m}$ = 1673 plants
Total plantation on Village, School and Gram Panchayat area and on the river bank	$2970 - 1673 = 1296$
Total no of plant	2970