Green Belt Development Plan

1.0 Greenbelt / Plantations Programme:

Greenbelt means planting of special type of plants suitable to that particular agroclimate zone and soil characteristics in a place which will make the area cooler, reduce air pollution, prevent soil erosion and further improve the soil fertility status. A green belt around the periphery of boundary and road side will be created to avoid erosion of soil, prevention of landslides, minimize the air pollution and noise pollution in the project area. The green plants are capable of absorbing air pollutants and forming sinks for pollutants. Leaves with their vast area in a tree crown, absorb pollutants on their surface, effectively reducing their concentration and noise level in the ambient.

According to the CPCB guide line there are 15 Agroclimatic regions, each of these region is further divided in to 68 sub zones based on annual rain fall, Climatic condition and soil types. The species recommended for the Greenbelt are quite adopted to such Climatic condition and grow well in the above soil types.

Existing Green Belt

Adequate green belt has already been developed in and around the existing plant premises. Locally available types of sufficient trees which are resistant to pollutants are and will be planted. Out of the existing 260 Acres of land, green belt will be developed in 86 Acres i.e. 33% of the existing land area. Local species are used in green belt.

Proposed Green Belt

Extensive green belt development will be started during the construction phase, which will continue till the operation of the plant. About 1500-2000 trees will be planted per hectare all around the plant, approach roads and township premises. Locally available types of trees which are resistant to pollutants will be planted. In addition to above, all open spaces available within the premises will be developed as nursery, park, gardens and other forms of greenery. 5 m wide greenbelt will be developed along the plant premises, as per land available. A nursery will be developed where 100,000 saplings will be raised every year for plantation purpose. Apart from greenbelt, extensive lawns, gardens and approach road-side plantation will be carried out at all vacant spaces inside the plant premises.

1.0.1 Guidelines & Techniques for Green Belt Development:

Extensive survey in the project area was undertaken to observe the structure and composition of vegetation. Hence a combination of plant is selected depending upon the topographical suitability and species selected as per SPCB Guideline. The soil characteristics were kept in mind. Based on this survey and environmental conditions suitable native plants species have been proposed for green belt development plan. Plantation along roads must take into account visibility aspects on curves so as to ensure safe driving. Plantation will be done in

a three tier system consisting of large trees, smaller trees and shrubs, Whereas some grasses and flowering plants are grown on lawns and garden.

1. First layer consisting of shrubs and grasses.
2. Second layer consisting of smaller trees.

1.0.2 Development of Green Belt:

The plantation matrix adopted for the green belt development includes pit of 0.3 m x 0.3 m size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration.

Multi-layered plantation comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt. In addition creepers will be planted along the boundary wall to enhance its insulation capacity.

Greenbelt is a set of rows of trees planted in such a fashion, to create effective barrier between the project and surroundings. The greenbelt helps to capture the fugitive emissions, attenuate the noise levels in the existing project and simultaneously improving aesthetics of the surroundings. The greenbelt around the industry wall will be developed in keeping view of the following objectives.

1. Planting of trees in each row will be in staggered pattern.
2. The short trees will be planted in the first rows and the tall trees in the outer rows around the purview of the project site.
3. Since the trunks of the trees are generally devoid of foliage, it will be useful to have shrubs in front of the trees so as to give coverage to this portion.
4. Sufficient spacing will be maintained between the trees to facilitate effective height of the greenbelt.
5. Plants of native origin, fast growing type with canopy and large leaf index shall be preferred.

1.0.3 Selection of Plant Species for Green Belt Development:

The selection of plant species for the development depends on various factors such as climate, elevation and soil. The plants would exhibit the following desirable 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 should be indigenous and locally available.
5. Species tolerance to air pollution like SO_2 and NO_2 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. Trees with high foliage density, leaves with larger leaf area and hairy on both the surfaces.
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 species.
13. Sustainable green cover with minimal maintenance.

Table No. 1: Tree species selected for Greenbelt as per CPCB

TYPE	Botanical Name	Common Name
SCHEDULES OF TREES		
T1	Caesalpinia pulcherrima	Krushnachuda
T2	Peltophorum ferrugineum	Radhachuda
T3	Mesua feria	Nageswar
T4	Azadirachta indica	Neem
T5	Millingtonia hortensis	Akash neem
T6	Calophyllum inophyllum	Polango
T7	Saraca indica	Ashok
T8	Pongamia glabra	Karanja
T9	Michelia champaca	Champa
T10	Mimusops elengi	Bakul
T11	Morus australis	Tuta
T12	Thespesia populnea	Umbrella tree
T13	Aegle marmelos	Bela
T14	*Mangifera indica*	Mango
T15	*Phyllanthus emblica*	Amla
T16	*Psidium guava*	Guava
T17	*Tamarindue indica*	Tentuli
T18	*Sanmanea saman*	Bada chakunda
T19	*Syzygium cumini*	Jamu
T20	*Alstomia scholaris*	Chatina
T21	*Leucaena leucocephala*	Su Babul
T22	*Annona squamosa*	Sitaphala
T23	*Saraca asoca*	Ashoka
SCHEDULES OF LARGE SHRUB		
S1	*Thevetia peruviana*	Kaniar
S2	*Ervatamia divaricata*	Tagar
S3	*Hibiscus chinensis*	Mandar

S4	*Nerium oleander*	Karabik
S5	*Murraya exotica*	Kamini
S6	*Cassia fistula*	Sunari
S7	*Spathodea campanulata*	Mysore green
S8	*Cestrum nocturnum*	Hena
S9	*Bouhaminvilla spectalillis*	Kagaj phool

1.0.4 Preparation for Seedlings:

1.0.4.1 To undertake plantation on site, following steps will be taken:

1. Obtaining Healthy seedlings from nursery
2. Preparation of pits and preparing them for transfer of seedlings
3. Take care of seedlings after plantation in pits

1.0.4.2 Pit and Soil Preparation:

1. The pit size has been recommended as 45 cm x 45 cm x 45 cm for trees and 30 cm x 30 cm x 30 cm for shrubs.
2. The spacing for trees is proposed 2 m while 1 m for shrubs plantation.
1. The pits should be watered prior to plantation of seedlings.

1.0.4.3 Post Care Facilities:

2. The growing plants are cared at least for the first 3 years under favourable condition of climate and irrigation.
3. For healthy and vigorous growth adequate nutrient will be supplied.
4. To avoid water stress condition regular watering will be done.