

## **Impact of the Proposed Diversion of 4.41 Ha of Forest land for Quartz & Feldspar Mining on the flora and fauna in adjoining Reserve Forests (Ecology & Biodiversity & soils)**

### **Study and Report by**

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**Sub:** Diversion of 4.41 Ha of forest land for grant of quarry lease for Quartz & Feldspar in survey number 553 / P of Chaganam Village & R.F., Sydapuram Mandal, SPSR Nellore District in favour of M/s Chettinad Morimura Semiconductor Material Pvt. Ltd., - Study of the proposed mining on nearby forests, Ecology, Biodiversity and wildlife –Reg.

**Ref:** 1.Letter from the PCCF, Guntur Letter No. Rc.no. 9246/2017-FCA. 2(iii),  
Dated: 12/12/2017  
2. Letter from PCCF Guntur letter No EFS02 - 15029/57/2018-FCA SEC-  
PCCF/FCA-3(ii), dated 26/12/2021.

### **I.i: Introduction**

With reference to the letters cited above, it is proposed to divert 4.41 Ha of forest land for grant of quarry lease for Quartz & Feldspar in survey No.553/P of Chaganam RF (Compartment No.122), Sydapuram (M), SPSR Nellore District in favour M/s Chettinad Morimura Semiconductor Material Pvt. Ltd.

In accordance with the Forest Conservation Act (1980) the project proponent engaged the services of Prof. K.B. Reddy, for assessing the impacts of the proposed diversion of forest land and the mining on the flora & fauna in adjoining RFs through primary survey. The survey also taken in to consideration the preventive and protective measures that need to be incorporate as a part of Environment, Ecology and biodiversity conservation. Primary survey was carried during the first week of July 2022. The objective of the assessment area:

1. Assessment of the flora and fauna of the proposed forest diversion of and biodiversity for mining purposes and the adverse impacts of the proposed action if the forest land is diverted.
2. Assessment of the status of flora and fauna of the forest and non-forest areas with special reference to rare or endangered or threatened (RET) species and the Schedule I fauna, if any.
3. Whether the proposed diversion and activity is compatible with the National and global objectives of "No net loss of biodiversity"?
4. The assessment also takes in to account the impact of the proposed mining on ecology, especially, soil erosion in and around the mining which may cause

sedimentation and silting of lotic and lentic water bodies around the proposed my lease.

5. To suggest desirable and practically feasible mitigative measures to prevent loss to flora and fauna besides prevention of soil erosion in and around the proposed mining area.

## I.ii: Proposed Mine Lease Area: Extent and location of land proposed for diversion:

The proposed quarry lease area of M/s Chettinad Morimura Semiconductor Material Pvt. Ltd. is located in survey No.553/P of Chaganam Village and RF (Compartment No.122), Marlapudi Section, Sydapuram (M), SPSR Nellore District. The total RF area proposed to be diverted is 4.41Ha and the area falls in survey No. 553 of Chaganam Reserve Forest of Sydapuram Mandal of Nellore Division. Out of the total area of 4.41 Ha, 3.6 Ha is for actual mining, 0.66 Ha for Safety Zone and 0.30 Ha for Road area as shown in Table 1. Contours and coordinates of the proposed 4.41Ha of reserve forest land to be diverted for mining and connecting road is shown in Fig 1.

Table 1. Proposed purpose for which the forest land is meant for		
S.No	Description	Area in Ha
1	Mining area	3.6
2	Safety zone area	0.66
3	Road area	0.30
	<b>Total</b>	<b>4.41</b>

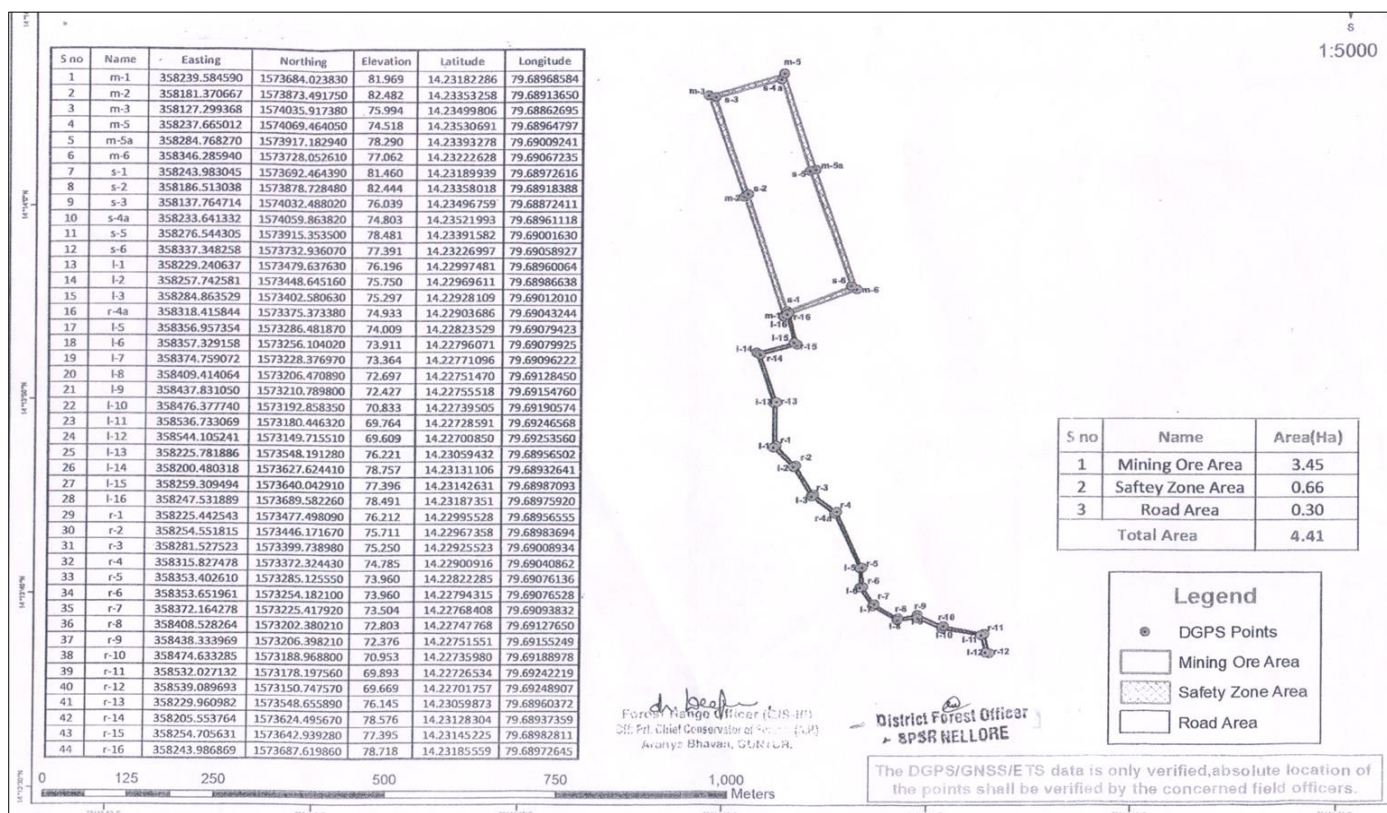


Fig 1. Official map showing the contours and coordinates of the proposed 4.41Ha of reserve forest land to be diverted for mining and connecting road.

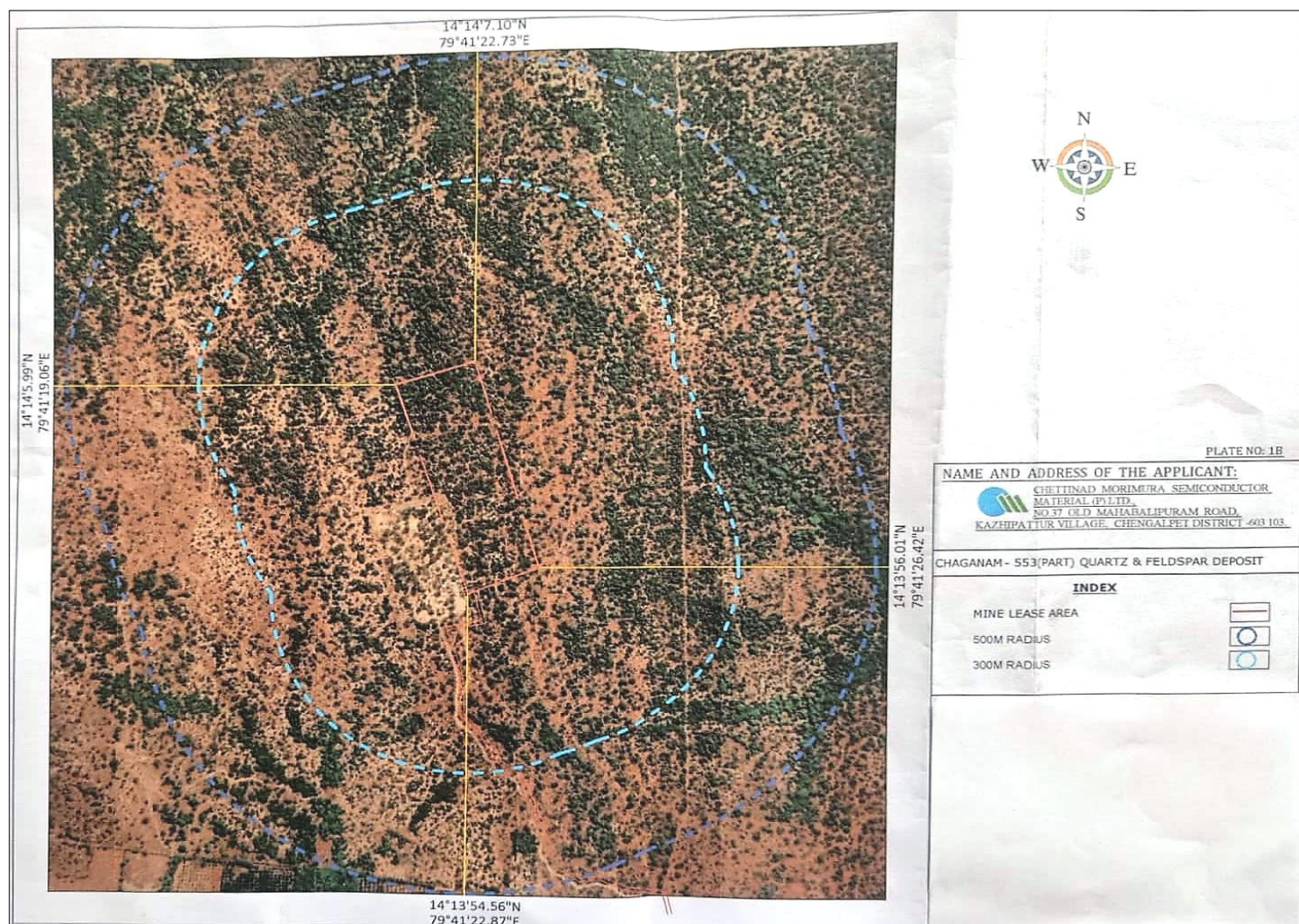


### I.iii: Eco-sensitivity of the proposed mine lease:

There are no Eco-sensitive areas such as the Biosphere reserves or National Parks or Wildlife Sanctuaries or migratory corridors of Elephants or Tigers or Nature Heritage sites or important bird areas (Ibans) or Ramsar wetlands or other protected areas except reserve forests within a radius of 10 km from the mine lease area. Sri Penusila Narasimha Wildlife Sanctuary, Nelapattu Bird Sanctuary and the Pulicat Lake Bird Sanctuary are 10 Kms, 57 Kms and 52 Kms respectively from the proposed mine area.

There are a few scattered isolated blocks of reserved forests and mica mines within 10 km from the proposed mine area. There, are also a few hills and hillocks in the buffer zone. The Chaganam R.F in which the proposed mine lease falls and other forests in the buffer zone belong to Southern dry evergreen scrub. Trees are uncommon and thorny shrubs, succulents and drought-resistant shrubs are predominant. Based on plant cover they range from open to moderately closed dense scrub forests.

There are scattered patches of impenetrable thickets overgrown by climbers. The study area comprising of the mine lease (Core area) and its buffer zone of 10 km radius. There are a number of Mica, Quartz & Feldspar mines around the proposed Quartz & Feldspar mine.



Topo Map of the study area.

## II: BASELINE DATA

### II.i: Forest vegetation and Flora of the reserved forests in and around the proposed mine lease:

As a part of the present study, a rapid primary survey of vegetation, flora and fauna within a radius of 10 km from the proposed project site was carried out in July 2022 covering the area shown in Fig 1. As per Champion and Seth's classification, SPSR Nellore Division has five major forest types. They are: (1) Dry Red Sanders bearing forest, (2) Southern Tropical Dry Mixed Deciduous forests, (3) *Hardwickia binata* forest, (4) Southern Tropical Thorn Forest and (5) Southern Tropical Dry evergreen forest. The RFs in the study area come under the Southern Tropical Thorn Forest and Southern Tropical Dry evergreen forests.

There was no distinct demarcation between the two in the study area. There was no zonation and merging or mixing of one type with the other was pretty common. The forest vegetation was altered by the invasion of Mesquite (*Prosopis juliflora*) which occupied many forest gaps and open areas both in the forest and non-forest areas. There were also invasive shrubs like Siam weed (*Chromolaena odorata*), Lantana (*Lantana camara*) and *Hyptis suaveolens*.

Rao (1991) studied the flora and vegetation of Nellore district. He reported 926 species belonging to 525 genera and 142 families. Dry deciduous forests, mixed forests, scrub forests, coastal and mangrove vegetation are the chief vegetation types in the district. The forests found in the study area belong to the Scrub forests. They are seen in all parts of the Sri Potti Sriramulu Nellore (SPSR Nellore) district.

The trees like *Bauhinia racemosa*, *Butea monosperma*, *Albizia amara* and thorny shrubs such as *Acacia horrida*, *Carissa spinarum*; *Ziziphus nummularia*; evergreen shrubs like *Dodonaea viscosa* were predominant. *Ziziphus xylopyrus*, *Ziziphus oenoplea*, *Ziziphus nummularia*, *Trema orientalis*, *Drypetes sepiaria*, *Tarennia asiatica* etc are common in these forests. Succulents like *Opuntia dillenii*, *Euphorbia antiquorum*, *Euphorbia tirucalli*, *Cissus quadrangularis* are quite common.

The thorny shrubs are overgrown by *Daemia extensa*, *Wattakaka volubilis*, *Canavalia gladiata*, *Leptadenia reticulata*, *Tinospora cordifolia*, *Cardiospermum halicacabum*, *Cassytha filiformis*, *Cissampelos pareira*, *Cocculus hirsutus*, *Corallocarpus epigaeus*, *Decalepis hamiltonii*, *Hiptage benghalensis*, *Piper sylvestre*, *Tylophora indica* etc. The ground is covered by grasses and forbs. *Spermacoce hispida*, *Ocimum canum*, *Senna uniflora*, *Celosia argentea*, *Andrographis echinoides*, *Lepidagathis cristata* and many others. All gaps in the forests are extensively covered by *Prosopis juliflora*.

According to the records of the forest department, the density of the adjacent RF is 0.4. This area falls in Eco-Class IV (Tropical thorn forests and tropical dry evergreen forests. They are moderately dense scrub forests. This area does not fall in any Sanctuary. The species such as *Drypetes sepiaria*, *Albizia lebbek*, *Atalantia monophylla*, *Bauhinia racemosa*, *Ziziphus xylopyrus*, *Acacia leucophloea*, *Diospyros chloroxylon*, *Dodonaea viscosa*, *Carissa spinarum*, *Euphorbia antiquorum* etc are the most predominant species both in the proposed mine lease area and in the forests of the buffer zone.

According to the official record of the forest department, the total number of trees found in the 4.41 Ha was 296 with an average density of about 67 per Ha. Almost 69% of the 296 trees have a girth range of 31 to 60 Cm. A list of 17 tree species whose numbers, height, girth and volume were measured by the forest department for calculation of NPV is given in Table 2. There are no endemic or threatened taxa in the forests of the study area. A list of all plant species found in the Proposed mine lease area (Core area) is given in Table 3.

A list of all plants found in the Reserve forests around the mine lease in 10 km radius is presented in Table 4. It may be stated that this is not an EIA report and hence detailed list of flora present in the non-forest areas of the buffer zone is not included. In accordance with the terms of reference, only the list of species found in the reserve forests is given in Table 4. Photos of the existing vegetation of the proposed mine lease within the Chaganam RF are shown in Figs 2, 3 and 4.

As the Chaganam RF block is relatively large and isolated, it was least exposed to biotic pressure and hence the shrub or small tree like plant have become relatively large. The forest is only a very minor source of NTF such as the minor forest fruits like *Carissa*, *Ber*, and *Canthium* etc.

**Table 2. Statement showing the Trees in the Forest Land in Compartment No.122 over an extent of 4.41 Ha in Chaganam RF, Chaganam Beat of Venkatagiri Range, Nellore Division for grant of Quarry lease for Quartz and Feldspar in favour of M/s.Chettinad Morimura Semiconductor Material Pvt.Ltd.,**

Botanical Name of the Tree	Local Name of the Tree	Family	No.of Trees
<i>Acacia leucophloea</i>	Tella tumma	Mimosaceae	6
<i>Acacia nilotica</i>	Baliya / Nalla thumma	Mimosaceae	2
<i>Albizia lebbek</i>	Dirisanam	Mimosaceae	84
<i>Albizia procera</i>	Pachari	Mimosaceae	21
<i>Atalantia monophylla</i>	Adivi Nimma	Rutaceae	67
<i>Azadirachta indica</i>	Vepa	Meliaceae	2
<i>Bauhinia racemosa</i>	Aare	Caesalpiniaceae	22
<i>Dichrostachys cinerea</i>	Veluturu	Mimosaceae	1
<i>Diospyros chloroxylon</i>	Ulindra	Ebenaceae	11
<i>Dolichandrone falcata</i>	Oodi	Bignoniaceae	2
<i>Drypetes sepiaria</i>	Cheekereni	Putranjivaceae	62
<i>Gmelina arborea</i>	Gummadi Teku	Verbenaceae	1
<i>Ixora arborea</i>	Koya	Rubiaceae	1
<i>Strychnos nux-vomica</i>	Musti	Loganiaceae	4
<i>Syzygium cumini</i>	Neredu	Myrtaceae	3
<i>Wrightia tomentosa</i>	Reppala	Apocynaceae	1
<i>Ziziphus xylopyrus</i>	Gotti	Rhamnaceae	6
<b>Total</b>			<b>296</b>

Maximum girth is below 120 Cm and they have no timber value and they are not suitable for use as poles. Total volume of the firewood was 16.1648 cu.m and the NPV was Rs.12949.15, according to the official enumeration report. Net Present value of the firewood is zero since there is no demand for firewood on account of the subsidized / free supply of LPG.





Fig 2. Proposed road area to the mine lease on the left and a dense patch of thorny shrubs on the right.



Fig 3: Glimpses of vegetation and flora of the forest area proposed to be diverted.





**Vegetation, terrain and topography of the mine lease area**

Fig 4: Vegetation of the forest land proposed to be diverted

<b>Table 3. List of all plants found in the proposed mine lease during July 2022.</b>			
Scientific name	Common / local name	Family	Habit
<i>Acacia leucophloea</i>	Tella tumma	Mimosaceae	Tree
<i>Acacia nilotica</i>	Nalla thumma	Mimosaceae	Tree
<i>Achyranthes aspera</i>	Vuttareni	Amaranthaceae	Herb
<i>Albizia lebbek</i>	Dirisanam	Mimosaceae	Tree
<i>Albizia procera</i>	Pachari	Mimosaceae	Tree
<i>Alhagi camelorum</i>	Camelthorn	Fabaceae	Shrub
<i>Atalantia monophylla</i>	Adivi Nimma	Rutaceae	Tree
<i>Azadirachta indica</i>	Vepa	Meliaceae	Tree
<i>Bauhinia racemosa</i>	Aare	Caesalpiniaceae	Tree
<i>Boerhavia diffusa</i>	Punarva	Nyctaginaceae	Herb
<i>Calotropis procera</i>	Jilledu	Asclepiadaceae	Shrub
<i>Canthium dicoccum</i>	Nalla balusu	Rubiaceae	Shrub
<i>Carissa spinarum</i>	Vaaka / Kalivi	Apocynaceae	Shrub
<i>Cassia auriculata</i>	Tangedu	Caesalpiniaceae	Shrub
<i>Chromolaena odorata</i>	Siam weed	Asteraceae	Shrub
<i>Cissus quadrangularis</i>	Nalleru	Vitaceae	Climber
<i>Cryptostegia grandiflora</i>	Rubber Wine	Asclepiadaceae	Climber
<i>Decalepis hamiltonii</i>	Peru Nannari	Periplocaceae	Climber
<i>Dichanthium annulatum</i>	Marvel grass	Poaceae	Grass
<i>Dichrostachys cinerea</i>	Veluthuru Chettu	Mimosaceae	Tree
<i>Diospyros chloroxylon</i>	Ulindra	Ebenaceae	Tree
<i>Dodonaea viscosa</i>	Bandedu	Sapindaceae	Shrub
<i>Dolichandrone falcata</i>	Oodi	Bignoniaceae	Tree

Contd...

<i>Drypetes sepiaria</i>	Cheekereni / Hedge Boxwood	Putranjivaceae	Tree
<i>Euphorbia antiquorum</i>	Jemudu	Euphorbiaceae	Shrub
<i>Euphorbia tirucalli</i>	Pencil Tree	Euphorbiaceae	Shrub
<i>Flueggea virosa</i>	White berry bush	Phyllanthaceae	Shrub
<i>Gmelina arborea</i>	Gummadi Teku	Verbenaceae	Tree
<i>Heteropogon contortus</i>	Spear grass	Poaceae	Grass
<i>Holoptelea integrifolia</i>	Nemalinara	Ulmaceae	Tree
<i>Hyptis suaveolens</i>	American Mint	Lamiaceae	Herb
<i>Ipomoea carnea</i>	Pink Morning glory	Convolvulaceae	Shrub
<i>Ixora arborea</i>	Koya	Rubiaceae	Tree
<i>Jatropha curcas</i>	Wild Castor	Euphorbiaceae	Shrub
<i>Lantana camara</i>	Lantana	Verbenaceae	Shrub
<i>Mimosa rubicaulis</i>	Rasne / Urisige	Mimosaceae	Shrub
<i>Opuntia elatior</i>	Prickly Peer	Cactaceae	Shrub
<i>Pergularia daemia</i>	Chebira	Asclepiadaceae	Climber
<i>Prosopis juliflora</i>	English Thumma	Mimosaceae	Tree
<i>Randia dumetorum</i>	Nalla balusu	Rubiaceae	Shrub
<i>Solanum torvum</i>	Turkey berry	Solanaceae	Shrub
<i>Solanum xanthocarpum</i>	Yellow berried nightshade	Solanaceae	Herb
<i>Strychnos nux-vomica</i>	Musti	Loganiaceae	Tree
<i>Syzygium cumini</i>	Neredu	Myrtaceae	Tree
<i>Tarenna asiatica</i>	Konda papdi	Rubiaceae	Shrub
<i>Tridax procumbens</i>	Coat buttons	Asteraceae	Herb
<i>Tylophora indica</i>	Naippalai	Assclepiadaceae	Climber
<i>Vachellia horrida</i>	Robber Thorn	Mimosaceae	Shrub
<i>Waltheria indica</i>	Sleepy morning	Malvaceae	Herb
<i>Wattakaka volubilis</i>	Sneeze Wort	Asclepiadaceae	Climber
<i>Wrightia tomentosa</i>	Reppala	Apocynaceae	Tree
<i>Ziziphus nummularia</i>	Nela regu	Rhamnaceae	Tree
<i>Ziziphus xylopyrus</i>	Gotti chettu	Rhamnaceae	Tree

**Table 4. List of trees, shrubs and perennial climbers found in the forests of the buffer zone**

Scientific name	Common / local name	Family	Habit
<i>Abutilon indicum</i>	Duvvena benda	Malvaceae	Shrub
<i>Acacia chundra</i>	Sandra	Mimosaceae	Tree
<i>Acacia leucophloea</i>	Tella thumma	Mimosaceae	Tree
<i>Acacia nilotica</i>	Nalla thumma	Mimosaceae	Tree
<i>Acanthospermum hispidum</i>	Mulla banthi	Asteraceae	Shrub
<i>Agave americana</i>	Kalabanda	Agavaceae	Shrub
<i>Alangium salvifolium</i>	Nalla Vuduga	Alangiaceae	Tree
<i>Albizia amara</i>	Narlinga	Mimosaceae	Tree



<i>Albizia lebbek</i>	Dirisanam	Mimosaceae	Tree
<i>Albizia procera</i>	Pachari	Mimosaceae	Tree
<i>Alhagi camelorum</i>	Camelthorn	Fabaceae	Shrub
<i>Antigonon leptopus</i>	Coral Creeper	Polygonaceae	Climber
<i>Atalantia monophylla</i>	Adivi Nimma	Rutaceae	Tree
<i>Azadirachta indica</i>	Vepa	Meliaceae	Tree
<i>Bauhinia racemosa</i>	Aare	Caesalpiniaceae	Tree
<i>Calotropis gigantea</i>	Tella jilledu	Asclepiadaceae	Shrub
<i>Calotropis procera</i>	Jilledu	Asclepiadaceae	Shrub
<i>Canthium dicoccum</i>	Nalla balusu	Rubiaceae	Shrub
<i>Cardiospermum halicacabum</i>	Budda budusa	Sapindaceae	Climber
<i>Carissa spinarum</i>	Vaaka / Kalivi	Apocynaceae	Shrub
<i>Cassia auriculata</i>	Tangedu	Caesalpiniaceae	Shrub
<i>Cassia fistula</i>	Rela	Caesalpiniaceae	Tree
<i>Catunaregam spinosa</i>	Managa	Rubiaceae	Shrub
<i>Chromolaena odorata</i>	Siam weed	Asteraceae	Shrub
<i>Cissus gaudrangularis</i>	Nalleru	Vitaceae	Climber
<i>Cissus vitiginea</i>	Adavi gummadi	Vitaceae	Climber
<i>Clerodendrum splendens</i>	Bharangi	Verbenaceae	Shrub
<i>Cryptostegia grandiflora</i>	Rubber Wine	Asclepiadaceae	Climber
<i>Decalepis hamiltonii</i>	Peru Nannari	Periplocaceae	Climber
<i>Dichrostachys cinerea</i>	Veluturu	Mimosaceae	Tree
<i>Diospyros chloroxylon</i>	Ulindra	Ebenaceae	Tree
<i>Dodonaea viscosa</i>	Bandedu	Sapindaceae	Shrub
<i>Dolichandrone falcata</i>	Oodi	Bignoniaceae	Tree
<i>Drypetes sepiaria</i>	Cheekereni	Putranjivaceae	Tree
<i>Euphorbia antiquorum</i>	Jemudu	Euphorbiaceae	Shrub
<i>Euphorbia dracunculoides</i>	Tillakada	Euphorbiaceae	Shrub
<i>Ficus hispida</i>	Hairy Fig	Moraceae	Tree
<i>Ficus benghalensis</i>	Marri	Moraceae	Tree
<i>Ficus racemosa</i>	Medi	Moraceae	Tree
<i>Ficus religiosa</i>	Raavi	Moraceae	Tree
<i>Flueggea virosa</i>	White berry bush	Phyllanthaceae	Shrub
<i>Gardenia resinifera</i>	Konda manda	Rubiaceae	Shrub
<i>Gmelina arborea</i>	Gummadi Teku	Verbenaceae	Tree
<i>Grewia villosa</i>	Tavidu / Tavadu	Tiliaceae	Tree
<i>Hiptage benghalensis</i>	Madhavalatha	Malpighiaceae	Climber
<i>Holoptelea integrifolia</i>	Nemalinara	Ulmaceae	Tree
<i>Ipomoea cairica</i>	Cairo morning glory	Convolvulaceae	Climber
<i>Ipomoea carnea</i>	Bush morning glory	Convolvulaceae	Climber
<i>Ipomoea carnea</i>	Pink Morning glory	Convolvulaceae	Shrub
<i>Ipomoea coccinea</i>	Red star	Convolvulaceae	Climber
<i>Ipomoea hederacea</i>	Obscure morning glory	Convolvulaceae	Climber

<i>Ipomoea obscura</i>	Goat's foot	Convolvulaceae	Climber
<i>Ipomoea palmata</i>	Railway Creeper	Convolvulaceae	Climber
<i>Ixora arborea</i>	Koya	Rubiaceae	Tree
<i>Jatropha curcas</i>	Wild Castor	Euphorbiaceae	Shrub
<i>Jatropha gossypifolia</i>	Siria Amanakku	Euphorbiaceae	Shrub
<i>Lantana camara</i>	Lantana	Verbenaceae	Shrub
<i>Leonitis nepetaefolia</i>	Lion's ear	Lamiaceae	Shrub
<i>Leucaena leucocephala</i>	Subabul	Mimosaceae	Tree
<i>Merremia aegyptia</i>	Hairy woodrose	Convolvulaceae	Climber
<i>Merremia dissecta</i>	White convolvulus creeper	Convolvulaceae	Climber
<i>Merremia emarginata</i>	Kidney leaf morning glory	Convolvulaceae	Climber
<i>Mimosa rubicaulis</i>	Rasne / Urisige	Mimosaceae	Shrub
<i>Opuntia elatior</i>	Prickly Peer	Cactaceae	Shrub
<i>Pergularia daemia</i>	Chebira	Asclepiadaceae	Climber
<i>Prosopis juliflora</i>	English Thumma	Mimosaceae	Tree
<i>Prosopis spicigera</i>	Jammi	Mimosaceae	Tree
<i>Randia dumetorum</i>	Nalla balusu	Rubiaceae	Shrub
<i>Rhynchosia minima</i>	Gaddi chikkudu	Fabaceae	Climber
<i>Solanum nigrum</i>	Black nightshade	Solanaceae	Shrub
<i>Solanum trilobatum</i>	Thoodhuvalai	Solanaceae	Shrub
<i>Strychnos nux-vomica</i>	Musti	Loganiaceae	Tree
<i>Syzygium cumini</i>	Neredu	Myrtaceae	Tree
<i>Tylophora indica</i>	Naippalai	Assclepiadaceae	Climber
<i>Vachellia horrida</i>	Robber Thorn	Mimosaceae	Shrub
<i>Vitex negundo</i>	Nirgundi	Verbenaceae	Shrub
<i>Wattakaka volubilis</i>	Sneeze Wort	Asclepiadaceae	Climber
<i>Wrightia tinctoria</i>	Sweet Indrajao	Apocynaceae	Tree
<i>Wrightia tomentosa</i>	Reppala	Apocynaceae	Tree
<i>Ziziphus nummularia</i>	Nela regu	Rhamnaceae	Tree
<i>Ziziphus horrida</i>	Tella regu	Rhamnaceae	Tree
<i>Ziziphus xylopyrus</i>	Gotti chettu	Rhamnaceae	Tree

## II.ii: Present stage and Status of the proposed mine lease area:

As stated earlier, the proposed lease area is located in moderately dense reserve forest dominated mainly by *Drypetes sepiaria*, *Atalantia monophylla*, *Albizia lebbbeck*, *Albizia procera* and *Bauhinia racemosa*. However, none of them was large enough for use as timber. They can be used only as firewood. Besides the 17 species of trees listed by the forest department, many thorny shrubs like *Prosopis juliflora*, *Carissa spinarum*; drought resistant shrubs like *Dodonaea viscosa*, *Cassia auriculata* and succulents like *Euphorbia antiquorum* were very common.

There were no large trees though potentially large tree species like *Albizia lebbbeck*, *Syzygium cumini* and a few Neem trees. All planted in general were stunted on account of hostile environmental conditions. The thorny shrubs of *Carissa*, *Vachellia horrida* and *Ziziphus* in open areas assumed spreading habitat owing to



lack of competition. It looks like an evergreen forest on account of the dominance of non-shedding evergreen shrubs or small trees.

Most of the plants present in the area proposed to be diverted (Table 3) are likely to be destroyed owing to site clearance for mining; opening of mining pits and dumping of over burden and waste. But there shall be no loss of any species listed under the threatened category by the Botanical Survey of India (BSI) since no such species is found in the zone of impact.

### **II.iii: Terrestrial Fauna of the Proposed Mine Lease and the Adjacent Reserve Forests**

The study area under consideration is not a part of any Eco sensitive area. There are no National Parks or Biosphere Reserves or Wildlife Sanctuaries or IBAs or other protected areas like Wetlands other than the village irrigation tanks. There are no breeding grounds or feeding grounds or migratory corridors of any Schedule I species of Wildlife (Protection) Act. There are no cases of conflict between humans and wildlife. A list of vertebrates (other than Aves) either spotted or reported from the study area is given in Table 5. A list of Birds either spotted or reported from the study area is given in Table 6. There are no rare or endangered or threatened (RET) or Schedule I species in the study area.

Table 5. List of vertebrates other than birds either found or known to have been spotted earlier in the study area of 10 Km radius. WPA means Wildlife (Protection) Act. LC means Least concern. NL= Not listed.

<b>MAMMALS:</b>			
Common name	Latin name	Whether found in the core area	IUCN/ WPA
Lesser Bandicoot	<i>Bandicota bengalensis</i>	Yes	LC / IV
Greater Bandicoot	<i>Bandicota indica</i>	Yes	LC / IV
Indian Jackal	<i>Canis aureus</i>	No	LC / II
Three striped squirrel	<i>Funambulus palmarum</i>	Yes	LC / IV
Porcupine	<i>Hystrix indica</i>	No	LC / III
Indian hare	<i>Lupus nigricollis</i>	Yes	LC / IV
Rhesus Monkey	<i>Macaca mulatto</i>	No	LC / II
Indian field rat	<i>Mus booduga</i>	Yes	LC / IV
House rat	<i>Mus muscuus</i>	No	LC / IV
Common Languor	<i>Presbytina entellus</i>	No	LC / II
House Rat	<i>Rattus rattus</i>	No	LC / IV
Fruit bat	<i>Rousettus leschnaulti</i>	No	LC / V
Wild boar	<i>Sus scroffa</i>	Yes	LC / III
Common Mongoose	<i>Herpestes edwardsii</i>	Yes	LC / II
Indian Fox	<i>Vulpes bengalensis</i>	No	LC / II
<b>REPTILES</b>			
Green Vine Snake	<i>Ahaetulla nasuta</i>	Yes	LC / II
Krait	<i>Bungarus caeruleus</i>	Yes	LC / II
Garden lizard	<i>Calotes versicolor</i>	Yes	LC / IV
Chameleon	<i>Chameleon zeylanicum</i>	No	LC / II

Whip Snake	<i>Dryphis nasutus</i>	Yes	LC / II
Grass skink	<i>Eutropis carinata</i>	Yes	LC / IV
Wall lizard	<i>Hemidactylus flaviviridis</i>	Yes	LC / IV
Small wall lizard	<i>Hemidactylus frenatus</i>	Yes	LC / IV
Termite hill Gecko	<i>Hemidactylus triedrus</i>	Yes	LC / IV
Cobra	<i>Naja naja</i>	Yes	LC / II
Rat snake	<i>Ptyas mucosus</i>	Yes	LC / II
Blind Snake	<i>Ramphotyphlops braminus</i>	Yes	LC / II
<b>AMPHIBIANS</b>			
Ordinary frog	<i>Rana hexadactyla.</i>	Yes	LC / NL
South Indian Toad	<i>Bufo melonosticatus</i>	Yes	LC / NL
Tree Frog	<i>Polypedates maculatus</i>	Yes	LC / NL
Burrowing frog	<i>Cacopus bystema</i>	No	LC / NL
Tiger Frog	<i>Rana tigrina</i>	Yes	LC / NL

Table 6: List of Birds either spotted or reported from the study area. Core area is the 4.47 Ha Forest area proposed for diversion. No rare or endangered or threatened (RET) bird species was either spotted or reported.

Latin name	Common name	Local Name	WPA Schedule	Whether found in core area
<i>Accipiter badius</i>	Shikra	Shikra gradda	LC / IV	No
<i>Acridotheres tristis</i>	Common Myna	Goruvanka	LC / IV	Yes
<i>Alauda gulgula</i>	Small sky Lark	Uttara guvva	LC / IV	Rare
<i>Alcedo atthis</i>	Common kingfisher	Lakhumukhi Pitta	LC / IV	Rare
<i>Anthus novaeseelandiae</i>	Paddy field Pipit	Varimadi Pipit	LC / IV	Rare
<i>Apus affinis</i>	House Swift	Babila	LC / IV	Yes
<i>Ardea alba</i>	Large Egret	Pedda tella konga	LC / IV	Rare
<i>Bubulcus ibis</i>	Cattle Egret	Konga	LC / IV	Yes
<i>Burhinus oedicephalus</i>	Stone curlew	Raati curlew	LC / IV	Rare
<i>Butastur teesa</i>	White eyed buzzard	Tella kannu buzzard	LC / IV	Rare
<i>Butorides striatus</i>	Little Green Heron	Chaarala konga	LC / IV	Rare
<i>Cacomantis merulinus</i>	Plaintive Cuckoo	Chaarala Kokila	LC / IV	Rare
<i>Calidris minuta</i>	Little Stint	Chinna stint	LC / IV	Rare
<i>Caprimulgus asiaticus</i>	Indian Night jar	Maamulu night jar	LC / IV	Rare
<i>Centropus sinensis</i>	Crow pheasant	Jamudu kaaki	LC / IV	Yes
<i>Ceryle rudis</i>	Lesser Pied Kingfisher	Lakumukhi Pitta	LC / IV	Rare
<i>Charities dubious</i>	Little Ringed plover	China valaya plover	LC / IV	Rare
<i>Chloropsis</i>	Green bulbul	Bulbul	LC / IV	Yes



<i>aurifrons</i>				
<i>Colomba livia</i>	Blue Rock pigeon	Paavuram	LC / IV	Yes
<i>Copsychus saularis</i>	Magpie Robin	Tella chaara nalla pitta	LC / IV	Yes
<i>Coracias benghalensis</i>	Blue jay	Paala pitta	LC / IV	Rare
<i>Corvus macrorhynchos</i>	Jungle Crow	Adavi kaaki	LC / IV	Yes
<i>Corvus splendens</i>	House crow	Kaaki	LC / V	Yes
<i>Coturnix coturnix</i>	Common quail	Puredu pitta	LC / IV	Yes
<i>Cypsiurus parvus</i>	Palm swift	Taati swift	LC / IV	Yes
<i>Dendrocitta vagabunda</i>	Rufous treepie	Tree Pie	LC / IV	Rare
<i>Dicaeum erythrorhynchos</i>	Pale billed flower pecker	Puvvu pitchuka	LC / IV	Rare
<i>Dicrurus adsimilis</i>	Black drongo	Nalla drongo	LC / IV	Yes
<i>Dicrurus caerulescens</i>	White bellied drongo	Tella potta drongo	LC / IV	Rare
<i>Dicrurus remifer</i>	Lesser Rocket tail drongo	Podavu thoka nalla pitta	LC / IV	Rare
<i>Dinopium benghalense</i>	Golden backed wood Pecker	Bangaru vadrangi pitta	LC / IV	Rare
<i>Egretta garzetta</i>	Little Egret	China tella konga	LC / IV	Yes
<i>Egretta intermedia</i>	Median egret	Konga	LC / IV	Yes
<i>Elanus caeruleus</i>	Black winged kite	Nalla rekkala gadda	LC / IV	Rare
<i>Esacus magnirostris</i>	Great stone plover	Pedda raati flover	LC / IV	Rare
<i>Eudynamis scolopacea</i>	Asian Koel	Kokila	LC / IV	Yes
<i>Francolinus pondicerianus</i>	Gray Partridge	Ooda kamuju	LC / IV	Rare
<i>Galerida cristata</i>	Indian crested lark	Juttu lark	LC / IV	Rare
<i>Halcyon smyrnensis</i>	White breasted Kingfisher	Tella yeda lakhumukhi pitta	LC / IV	Rare
<i>Haliaeetus indus</i>	Brahminy kite	Brahmana gradda	LC / IV	Rare
<i>Hemiprocne longipennis</i>	Crested tree swift	Juttu swift	LC / IV	Rare
<i>Himantopus himantopus</i>	Black winged stilt	Nalla rekkala stilt	LC / IV	Rare
<i>Hirundo daurica</i>	Striated swallow	Cchaarala pitta	LC / IV	Rare
<i>Hirundo rustica</i>	Common Swallow	Swallow	LC / IV	Rare
<i>Lanius excubitor</i>	Grey Shrike	Uuda shrike	LC / IV	Rare
<i>Lonchura malabarica</i>	White throated Munia	Tella gontu munia	LC / IV	Rare
<i>Lonchura malacca</i>	Black headed munia	Nalla tala munia	LC / IV	Rare
<i>Lonchura punctulata</i>	Spotted munia	Chukkala munia	LC / IV	Rare
<i>Megalaima haemacephala</i>	Copper smith	Raagi pitta	LC / IV	Rare
<i>Merops orientalis</i>	Green bee-eater	Mirapakaya pitta	LC / IV	Rare
<i>Merops philippinus</i>	Blue tailed bee Eater	Mirapakaya pitta	LC / IV	Rare
<i>Micropternus brachyurus</i>	Rufous woodpecker	Vadrangi pitta	LC / IV	Rare

<i>Milvus migrans</i>	Black Kite	Peethiri gadda	LC / IV	Yes
<i>Motacilla alba</i>	Pied wagtail	Toka oopu tella chaara pitta	LC / IV	Yes
<i>Motacilla flava</i>	Yellow wagtail	Toka oopu pasupu pitta	LC / IV	Yes
<i>Nectarinia lotenia</i>	Loten's sunbird	Sunbird	LC / IV	Rare
<i>Nectarinia asiatica</i>	Purple sunbird	Yerra sunbird	LC / IV	Yes
<i>Nectarinia zeylonica</i>	Plum rumped sunbird	Yerra veepu sunbird	LC / IV	Rare
<i>Netta rufina</i>	Red crested Pochard	Erra juttu baatu	LC / IV	Rare
<i>Nettapus coromandelianus</i>	Cotton Teal	Tella paraja	LC / IV	Rare
<i>Nycticorax nycticorax</i>	Night Heron	Sabari Konga	LC / IV	Rare
<i>Oriolus oriolus</i>	Golden oriole	Bangaru pitta	LC / IV	Yes
<i>Orthotomus sutorius</i>	Tailor Bird	Tailor pakshi	LC / IV	Rare
<i>Parus major</i>	Grey Tit	Ooda tit	LC / IV	Rare
<i>Passer domesticus</i>	House sparrow	Pitchuka	LC / IV	Yes
<i>Pelargopsis capensis</i>	Spot billed kingfisher	Chukka mukku lakhumukki pitta	LC / IV	Rare
<i>Phalacrocorax carbo</i>	Large Cormorant	Pedda neeti kaaki	LC / IV	Rare
<i>Phalacrocorax niger</i>	Little Cormorant	Neeti kaaki	LC / IV	Rare
<i>Ploceus manyar</i>	Streaked weaver bird	Padmasale pitta	LC / IV	Rare
<i>Pitta porphyria</i>	Indian Pitta	Pitchuka	LC / IV	Rare
<i>Ploceus philippinus</i>	Baya	Common Weaver	LC / IV	Yes
<i>Podiceps ruficollis</i>	Dab Chick	Budga baathu	LC / IV	Rare
<i>Porphyrio porphyria</i>	Purple Moorhen	Erra neeti kodi	LC / IV	Rare
<i>Pseudibis papillosa</i>	Black Indian Ibis	Nalla konkanam	LC / IV	Rare
<i>Psittacula krameri</i>	Rose ringed parakeet	Ramachiluka	LC / IV	Yes
<i>Pterocles exustus</i>	Indian sand grouse	Kamju	LC / IV	Yes
<i>Pycnonotus cafer</i>	Red vented bulbul	Bulbul	LC / IV	Yes
<i>Rallus striatus</i>	Blue breasted banded rail	Neeti kodi	LC / IV	Rare
<i>Recurvirostra avosetta</i>	Avocet	Avocet	LC / IV	Rare
<i>Rostratula benghalensis</i>	Painted Snipe	Painted Snipe	LC / IV	Rare
<i>Saxicoloides fulicata</i>	Indian robin	Nalla pitta	LC / IV	Yes
<i>Streptopelia chinensis</i>	Spotted dove	Chukkala guvva	LC / IV	Yes
<i>Streptopelia decaocto</i>	Collared dove	Valaya guvva	LC / IV	Yes
<i>Sturnus contra</i>	Pied Myna	Gorinka	LC / IV	Rare
<i>Tadorna ferruginea</i>	Brahminy duck	Brahmana baatu	LC / IV	Rare
<i>Tephrodornis pondicerianus</i>	Common wood shrike	Wood shrike	LC / IV	Rare
<i>Tringa glareola</i>	Wood sand piper	Kalap Isuka plover	LC / IV	Rare
<i>Tringa nebularia</i>	Green Shank	Patcha shank	LC / IV	Rare



<i>Tringa ochropus</i>	Green Sandpiper	Patcha Sand piper	LC / IV	Rare
<i>Tringa tetanus</i>	Red Shank	Erra shank	LC / IV	Rare
<i>Turdoides striatus</i>	Jungle babbler	Adavi babbler	LC / IV	Rare
<i>Tyto alba</i>	Barron Owl	Tella gudlaguba	LC / IV	Yes
<i>Upupa epops</i>	Hoopoe	Oohuu pitta	LC / IV	Yes
<i>Vanellus cinereus</i>	Grey headed lapwing	Lapwing	LC / IV	Yes
<i>Vanellus indicus</i>	Redwattled lapwing	Erra teeturu	LC / IV	Yes
<i>Vanellus malabaricus</i>	Yellow wattled Lapwing	Passupu teeturu	LC / IV	Rare
<i>Zosterops palpebrosus</i>	Oriental White eye	Tella kannu pitchuka	LC / IV	Yes

### III: PREDICTION OF IMPACTS

Biological Impact Assessment (BIA) is an important and integral part of the EIA. Prediction of impacts is based both on the direct and indirect; short-term as well as long-term; irreversible and irreversible impacts that are most likely to occur owing to the proposed mining activity during operations. The ecological factors that are considered most significant as far as the impact on flora and fauna are concerned:

1. Whether there shall be any reduction in species diversity
2. Whether there shall be any habitat loss or fragmentation
3. Whether there shall be any additional risk or threat to the rare or endangered or endemic or threatened (REET) species
4. Whether there shall be any impairment of ecological functions such as
  - (i) Disruption of food chains, (ii) decline in species population and or (iii) alterations in predator-prey relationships.

The direct and the most destructive impacts of the project are limited to the mine lease area only. For the purposes of the biological impact assessment (BIA), the study area is divided into core and buffer areas. The direct impacts shall be limited to the core area of 4.41 Ha mine lease area including the approach road of 0.3 Ha. The proposed mine is a new mine located in a Forest area.

Owing to site clearance, denudation, opening of mine pits; dumping of waste and overburden; establishment of onsite facilities and transport of mineral, the existing vegetation and flora of the mine lease area including the land diverted for road gets severely damaged and destroyed. But yet there shall not be any loss of plant diversity since all the plant species found in the mine lease are of common and of widespread occurrence. There are no National Parks, Wildlife sanctuaries, Biosphere reserves or other protected areas either in the core area or in the buffer zone. While assessing the impacts on Biodiversity (BIA), it is important to consider the following in decision making:

- All species are not equally important from the point of conservation. For instance, we try to eradicate invasive weeds.
- The BIA of the core area should be based on endemism (Proportion of endemic species); conservation status (RET and Schedule I species are more important than others); Economic value and the importance of the species for the stability of the Ecosystem (the structural stability of the forests is due to its tree cover).

When the above issues are considered, there are no endemic or RET or Schedule I species in the core area. There are no economically valuable species. The forest under consideration has not reached the climatic climax stage and its apparent stability is due to disturbance. It is a disclimax. Hence, the loss of 4.41 Ha of forest is not going to make any difference as far as the biodiversity is concerned.

There is going to be no change in the land use and land cover of the adjacent forest or non-forest areas on account of the proposed mine. Among the plant species that are going to be lost, the annuals and therophytes which are highly resilient can come back once the intensity and frequency of disturbances are over. As there are no rare or endangered or endemic or threatened (REET) species, proposed mining activity will not pose any additional threat to any REET species. Hence, the impact of the project on flora is negligible.

As far as the fauna is concerned, the proposed mining activity could pose no additional threat to the habitat of RET or Schedule I species mainly because of the absence of such species in the zone of impact. Proposed mining activity is incapable of posing any additional threat to any Schedule I species either directly or indirectly since no such species occur in the area that is likely to be impacted by the mining.

### **III.i: Quantification of Impacts**

Ultimate objective of present study is to find out how the proposed project activity is going to impact the Flora, Fauna, Ecology and biodiversity of the nearby RFs. In order to predict the impacts, it is essential to understand how the proposed activity is going to bring about changes in the surrounding environment. A brief account about the likely changes is given below:

#### **a). Spatial and Temporal changes:**

Changes over a period of time (temporal changes) and space (Spatial changes) are quite natural and may be brought about by natural forces without any outside intervention. Such changes are usually characteristic of pristine, uninhabited naturally subsidized or unsubsidized solar powered natural Ecosystems like virgin forests and oceans. But the RFs under consideration are highly modified on account of anthropogenic and biotic pressure. Hence, changes are common even without the proposed project.

#### **b) Magnitude (mi) and Direction of Change:**

Change has a magnitude and it may also have a direction. Natural changes in a stable ecosystem are very slow and perceptible over a long period of time. Hence, they are difficult to perceive in our lifetime. But man-made changes are very rapid and hence they could be realized almost immediately. Magnitude of change depends on frequency and intensity of impacts. Disturbances of high frequency and high magnitude will have severe adverse impacts which may lead to regressive or retrogressive changes.

On the other hand, moderate and occasional disturbances are known to enhance biodiversity, according to the Intermediate Disturbance Hypothesis (IDH). Changes may have a direction (Directional changes) or may be random and non-directional.

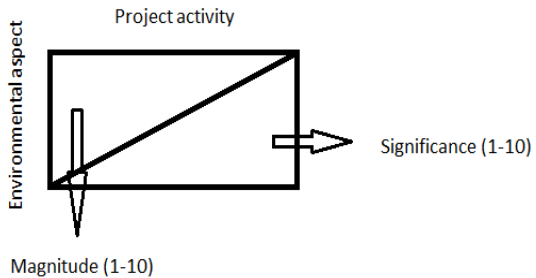
Directional changes such as Ecological succession are predictable. When the impacts are quantified, magnitude of impact is indicated by a symbol  $mi$ .

### c): Sensitivity or significance of the Impacts (si):

In conservation biology, and impact predictions, apart from the  $mi$ , sensitivity or significance of the impact has its own weightage. For instance, the outcome of denudation of grassland and a tropical rainforest are totally different. Loss of an invasive weed is beneficial but not a rare or endangered species.

### d): Combined impact of the magnitude:

( $mi$ ) and sensitivity ( $si$ ) is the product of  $misi$ .  $Si$  may be positive or negative. For each of Environmental parameter, the combined impact can be quantified as illustrated below

Magnitude ( $mi$ ) and sensitivity or significance ( $si$ ) of Impact			
	Magnitude	Sensitivity	Impact
	$mi$	$si$ (+ or -)	$misi$
	0 to 10	0 to 10 and -0 to -10	Maximum 100 for each parameter

### e). Direct and indirect changes:

If a project or activity is directly responsible for a change, such as change from terrestrial to aquatic habitat when an area like forest is submerged due to storage of water in a reservoir. That is a direct change. A project may also be indirectly responsible for a change due to changes in land-use-land-cover; cropping pattern; crop intensity etc.

### f). Reversible and Irreversible changes:

Changes may be temporary and reversible or may be permanent and irreversible.

### g). Catalytic changes:

Project in many cases may just act as a catalyst and hence it can increase pace or magnitude of change. For instance, influx of people when a large power plant or steel plant is constructed.

### h). Qualitative and quantitative changes:

Changes may be qualitative hence they are tough to quantify or measure. Quantitative changes on other hand can be measured and quantified provided there is a reference point.



### III.ii: Impact identification by Checklist method:

This is a very common simple method. It is mainly a qualitative YES or NO type method. For instance, the impact of a hydroelectric project on air quality is NO while the impact of a thermal power plant on air quality is YES.

**Simple Matrix method:** This is simply a list of environmental aspects listed along the vertical axis, against which we determine whether an activity would have an adverse effect, no effect or beneficial effect. A simple "x" or "tick" is given under the appropriate column. Mining in general shall have adverse impacts on soil, vegetation, noise (especially if blasting is involved), and air pollution due to dust emissions. But the severity of these impacts varies depending on the magnitude and frequency of operations and the control measures taken.

### III.iii: Most likely impacts of the proposed mining activity:

The proposed mine lease area is a small scrub forest. It is more like a bushland. Tree density is very low but canopy cover is dense in patches. Detailed mining plan was prepared and approved by the competent authority. The information about the method of mining; generation of overburden, and disposal of stony waste are explained in the mining plan. The proposed mine lease comprises of Quartz and Feldspar. Mining involves drilling and blasting.

About 1 kg of gun powder and explosive slurry per ton of rock blasted is going to be used. Overburden and stony waste are going to be dumped within the mine lease and will be later used for reclamation purpose after completion of mining activities. The predictable impacts of the proposed activity on the flora and fauna of the core area and buffer zone are summarized in Table 7. As the local flora is highly resilient to changes; drought, pollution and cutting, the mild impacts around the mine pit can't alter the community structure and floristic composition unless done deliberately.

**Table 7: Most probable impacts of the proposed mining activity on the flora and fauna of the core area and the nearby forests in the buffer zone**

<b>Nature of impact</b>	<b>Magnitude and significance of impact</b>	<b>Control / Remediation plan</b>
Dust emissions during drilling and blasting	Negligible and for a very short time only	Drilling area shall be covered by tarpaulin or wet gunny.
Noise during drilling and blasting	No impact outside the mine pit	Workers will use ear plugs / mufflers.
Fugitive dust emissions during loading and unloading	Since the material is mostly stony with very little dust, dust emissions are negligible.	Water shall be sprayed if required.
Fugitive dust emissions during transport	Haul roads do not contain any loose soil. They have hard rocky top or covered with broken rock. Hence, dust emissions during transport are very slight	The trucks shall be covered with tarpaulin and the haul roads are mostly hard top. Water shall be sprayed in areas prone to dust generation,

Stack emissions	There is no stack and no stack emissions.	Not applicable
Air emissions and air pollution	The area is not critically polluted and the additionality due the proposed mining is negligible	Dust suppression by water spraying during dry period.
Water pollution due to discharge of trade effluents	No treated or untreated effluents are going to be discharged	Domestic sewage shall be treated in soak pit.
Impacts on soil	Adverse impacts on soil shall be limited to the mine pit and the haul roads	Integrated soil, water and nutrient systems are suggested
Chances of enhanced soil erosion	Enhanced soil erosion is possible when the existing vegetation is removed.	The impacts on neighbouring areas shall be controlled by making garland drains, rain water harvesting pits, rock-filled check dams; sedimentation and silting ponds within the mine lease .
Impact on Forests, flora and fauna	Mild impacts could occur around the mine pits and transport route within a radius of 100 m during dry season	No chances for any loss of biodiversity as there are no RET or schedule I species. Fugitive dust emissions are suppressed by spraying water.

As shown in Table 7, the direct or indirect adverse impacts of the proposed mining activity on the flora and fauna of nearby forests is negligible and it is not going to bring about any changes in community structure or composition. Further, the area is neither critically polluted nor ecologically sensitive. Apart from it, there are several operating mica mines and there were no reports or complaints of any adverse impacts on any of the components of the Ecosystem.

The area that comes under the project impact zone (PIZ) will not extend beyond 150 m from the mine pit and 100 m on either side of the haulage road. The area is not a home for any rare or endangered or endemic or threatened (REET) species or Schedule I fauna and hence no REET species or Schedule species is going to be impacted. When we consider all aspects and take a holistic view, it can be safely concluded that the proposed diversion of forest land of mining activity with the routine safety and control measures is totally safe for the nearby forests and the wildlife in them.

### **III.iv: Most likely impacts of the proposed mining activity on soil erosion:**

As a matter of fact, mining is a destructive process with severe adverse impacts on soil texture, structure, topography and physicochemical properties but within the mining site. As a consequence of denudation, digging, cutting, dumping of overburden and waste, transport of ore, soil erosion due to wind during dry period and rain due to rainy season is increased. However, these impacts are easily

manageable and totally restricted to the mining site only. In the present case, there shall be a peripheral safety zone of about 7.5 m width.

The existing vegetation of safety zone shall be retained and it will be densified by filling the gaps with the ever-green multipurpose trees like *Syzygium*, Neem, Jackfruit, Peepal, Albizia etc. Top soil from the surface of mine pits shall be spread over the safety zone to increase height so that water from surrounding areas do not enter the mining sit. Rain water from the mining area the overburden dumps shall be diverted to a contour trench cum rainwater collection and percolation pit. No water from the mine shall be allowed to go out of the mine lease.

The approach road shall be black topped and a dense row of trees shall be grown along the margins of the road. Hence, the impacts of the mine on soil shall not extend beyond the boundaries of the 4.41 Ha mine lease only. In any case, the proposed action and activity is not going to pose any severe adverse threat to the soils around the mine lease even under the worst circumstances, since the area of 4.41 Ha is too small.

#### **IV: Environmental Impact Assessment (EIA):**

Once the land under consideration is diverted for mining of Quartz and Feldspar further steps would follow leading to an EIA study. Mining plan was prepared and approved by the competent authority. During the EIA study, baseline data with regard to air, water, soil, ecology and biodiversity, noise and socio-economic aspects would be collected in accordance with the terms of reference.

Additional impacts due to the proposed mining shall be computed and final quality of air, water, soil and noise environment shall be assessed. Suitable control measures shall be suggested. The final EIA is evaluated by the SEAC before the Environmental clearance (EC) is grated. With such safety regime in place, there is no cause for any kind of concern due to the diversion of the 4.47 Ha of forest land for mining.

#### **V: Summary and Conclusions:**

- As the area sought for diversion is a scrub and as there shall be no impact on nearby forests, vegetation, ecology, flora, fauna, biodiversity and soils, it is environmentally and ecologically safe to divert the proposed 4.41 Ha of forest land for non-forest mining activity.
- There are no Eco-sensitive areas such as the Biosphere reserves or National Parks or Wildlife Sanctuaries or migratory corridors of Elephants or Tigers or Nature Heritage sites or Important bird areas (IBAs) or Ramsar wetlands or other protected areas except reserve forests within a radius of 10 km from the proposed mine lease area
- On account of mining the vegetation and flora of the mine lease area is going to be damaged or destroyed but there shall be no loss of any REET species or Schedule I fauna or economically important species.
- The adverse impact of the proposed mining does not extend beyond the mine safety zone of the mine lease. It is not going to alter the structure and composition of the nearby forests.



- Owing to the rocky terrain, gravelly soil, dust emissions are not going to be an issue. Any little dust can be easily suppressed by spraying water.
- Enhanced soil erosion due to deforestation of the mine lease is only a minor problem and it will be controlled by means of integrated soil, water and nutrient conservation and safety zone plantations.
- The PP shall incorporate all details in the EIA report after the allotment of the proposed land.

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