



REPORT ON BIODIVERSITY DOCUMENTATION

Prepared for

Enerrgia – SKYI Project land, Bhukum, Pune

February 2014

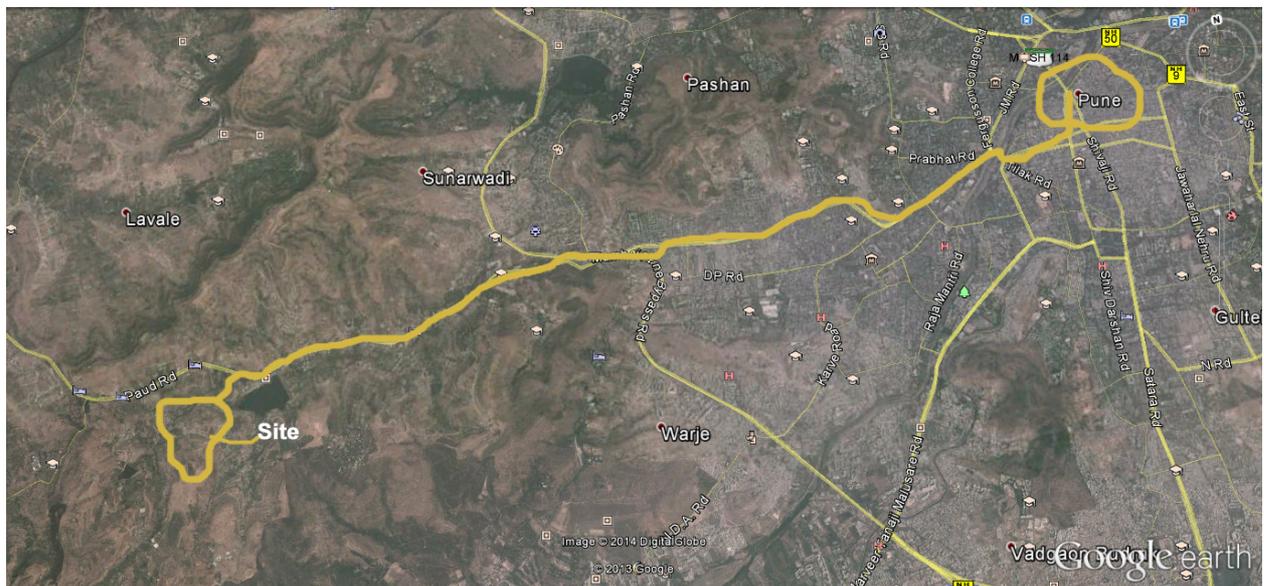


*We do not inherit the land from our ancestors; we borrow it from our children.
– Chief Seattle.*



oikos
for Ecological Services

Site Location:



Introduction

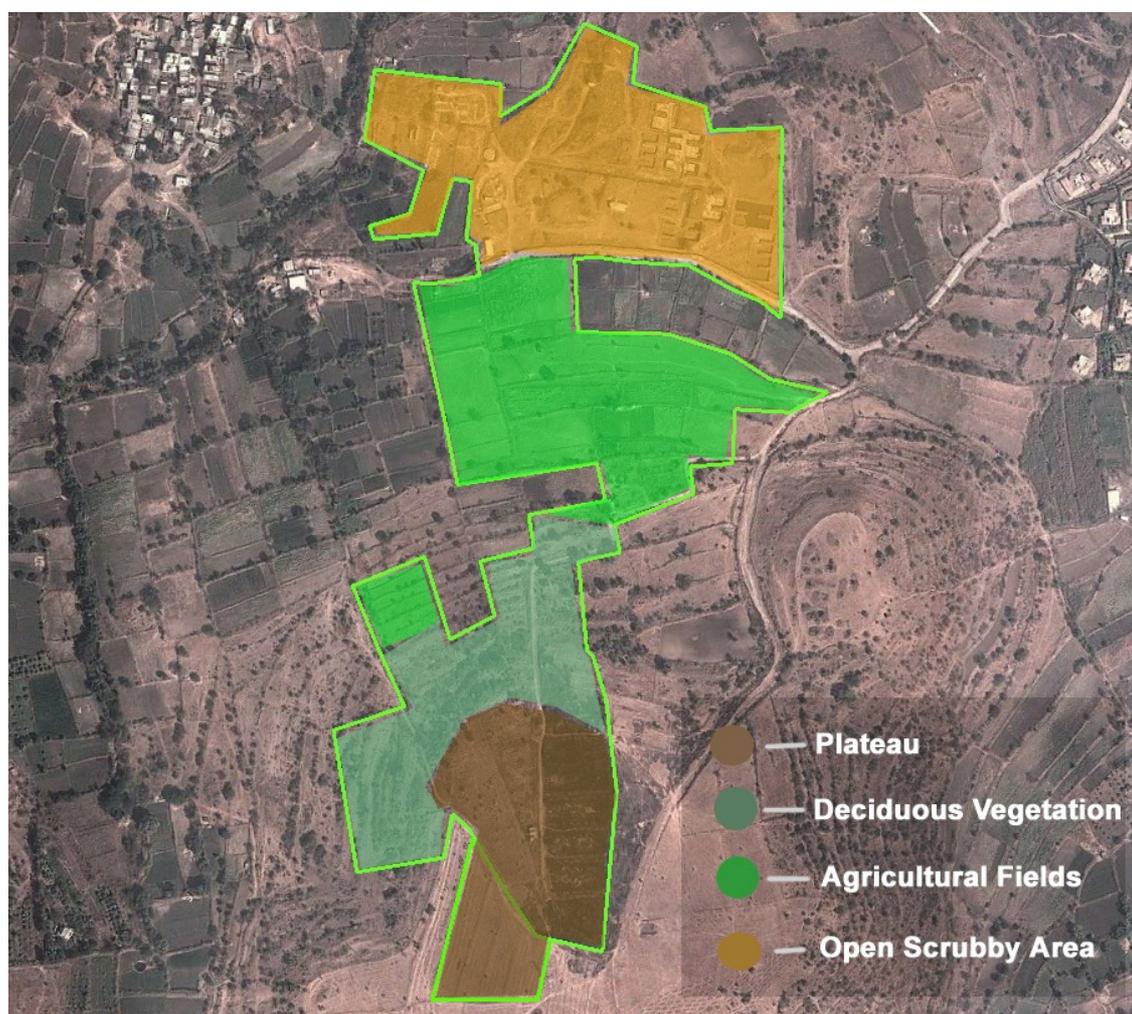
Location of the site: The project area is located on the western side of the Pune city off Pune – Mulshi road in Bhukum. The total area of the land is 60 acres. Geographically, this region comes under the transition part between Pune city and Western Ghats. Thus the average annual rainfall will be around 1200 mm. The temperature in summers ranges between 35°C to 40°C. While the winter temperatures are in the range of 10°C to 20°C. The site location is 18°29'29.71" N and 73°43'29.10" E with an elevation of 2381 ft from the sea level.

Topography: The land has a small hillock at the south with moderate slope towards North. It has moderate slope, few undulated areas and agricultural fields. There is approximately equal distribution of each zone on the site. The upper contour of the site in south has a plateau with recent plantations. It is followed by a moderate slope with deciduous and scrubby vegetation.

Vegetation: The type of vegetation observed is of moist deciduous type. The land can be divided into 3 regions according to the type of vegetation observed. The upper contour of the land has a barren plateau with few plantations of Karanja, Amba, Jambhul etc.. The second patch i.e the middle contour on slopes shows presence of dry deciduous vegetation with scrubs like Phansi, Kate Sawar, Pangara, Bor, Babhul and Khair. The third patch i.e. middle lower

contour shows presence of agricultural fields while the fourth patch of lower contour shows scrubby vegetation on undulated surface.

Fauna: As the land shows mixture of open land, grasses, moderate scrubby canopy and presence of agricultural fields, birds like Sunbirds, White eyes, Flycatchers, warblers, Pipits, Shrikes and few Raptors are observed. Due to absence of good vegetation cover, animals diversity found is low.



Analysis of Biodiversity

The site, near Bhukum, is spread over an area of approximately 60 acres. The land has a stream along one of the boundary but is not present inside. The land can be categorized into 4 regions, namely; Plateau area, deciduous vegetation, agricultural fields and scrubby vegetation, according to the type of vegetation the land comprises & existing topography.

The **Plateau area** is mainly barren with hardly any grass or biomass cover on it. The strata is murrum with very lesser soil. Few plantations of Karanja, Amba, Jambhul, Chikku, Mulberry, Nirgudi, Kaju, Rakta rohida etc are done recently.

The **deciduous region** is the only area on site which shows moderate canopy cover. Mostly the trees included are babhul, khair, shisoo, phashi, Kate sawar and Pangara. All are present on gradual to moderate slope. This is one of the places which show prominent bird activity. Nests of few birds & bee hives were observed in this zone.

The **agricultural land** mainly consisted of crops of Jawar. Hardly any trees are present in between the fields or along the farm bunds.

The **scrubby vegetation area** however is almost covered with different grasses and shrubs with few small trees. But it forms an important habitat for birds like pipits, quails and larks. Also due to the undulated area and abandoned quarry, birds like spotted owlet were observed. The presence of stone piles forms a good habitat for reptiles. The overall area being open, many raptors are seen hovering on the site.

A stream is present just outside the boundary at 18°29'37.39" N and 73°43'22.82" E. Though the stream is outside the boundary, similar habitat creation inside can attract the birds. Typical forest birds like Tickel's blue flycatcher, Red throated Flycatcher, Iora etc where observed in stream section.

Proposed Land Use Plan

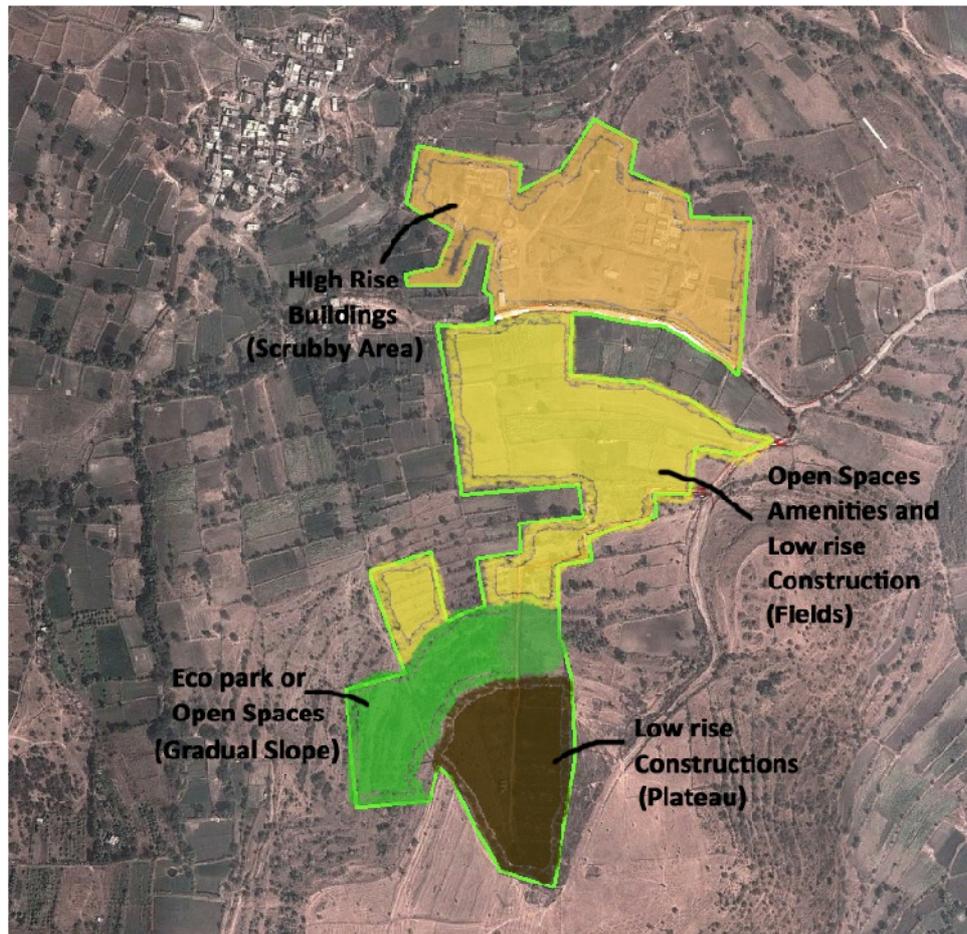


Fig a: Land Use Plan

The site surveyed is divided into different zones according to the land cover on it. The land use pattern had been suggested on the basis of minimum damage to the environment as well as according to the strata and overall land cover.

1. **Eco Park:** This is the area marked as “conservation zone” in earlier maps. This is the only area which shows presence of better canopy cover with respect to the other areas on land. This area shows presence of few mature deciduous trees and more bird diversity. Hence this can be reserved as “Eco park”. Few pathways can be made for a relaxing walk through this area.
2. **Plateau:** This area can be utilized for Low rise constructions. The very basic reason being, plateau areas are percolating areas. Thus, greater the surface area, greater will be the percolation (of water through rainfalls). Low- rise construction will also look aesthetic as well as have more open spaces and less hardscape areas. A high tension wire crosses this

area, thus a low height green belt (shrubs or medium sized trees) is recommended below this wire. So considering aesthetics, percolation of rainwater & high tension wire, low rise structures would be most appropriate.

3. **Fields:** The fields approximately cover up for 25 to 30 percent of the site. As the fields are spread over the gradual slope area as well as the lowest part adjacent to road, all the common facility areas can be constructed buildings. The open spaces here are recommended to be in patches and not a single corner or a single middle area. The patches will help in establishing corridors for birds and butterflies.
4. **Open scrubby land:** This area can be completely utilized for high rise buildings as the strata is also hard enough with minimal damage to the land.

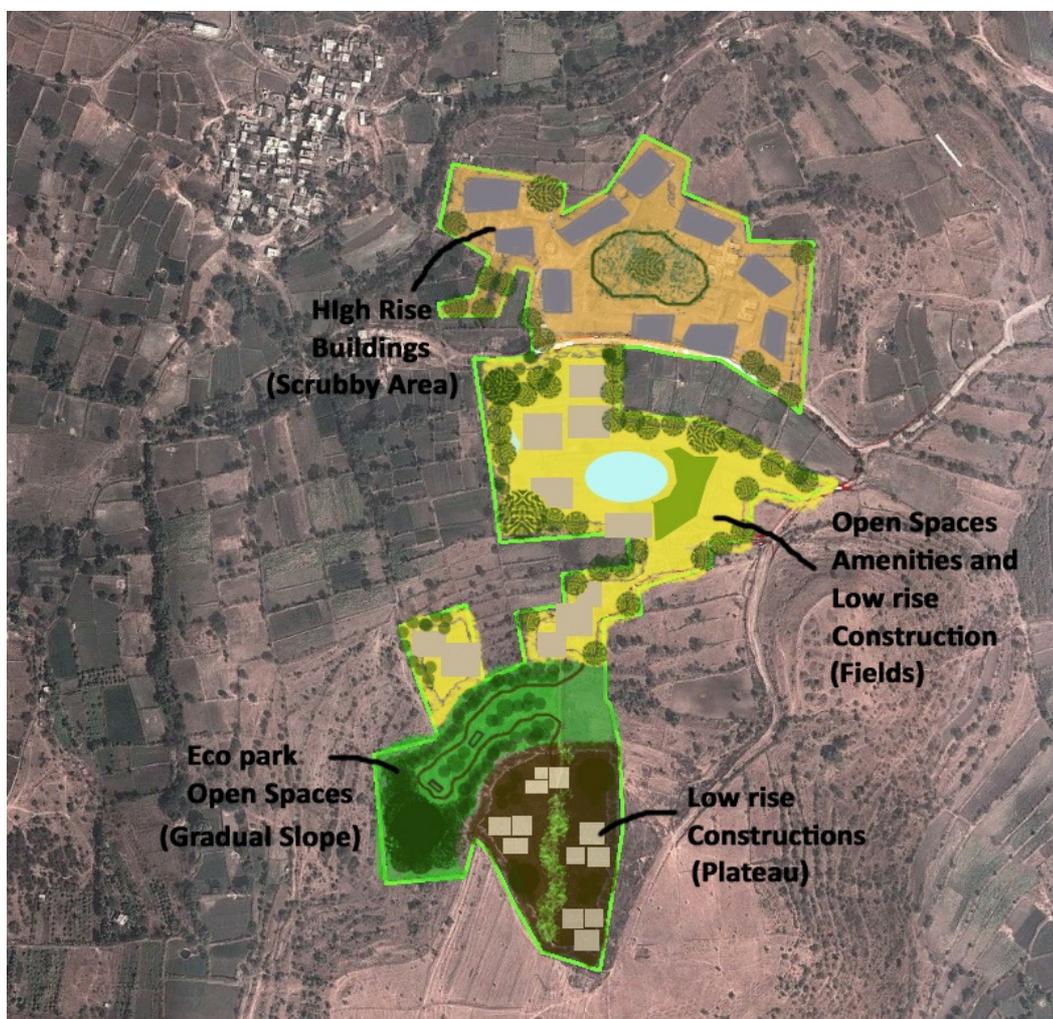


Fig b: Indicative Plan

Annexure

1. Flora List:

Plants marked in red are non natives.

No.	Common Name	Botanical Name
1.	Khair	<i>Acacia catechu</i>
2.	Babhul	<i>Acacia nilotica</i>
3.	Pandhara Khair	<i>Acacia polyacantha</i>
4.	Pasari Babhul	<i>Acacia torta</i>
5.	Kala Shirish	<i>Albizia amara</i>
6.	Kinhai	<i>Albizia procera</i>
7.	Satwin	<i>Alstonia scholaris</i>
8.	Neem	<i>Azadirachta indica</i>
9.	Kanchan	<i>Bauhinia purpurea</i>
10.	Apta	<i>Bauhinia racemosa</i>
11.	Katesawar	<i>Bombax ceiba</i>
12.	Asana	<i>Bridelia retusa</i>
13.	Palas	<i>Butea monosperma</i>
14.	Bahava	<i>Cassia fistula</i>
15.	Bhutya	<i>Cassine glauca</i>
16.	Jyotishmati	<i>Celastrus paniculatus</i>
17.	Bhokar	<i>Cordia dichotoma</i>
18.	Phanshi	<i>Dalbergia lanceolaria</i>
19.	Shisoo	<i>Dalbergia sissoo</i>
20.	Medhshingi	<i>Dolichandrone falcata</i>
21.	Pangara	<i>Erythrina suberosa</i>
22.	Nilgiri	<i>Eucalyptus sp.</i>
23.	Umbar	<i>Ficus racemosa</i>
24.	Tambat	<i>Flacourtia indica</i>
25.	Pandharphali	<i>Flueggea leucopyrus</i>
26.	Undirmari	<i>Gliricidia</i>
27.	Shivan	<i>Gmelina arborea</i>
28.	Dhaman	<i>Grewia tiliifolia</i>
29.	Henkal	<i>Maytenus senegalensis</i>
30.	Wawal	<i>Holoptelea integrifolia</i>
31.	Khaya	<i>Khaya senegalensis</i>
32.	Nana	<i>Lagerstroemia microcarpa</i>
33.	Moi	<i>Lannea coromandelica</i>
34.	Subabhul	<i>Leucaena glauca</i>
35.	Amba	<i>Mangifera indica</i>
36.	Singapore Cherry	<i>Muntingia calabura</i>
37.	Karanj	<i>Pongamia pinnata</i>

38.	Bija	<i>Pterocarpus marsupium</i>
39.	Chandan	<i>Santalum album</i>
40.	Mokha	<i>Schrebera swietenoides</i>
41.	Bibba	<i>Semecarpus anacardium</i>
42.	Jambhul	<i>Syzygium cumini</i>
43.	Pendhra	<i>Tamilnadia uliginosa</i>
44.	Beheda	<i>Terminalia bellirica</i>
45.	Hirda	<i>Terminalia chebula</i>
46.	Bhend	<i>Thespesia populnea</i>
47.	Ghatbor	<i>Ziziphus caracutta</i>
48.	Bor	<i>Ziziphus mauritiana</i>
49.	Toran	<i>Ziziphus rugosa</i>

2. Bird List:

No.	Common Name	Scientific Name
1.	Jungle Myna	<i>Acridotheres fuscus</i>
2.	Common Myna	<i>Acridotheres tristis</i>
3.	Common Iora	<i>Aegithina tiphia</i>
4.	Paddy field Pipit	<i>Anthus rufulus</i>
5.	Spotted Owlet	<i>Athene brama</i>
6.	Cattle Egret	<i>Bulbulcus ibis</i>
7.	Common Rosefinch	<i>Carpodacus erythrinus</i>
8.	Yellow eyed Babbler	<i>Chrysomma sinense</i>
9.	Woolly necked Stork	<i>Ciconia episcopus</i>
10.	Short toed Eagle	<i>Circaetus gallicus</i>
11.	Oriental Magpie Robin	<i>Copsychus saularis</i>
12.	Jungle Crow	<i>Corvus macrorhynchos</i>
13.	House Crow	<i>Corvus splendens</i>
14.	Common Quail	<i>Coturnix coturnix</i>
15.	Tickel's blue flycatcher	<i>Cyornis tickelliae</i>
16.	Black Drongo	<i>Dicrurus macrocercus</i>
17.	Black shouldered Kite	<i>Elanus caeruleus</i>
18.	Common Kestrel	<i>Falco tinnunculus</i>
19.	Red throated Flycatcher	<i>Ficedula parva</i>
20.	Red rumped Swallow	<i>Hirundo daurica</i>
21.	Wire tailed Swallow	<i>Hirundo smithii</i>
22.	Long tailed Shrike	<i>Lanius schach</i>
23.	Bay-backed Shrike	<i>Lanius vittatus</i>
24.	White rumped Munia	<i>Lonchura striata</i>
25.	Coppersmith Barbet	<i>Megalaima haemacephala</i>
26.	Green Bee- eater	<i>Merops orientalis</i>
27.	Purple Sunbird	<i>Nectarinia asiatica</i>
28.	Eurasian Golden Oriole	<i>Oriolus oriolus</i>

29.	Tailorbird	<i>Orthotomus sutorius</i>
30.	House Sparrow	<i>Passer domesticus</i>
31.	Small Minivet	<i>Pericrocotus cinnamomeus</i>
32.	Greenish Warbler	<i>Phylloscopus trochiloides</i>
33.	Plain Prinia	<i>Prinia inornata</i>
34.	Ashy Prinia	<i>Prinia socialis</i>
35.	Red vented Bulbul	<i>Pycnonotus cafer</i>
36.	Fan tailed Flycatcher	<i>Rhipidura aureola</i>
37.	Pied Bushchat	<i>Saxicola jerdoni</i>
38.	Indian Robin	<i>Saxicoloides fulicata</i>
39.	Spotted Dove	<i>Streptopelia chinensis</i>
40.	Little Brown Dove	<i>Streptopelia senegalensis</i>
41.	Jungle Babbler	<i>Turdoides striatus</i>
42.	Oriental White-eye	<i>Zosterops palpebrosus</i>

Proposed Plant List

Evergreen	Avenue	Fruit	Medicinal	Hedge	Climbers
Mango	Bahawa	Mango	Behda	Adulasa	Madhavilata
Bakul	Kala kuda	Awala	Bibba	Kunti	Madhunashini
Bhend	Kusum	Bhokar	Bija	Mendi	Kusar
Jambhul	Shirish	Jamun	Rohitak	Nirgudi	Shatawari
Putranjiva	Sawar	Karwanda	Shivan	Koynel	Sagar gota
Sonchapha	Nana	Ankol	Karanj	Wala	Clematis
Shisam	Palas	Kawath	Ritha	Lemon grass	
Neem	Pangara	Bel	Murudsheng	Bamboo	
Shisoo	Pipar	Hirda	Dhayati		
Wad	Waras		Arjun		
Chinch	Moha			Ornamental	
Nagchafa	Kanchan			Kuda	
Satwin	Phashi			Durangi	
Muchkund	Kalam			Tarwad	
Pendhara	Parijat			Chitrak	
Umbar	Rohan				
	Bartondi				
	G. latifolia				
	Kadamb				
	Pimpal				