

Brief Project Details

1.0 PROJECT BACKGROUND

The Indian Academy of Highway Engineers (IAHE) under **Ministry of Road Transport & Highways, Government of India** has decided to take up the up-gradation of newly declared NH-341. The proposed project road NH-341 has been notified by MoRT&H vide gazette notification no. S.O. 1522(E) dated 13th June 2014. The IAHE has been entrusted with the assignment of Project Management Consultancy Phase I including preparation of Detailed Project Report for 2/4 laning of NH-341 from Junction with NH-41 at Bhimasar connecting Anjar, Bhuj, Khavda to Dharmshala in the State of Gujarat (Package No. NH/IAHE/14).

The proposed project road under consultancy i.e. NH-341 starts from the junction of NH-41 (Km 341+800) at service road level below flyover known as Barsana Chowk near village Nandgram and ends at Dharmshala BSF Camp in restricted Defence area in the district of Kutch, Gujarat. The proposed project roads have been divided into **two packages** for preparation of Detailed Project Reports and further implementation (**Table-1**) and shown in the Index Map (**Figure-1**).



Figure-1 Index Map Showing Package Wise Project Roads

Table-1 Package wise distribution of the Project Roads

Package No	Related Stretch	From (Km)	To (Km)	Length after improvement (km)
I	Up gradation to 4-laning from Junction with NH-41 at Barsana Chowk connecting Bhimasar, Anjar, Bhuj up to Bhuj Airport Junction	0+000	65+478	59.133
II	Widening and Strengthening of Bhuj-Khavda-Dharmshala road section of NH-341 (upto BSF Camp) to Two Lane with Paved / Gravel Shoulder.	65+478	162+185	96.707

This **Biodiversity Impact Assessment Report** has been prepared for development of **Bhuj-Khavda-Dharmshala** (up to BSF Camp) **Road Section of NH-341 (Package II)** to Two Lane with Paved / earthen Shoulder.

2.0 IMPLEMENTING AGENCY

The captioned project is being developed by **Ministry of Road Transport and Highways, Govt. of India** under facilitation of Indian Academy of Highway Engineers (IAHE), Noida through the office of the Executive Engineer, National Highways Division at Plot No 1, Ward 3B, Tagore Road Adipur, District Kutch – 370 205, Gujarat as Project Implementing Unit (PIU).

3.0 DESCRIPTION OF THE ALIGNMENT

The proposed project road is a two-lane highway comprises the section **Bhuj to Dharamshala (Pkg. II)** commencing from design **Ch. 65+478 to design Ch. 162+185** at BSF Camp, Dharamshala of **NH-341** in the State of Gujarat. **Total length** of the project road is **96.707 km**. The land width available is 30.0m and 2-lane with paved shoulder could be comfortably accommodated within the existing ROW except in built up area where 4-lane with service road is required. The main built up area in route is Khavda at Km 132+000 to Km 133+000. To accommodate 4-lane with service road, additional land may need to be acquired in Khavda. There are deficient horizontal curves at Km 86+200 and between Km 133+000 to 134+000. Except few habitations there is barren land on either side of the project road.

The succeeding section is close to border and the area is under control of Defence Ministry



Start Point of Project Road at Bhuj



End Point of Project Road at Dharamshala

starting at India Bridge. The approximate length of India Bridge is 430m. India Bridge is 2-lane Bridge having carriageway of 7.0m. **The condition of bridge is good and it is maintained by BRO.** After India bridge, road is 2-lane configuration having 7.0m bituminous layer and earthen shoulder of 1 to 2m on either side up to Dharamshala BSF Camp i.e. the end point of the project road (Ch. 162+185). **This road is strategically important because of it ingress into border area of India-Pakistan.**

Table-2 Existing Features of Bhuj – Khavda – Dharmshala Section of NH-341

Carriageway	Two lane with carriageway width 7.0 m and formation width is 9.0 m to 10.0 m
No. of Major Bridges	7
No. of Minor Bridges	23
No. of Causeway	2
No. of Culverts	80
Railway Level Crossing	Nil
No. of Major Junctions	3
No. of Minor Junctions	62

4.0 CLEARANCES REQUIRED

4.1 Environment Clearance

Proposed project is the widening & strengthening of NH-341 (Package-II). Length of the project road is 96.707 km (less than 100 km) and additional land acquisition is less than 40m. Therefore, **Environmental Clearance will not be required** for the proposed development.

4.2 Wildlife Clearance

As per the map of the Kachchh Desert Wildlife Sanctuary, the Project Road (Bhuj-Khavda-Dharmshala Road Section of NH-341) is not passing through the Wildlife Sanctuary (Figure-2). However, during site visit, two boundary pillars have been observed on either side of the project road near Chainage Km 147+400 and Forest Department verbally confirmed that these are Boundary Pillars of the Sanctuary.

Therefore, as per the information collected from site as well as from the Forest Department, it seems that **1.9 km stretch of the project road is traversing through Kachchh Desert Wildlife Sanctuary from Km 147+350 to Km 147+450 and km 149+000 to Km 150+800 (Figure-3) and Wildlife Clearance will be required for the same.**

Further, as per MoEF&CC Circular (F. No. 6-62/2013 WL dated 22nd December 2014) regarding Recommendation of the sub-committee on Guidelines for roads in Protected Areas – *“The cases of resurfacing and strengthening of existing Highways, not involving widening within Protected Areas will be possible without reference to Standing Committee of National Board for Wildlife”.*

4.3 Forest Clearance

The proposed development will be carried out mostly within existing right of way. However, the roadside trees within existing right of way (RoW) has been declared as **Protected Forest** from **Bhuj (Km 65+478) to Khavda (Km 133+200) section of the Project Road** by the Forest Department, Government of Gujarat vide Gazette Notification dated 28th March 1973 and hence diversion of Protected Forest Land is required for the project.

Therefore, **Forest Clearance** for diversion of Protected Forest land (**122.4077 ha**) and **Tree Felling Permission will be required** from Forest Department of Government of Gujarat for the proposed project. Prior approval of Central Government under section 2 of the Forest (Conservation) Act, 1980 for Diversion of Protected Forest has already been submitted (**Proposal No. : FP/GJ/ROAD/23626/2017**).

4.0 IMPROVEMENT PROPOSAL

Stretch inside Wildlife Sanctuary: Improvement proposal of the stretch passing though the Kachchh Desert Wildlife Sanctuary is given below:

Km 147+350 to Km 147+450	No improvement, existing bridge will be retained
km 149+000 to Km 150+800	No improvement, resurfacing of existing carriageway and maintenance of India Bridge

Stretch outside Wildlife Sanctuary: Two Lane with Paved / Gravel Shoulders shall be undertaken. The paved carriageway shall be 10 / 7m wide for 2 lane section including 1.5m paved shoulder / excluding 2.5m wide Gravel shoulders on both sides in accordance with the typical cross sections drawings. However, from Km 132+415 to Km 133+000 in Khavda, the width of the carriageway shall be 15m. The improvement Proposal also includes geometric improvement, junction improvement, road side drain, reconstruction / widening/ construction of bridges and culverts.

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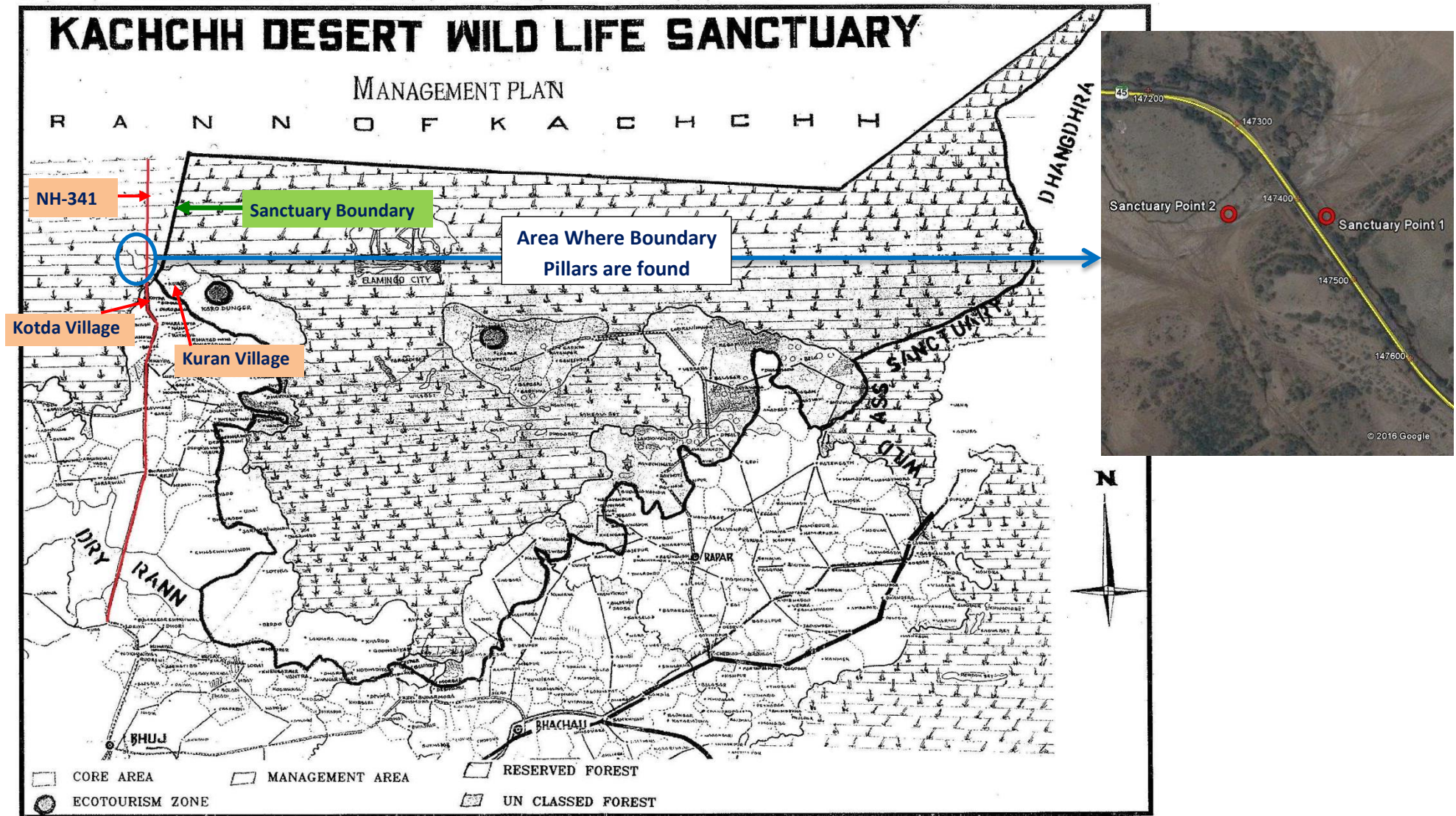


Figure-2 Map Showing Project Road on Kachchh Desert Wildlife Sanctuary Map and Location of Sanctuary Boundary Pillars

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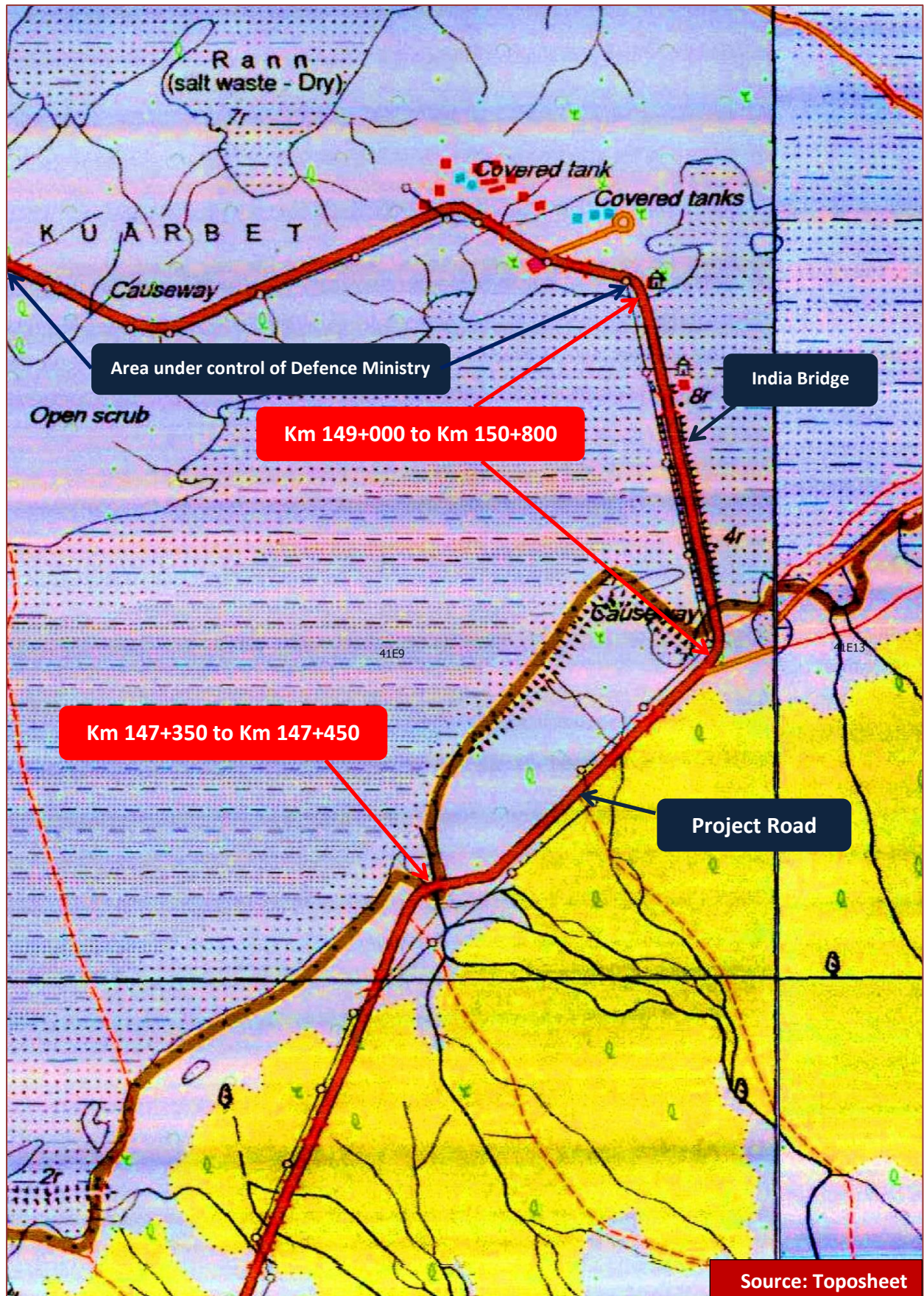


Figure-3 Map Showing Section of Project Road traversing through Kachchh Desert Wildlife Sanctuary

5.0 PROTECTED AREAS

5.1 Kachchh Desert Wildlife Sanctuary

Kuchchh Desert Wildlife Sanctuary¹, part areas of Great Rann, is situated in Kutch district of Gujarat. The 60% of the geographical area of Kuchchh is saline desert namely the Great Rann of Kuchchh (GRK) and Little Rann of Kuchchh (LRK). The GRK is the north eastern region of Kuchchh district and bordering the Indo-Pak border. Recognizing the ecological, faunal, floral, geo-morphological significance and for the purpose of protecting, conserving and developing wildlife and their habitats, Government of Gujarat declared the GRK as Desert Wildlife Sanctuary under Section 18(1) of the Wildlife (Protection) Act - 1972, vide its notification no. GSABN-41-85-WLP-1386-207-V-2, dated 28th February 1986. The area comprises of Bhuj, Rapar, Anjar and Bhachau talukas of Kuchchh district. Out of total area of the Sanctuary, 109,00 km² is Reserved Forests, 1313.07 km² Revenue Wasteland while remaining area is territorial water of country.

Habitat Type: According to the revised classification of the forest types of India (Champion and Seth, 1968), the following nine forest types are represented in and around the Kuchchh Desert Wildlife Sanctuary:

Sub Group 5B Northern Tropical Dry Deciduous Forests

- E3 - Babul Forest
- E8b - Babul Savannah
- E8c - *Salvadora Tamarix* Scrub

Sub Group 6B Northern Tropical Thorn Forests

- C1 - Desert Thorn Forest
- DS2 - Tropical *Euphorbia* Scrub
- E1 - *Euphorbia* Scrub
- E2 - *Acacia Senegal* forests
- E3 - Rann Saline Thorn Scrub
- E4 - *Salvadora* Scrub

Floral Diversity: The tree and herbaceous cover constitutes about 0.11% area of the Sanctuary. The main species are *Acacia Senegal*, *Prosopis chilensis*, *Salvadora persica*, *Salvadora oleiodes* and *Sueda* species. Within the Sanctuary few species demonstrated clear patterns of distribution, while *Sueda nudiflora* and *Sueda fruticosa* are distributed uniformly in the entire Sanctuary. *Salvadora oleiodes* and *Salvadora persica* were recorded in less abundance in the southern (SW and SE) part of the Sanctuary. *Prosopis chilensis* was much common in the southern half of the Sanctuary.

The dominant area under dense tree cover is mainly confined to the eastern part of the Sanctuary. The western part of the Sanctuary is hilly tract of Kaladungar. This area is having two

¹ Source: Management Plan, Kuchchh Desert Wild Life Sanctuary, Forest Department – Gujarat State, March 2008

important medicinal plant species of the area i.e. *Commiphora wightii* and *Sterculia urens*. Most of the area of the Sanctuary falls under saline tract and seasonal wetland.

Table-3 Records of Rare Plants in Kuchchh Desert Wildlife Sanctuary

S. No.	Plant Species	S. No.	Plant Species
1.	<i>Citrullus colocynthis</i>	2.	<i>Heliotropium bacciferum</i>
3.	<i>Commiphora wightii</i>	4.	<i>Heliotropium rariflorum</i>
5.	<i>Convolvulus stocksii</i>	6.	<i>Ipomoea kotschyana</i>
7.	<i>Campylanthus ramosissimus</i>	8.	<i>Indigofera caerulea</i>
9.	<i>Dactyliandra welwitschii</i>	10.	<i>Sida tiagi</i>
11.	<i>Dipcadi erythraem</i>	12.	<i>Pavonia ceratocarpa</i>
13.	<i>Ephedra foliata</i>	14.	<i>Tribulus rajasthanensis</i>
15.	<i>Helichrysum cutchicum</i>		

Source: Management Plan, Kuchchh Desert Wild Life Sanctuary, March 2008

Faunal Diversity: Flamingoes species, *Phoenicopterus rubber* (Greater Flamingo) and *Phoenicopterus minor* (Lesser Flamingo) congregate in large number in Rann, especially in the ‘**Flamingo City**’ in GRK. Wild Ass (*Equus hemionus khur*) is endemic to region. These species together constitute key species of the Sanctuary.

The GRK is the only site in the country for breeding of Greater Flamingos. Apart from Flamingo, there are other migratory as well as resident birds in the Protected Area (**Table-4**). The region is home of number of threatened reptile species (**Table-5**) as well as mammalian fauna (**Table-6**).

Table-4 Aves in Rann of Kuchchh and Vulnerable & Endangered Status

Common Name	Scientific Name	Status (1994)
Lesser Flamingo	<i>Phoenicopterus minor</i>	Near Threatened (IUCN)
Marble Teal	<i>Marmaronetta angustirostris</i>	Vulnerable (IUCN)
Ferruginous Duck	<i>Aythya nyroca</i>	Vulnerable (IUCN)
Sarus Crane	<i>Grus antigone</i>	Endangered (IUCN)
Indian Skimmer	<i>Rynchops albicollis</i>	Vulnerable (IUCN)
Dalmattian Pelican	<i>Pelecanus crispus</i>	Vulnerable(IUCN & ZSI)
Large Whistling Duck (Teal)	<i>Dendrocygna bicolor</i>	Vulnerable (ZSI)
Osprey	<i>Pandion haliaetus</i>	
Indian Skimmer	<i>Rynchops albicollis</i>	Endangered (ZSI)
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Regionally endangered
Schedule-I Species		
Lesser Florican*	<i>Sypheotides indica</i>	Endangered(IUCN)
Spoon Bill*	<i>Platalea leucorodia</i>	Endangered(ZSI)
Houbara Bustard*	<i>Chlamydotis undulate</i>	Vulnerable(IUCN)
Hawks*	<i>Accipiter sp.</i>	Endangered(ZSI)
Large Falcons*	<i>Falco sp.</i>	

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Common Name	Scientific Name	Status (1994)
Pea Fowls*	<i>Pavo cristatus</i>	Vulnerable (ZSI)

*Threatened Species by IUCN

Source: Management Plan, Kuchchh Desert Wild Life Sanctuary, March 2008

Table-5 Reptiles in Rann of Kuchchh and Vulnerable & Endangered Status

S. No.	Common Name	Scientific Name	Status	Remarks
1.	Trinket Snake	<i>Elaphe Helena</i>	Rare, Restricted	Endemic to India
2.	Indian Chameleon	<i>Chamaeleon zeylanicus</i>	Not reported after 1997	
3.	Black Cobra	<i>Naja oxiana</i>	Not reported after 1997	Critically Endangered
4.	Indian Star Tortoise	<i>Geochelone elegans</i>	Rare Restricted	IUCN List as Vulnerable (BCPP, 97) *Endangered (ZSI, 1994)
5.	Desert Monitor*	<i>Varanus griseus</i>		
6.	Marsh Crocodile*	<i>Crocodylus palustris</i>	Not reported after 1997	
7.	Banded Rock Gecko	<i>Cyrtodactylus kacchensis</i>	Rare Restricted	Lower risk near threatened by Scientists
8.	Checkered Keelback	<i>Xenochirophis piscator</i>		
9.	Buffstripped Keelback	<i>Amphiesma stolatum</i>		
10.	Johns Earth Boa	<i>Eryx johnii</i>		
11.	Common Wolf Snake	<i>Lycodon aulicus</i>		
12.	Russels Viper	<i>Daboia russelii</i>		
13.	Krait	<i>Bungarus caeruleus</i>		
14.	Agama	<i>Trapelus agilis</i>	Not seen after 1997	

Source: Management Plan, Kuchchh Desert Wild Life Sanctuary, March 2008

BCPP = Biodiversity Conservation Prioritization

Table-6 Mammals in Rann of Kuchchh and Vulnerable & Endangered Status

S. No.	Common Name	Scientific Name	Status (1994)
1.	Indian Wild Ass	<i>Equus hemionus khur</i>	Endemic, Endangered (ZSI)
2.	Jungle Cat	<i>Felis chaus</i>	Lower Risk near threatened (BCPP)
3.	Hyena	<i>Hyaena hyaena</i>	
4.	Ratle	<i>Mellivora capensis</i>	
5.	Indian Flying Fox	<i>Pteropus giganteus</i>	
6.	Small Indian Civet	<i>Viverricula indica</i>	
7.	Desert Cat	<i>Felis silverstris</i>	
8.	Caracal	<i>Felis caracal</i>	Endangered (ZSI)
9.	Indian Wolf	<i>Canis lupus</i>	Lower Risk near threatened (BCPP)
10.	Desert Fox	<i>Vulpes vulpes</i>	Vulnerable (ZSI)
11.	Indian Pangolin	<i>Manis crassicaudata</i>	Vulnerable (ZSI)
12.	Blackbuck	<i>Antilope cervicapra</i>	Vulnerable (ZSI)
13.	Jackal	<i>Canis aureus</i>	

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S. No.	Common Name	Scientific Name	Status (1994)
14.	Indian Fox	<i>Vulpes bengalensis</i>	
15.	Indian Hare	<i>Lepus nigricollis</i>	
16.	Chinkara	<i>Gazella gazelle</i>	
17.	Blue bull	<i>Boselaphus tragocamelus</i>	

Source: Management Plan, Kuchchh Desert Wild Life Sanctuary, March 2008

BCPP = Biodiversity Conservation Prioritization

5.2 Impact Assessment and Mitigation Measures

Impacts:

- **No improvement has been proposed in the stretch passing through the Sanctuary except resurfacing of the existing carriageway**
- **No threatened species of flora** is falling in the ROW of the project stretch passing through the Sanctuary
- The construction activities and noise may cause temporary disturbance to wildlife, which is short term reversible impact.
- Resurfacing of existing carriageway and maintenance of bridge **would not restrict / stop the free flow of water in the Rann portion of the Sanctuary**
- There is no mangrove in nearby to the stretch passing through Sanctuary. Hence **no impact on mangrove** is envisaged.
- **“Flamingo City”**, the only breeding ground of the Lesser and Greater Flamingoes in the Indian Subcontinent, is **more than 30 km away from the** alignment of the Project Road. Hence **no impact on the breeding ground of Flamingoes** is envisaged.

Mitigation Measures

- No construction camp shall be allowed within the designate limits of the Sanctuary as well as within 1km from its boundaries.
- No construction activities will be permitted along stretches of road passing through the Sanctuary and within 1 km from its boundaries after 6:30 p.m.
- No disposal of debris shall be allowed within these areas except at locations identified by the contractor in consultation with the local administration.
- No workmen shall be allowed to stay within the areas after sundown.
- No incineration or burning of wastes should be carried out
- LPG/ Kerosene shall be provided by the Contractor for cooking to avoid indiscriminate felling of trees
- The User Agency and Contractor will ensure the minimum movement of the vehicles during the construction period
- The User Agency and Contractor will not use any area of the sanctuary other than the area permitted for the project activity by the Forest Department
- All the construction workers and staff of the project unit will be made aware and educated about the presence of the Wildlife in the area. Environmental awareness program will be

- provided to the Contractor, labours and all staff deployed at the site
- All staff / workers will be instructed not to chase or disturb if any wildlife seen near the project area. The incidence of sighting wildlife near project site should be reported to Forest Department.
 - Noise will be kept under control by regular maintenance of equipment and vehicles. No honking board shall be placed near Forest. Noisy activity shall be prohibited during night time.
 - Implementing sediment and erosion controls during maintenance of bridges will minimize adverse Impacts on Rann.
 - Contingent actions will be taken for speedy cleaning up of oil spills, fuel and toxic chemicals in the event of accidents.
 - **Therefore, the overall the impact on biodiversity in and around the stretch passing through the Sanctuary will be short-term and insignificant.**
