



भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA
जबलपुर हवाईअड्डा, जबलपुर
JABALPUR AIRPORT, JABALPUR-482005

Ref: AAI/JBP/EC/2019/207

Date: 22.2.2019

To,

The Member Secretary,
Infra-1, IA Division,
Ministry of Environment, Forests and Climate Change,
Indira Paryavaran Bhavan,
3rd Floor, Vayu wing, Jorbagh Road, Aliganj,
New Delhi-110003

Sub: Expansion of Jabalpur Airport at villages Dumna, Gadheri and Chakdehi, district Jabalpur, Madhya Pradesh by M/s. Airports Authority of India – Environmental Clearance Re-consideration

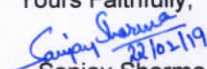
Ref: Clarification sought by EAC vide minutes of the 33rd meeting (Infra) held on 9th August, 2018

Sir,

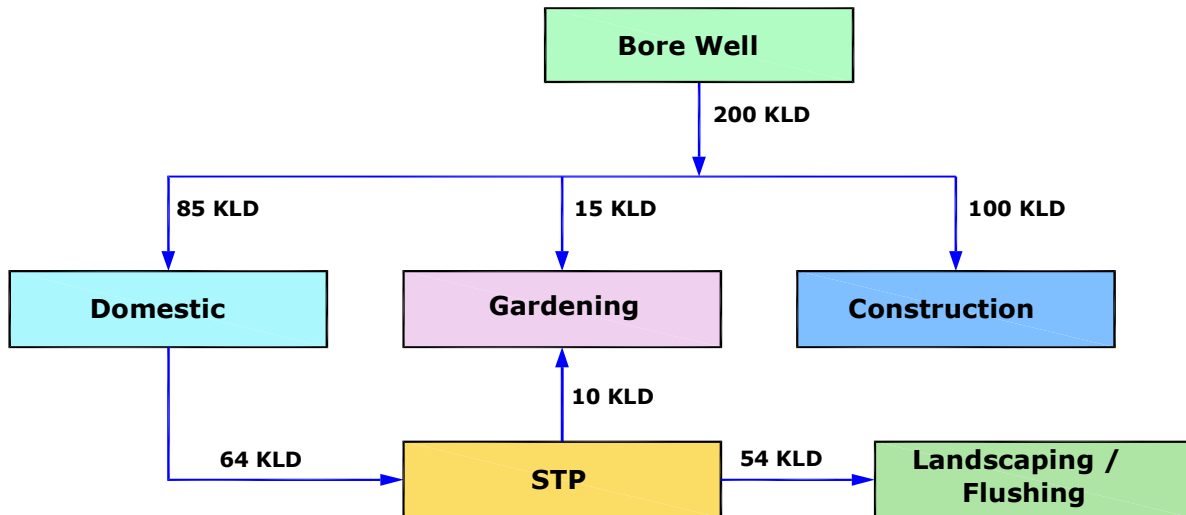
This is with respect to the above mentioned subject and cited reference to EAC meeting held on 9th August, 2018. After detailed deliberation on proposal, the committee sought the following additional information /clarification and the same is provided herewith:

Sr. No	Query	Response
1	Submit revised water balance detail including existing and proposed requirement.	Revised water balance attached as Enclosure-1
2	Submit Fire NOC for existing project from concerned department.	Fire NOC copy is given in Enclosure-2
3	Submit copy of valid consent to operate issued by State Pollution Control Board for existing airport.	CFO obtained from MPPB and the copy is given as Enclosure-3
4	Submit copy of CGWA clearance for the existing Project.	CGWA – Regional office, Bhopal has recommended the case to the CGWA – New Delhi, which is under finalization. Online status is given as Enclosures - 4
5	A wild life management plan for the area duly endorsed by the D.F.O which would indicate the incidence of wild life, the probable risks, historical evidence of past incidents and a management plan.	Authenticated wild life management plan duly authenticated from DFO is provided in Enclosure-5
6	Plan for corporate environment responsibility (CER) as specified under Ministry's office memorandum vide F.No. 22-65/2017-IA.III dated 1 st May 2018 shall be submitted.	CER plan given in Enclosure-6

We request you to kindly further consider our proposal for grant of Environmental Clearance (EC) as this project is of National importance.

Yours Faithfully,

Sanjay Sharma
Sr. Mgr (E-C), AAI Jabalpur

ENCLOSURE-1
WATER BALANCE CHART



Clarification submitted to CGWA:

The year of construction of the Jabalpur Airport is 1930, whereas the year of construction of two bore well is 2002 & 2014 respectively.

The discharge from the old borewell is diminishing. Also, as per the statutory aviation laws airport has to maintain certain bulk quantity of water for its designated firefighting category, apart from the passengers demand from public service point of view. Also, the proposed new terminal building is far away from the present borewells, which are in-sufficient to serve the purpose and the additional two bore wells are required for the proposed new facilities. The requirement of 4 bore wells is based upon pumping out of water @50% to be on safer side during the day shift when airport is busy with passenger footfalls. The additional requirement of borewells is for stand by units in view of the airport being public premise and a priority area.

The total water requirement is 200 m³/day only. The total water requirement for the airport after expansion will be about 100 KLD. The construction water requirement is about 100 KLD which is a temporary phase. The wastewater generated from domestic purposes will be treated in STP and utilised for gardening, landscaping and flushing maintaining the concept of zero liquid discharge. The water balance chart is given above.

ENCLOSURE-3
CTO FROM MPPCB



Consent Order

M.P. Pollution Control Board
E-5, Arera Colony
Paryawaran Parisar, Bhopal – 462 016 (M.P.)
Tele : 0755-2466191, Fax-0755-2463742

RED-LARGE

CCA-Fresh

VALIDITY(A/W): 31/10/2019

CONSENT NO: ***

PCB ID: 116806

To,

M/s. Airports Authority of India
Jabalpur Airport Dumna
Distt. JABALPUR – 482 002 (M.P.)

Sub: Grant of Consent to Operate under section 25 of the Water (Prevention & Control of Pollution) Act, 1974, under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981.

Ref: Your Consent to Operate application receipt No. 720641 dated: 07/09/2018 and last communication date 18.10.2018.

With reference to your above application for consent to operate and authorization has been considered under the aforesaid Acts and existing rules therein. The M. P. Pollution Control Board has agreed to grant consent up to **31/10/2019**, subject to the fulfillment of the terms & conditions, enclosed with this letter and

SUBJECT TO THE FOLLOWING CONDITIONS:-

- (a) **Location:** Khasra No. 3,8,9,10,15,7/50, 38/53/2 in Village: Dumna, Khasra No. 2/2, 103/2 in Village: Gadheri and Khasra No. 3/1, 3/2, 4, 7/1/2, 8/1, 11/1, 11/3 in Village: Chakdehi, Distt. Jabalpur (M.P.)
- (b) **The capital Investment:** Rs. 27.32 crores
- (c) **Product and Production Capacity:**

Airport Project	
Airport Operations	150 Passengers
Generation of Electricity by D.G. Set	2 x 250 KVA 1 x 400 KVA

Note:- For any change in above industry shall obtain fresh consent from the Board.

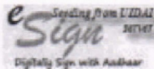
The Validity of the consent is up to **31/10/2019** has to be renewed before expiry of consent validity. Online application through XGN with annual license fees in this regard shall be submitted to this office 6 months before expiry of the consent/Authorization. Board reserves the right to amend/cancel / revoke the above condition in part or whole as and when required.

Enclosures:-

- * Conditions under Water Act
- * Conditions under Air Act
- * General conditions

Copy to:

- 1) Collector, District Jabalpur for information please.
- 2) Regional Officer, M.P. Pollution Control Board, Jabalpur for information



e-Signed On 26/11/2018 13:04:29
(Organic Authentication on AADHAR from UIDAI Server)
TPAV # R9191E93XQ

ACHYUT ANAND MISHRA
Member Secretary

Consent No:AW-49059,Validity:31/10/2019, Outward No:87577,26/11/2018

e-Signed (Physical Signature NOT requires)

Page 1 of 6

ENCLOSURE-4
CGWA CLEARANCE



Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation

Application for Issue of NOC to Abstract Ground Water (NOCAP)

Welcome : AAJABALPUR

Previous Login Date Time: 31/01/2019 12:48:56 PM , IP Address: 223.31.114.66

[Applicant Home](#) | [Apply](#) | [Feedback](#) | [Change Password](#) | [Profile](#)

<p>Information</p> <p>Guidelines Steps for Filling Online Application</p> <p>Documents Required</p> <p>Documents Required for Online Application</p> <ul style="list-style-type: none"> ▶ Industrial ▶ Infrastructure ▶ Mining <p>Track Status</p> <p>Application Status</p> <ul style="list-style-type: none"> ▶ Online <p>Location</p> <p>Area Type Segment-B Area Type Regional office Location CGWA Headquarters</p> <p>Reports</p> <p>Applied for NOC - Online NOC Issued-Online</p> <p>Contact Us</p> <p>Contact</p>	<p align="center">Application Status</p>																				
	<table border="1"> <tr> <td>Application No :</td> <td>21-4/655/MP/INF/2018</td> </tr> <tr> <td>Receive Date :</td> <td>28/01/2019</td> </tr> <tr> <td>Name of Infrastructure :</td> <td>M/S. AIRPORTS AUTHORITY OF INDIA</td> </tr> <tr> <td>Application Processing Fee :</td> <td>Rs. 1000.00/- (Rupees One Thousand Only) (Submitted: Yes)</td> </tr> <tr> <td>Current Stage :</td> <td>Application Processing Stage</td> </tr> <tr> <td>Current Status :</td> <td>In Process</td> </tr> <tr> <td>Address :</td> <td>Central Ground Water Authority West Block-IIR K Puram SOUTH WEST DELHI</td> </tr> </table>	Application No :	21-4/655/MP/INF/2018	Receive Date :	28/01/2019	Name of Infrastructure :	M/S. AIRPORTS AUTHORITY OF INDIA	Application Processing Fee :	Rs. 1000.00/- (Rupees One Thousand Only) (Submitted: Yes)	Current Stage :	Application Processing Stage	Current Status :	In Process	Address :	Central Ground Water Authority West Block-IIR K Puram SOUTH WEST DELHI						
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Receive	From User	To User	Forwarded	Action Date	Action	Action	Ground	Ground													

Date	Name	Name	User Name		Internal Status	Comment	Water Recom Per Day	Water Recom Annual
18/12/2018	(Evaluation Officer) Central Ground Water Board North Central Region	(Evaluation Officer) Central Ground Water Board North Central Region	(Approval Officer) Central Ground Water Board North Central Region	03/01/2019	Forward	Forwarded to AO	200.00	73000.00
03/01/2019	(Evaluation Officer) Central Ground Water Board North Central Region	(Approval Officer) Central Ground Water Board North Central Region	(Regional Director) Central Ground Water Board North Central Region	04/01/2019	Forward	Forwarded to Adm	200.00	73000.00
04/01/2019	(Approval Officer) Central Ground Water Board North Central Region	(Regional Director) Central Ground Water Board North Central Region	(Approval Officer) Central Ground Water Board North Central Region	12/01/2019	Return	Forwarded to Adm	200.00	73000.00
12/01/2019	(Regional Director) Central Ground Water Board North Central Region	(Approval Officer) Central Ground Water Board North Central Region	(Evaluation Officer) Central Ground Water Board North Central Region	22/01/2019	Return	Forwarded to Adm	200.00	73000.00
22/01/2019	(Approval Officer) Central Ground Water Board North Central Region	(Evaluation Officer) Central Ground Water Board North Central Region	(Approval Officer) Central Ground Water Board North Central Region	22/01/2019	Forward	Forwarded to Adm	200.00	73000.00
22/01/2019	(Evaluation Officer)	(Approval Officer)	(Regional Director)	22/01/2019	Forward	Forwarded to Adm	200.00	73000.00

	Central Ground Water Board North Central Region	Central Ground Water Board North Central Region	Central Ground Water Board North Central Region					
22/01/2019	(Approval Officer) Central Ground Water Board North Central Region	(Regional Director) Central Ground Water Board North Central Region	(Evaluation Officer) Central Ground Water Authority	28/01/2019	Forward	Forwarded to CGWA	200.00	73000.00
28/01/2019	(Regional Director) Central Ground Water Board North Central Region	(Evaluation Officer) Central Ground Water Authority						

NOC Processing

Receive Date	From User Name	To User Name	Forwarded User Name	Action Date	Action Internal Status	Action Comment
No Record for this Stage.						

NOC Disbursement

Receive Date	From User Name	To User Name	Forwarded User Name	Action Date	Action Internal Status	Action Comment
No Record for this Stage.						

[Go Back](#)

ENCLOSURE-5
AUTHENTICATED WILDLIFE CONSERVATION PLAN FROM DFO

कार्यालय वन मण्डल अधिकारी, सामान्य वनमण्डल जबलपुर-482001
फोन : 91-761-2624195 (कार्या.), Email: dfotjbp@mp.gov.in

क्र०/डी०एम०/4202

जबलपुर दिनांक 14/11/18

प्रति,

विमानपत्तन निदेशक
भा० वि० प्रा० जबलपुर विमानतल
जबलपुर

विषय :- जबलपुर हवाई अड्डे को 'AB - 320' प्रकार के विमान संचालन के उपयुक्त बनाने के लिये हवाई अड्डे का विस्तार।
संदर्भ :- आपका पत्र क्रमांक/ एएआई/ जबलपुर/ ए०पी०डी०/2018/833 (01-02) दिनांक 05.09.2018.

विषयान्तर्गत संदर्भित पत्र से प्राप्त जबलपुर विमानतल के विस्तारण कार्य हेतु आवेदन के तहत प्राप्त वन्य-जीवन संरक्षण योजना अनुमोदन उपरांत मूलतः आपकी ओर सम्प्रेषित है।
संलग्न :- योजनाएं।

7/12/18
वन मंडल अधिकारी
सामान्य वनमंडल जबलपुर
30/11/18

कार्यालय वन मण्डल अधिकारी, सामान्य वनमण्डल जबलपुर-482001

फोन : 91-761-2624195 (कार्या.), Email: dfotjbp@mp.gov.in

क्र०/डी०एम०/५२०२

जबलपुर दिनांक 14/10/18

प्रति.

विमानपत्तन निदेशक
आ० वि० प्रा० जबलपुर विमानतल
जबलपुर

विषय :- जबलपुर हवाई अड्डे को 'AB - 320' प्रकार के विमान संचालन के उपयुक्त बनाने के लिये हवाई अड्डे का विस्तार।
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सलग्न :- योजनाएं।

वन मंडल अधिकारी
सामान्य वनमंडल जबलपुर
30/11/18

WILDLIFE CONSERVATION PLAN
FOR
THE PROPOSED EXPANSION OF JABALPUR AIRPORT AT
VILLAGES DUMNA, GADHERI AND CHAKDEHI,
JABALPUR DISTRICT, MADHYA PRADESH


Divisional Forest Officer
Jabalpur (T) Division
Jabalpur



विमानपत्तन निदेशक
भारतीय विमानपत्तन प्राधिकरण
जबलपुर विमानतल, जबलपुर



TABLE OF CONTENTS

Chapter	Title	Page No.
1.1	Introduction of the Project AAI- Jabalpur	1
1.2	Purpose of the Report	1
1.3	Details of Environmental Setting	4
1.4	Scope of the Study	9
1.5	Methodology of the Study	9
1.6	Study Area and its Ecological Sampling	10
1.7	Ecology of the Study Area	12
1.8	Forest Blocks in the Study Area	12
1.9	Fauna of the Dumna Nature Preserve Park	13
1.10	Fauna of the Core Zone	14
1.11	Fauna of the Buffer Zone	14
2.0	Leopard Conservation	17
3.0	Indian Grey Hornbill Conservation	22
4.0	Schedule-II, III and IV Fauna	23
4.8	History of Wild life and incidences within/near Jabalpur Airport	24
4.8.1	Past incidents	24
4.8.2	Learning from the past incidents	26
4.8.3	Mitigation measures adopted for the risk of wild life incidents	26
4.9	Budget	27



1.0 INTRODUCTION

Jabalpur airport is managed by Airports Authority of India (AAI), and is the third largest airport in the state of Madhya Pradesh in terms of passenger traffic. It is connected to Delhi, Mumbai & Hyderabad by Spice jet and Alliance Air. Jabalpur airport is spread over an area of 659.18 acres. It is located at a distance of about 8.0 km, west from Jabalpur town. The terminal building already exists and at present CRJ 700 and Q-400 aircrafts are operating. Further, daily there are 2 numbers of non-scheduled operations of BCH-1900 type of aircrafts. The present peak hour traffic of scheduled flights is 1 number of aircraft for which apron is available.

Considering the projected traffic in the year 2017-18, there is a need to build new terminal building, apron and allied works at the location available within the existing land and additional land of 101.14 acres for the extension of runway and airport development which is also in possession of AAI.

1.1 Purpose of the Report

As per Environmental Impact Assessment Notification dated 14th September, 2006 and 01.12.2009, the proposed airport expansion project falls under category 'A' under project type 7(a) and requires Environmental Clearance (EC) to be obtained from Ministry of Environment, Forest and Climate Change (MoEF&CC) before the commencement of any ground activity.

Vimta Labs Limited, Hyderabad, has been assigned to undertake an Environmental Impact Assessment (EIA) study and preparation of Environment Management Plan (EMP) for various environmental components, which may be affected due to the impacts arising out of the proposed project activity.

In line with the said Notification, an application for prior environmental clearance was filed to MOEF&CC. Accordingly, scoping-meeting was held in MoEF&CC on 23rd February 2016 for determining the Terms of Reference (TOR) for the preparation of EIA/EMP report for the proposed project. Based on the TOR conditions stipulated by MoEF&CC vide letter No. F.No.10-12/2016-IA.III dated 26th March, 2016, EIA/EMP has been prepared. The proposal was appraised by EAC (Infra-2) in its 29th meeting held on 20th March, 2018 and sought additional information, which includes "Wildlife Conservation Plan along with wildlife issues and mitigation measures".

1.2 Identification of Project and Project Proponent

1.2.1 Project Proponent

Airports Authority of India (AAI) was constituted by an Act of Parliament and came into being on 1st April 1995. Currently, it manages a total of 125 Airports, which include 11 International Airports, 08 Customs Airports, 81 Domestic Airports and 25 Civil Enclaves at defence Airfields.



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

AAI also provides Air Traffic Management Services (ATMS) over entire Indian Air Space and adjoining oceanic areas with ground installations at all airports and 25 other locations to ensure safety of aircraft operations.

1.2.2 About the Project

➤ **Pre History**

The airport was opened in the 1930s and used periodically by the Royal Air Force and Royal Flying Corps before and during World War II. It was commonly known as Jubbulpore Aerodrome and had a dirt runway until the 1960s. The new paved runway was built atop the original dirt runway, in the same alignment. Before the aerodrome at Dumna was opened, planes had been landing, even in the 1920s, within a racecourse inside the city limits of Jabalpur.

➤ **Project Background**

Jabalpur airport is managed by Airports Authority of India and is the third largest airport in the state of Madhya Pradesh in terms of passenger traffic. In 2014-15 Jabalpur airport handled 0.1 million domestic passengers. It is connected to Delhi, Mumbai and Hyderabad by Spice jet and Alliance Air. In September 2015 State Govt. has handed over 468.43 acres of land to AAI. The total land in possession of AAI at Jabalpur airport is around 760 acres.

Chairman AAI directed that instead of going in for piecemeal development a holistic approach may be adopted and all development works to be spelt out in a comprehensive scope of work for up-gradation of Jabalpur airport to make it suitable for operation of AB-320 type of aircraft since State Govt. has handed over 468.43 acres of land to AAI.

➤ **Present Proposal**

The present proposal of expansion of existing Jabalpur airport will help in easing the movement of AB 320 type of aircrafts & will be able to cater to passenger's traffic beyond 2015-16. Hence, there is a need for construction of new terminal building, extension of apron, runway and other allied works. The year wise passenger report for the last three years is given below. From the table, it can be observed that the percentage increase of the passengers is about 50% in the year 2015-16 when compared to 2014-15. It is expected that it would increase further in the coming years. The details are given in **Table-1**.

TABLE-1
PASSENGER DETAILS

Year	Aircraft Movements	Passengers
2014-15	1718	101227
Growth Rate	45%	50%
2015-16	2491	151841

Source: AAI

The project will also lead to generation of indirect employment opportunities for local population during both construction & operation phases. The proposed



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

project is development of Jabalpur airport to facilitate landing of AB 320 type of aircrafts which involves:

- Construction of new terminal building;
- Extension of runway and taxiway;
 - Apron extension; and
 - Construction of ATC tower.

The estimated cost of the proposal is about Rs. 165 crores. Further, construction of drainage works, fire station, boundary wall & other miscellaneous works along with electrical works will be carried out. The airport is operational under AAI. Presently, only private / commercial flights are operating at Jabalpur airport.

1.3 Details of Environmental Setting

Jabalpur airport and 10 km radius surrounding area is covered in the Survey of India Toposheet No's F44B15, F44C3, F44B16 & F44C4. The environmental setting around the airport is given in **Table-2**. The location map and 10 km radius study area map are given in **Figure-1** and **Figure-2** respectively. The google image is given in **Figure-3**.

TABLE-2
ENVIRONMENTAL SETTING AROUND THE AIRPORT

Sr. No.	Particulars	Details
1	Coordinates	Latitude: 23°10'14.5"N to 23°11'22.5"N Longitude: 80°02'25.2"E to 80°04'25.0"E
2	General elevation above MSL	480 m
3	Nearest highways	NH-12A (7.2 km, S) NH-7 (9.6 km, W)
4	Nearest railway station	Jabalpur Railway Station (8.8 km, W)
5	Nearest other airports	Nagpur Airport (240 km, SSW) Bhopal Airport (270 km, W)
6	Nearest village/town	Nearest Village: Dumna (0.2 km, ESE), Kakartala (1.8 KM) , Gadheri (4 KM) Major Town: Jabalpur (8.0 km, W)
7	Ecologically sensitive zones	Deer Spotted on breeding area in Dumna Nature Reserve Park (1.3 km, W). Migratory birds comes on Khandari reservoir in winter Season.
8	Forest areas in 10 km radius	Lowergaur RF (0.03 km, E) Chhatri RF (5.8 km, NE) Bijapuri RF (6.6 km, ENE) Sakri RF (7.6 km, N) Gangai RF (8.4 km, E) Pondi RF (8.9 km, NE) Dumna Nature Reserves (1.5 km, W)
9	Major water bodies	Khandari Reservoir (1.2 km, WSW) Pariat Nadi (2.7 km, N) Gaur Nadi (3.0 km, SE) Pariat Tank (6.9 km, NE)
10	Notified historical/ archaeological/ tourist places	Nil within 10 km radius



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

Sr. No.	Particulars	Details
11	Defence and other related establishments	Central Ordinance Department (2.6 km, W) Ordinance Factory (2.0 km, North) Vehicle Factory (6.2 km, NW) GIF Industries (7.3 km, NW)
12	Industries	Eastland Khamaria Estate (1.7 km, NNW) Riccha Industrial area (8.0 km, NW) B.S.N.L Factory (9.2 km, NW)
13	Seismic zone	Seismic zone-III as per IS: 1893 (Part-1): 2002

Note: All distances mentioned above are aerial distances from airport boundary



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

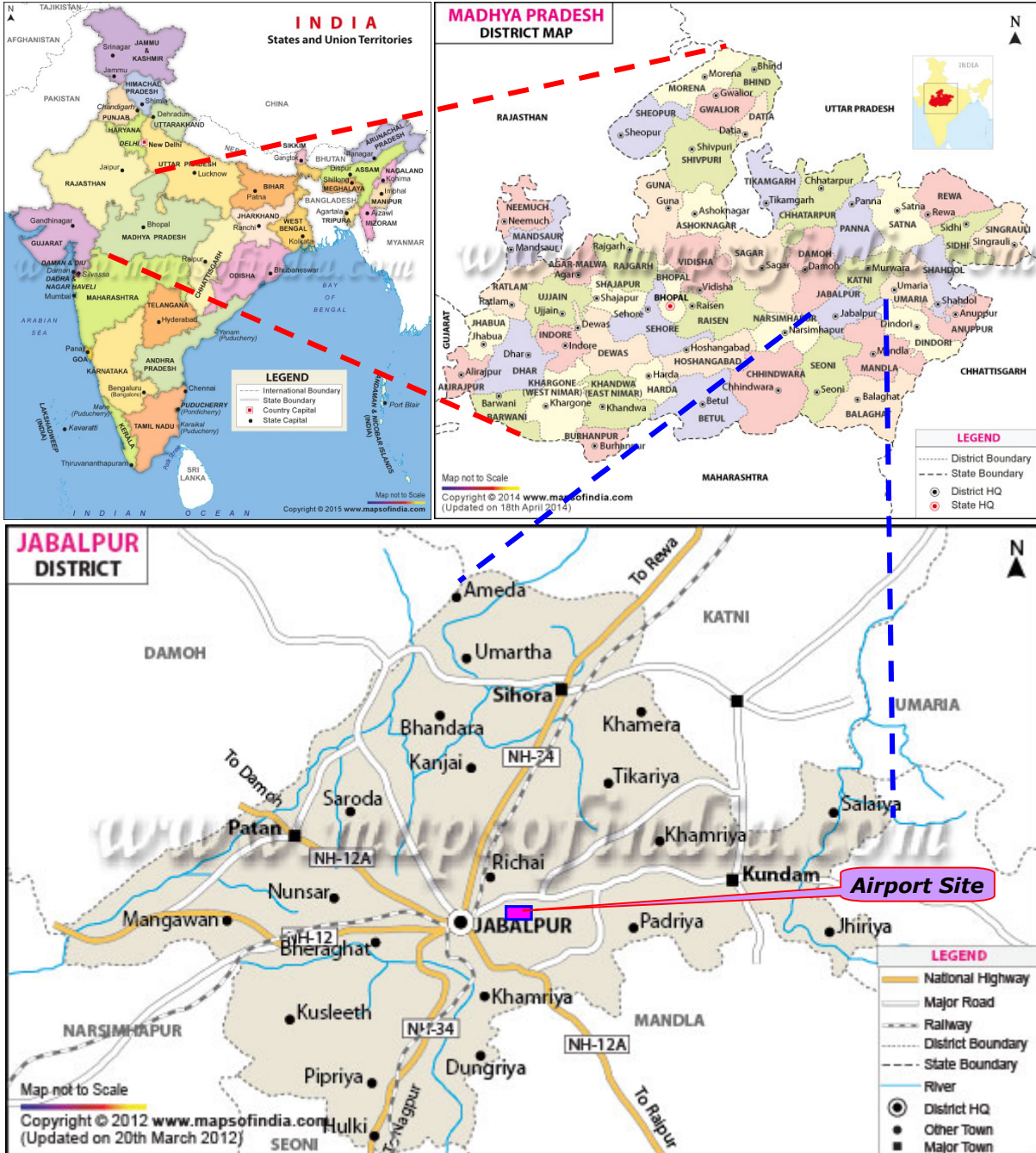
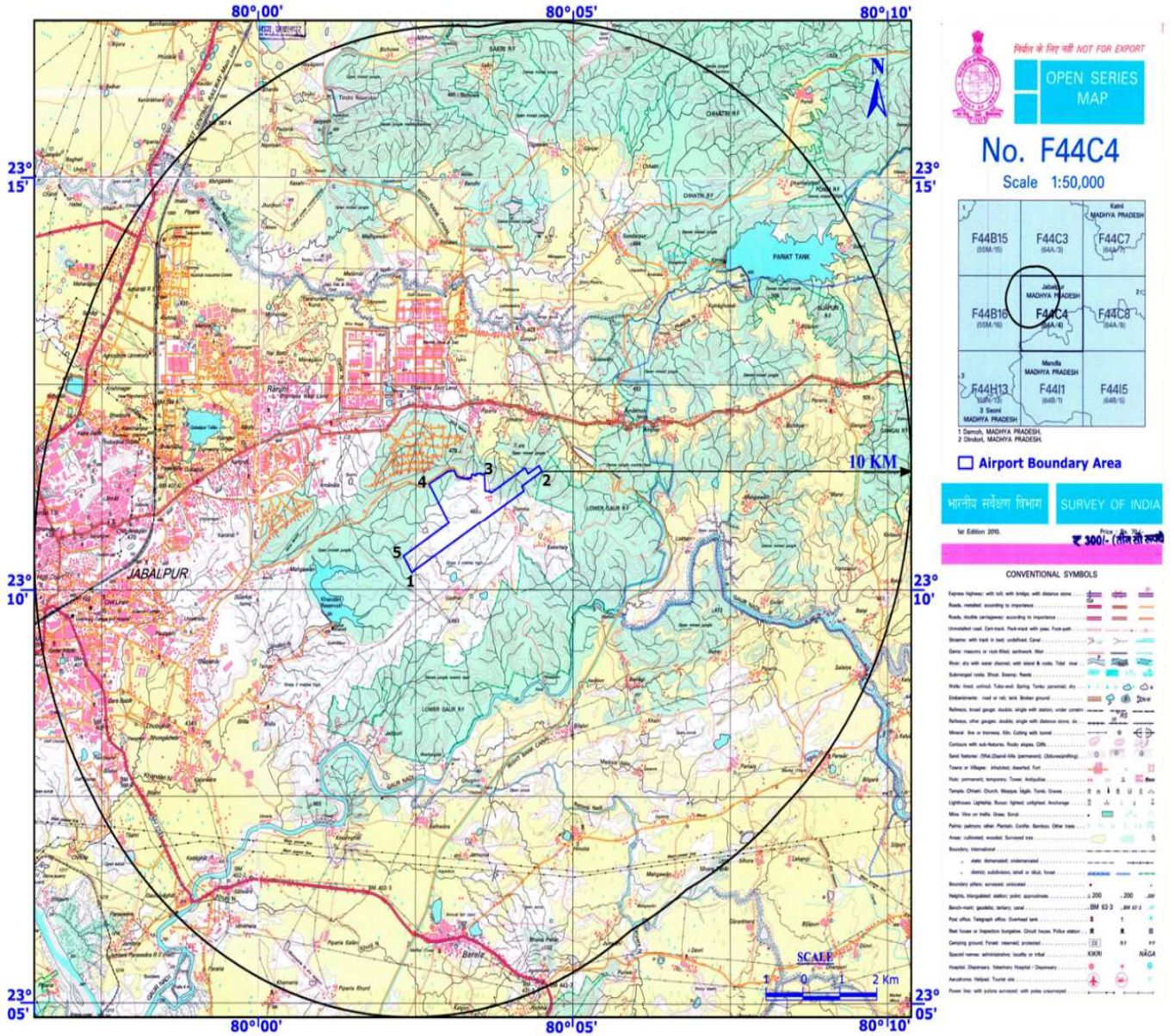


FIGURE-1



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

INDEX MAP SHOWING THE PROJECT SITE





STUDY AREA MAP OF THE PROJECT (10 KM RADIUS)

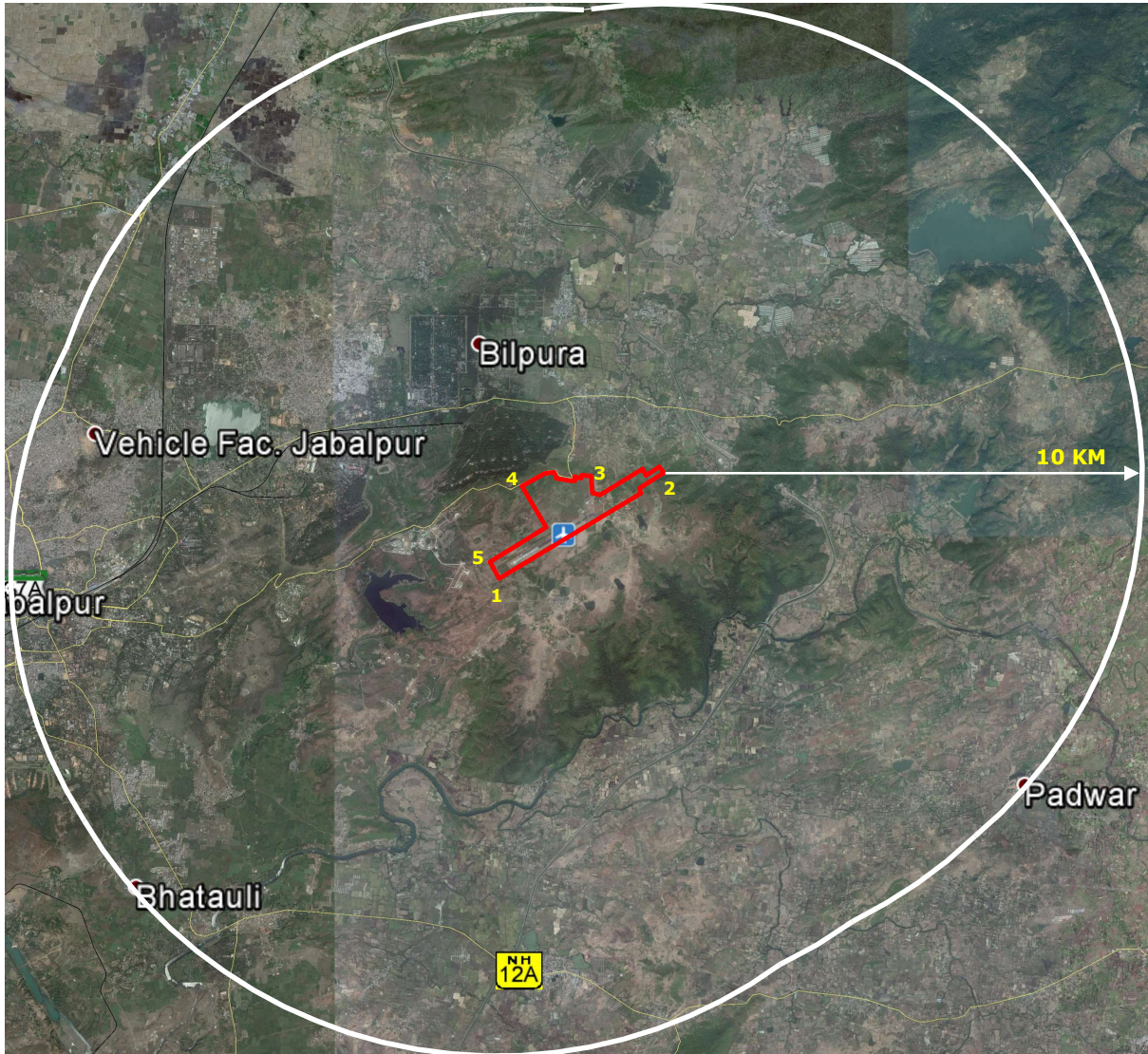


FIGURE-3
GOOGLE IMAGE (10 KM RADIUS)



1.4 Scope of the Study

With a view to assess the environmental impacts due to the proposed project, AAI has retained the services of M/s. Vimta Labs Ltd, Hyderabad to prepare EIA report for various environmental components including air, noise, water, land and biological components and to prepare an EMP for mitigating adverse impacts.

The EIA report is prepared based on the TOR conditions issued by MoEF&CC and one season baseline environmental monitoring carried out in the study area of 10 km radius. Modelling exercises have been carried out to predict and evaluate impacts due to proposed project. Mitigation measures have been proposed on the basis of impact evaluation.

The scope of the study broadly includes wildlife conservation plan along with Wildlife issues and mitigation measures:

- Identification of fauna for preparation of wildlife conservation plan;
- Collection of data relevant to the Scheduled-I fauna found in the study area and literature review;
- Identification of habitat of Scheduled –I fauna and other scheduled fauna along with conservation indices; and
- Identification of the critical environmental attributes required to be monitored further and mitigation measures.

The literature includes review of relevant articles from various publications, government records, etc.

1.5 Methodology of the Study

Vimta Labs Limited, Hyderabad along with the officials of AAI –Jabalpur had conducted a reconnaissance survey and sampling locations were identified. To achieve the above objectives, a detailed study of the area was undertaken with the existing airport boundary as its centre.

- Generation of primary data by undertaking systematic ecological survey in the study area;
- Primary data collection for flora through random sampling method for trees, shrubs and herbs from the selected locations to know the vegetation cover qualitatively;
- Faunal studies by taking transect in the study area to spot the fauna and also to know the fauna through secondary indicators such as pugmarks, scats, fecal pellets, calls and other signs;
- A sampling of aquatic biodiversity using the standard method for phytoplankton zooplankton and other macro- flora and fauna;
- For ecological information, the secondary sources such as local officials, villagers, and other stakeholders were interviewed; and
- Sourcing secondary data with respect to the study area from published literature.



The study also provides framework and institutional strengthening for implementing the mitigation measures. Field studies have been conducted during pre-monsoon season (March-May, 2016) to determine existing conditions of various environmental attributes. The monitoring details and scope of work are outlined in **Table-3**.

**TABLE-3
ENVIRONMENTAL ATTRIBUTES AND FREQUENCY OF MONITORING**

Sr. No.	Attributes	Sampling Locations	Parameters	Frequency
1	Ecology (Terrestrial and Aquatic)	3	Identification of species diversity	Once during study period

1.6 Study Area and its Ecological Sampling

The regulatory requirement of environmental law pertaining to developments has to be complied for existing project. The existing project requires environmental impact studies for obtaining environmental clearance from Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India. The list of terrestrial and aquatic sampling locations in the study area is presented in **Table-4** and shown in **Figure-4**.

**TABLE-4
TERRESTRIAL AND AQUATIC SAMPLING LOCATIONS**

Code	Name of the Locations	Distance from Airport Site (km)	Direction
Terrestrial Ecological Locations			
TE-1	Airport site	-	-
TE-2	Barela	8.3	S
TE-3	Amanala	2.9	WNW
TE-4	Sundarpar	5.4	NE
TE-5	Amkhoh	2.7	ENE
Aquatic Ecological Locations			
AE-1	Gaur Nadi at Kivlari	8.9	NW
AE-2	Pariat Nadi near Piparia	6.9	SE



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

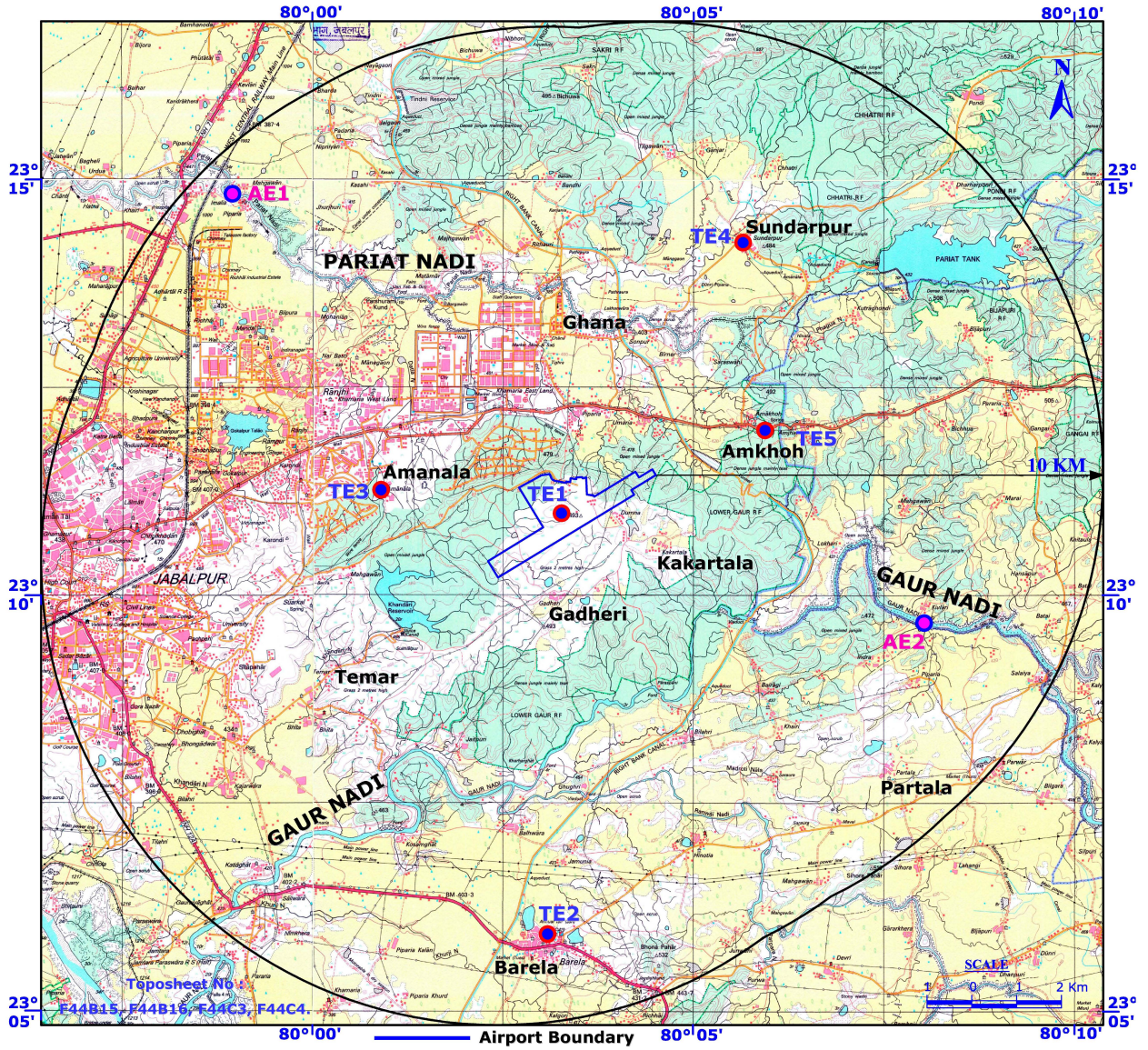


FIGURE-4
TERRESTRIAL AND AQUATIC ECOLOGICAL SAMPLING LOCATIONS



1.7 Ecology of the Study Area

The following types of vegetation are present in the study area.

Dry Teak Forest 5A (C1b): These forests are associated with Teak, Saja- (*Terminalia tomentosa*), Moyen (*Lannea coromandelica*), Dhaura (*Anogeissus latifolia*), Tendu (*Diospyros melanoxylon*), Amaltas (*Cassia fistula*), Faldu (*Mitragyna* spp), Salai (*Boswellia serrata*). In the lower canopy, the species like *Nycanthes arbor-tristis* (Parijat), *Woodfordia fruticosa* (Dhataki), *Helicteres isora* (East Indian Screw pine), *Grewia hirsuta* (Nagbala/Kukurbicha), *Indigofera pulchella* (*Cassia indigo*), *Carissa* spp, (Karonda), *Holarrhena pubescens* (Kutaja), predominate the existing flora.

Southern Dry Mixed Deciduous Forests (5A/C3)

This type of the forest is confined to relatively low rainfall area and lower altitude, i.e 300 400 m above mean sea level. Species growing in these forests are common to most deciduous forests such as Dhaura (*Anogeissus latifolia*), Saaj/ Saaja- (*Terminalia tomentosa*), *Chloroxylon swietenia* (East Indian Tree), *Hardwickia binnata* (Anjan), *Boswellia serrata* (Salai guggal), *Soymida febrifuga* (Rohan/ Rakta Rohan), *Mitragyna parviflora* (Kaim), *Madhuca indica* (Mahua), *Lagerstroemia parviflora* (Lendia), *Aegle marmelos* (Bel) and *Butea monosperma* (Palash/Flame of forest). *Bamboo* species (Bans) usually grow as under growth and heavily browsed and become bushy.

Dry Deciduous Scrub 5/ D S1

Comprises of *Diospyros melanoxylon* (Tendu), *Acacia leucocephala* (Subabul), *Butea monosperma* (Palash), *Cassia fistula* (Amaltas), *Anogeissus latifolia* (Dhaora), *Lannea grandis* (Mohin/Indian Ash Tree), *Carissa opaca* (Karonda), *Woodfordia fruticosa* (Dhataki).

1.8 Forest Blocks in the Study Area

There are six reserve forests and a nature reserve within 10 km radius of the study area listed in **Table-5**.



**TABLE-5
DETAILS OF FOREST BLOCKS IN STUDY AREA (10 KM RADIUS)**

Sr. No	Name of the Forest Block	Distance (km)	Direction
1	Lowergaur RF	0.03	E
2	Chhatri RF	5.8	NE
3	Bijapuri RF	6.6	ENE
4	Sakri RF	7.6	N
5	Gangai RF	8.4	E
6	Pondi R.F	8.9	NE
7	Dumna Nature Reserve Park	1.3	W

1.9 Fauna of the Dumna Nature Preserve Park -Scheduled-I, II, III, IV in the Study Area

Dumna Nature Reserve Park is an ecotourism site open to the public located in the Jabalpur district, Madhya Pradesh. It includes a dam, forests, and numerous wildlife in sprawling 1058 ha area. This is located at a distance of 1.3 km, NW from airport boundary.

Wildlife comprises of rich diversity of fauna such as wild boars, monkeys, jackals, spotted deer, porcupine, and spotted deer or cheetal. Several species of birds are also found in the Dumna Nature Reserve Park. The park has lush green landscapes with plenty of trees and plants which are endowed with bamboo groves.

Panthera pardus –Presence were indicated by the locals and forest staff in the Dumna Nature Reserve Park occasionally.

As per the observations in the buffer zone, there is indicated presence of *Panthera pardus* (Panther), *pavo cristatus* (Indian Peafowl), *Ocyrceros biaostris* – Grey Hornbill, *Cervus axis* (Cheetal/ Spotted Deer), *Sus scrofa* - (Wild Boar) were identified in the ecological studies based on primary and secondary data available. Listed according to their respective schedules which are listed in **Table-6** as Indian Wildlife (Protection) Act, 1972.

**TABLE-6
FAUNA OF DUMNA NATURE PRESERVE IN THE BUFFER ZONE**

Sr. No	Scientific Name	Common Name	Schedules as per Indian Wildlife (Protection) Act, 1972
1	<i>Panthera pardus</i>	Leopard	Sch-I
2	<i>Pavo cristatus</i>	Indian Peafowl	Sch-I
3	<i>Ocyrceros biaostris</i>	Indian Grey Hornbill	Sch-I
4	<i>Gracula religiosa</i>	Hill Myna	Sch-I
5	<i>Sus scrofa</i>	Wild Boar	Sch-III
6	<i>Cervus axis</i>	Cheetal /Spotted Deer	Sch-III
7	<i>Hystrix indica</i>	Porcupine	Sch-IV



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

Sr. No	Scientific Name	Common Name	Schedules as per Indian Wildlife (Protection) Act, 1972
8	<i>Canis aureus</i>	Jackal	Sch-II
9	<i>Macaca mullata</i>	Rhesus Monkeys	Sch-II

1.10 Fauna of the Core Zone

The fauna of the core zone is listed in **Table-7**.

**TABLE-7
FAUNA OF THE CORE ZONE**

Sr. No.	Scientific Name	Common Name	Conservation as per WPA (1972)
Avian Fauna			
1	<i>Acridotheres tristis</i>	Common myna	Sch-IV
2	<i>Passer domesticus</i>	House Sparrow/Pichuka	Sch-IV
3	<i>Bubulcus ibis</i>	Cattle egret	Sch-IV
4	<i>Passer domesticus</i>	House Sparrow	Sch-IV
5	<i>Egretta garzetta</i>	Little egret	Sch-IV
6	<i>Corvus marcorynchos</i>	Jungle Crow	Sch-IV
7	<i>Corvus splendens</i>	House crow/ Kowa	Sch-V
8	<i>Columba livia</i>	Blue Rock -Pigeon	Sch-V
Amphibians & Reptiles			
1	<i>Bufo melanosticus</i>	Common frog	Sch-IV
2	<i>Rana tigrina</i>	Bull frog	Sch-IV
3	<i>Calotes versicolor</i>	Common garden lizard	Sch-IV
Mammals			
1	<i>Bandicota indica</i>	Greater Bandicoot/	Sch-V
2	<i>Herperstes edwardsii</i>	Indian Mongoose	Sch-II
3	<i>Funambulus pennanti</i>	Five striped Palm Squirrel	Sch-V
4	<i>Sus scrofa</i>	Wild Boar	Sch-III
Insects			
1	<i>Papilio demoleus</i>	Common Swallow Tail Butterfly	-
2	<i>Attacus atlas</i>	Atlas moth	-
3	<i>Neoscana bengalensis</i>	Spotted Orb Weaver	-
4	<i>Argiope pulchella</i>	Orb Spider	-

1.11 Fauna of the Buffer Zone

The fauna of the buffer zone is listed in **Table-8**.

**TABLE-8
FAUNA OF THE BUFFER ZONE**

Sr. No	Scientific Name	Common name	Conservation Status as per Indian Wildlife Protection Act (1972)
Avifauna			
1	<i>Adreola grayii</i>	Paddy Bird/Pond Heron	Sch-IV
2	<i>Phalacrocorax niger</i>	Little Cormorant	Sch-IV
3	<i>Bulbucus cormandus</i>	Cattle Egret	Sch-IV
4	<i>Egretta intermedia</i>	Intermediate Egret	Sch-IV
5	<i>Mycteria leucocephala</i>	Painted Stork	Sch-IV



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

Sr. No	Scientific Name	Common name	Conservation Status as per Indian Wildlife Protection Act (1972)
6	<i>Columba livia</i>	Blue Rock Pigeon	Sch-V
7	<i>Dicrurus macrocerus</i>	Black Drongo	Sch-IV
8	<i>Corvus macrorhynchos</i>	Jungle Crow	Sch-IV
9	<i>Dendrocritta vagunda</i>	Rufous Treepie	Sch-IV
10	<i>Cinnyris asiatica</i>	Purple Sunbird	Sch-IV
11	<i>Leptocoma zeylonica</i>	Purple-Rumped Sunbird	Sch-IV
12	<i>Passer domesticus</i>	House Sparrow	Sch-IV
13	<i>Ploceus philippinus</i>	Baya Weaver	Sch-IV
14	<i>Petronia xanthocollis</i>	Yellow-Throated Sparrow	Sch-IV
15	<i>Sturnus roseus</i>	Rosy Starling	Sch-IV
16	<i>Temenchus pagogarum</i>	Brahminy Starling	Sch-IV
17	<i>Acridotheres tristis</i>	Common Myna	Sch-IV
18	<i>Lonchura striata</i>	White Rumped Munia	Sch-IV
19	<i>Lonchura punctualata</i>	Scaly -Breasted Munia	Sch-IV
20	<i>Orthomos sutorius</i>	Common Tailor Bird	Sch-IV
21	<i>Prinia socialis</i>	Common Prinia	Sch-IV
22	<i>Saxicola caprata</i>	Pied Bushchat	Sch-IV
23	<i>Pyconotus cafer</i>	Red Vented Bulbul	Sch-IV
24	<i>Lanius schach</i>	Long tailed Shrike	Sch-IV
25	<i>Motacila cineria</i>	Grey Wagtail	Sch-IV
26	<i>Turdoides striatus</i>	Jungle Babbler	Sch-IV
27	<i>Anthus rufulus</i>	Paddyfield Pitpit	Sch-IV
28	<i>Merops orientalis</i>	Little Green Bee Eater	Sch-IV
29	<i>Coracias benghalensis</i>	Indian Roller	Sch-IV
30	<i>Upupa epops</i>	Common Hoopoe	Sch-IV
31	<i>Megalaima haemacephala</i>	Coppersmith Barbet	Sch-IV
32	<i>Hirundo smithii</i>	Wire Tailed Swallow	Sch-IV
33	<i>Eudynamys scolopaceus</i>	Asian Koel	Sch-IV
34	<i>Tyto alba</i>	Barn Owl	Sch-IV
35	<i>Caprimulgus asiaticus</i>	Indian Little Nightjar	Sch-IV
36	<i>Apus affinis</i>	Little Swift	Sch-IV
37	<i>Ceryle rudis</i>	Lesser Pied Kingfisher	Sch-IV
38	<i>Pavo cristatus</i>	Indian Peafowl	Sch-I
39	<i>Ocyrceros biorostris</i>	Indian Grey Hornbill	Sch-I
40	<i>Gracula religiosa</i>	Hill Myna	Sch-I
41	<i>Anthene brama</i>	Spotted Owlet	Sch-IV
42	<i>Calidris ferruginea</i>	Curlew Sandpiper	Sch-IV
43	<i>Himantopus</i>	Black Winged Stilt	Sch-IV
44	<i>Sterna aurantia</i>	Indian River Tern	Sch-IV
45	<i>Laurus ridibundus</i>	Black headed Gull	Sch-IV
46	<i>Pscittacula krameri</i>	Rose-Ringed Parakeet	Sch-IV
47	<i>Streptopelia chinensis</i>	Spotted Dove	Sch-IV
48	<i>Perdicula asiatica</i>	Jungle Bush Quail	Sch-IV
49	<i>Gallinula chloropus</i>	Common Moorehen	Sch-IV
50	<i>Fulica atra</i>	Common Coot	Sch-IV
51	<i>Vanellus indicus</i>	Red Wattled Lapwing	Sch-IV
Mammals			
1	<i>Funambulus pennanti</i>	Five Striped Palm	Sch-IV



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

Sr. No	Scientific Name	Common name	Conservation Status as per Indian Wildlife Protection Act (1972)
		Squirrel	
2	<i>Bandicoota benghalensis</i>	Bandicoot	Sch-V
3	<i>Pteropus giganteus</i>	Indian Flying Fox	Sch-V
4	<i>Sus scrofa</i>	Wild Boar	Sch-III
5	<i>Vulpes bengalensis</i>	Indian Fox	Sch-II
6	<i>Lepus nigricollis</i>	Indian Black Napped Hare	Sch-IV
7	<i>Herpestes edwardsi</i>	Indian Mongoose	Sch-II
8	<i>Panthera pardus</i>	Leopard	Sch-I
Reptiles			
1	<i>Calotes versicolor</i>	Common Garden Lizard	Sch-IV
2	<i>Chameleon zeylanicus</i>	Chameleon	Sch-IV
3	<i>Naja</i>	Common Cobra	Sch-II
4	<i>Pytas muscosus</i>	Common Rat Snake	Sch-II
5	<i>Varanus</i>	Monitor Lizard	Sch-I
6	<i>Molurus Molurus illaeus</i>	Paython	Sch-I
Amphibians			
1	<i>Buffo melanosticus</i>	Common Toad	Sch-IV
2	<i>Rana trigrina</i>	Bull Frog	Sch-IV
Fresh Water Fishes			
1	<i>Chana gachus</i>	Murrel	-
2	<i>Catla</i>	Major Carp/Catla	-
3	<i>Labeo rohita</i>	Rohu	-
4	<i>Wallago attu</i>	Shivda	-
Insects			
1	<i>Papilio demoleus</i>	Common-Swallowtail Butterfly	-
2	<i>Attacus atlas</i>	Atlas moth	
3	<i>Virachola isocrates</i>	Pomegrante Butterfly	-
4	<i>Achea janata</i>	Castor Semilooper	-
5	<i>Neoscana bengalensis</i>	Spotted Orb Weaver	-
6	<i>Argiope pulchella</i>	Orb Spider	-

2.0 Leopard Conservation



Source: Indian Leopard – *Panthera pardus fusca* –Wildlife Institute of India

Panthera pardus

2.1 Description

The Indian Leopard (*Panthera pardus fusca*) is a subspecies widely distributed in the Indian subcontinent. It is one of the five big cats found in India, apart from Asiatic Lion, Bengal tiger, snow leopard and clouded leopard.

In the year 2008, the International Union for Conservation of Nature –IUCN classified as Near Threatened, stating they soon qualify for the '**Vulnerable**' status due to the loss of habitat and fragmentation, heavy poaching for the illegal trade of skins and body parts in Asia and persecution due to conflict situations. They are becoming increasingly rare outside protected areas. The trend of the population is decreasing.

The presence of the leopards were reported near the Dumna Nature Reserve Park.

2.2 Characteristics

Friedrich Albrecht Anton Meyer wrote in 1794, the first description of *Felis fusca*, in which he gave account of a panther-like cat from Bengal (India) of about 85.5 cm (33.7 inch), with strong legs and a long –well-formed tail, head as big as a panther's broad muzzle, short ears and small yellowish grey eyes, light grey



ocular bulbs, black at sight, but on closer examination dark brown with circular darker coloured spots, tinged pale and underneath.

2.3 Distribution and Habitat

In the Indian subcontinent, topographical barriers to the dispersal of the subspecies are the Indus River in the west, and Himalayas in the north. In the east, the lower course of the Brahmaputra River and Ganges Delta form natural barriers to the distribution of the Indo-Chinese leopard. This subspecies is distributed all over India, Nepal, Bhutan, Bangladesh and parts of Pakistan. They are found in the tropical rain forests, dry deciduous forests, temperate forests and northern coniferous forests up to an altitude of 2,500 m (8,200 ft) above sea level, bordering snow leopard habitat. Mangrove forest of Sundarbans, abode of Bengal Tiger is only tiger reserve in India where leopards have been seen. It is only the Bangladesh side of the forest that reported about the only sighting of the leopard in 1931.

2.4 Range of Leopard Territory

Ranges of male leopards comprises of about 48 Km² (19 square miles) and females about 17 km² (6.6 square miles), female leopards home range decreases to 5-7 km² (1.9 to 2.9 square miles) when they have litter of small cubs, which will be with mother for at least 2 years.

2.5 Leopards are Very Territorial

Translocating leopards under pressure from local people is not the solution, as the leopards will traverse hundreds of kilometers to come back to the same location. In proven scientific studies of radio collared leopards have re-traced their journey to their original homes.

2.6 Human-Leopard Conflict

Ever growing expansion of agricultural land, development and industrial activities, encroachment of humans and their livelihood in to protected areas are main factors contributing to habitat loss and decrease of wild prey. As a result leopards stray in to human settlements, where they are tempted to prey on the dogs, pigs and goats and other domestic livestock, which constitutes an important part of their diet, if they live on the periphery of human habitations. Human -leopard conflict situations ensue, and have increased in years. In retaliation for attacks on livestock, leopards are shot, poisoned and trapped in brutal snares.

India's forest department is only entitled to set up traps only in cases of leopard having attacked humans. If the only presence of crowd prevents the leopard from escaping, then the crowd has to be dispersed and the animal is allowed to escape.



2.7 Leopard Population

In India leopard conservation is often clubbed with tigers because they usually share the same habitat. Till 2014 no reliable count of leopards was available, which has also affected its systematic protection. Unofficial estimate put their number 10,000 and 15,000, but the data (without any census) released by India's ministry of environmental and forests in 2008 estimated more than 11,000 leopards in the country.

2.8 First Ever National Leopard Census -2014

The first ever national leopard census has put the spotted cat population at 7,910 in and around tiger habitats across India, except the northeastern parts. The leopard count was done along with the tiger census in 2014 with the same methodology adopted for tigers. This involved getting pictures of animals through camera-traps and gathering of other evidences of their presence, and then extrapolating the numbers to cover the entire forest landscape. The census number gives the first accurate picture of the density and distribution of the spotted cats, which were previously guesstimated. There are leopards outside the areas conservation areas, an estimate of 12,000 to 14,000 according to Dr.Y.V.Jhala, Lead Scientist of Tiger Census who presented the leopard figures at Wildlife Institute of India's annual research seminar in Dehradun in early September 2015.

The exercise covered 3, 50,000 sq. km of forested habitat across the Shivalik hills and Gangetic plains, Central India and the Western Ghats landscape. As many as 17,143 of 1647 individual leopards were obtained during the exercise that covered most forested landscapes, even the low-grade revenue forests. The study found the species well distributed across the country, indicating the India's leopard population is "quite health". Armed with this proof tiger habitats, the wildlife Institute calculated density. "The number are close to 8,900 for the leopard" as reported by Dr.Y.V.Jhala, about the leopards in the protected areas. The number of 2000 -14,000 is an extrapolation. It is an educated guess about the numbers in the whole country.

"Most of the leopard populations are contiguous, ensuring a healthy genetic exchange so leopards do not face the problems of isolated populations that plague Indian tigers'. The wildlife biologists are of opinion since there was no previous estimate, there was no way of knowing whether the leopard populations was growing or declining". But leopards are doing far better than tigers because they can survive in scrubs and human-impacted forests as well. That is why they are not imminent danger as the tigers" he said.

2.9 No of Leopards Killed in the last 21 Years in India

Sr.No	Year	Leopards Killed
1	2014	116
2	2013	110
3	2012	252
4	2011	187



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

Sr.No	Year	Leopards Killed
5	2010	181
6	2009	161
7	2008	158
8	2007	126
9	2006	166
10	2005	200
11	2004	123
12	2003	148
13	2002	89
14	2001	168
15	2000	1,278
16	1999	135
17	1998	69
18	1997	146
19	1996	111
20	1995	143
21	1994	139

Source: Wildlife Institute of India

The leopards are killed because of their body parts are being used as replacement in traditional Chinese (TCM) for tiger parts, which have become increasingly expensive and restrictive, otherwise leopard skins /pelts have been traded for a long time.

2.10 Threats

Killing animals for illegal wildlife trade has the greatest potential to do maximum harm in minimal time. Apart from the poaching Indian Leopards are threatened by the loss of habitat and fragmentation of formerly connected populations, various levels of human-leopard conflict in human dominated landscapes, and competition with other predators.

2.11 Poaching

A significant immediate threat to these cats is the illegal trade in body parts and poached skins between India, Nepal and China. The government of these countries has failed to implement adequate preventive and enforcement response. Besides this, wildlife crime has also remained a low priority in terms of political commitment and investment for years. There are well organized gangs of trained professional poachers, who move from place to place and set up camp in vulnerable areas. After the killing the skins are rough -cured in the field and handed over to dealers, who send for further treatment to Indian tanning centers. Buyers choose skins from dealers or tanneries and smuggle them through a complex interlinking network to markets outside India, mainly in China. Seized skins in Kathmandu confirm the city's role as a key staging point for illegal skins smuggled from India bound for Tibet and China.



It is likely that seizures represent a tiny fraction of the total illegal trade, with the majority of smuggled skins reaching their intended end markets. Seizures revealed:

- In India: More than 2845 leopards were killed illegally between 1994 and October 2010.
- In Nepal: 243 poached leopards were killed illegally between 1994 and October 2010.
- In China and Tiger more than 774 poached leopards between July 1999 and September 2005.

According to Wildlife Protection Society of India (WPSI) report of May, 2010 at least 3,189 leopards were killed in India since 1994. For one tiger skin, there is least seven leopard's skins in the haul.

2.12 Conservation

Frederick Walter Champion was one of the first in India who after World War I advocated for the conservation of leopards. He condemned sport hunting and recognized their key role in the ecosystem. Despite people calling for conservation in India and Nepal being contracting parties to CITES, 1973.

Convention on International Trade in Endangered Species of Flora and Fauna-CITES, 1973, national legislation of both countries does not incorporate and address the spirit and concerns of CITES.

Trained human resources, basic facilities and effective networks for control of poaching and trade in wildlife are lacking.

Leopards are endangered and they are listed in the Indian Wildlife (Protection), Act, 1972. Harming schedule -I species is punishable by monetary fines and levy of both.

As leopards are listed in the Schedule-I, of the Indian Wildlife (Protection) Act, 1972 they are accorded protection across India.

2.13 Cages and Baits / Trained Personal with Tranquilizer Guns

Unless leopard is declared harmful and certified by the Wildlife warden, its translocation is not necessary.

Jabalpur Smart City authorities should ensure that slaughter house wastes should not be discarded near the vicinity of airport vicinity and any animal viscera should be discarded properly.

All the airport boundary wall should be properly sealed so that these predators do not venture in to the boundary wall of airport authority.

Air staff should have a trained veterinary officer on deputation from forest department who is trained to operate tranquilizer gun with adequate wildlife



training to ensure trap and capture of the leopards if they are found in the airport premises.

Capture of its prey like wild boar –*Sus scrofa* and other prey will prevent entry of the predators in the airport premises.

3.0 Indian Grey Hornbill Conservation (*Ocyceros birostris*), is found in pairs or small groups.



Source: Oriental Bird Images

- **Common Indian Grey Hornbill – *Ocyceros birostris***

Grey Horn bills are found in the Dumna Nature Reserve Park

3.1 Habit and Habitat of Indian Grey Hornbill: Deciduous forests, grasslands, open- thorn scrub thickets/forests with fig borne trees as keystone species for the survival of the Indian Grey hornbill's.



3.2 Identification of Indian Grey Horn Bills

Indian grey hornbill is a beautiful bird. Size between 55 cm. to 70 cm. Indian grey hornbill have grey feathers all over the body with a light grey or dull white belly. Ear coverts are darker. Upper parts are light (dark some time) greyish brown and there is a slight trace of a pale super-cilium.

Flight feathers of the wing are dark brown with a whitish tip. The tail has a white tip and a dark sub-terminal band. They have a red iris and the eyelids have eyelashes. The bare skin around the eye is dark in the male while it is sometimes pale reddish in females. The horn is black or dark grey with a casque extending up to the point of curvature in the horn. The casque is short and pointed. Male has a larger casque on a dark bill, and the culmen and lower mandible are yellowish and female has a more yellowish bill with black on the basal half and on the casque. The bare skin around the eye is dark in the male, but sometimes pale reddish in females. The female has a more yellowish bill with black on the basal half and on the casque.

3.3 Nesting season is between February to June. They usually nest in tree hollows on tall trees. The female stays inside the nest and nest entrance is sealed by the female using its excreta and mud-pellets supplied by the male.

3.4 Foraging Behaviour of Grey Indian Hornbill Indian grey hornbill feed on fruits, nuts, seeds, small insects, lizards, and small snakes. Call of the Indian Grey Hornbill sounds like a shrill "wheee"; the other is a cackling "k-k-k-kae".

3.5 Conservation of Indian Grey Hornbill is listed under Indian (Wildlife) Conservation, Act, 1972, listed in the Schedule-I of the Act, conservation of grass-lands, and even dead trees or old trees which act as roosting perches of Indian Grey Horn bill.

4.0 Schedule-II, III and IV Fauna of the Dumna Nature Reserve: The following are the Schedule-II, III, and IV fauna in the found in the area.

<i>Canis aureus</i>	Jackal	Sch-II
<i>Macaca mullata</i>	Rhesus Monkey	Sch-II
<i>Sus scrofa</i>	Wild Boar	Sch-III
<i>Cervus axis</i>	Cheetal /Spotted Deer	Sch-III
<i>Hystrix indica</i>	Porcupine	Sch-IV
<i>Vulpes benghalensis</i>	Indian Fox	Sch-II
<i>Herpestes edwardsii</i>	Common Mongoose	Sch-II

The vegetation and conservation initiatives of Dumna Nature Reserve Park ensure conservation of these fauna along with Schedule-I fauna.

4.1 Mitigation Measures to Reduce Man-Animal Conflicts

- Cages with baits should be appropriate placed to prevent them coming in to airport premises.



- Animals which are threat to the human life should be caught and translocated with permission of the 'Wildlife Warden or under the guidance of District Forest Officer.
- Deputation of forest personal working with AAI –authority to mitigate any man-animal conflict situations
- Availability of tranquilizer gun with adequate dose and antidotes for man-animal conflict mitigation situation
- Proper disposal of solid waste or kitchen wastes ensures that animals do not come for scavenging for the disposed waste food.
- Proper disposal slaughter –meat products ensures prevention of the predators or animals in the airport authority premises which does not impair any threats for airport operations and for flight operations.
- Bird Hazard mitigation will be a greater asset as the birds such as Black kites and other scavengers which are huge threat to the flight operations will be under check.
- As per Directorate General of Civil Aviation appropriate training and briefing on migratory paths of birds and also mitigation of bird hazards as per the applicable norms, the bird hazard mitigation will be under check.

4.2 Proper Maintenance of Water Holes & Maintenance of Salt Sticks

The proper maintenance of water holes and water troughs and salt sticks to be done which are useful for the ungulates (Cheetal), species like Jackals for their survival and conservation.

4.3 Management of *Sus scrofa* – Wild Boar –Man-Animal Conflict of Wild Boar.

For management of wild boar cages, - with baits for capture and release in other forest areas. Few of the field staff should be trained to capture 'Wild Boars' with nets and it be enclosed in the cages available for capture and informed to forest department to release in densely wooded forests.

The garbage should be properly handled so that vermin species and 'Wild Boar' does not venture in to the airport areas. Always field staff should be trained with refresher courses to capture wild boars and also there should be a provision for tranquilizer gun with an adequate dose of tranquilizer and antidote. Wild boar is protected under Schedule-III of the Indian Wildlife (Protection) Act, 1972.

4.4 Wildlife of Khandari Reservoir: Due to the airport operations, no damage will occur to the Khandari reservoir and its existing fauna such as 'Crocodiles and water birds'.

4.5 For the Conservation of the Cheetal –*Cervus axis* –Spotted Deer, the feral dogs have to be controlled and also the garbage disposal has to be litter free.

4.6 Speed limit: Implementation of speed limit will reduce any road kills of the wild animals in the vicinity for the safety of vertebrate and in-vertebrate fauna such as amphibians and reptiles.



4.7 Garbage disposal in Airport Premises

Owing to improper disposal of garbage bins, prey of leopards such as wild boar, Stray, feral dogs are attracted in to the airport premises, if the proper disposal of the garbage is under check and also there should be trained personal with wildlifecapture to meet anyemergency related to man-animal conflict.

As per the norms of the Directorate General of Civil Aviation (DGCA) Government India norms garbage disposal/safety norms as to be adhered as any commercial/civil aerodrome in India.

4.8 History of Wild life and incidences within/near Jabalpur Airport

4.8.1 PAST INCIDENTS:

- ***Leopard seen near Dumna, near IIITD&M and Explosive Depot, Khamariya:***

Many leopards are seen in the areas in the vicinity of Jabalpur Airport, namely Dumna, around the vegetation along road from Dumna nature park to Airport, around forest surrounding Explosive Depot of Ordinance-Khamariya, within the vegetation surrounding IIITD&M. They are prone to come at the roads in night time. It is fairly possible that any leopard may enter the Airport premises any day/night. Reports of leopards killing Cheetal were published in local newspapers during December-2017.

- ***Cheetals found dead due to attack from dogs:***

02 no. of Cheetals found dead near Vanjari Mata Temple in the vicinity of Dumna Nature park which is 06 km from the Jabalpur Airport. It was reported that they had consumed some poisonous substance, as per the postmortem report by Anti Poaching Unit Incharge, MP Forest Department. Apart from this, many incidents were reported in local newspapers regarding attack and killing of Cheetals by pack of dogs, such as in February-2011, November-2011, December-2011, August-2012, January-2013 and April-2014 etc.

- ***Incidents of Cheetals being hit by vehicles:***

Stray incidents have come to notice that Cheetals were hit by the vehicles while crossing the road (road from Dumna Nature park to Jabalpur Airport). Report published in a local Newspaper in May-2014 is an example.



- **Incidents of Jackals being seen within Airport premises:**

Many times the jackals/foxes have been seen roaming in the adjoining areas of Jabalpur Airport. Normally they do not cause harm to anybody, but can be prone to hit by movement of vehicles etc.

- **Incident of wild boar hit by Spicejet aircraft:**

The Spicejet Airlines 72-seater craft had hit a wild boar while moving on taxiway after landing. This incident took place in December, 2015. Intensive combing operations were carried out by AAI to trace any possibility of any wild life habitat within the premises of Jabalpur Airport and found a few flocks of wild boar and foxes near its boundary wall at a few locations.

- **Incident of bird hits to the aircrafts:**

Bird hit is not a new thing at the vicinity of airports and Jabalpur Airport is also not an exception to this problem. Incidents of bird hits have occurred while the take-off and landing of the aircrafts at Jabalpur airport in the past which is less than the acceptable norm of aircraft movements.

4.8.2 LEARNING FROM THE PAST INCIDENTS:

Many wild animals are present around the adjoining areas & forest cover around the Jabalpur Airport. As such, these are prone to intrude the airport premises and are susceptible to injury & life risk, apart from a risk from the aircraft movement safety point of view. In view of this, it is necessary for Airport Authority to secure its periphery in a way that any possible entry of stray/wild animal can be avoided. Few mitigation plan can also be placed in position to tackle any risk of incident involving wild life in an efficient and safe manner.

4.8.3 MITIGATION MEASURES ADOPTED FOR THE RISK OF WILD LIFE INCIDENTS:

- Grass/vegetation clearance has been executed and maintained perennially to avoid any shelter and hide to the wild animals. The clear land (from grass and vegetation) also aid to unrestricted line of sight from wall to wall which in turn deters and collision of vehicles and animals.



Wildlife Conservation Plan for the Proposed Expansion of Jabalpur Airport at Villages, Dumna, Gadheri and Chakdehi, Jabalpur district, Madhya Pradesh

- Fortnightly inspection of perimeter wall being done and records being maintained to inspect any hole/wear & tear to its structure and any corrective action required there off.
- Provision of concertina coils being made through out the length of perimeter wall to reinforce safety and making it almost intrusion-free. The wall shall be of approved height of 8 ft. +1.5 ft. as per international norms / BCAS which is being constructed all around airport operational area.
- Deployment of zone guns (horn – blow devices) along the sides of runway within basic strip to scare and deter any animal to come near runway, thereby avoiding any chances of collision between animal and landing/taking off aircraft.
- Vehicles for ferrying cages of forest department are available with motor Transport department of AAI and if required, charges shall be paid, if hired from outside or provided by forest department.
- The contact no. of Zonal officer/other relevant officers of Jabalpur Municipal Corporation, M.P. Forest Department being displayed at prominent places within the Jabalpur Airport Premises to communicate any incident involving wild life in a real time manner.

4.9 Budget

There is sufficient fund availability with Airports Authority of India and it is feasible for it to expend following amount for the 'Wildlife Management' in the vicinity of the Jabalpur airport and buffer zone under its CSR/CER:

Sr. No	Activities	INR in Lakhs
1	Plantation activity for Indian peafowl and other Schedule-I birds	5.00
2	Salt Sticks	5.00
3	Check dams and water holes maintenance	15.00
4	Cages and man –animal conflict resolution –Leopard - <i>Panthera pardus</i>	15.00
5	Promoting of wildlife conservation awareness activities	5.00
6	Maintenance of cages for capture of wild boar – <i>Sus scrofa</i>	5.00
7	Display boards on awareness of the schedule-I species	1.00
8	Miscellaneous like veterinary care	5.00
9	Improvement of watch towers	4.00
10	Construction of Perimeter Wall	(605+706) = 1311.00
Total (Rupees in Sixty Lakhs)		1371.00

ENCLOSURE-6
CER PLAN

Corporate Environmental Responsibility

Detailed corporate environmental responsibility policy of Airports Authority of India is given below. As per the CER policy dated 1st May, 2018, 0.75 % fund of the proposed project cost is to be allocated for the CER activities. The total cost of the proposal is Rs. 165 crores, for which the 0.75% CER cost amounts to Rs. 1.23 crores.

The strategies for designing, implementing and monitoring the CSR activities of AAI are based on the existing good practice models. These strategies will help in standardizing the CSR related processes, essential in the context of AAI.

(a) Build on core strengths and comparative advantage:

AAI will undertake those activities under its CSR plan where it has a well-defined comparative advantage and/or a primary responsibility to address an issue.

(b) Develop customized and needs based programmes:

While committed to achievement of its goals and objectives the AAI will not use a one-size-fits- all approach. Projects will be designed by matching local needs with AAI's priorities and available budget.

(c) Emphasize sustainability:

Before roll out of any projects/ initiatives AAI will assess the feasibility and potential for sustainability. Appropriate partnerships will be formed, especially with government initiatives to ensure that the activities are handed over either to the government or communities and sustained by them after a defined period of time.

(d) Engage in-house facility for coordinating roll out of CSR activities:

The implementation of the CSR activities will be coordinated by a Committee especially created for CER. CER functions implementation will be done by identified specialized agencies and Civil Society organizations, on need basis.

(e) Maximize outcomes through strategic partnerships:

Necessary partnerships will be forged with a range of stakeholders at the local, state and national level, including Non-Governmental Organisations (NGOs), Community Based Organisations (CBOs), technical support organizations, public representatives and opinion makers, other Public Sector Undertakings (PSUs), private sector and concerned government departments. Where needed the services of individual experts/ consultants will also be solicited.

(f) Mainstream CSR into the core business plan of AAI:

Annual CSR Plan and the Annual Budget Allocation will get approved from the AAI Board before implementation. This plan will be developed through the active engagement, leadership and inputs of the staff members of AAI, posted at the national, regional and local airport level. This will be in keeping with the provisions

pertaining to CSR activities and "Performance Evaluation Parameters and Targets" laid out in the MoU between the AAI and Ministry of Civil Aviation.

The Airport Directors, Regional Executive Directors and their teams and senior management will be suitably oriented to integrate CSR into their day to day work. In this way ideas for projects will emanate from the core staff of AAI and will be reported in the work of the respective units, in addition to being reported in the Annual report of AAI. Thus, CER will not only be an integral part of the core business plan of AAI, but will, in practical terms be enmeshed with the everyday workings of the organization.

The CSR activities help in rapport and confidence building with communities to make them good neighbours. Direct benefits (jobs, training) make them pro-airport and build their stake in the operations of airport. Airport operations benefit with supply of good manpower from nearby areas, thus creating a win-win situation. The socio-economic development in the region will lead for enhancement of quality of life of people in the region. So, based on the above, it can be said that the proposed project will result in further improving the infrastructure facilities of the area.

CER BUDGET

Sr. No.	CER Activity	Tentative Budget
1	Borewells and handpumps in surrounding villages for facilitating drinking water supply	Rs. 30 lakhs
2	Support to local government schools w.r.to sanitation and health	Rs. 20 lakhs
3	Construction of public toilets in the surrounding villages	Rs. 15 lakhs
4	Strengthening of village roads through State Govt.	Rs. 55 lakhs
5	Installation of street lights in nearby villages as per requirement	Rs. 3 lakhs
	Total	Rs. 123 lakhs