FINAL REPORT (MAY 2012 – APRIL 2013)

STUDY OF LARGE MAMMALS (LEOPARD, ROYAL BENGAL TIGER AND JUNGLE CAT) IN HETAUDA-DHALKEBAR-DUHABI 400 kV TRANSMISSION LINE PROJECT



Submitted to:

Hetauda- Dhalkebar- Duhabi 400 kV Transmission Line Project

Darbar Marga, Kathmandu

Submitted by:

ENVIRONMENT AND SOCIAL STUDIES DEPARTMENT

Kharipati, Bhaktapur, Nepal

MAY 2013

1	BAG	P CKGROUND	Page No. 1
2		OPE OF THE STUDY	
3		DJECT DESCRIPTION	
4		JDY TEAM AND METHODOLOGY	
	4.1	Study Team	5
	4.2	Literature Survey	5
	4.3	Consultations and Interactions	5
	4.4	Presence Absence Survey	6
	4.5	Key Informants Survey	6
	4.6	Camera Trapping	6
	4.7	Questionnaire Survey	6
	4.8	Data Analysis	7
5	RES	SULTS AND DISCUSSIONS	7
	5.1	Presence of Tiger, Leopard and Jungle Cat	7
	5.2	Camera Trapping to Confirm Frequency and Occurrence of Tiger, Leopard and	nd
	Jung	gle Cat	10
	5.3	Human - Large Mammal Conflict	14
	5.4	Existing 132 kV Transmission Line and Its Impact	14
6	МІТ	TIGATION MEASURES	15
ВΙ	BLIO	OGRAPHY	16

List of Annexes pages	Number	of
ANNEX A: RESPONDENTS OF THE KEY INFORMANT'S SURVEY		7
ANNEX B: CHECKLIST FOR THE KEY INFORMANT'S SURVEY		1
List of Tables	Page	e No.
Table 3-1: Project features		2
Table 4-1: Study Team		5
Table 5-1: Signs of tiger, leopard and jungle cat recorded between He	tauda and Duhabi	
along the proposed TL		7
List of Figures	Page	No.
Figure 3-1: Map showing proposed 400 kV TL and forested habitats in		
Figure 5-1: Signs recorded during the field study along 2 km periphery between Hetauda and Duhabi		
Figure 5-2: The map showing points of camera trapping and locations recorded at 3 locations		
Figure 5-3: Map showing location where the jungle cat was recorded of session		
Figure 5-4: Map showing reported locations of large mammal - human proposed high transmission line	_	
List of Photos	Page	No.
Photo 5-1: Leopard pugmark recorded near Nijgadh		8
Photo 5-2: Pugmark of the leopard recorded during field survey in Dh	anusa (near Dhalke	ebar)
		9

Photo 5-3: Scat of leopard recorded during field survey near Nijgadh, Bara	9
Photo 5-4: A male leopard captured on camera trapping near East of Nijgadh	12
Photo 5-5: A female leopard captured on camera trap	12
Photo 5-6: The female leopard recaptured again on camera traptrap	13
Photo 5-7: Jungle cat captured on the trap	13

Abbreviations and Acronyms

ESSD Environment and Social Studies Department

HCE Hydro Consult Engineering Limited

IEE Initial Environmental Examination

km Kilometer

kV Kilo Volt

m Meter

NEA Nepal Electricity Authority

RoW Right of Way

sq.km. Square kilometer

TL Transmission Line

ToR Terms of Reference

1 BACKGROUND

This report has been prepared as per the requirements stipulated by the MOU between the Project and Environment and Social Studies Department (ESSD) of Nepal Electricity Authority (NEA) with scope of work to conduct specific study on large mammals (Leopard, Royal Bengal Tiger and Wild Cats) found along the Hetauda – Dhalkebar – Duhabi 400 kV Transmission Line (TL) Project to fulfill the requirement of World Bank for Project funding. Hydro Consult Private Limited (HCPL) is the Consultant involved in the study.

Nepal Electricity Authority, Transmission Line and Substation Construction Department intend to construct Hetauda- Dhalkebar- Duhabi 400 kV Transmission Line Project. The Initial Environmental Examination (IEE) study of the proposed project was conducted by ESSD as per the Environment Protection Rules (EPR), 1997 and World Bank Guidelines. The IEE study documented the presence of Large Mammals (Leopard, Royal Bengal Tiger and Jungle Cat) and their migration route at some of the localities in TL. Since TL passes about 40% forest area in its total length the impacts on Large Mammals (Leopard, Royal Bengal Tiger and Jungle Cat) has been envisaged in IEE report but more specific and detail study on the Large Mammals (Leopard, Royal Bengal Tiger and Wild Cats) species found in the area is required to avoid or mitigate any adverse short term or long term negative effects exerted by this development work. Therefore, on this section a one year long study (May 2012 – April 2013) was conducted by the experts of large mammals in coordination with the other team members to find out the occurrence and distribution of large mammals, possible impacts on them by this development and document possible measures to make the project more environment friendly. The report is prepared based on the findings of one year's field work and community consultations.

2 SCOPE OF THE STUDY

The scope of the work is to conduct specific study on large mammals (Leopard, Royal Bengal Tiger, and Wild Cats) at key localities along the TL route. The IEE study conducted for the project documented the presence of Leopard and Jungle cat. The presence of Royal Bengal Tiger was reported in TL alignment between Hetauda- Nijgadh Section but not confirmed. The hot spot study will include:

- Confirm the occurrence of Leopard, Royal Bengal Tiger and Jungle Cat in TL alignment;
- Identification of the suitable habitat in the area if any;
- Identification of the migration time, key movement area, depredation to livestock in nearby settlement etc;
- Identification of the migration territory and possibilities of frequent interaction with project workers during construction and operation;
- Collection of information regarding the touch/contact/harm to the existing 132 kV towers;
- Review available literature and studies on the impact of transmission lines, towers and cables on large mammals and compile relevant information on mitigation measures used to minimize the adverse impacts identified;

- Identification of the impacts of the proposed project on large mammals during construction and operation phases; and
- Develop appropriate mitigation measures to minimize the adverse impact.

3 PROJECT DESCRIPTION

The proposed Hetauda – Dhalkebar- Duhabi 400 kV TL passes through 4 zones (Narayani, Janakpur, Sagarmatha and Koshi), 10 districts, 77 Village Development Committees (VDCs) and two municipalities. It covers the area of Makwanpur, Bara, Rautahat, Sarlahi, Mahottari, Dhanusha, Saptari, Siraha, Sunsari and Morang districts (Figure 3-1). The proposed 400 kV TL is 285.2 km in length, commencing at the under construction Hetauda substation (for Hetauda-Bardghat 220 kV Project) located at Hetauda Municipality Ward Number 1 of Makwanpur district and terminating at the new Duhabi substation located at Ward Number 7 Bhokraha Tole (Hanif Tole) of Bhokraha VDC in Sunsari district. The TL passes through 112.66 km of forest area which consists of 95.7 km of forest area, 8.2 km of shrub land and 8.76 km of grass land. The total forest land along the alignment Right of Way (RoW) is 518.24 ha. The TL passes at the border of the buffer zone of Parsa Wildlife Reserve (4.5 km). At the nearest the TL lies 6.4 km away from core area of Parsa Wildlife Reserve. The minimum distance of the alignment from the Koshi Tappu Wildlife Reserve is 1.8 km.

Table 3-1: Project features

Features		Description			
General		•			
Project		Hetauda – Dha	Hetauda – Dhalkebar- Duhabi 400 kV Transmission Line		
		Project			
Developme	ent region	Central and Ea	stern Development Region		
Districts		10 districts (6	from Central Development Region 4 from		
		Eastern Develo	opment Region)		
Developme	ent Region	Districts	VDCs/municipalities		
Central	Development	Makwanpur	Hetauda Municipality and Churiyamai,		
Region		(6)	Hatiya, Hurnamadi ,Shreepur Chatiwa		
			and Dhiyal VDCs		
"		Bara (2)	Nijgadh and Bharatgang VDCs		
"		Rautahat (5)	Chandranigahapur, Kakanpur,		
			Rangapur, Judibela and Paurai VDCs		
"		Sarlahi (10)	Karmaiya, Dhungrekhola, Hariaon,		
			Atrouli, Pattharkot, Lalbandi, Kalinjor,		
			Ranigunj, Bhaktipur and Gourishankar		
			VDCs		
"		Mahottari (3)	Khayarmara, Gauribas and Maistan		
			VDCs		
···		Dhanusha	Tulsichauda, Begadawar, Dhalkebar,		
		(10)	Naktajhijh, Hariharpur, Puspalpur,		

		Umaprempur, Yagyabhumi, Bharatpur	
	C. 1 (4.7)	and Godar VDCs	
Eastern Development	Siraha (17)	Ramnagar Mircharya, Fulbariya,	
Region		Badharamal, Karjanha, Rampurbirta, Chandrodayapur, Chandralalpur,	
		Jamdaha Lalpur, Ayodhyanagar,	
		Asanpur, Dhangadhi, Bstipur, Padariya	
		Tharotole, Govindpur Taregana &	
		Bhadayia VDCs and Lahan Municipality	
"	Saptari (20)	Madhupatti, Daulatpur, Kushaha,	
		Khojpur, Pansera, Kalyanpur, Bhangaha,	
		Khoksar Parbaha, Rayapur, Terahota,	
		Sitapur, Prasabani, Jandaul, Bakdhauwa,	
		Theliya, Dharampur, Rupnagar,	
		Dhodhanpur, Kamalpur and Fatepur	
		VDCs	
	Udayapur (2)	Thoksila and Tapeswari VDCs	
"	Sunsari (4)	Mahendranagar, Singiya, Dumraha, and	
		Bhokraha VDCs	
Initial point		a Substation , Hetauda Municipality	
Torminal point	Makwanpur New Duhabi Substation, Bhokraha VDC, Sunsari district		
Terminal point Number of major road	3	ubstation, briokrana VDC, Sunsan district	
crossing	3		
Number of major river	Д		
crossings	•		
Number of 33 kV line	1		
crossings			
Number of 66 kV line	1		
crossings			
Number of 132 kV line	1		
crossings			
Clearances	¥		
Highways	9.5 m		
3	8.6		
pedestrians only		2011	
Power lines	6.5 m for 11 & 33 kV and 6.1 for 66 & 132 kV		
Telecommunication lines	36m		
Roads and streets	9.5m		
Residential areas	9.2m		
Water surface at maximum	7.5 m		
flood			

To metal clad or roofed sheds	6m
or structures upon which a	
man may stand	
Vertical clearance for forest	7.5m
Horizontal clearance for	46m
forest and settlement	
Substation	
New Substation	400/220/132 kV at Hanif tole of Bhokraha VDC
Upgrading	Construction of 400/220/132 and 33 kV voltage level
	buses at Dhalkebar substation and 220 kV bus and
	transformers at new Hetauda substation.
Finance	
Project Cost	USD 144 million for both transmission line and
	substation
Funding Agency	Government of Nepal (GoN) / World Bank

Note: For other objects not listed above the requirements for minimum clearances shall comply also with NESC (NATIONAL ELECTRIC SAFETY CODE).

Source: IEE Report, 2011

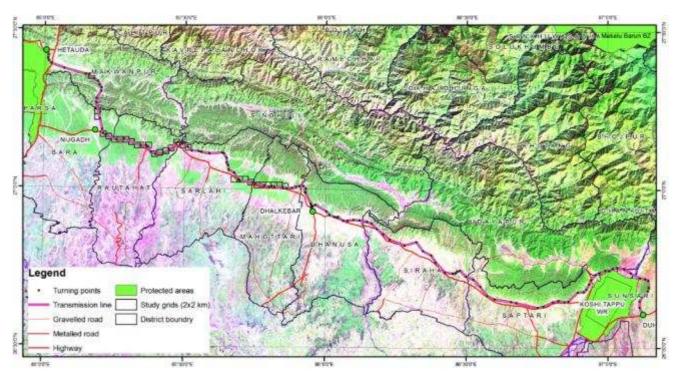


Figure 3-1: Map showing proposed 400 kV TL and forested habitats in between Hetauda and Duhabi

4 STUDY TEAM AND METHODOLOGY

4.1 Study Team

A team of experts with several years' professional experience in their respective areas carried out the study of Large Mammals (Leopard, Royal Bengal Tiger and Wild Cats) in Hetauda – Dhalkebar – Duhabi 400 kV TL Project areas guided by the Terms of Reference (TOR) and Inception report cleared by the World Bank/Project. The names and expertise of the study team that carried out the field survey and report preparation are given in Table 4-1.

Table 4-1: Study Team

Table	Table 4-1: Study Team				
SN	Name	Expertise/position			
1	Rabindra Chaudhary	Coordinator			
2	Pranav Acharya	Team Coordinator			
3	Naresh Subedi	Large Mammals Expert/ Team Leader			
4	Amrit Poudel	Associate Coordinator			
5	Dr. Chiranjibi Prasad Pokharel	Large Carnivore Expert			
6	Babu Ram Lamichhane	GIS Expert			
7	Balaram Bhattarai	Environmental Specialist			
6	Pradip Gautam	Environmentalist			
7	Bishnu Sing Thakuri	Socio-economist			
8	Sanjaya Dhital	Wildlife Biologist			
9	Kapil Pokherel	Wildlife Technician			
10	Nandu Acharya	Wildlife Technician			

4.2 Literature Survey

Literatures relevant to impacts of development projects on leopard, Royal Bengal tiger and jungle cat were searched and reviewed. These include published and grey literature. IEE report of the proposed project and any other reports available for the area in districts and central offices were also collected and reviewed.

4.3 Consultations and Interactions

Consultations with District Forest Offices (DFOs), community forest user groups, cattle herders, forest guards and local communities were done in Hurnamadi, Shreepur, Nijgadh, Lalbandi, Fattepur and Koshi Tappu. During the consultations the impacts of the existing 132 kV TL to Leopard, Royal Bengal Tiger and Wild Cats was discussed together with the possible impacts of proposed project. Consultations with Bardia National Park Office was also done to find out if there were any impacts of existing 132 kV TL to large mammals. The 132 KV TL (about 35 km segment) passes through core area of Bardia National Park.

4.4 Presence Absence Survey

From the study area map, possible habitats of large mammals were identified and the forest areas were delineated. Attempts were made to find out any tracks, scats or signs of carnivores 2 km either (left and right) side of the central line of proposed 400 kV TL. For this, grids (2km x 2km) were made along the TL that passes through intact forest lands. Within each grid a transect walk (at least 2 km) along streams, dusty roads and creeks was done to find out tracks, scats or any signs of tiger, leopard and jungle cats. The signs of large carnivores were searched opportunistically along the TL in all districts even where there was no intact forest area. Once the sign of tiger was recorded, the site was further assessed through camera trapping to confirm the presence of tiger because tiger is endangered species while leopard and jungle cat are common species.

Presence absence survey was carried out during October and November 2012. Once the sign of carnivore was detected record on habitat type, location, photograph, measurements, identification of species and sex was done and noted into the data sheet.

4.5 Key Informants Survey

Along with the presence/absence survey, semi structured interview with 5-10 local key informants residing near to the settlements from the forested areas and the TL construction area was conducted to get general idea about the distribution of the large mammal species focusing on tiger, leopard and wild cats along with the presence/absence surveys. Sighting records/trends (spatial and temporal) and level of livestock depredation were also collected.

4.6 Camera Trapping

Based on the forest coverage in the proposed TL a total of 29 grids of 2kmx2km were laid along the TL for the camera trapping purpose.

Based on key informants interview and preliminary findings of presence absence survey for large mammals, camera traps (Reconyx 550, USA) were deployed on the most potential sites to confirm the presence of the large mammal species. A total of 13 pairs of cameras were deployed for 15 days as recommended by Nepal Tiger Monitoring Protocol to confirm the presence or absence of large mammals. Camera trapping method has been used in the study of the large mammals since long (*Krantha 2002*). A camera trap is a remotely activated camera that is equipped with a motion sensor or an infrared sensor, or uses a light beam as a trigger. Camera trapping is a method for capturing wild animals on film/digital photo when researchers are not present, and has been used in ecological research for decades. In addition to applications in hunting and wildlife viewing, research applications include studies of nest ecology detection of rare species, estimation of population size and species richness, as well as research on habitat use and occupation of human-built structures. Cameras are installed in the most sighting area of the animals. Generally it is calculated like animals/100 sq km. As no signs of tigers were found on the east of Chandranigahapur (AP 21), camera trapping was not carried out in that area. Camera trapping was done during February and March 2013.

4.7 Questionnaire Survey

The cattle herders and local community members were interviewed with semi-structured questionnaires to get information on the large mammals and their perception towards how the proposed development activity may affect their conservation during the construction period and after completion. Respondents were also asked about the human large mammal conflict. A total of 326 randomly selected respondents were interviewed in different districts (ANNEX A).

4.8 Data Analysis

Geographical Information System (GIS) Software Arc View 9.3 was used to prepare the map of the study area and to see the distribution of signs of the large mammals. Simple analysis was performed to get abundance and frequency of the leopard, Royal Bengal tiger and wild cat species. Information received from consultations and questionnaire survey was analyzed by using excel tools. Density of signs and individuals were expressed as number per kilometer. Disturbance factors and their possible impacts on leopard, Royal Bengal tiger and jungle cat during the construction phase were listed and evaluated. Threats due to power line project was evaluated in the field and listed. Recommendation of mitigation measures have been made based on the findings.

5 RESULTS AND DISCUSSIONS

5.1 Presence of Tiger, Leopard and Jungle Cat

Very few signs of tiger, leopard and jungle cat (hereafter termed as large mammals) were found along the proposed TL between Hetauda and Duhabi (Table 5-1 and Figure 5-1). The signs of tiger were found only in two locations west of the Bagmati River. There were no signs of tiger east of the Bagmati River (Figure 5-1).

Table 5-1: Signs of tiger, leopard and jungle cat recorded between Hetauda and Duhabi along the proposed TL

SN	Species	Location	Tower No	Latitude	Longitude	Evidence
						type
1	Tiger	West of Nijgadh	AP-14	85.307717	27.190050	Scat
2	Tiger	East of Nijgadh	AP-17	85.059217	27.183767	Pugmark
3	Leopard	North of Dhalkebar	AP-55 (near	85.960000	27.003100	Pugmark
			Dhalkebar)			
4	Leopard	South West of	AP-18	85.331000	27.111000	Pugmark
		Nijgadh				
5	Leopard	West of Nijgadh	AP-19	85.336000	27.135000	Pugmark
6	Leopard	North west of	AP-20	85.339000	27.160000	Pugmark
		Nijgadh				
7	Leopard	North west of	AP-16	85.261000	27.190000	Scat
		Nijgadh				
8	Jungle cat	West of Nijgadh	AP-14	85.067000	27.138000	Pugmark
9	Jungle cat	North of Dhalkebar	AP-03	85.973130	26.971012	Pugmark
			Dhalkebar			
			east			
10	Jungle cat	Near Bagmati	AP-29	85.444191	27.199460	Scat

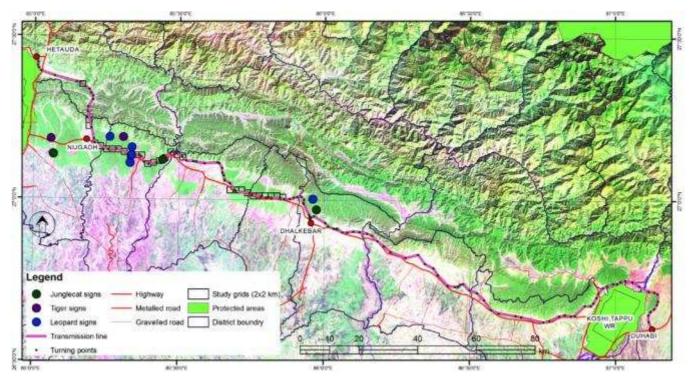


Figure 5-1: Signs recorded during the field study along 2 km periphery of the proposed TL between Hetauda and Duhabi

The signs of leopard and jungle cat were found up to Dhanusha district near Dhalkebar. There were no signs of leopard and jungle cat east of Dhanusha district along 2 km periphery of the proposed high tension line (Figure 5-1). Pugmarks and scat of leopard recorded during field survey are shown in Photo 5-1, Photo 5-2 and Photo 5-3.



Photo 5-1: Leopard pugmark recorded near Nijgadh



Photo 5-2: Pugmark of the leopard recorded during field survey in Dhanusa (near Dhalkebar)



Photo 5-3: Scat of leopard recorded during field survey near Nijgadh, Bara

5.2 Camera Trapping to Confirm Frequency and Occurrence of Tiger, Leopard and Jungle Cat

Camera trapping along the 2 km periphery of proposed TL were carried out to find out frequency of occurrence of tiger, leopard and jungle cat in the areas where presence of these species was detected during presence/absence survey. The cameras were fixed in 13 locations for 15 days in the forest areas. Since tiger being an endangered species the major concern was paid for tiger. Both leopard and jungle cat are common species in Nepal.

The tiger was not recorded by camera trapping exercise in any of the forested area of the proposed TL. The tigers use very large home ranges depending on the availability of prey bases (*Kranth et al 2002*). We suspect that only the transient tigers that were dispersing from Parsa Wildlife Reserve were using the forest areas east of Parsa up to the Bagmati River but there was hardly a single residential tiger in the periphery of proposed TL between Hetauda and Duhabi. The wild prey base in the area was lower than 5 animals/km² (present study), which is very low to support the tigers throughout the year. On the other hand, the forest patches were very disturbed because of human activities like collection of firewood, sand, fodder and cattle grazing. Tigers have not been recorded in east of the Bagmati River in the recent study carried out by Karki (2012). High human disturbances and decreased prey base have been reported to have negative effects on the tiger occupancy (*Barber-Meyer et al. 2012*).

During the camera trapping exercise only 2 leopards (1 male and 1 female) (Photo 5-4, Photo 5-5 and Photo 5-6) were recorded in three locations between Nijghad and Bagmati (Figure 5-2). This frequency of leopard on the camera trap suggested that there were some leopards regularly staying in the forested areas of proposed TL west of the Bagmati River. These leopards sometime move to Parsa Wildlife Reserve as the availability of wild prey in the forest areas outside the reserve was very low. Because of very low wild prey species availability in the area the leopards often do depredation on the cattle and livestock.

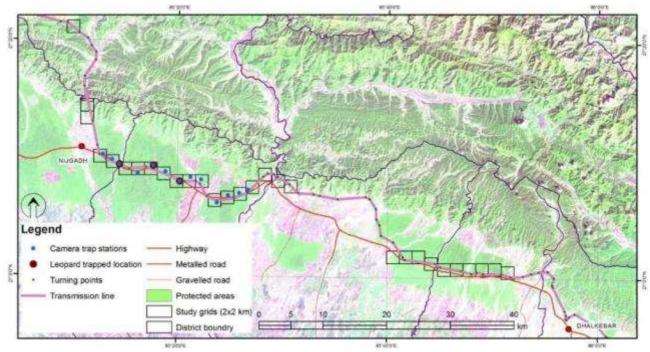


Figure 5-2: The map showing points of camera trapping and locations where the leopard was recorded at 3 locations

Although jungle cat is common species within protected areas of Nepal, the cat is very scarcely distributed outside the protected areas. Only one jungle cat was recorded (

Photo 5-7) west of the Bagmati River during the Camera trapping session (Figure 5-3). The low level of presence of jungle cat in the proposed area could be due to low level of availability of prey species and poaching together with human caused disturbances like cattle grazing, firewood and timber collections.

There was no certain season for the large mammals for their dispersal or migration in the study area. However, anecdotal evidences suggest that monsoon period (June – October) was the most sensitive time period of the year for their dispersal. Therefore, construction work in the forested habitats during this season should be avoided.

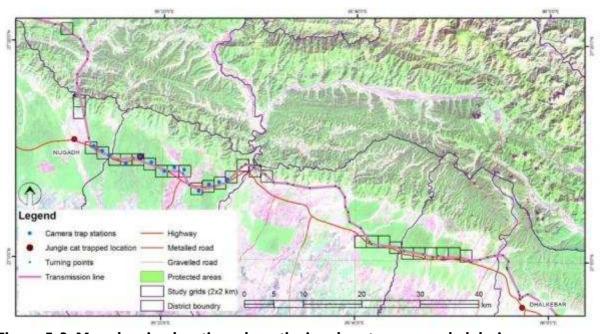


Figure 5-3: Map showing location where the jungle cat was recorded during camera trapping session



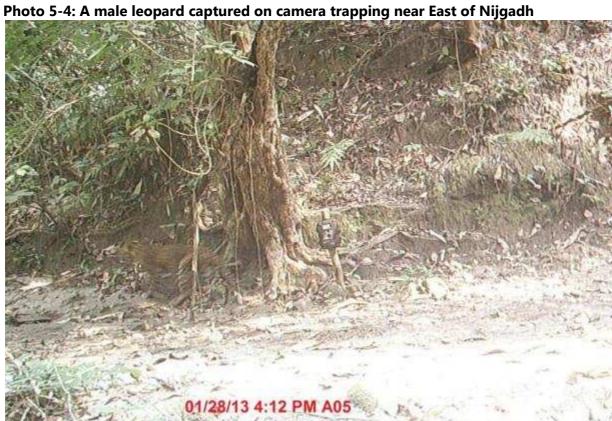


Photo 5-5: A female leopard captured on camera trap



Photo 5-6: The female leopard recaptured again on camera trap



Photo 5-7: Jungle cat captured on the trap

5.3 Human - Large Mammal Conflict

A total of 326 respondents were interviewed in the study area (Refer Figure 5-4 for the locations of the respondents and conflict areas) to find out if there were any conflicts with large mammals. Only 1.85% (n = 6) of the respondents reported that they had conflict with tiger. About 6% (n = 20) respondents reported that they had conflict with leopard. None of the respondents reported that they had conflict with jungle cat. Majority of the conflicts (>90%) were confined in districts of Rautahat, Bara, Makwanpur and Siraha. The conflict was due to depredation of cattle, goats and buffalos by tiger and leopard. In the areas where there is very low density of wild prey base (spotted deer, wild boar, sambar etc.) human carnivores conflicts are expected (Smith 1999). Human causality in the project area is not reported during the survey period. It is very difficult to quantify the risk to labor/wild animals. However the experience shows that transmission line construction works are conducted in day time and movement of labor is in group (7-15) so such type of risk is negligible. The level of human large mammal conflict along the proposed TL was very low compared to other areas like Chitwan and Nawalparasi districts. This suggests that there is extremely low chance of large carnivore and project staff (including labors) conflict during the construction phase of proposed TL. If certain precautions (see mitigation measures) are taken during construction phase, the possible conflicts with large mammals can be reduced substantially.

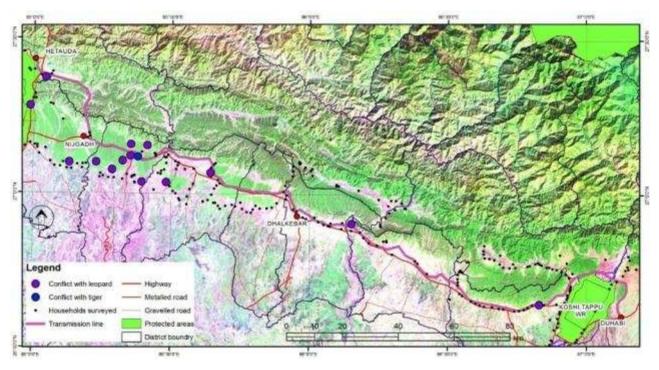


Figure 5-4: Map showing reported locations of large mammal - human conflicts along the proposed high transmission line

5.4 Existing 132 kV Transmission Line and Its Impact

The respondents (n = 326) in the study area were interviewed whether they had noticed any adverse or beneficial impacts of existing 132 kV TL on large mammals. All the respondents claimed that the existing 132 kV TL did not have harmful impacts on the large mammals (tiger, leopard and jungle cat) neither a positive impact. Similarly, the long term record (1998 to 2012) of Bardia National Park (BNP) showed no mortality of tiger, leopard and jungle cat

because of existing 132 kV TL that passes through core habitats of the Park. Furthermore, the existing 132 kV TL in Bardia National Park did not have any barrier effect on the regular movement and dispersal of tiger, leopard and jungle cat. This evidence suggest that the proposed 400 kV TL between Hetauda and Duhabi that passes through some of the national forests will not have a significant effect for the tiger, leopard and jungle cat.

6 MITIGATION MEASURES

Transmission systems have an inherently small footprint compared to other "linear" infrastructure (e.g., expressways and other roads which typically alter topography and drainage in an irreversible manner). Based on the findings following measures are suggested to minimize the impacts on large mammals:

- Total affected forest area due to construction of the proposed 400 kV TL is about 519 ha that includes tree, shrub land and grass land (*IEE 2011*). During the construction phase some level of disturbances to large mammals is expected. However, the large mammals (tiger, leopard and jungle cat) are nocturnal and can easily shift their territory. Therefore, the construction work in the forested areas should be restricted during day time only which will allow large mammals to move freely during the night time. Similarly, the construction camps should not be kept inside the forest areas to avoid disturbances and conflicts with large mammals. The construction workers will be restricted to bring dogs to the construction sites since stray dogs coming to construction site may increase the occurrence of leopard at the site.
- Proper waste management including food waste at camp and construction site shall be done to minimize the risk.
- Sensitization training on wildlife conservation and precautions to be taken while
 working in the sensitive forest habitats should be provided to the project staff and
 workers to minimize poaching and conflicts with large mammals. ESSD will conduct
 awareness program covering the representative of Community Forest Users Group of
 the affected community forest. In addition awareness program will be also
 implemented for the project workers involved in construction works.
- Regular monitoring of the construction work will be carried out in the forested habitats to control and minimize unnecessary disturbances and damages.
 Construction work in the forested habitats during monsoon period (June – October) should be avoided or minimized.
- There is a lack of scientific database and information on how the high tension line passing through dense forest areas or protected areas may affect large mammals and their conservation in the long run. Therefore, a long term monitoring on the impact of high tension line on biodiversity conservation should be initiated to evaluate the long term impacts of the proposed project.

BIBLIOGRAPHY

Barber-Meyer, S. M., Jnawali S. R., Karki, J. B. Khanal, P., Lohani, S., Long, B., MacKenzie, D. I., Pandav, B., Pradhan, N.M.B., Shrestha, R., Subedi, N., Thapa, G., Thapa, K., & Wikramanayake, E. (2012). Influence of prey depletion and human disturbance on tiger occupancy in Nepal. Journal of Zoology.

Eliassen, T. (2003) Niche separation and food competition between tigers (Panthera tigris) and leopards (Panthera pardus) in Royal Bardia National Park, Nepal, An M.Sc thesis submitted to Agricultural University of Norway, Norway.

ESSD (2011), Initial Environmental Examination of Hetauda – Dhalkebar – Duhabi 400 kV Transmission Line Project. Environment and Social Studies Department, Nepal Electricity Authority, Kathmandu, Nepal.

Jacques, G., (2009) Prey Selection by Tigers (Panthera Tigris Tigris) in the Karnali Floodplain of Royal Bardia National Park, Nepal, MSc thesis, Imperial College London, UK.

Karki, J. B., Jnawali, S. R., Shrestha, R., Pandey, M. B., Gurung, G. & Thapa, M. (2009). Tiger and their prey base abundance in terai arc landscape Nepal. Department of National Parks and Wildlife Conservation and Department of Forest, Nepal.

Karanth, K.U., and Nichols, J.D. (Eds) (2002) Monitoring of Tigers and their Prey: A manual for Researchers, Managers and Conservationists in Tropical Asia.

Krebs, C. J. (2009) Ecology. Sixth edition. Benjamin Cummings, San Francisco, USA.

Majupuria, T.C., and Majpuria, R. K.(1998) Resources and Management, Wildlife, National Parks and Reserves of Nepal.

Shah, K.B., Thapa, T.B. and Budha, P.B. (2004) Status Survey of the Forest Leopard Panthera pardus Linnaeus, 1758 in Nepal. A report submitted to WWF Nepal Program, Kathmandu, Nepal.

Smith, D. (1999) Metapopulation Structure of Tigers in Nepal,Riding the Tiger: Tiger conservation in Human Dominated Landscape, Cambridge University Press, UK.

Sutherland, W. J. (2000) The Conservation Handbook: Research, Management and Policy. Blackwell Science, Oxford, UK.

Wang, S. W. & Macdonald, D.W. (2009) Feeding Habits and Niche Partitioning in a Predator Guild Composed of Tigers, Leopards and Dholes in a Temperate Ecosystem in Central Bhutan, J. Zool., London, UK.

ANNEX A

RESPONDENTS OF THE KEY INFORMANT'S SURVEY

RESPONDENTS OF THE KEY INFORMANT'S SURVEY

SN	Respondent name/code	Date	Location	District
1	Nir Bahadur Ghalen	04-Oct-12	Dumarwana-7, Kakadi	Bara
	(Tamang)			
2	Tankanath Yogi	04-Oct-12	Nijgad-1, Shivnagar	Bara
3	Usha Thapa	04-Oct-12	Nijgad-5	Bara
4	Maya Kafle	04-Oct-12	Nijgad-5, Bhiyal tol	Bara
5	Tul maya lama	04-Oct-12	Kanakpur-5 Simri	Rautahat
6	Surya Bd. Rai	04-Oct-12	Kanakpur-5 Simri	Rautahat
7	Januka Adhikari	04-Oct-12	Kankpur-6 Jangauli	Rautahat
8	Pul Pd. Chaudhary	04-Oct-12	kanakpur-7, Jangalsaiya	Rautahat
9	Sekha Moktar	04-Oct-12	kanakpur-2	Rautahat
10	Ismil Anusari	04-Oct-12	Laxmipur-,Islampur	Rautahat
11	Lali Rai	04-Oct-12	Rangpur-7,Raitol	Rautahat
12	Rome Kuwal	04-Oct-12	Rangpur-9,Mahruwa	Rautahat
13	Saphi Ulla	04-Oct-12	Simra Bhawanipur-5	Rautahat
			Santawa	
14	Ratna Bd. Kuwal	05-Oct-12	Paurai-5	Rautahat
15	Dhan B. Kuwal	05-Oct-12	Paurai-5	Rautahat
16	Mukti Thapa	05-Oct-12	Paurai-6	Rautahat
17	Ramesh Timilsina	05-Oct-12	Judibela-3 Laxmi tol	Rautahat
18	Guman Singh Tamang	05-Oct-12	Judibela-9 ban tol	Rautahat
19	Bishnu Pd. Mainali	05-Oct-12	Judibela-1,Phulbari	Rautahat
20	Laxi Pd. Mainali	05-Oct-12	Judibela-1,Phulbari	Rautahat
21	Sutumaya Bel	05-Oct-12	Judibela-1,Phulbari	Rautahat
22	Paupram Gautam	05-Oct-12	Chandranigahpur-4	Rautahat
			Gaidetar	
23	Tilak Bd. Thing	05-Oct-12	Chandranigahpur-4 Ghara	Rautahat
24	Liladhar Timilsina	05-Oct-12	Chandranigahpur-4	Rautahat
			santitol	
25	Bhagwati Dahal	05-Oct-12	Chapur-1 Santinagar	Rautahat
26	Suntali Sunuwar	05-Oct-12	Chandranigahpur-2,Santitol	Rautahat
27	Binita Kusah	05-Oct-12	Chandranigahpur-7	Rautahat
			Sukhawnighari	
28	Prit Majhi	05-Oct-12	Dumariya-3, Chatnagar	Rautahat
29	Marini Anusari	05-Oct-12	Dumariya-2	Rautahat
30	Lal Bd. Shaha	05-Oct-12	Dumariya-7,Chetanagr	Rautahat
31	Kedar Shautha	05-Oct-12	Dumariya-7,Chetanagr	Rautahat
32	Yadu Jha	05-Oct-12	Belwa-9	Rautahat
33	Mahendra Shah	05-Oct-12	Bisrampur-9	Rautahat
34	Rameshwar Patel	05-Oct-12	Bisrampur-8,Baalerigau	Rautahat
35	Nagendra Yadav	05-Oct-12	Bisrampur-9, Dhangadi	Rautahat
36	Sarita Thapa	06-Oct-12	Karmaiya-1,Bagmati	Saralahi

27	L L.L. B. (06 0 4 12	Karani a 2 Darkara	C I . I . '
37	Julphe Bot	06-Oct-12	Karmaiya-3,Bathane	Saralahi
38	Raj K. Tamang	06-Oct-12	Karmaiya-3,Karmaiya	Saralahi
39	Ganesh B.K.	06-Oct-12	Karmaiya-8,Nayabasti	Saralahi
40	Bhagavata Magar	06-Oct-12	Rajghat-7,Tekani	Saralahi
41	Dhan B. Dhangali	06-Oct-12	Rajghat-8,Rampur	Saralahi
42	Harka B. Pulami	06-Oct-12	Rajghat-7,Tekani	Saralahi
43	Ramji Moktan	06-Oct-12	Karmaiya-9 Girayat	Saralahi
44	Kal B. Yaiba	06-Oct-12	Rajghat-4, Lalbhalodchok	Saralahi
45	Ram Lal Yadav	06-Oct-12	Shankarpur-2, Shankarpur	Saralahi
46	CT30	06-Oct-12	Sakrampur, Lalbandi	Saralahi
47	Manmaya Khatiwda	06-Oct-12	Murtiya-1	Saralahi
48	Asok k. koiri	06-Oct-12	Murtiya-2	Saralahi
49	Sriram Mali	06-Oct-12	Janakinagar-3	Saralahi
50	Dhukha Mandal	06-Oct-12	Janakinagar-6, Gangapur	Saralahi
51	Suresh k. Pandit	06-Oct-12	Pipariya-3, Pipariya	Saralahi
52	Shiv Sankar BK	06-Oct-12	Pipariya-7, Pipariya	Saralahi
53	Surendra Shah	06-Oct-12	Kabilasi-9, Gaur	Saralahi
54	Dinesh k. Ram	06-Oct-12	Bharadwej-4,Haraiya	Saralahi
55	Shakh Idrish	06-Oct-12	Haraiya-9, Haripur	Saralahi
56	Manish Chaudary	06-Oct-12	Manpur-1,Jagatpur	Saralahi
57	Dinesh BK	06-Oct-12	Saspur-1, Tingharv	Saralahi
58	Bisnumaya Thapa	06-Oct-12	Dangani-2-4, Akask chok	Saralahi
59	Birandra Timilsina	06-Oct-12	Hariyon-4	Saralahi
60	CS31	06-Oct-12	Dhangari-7 Dharara	Saralahi
61	Narayan Rai	06-Oct-12	Dhangari-9, Grat	Saralahi
62	Poem Bd. Lama	06-Oct-12	Hariyon-6, sukumbasi	Saralahi
63	Jagnath Shah	06-Oct-12	Hariyon-8, Belganga	Saralahi
64	Ganesh Rawat	06-Oct-12	Lalbandi-4 Lalbandi	Saralahi
65	Syam Lama	07-Oct-12	Lalbandi-3, Lalbandi	Saralahi
66	Syam B. Yonjan	07-Oct-12	Patharkot-4	Saralahi
67	Lal B. Bhujel	07-Oct-12	Pathwat-5,Bhaunichok	Saralahi
68	Ram B. Magar	07-Oct-12	Patharkot-4 thinghat	Saralahi
69	Prem B. Muktan	07-Oct-12	Patharkot-6, Hirpur	Saralahi
70	Dip B. Lama	07-Oct-12	Raniganj-2, Raniganj	Saralahi
71	Gyan Tamang	07-Oct-12	Iswarpur-1, phuljor	Saralahi
72	Sukbir Mahto	07-Oct-12	Iswarpur-1,Baranpur	Saralahi
73	Krishna mani Sharma	07-Oct-12	Iswarpur-1, sakhuban	Saralahi
74	Ram din danuwar	07-Oct-12	Iswarpur-1, Bailbas	Saralahi
75	CU33	07-Oct-12	Iswarpur-6, khariyatol	Saralahi
76	Dhasratha Chaudhary	07-Oct-12	Bela-9, Bhalbhai	Saralahi
77	Bhabsan Mahato	07-Oct-12	Bhaktipur-7	Saralahi
78	Ram B.Gyabal (Tamanag)	07-Oct-12	Bhaktipur-9,Manpakhol	Saralahi
79	Ram ekbal Mahato	07-Oct-12	Bhaktipur-4	Saralahi
80	Gopal Chaudhary	07-Oct-12	Gaurisankar-4	Saralahi
81	Indra Mahato	07-Oct-12	Gaurisankar-4, Hirakatuwa	Saralahi
82	Kishan Yaadav	07-Oct-12	Gaurisankar-9, Srinagar	Saralahi
83	Bikau K. Mahato	07-Oct-12	Bharatpur-9, paraniya	Mahottari
		J. OCC 12		

84	Kailash Matato	07-Oct-12	Laxmniya-7	Mahottari
85	Pundev Yadav	07-Oct-12	Laxmniya-2, Dhannoraya	Mahottari
			tol	
86	Bijlal Shaha	07-Oct-12	Laxmiya-1, Thapatol	Mahottari
87	Khimat Mahato	07-Oct-12	Belgachhi-2, Belgachhi	Mahottari
88	Mahosur Suri	07-Oct-12	Belgachhi-7, Bhalkebar	Mahottari
89	CU36	07-Oct-12	Belgachhi-8,	Mahottari
90	CU37	07-Oct-12	Ramnagar-5, Kusmani	Mahottari
91	Aitimaya Tamang	07-Oct-12	Hatilet-7 Labingtol	Mahottari
92	Dinesh Mahato	07-Oct-12	Hatilet-1	Mahottari
93	Debimaya Khatri	07-Oct-12	Bardibas-9	Mahottari
94	Tek B. Magar	08-Oct-12	Gauribas-5, Patu	Mahottari
95	Heman Majhi	08-Oct-12	Dharkola	Mahottari
96	CT38	08-Oct-12	Bardibas-3	Mahottari
97	CU39	08-Oct-12	Begadawar-9	Dhanusa
98	Guman Singh Tamang	08-Oct-12	Begadawar-4, Jamunibas	Dhanusa
99	Dal B.Suwar	08-Oct-12	Dhalkebar-2, Dhalkebar	Dhanusa
100	Rajendra Pd. Mahato	08-Oct-12	Dhalkebar-3,	Dhanusa
101	CV40	08-Oct-12	Hariharpur-9, Bisranpur	Dhanusa
102	Binod Thakur	08-Oct-12	Hariharpur-8, lalmati	Dhanusa
103	CV40	08-Oct-12	Puspalpur	Dhanusa
104	Tek B. Rai	08-Oct-12	Yagyabhumi-7, Danda tol	Dhanusa
105	Tek Bd. Lama	08-Oct-12	Yagyabhumi-9,Viman	Dhanusa
106	Ram Sukbir Rebilash	08-Oct-12	Bhalatpur-2, chhaghariya	Dhanusa
107	Ramdhan Yadav	08-Oct-12	Bhalatpur-3, chhaghariya	Dhanusa
108	CW42	08-Oct-12	Bhalatpur-3, chhaghariya	Dhanusa
109	CW42	08-Oct-12	Godar-9, Sakhawani	Dhanusa
110	CW42	08-Oct-12	Godar-3,	Dhanusa
111	Ramdurita Shah	08-Oct-12	Badharamel-3Bandispur	Siraha
112	Syam Bd. Phuyal	08-Oct-12	Badharamel-1, Beltiua	Siraha
113	CW43	08-Oct-12	Badharamel-1,	Siraha
114	CW44	08-Oct-12	Badharamel-5,Bhalkiya	Siraha
115	CX44	08-Oct-12	Bhegal-6	Siraha
116	CX44	08-Oct-12	Karjone-8, prajatpur	Siraha
117	CX45	08-Oct-12	Mirdaiya-3	Siraha
118	CX45	08-Oct-12	Phulbaraya-8	Siraha
119	CX46	08-Oct-12	Phulbari-9	Siraha
120	CX46	08-Oct-12	Phulbari-9, Mulbari	Siraha
121	CY46	08-Oct-12	Charwan-1	Siraha
122	CY46	08-Oct-12	Charwan-7	Siraha
123	CY48	08-Oct-12	Ayodyanagar	Siraha
124	CY48	08-Oct-12	Ayodyanagar	Siraha
125	DA51	09-Oct-12	Daulatpur-1, Laxmipur	Saptari
126	DA51	09-Oct-12	Majupati-6,7Kanakpur	Saptari
127	DA51	09-Oct-12	Daulatpur-5,	Saptari
128	CZ 51	09-Oct-12	Hardiya-2	Saptari
129	CZ 51	09-Oct-12	Hardiya-1, Hardiya	Saptari

130	CZ51	09-Oct-12	Hardiya-2, Hardiya	Saptari
131	DB51	09-Oct-12	Namuna-6, Tushar	Saptari
132	Daya Ram Shaha	09-Oct-12	Kushaha-2	Saptari
133	DB51	09-Oct-12	Pansera-2	Saptari
134	DB52	09-Oct-12	Banajula-2, Banajiula	Saptari
135	DB52	09-Oct-12	Ranjitpur-07, Ranjitpur	Saptari
136	DB52	09-Oct-12	kalyanpur-2, Basanpur	Saptari
137	DB53	09-Oct-12	Kanlyanpur-6	Saptari
138	CB53	09-Oct-12	Bhanghi-5	Saptari
139	DB54	09-Oct-12	Mohanpur-2	Saptari
140	Lal Bd. Chaudhary	09-Oct-12	Khoksarprawah-3Khoksar	Saptari
141	Ramesh Kumar Yadav	09-Oct-12	Raipura-8, Ropani	Saptari
142	Rabindra Dhakal	09-Oct-12	Terauta-6,	Saptari
143	CB55	09-Oct-12	Sitapur-1, Saptari	Saptari
144	Sarada Devi Chaudhary	09-Oct-12	Sitapur-3	Saptari
145	DB56	09-Oct-12	porsani-5,Bhela	Saptari
146	DB56	09-Oct-12	Jandau-8	Saptari
147	Bal Krishna Chaudhary	09-Oct-12	Bagidhuwa-9, Ratawata	Saptari
148	Bel B. Katuwal	09-Oct-12	Thetiya-1, Byangi	Saptari
149	DB58	09-Oct-12	Rupnagar-3	Saptari
150	DB58	10-Oct-12	Dharampur-1	Saptari
151	Bindu Chaudhary	10-Oct-12	Ghoghanpur-4	Saptari
152	DB59	10-Oct-12	Bhawanipur-5	Saptari
153	DB59	10-Oct-12	Belanda-8	Saptari
154	DA57	10-Oct-12	Belanda-7	Saptari
155	DA59	10-Oct-12	Bhodanpur-4	Saptari
156	DB59	10-Oct-12	Bhodanpur-5	Saptari
157	Karmchandra Shah	10-Oct-12	Kanchanpur-4, Beriya	Saptari
158	Oham Pd. Yadav	10-Oct-12	Badgama-2	Saptari
159	DC58	10-Oct-12	Badgama-2	Saptari
160	DC57	10-Oct-12	Banajhariya-1,	Saptari
161	Kapleshwari shah	10-Oct-12	Man kaderi-8	Saptari
162	DC58	10-Oct-12	Barmajhiya-8	Saptari
163	DD58	10-Oct-12	Badgama-8	Saptari
164	DE 58	10-Oct-12	Majhwapur-6, Arni	Saptari
165	Laxman Karmait	10-Oct-12	Jugniya-8, Jugniya	Saptari
166	DE 57	10-Oct-12	Joganiya-1	Saptari
167	Radhedin Baniya	10-Oct-12	Hanumannagar-1	Saptari
168	DE 58	10-Oct-12	Joganiya-8	Saptari
169	DE 60	10-Oct-12	Haripur-7	Sunsari
170	DE 60	10-Oct-12	Haripur-8	Sunsari
171	DE 60	10-Oct-12	Haripur-3	Sunsari
172	DD60	10-Oct-12	Haripur-1	Sunsari
173	Rabinda K. Singh	11-Oct-12	Kushawa-5	Sunsari
174	Ranjana Mandal	11-Oct-12	Madhuwan-1	Sunsari
175	DA62	11-Oct-12	Parkashpur	Sunsari
176	DA62	11-Oct-12	Parkashpur-5	Sunsari

177	DA 62	11-Oct-12	Manhendranagar-9	Sunsari
178	CZ63	11-Oct-12	Mahendranagar-5	Sunsari
179	CZ 63	11-Oct-12	Mahendranagar-4	Sunsari
180	CZ63	11-Oct-12	Mahendranagar-4	Sunsari
181	Chakna Bd. Raila	11-Oct-12	Mahendranagar-5	Sunsari
182	CY 63	11-Oct-12	Barachhatra-6	Sunsari
183	Krishna Pd. Baral	11-Oct-12	Barachhatra-6, Jabadi	Sunsari
184	CZ 63	11-Oct-12	Barachhatra-4,	Sunsari
185	CZ64	11-Oct-12	Bharauli-3	Sunsari
186	CZ 64	11-Oct-12	Bharauli-3	Sunsari
187	CZ64	11-Oct-12	Bakalauri-5	Sunsari
188	Anurudha Jha	11-Oct-12	Bakalauri-9	Sunsari
189	Eak Raj Pradhan	11-Oct-12	Bakalauri-3,	Sunsari
190	DB65	11-Oct-12	Pakali-5	Sunsari
191	DB65	11-Oct-12	Labipur-6	Sunsari
192	DB65	11-Oct-12	Itahari-5	Sunsari
193	Bhoj lal Lamichhane	11-Oct-12	Itahari-2	Sunsari
194	Ram Pd.Shrestha	11-Oct-12	Hashpokha-1	Sunsari
195	Padam Bd. Magar	11-Oct-12	Panthkanya-3	Sunsari
196	CY65	12-Oct-12	Dharan-18, Budhachoka	Sunsari
197	CY65	12-Oct-12	Dharan-17	Sunsari
198	Ananda Lama	12-Oct-12	Dharan-17	Sunsari
199	CY66	12-Oct-12	Dharan-15	Sunsari
200	Kama Lama	12-Oct-12	Panchakanya-3	Sunsari
201	CZ66	12-Oct-12	Panchakanya-2	Sunsari
202	Ram Pd. Dungana	15-Oct-12	Itahari	Sunsari
203	Man Bd. Karki	15-Oct-12	Phattepur-4	Saptari
204	Dambar Bd. Lama	15-Oct-12	Tapeshwari-1	Udayapur
205	CY61	15-Oct-12	Thoksila	Udayapur
206	CY59	15-Oct-12	Bashaha	Udayapur
207	CY58	15-Oct-12	Beltar	Udayapur
208	CZ59	15-Oct-12	Tapeshwari	Udayapur
209	Goma Dahal	15-Oct-12	Sundarpur-5	Udayapur
210	CZ58	15-Oct-12	Sundarpur-3	Udayapur
211	CZ57	15-Oct-12	Siwai-2	Udayapur
212	CZ58	15-Oct-12	Sundrpur	Udayapur
213	CZ57	15-Oct-12	Hariya-5,Dhatitol	Udayapur
214	CZ57	15-Oct-12	Hardiya-5	Udayapur
215	CZ57	15-Oct-12	Hardiya-6	Udayapur
216	CZ56	15-Oct-12	Hardiya-4	Udayapur
217	Tara Bd. Paudyal	15-Oct-12	Jogidaha-1	Udayapur
218	CZ56	15-Oct-12	Jogidaha-1	Udayapur
219	CZ56	15-Oct-12	Jogidaha-1	Udayapur
220	CZ55	15-Oct-12	Jogidaha-6	Udayapur
221	Debi Sharestha	15-Oct-12	Jogidaha-9	Udayapur
222	CZ54	15-Oct-12	TriyugaNP-7, Bhulke	Udayapur
223	CZ54	15-Oct-12	TriyugaNP-7	Udayapur

224	CY54	15-Oct-12	GaidhatNP	Udayapur
225	CY55	15-Oct-12	GaidhatNP	Udayapur
226	Padma Devi B.K.	16-Oct-12	Triyuga Np-8	Udayapur
227	Khila Raj Niraula	16-Oct-12	Triyuga Np-10,Deuri	Udayapur
228	Kailash karki	16-Oct-12	Triyuga Np-11,Deuri	Udayapur
229	Ramjee Karki	16-Oct-12	Triyuga Np-13,Bhanta	Udayapur
230	CX53	16-Oct-12	Triyuga Np	Udayapur
231	CY53	16-Oct-12	Chuhade	Udayapur
232	Cy51	16-Oct-12	Triyuga NP-11	Udayapur
233	Mandal Lal Chaudhary	16-Oct-12	Hardiya-1	Udayapur
234	CZ49	16-Oct-12	Dhangadi-1, Sonapur	Udayapur
235	Bhawani Dal chan	16-Oct-12	Belsrot, Tribeni VDC	Udayapur
236	CW45	16-Oct-12	Tribeni-4, Udayapur	Udayapur
237	Ganesh Sharestha	16-Oct-12	Tribeni-6	Udayapur
238	CV46	16-Oct-12	Tribeni-7, Khoksa	Udayapur
239	CV46	16-Oct-12	Tribeni-9	Udayapur
240	CU47	16-Oct-12	Katari-1	Udayapur
241	CU47	16-Oct-12	Katari-	Udayapur
242	CS39	16-Oct-12	Gaurivas-6	Mahottari
243	Gauri	16-Oct-12	Gaurivas-8	Mahottari
244	CR39	16-Oct-12	Chune-5, Ndut	Dhanusa
245	Chnda Bd. Gurung	10-Nov-	Ayodhapur-9, Bagaidig	Chitwan
		12		
246	Dil. Bd. Tamang	10-Nov-	Thori-1, Chautara	Parsa
2.47	C D C !'	12	TI : 2.0	
247	Syam Bd. Subedi	10-Nov-	Thori-3,Saraswati	Parsa
240	CI 12	12	The distance of the second	D
248	CL12	10-Nov- 12	Thori-4,Parsa	Parsa
240	Basudev Aryal	10-Nov-	Thori Gautamnagar-8	Parsa
249	basudev Aryai	12	Thori Gautamhagar-8	Faisa
250	Tek Bd. Tamang	10-Nov-	Thori-7,Thaunpaln	Parsa
230	rek ba. ramang	12	mon 7,maunpain	1 4134
251	CM 13	10-Nov-	Thori-7	Parsa
231	CIVI 23	12	111011 7	Tarsa
252	Rupak Thapa	10-Nov-	Nirmalbasti-1, Ramnagar	Parsa
		12		
253	Seti Lama	10-Nov-	Nirmalthori-1, Ramnagar	Parsa
		12	, , , , , , , , , , , , , , , , , , , ,	
254	Ganesh Sharestha	10-Nov-	Nirmalthori-3, Ramnagar	Parsa
		12		
255	Bhim Bd. Basnet	10-Nov-	Nirmalthori-4	Parsa
		12		
256	Suk Lal Sharestha	10-Nov-	Nirmalthori-6	Parsa
		12		
257	Purn Pd. Achaya	10-Nov-	Nirmalthori-9,Mdhabani	Parsa
		12		
258	Tek Bd. Upreti	10-Nov-	Sundarpur-5	Parsa

		12		
259	Bharma Shah	10-Nov- 12	Mahadevpati-8	Parsa
260	CQ15	10-Nov- 12	Sedhawa-9,Basantpur	Parsa
261	CP15	10-Nov- 12	Sedhawa	Parsa
262	CP15	10-Nov- 12	Sedhawa-7,Harijan	Parsa
263	CP15	10-Nov-	Jitpur-9	Parsa
264	CP15	10-Nov- 12	Sankarsaraiya- 5,Selhawaniya	Parsa
265	Mahadev Rawta Gurung	10-Nov- 12	Palerewa Sugauli-3	Parsa
266	CP16	10-Nov- 12	Paterwasugauli-4	Parsa
267	CP16	10-Nov- 12	PaterwaSugauli-6	Parsa
268	Khelmaya	11-Nov- 12	Gadi-5,Bainathpur	Parsa
269	Ram Bd. Lama	11-Nov- 12	Gadi-6,BankatLaxmipur	Parsa
270	Jagdamb Mahato	11-Nov- 12	Gadi-4,Rangpur Laxmipur	Parsa
271	Sumtra Jeli	11-Nov- 12	Maduwanmethali-1,2	Parsa
272	CP18	11-Nov- 12	Begbana-7, Manawa	Parsa
273	Raju Chaudhary	11-Nov- 12	Begbana-5,Piprahawa	Parsa
274	Dil Bd. Tamang	11-Nov- 12	Buruwaguthi-5	Parsa
275	CQ19	11-Nov- 12	Buruwaguthi-1	Parsa
276	Suresh Shah	11-Nov- 12	Beluwa-1, mIlan chok	Parsa
277	CQ19	11-Nov- 12	Charauni-9	Parsa
278	Rajendra Subedi	11-Nov- 12	Simara-5,Bojani	Bara
279	Ramshi Pd. Kharel	11-Nov- 12	Simara-6,Auriaya	Bara
280	Kopila Lamichane	11-Nov- 12	Dubarwana-8	Bara
281	Krishana Pd.Jamkatel	11-Nov- 12	Dubarwana-8, Malapur	Bara
282	Krisna Pd. Pudasaini	11-Nov-	Dubarwana-4, Nayabasti	Bara

		12		
283	Panda Sapkota	11-Nov- 12	Dubarwana-7, katarwa	Bara
284	Taj k. Dhohal	11-Nov- 12	Menarwa-2,Jaithapur	Bara
285	GaneshBd. Tamang	11-Nov-	Haraiya-1,Romang	Bara
286	Hom Bd.Katri	11-Nov-	Karaiya-8, Beluwa	Bara
287	Dairanga Chaudhary	11-Nov-	Kekadi-2	Bara
288	Kwshavb Teli	11-Nov-	Parswna-5	Bara
289	Jugun Chaudhary	11-Nov-	Sapahi-6, Juwakoti	Bara
290	Kliman Chaudhary	11-Nov-	Kolhabi-7	Bara
291	CR24	11-Nov-	Sipahi	Bara
292	Karan Ghising	11-Nov-	Sapahi-2, Purankanta	Bara
293	CR 24	11-Nov- 12	Sapahi-2	Bara
294	Pamha Lama	11-Nov-	Ratanpuri-9 Lal	Bara
295	Suk. Bd. Tamang	11-Nov-	Amlekhaganj	Bara
296	Laximidevi Thin	11-Nov-	Amlekhaganj-9, Chakati	Bara
297	Sonam sinh Lama	11-Nov-	Ratanpur-7, Petital	Bara
298	Surya Lama	11-Nov-	Amlekhaganj-5,Bajhidedi	Bara
299	Rishewar Narayan Shah	12-Nov-	Amlekhaganj-5	Bara
300	Tarabd. Bist	12-Nov-	Amlekhaganj-7	Bara
301	Jit Bd. Tamang	12-Nov-	Amlekhaganj-7	Bara
302	CM20	12-Nov-	Amlekhaganj-3,7	Bara
303	Gorga Bd. Pathrin	12-Nov-	Churiyamai-3, Ratamati	Makawanpur
304	CL 21	12-Nov-	Churiyamai-6, Barla	Makawanpur
305	sansaimai CF	12-Nov-	Churiyamai-6, Noward	Makawanpur
306	CL 21	12-Nov-	Churiyamai-7	Makawanpur

		12		
307	CL22	12-Nov-	Churiyamai-9	Makawanpur
		12		
308	CL22	12-Nov-	Hetauda-6	Makawanpur
		12		
309	Ck20	12-Nov-	Churiyamai-2,Mayuardap	Makawanpur
		12		
310	Sunita Banjan	12-Nov-	Churiyamai-1,Kalapur	Makawanpur
	-	12		
311	Dorabel Chhetri	12-Nov-	Padampokhari-1	Makawanpur
		12		
312	Chandra Bd. Pudasaini	12-Nov-	Basahmadi-3	Makawanpur
		12		
313	CJ19	12-Nov-	Basahmadi-2, Bhaktipur	Makawanpur
		12		
314	Sudarsan Ariyal	12-Nov-	Hasikhola-6	Makawanpur
		12		
315	CJ19	12-Nov-	baschandi-1	Makawanpur
		12		
316	Dev Pd.Priayal	12-Nov-	Manahari-8, Rajariya	Makawanpur
		12		
317	CJ 18	12-Nov-	Hardikhola-7	Makawanpur
		12		
318	CJ18	12-Nov-	Hardikhola-8	Makawanpur
		12		
319	CI18	12-Nov-	Hardikhola-9, Dillipur	Makawanpur
		12		
320	Biswanath Guri	12-Nov-	Manhari-7	Makawanpur
		12		
321	Think Bd. Rai	12-Nov-	Manhari-5	Makawanpur
		12		
322	Balram Khatri	12-Nov-	Manhari-3, Bijauna	Makawanpur
		12		
323	Surya Bd. Bel	12-Nov-	Manhari-5, Nayabasti	Makawanpur
		12		
324	Thir B. Lama	12-Nov-	Churiyamai-3, Ratamati	Makawanpur
		12	<u> </u>	
325	Rajaram Sharma	12-Nov-	Churiyamai-6, Barla	Makawanpur
26.5	.,	12		
326	Kumari Tamang	12-Nov-	Churiyamai-6,	Makawanpur
		12		

ANNEX B CHECKLIST FOR THE KEY INFORMANT'S SURVEY

STUDY OF LARGE MAMMALS IN HETAUDA- DHALKEBAR- DUHABI 400 KV TRANSMISSION LINE PROJECT

CHECKLIST FOR THE KEY INFORMANT'S SURVEY

Add	Name of the respondent: Address: Age: Sex:						
1) H	ow long are you livin	g here?					
2) H	ow frequently you go	into forest?					
3) H	ave you seen followin	ng animals in you	r area ?				
SN	Species	Tick (√) or (x)	When	Where	Remarks		
1	Tiger						
2	Leopard						
3	Jungle cat						
4	Elephant						
4) List the other wild animals found in your area other than above mentioned							
5) Do these animals do any harm for you? Yes / No If yes provide some details							
6) Any other comments							