

APPENDIX W

AUTUMN ECOLOGICAL SURVEYS



**SUPPLEMENTARY ECOLOGICAL SURVEYS
ALONG THE PROPOSED
KVESHETI – KOBİ ROAD SECTION**



FINAL VERSION

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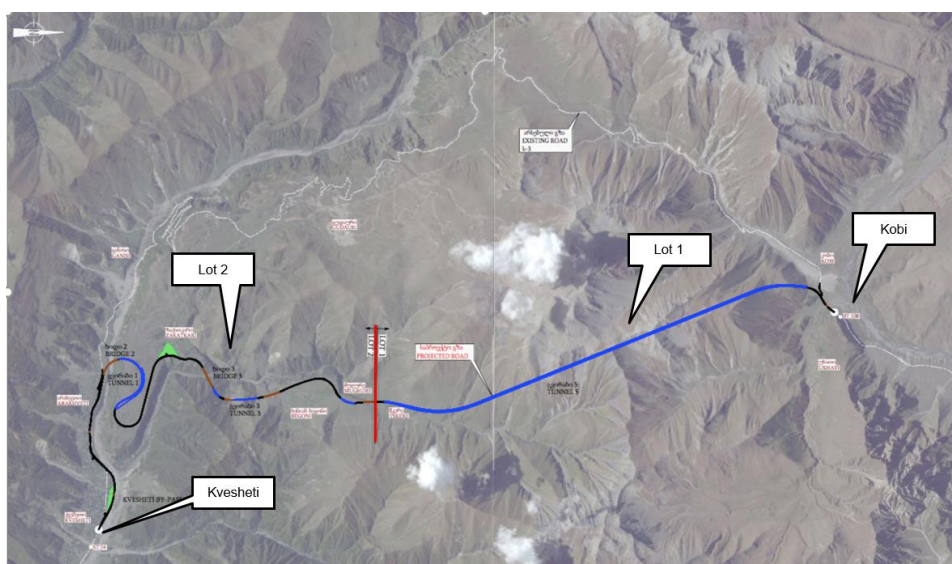
1. Introduction

1.1. Project overview

The existing “Military Road” runs between Georgia and Russia and includes a stretch of some 35km between the towns of Kvesheti and Kobi which is often closed in winter where it crosses over the Jvari Pass at a height of 2,395 m. The initial 7km section of the road from Kvesheti runs alongside the TetriAragvi river before climbing steeply in a zig-zag through the Gudauri ski area for around 15 km. It then crosses the Jvari Pass for around 10 km before descending to cross the tributary streams of the Térek near Kobi (on 60 and 42 m long bridges).

A new section of road is proposed that will bypass Kvesheti (on the river side) and then go on up to the Begoni plateau in a series of gentle curves. It will then pass through the Tereg valley to Tskere where it will enter an the southern portal of an 8km long tunnel. Exiting from the north tunnel portal the road has a final 0.9km stretch to Kobi where it rejoins the existing road. The proposed new road will be around 24 km in total length and will require 8 bridges (1 existing bridge and 7 new bridges) as well as the 8km tunnel.

The route is shown in the diagram below. Areas in blue are tunnels, with the northern tunnel portal on the far right of the picture.



1.2. Study Objectives

An Environmental Impact Assessment of the project has been produced to meet national regulatory requirements (Gamma 2018). This has been supplemented by the development of an “international Environmental and Social Impact Assessment (ESIA)” (Anas 2018). As part of this, DG consulting was contracted to provide specific additional information and, where appropriate undertake additional surveys, to address potential impacts of the proposed new road on migrating birds, bats and otters. The work sought to build on the baseline conditions described in the national EIA and advise on any specific regional sensitivities and or particular mitigation required given the nature of the project.

The results of the studies have been incorporated into the international ESIA and used to inform the relevant sections on baseline conditions, impact assessment and mitigation.

1.3. Specialists Involved

The work was undertaken by the following team of specialists:

- Bird surveys: Gia Edisherashvili (with support from Ilia Mirotadze)
- Bat surveys: Ioseb Natradze
- Otter Surveys: Sasha Bukhnikashvili (with field support from Nugzar Surguladze)
- Overall coordination: David Girvliani

1.4. Approach, Timing and Constraints

All work was carried out between late September 2018 and early November 2018. The approaches adopted and implications of seasonal and timing (and other) constraints are outlined under each of the sections below, as appropriate.

1.5. Layout of this Report

The remainder of this report is structured as follows:

- Section 2 addresses migratory birds (autumn migration)
- Section 3 addressed bats
- Section 4 addresses otters
- Section 5 summarises the results of the studies

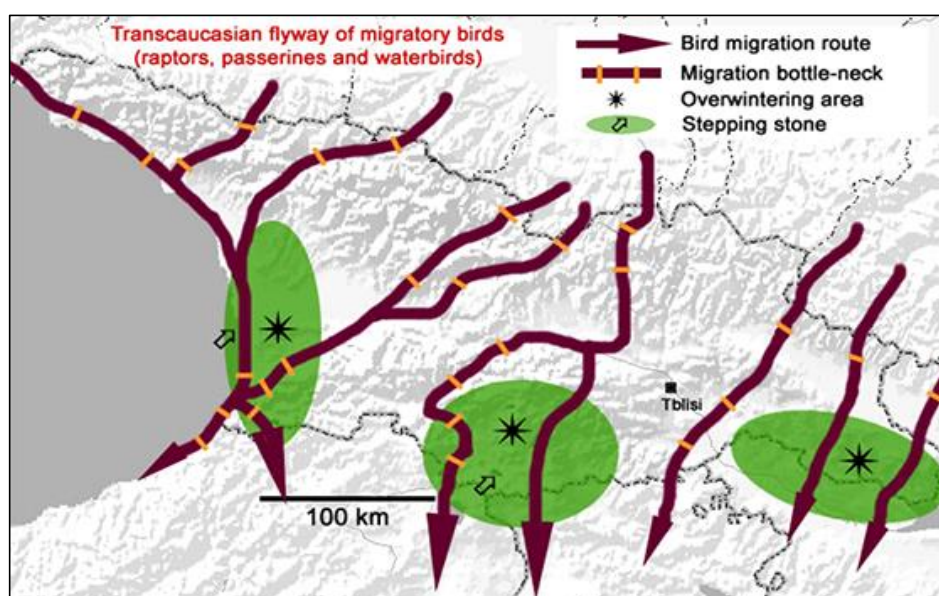
In addition:

- Appendix 1 provides raw data on the birds observed
- Appendix 2 provides pictures of some species observed

2. Autumn Bird Study

2.1. Background

The Caucasus are an important flyway in spring and autumn as the three major global migration routes of the Black Sea/Mediterranean; Central Asian and east Asia/East Africa flyways all come together here. Since migrating birds tend to avoid flying high over the top of mountains, the key inland mountain passes tend to form “bottlenecks” where large numbers of birds fly together over a relatively small area of land. Within Georgia the Jvari Pass through which the existing road passes is recognised as an important route (the “Kazbegi flyway”) which is used by a range of raptors, water birds and passerines. Species commonly encountered include European Honey-buzzards, Black Kites, Lesser Spotted, Greater Spotted, Steppe and Booted Eagles, Marsh, Montagu’s and Pallid Harriers, all passing from their breeding grounds in Eastern Europe and West Siberia, to wintering grounds across Africa. The importance of this flyway has been one of the reasons for the designation of the Kazbegi IBA (see ESIA for details).



Indeed at peak migration times over 30,000 raptors a day have been recorded (mostly black kite and steppe buzzards) from key localities such as Stepanstminda within this flyway (see for example data from ebird and observado) . Most of these pass the mountains via the Jvari pass rather than the Project Aol, as the mountains within the Project Aol create barriers that are considered too high for easy migration (see Autumn 2018 migratory report, Annex H). Migrating birds of prey such as eagles (*Aquila* spp.), harriers (*Circus* spp.) and Black Kite (*Milvus migrans*) are particularly common during spring migration (with more than 1,000 migrating raptors per day) in the vicinity of the Cross Pass and Sameba Church in Stepantsminda. Other species recorded on passage through the area include black storks and common and demoiselle cranes, whilst areas of woodland have been recorded as “excellent” for migrating passerines.

Unlike in Batumi, there is no regular surveying of migrants within the Kazbegi region, with the most recent planned bird of prey autumn migration count being undertaken in 2010 by BRC (Batumi Raptor Count). The results of this count (between 22 August - 29 September 2010) are shown in the table below.

Species	Number	Species	Number
Black Kite	25877	Lesser spotted eagle	38
Black Stork	16	Levant Sparrowhawk	1446
Booted eagle	79	Long-legged buzzard	1
Buzzard spec.	1	Marsh harrier	321
Egyptian vulture	7	Merlin	4
Falcon spec.	23	Montagu's harrier	268
Golden Eagle	1	Montagu's/Pallid harrier	1115
Goshawk	3	Osprey	15
Greater spotted eagle	44	Pallid harrier	366
Hen harrier	6	Red-footed falcon	14
Hobby	24	Short-toed Eagle	23
Honey-buzzard	129	Sparrowhawk	147
Imperial Eagle	3	Sparrowhawk spec.	195
Kestrel	185	Steppe buzzard	26063
Kestrel spec.	22	Steppe eagle	58
Lesser Kestrel	10	White-tailed eagle	3
Total birds counted	56507		

Annual Maximum Counts are also recorded by Trektellen which is also used by BRC to record their data. Although data is available up to 2017, the most recent data from Kazbegi is from 2015¹ and over the years 2006-2015 the following annual maximum counts were recorded that so not differ materially from those in 2010 (note the only count data is autumn, no spring counts at all are recorded):

Species	Number	Species	Number
Black Kite	30134	Lesser spotted eagle	43
Black Stork	16	Levant Sparrowhawk	2123
Booted eagle	85	Long-legged buzzard	2
Buzzard spec.	1	Marsh harrier	346
Egyptian vulture	9	Merlin	4
Falcon spec.	23	Montagu's harrier	274
Golden Eagle	1	Montagu's/Pallid harrier	1211
Goshawk	4	Osprey	17
Greater spotted eagle	49	Pallid harrier	454
Hen harrier	7	Red-footed falcon	14
Hobby	24	Short-toed Eagle	23
Honey-buzzard	156	Sparrowhawk	163
Imperial Eagle	5	Sparrowhawk spec.	213
Kestrel	186	Steppe buzzard	29378
Kestrel spec.	22	Steppe eagle	64
Lesser Kestrel	10	White-tailed eagle	3
Total birds counted	65381		

¹ www.trektellen.org/site/yeartotals/1333/2015/-2

2.2. Approach to the Study

To update and supplement the data shown above, specific bird counts were undertaken in the autumn of 2018 to help determine the overall importance to birds during this autumn migration period of:

- i) the **Aragvi River Gorge** up which the existing road passes, and which represents the Kazbegi flyway in general (ie provides a control)
- ii) the specific **Khada Gorge and Valley** up which the new road is proposed to pass up to Tskere village which is the point of southern portal of the proposed new road.
- iii) the north side of Caucasus ridge, where the norther Portal is located close to the Tergi river at the **confluence of the Tergi and Bidara rivers and the Narvana river** the right tributary of the Tergi.

The two corridors from the south slope of Caucasus allowed comparison of the characteristics of the migration corridor along the existing road and Jvari crossing (the historical route connecting north and south parts of the Caucasus) and which is better studied regarding migratory birds compared with the Khada river Gorge. (note the Khada Valley has a “dead-end” where it meets the ridges of the “Saddleback Mountain” and the existing road is mainly just used by local villagers to access the settlement in the gorge and the alpine pastures/hay lands nearby used by local and regional farmers in summer periods as pastures for sheep and cattle.

The two valleys studies are shown on the figure below

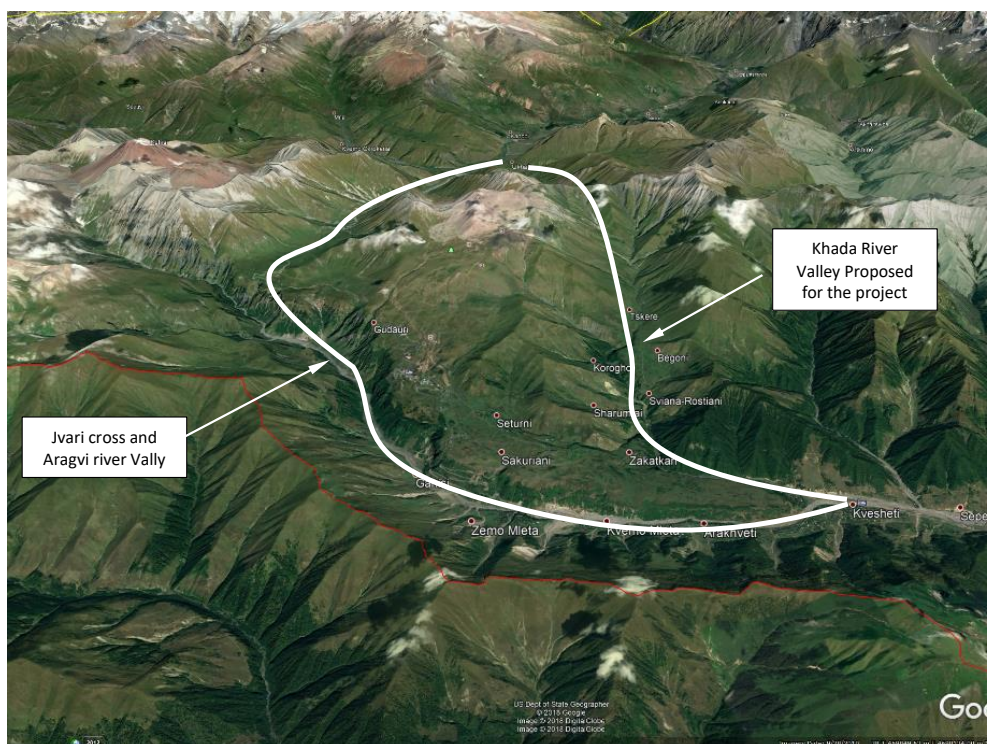


Figure 2.2.1 The view of Aragvi and Khada river valleys

The selected vantage points (VPs) for the target corridors are shown and described further in the results section below. Counts were made at each vantage point on at least 4 occasions and for at least 3 hours per count. Counts used binoculars and spotting scopes and were not made on days of poor weather when migration and visibility was limited. At low intensities individual birds were counted, with higher counts should in multiples of 10. Two people were used for each observation session.

Date	Cloud	Wind	Rain?	Visibility	VP1	VP2	VP3	VP4	VP5	VP6
27/09	Cloudy	High	No	?	√					
28/09	Sunny	Low	No	High	√		√	√		
29/09	Part cloud	Still	No	High		√	√	√	√	√
30/09	Sunny	Still	No	High		√			√	√
02/10	Sunny	Still	No	High						√
03/10	Sunny	High	No	High	√	√			√	
04/10	Part Cld	High	No						√	√
05/10	Low cloud	Still	No	?	√		√	√		
06/10	Sunny	Still	No	High		√	√	√		

Timing of and Weather during the surveys is summarised above and detailed further (along with original data from each vantage point) in Appendix 1 and species photographs in Appendix 2.

2.3. Vantage point 1 (Northern Portal, Kobi settlement)

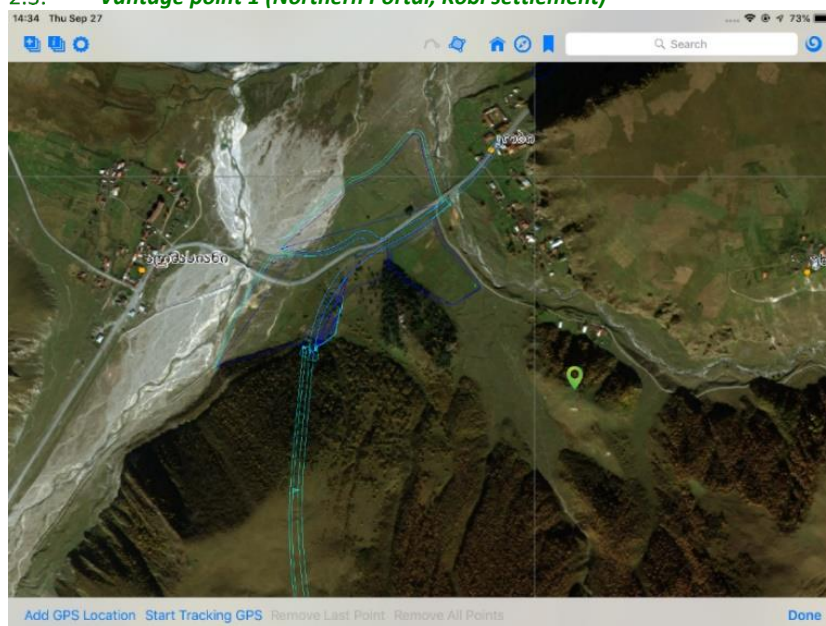


Figure 2.3.1 The vantage point location

2.3.2. Vantage Point Description

The VP was located on the top of mountain, at the same height as the Ukhati Plateau located across the River Narvana (see Figures below). It provided views over both the **Tergi river valley** (ie from the north towards the Jvari cross and Bidara river); the **Narvani River** and north west **upstream of the**

Tergi river. The VP is also considered important for resident species as it includes views of both the mountains to the west and the nearby scrub and cliffs around which is potential raptor nesting habitat



Figure 2.3.2 View to Ukhati plateau and Tergi river Gorge from the vantage point



Figure 2.3.3 i) view of Narvana River Valley upstream from vantage point ii) View from the vantage point to Tergi river valley upstream

2.3.3. Summary Results

Species	Latin name	27/09	28/09	03/10	05/10
Birds of Prey					
Common Buzzard or Honey Buzzard	<i>Buteo buteo or Pernis apivorus</i>	23	23	5	6
Griffon Vulture	<i>Gyps fulvus</i>	3	2	1	2
Golden Eagle	<i>Aquila chrysaetos</i>			3	3
Short-toed-Eagle	<i>Circaetus gallicus</i>			1	
Common Kestrel	<i>Falco tinnunculus</i>			1	
Harrier	<i>Circus sp.</i>		1	1	
Sparrowhawk	<i>Accipiter nisus</i>		2		
Goshawk	<i>Accipiter gentilis</i>		2		
Lammergeier	<i>Gypaetus barbatus</i>	1	1		
Other Species					

Crag Martin	<i>Ptyonoprogne rupestris</i>	50-60			20-25
Water Pipit	<i>Anthus spinoletta</i>	30+			50-70
Black Redstart	<i>Phoenicurus ochruros</i>				2
Mistle Thrush	<i>Turdus viscivorus</i>		30+		20+
Chiffchaff	<i>Phylloscopus collybita</i>		many	many	Many
Goldfinch	<i>Carduelis carduelis</i>				6
Ring Ouzel	<i>Turdus torquatus</i>				3-4
Red-billed Chough	<i>Pyrhacorax pyrrhacorax</i>	60			
Warblers	<i>Phylloscopus sp. sp.</i>			N/A	
Great Tit	<i>Parus major</i>			N/A	
Chaffinch	<i>Fringilla coelebs</i>				
Rock Bunting	<i>Emberiza cia</i>			N/A	
Dipper	<i>Cinclus cinclus</i>				2

Of the Common Buzzards, 8 individuals were recorded hunting on the Ukhati plateau with the other **15 recorded at high altitude flying from the north to the south**. The Lammerger and Griffon Vulture are likely to be resident in the area (see additional VP observations) although both were flying at high altitudes over the site. The Short-toed-Eagle was also flying at very high altitude but the Golden Eagles were recorded at lower heights (near Kobi). Other birds of prey species are not considered notable and were also not recorded in numbers.

Of the species recorded whilst none of the species were considered particularly notable, several were in sizeable groups. Of these the Crag Martin (*Ptyonoprogne rupestris*) flew over the vantage point in groups in a southerly direction whilst the Water Pipits (*Anthus spinoletta*) were recorded in small groups flying around with frequent landings.

2.4. Vantage Point 2: Tskere village, Khada valley (near southern tunnel portal)

2.4.1. Vantage Point Description

The VP covers the upstream section of the Khada river valley and allows views of migratory birds flying over the Saddleback range from Kobi settlement, local birds at Tskere village and birds flying up the valley. It also looks towards the Zakatkari village located in south direction from the VP on the plateau.

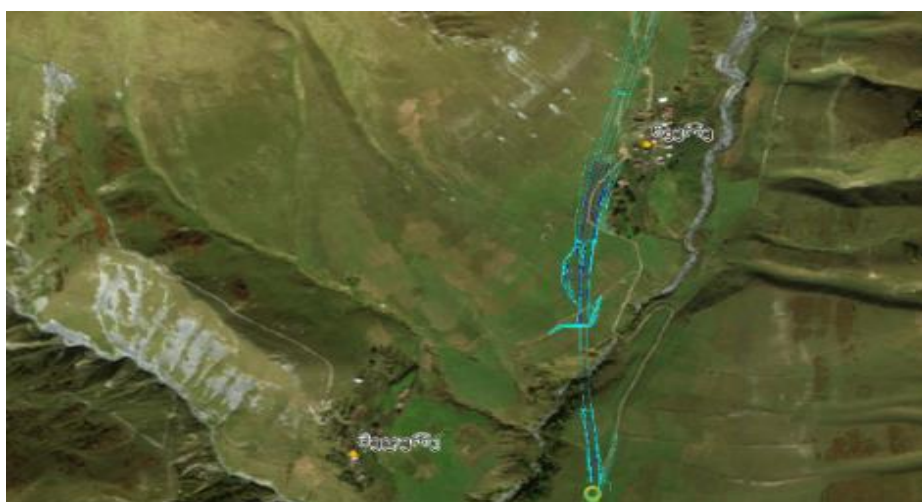


Figure 2.4.1 Location of vantage point

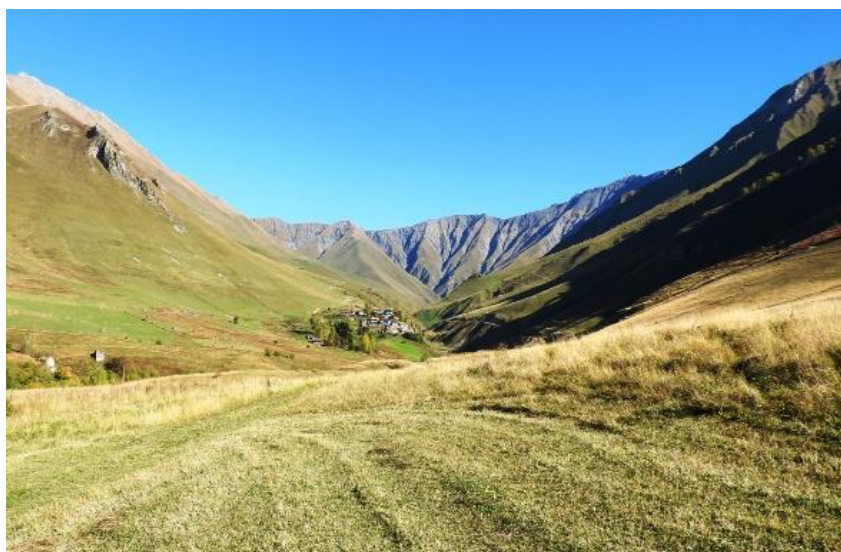


Figure 2.4.2 View from the vantage point looking up the Khada valley to Tsekere

2.4.2. Summary Results

Species	Latin name	29/09	30/09	03/10	06/10
Birds of Prey					
Common Buzzard	<i>Buteo buteo</i>	1	1	1	
Golden Eagle	<i>Aquila chrysaetos</i>	3	1		
Sparrowhawk	<i>Accipiter nisus</i>		2		
Lammergeier	<i>Gypaetus barbatus</i>	1			
Other Species					
Water Pipit	<i>Anthus spinoletta</i>	20+	40+	10	50+
Chiffchaff	<i>Phylloscopus collybita</i>		4-5	few	4-5
Goldfinch	<i>Carduelis carduelis</i>				3
Ring Ouzel	<i>Turdus torquatus</i>	3			
Jay	<i>Garrulus glandarius</i>	1			1
White Wagtail	<i>Motacilla alba</i>		3-4		2-3
Hooded Crow	<i>Corvus cornix</i>		1		20-30
Yellowhammer	<i>Emberiza citrinella</i>				2

Very few birds of prey were recorded near the village, and none seemed to be migrating. The Golden Eagle and Lammergeier may be the same birds as recorded in VP 1 on other occasions. No particularly notable species were recorded, although large numbers of water pipits were again observed.

2.5. Vantage Point 3 –North From Zakatkari village on the plateau

2.5.1. Vantage Point Description

The VP covers most part of the upstream part of Khada river valley towards the watersheds and also provides a view of the plateau where the flat section of the road has large bend.



Figure 2.5.1 Location of the vantage point at Zakatkari village



Figure 2.5.2 View from the vantage point near Zakatkari upstream in Khada gorge

2.5.2. Summary Results

Species	Latin name	28/09	29/09	05/10	06/10
Birds of Prey					
Common Buzzard	<i>Buteo buteo</i>	2			
Other Species					
Water Pipit	<i>Anthus spinoletta</i>	Few			
Chiffchaff	<i>Phylloscopus collybita</i>	Few			
Great Tit	<i>Parus major</i>		Few	Few	Few
Chaffinch	<i>Fringilla coelebs</i>	Few	Few	Few	Few
Jay	<i>Garrulus glandarius</i>	1		1	
White Wagtail	<i>Motacilla alba</i>	Few			
Ortolan Bunting	<i>Emberiza hortulana</i>	1			
Green Woodpecker	<i>Picus viridis</i>		1		
Blackbird	<i>Turdus merula</i>		?		
Lond – tailed Tit	<i>Aegithalos caudatus</i>		Few		
Nuthatch	<i>Sitta europaea</i>		1		

Common Buzzard was the only species recorded, with 2 birds seen at high altitude heading south. Small numbers of a range of other species were recorded, but none are considered notable.

2.6. Vantage Point 4 –South from Zakatkari village on the plateau

2.6.1. Vantage Point Description

The VP provides view over the plateau, where the new section of road has a significant bend. In addition to the road construction area, there is the potential for disposal of large amount of the spoil material in the area adjacent to the vantage point. The VP provides views of the plateau area and potential migratory birds flying in Aragvi river gorge (south) and Khada river gorge (north)

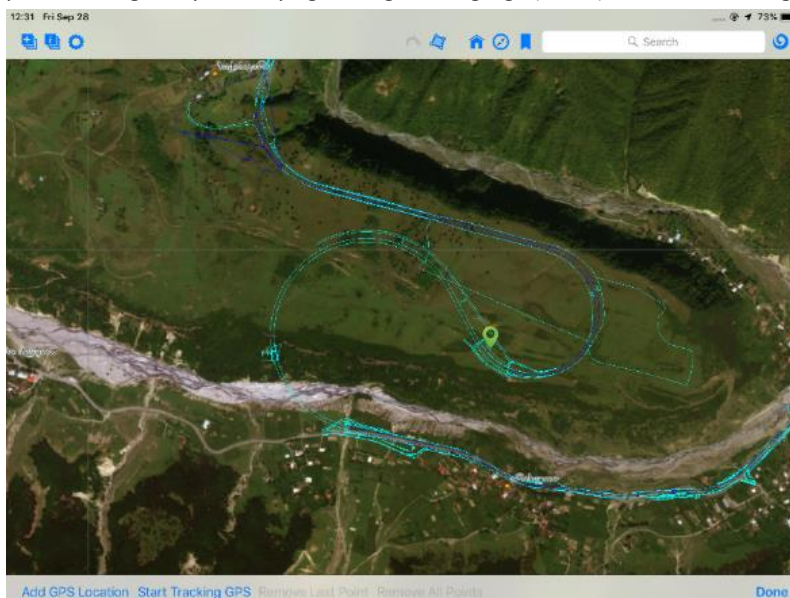


Figure 2.6.1 Vantage point south east from Zakatkari village on the plateau area



Figure 2.6.2 View from the vantage point south-east from Zakatkari village towards the north

2.6.2. Summary Results

Species	Latin name	28/09	29/09	05/10	06/10
Birds of Prey					
Common Buzzard	<i>Buteo buteo</i>	3	2		
Other Species					
Water Pipit	<i>Anthus spinoletta</i>	30+		20+	20+
Chiffchaff	<i>Phylloscopus collybita</i>	Few			
Warblers	<i>Phylloscopus sp. sp.</i>		Few		10+
Chaffinch	<i>Fringilla coelebs</i>	few			3-4
Jay	<i>Garrulus glandarius</i>	1	3	1	1
White Wagtail	<i>Motacilla alba</i>	few			
Blackbird	<i>Turdus merula</i>	2	2	2	2
Raven	<i>Corvus corax</i>	few			
Tree Pipit	<i>Anthus trivialis</i>			20+	

Common Buzzard was the only species recorded, with a small number of birds seen flying at tree height over the plateau. Small numbers of a range of other species were recorded, but none are considered notable. Again water pipit were frequent though.

2.7. Vantage Point 5 at Bidara River Gorge

2.7.1. Vantage Point Description

The vantage point is located in the Bidara River Valley close to the existing road and provides a view to the valley from the Tergi river towards Jvari river cross.



Figure 2.7.1 The location of vantage point at travertine



Figure 2.7.2 View from the vantage point at travertine down to Bidara River

2.7.2. Summary Results

Species	Latin name	29/09	30/09	03/10	04/10
Birds of Prey					
Common Buzzard	<i>Buteo buteo</i>	12			
Griffon Vulture	<i>Gyps fulvus</i>			2	
Golden Eagle	<i>Aquila chrysaetos</i>	1			
Lammergeier	<i>Gypaetus barbatus</i>	3	1	2	2
Peregrine Falcon	<i>Falco peregrinus</i>			1	
Other Species					
Water Pipit	<i>Anthus spinoletta</i>	30+	Few	Few	Few
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>		Few		
Jay	<i>Garrulus glandarius</i>	10-12			
White Wagtail	<i>Motacilla alba</i>	Few			
Raven	<i>Corvus corax</i>	2			
Rock Dove	<i>Columba livia</i>			3	18-21

The buzzards and peregrine were all recorded flying in a southerly direction and were considered likely to be migrating. Both the Lammergeier and Griffon vultures are considered likely to be the same birds as recorded earlier and are probably resident. Small numbers of a range of other species were recorded, but none are considered notable.

2.8. Vantage Point 6 – Jvari cross

2.8.1. Vantage Point Description

The VP is located at Jvari cross (~2379m) near to the existing road corridor. It provided views of migratory birds approaching the Aragvi river gorge over the Jvari pass and observations of local birds, especially raptors.

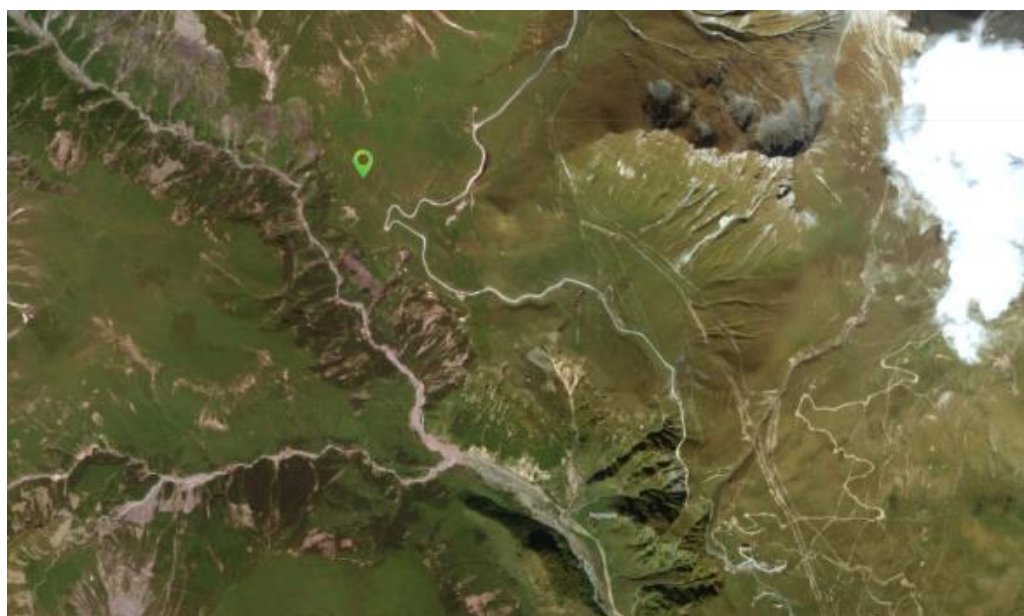


Figure 2.8.1 The location of vantage point at Jvari cross



Figure 2.8.2 View from the vantage point at Jvari cross

2.8.2. Summary Results

Species	Latin name	29/09	30/09	02/10	04/10
Birds of Prey					
Common Buzzard	<i>Buteo buteo</i>	1			
Common Kestrel	<i>Falco tinnunculus</i>				1
Lammergeier	<i>Gypaetus barbatus</i>				4
Other Species					
Water Pipit	Anthus spinoletta	100+	Few	Few	Few
Goldfinch	<i>Carduelis carduelis</i>		10-12		
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>		10+	15+	
Alpine Chough	<i>Pyrrhocorax graculus</i>	few			
Twite	<i>Carduelis flavirostris</i>	25-30		2	

No migrating birds were observed at this height, with the only species of note being the apparently resident Lammergeier. No unusual birds from other species were recorded, although again high numbers of water pipits were present on the first day of surveys.

2.9. Summary of Bird Survey Results

Migratory bird activity between 28 September-06 October 2018 was found to be low overall, possibly because the autumn weather was particularly cold this year. From the relatively small amount of data obtained it would, however, appear that the existing road corridor along the Tergi valley (VP1, VP5) is of greater importance than the Khada river gorge for birds of prey, and this would make sense given the need for birds to fly over the “saddleback” mountain to reach the Khada valley. The most common migratory birds recorded were common buzzards which were seen flying over the Ukhati plateau (to

the north of the northern portal) searching for food as well as resting on the power transmission lines before flying south towards the Bidara river gorge and the Jvari crossing. Few birds were recorded following the Narvana river south-east direction towards the Khada Gorge.

Maximum numbers of birds recorded at any single VP are shown below.

Species	Latin name	VP1 North Portal	VP2 South Portal	VP 3 N of Zakatkari	VP4 S of Zakatkari	VP 5 Tergi Valley	VP 6 Jura Pass
Birds of Prey							
Common Buzzard	<i>Buteo buteo</i>	23	1	2	3	12	1
Griffon Vulture	<i>Gyps fulvus</i>	3				2	
Golden Eagle	<i>Aquila chrysaetos</i>	3	3			1	
Short-toed-Eagle	<i>Circaetus gallicus</i>	1					
Common Kestrel	<i>Falco tinnunculus</i>	1					1
Harrier	<i>Circus sp.</i>	1					
Sparrowhawk	<i>Accipiter nisus</i>	2	2				
Goshawk	<i>Accipiter gentilis</i>	2					
Lammergeier	<i>Gypaetus barbatus</i>	1	1			3	4
Peregrine Falcon	<i>Falco peregrinus</i>					1	
Other Species							
Crag Martin	<i>Ptyonoprogne rupestris</i>	50+					
Water Pipit	<i>Anthus spinoletta</i>	50+	40+	Few	30+	30+	100+
Black Redstart	<i>Phoenicurus ochrurus</i>	?					
Mistle Thrush	<i>Turdus viscivorus</i>	30+					
Chiffchaff	<i>Phylloscopus collybita</i>	Many	5	Few	Few		
Goldfinch	<i>Carduelis carduelis</i>						10+
Ring Ouzel	<i>Turdus torquatus</i>	4	3				
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	60				Few	15+
Warblers	<i>Phylloscopus sp. sp.</i>	Few			10+		
Great Tit	<i>Parus major</i>	Few		Few			
Chaffinch	<i>Fringilla coelebs</i>			Few	4		
Rock Bunting	<i>Emberiza cia</i>	?					
Dipper	<i>Cinclus cinclus</i>	2					
Jay	<i>Garrulus glandarius</i>		1	1	3	10-12	
White Wagtail	<i>Motacilla alba</i>		4	Few	Few	Few	
Hooded Crow	<i>Corvus cornix</i>		1				
Yellowhammer	<i>Emberiza citrinella</i>		2				
Ortolan Bunting	<i>Emberiza hortulana</i>			1			
Green Woodpecker	<i>Picus viridis</i>			1			
Blackbird	<i>Turdus merula</i>			1	2		
Long – tailed Tit	<i>Aegithalos caudatus</i>			Few			
Nuthatch	<i>Sitta europaea</i>			1			
Raven	<i>Corvus corax</i>				few	2	
Tree Pipit	<i>Anthus trivialis</i>				20+		
Rock Dove	<i>Columba livia</i>					20+	
Alpine Chough	<i>Pyrrhocorax graculus</i>						few
Twite	<i>Carduelis flavirostris</i>						25-30

Overall, whilst some local birds were recorded in the area including raptors (with vultures and eagles recorded as nesting on the high cliffs of the Kabarjina mountain ridge - south west slope), the Khada valley is not considered as important as the Jvari pass for migrants as it is would require flying over the top of the local mountain ridge as described above.

3. Bats

3.1. Desk Research

Around 30 bat species are found in Georgia, all of which are legally protected under the framework of the Convention on Conservation of Migratory Species of Wild Animals (CMS), Annex IV of the Habitats Directive and the associated Agreement on the Conservation of Populations of European Bats (EUROBATS). Of these, four species are in Red list of Georgia and one species in IUCN red list.

25 species are recorded in IBAT as potentially present in the Project area, although there has been no comprehensive bat undertaken in the area and there is only limited information available in the literature data about bat species here. What literature there is includes records from:

- close to **village Kobi** of Brown long-eared bat (*Plecotus auritus*) (Bukhnikashvili 2004).
- close to **village Sno**: Whiskered Bat (*Myotis mystacinus*), Natterer's bat (*Myotis nattereri*), Common Pipistrelle Bat (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Leisler's Bat (*Nyctalus leisleri*) (Bukhnikashvili 2013)
- in **Dariali gorge** as well as Common Pipistrelle Bat (*Pipistrellus pipistrellus*) in 2013.

Given this information and the existing habitats present within the project area and its vicinities, it is expected that 19 bat species might occur in the study area and its vicinities in different seasons of the year, as shown in the Table below.

Species might occur in the project area and its vicinities

#	Scientific name	Common name	Status
1.	<i>Rhinolophus ferrumequinum</i>	Greater Horseshoe Bat	Habitats Directive Annex II species
2.	<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	Habitats Directive Annex II species
3.	<i>Myotis blythii</i>	Lesser Mouse-eared Bat	Habitats Directive Annex II species
4.	<i>Myotis mystacinus</i>	Whiskered Bat	
5.	<i>Myotis nattereri</i>	Natterer's bat	
6.	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle Bat	
7.	<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	
8.	<i>Pipistrellus nathusii</i>	Nathusius' Pipistrelle Bat	
9.	<i>Pipistrellus kuhlii</i>	Kuhl's pipistrelle bat	
10.	<i>Hypsugo savii</i>	Savi's Pipistrelle Bat	
11.	<i>Nyctalus noctula</i>	Noctule	
12.	<i>Nyctalus leisleri</i>	Leisler's Bat	
13.	<i>Nyctalus lasiopterus</i>	Greater noctule bat	IUCN - VU
14.	<i>Vespertilio murinus</i>	Particoloured Bat	
15.	<i>Eptesicus serotinus</i>	Serotine Bat	
16.	<i>Eptesicus nilssonii</i>	Northern Bat	
17.	<i>Plecotus auritus</i>	Brown long-eared bat	
18.	<i>Plecotus macbullaris</i>	Alpine Long-eared Bat	
19.	<i>Tadarida teniotis</i>	European free-tailed bat	

Of these, only one species is on the IUCN Red List as follows and none are on the National Red List.

- The **Giant Noctule** *Nyctalus lasiopterus* (IUCN VU) forages over mixed and deciduous forest and wooded river valleys. It is highly dependent on mature forest colonies which 40 year-old trees and any mature tree removal can be a threat. It feeds mostly on moths and beetles but

may also take small songbirds and will fly at heights of up to several hundred meters to do this. A migrant, summer roosts are in hollow trees and bat-boxes, and occasionally in buildings. Trees and rock crevices may also be used as hibernacula in winter. Threats include loss of mature woodland, particularly the loss of old trees.

A further three are, however, IUCN LC but Habitats Directive Annex II species as follows:

- **Greater Horseshoe Bat *Rhinolophus ferrumequinum*** - Forages in deciduous woodland (particularly early in the year) shrubland and summer-grazed pasture (particularly late in the summer). Feeds on beetles, moths and other insects at low level and flies up to 3 km from the roost each night. Summer roosts are located in warm natural and artificial underground sites and they will use caves all year, as well as buildings for some summer maternity colonies. In winter it hibernates in cold underground sites (usually large caves). Threats include fragmentation and isolation of habitats, change of management regime of deciduous forests & agricultural areas, loss of insects (pesticide use), and disturbance and loss of underground habitats and attics.
- **Lesser Horseshoe Bat *Rhinolophus hipposideros*** - Forages close to the ground within and along the edges of broadleaf deciduous woodland (primary foraging habitat), but also in riparian vegetation and shrubland areas, although open areas are avoided. Feeds on midges, moths and craneflies. Summer roosts (breeding colonies) are found in natural and artificial underground sites and in winter it hibernates in underground sites (including cellars, small caves and burrows). Habitat loss and fragmentation pose a threat to this species.
- **Lesser Mouse-eared Myotis *Myotis blythi*** - Forages in scrub and grassland habitats, including farmland and gardens. Maternity colonies are usually found in underground habitats such as caves and mines, and sometimes in buildings. Hibernates in winter in underground sites. Threats include changes in land management, including agricultural pollution and disturbance to roosts in caves.

IBAT identified a further 5 IUCN RL/ Annex II species as potentially present (including 3 GRL species) in the wider area, but further consultation and research has indicated that they are unlikely to be present in the Project AoI. These include Mehely's Horseshoe Bat (*Rhinolophus mehelyi* – IUCN:VU. GRL: VU; HD Annex II); Brandt's Bat (*Myotis brandtii* - IUCN: LC. GRL:VU); Western Barbastelle (*Barbastella barbastellus* - IUCN: NT, GRL: VU; HD, Annex II); Geoffroy's Bat (*Myotis emarginatus* - IUCN LC; HD Annex II) and Schreiber's Bent-winged Bat (*Miniopterus schreibersii* – IUCN NT, HD Annex II).

IBAT also lists the following non-Georgian Red List and IUCN LC species as potentially present in the wider area: *Eptesicus bottae* (Botta's Serotine); *Hypsugo savii* (Savi's Pipistrelle); *Myotis aurascens* Steppe (Whiskered Bat); *Myotis daubentonii* (Daubenton's Myotis). These are not expected in the study area however.

3.2. **Field Research**

Field research involves a mix of simple activity surveys (to provide initial data) and complex surveys (eg radiotracking) where notable species are found to be present. Surveys for roost sites are also important (eg of caves, houses, mature trees, rock fissures, etc). Whilst bat activity surveys were originally proposed for late September and early October, in the event, the especially cold autumn meant that no bat activity was recorded in the study areas during the site visits. Instead the team focused on project reconnaissance surveys to enable further fieldwork to be carried out in 2019. The main objectives of this field-work were to identify areas suitable for bats and to plan future field-work for further comprehensive bat survey.

Four main areas were identified as of potential value to bats namely:

- The Narvana Valley near Kobi
- Along the River Khadistskali,
- Close to the village of Tskere
- On the plateau around the village of Zakatari

Each of these is discussed further below.

Area 1: Narvana valley near Kobi.



Narvana valley (Pic. 1), rocky areas (Pic. 2) in south-east from the river Narovani and Kobi junctions

Habitats here include a range of wetland, rocky and woodland fringe habitats.

- *Rhinolophus hipposideros* Lesser Horseshoe Bat
- *Pipistrellus pipistrellus* Common Pipistrelle Bat
- *Pipistrellus pygmaeus* Soprano Pipistrelle
- *Nyctalus lasiopterus* Greater noctule bat
- *Vespertilio murinus* Particoloured Bat
- *Eptesicus serotinus* Serotine Bat
- *Eptesicus nilssonii* Northern Bat
- *Plecotus macrobullaris* Alpine Long-eared Bat
- *Tadarida teniotis* European free-tailed bat
- *Plecotus auritus* Brown long-eared bat

Area 2: River Khadistskali,

This area, close to the village of Bedona, which includes both areas with old “grottos” and an area of small wetland (at N42.43969°/E44.52586°). A similar species composition could be expected here as found on the Narvana above.



Small grotto



Wetland area

Tsekere village

A number of habitats are present near the village here (co-ordinates N42.47574°/E44.53461°). These include riverine habitat as well as local gardens. Given the higher altitude, however, it is likely that a smaller number of species will be present and these are expected to include the following:

- *Pipistrellus pipistrellus* Common Pipistrelle Bat
- *Vespertilio murinus* Particoloured Bat
- *Eptesicus serotinus* Serotine Bat
- *Eptesicus nilssonii* Northern Bat



Zakatkari Plateau Areas.

Potential bat habitats are found near the villages, the small lake (coordinates N42.43797°/E44.50650°) and upland areas near Zakatkari.



Small lake on plateau close to village Kaishauri



Upland close to village Zakatkari

On this site it is thought that all of the species present in near the Narvana River could also be recorded in different seasons of the year.

Whilst summer bat surveys are needed in 2019 to confirm actual presence or absence of species within the project area, overall the high altitudes and limited habitats present mean that it is considered unlikely that any IUCN Critically Endangered or Endangered species or GRL species are present within the Project Area of Interest. Despite this, and in addition to some of the more common species listed above, the following notable species may be present:

- **Giant Noctule** (*Nyctalus lasiopterus*)
- **Lesser Mouse-eared Myotis** (*Myotis blythi*)
- **Greater Horseshoe Bat** (*Rhinolophus ferrumequinum*).
- **Lesser Horseshoe Bat** (*Rhinolophus hipposideros*)

Regardless, a precautionary approach should be taken to protecting any potentially suitable bat breeding, hibernating or roosting sites (caves, houses, mature trees, rock fissures, etc.) within the Project AoI, especially given that:

- it is much easier to prove presence rather than absence of bat species
- all bat species in Georgia are protected
- bat populations in general in Georgia are showing downward trends due to habitat fragmentation, intensification of agriculture, and cave disturbance.

3.3. Further Surveys

Further surveys for bats should be carried out in July or in August 2019. These should involve a minimum of 4 working nights and three researchers. Passive bat detectors should also be used within the project area. The surveys further should use hand-held detectors and should involve transects and survey from one hour before dusk. Surveys should focus on the four areas highlighted above. Before starting surveys, relevant study polygons should be selected within the target site and mist nets installed in those areas where a relatively higher possibility of bats catching exists. Field transects should be defined and conducted according to the recommendations provided by "Guidelines for Surveillance and Monitoring of European Bats (2014)", which was developed under the umbrella of the Agreement on the Conservation of Populations of European Bats (EUROBATS). As such they should be covered at a suitable speed to cover 100m in 8 or 10 minutes.

3.4. Additional References

A Bukhnikashvili, A Kandaurov, I Natradze 2004; Records of Bats in Georgia over the last 140 years (Russian); "Plecotus" M, № 7: 41-57

Buknikashvili A., Abuladze A., Edisherashvili G., Kandaurov A., Bekoshvili D., Natradze I., 2013; Terrestrial Mammals of Borbalo Mountain Mass and its Conservation. Tbilisi; 58pp

4. Otter Surveys

4.1. Background

The Otter (*Lutra Lutra*) is a GRL VU and Habitats Directive II and IV species. The national population has been estimated at around 400 individuals, but this may be under-reporting. Numbers have reportedly been in decline following a decline in wild fish stocks and habitat destruction. The species is vulnerable to removal of bank side vegetation, and persecution due to perceived depredation on fish. IUCN range maps indicate it may be resident in the study area.

4.2. Approach to the Work

Walkover surveys of the rivers and streams in the vicinity of the proposed project were conducted during the periods of 29-30 September, 04-06 October and the 1-3 November 2018. The work was done by an experienced surveyor and involved searching for evidence such as dung (spraints), tracks (footprints), feeding remains, otter slides (into water), holts (underground dens) and couches (above ground sites where otters rest during the day). The survey area was split into 4 different parts covering 1) the northern portal of the tunnel near to Narvana and Bidara confluence to the Tergi river 2) the southern portal of the tunnel near to the Tskere village 3) Bridge crossings on the Khada river and 4) confluence of Khada and Aragvi rivers as shown in Figure 4.3.2. below.

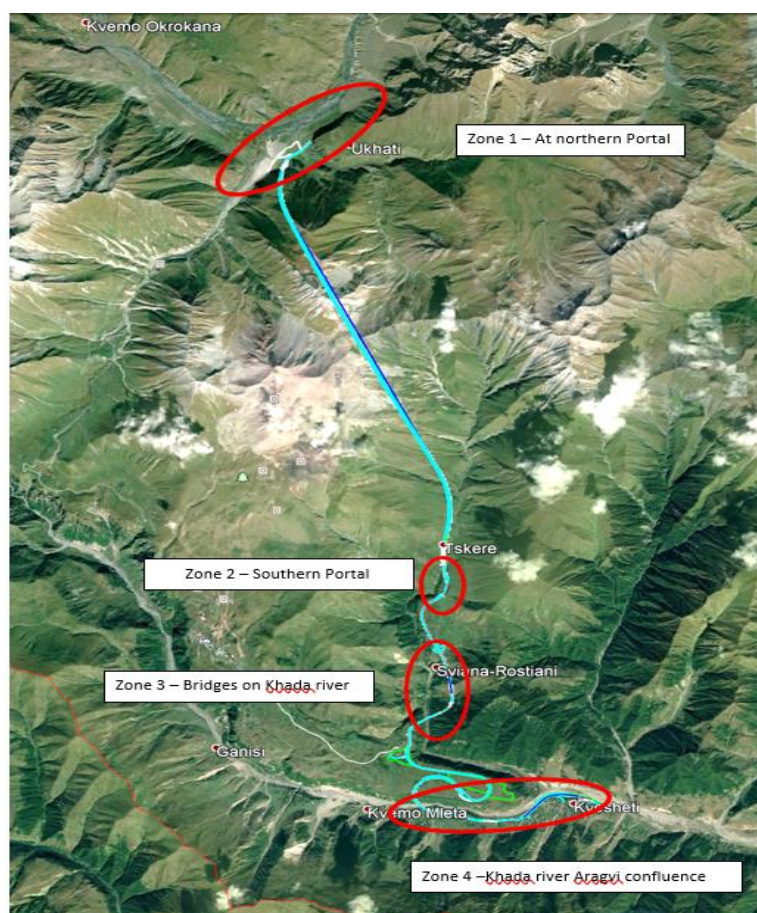


Figure 4.1.3 The survey area for identification of the otter presences zones

4.3. Area 1: The Northern Portal and Kobi Village

The northern portal is located near the confluence of the Tergi, Narovani and Bidara Rivers and the survey team visited and walked all three areas. The largest and most important river is the **Tergi river** which has flat wide floodplains with low streams. It is covered with dense vegetation typical for this area, including typical Alpine grasses and high wetland species. The habitat is considered attractive to otter, especially because of the presence of fish in the river and the abundance of amphibians and shelter. **Otter signs, including footprints were identified in the Tergi river valley**, close to the Mineral water bottling plant and some 500m upstream from the confluence of Tergi and Bidara rivers.



Figure 4.3.1 Confluence of Tergi and Bidara, upstream section from confluence

The **Bidara river** valley is considered less attractive to otters as it supports significantly less fish and its vegetation cover is sparse meaning that otter habitat is limited. The existing road also follows the Bidara river valley and there is significant nuisance from this road already. No signs of otter presence were found in the Bidara river upstream section, although with the limited survey time it is not possible to conclude, that otter is definitely absent from the valley.

The **Narvana river** valley is also considered poor in fish resources, but close to the stream there are boulders with bushes in between, fractured rocks and places where otter can be hidden. Interviews with locals here indicated that **otters have been seen in the valley during the last year**, and during the survey **otter spraints were identified on boulders** within the river channel. The riverbanks in this area are covered with stones, so otter slides were not expected and was not identified.

Figure 4.3.2 The survey area for identification of the otter presences zones



Figure 4.3.3 View of Narvana river valley

4.4. Area 2: The Southern Portal and Tskere village

The proposed southern portal will be located near to Tskere village and in the vicinity of the local river.



Figure 4.4.1 The view of the habitat along the river near to Tskere

The river bed here has numerous boulders and large stones, but is located **upstream from a waterfall**, which is a natural barrier for fish migration. Accordingly the food base for the otter is very poor and **no otter signs were identified here** in either of the surveys.

4.5. Area 3: The bridges on the Khada river

The section surveyed is located near to the existing road in the Khada valley. The river here is more or less flat and the stream speed is low. **Habitat is favourable and attractive for otters** because the river is split into a number of small streams and the floodplains along the river are covered with vegetation, allowing lots of places for otters to rest up. A typical view is given on the photo below



Figure 4.5.1 The typical view of Khada river near to planned bridges.

A number of **signs of otter presence were identified** in this section, including footprints as shown in the picture below. It can be stated, that otter is present in the area although the population size cannot be confirmed.



Figure 4.5.2 Otter footprints by the river.



Figure 4.5.3 The area near to the otter footprints

However, during the second survey undertaken in November, no further signs of otter presence were located in this section.

4.6. Area 4: The confluence of Aragvi and Khada Rivers

In the Aragvi upstream section the road will be constructed parallel to the existing road along the river, after the river has been crossed by the bridge. The area may also be used for disposal of spoil material generated during the cut –fill operations.



Figure 4.6.1 The ship movement in Aragvi river gorge impacting riverbanks

Whilst the **Aragvi river banks** could be attractive for otters, the existing road means that there is significant disturbance on the right bank. The left bank is difficult to access and is probably is more

suitable for the otter. During the October survey, the river bank was significantly impacted by sheep migrating from the Alpine pastures to the lowland areas and it **was impossible to identify any signs of otter** presence.

The Khada river gorge **upstream from the Confluence** is also considered potential otter habitat, and although there is disturbance from the nearby village, interviews with the local population indicate that **otters are seen frequently by the fisherman** and locals walking along the river. Despite this no evidences for the otter presence were found during the survey in the mentioned area.

4.7. Summary

The overall results of the survey can therefore be summarised as follows:

Area	Findings
1: Northern Portal and Kobi Village	Evidence of otter found along the Tergi River (tracks) and Narvana river (spraints and anecdotal evidence). No evidence found along the Bidara River which suffers disturbance from the existing road.
2: Southern Portal and Tskere village	No evidence of otter activity in this area and the waterfall probably prevents fish from accessing the area.
3: Khada River Valley	Good otter habitat and evidence of otter activity (tracks and potential couches)
4: Confluence of Aragvi and Khada Rivers	No evidence of otter activity observed but anecdotal evidence of otters along the Khada River.

ANNEXES

Annex 1: Bird Survey Results

Vantage Point 1

During Session 1 the following birds were recorded:

- **Common Buzzard:** During the monitoring, the number of birds recorded was very low. The 8 individuals of Common Buzzard (*Buteo buteo*) was recorded at low altitude (around 50 m above the ground level – At height of Transmission line); The individuals were hunting on Ukhati Plateau. In addition 15 individuals were recorded at high altitude. The main direction was from the north to south direction flying in Bidara gorge probably passing the Jvary and reaching Aragvi vally. None of the birds flew towards Khada river gorge over Narvana river gorge.
- **Crag Martin (*Ptyonoprogne rupestris*)** Few groups of Crag Martin (*Ptyonoprogne rupestris*) flew over the vantage point towards south direction. In total up to 50-60 birds.
- **Water Pipit (*Anthus spinoletta*)** The small groups of Water Pipit (*Anthus spinoletta*) were flying around with frequent landings in total 30 birds
- From the Local birds 1 individual of Lammergeier (*Gypaetus barbatus*), 3 individuals of Griffon Vulture (*Gyps fulvus*) flying at high altitudes. Near to the Tergi river stream 2 individuals of Dipper (*Cinclus cinclus*) and group of Red-billed Chough (*Pyrrhocorax pyrrhocorax*) up to 60 individuals.

Session 2 was conducted on 28 September. Weather – Sunny, low wind, no precipitation, high visibility. Following birds were recorded:

Species	Latin name	Number of birds	Comment
<u>Common Buzzard</u>	<i>Buteo buteo</i>	23	
Sparrowhawk	<i>Accipiter nisus</i>	2	
Goshawk	<i>Accipiter gentilis</i>	2	
Harrier	<i>Circus sp.</i>	1	
Mistle Thrush	<i>Turdus viscivorus</i>	30+	Group
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	Sound from the bushland, lot's of individuals
Lammergeier	<i>Gypaetus barbatus</i>	1	Probably the same as recorded in session 1
Griffon Vulture	<i>Gyps fulvus</i>	2	Probably the same as recorded in session 1

Session 3 was conducted on 03 October Weather – Sunny, Windy, no precipitation, high visibility. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Short-toed-Eagle	<i>Circaetus gallicus</i>	1	Flying at very high altitude from Bidara over the Ukhati Plateau to the North
<u>Common Buzzard</u>	<i>Buteo buteo</i>	5	3 hunting over Ukhati Plateau, Two crossed the gorge between Narvana and Bidara rivers and flew to south east
Common cestler	<i>Falco tinnunculus</i>	1	Followed Birada river gorge towards the south

Harrier	<i>Circus sp.</i>	1	Hunting around near to Tergi river
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	Number of birds recorded as well as sound from the bush land
Warblers	<i>Phylloscopus sp. sp.</i>	N/A	
Great Tit	<i>Parus major</i>	N/A	
Caffinch	<i>Fringilla coelebs</i>		
Rock Bunting	<i>Emberiza cia</i>		
Griffon Vulture	<i>Gyps fulvus</i>	2	Probably the same as recorded in session 1
Golden Eagle	<i>Aquila chrysaetos</i>	3	Near Kobi settlement, One young, Flew towards upstream section of Tergi

Session 4 was conducted on 05 October 2018 Weather – Low Clouds, still, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
<u>Common Buzzard or Honey Buzzard</u>	<i>Buteo buteo or Pernis apivorus</i>	6	At long distance, flying to upstream section of Narvana River
Crag Martin	<i>Ptyonoprogne rupestris</i>	20-25	Flying in Narvana River gorge
Water Pipit	<i>Anthus spinoletta</i>	5-7*10	5-7 groups of around 10 birds flying in different directions
Black Redstart	<i>Phoenicurus ochruros</i>	2	In bushes
Mistle Thrush	<i>Turdus viscivorus</i>	20+	Flying in group
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	Number of birds recorded as well as sound from the bush land
Goldfinch	<i>Carduelis carduelis</i>	6	6 individuals flew to Bidara river gorge to the south
Griffon Vulture	<i>Gyps fulvus</i>	2	Probably the same as recorded in sessions before
Golden Eagle	<i>Aquila chrysaetos</i>	3	
Ring Ouzel	<i>Turdus torquatus</i>	3-4	Sitting on transmission wires
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>		Few individuals flying over Ukhati plateau

Water Pipit (*Anthus spinoletta*) The small groups of Water Pipit (*Anthus spinoletta*) were flying around with frequent landings in total 30 birds Near to the Tergi river stream 2 individuals of Dipper (*Cinclus cinclus*)

Vantage Point 2

Session 1 was conducted on 29th September 2018 Weather – Cloudy, partly sunny, still, no precipitation. The low activity of birds in the area; Following birds were recorded:

Species	Latin name	Number of birds	Comment
<u>Common Buzzard</u>	<u><i>Buteo buteo</i></u>	1	At low altitude (40-60 m) flying to south
Water Pipit	<i>Anthus spinoletta</i>	20+	Small groups flying in different directions, frequently landing
Lammergeier	<i>Gypaetus barbatus</i>	1	Probably the same as recorded in session 1
Golden Eagle	<i>Aquila chrysaetos</i>	3	
Ring Ouzel	<i>Turdus torquatus</i>	3	Sitting on transmission wires
Jay	<i>Garrulus glandarius</i>	1	

Session 2 Conducted on 30th September 2018 Weather – Sunny, still, no precipitation. The low activity of birds in the area; Following birds were recorded:

Species	Latin name	Number of birds	Comment
<u>Common Buzzard</u>	<u><i>Buteo buteo</i></u>	1	Sitting on the transmission wires
Sparrowhawk	<i>Accipiter nisus</i>	2	
Water Pipit	<i>Anthus spinoletta</i>	40+	Groups flying in different directions
White Wagtail	<i>Motacilla alba</i>	3-4	
Chiffchaff	<i>Phylloscopus collybita</i>	4-5	
Golden Eagle	<i>Aquila chrysaetos</i>	1	
Hooded Crow	<i>Corvus cornix</i>	1	

Session 3 Conducted on 03 October 2018 Weather – Sunny, still, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
<u>Common Buzzard</u>	<u><i>Buteo buteo</i></u>	1	Sitting on the transmission wires
Water Pipit	<i>Anthus spinoletta</i>	10	Small groups
Chiffchaff	<i>Phylloscopus collybita</i>	few	

Session 4 Conducted on 06th October 2018 Weather – Sunny, still, no precipitation. Low activity of birds in the area; Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	50+	Groups flying in different directions
White Wagtail	<i>Motacilla alba</i>	2-3	
Chiffchaff	<i>Phylloscopus collybita</i>	4-5	
Jay	<i>Garrulus glandarius</i>	1	
Hooded Crow	<i>Corvus cornix</i>	20-30	Two groups
Goldfinch	<i>Carduelis carduelis</i>	3	
Yellowhammer	<i>Emberiza citrinella</i>	2	

Vantage Point 3

Session 1 was conducted on 28 September 2018 Weather – Sunny, still, no precipitation. The activity of birds was low during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common Buzzard	<i>Buteo buteo</i>	2	At High altitude flying to south
Water Pipit	<i>Anthus spinoletta</i>	Few	Few individuals
White Wagtail	<i>Motacilla alba</i>	Few	Few individuals
Chiffchaff	<i>Phylloscopus collybita</i>	Few	Few individuals
Jay	<i>Garrulus glandarius</i>	1	
Chaffinch	<i>Fringilla coelebs</i>	Few	Few individuals
Ortolan Bunting	<i>Emberiza hortulana</i>	1	

Session 2 was conducted on 29th September 2018. Weather – Partly Cloudy, low wind, no precipitation. The activity of birds was low, No migrant birds were identified during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Green Woodpecker	<i>Picus viridis</i>	1	
Blackbird	<i>Turdus merula</i>		
Nuthatch	<i>Sitta europaea</i>	1	
Great Tit	<i>Parus major</i>	Few	
Long – tailed Tit	<i>Aegithalos caudatus</i>	Few	
Chaffinch	<i>Fringilla coelebs</i>	Few	

Session 3 - Conducted on 05th October 2018 Weather – Partly Cloudy, Windy, no precipitation. The activity of birds was low, No migrant birds were identified during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Great Tit	<i>Parus major</i>	Few	
Jay	<i>Garrulus glandarius</i>	1	
Chaffinch	<i>Fringilla coelebs</i>	Few	

Session 4 - Conducted on 06th October 2018 Weather – Partly Cloudy, Windy, no precipitation. Practically no birds recorded except:

Species	Latin name	Number of birds	Comment
Great Tit	<i>Parus major</i>	Few	
Chaffinch	<i>Fringilla coelebs</i>	Few	

Vantage Point 4

Session 1 was conducted on 28 September 2018 Weather – Sunny, still, no precipitation. The activity of birds was low during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common Buzzard	<i>Buteo buteo</i>	3	At low altitude (at tree height) flying to south
Water Pipit	<i>Anthus spinoletta</i>	30+	Small groups of 8-15 individuals
White Wagtail	<i>Motacilla alba</i>	few	Few individuals
Chiffchaff	<i>Phylloscopus collybita</i>	few	Few individuals
Blackbird	<i>Turdus merula</i>	2	
Jay	<i>Garrulus glandarius</i>	1	
Raven	<i>Corvus corax</i>	few	
Chaffinch	<i>Fringilla coelebs</i>	few	

Session 2 was conducted on 29th September 2018 Weather – Partly Cloudy, low wind, no precipitation. The activity of birds was low. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common Buzzard	<i>Buteo buteo</i>	2	Flying over the plateau
Warblers	<i>Phylloscopus sp.</i>	Few	
Blackbird	<i>Turdus merula</i>	2	
Jay	<i>Garrulus glandarius</i>	3	

Session 3 was conducted on 05 October 2018 Weather – Partly Cloudy, strong wind, no precipitation. The activity of birds was low, No migrant birds were identified during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	20+	Small groups of 8-15 individuals
Tree Pipit	<i>Anthus trivialis</i>	20+	Mixed groups
Blackbird	<i>Turdus merula</i>	2	
Jay	<i>Garrulus glandarius</i>	1	

Session 4 - 06 October 2018 Weather – Sunny, Windy weather, no precipitation. The activity of birds was low, No migrant birds were identified during the session. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	20+	Small groups of 5-8 individuals
Warblers	<i>Phylloscopus sp. sp.</i>	10+	Small groups
Blackbird	<i>Turdus merula</i>	2	
Jay	<i>Garrulus glandarius</i>	1	
Chaffinch	<i>Fringilla coelebs</i>	3-4	

Vantage Point 5

Session 1 was conducted on 29 September 2018 Weather – Partly Cloudy, windy, partly rainy.
Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common Buzzard	<i>Buteo buteo</i>	12	Flew to south over Jvari cross
Water Pipit	<i>Anthus spinoletta</i>	30+	Small groups
White Wagtail	<i>Motacilla alba</i>	Few	Small groups
Griffon Vulture	<i>Gyps fulvus</i>	3	Probably the same as recorded in sessions before
Golden Eagle	<i>Aquila chrysaetos</i>	1	
Jay	<i>Garrulus glandarius</i>	10-12	
Raven	<i>Corvus corax</i>	2	

Session 2 was conducted on 30 September 2018 Weather – Cloudy, windy, no precipitation.
Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	Few	
Lammergeier	<i>Gypaetus barbatus</i>	1	
Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	Few	

Session 3 -Conducted on 03 October 2018 Weather – Sunny, No wind, no precipitation.
Following birds were recorded:

Species	Latin name	Number of birds	Comment
Peregrine Falcon	<i>Falco peregrinus</i>	1	Flew towards south over the Jvari cross
Water Pipit	<i>Anthus spinoletta</i>	Few	Small groups up to 20 individuals
Lammergeier	<i>Gypaetus barbatus</i>	2	
Griffon Vulture	<i>Gyps fulvus</i>	2	
Rock Dove	<i>Columba livia</i>	3	

Session 4 -Conducted on 04 October 2018 Weather – partly cloudy, strong wind, no precipitation.
Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	Few	Small groups up to 20 individuals
Lammergeier	<i>Gypaetus barbatus</i>	2	
Rock Dove	<i>Columba livia</i>	18-21	Small groups

Vantage Point 6

Session 1 was conducted on 29 September 2018 Weather – Foggy, later cleared, Still, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common Buzzard	<i>Buteo buteo</i>	1	
Water Pipit	<i>Anthus spinoletta</i>	100+	Large groups
White Wagtail	<i>Motacilla alba</i>	Few	Small groups and individuals
Red-billed Chough	<i>Pyrrhonorax pyrrhonorax</i>	Few	Mixed groups with Alpine Chough
Alpine Chough	<i>Pyrrhonorax graculus</i>		Mixed groups with Red-billed Chough
Twite	<i>Carduelis flavirostris</i>	25-30	One group

Session 2 was conducted on 30 September 2018 Weather – Cloudy, windy, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	Few	Flying individuals
Goldfinch	<i>Carduelis carduelis</i>	10-12	Two small groups flying to the south
Red-billed Chough	<i>Pyrrhonorax pyrrhonorax</i>	10+	Small group

Session 3 was conducted on 02 October 2018 Weather – Sunny, Still, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Water Pipit	<i>Anthus spinoletta</i>	Few	Flying individuals towards different directions
Red-billed Chough	<i>Pyrrhonorax pyrrhonorax</i>	15+	2 small groups
Twite	<i>Carduelis flavirostris</i>	2	

Session 4 Conducted on 04 October 2018 Weather – Sunny, Still, no precipitation. Following birds were recorded:

Species	Latin name	Number of birds	Comment
Common kestrel	<i>Falco tinnunculus</i>	1	
Water Pipit	<i>Anthus spinoletta</i>	Few	Flying individuals and very small groups
Lammergeier	<i>Gypaetus barbatus</i>	4	

Annex 2 – Bird Survey Photographs



