



ASIAN INFRASTRUCTURE
INVESTMENT BANK



WORLD BANK GROUP

THE WORLD BANK
IBRD · IDA

IFC

International
Finance Corporation



中國電力國際發展有限公司
CHINA POWER INTERNATIONAL DEVELOPMENT LIMITED

ZHANATAS WINDFARM BIRDS MONITORING REPORT

AUTUMN 2019



November 2019

1 PROJECT DESCRIPTION

The Asian Infrastructure Investment Bank (“AIIB” or the “Bank”) is considering providing financing to the 100MW Zhanatas wind power plant (WPP) located near Zhanatas town, Zhambyl Region (the Project). The Project aims to fulfill the Kazakhstan commitment to increase its renewable power production to 3% of the total by 2020. It will also contribute to the regional network power availability. Forty turbines will be placed at 233ha leased land, 0.5-0.6km from each other in 5 segments that can be viewed as one complete and one broken row 1.4 km apart, placed on the elevated flanks of an eroded anticline. The 35kV alternate current powerlines will run along the connecting roads to the internal substation from where an 110kV overhead line will run along the road to Shymkent for 7.6km to the 110/35kV national grid substation.

2 METHODOLOGY

This report covers the survey of animals, mainly migratory and nesting birds on the 5 site visits 2 days long each: 26- 27.08; 10-11.09; 20-21.09; 10-11.10 and 23-24.10. The studies were conducted by the ornithologist Andrey Garvrilov – zoologist at the Laboratory of ornithology of the Institute of Zoology, specializing in the study of bird’s migration and with good knowledge of the ecology of terrestrial vertebrates. He has participated in several international ornithological projects and is familiar with internationally accepted survey methods.

The overall aim of the monitoring is to collect information for assessment of impact from habitat loss, displacement and death through collision. The monitoring methodology was based on the principles of the Recommended Birds Survey Methods to Confirm Impact Assessment of Onshore Windfarms, Scottish Natural Heritage, Version 2, 2017. As is suggested by this document, the methodology had to be adopted for the local conditions.

3 NESTING AND MIGRATORY BIRDS OBSERVATION SUMMARY

At the WPP territory 451 birds of 17 species of 5 orders were observed that corresponded to the density of 1.94 birds/ha of the WPP area. The majority of species were of Least Concern (LC) in the IUCN List. Only the noted Black vulture (*Aegypius monachus*) is Near Threatened (NT) and Black bellied Sangrouse is in the Red Book of Kazakhstan. Only Chukar and the Eastern Rock Nuthatch (*Sitta tephronota*) were resident species, the rest were migratory. Passeriformes (sparrow-like) were most numerous (205 birds of 11 species) with Swallow dominating in August and Calandra Lark dominating in October.

None of the birds flew inside the 20-120m risk zone of the blades rotation. Sparrow-like birds flew at 1-2m height. The wandering alone the area Black vulture flew at more than 200m height. As his descend to a noted from the height corps is slow and circular, it is not affected by the blades rotation. Out of prey birds, Kestrel and Long-legged Buzzard hunted at 10-12m above the ground. The small number of birds migrated along the v-shape Burkitty River valley at 1-5m height well below the turbines location.

At the Zhanatas Town wastewater lagoon located 13km northeast of the nearest turbine, 5181 birds of 29 species of 8 orders were observed. The Coot, Gadwall and Common Pochard were the most numerous. Out of the protected birds, there were the protected by the Red Book of Kazakhstan White-headed Duck (endangered in IUCN List), Ferruginous Duck (NT), White-tailed Eagle (LC) and Black-bellied Sangrouse (LC).

At the Kazfosfat quarry lake very low diversity of birds were observed due to absence of forage, shelter and human presence. Over the whole observation period only several birds of the resident species Chukar (30) and Eastern Rock Nuthatch (2) were noted. The Stock Dove (22), Rock Dove (70) and

some of sparrow-like birds used the area during migration and an Osprey and 2 Golden Eagles hunted on them. This is very low, considering that the 50-110m wide lake stretches for 20km.



Photo 1 The closest to the WPP potentially sensitive areas: Zhanatas Town waste water lagoon 13km away (above) and Kazfosfat quarry lake 2km from the nearest turbine. The black dots on the water of the former are

numerous ducks. The quarry attracts little wildlife through the year for the lack of forage and shelter and human presence.

4 CONCLUSION

Autumn birds migration at the WPP area was very weak mainly due to the lack of woody and shrubby vegetation and absence of water bodies. Low diversity and numbers of resident birds was for the same reason. The noted birds passed the area at the height below the risk window due to frequent high winds.

Previous observations in the period 1995-2018 in the key birds areas like Chokpak Overpass, Ters-Aschibulak Reservoir, Kyzylkol and Akkol lakes showed that the main migration routes and important for resting, feeding and breeding areas lie at some distance from the WPP. The known migration routes lie 54 kilometers north from the turbines and parallel to them (Figure 1). The closest protected area is Kyzylkol Lake 24km northwest. These observations and the rings return data from 1966 suggested that the corridor nearest to the WPP migration corridor lied 20km to the north along the Kyzylkol, Sorkol, Akkol lake system that was visited by over 75 species of waterfowl birds, 8 rare and disappearing birds and 120 other species of birds, mainly sparrow-like birds.

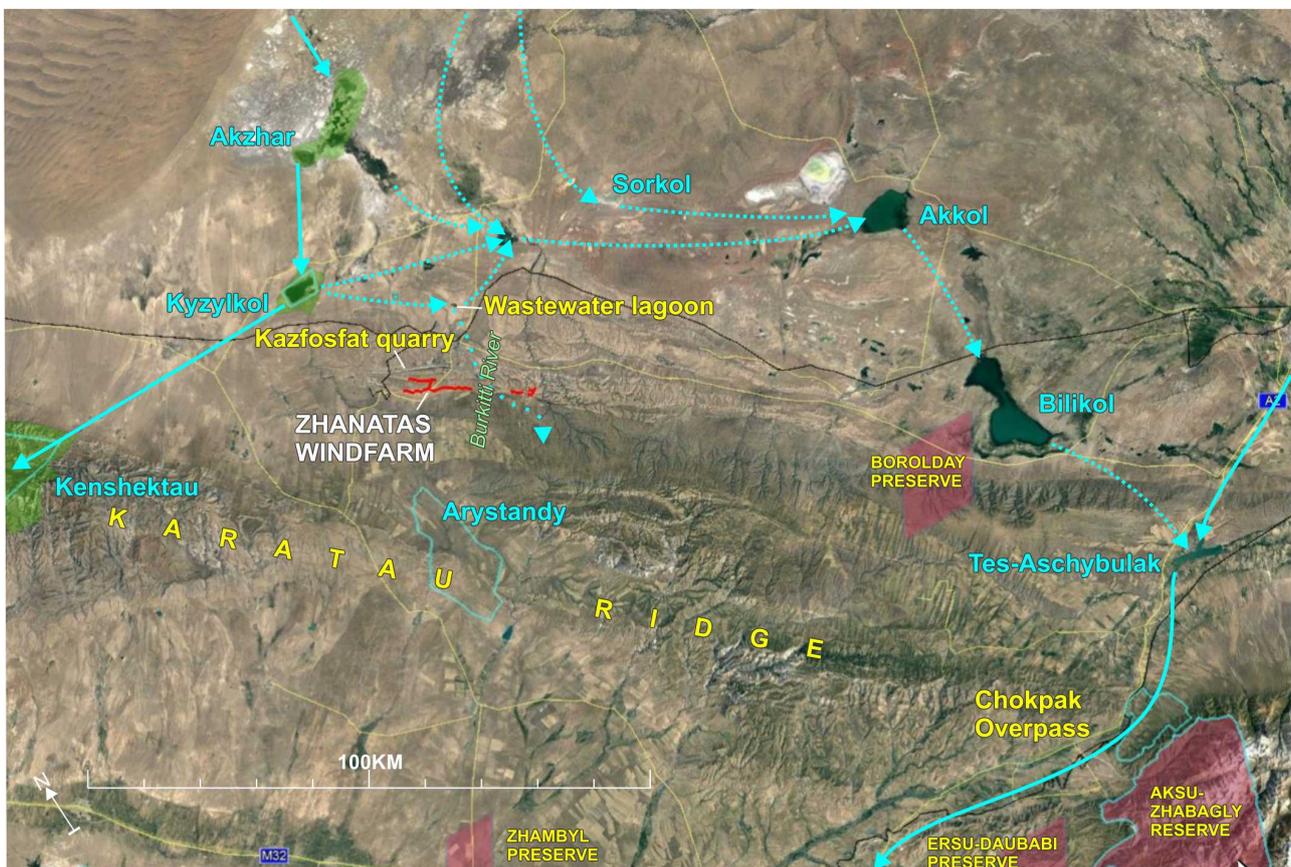


Figure 1 Showing the nearest sensitive ecological areas: Important bird areas (blue); Key biodiversity areas (green); State protected areas (pink) and the nearest to the WPP birds migration route (blue dash line) that approaches the Karatau Mountain Ridge but then follow the lakes system to join the main migratory route 115km away from WPP at Ters-Aschibulak Reservoir to go over the Ridge at the Chokpak Overpass. Noted migration along Burkitti River 2.5km from the turbines 24 and 25 was very minor and went below turbines level.

Birds collision with the blades may occur but is not expected to constitute a significant risk. Although in high frontal wind, rain or snow the birds can be forced down and enter the 20-120m risk window, they are likely to look for and land to a large clear waterbody as a protection from predators and wait until the weather improves. The nearest significant waterbody used for resting is the Zhanatas wastewater lagoon 13km northwest of the nearest turbine. These birds renew migration at considerable height once

the weather improves. Absence of birds in Kazfosfat quarry 5km north of the turbines is explained by human presence and absence of forage.

During autumn migration very few birds were observed. In August a flock of barn swallows crossed the site from northwest at turbines 20-21 flying below the risk window 20-120m; 30-40 wagtails and pipits were resting around the turbines 45-46. All of them fly below the risk window but 3 breeding nearby common kestrels that came to hunt on them, fly within the risk window. Observation of their flight from a vantage point suggested low risk to these birds.

The residing in the WPP area wheatears, larks and other passerines fly at heights below 20m i.e. under the blades. The flights of the preying on them birds may be altered forcing them to spend more time monitoring blades than hunting or to avoid the turbines areas all together but concentration of the prey is insufficient to support prey birds on the WPP territory on a continuous basis.

Birds collision with the powerlines wires is possible but unlikely due to absence of large migrating birds that have low maneuverability and are not familiar with the area.

5 OBSERVATION DETAILS

5.1 Route Survey Results

Tables below show birds survey results for three habitats: WWP site, Kazfosfat quarry and Zhanatas wastewater lagoon. The survey routes and points location are shown on Figure 1.

5.1.1 WPP Site

Date:	26-27.08.19	Visit Number:	1
Start time:	06.30	End time:	19:00
Temp. (at start and end of survey)	26.08 = 16.4°C;34°C 27.08 =20.7°C; 32.6°C		
Humidity (low/medium/high)	26=33-15% 27=26-15%		
Wind speed	26.08 = Calm, windless 27.08 = W 3 m/s – SW 1 m/s		
Cloud cover	26.08=0% 27.08=0%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS			TOTAL FOUND ON SITE
None			
NESTING BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
None			
MIGRATORY BIRDS AT WPP			TOTAL FOUND ON SITE
1. <i>Falco tinnunculus</i> Kestrel			5
2. <i>Pterocles orientalis</i> Black bellied Sandgrouse			13
3 <i>Riparia riparia</i> Sand Martin			10
4. <i>Hirundo rustica</i> Swallow			70
5. <i>Anthus campestris</i> Tawny Pipit			28
6. <i>Emberiza calandra</i> Corn Bunting			3
Date:	10-11.09.19	Visit Number:	2

Start time:	06:00	End time:	19:30
Temp. (at start and end of survey)		10.09=11.3 - 20.3°C 11.09=9.4 - 22.5°C	
Humidity (low/medium/high)		10=80-32% 11=59-20%	
Wind speed		10.09 S 4m/s – NW 2m/s; 11.09 SW 1m/s – NE 4ms	
Cloud cover		10=20-60% 11=0%	
Rain / Fair		Dry	
Any changes in weather during survey?		Not significant	
NESTING BIRDS		TOTAL FOUND ON SITE	
<i>Alectoris chukar</i> Chukar		10	
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS AT WPP		TOTAL FOUND ON SITE	
1 <i>Falco tinnunculus</i> Kestrel		1	
2 <i>Anthus campestris</i> Tawny Pipit		13	
3 <i>Corvus monedula</i> Jackdaw		15	
4 <i>Columba oenas</i> Stock Dove		1	
5 <i>Oenanthe isabellina</i> Isabelline Wheatear		8	
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
Date:	20-21.09.19	Visit Number:	3
Start time:	06.00	End time:	19.30
Temp. (at start and end of survey)		20.09=18.5°C; 29.8°C 21.09=15.7°C; 32.4°C	
Humidity (low/medium/high)		20.09=34-18% 21.09=38-14%	
Wind speed		20.09=SW 3m/s-SSW 2m/s 21.09=Calm, windless	
Cloud cover		20.09=0% 21.09=0%	
Rain / Fair		Dry	
Any changes in weather during survey?		Not significant	
NESTING BIRDS		TOTAL FOUND ON SITE	
<i>Alectoris chukar</i> Chukar		21	
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS AT WPP		TOTAL FOUND ON SITE	
1. <i>Falco tinnunculus</i> Kestrel		2	
2. <i>Anthus trivialis</i> T Pipit		3	
3. <i>Corvus monedula</i> Jackdaw		35	
4. <i>Oenanthe oenanthe</i> Northern Wheatear		7	
5. <i>Oenanthe pleschanka</i> Pied Wheatear		1	
6. <i>Oenanthe isabellina</i> Isabelline Wheatear		10	
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			

Date:	10-11.10.19	Visit Number:	4
Start time:	06.00	End time:	20.00
Temp. (at start and end of survey)	10.10=13.4°C; 23°C 11.10=10.5°C; 12.8°C		
Humidity (low/medium/high)	10.10=45-19% 11.10=62-33%		
Wind speed	10.10=S 2 m/s – SSW 1 m/s 11.10=W 3 m/s-W 5 m/s		
Cloud cover	10.10=60-90% 11.10=40-90%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS			TOTAL FOUND ON SITE
<i>Alectoris chukar</i> Chukar			10
NESTING BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
None			
MIGRATORY BIRDS			
1	<i>Aegypius monachus</i> Black Vulture		1
2	<i>Falco tinnunculus</i> Kestrel		3
3	<i>Columba oenas</i> Stock Dove		1
4	<i>Galerida cristata</i> Crested Lark		11
5	<i>Melanocorypha calandra</i> Calandra Lark		21
6	<i>Corvus monedula</i> Jackdaw		2
7	<i>Oenanthe isabellina</i> Isabelline Wheatear		4
MIGRATORY BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
None			
Date:	23-24.10	Visit Number:	5
Start time:	06.00	End time:	20:00
Temp. (at start and end of survey)	23.10=4.2°C; 11.8°C 24.10=7.0°C; 13.6°C		
Humidity (low/medium/high)	23.10=25-27% 24.10=35-27%		
Wind speed	23.10=SSW 2m/s 24.10=NE 1m/s		
Cloud cover	23.10=0% 24.10=0%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS			TOTAL FOUND ON SITE
<i>Alectoris chukar</i> Chukar			15
NESTING BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
None			
MIGRATORY BIRDS			
1	<i>Buteo rufinus</i> Long-legged Buzzard		1
2	<i>Falco tinnunculus</i> Kestrel		1
3	<i>Columba oenas</i> Stock Dove		5
4	<i>Galerida cristata</i> Crested Lark		32
5	<i>Melanocorypha calandra</i> Calandra Lark		130
6	<i>Anthus campestris</i> Tawny Pipit		1
7	<i>Oenanthe isabellina</i> Isabelline Wheatear		5
MIGRATORY BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE

None

5.1.2 Zhanatas Town Wastewater Lagoon

Date:	27.08.19	Visit Number:	1
Start time:	06.00	End time:	08.00
Temp. (at start and end of survey)	20.7°C; 27.4°C		
Humidity (low/medium/high)	26-15%		
Wind speed	W 3 m/s-SSW 1m/s		
Cloud cover	0%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS			TOTAL FOUND ON SITE
None			
NESTING BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
None			
MIGRATORY BIRDS AT WPP			TOTAL FOUND ON SITE
None			
MIGRATORY BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE
1. <i>Podiceps cristatus</i> Great Crested Grebe			15
2. <i>Ardea cinerea</i> Grey Heron			1
3. <i>Cygnus olor</i> Mute Swan			1
4. <i>Tadorna ferruginea</i> Ruddy Shelduck			25
5. <i>Anas crecca</i> Green-winged Teal			30
6. <i>Anas strepera</i> Gadwall			150
7. <i>Anas querquedula</i> Garganey			30
8. <i>Anas clypeata</i> Shoveler			15
9. <i>Aythya nyroca</i> Ferruginous Duck			5
10. <i>Circus aeruginosus</i> Marsh Harrier			1
11. <i>Fulica atra</i> Coot			850
12. <i>Phalaropus lobatus</i> Red-necked Phalarope			15
13. <i>Larus ridibundus</i> Black-headed Gull			15
14. <i>Larus cachinnans</i> Caspian Gull			3
15. <i>Pterocles orientalis</i> Black bellied Sandgrouse			5
16. <i>Riparia riparia</i> Sand Martin			70
17. <i>Hirundo rustica</i> Swallow			130
18. <i>Galerida cristata</i> Crested Lark			2
19. <i>Motacilla flava</i> Grey-headed Wagtail			150
20. <i>Pica pica</i> Magpie			1
21. <i>Oenanthe isabellina</i> Isabelline Wheatear			6
Date:	11.09.19	Visit Number:	2
Start time:	06:05	End time:	8:10
Temp. (at start and end of survey)	9.4 - 22.5°C		
Humidity (low/medium/high)	59-20%		
Wind speed	SW 1m/s – NE 4ms		
Cloud cover	0%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS			TOTAL FOUND ON SITE
None			10
NESTING BIRDS AT THE NEARBY AREA			TOTAL FOUND ON SITE

None			
MIGRATORY BIRDS AT WPP		TOTAL FOUND ON SITE	
1. <i>Podiceps cristatus</i> Great Crested Grebe			12
2. <i>Cygnus olor</i> Mute Swan			7
3. <i>Tadorna ferruginea</i> Ruddy Shelduck			50
4. <i>Anas crecca</i> Green-winged Teal			40
5. <i>Anas strepera</i> Gadwall			180
6. <i>Anas querquedula</i> Garganey			55
7. <i>Anas clypeata</i> Shoveler			45
8. <i>Circus aeruginosus</i> Mash Harrier			2
9. <i>Fulica atra</i> Coot			900
10. <i>Phalaropus lobatus</i> Red-necked Phalarope			160
11. <i>Larus ridibundus</i> Black-headed Gull			45
12. <i>Motacilla flava</i> Grey-headed Wagtail			20
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
Date:	21.09.19	Visit Number:	3
Start time:	06.00	End time:	08.30
Temp. (at start and end of survey)	15.7°C; 22°C		
Humidity (low/medium/high)	38-14%		
Wind speed	Calm, windless		
Cloud cover	0%		
Rain / Fair	Dry		
Any changes in weather during survey?	Not significant		
NESTING BIRDS		TOTAL FOUND ON SITE	
None			
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS AT WPP		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
1 <i>Egretta alba</i> Great Egret			2
1. <i>Tadorna ferruginea</i> Ruddy Shelduck			70
2. <i>Anas platyrhynchos</i> Mallard			150
3. <i>Anas crecca</i> Green-winged Teal			50
4. <i>Anas strepera</i> Gadwall			200
5. <i>Anas querquedula</i> Garganey			70
6. <i>Anas clypeata</i> Shoveler			85
7. <i>Circus aeruginosus</i> Mash Harrier			2
8. <i>Fulica atra</i> Coot			1000
9. <i>Phalaropus lobatus</i> Red-necked Phalarope			200
10. <i>Oenanthe isabellina</i> Isabelline Wheatear			6
Date:	11.10.19	Visit Number:	4
Start time:	06.00	End time:	08.30
Temp. (at start and end of survey)	10.5°C; 7.9°C		
Humidity (low/medium/high)	62-29%		
Wind speed	W 3 m/s-WNW 3 m/s		
Cloud cover	40%-90%		
Rain / Fair	Dry		

Any changes in weather during survey?		None	
NESTING BIRDS		TOTAL FOUND ON SITE	
None			
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS			
None			
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
1. <i>Podiceps cristatus</i> Great Crested Grebe		17	
1. <i>Cygnus olor</i> Mute Swan		7	
2. <i>Anas platyrhynchos</i> Mallard		70	
3. <i>Anas crecca</i> Green-winged Teal		10	
4. <i>Anas strepera</i> Gadwall		50	
5. <i>Anas Penelope</i> Eurasian Wigeon		30	
6. <i>Anas clypeata</i> Shoveler		70	
7. <i>Aythya farina</i> Common Pochard		200	
8. <i>Oxyura leucocephala</i> White-headed Duck		40	
9. <i>Circus aeruginosus</i> Marsh Harrier		1	
10. <i>Fulica atra</i> Coot		800	
11. <i>Gallinago gallinago</i> Common Snipe		1	
12. <i>Larus ridibundus</i> Black-headed Gull		70	
13. <i>Corvus corone</i> Carrion Crow		2	
Date:	24.10	Visit Number:	5
Start time:	06:00	End time:	08:00
Temp. (at start and end of survey)		7°C; 8.6°C	
Humidity (low/medium/high)		35-27%	
Wind speed		NW 1 m/s-NNW 1m/s	
Cloud cover		0%	
Rain / Fair		Dry	
Any changes in weather during survey?		Not significant	
NESTING BIRDS		TOTAL FOUND ON SITE	
None			
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
None			
MIGRATORY BIRDS			
None			
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE	
1. <i>Podiceps cristatus</i> Great Crested Grebe		11	
1. <i>Cygnus olor</i> Mute Swan		4	
2. <i>Tadorna ferruginea</i> Ruddy Shelduck		7	
3. <i>Anas platyrhynchos</i> Mallard		3	
4. <i>Anas Penelope</i> Eurasian Wigeon		15	
5. <i>Aythya farina</i> Common Pochard		70	
6. <i>Haliaeetus albicilla</i> White-tailed Eagle		1	
7. <i>Fulica atra</i> Coot		350	

5.1.3 Kazfosfat Quarry

Entry was possible only in two last visits due to difficulties in obtaining passes to Kazfosfat territory but observations from several remote points made during the first visits confirmed the following data.

Date:	10.10	Visit Number:	4
Start time:	10:05	End time:	11:25

Temp. (at start and end of survey)	13.4°C; 23°C	
Humidity (low/medium/high)	45-19%	
Wind speed	S 2 m/s - SSW 1 m/s	
Cloud cover	60-90%	
Rain / Fair	Dry	
Any changes in weather during survey?	Not significant	
NESTING BIRDS		TOTAL FOUND ON SITE
None		
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE
None		
MIGRATORY BIRDS		
1. <i>Passerines sp.</i>		30
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE
1. <i>Columba oenas</i> Stock Dove		1
Date:	24.10	Visit Number: 5
Start time:	10:10	End time: 11:20
Temp. (at start and end of survey)	7°C; 8.6°C	
Humidity (low/medium/high)	35-27%	
Wind speed	NW 1 m/s-NNW 1m/s	
Cloud cover	0%	
Rain / Fair	Dry	
Any changes in weather during survey?	Not significant	
NESTING BIRDS		TOTAL FOUND ON SITE
1. <i>Alectoris chukar</i> Chukar		15
2. <i>Sitta tephronota</i> Eastern Rock Nuthacht		1
NESTING BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE
None		
MIGRATORY BIRDS		
2. <i>Passerines sp.</i>		35
MIGRATORY BIRDS AT THE NEARBY AREA		TOTAL FOUND ON SITE
2. <i>Columba oenas</i> Stock Dove		1
3. <i>Columba livia</i> Rock Dove		70