
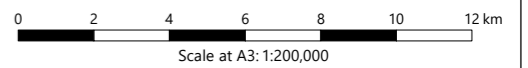


\\172.26.36.27\6000\_Task\2019\_Task\X.19.00287.GLA - Zarafshon Wind Farm ESIA Uzbekistan\Modelling\GIS\2021 ArcMap and InDesign documents\43423-WOOD-XX-02-DR-SA-0001\_S3\_R10.mxd Originator: wilisc03



Key

 Proposed WTG locations



Zarafshan Wind Farm ESIA

**Figure 1-1**  
Site Location

January 2022





DO NOT SCALE

KEY

- EXISTING ROADS
- EXISTING ROADS TO BE UPGRADED
- NEW ROADS
- WTG LOCATIONS
- INDICATIVE SUBSTATION
- AIS
- OH CONNECTION LINES
- EXISTING OH TRANSMISSION LINES
- SENSITIVE RECEPTORS
- TEMPORARY COMPOUND / WAREHOUSE 1
- TEMPORARY LAYDOWN / WAREHOUSE 2 & WATER STORAGE
- TEMPORARY LAYDOWN / WAREHOUSE 3

RECEPTOR NO	SENSITIVE RECEPTOR
1	HOTEL
3	BESAPAN
5	NEW FARM 1 RESIDENTIAL
7	FARM - RESIDENTIAL
8	STRUCTURE 1 - RESIDENTIAL, 2 BUILDINGS IN A COMPOUND
9	RESIDENTIAL & AGRICULTURAL
10	GOLD MINE SETTLEMENT
11	RAMZAN CITY FARM



WTG COORDINATES	
ID	Eastings Northing
T01	613433 4602928
T02A	618866 4605558
T3	608169 4603708
T4	623660 4605420
T5	608758 4603649
T6	608698 4604129
T7	609349 4603642
T8	609199 4604309
T9	609397 4602888
T10	624953 4601110
T11	609830 4604315
T12	610006 4602658
T13	610353 4603466
T14	610518 4604693
T15	610651 4602674
T16	610808 4602196
T17	610869 4606007
T18	611267 4601650
T19	611320 4604655
T20	611402 4605792
T21	611813 4605312
T22	611920 4604290
T23	612007 4603753
T24	612275 4603094
T25	612449 4602386
T26	612668 4604589
T27	612757 4603974
T28	613513 4603698
T29	613942 4604361
T30	614129 4605319
T31	614504 4606568
T32	614691 4604361
T33	614914 4606240
T34	615351 4607929
T35	615719 4604221
T36	615947 4607541
T37	615646 4605897
T38	616219 4603505
T39	616362 4604351
T40	616613 4603259
T41	616859 4606973
T42	616915 4601431
T43	616997 4602317
T44	617347 4606592
T45	617479 4603545
T46	617552 4601404
T47	617799 4602503
T48	617900 4601014
T49	618081 4603592
T50A	618150 4606031
T51-R	618614 4598864
T52	618565 4601515
T53	618778 4603842
T54	618824 4601075
T55A	619336 4605198
T56	619304 4602789
T57	619372 4600533
T58	619501 4603829
T59	619680 4601822
T60	619847 4600155
T61	620089 4604884
T62	620203 4603761
T63	620256 4601838
T64	620302 4599638
T65	620554 4600876
T66A	620619 4605131
T67	620714 4603547
T68	620767 4599568
T69	620955 4601604
T70	621064 4600647
T71A	621477 4606319
T72	621351 4599603
T73	621365 4604759
T74	621644 4601609
T75A	621748 4607625
T76	621921 4607126
T77	621888 4599388
T78	621865 4600904
T79	622190 4603809
T80	622247 4600603
T81	622456 4603211
T82	622616 4607453
T83	621576 4603541
T84	622767 4605132
T85	622913 4603880
T86	622902 4600911
T87	623066 4607214
T88	623126 4600505
T89	623395 4606595
T90	623513 4601849
T91A	623463 4603560
T92	623788 4600514
T93A	623753 4603018
T94	623829 4607354
T95	623903 4601562
T96A	624415 4603335
T97	624452 4602754
T98	624517 4601285
T99	624553 4605763
T100	624553 4607354
T101	624873 4600544
T102	624973 4605368
T103-R	619104 4598652
T104-R	619730 4598750
T105	625108 4607360
T106A	625247 4603564
T107	625495 4607064
T108B	625846 4603715
T109	625892 4605396
T110	626138 4606896
T111-R	622577 4602217

ANCILLARY INFRASTRUCTURE	CO-ORDINATES
TEMPORARY COMPOUND / WAREHOUSE 1 NEAR SUBSTATION	619592 4600928 619797 4600928 619797 4600732 619592 4600732
TEMPORARY LAYDOWN / WAREHOUSE 2	619591 4602207 619791 4602207 619791 4602007 619591 4602007
TEMPORARY LAYDOWN / WAREHOUSE 3 WATER STORAGE AREA	613270 4604015 613490 4603952 613405 4603775 613145 4603914
SUBSTATION	619481 4600892 619666 4600892 619595 4601038 619481 4601038
AIS	619371 4601067 619481 4601067 619481 4600870 619371 4600870



REV	DESCRIPTION	DATE	BY	CHKD	APPD	DATE
B8	RECEPTOR 1 IN KEY CHANGED TO HOTEL	11.02.22				
B7	WTG LOCATIONS REVERSE ACCESS ROADS AMENDED COORDINATES TABS UPDATED	01.01.22				
B6	WTG LOCATIONS REVERSE ACCESS ROADS AMENDED SUBSTATIONS & CONNECTIONS AMENDED	01.12.21				
B5	INDICATIVE COMPOUND AND CAMP AREA ADDED	11.09.21				
B4	TEMPORARY WAREHOUSE & STORAGE YARD ADDED	06.09.21				
B3	RECEPTOR 11 ADDED	11.08.21				
B2	NOISE RECEPTOR LOCATIONS ADDED SITE ACCESS ROAD ADDED	08.07.21				
B1	ISSUED FOR ESH	18.05.21				

ZARAFSHAN WIND FARM ESIA

SITE LAYOUT PLAN



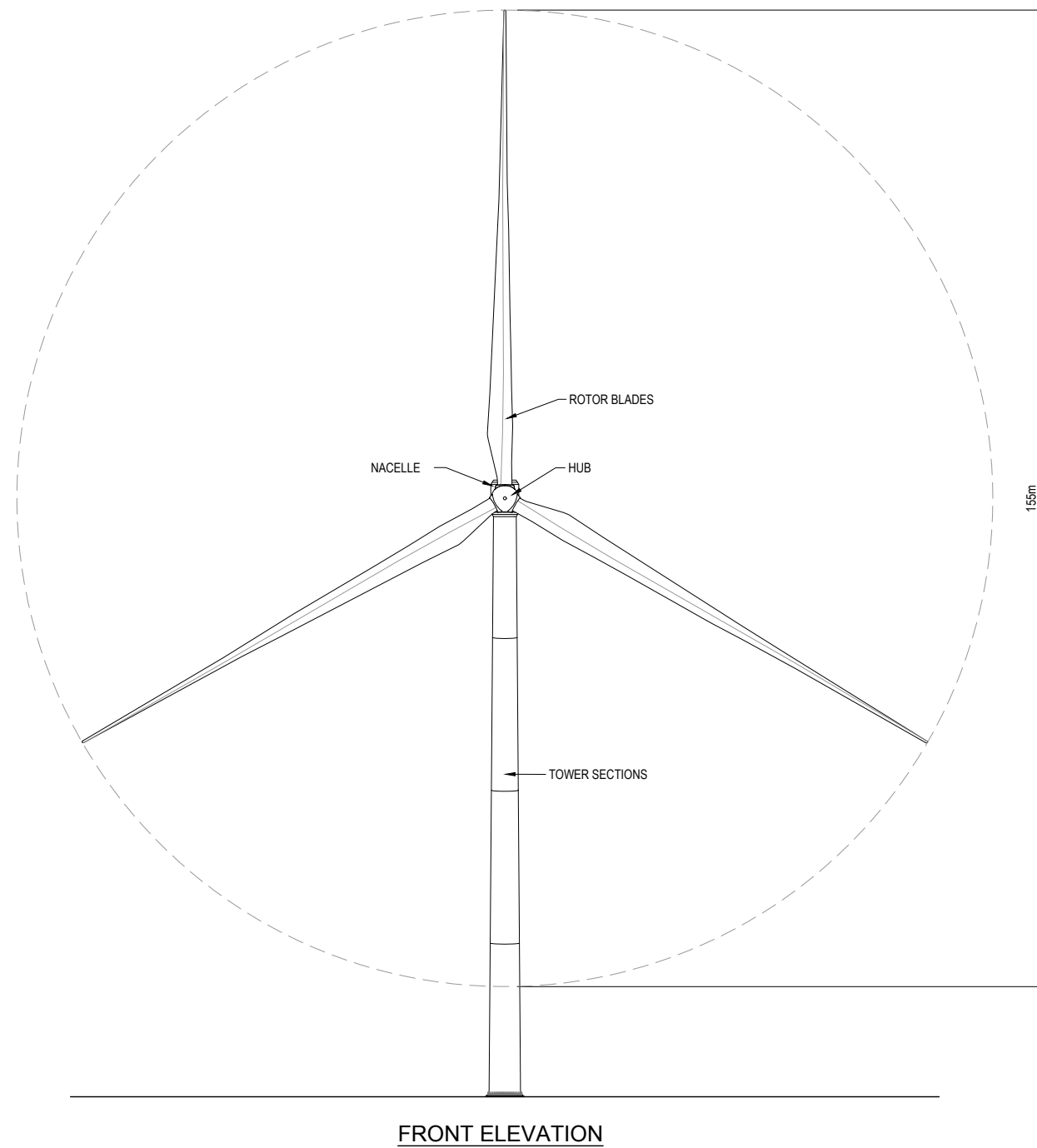
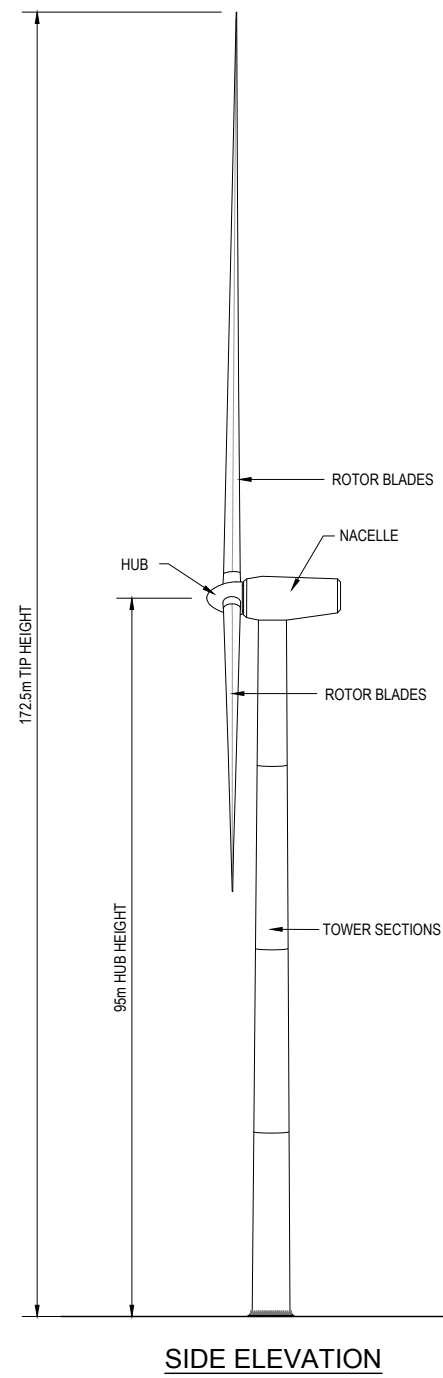
St Vincent Plaza, 319 St Vincent Street, Glasgow, G2 6LP  
Tel: +44 (0) 141 227 1100 www.woodplc.com

Scale	1:20,000	Project	ESIA	Revision	MAY 2021	Sheet	A0
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J:\6000\2021\_Tasks\192248A\_Zarafshan Wind Farm\ESIA\Figure 1-2 Site Layout-B8.dwg



DO NOT SCALE



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B1	ISSUED FOR ESIA	PMcG	VMcL	VMcL	19.05.21
Rev	Description	By	Chk'd	App'd	Date

Job Title

**ZARAFSHAN  
WIND FARM ESIA**

Org Title

**WIND TURBINE GENERATOR  
ELEVATIONS**



St Vincent Plaza, 319 St Vincent Street, Glasgow, G2 5LP  
tel: +44 (0) 141 227 1700 www.woodplc.com

Scale	1:1000	Date	MAY 2021	Size	A3
Drawn	PMcG	Checked	VMcL	Approved	VMcL

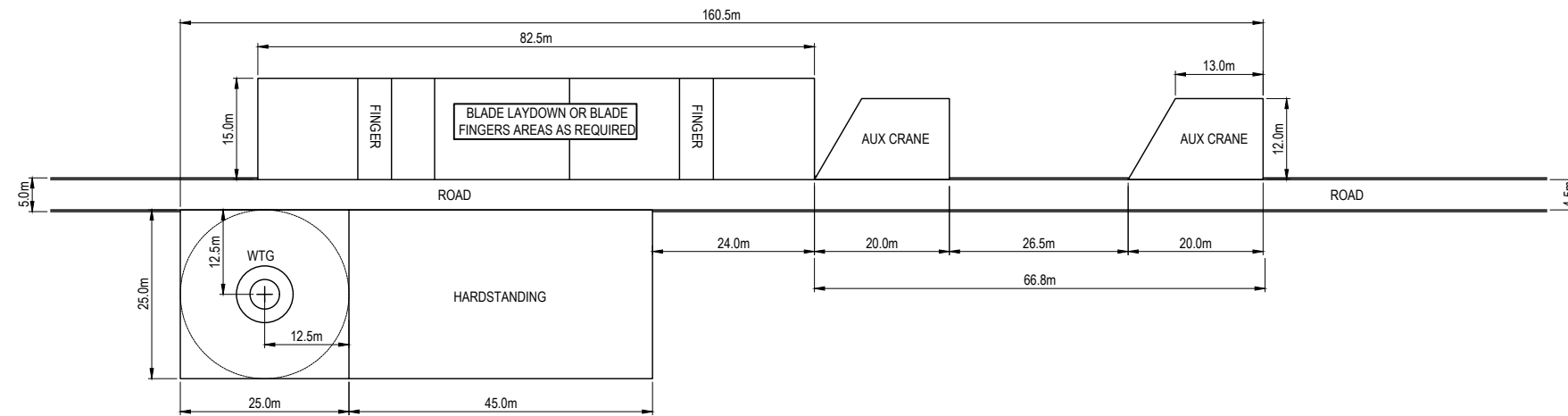
Status

**ESIA**

Drawing No.	<b>FIGURE 2.1</b>	Revision	B1
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DO NOT SCALE



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B1	ISSUED FOR ESIA	PMcG	VMcL	VMcL	19.05.21
Rev	Description	By	Chk'd	App'd	Date

Job Title  
**ZARAFSHAN  
WIND FARM ESIA**

Org Title  
**TYPICAL HARDSTANDING AREA**



St Vincent Plaza, 319 St Vincent Street, Glasgow, G2 5LP  
tel: +44 (0) 141 227 1700 www.woodplc.com

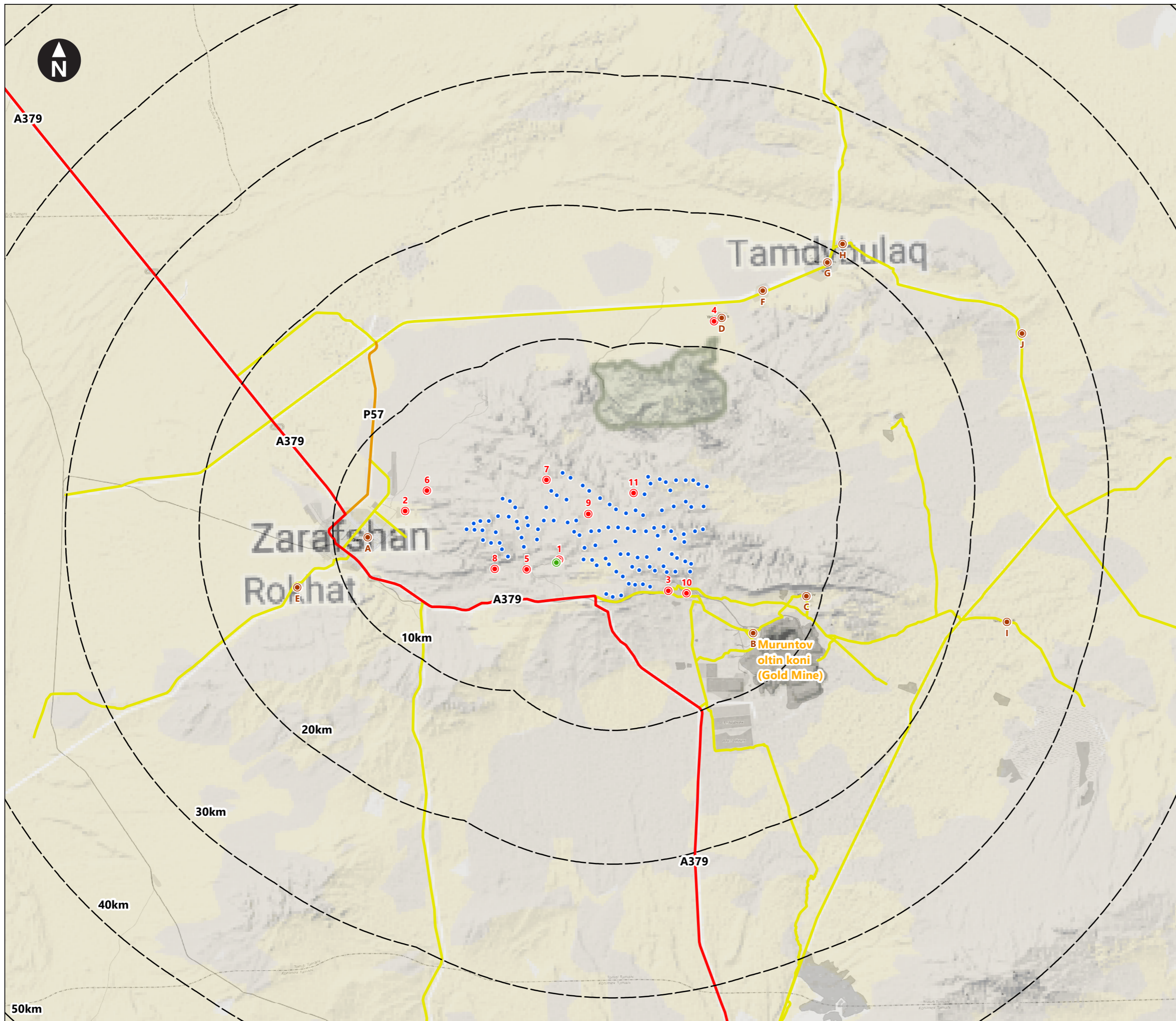
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Drawn	PMcG	Checked	VMcL	Approved	VMcL

Status  
**ESIA**

Drawing No.	<b>FIGURE 2.2</b>	Revision	B1
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Key

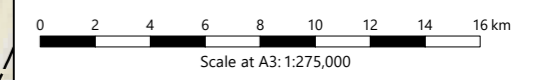
- Proposed WTG locations
- Lines indicating the distance from the proposed turbine locations
- Noise Sensitive / Shadow Flicker Receptors

- 1) Hotel
- 2) Zarafshon (east)
- 3) Besapan
- 4) Adzherekty
- 5) New Farm 1 Residential
- 6) New Farm 2 Residential
- 7) Farm - Residential
- 8) Structure 1 - Residential, 2 buildings in a compound
- 9) Residential and agricultural
- 10) Gold Mine Settlement
- 11) Ramzan City Farm

- Religious Site
- Settlements

- A) Zarafshan
- B) Besapan
- C) Muruntov
- D) Yangi Tomdi
- E) Rokhat
- F) Ajiriqti
- G) Kazbek bi
- H) Tamdibuloq
- I) Jingildi
- J) Kynyr

- A739 road
- P57 road
- Unclassified roads

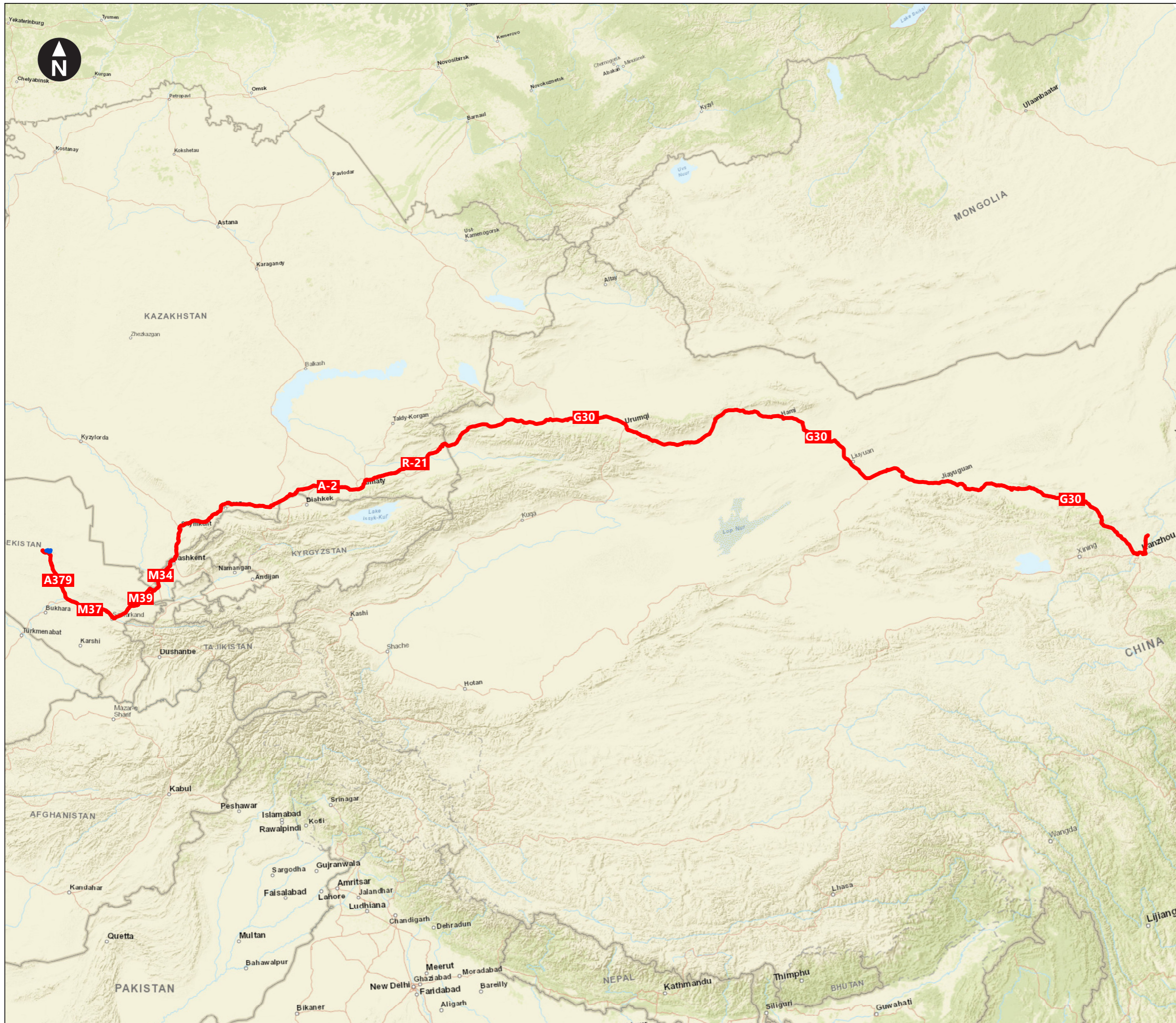


Zarafshan Wind Farm ESIA



**Figure 7-1**  
**Community Territories**

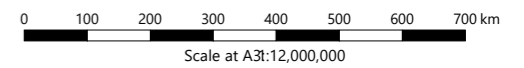


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Key

-  Proposed WTG locations
-  Indicative transport route from Baiyin City to Zarafshan



Zarafshan Wind Farm ESIA

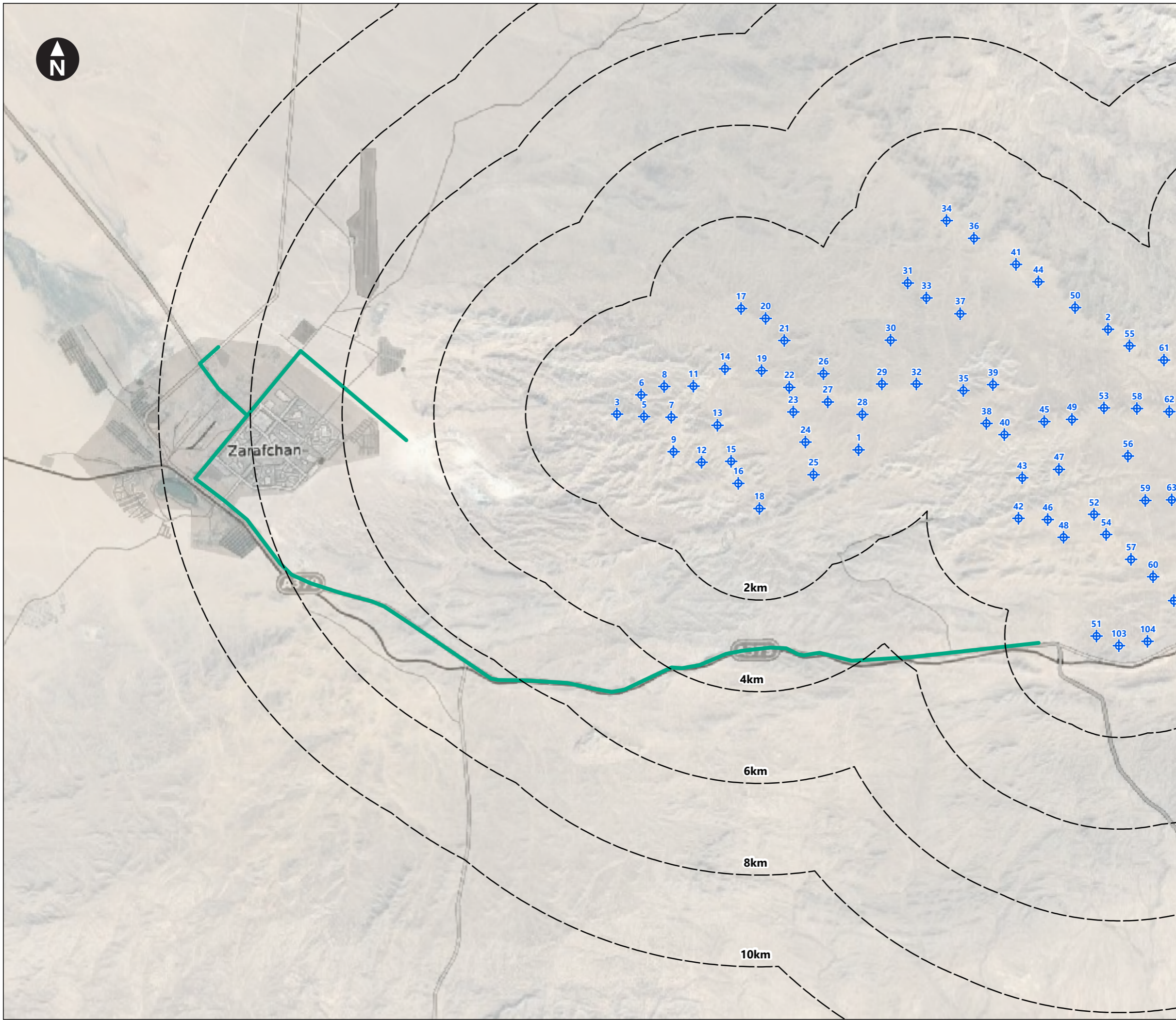
**Figure 8-1**  
Indicative Transport Route

January 2022



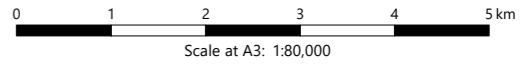


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Key

- Proposed WTG locations
- Lines indicating the distance from the proposed turbine locations
- Crushed Stone Delivery Route

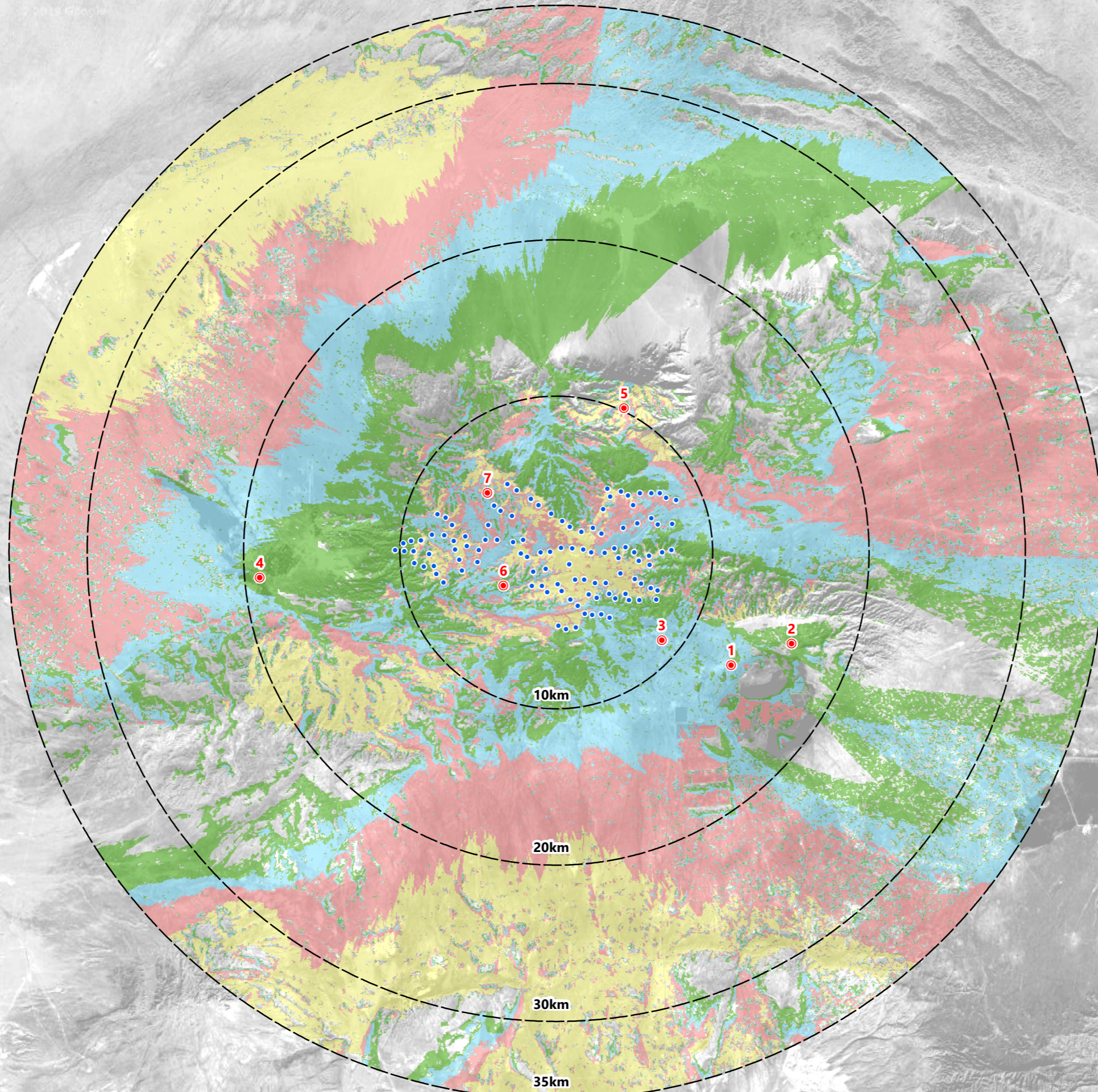


Zarafshan Wind Farm ESIA




**Figure 8-2**  
Crushed Stone and Concrete Delivery Routes







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Key

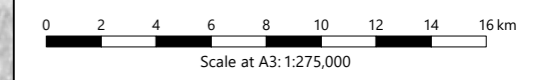
-  Proposed WTG locations
-  Lines indicating the distance from the mean site centre
-  Viewpoint Locations

1) Road at Besapan  
 2) South of Muruntov  
 3) South of Industrial Area / Rail Depot  
 4) Edge of Zarafshan  
 5) High Ground to North  
 6) Hotel  
 7) Farm Shelter

-  1-27 turbines may be theoretically visible
-  28-55 turbines may be theoretically visible
-  56-83 turbines may be theoretically visible
-  84-111 turbines may be theoretically visible

Notes: This drawing is based on a computer generated Zone of Theoretical Visibility (ZTV). The areas shown indicate the maximum theoretical visibility of the proposed turbines and do not take account of any screening from vegetation or built-form. The ZTV also includes an adjustment that allows for the Curvature and Light Refraction of the Earth.

This figure has been based on the following parameters:  
Turbine layout file: LZARAFSHON008.WFL  
Hub height: 95m  
Rotor diameter: 155m  
Height to blade tip: 172.5m



Zarafshan Wind Farm ESIA

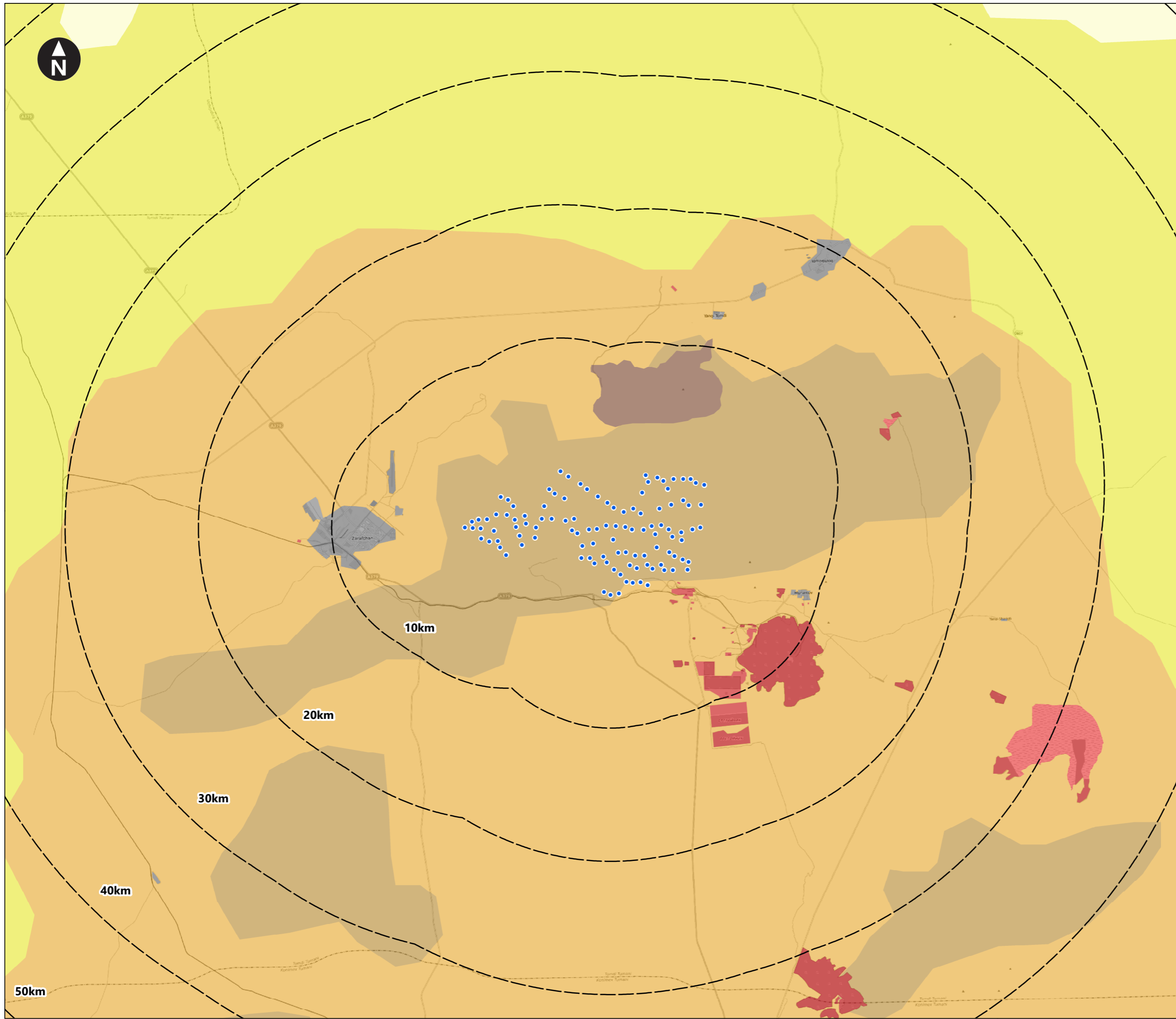
**Figure 9-1**  
**Zone of Theoretical Visibility**  
**with Viewpoints**

February 2022





\\172.26.36.27\6000\_Tasks\2019\_Tasks\19.00287.GLA - Zarafshon Wind Farm ESIA Uzbekistan\Modelling\GIS\2021 ArcMap and InDesign documents\43423-WOOD-XX-02-DR-SA-0004\_S3\_R10.mxd Originator: wilsc03



Key

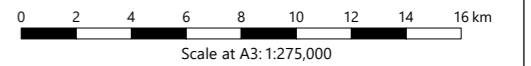
- Proposed WTG locations
- Lines indicating the distance from the proposed turbine locations

**Landscape Character Types**

- Gypsum Deserts
- Rocky Deserts
- Saline Deserts
- Sand Deserts

Source: The Sixth National Report of the Republic of Uzbekistan on the Conservation of Biological Diversity (p.196)

- Urban
- Mining & Industry
- Tamdytau Mountains



Zarafshan Wind Farm ESIA

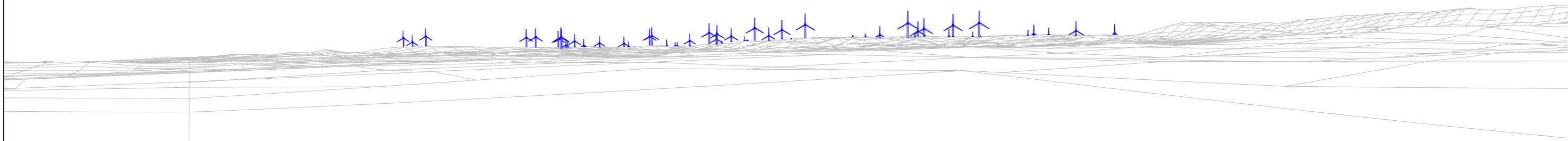
**Figure 9-2**  
**Landscape Character Types**

January 2022

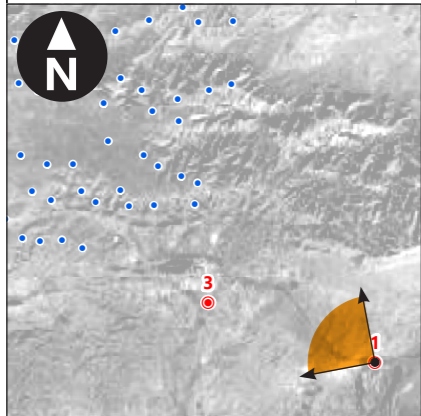




103 51 104 64 68 60 77 72 48 42 57 45 54 52 43 65 70 47 40 38 59 80 63 78 45 69 56 49 88 74 86 53 92 62 67 111 101 83 90 95 81 88 79 10 73 85 83 91 97 96



View flat at a comfortable arm's length



This figure has been based on the following parameters:  
Turbine layout file: LZARAFSHON008.WFL  
• Hub height: 95m  
• Rotor diameter: 155m  
• Height to blade tip: 172.5m

OS reference:	E629 651, N4596 350	Horizontal field of view:	90° (cylindrical projection)
Eye level:	585.5m AOD	Principal distance:	522mm
Direction of view:	304°	Paper size:	420mm x 297mm (A3)
Nearest turbine:	6,357m	Correct printed image size:	390 x 222mm

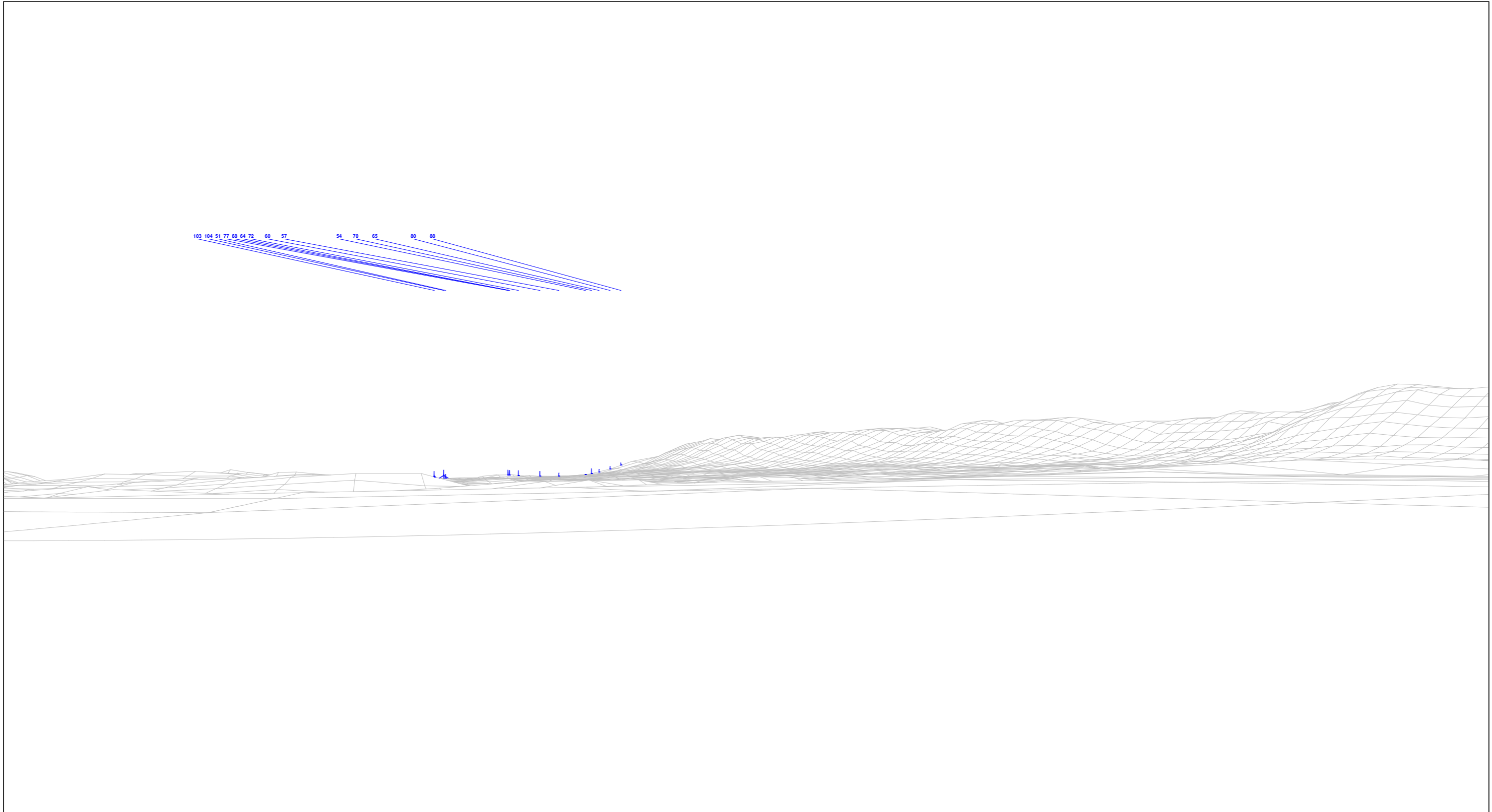
Zarafshon Wind Farm ESIA

Figure 9-3  
Viewpoint 1  
Road at Besapan

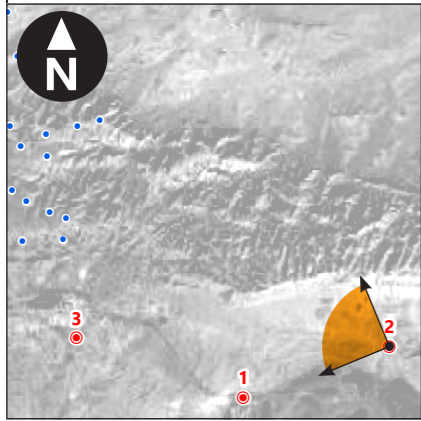
February 2022







View flat at a comfortable arm's length



This figure has been based on the following parameters:  
 Turbine layout file: LZARAFSHON008.WFL  
 • Hub height: 95m  
 • Rotor diameter: 155m  
 • Height to blade tip: 172.5m

OS reference:	E633 524, N4597 713	Horizontal field of view:	90° (cylindrical projection)
Eye level:	562.5m AOD	Principal distance:	522mm
Direction of view:	293°	Paper size:	420mm x 297mm (A3)
Nearest turbine:	9,102	Correct printed image size:	390 x 222mm

Zarafshon Wind Farm ESIA

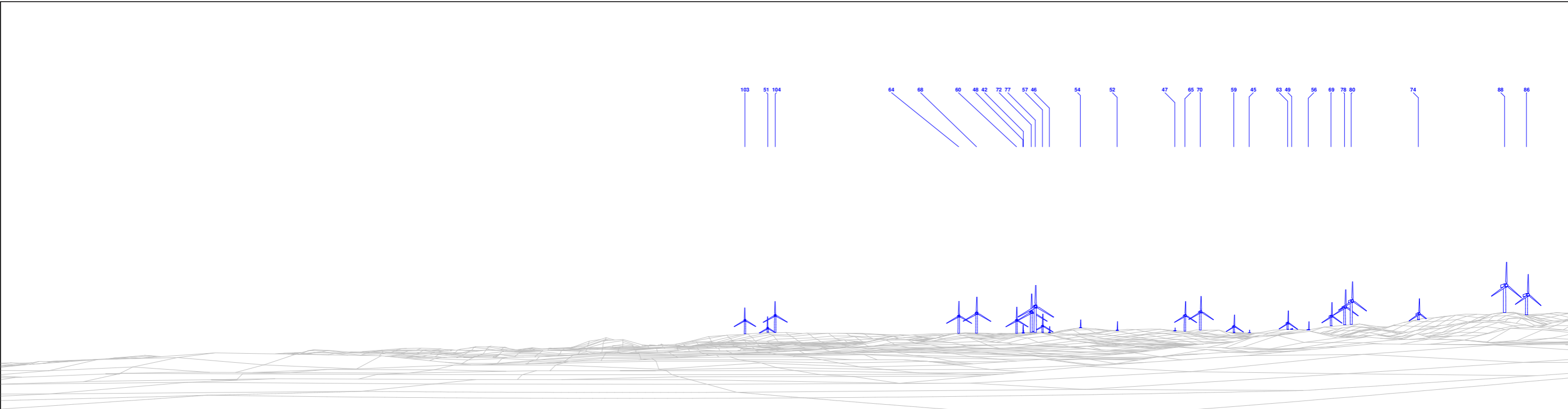
Figure 9-4  
Viewpoint 2  
South of Muruntov

February 2022



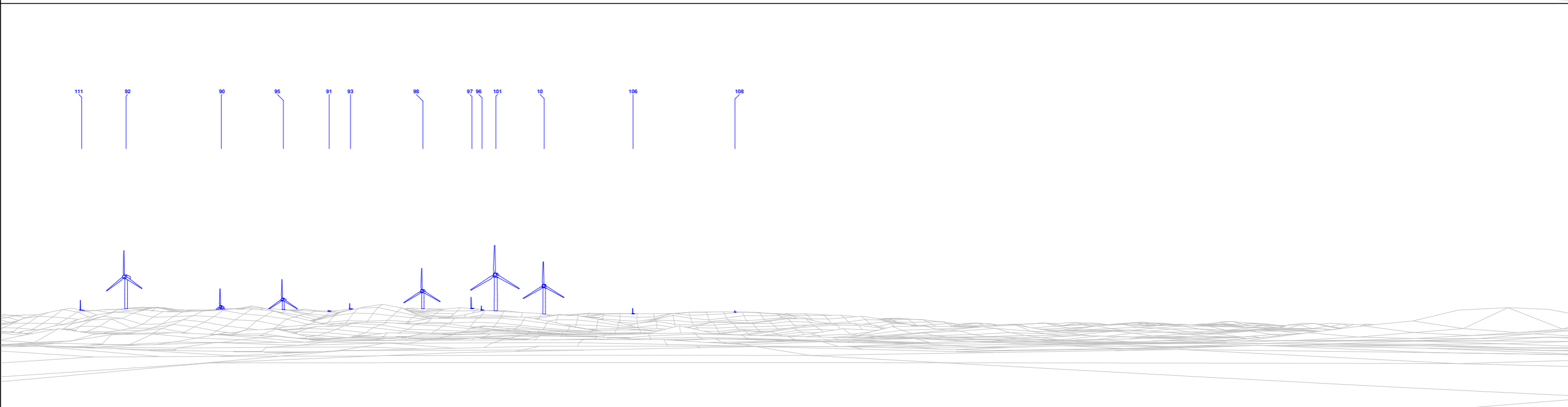


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 Originator: wisc03



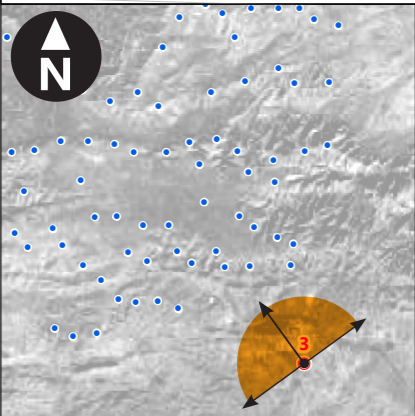
**West View**

**View flat at a comfortable arm's length**



**North View**

**View flat at a comfortable arm's length**



This figure has been based on the following parameters:  
 Turbine layout file: LZARAFSHON008.WFL  
 • Hub height: 95m  
 • Rotor diameter: 155m  
 • Height to blade tip: 172.5m

OS reference:	E625 229, N4597 936	Horizontal field of view:	90° (cylindrical projection)
Eye level:	613.5m AOD	Principal distance:	522mm
Direction of view:	279° / 9°	Paper size:	420mm x 297mm (A3)
Nearest turbine:	2,632m	Correct printed image size:	390 x 111mm

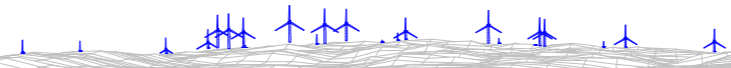
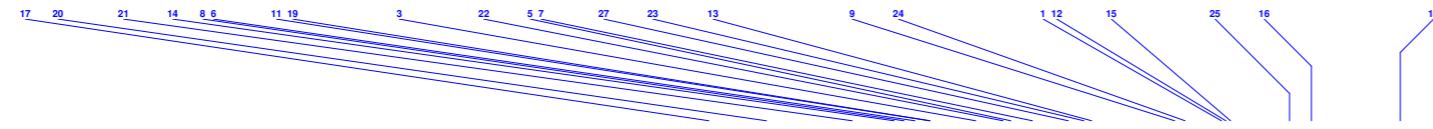
Zarafshon Wind Farm ESIA

**Figure 9-5  
 Viewpoint 3  
 South of Industrial Area / Rail Depot**

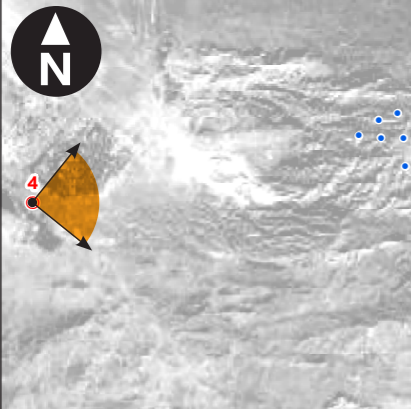
February 2022







View flat at a comfortable arm's length



This figure has been based on the following parameters:  
 Turbine layout file: LZARAFSHON008.WFL  
 • Hub height: 95m  
 • Rotor diameter: 155m  
 • Height to blade tip: 172.5m

OS reference:	E599 506, N4601 932	Horizontal field of view:	90° (cylindrical projection)
Eye level:	408.5m AOD	Principal distance:	522mm
Direction of view:	84°	Paper size:	420mm x 297mm (A3)
Nearest turbine:	8,843m	Correct printed image size:	390 x 222mm

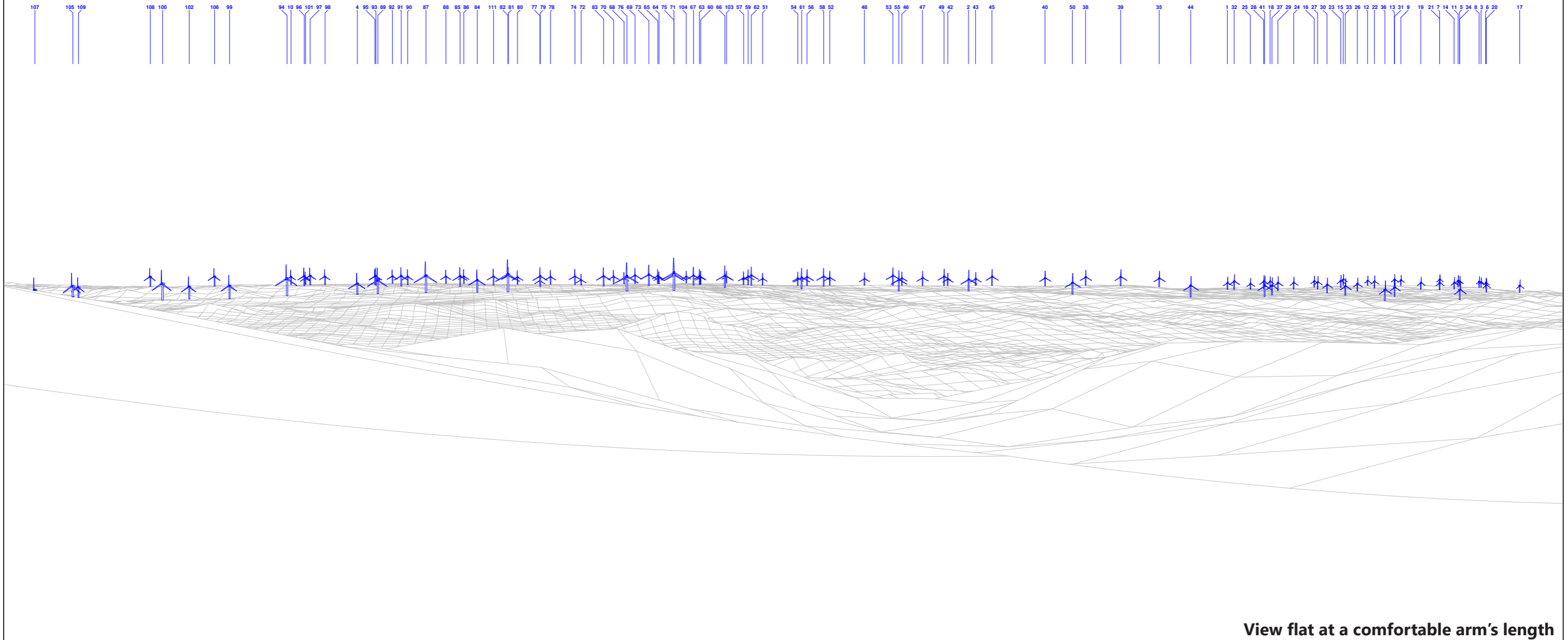
Zarafshon Wind Farm ESIA

Figure 9-6  
Viewpoint 4  
Edge of Zarafshan

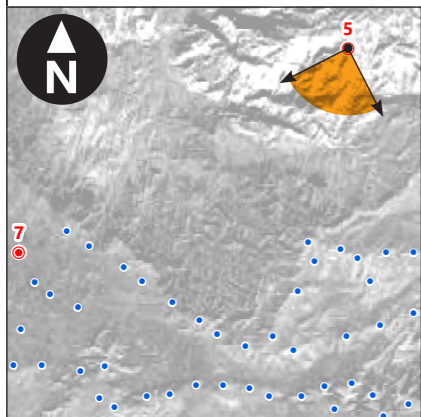
February 2022







View flat at a comfortable arm's length



This figure has been based on the following parameters:  
 Turbine layout file: LZARAFSHON008.WFL  
 • Hub height: 95m  
 • Rotor diameter: 155m  
 • Height to blade tip: 172.5m

OS reference: E622 812, N4612 770  
 Eye level: 830.5m AOD  
 Direction of view: 198°  
 Nearest turbine: 5,253m

Horizontal field of view: 90° (cylindrical projection)  
 Principal distance: 522mm  
 Paper size: 420mm x 297mm (A3)  
 Correct printed image size: 390 x 222mm

Zarafshon Wind Farm ESIA

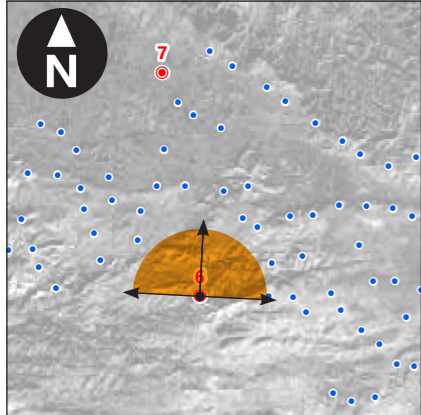
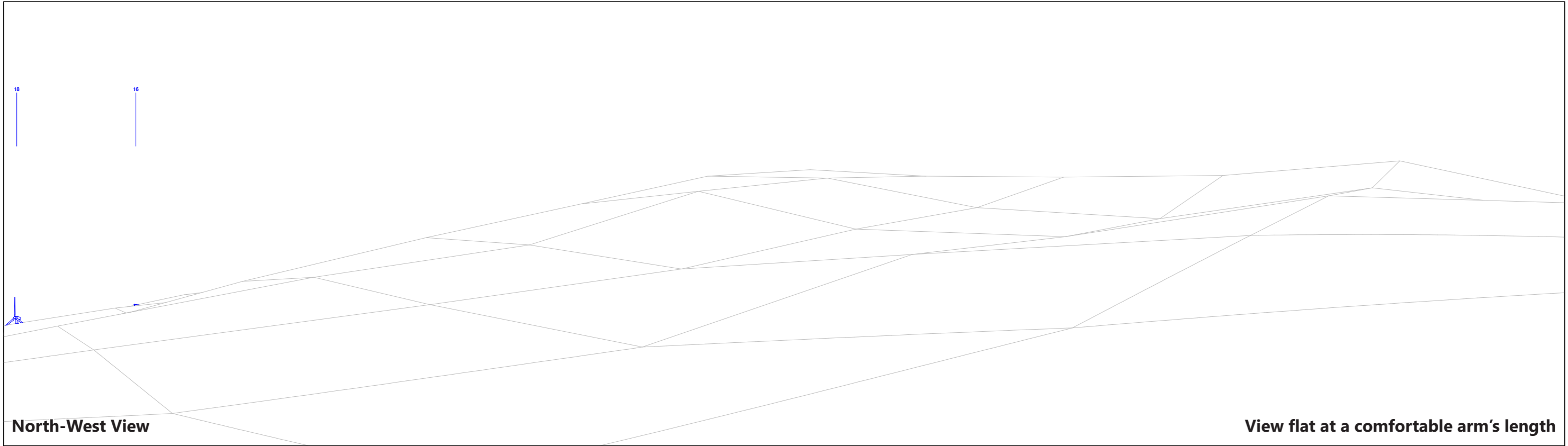
Figure 9-7  
Viewpoint 5  
High Ground to North

February 2022





Originator: wilsc03  
\\172.26.36.27\6000\_Task\2019\_Task\X\19\_00287\GLA - Zarafshon Wind Farm ESIA Uzbekistan\Modelling\GIS\2021 ArcMap and InDesign documents\43423- WOOD-XX-02-DF-SA-0017\_S3\_R8.indd



This figure has been based on the following parameters:  
Turbine layout file: LZARAFSHON008.WFL  
• Hub height: 95m  
• Rotor diameter: 155m  
• Height to blade tip: 172.5m

OS reference: E615 083, N4601 432  
Eye level: 644.5m AOD  
Direction of view: 318° / 48°  
Nearest turbine: 1,832m

Horizontal field of view: 90° (cylindrical projection)  
Principal distance: 522mm  
Paper size: 420mm x 297mm (A3)  
Correct printed image size: 390 x 111mm

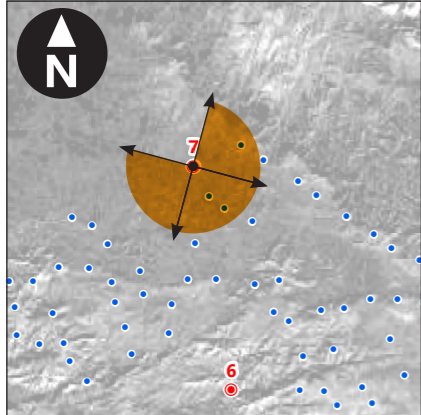
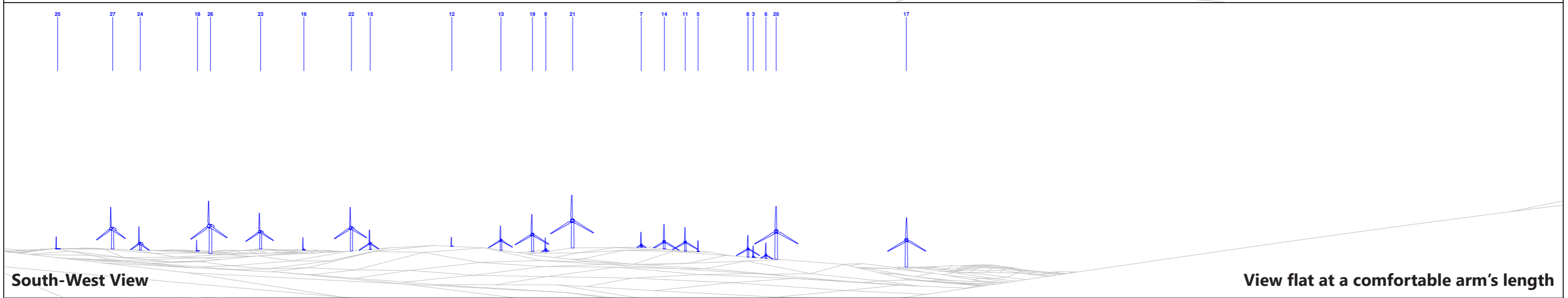
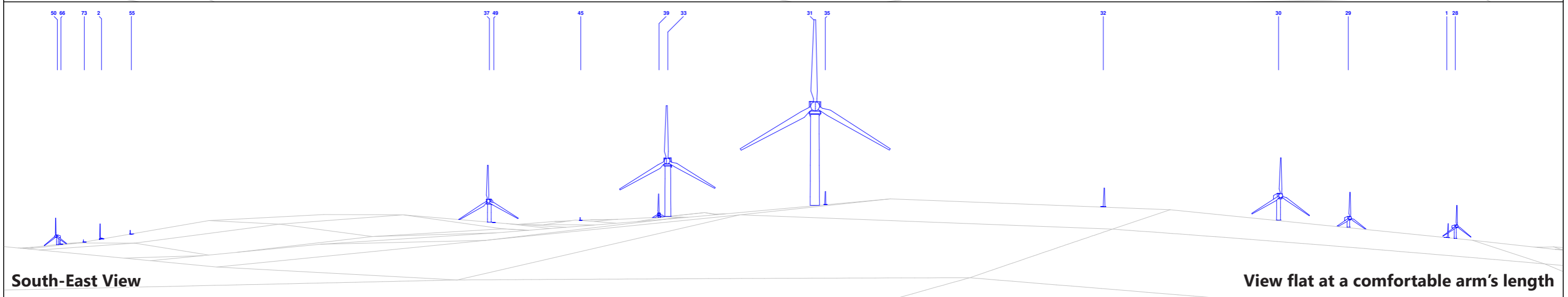
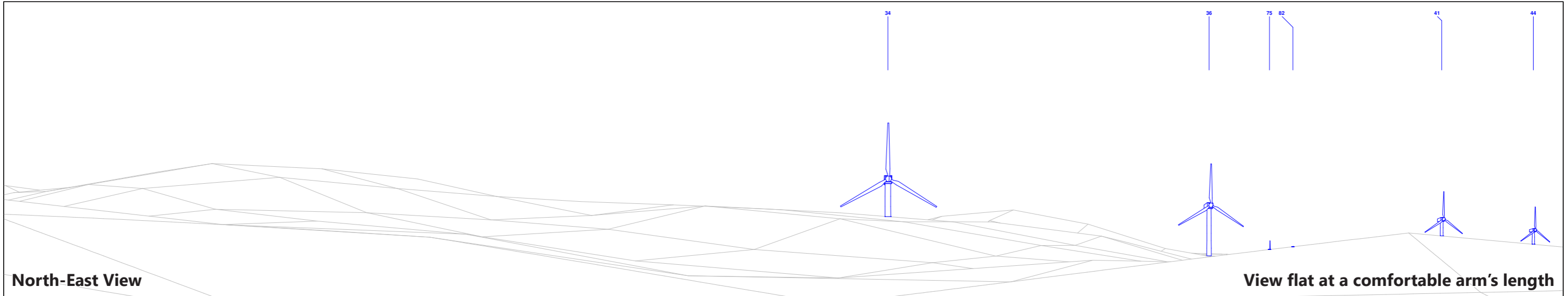
Zarafshon Wind Farm ESIA

**Figure 9-8**  
**Viewpoint 6**  
**Hotel**

February 2022  
● ● ●







This figure has been based on the following parameters:  
 Turbine layout file: LZARAFSHON008.WFL  
 • Hub height: 95m  
 • Rotor diameter: 155m  
 • Height to blade tip: 172.5m

OS reference: E614 078, N4607 363  
 Eye level: 593.5m AOD  
 Direction of view: 60° / 150° / 240°  
 Nearest turbine: 901m

Horizontal field of view: 90° (cylindrical projection)  
 Principal distance: 522mm  
 Paper size: 420mm x 297mm (A3)  
 Correct printed image size: 390 x 74mm

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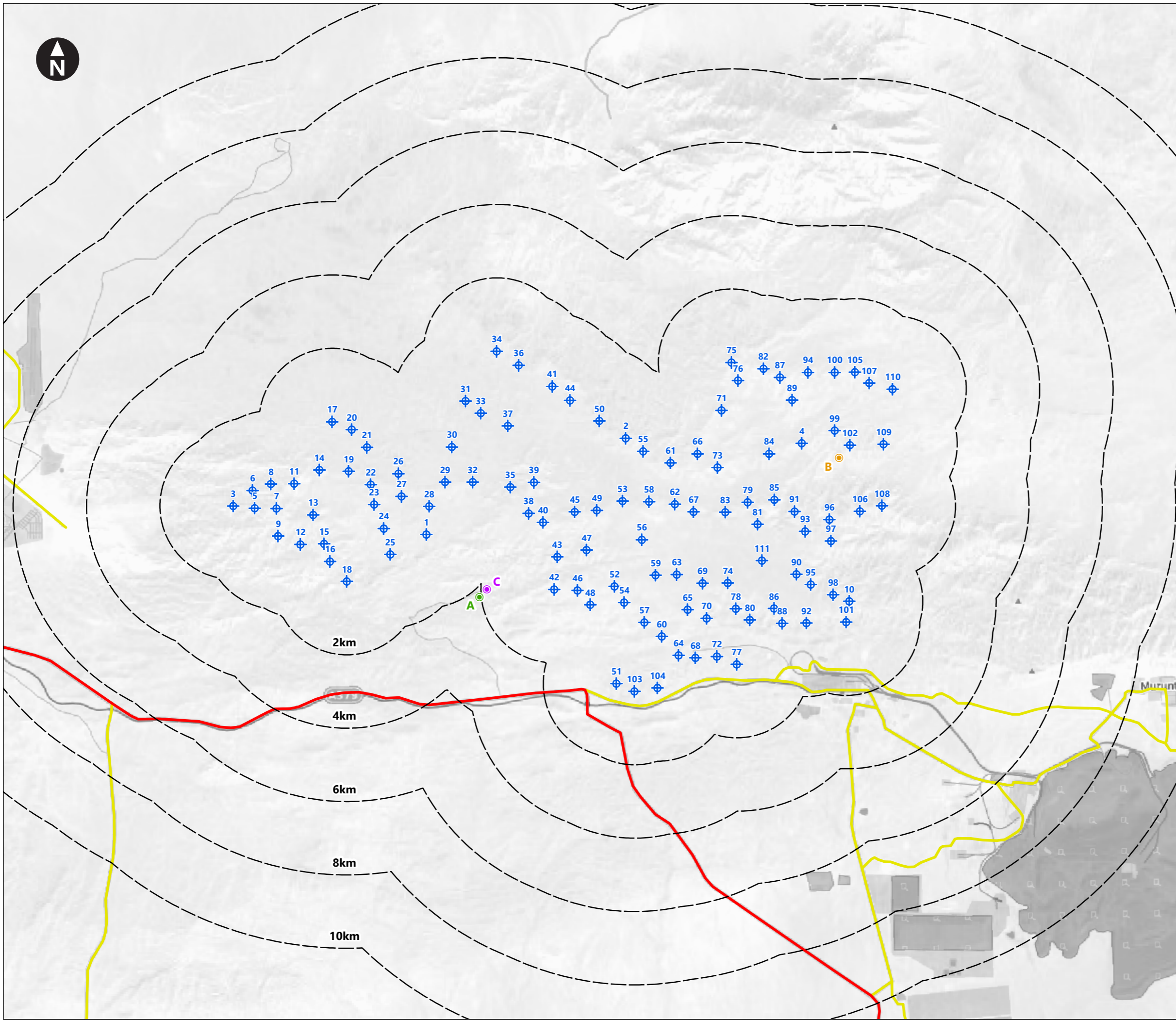
**Figure 9-9  
Viewpoint 7  
Farm Shelter**

February 2022


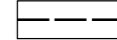





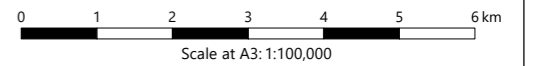


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Key

-  Proposed WTG locations
-  Lines indicating the distance from the proposed turbine locations
-  A) Religious site (Gujumli Arliyo)
-  B) Indicative location of remnants of paleo volcano
-  C) Hotel



Zarafshon Wind Farm ESIA

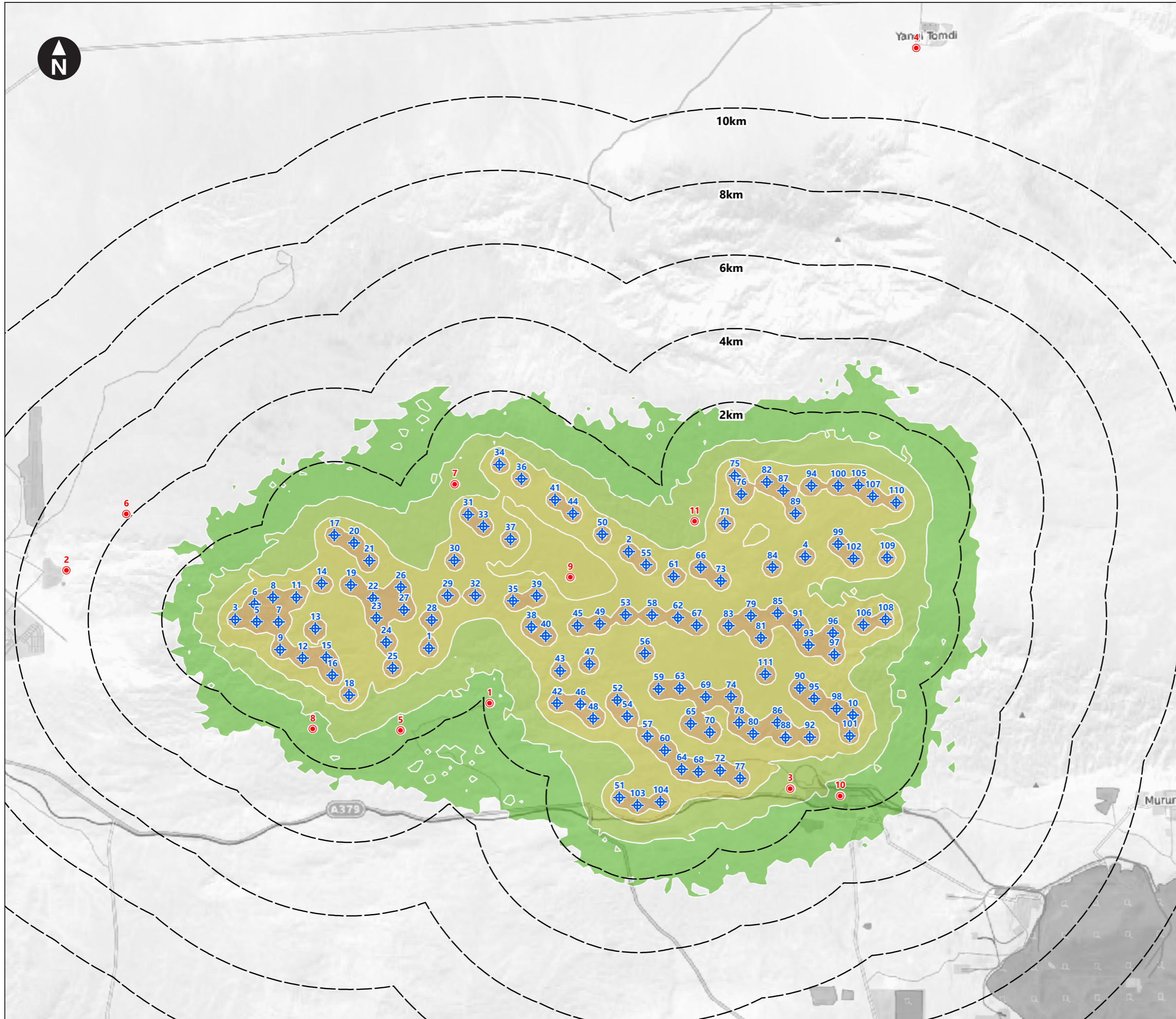
**Figure 10-1**  
**Archaeology Sites**

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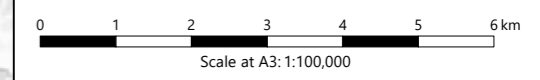
Key

- Proposed WTG locations
- Lines indicating the distance from the proposed turbine locations
- Noise Sensitive Receptors

1) Hotel  
 2) Zarafshon (east)  
 3) Besapan  
 4) Adzherekty  
 5) New Farm 1 Residential  
 6) New Farm 2 Residential  
 7) Farm - Residential  
 8) Structure 1 - Residential, 2 buildings in a compound  
 9) Residential and agricultural  
 10) Gold Mine Settlement  
 11) Ramzan City Farm

**Noise Contours**

- 35 dB (A)
- 40 dB (A)
- 45 dB (A)
- 50 dB (A)
- 55 dB (A)



Zarafshan Wind Farm ESIA

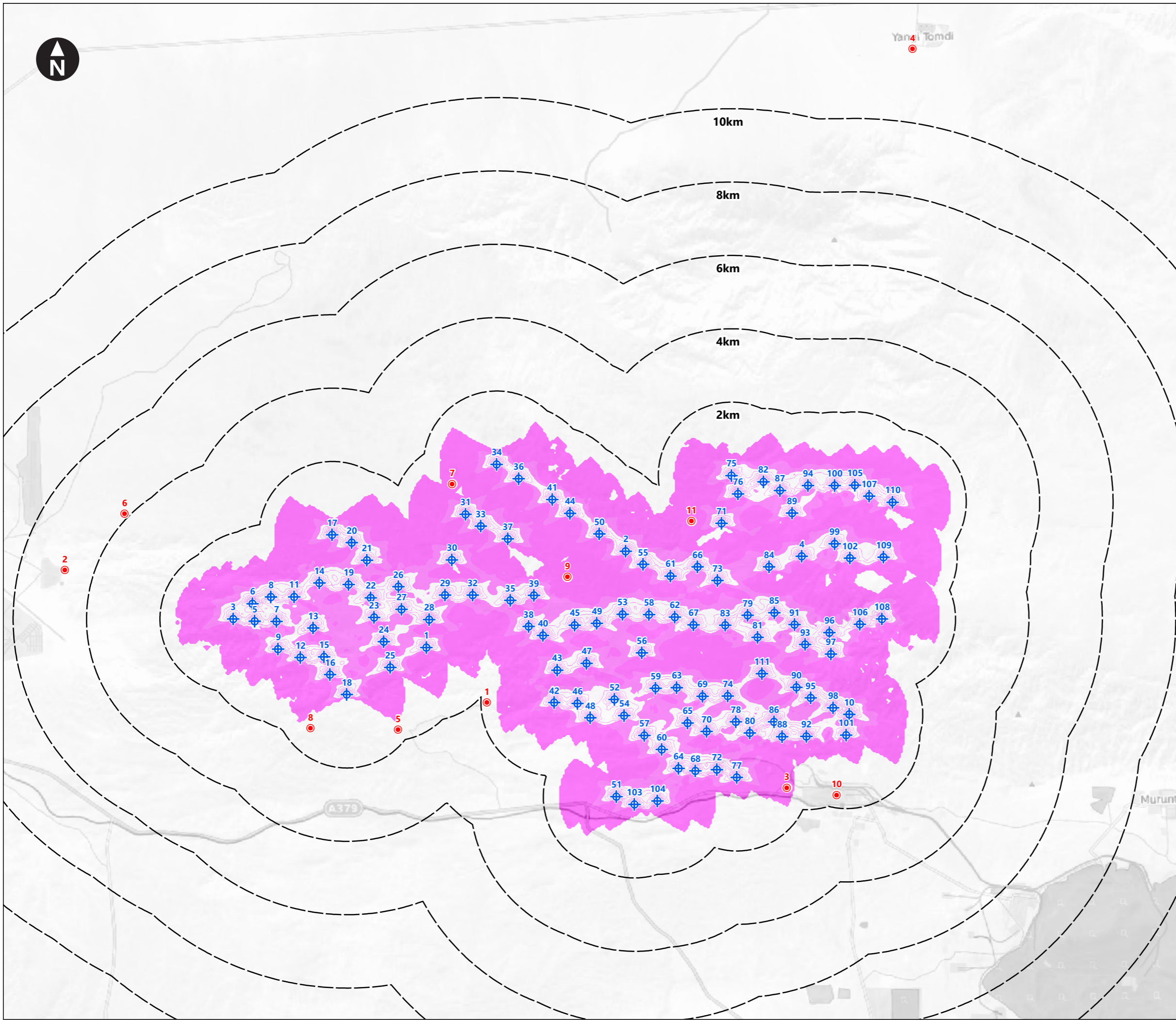
**Figure 11-1**  
Noise Sensitive Receptors

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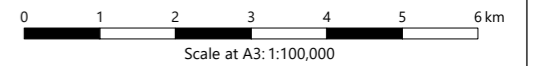


Key

-  Proposed WTG locations
-  Lines indicating the distance from the proposed turbine locations
-  Shadow Flicker Receptors

- 1) Hotel
- 2) Zarafshon (east)
- 3) Besapan
- 4) Adzherekty
- 5) New Farm 1 Residential
- 6) New Farm 2 Residential
- 7) Farm - Residential
- 8) Structure 1 - Residential, 2 buildings in a compound
- 9) Residential and agricultural
- 10) Gold Mine Settlement
- 11) Ramzan City Farm

Note: Shading represents areas predicted to experience over 30 hours of theoretical shadow flicker events per year.



Zarafshan Wind Farm ESIA

**Figure 12-1**  
**Shadow Flicker**

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