Kovačica Wind Park, Serbia

Non-Technical Summary

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Contents

1 INTRODUCTION 1

2 SETTING AND LOCATION OF WIND FARM 2

3 DESCRIPTION OF THE WIND FARM 4

5 PLANNING AND ENVIRONMENTAL IMPACTS 5

6 GREENHOUSE GAS ASSESSMENT 8

7 ENVIRONMENTAL AND SOCIAL ACTION PLAN 9

8 STAKEHOLDER ENGAGEMENT PLAN (SEP) 9

1 INTRODUCTION

This Non-Technical Summary (NTS) provides a summary of the project description, the benefits of the project, the mitigation of potentially significant adverse environmental and social impacts which have informed the development of an Environmental and Social Action Plan (ESAP) and public consultation activities. Contact information for this project is provided below.

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The wind park at Kovačica comprises 38 wind turbines (turbine model GE 2.75MW-120, each with capacity of 2.75 MW), providing a total potential power capacity of 104.5MW. Each wind turbine consists of a hollow steel tower with a generator nacelle which houses and protects the main components of the rotor blades, gear box, transformer and control systems. The turbines would be three-bladed downwind, horizontal axis wind turbines that will be 110 m to the hub and 169m to the blade tip when vertical. The turbines are connected via 33kV underground cables and junction stations which are connected to a Substation within the wind farm.

The total area occupied by the wind farm is 3,711 ha, of which approximately 4,5ha will be dedicated to the wind turbines. The remaining land will be used for agricultural, forestry and a vineyard. The land which was temporarily disturbed during the construction works will be restored. The proposed layout of the wind farm at Kovačica is shown on Figure 1.

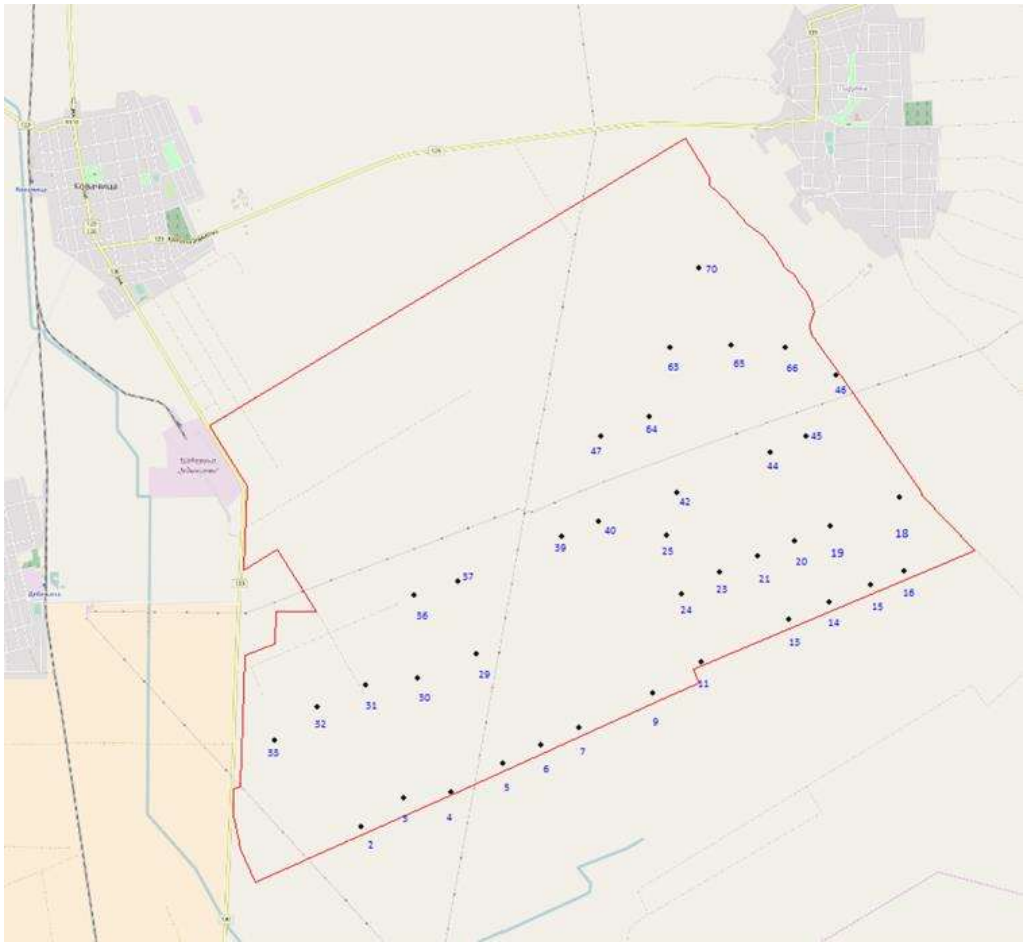

Figure 1 – Layout of Kovačica Wind Farm

2 SETTING AND LOCATION OF WIND FARM

The proposed site is located in South West Banat within the Vojvodina Province, in the north east of the Republic of Serbia (See Figure 2 below). The closest settlements are Padina (1km to the northeast), Debeljaca (1.75km to the southwest) and Kovačica (2.5km to the northwest of the development area).

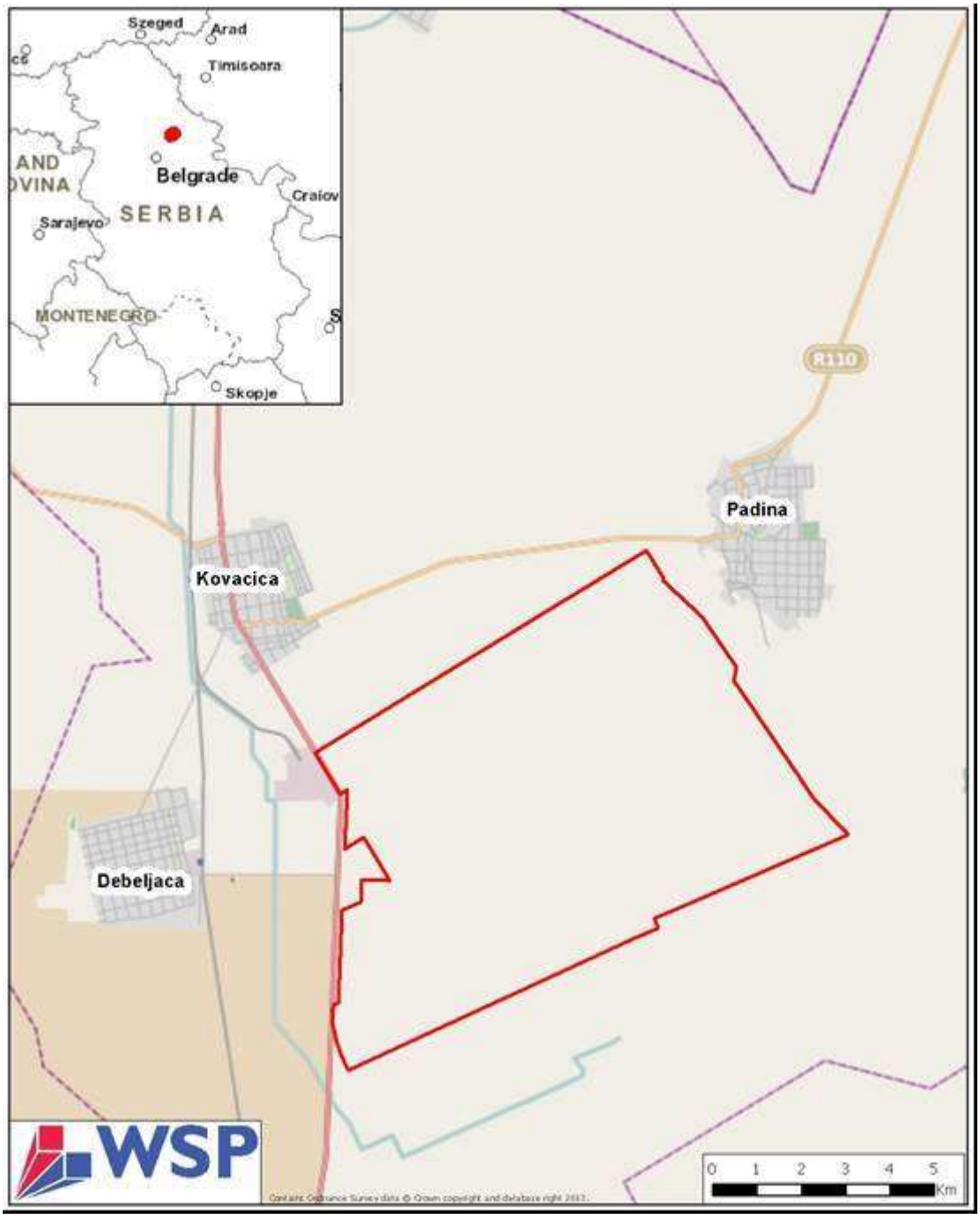

Figure 2 – Location of the Kovačica Wind Farm

The proposed site is covers an area of approximately 3,711 hectares, within the territory the Municipality of Kovačica, CA Kovačica, Debeljaca and Crepaja. The site elevation is approximately 80m above sea level in the west, sloping gently up to approximately 115m above sea level in the east.

The R111 road runs parallel with the Western boundary of the site and the Jedinstvo sugar plant is located to the west of the road.

The majority of the site area comprises intensively farmed strip fields growing agricultural crops mostly in mono culture of little ecological value, with minor areas of low woodland, orchard and vineyard. A small area of research woodland is present on the site (c.14.86 hectares in total area) and there is an area of steppe vegetation at the far eastern end of the site, and a line of acacia trees. These features have been considered and deliberately avoided in the project layout and in consultation with the Institute for Nature Protection

There are no nationally protected areas within the site boundary. There is a small area of locally designated ecological network in the northeast corner of the site, located along the Jarkovacki Road (KOB07a and KOV07b).

Figure 3 – General views of Kovačica site

3 DESCRIPTION OF THE WIND FARM

3.1 DESCRIPTION OF EQUIPMENT AND INFRASTRUCTURE

Electrawinds is installing wind turbine model GE 2.7-120 supplied by GE Energy for the production of clean electricity by converting wind energy into electrical energy. These wind turbines have a capacity of 2.75MW and the maximum height of the turbine including the rotor blade is 169m. These turbines are smaller than the generic units considered in the original EIA. The type of turbine installed is shown in Figure 3 below:

Figure 4 – GE 2.75-120 Turbine

The other infrastructure associated with the wind turbines includes a transmission substation, overhead cables, underground cables and a substation.

There are underground cables connecting the turbines to the substation station and overhead cables which connect with the national grid on site.

Access roads will also be constructed as part of the wind farm and these are also available for use by local residents and those who lease the land within the area of the site for agricultural purposes.

4 PLANNING AND ENVIRONMENTAL IMPACTS

The Kovačica Windfarm Project has been located and designed to minimise environmental and social impact. In addition, the Project will provide environmental and socio-economic benefits from the generation of clean energy, the creation of jobs in the local community and the provision of tax revenue to the Municipality. Importantly, the Project will be a key element of the national target to generate 500MW of electricity from wind power and is central to the government's target of generating 27% of the country's overall energy requirements from newly developed wind power by 2020. The use of reliable, renewable wind power technology will achieve significant greenhouse gas emissions (GHG) savings as opposed to the use of conventional power generation plant using fossil fuels, The potential impact on birds and bats is expected to be low but this must be confirmed by careful monitoring.

No agricultural use and no persons or businesses have been or will be displaced as a result of the proposed wind park scheme. Importantly, the developer will need to upgrade the network of tracks within the windfarm and these improved roads will be available for use by people farming the land.

The key issues in terms of impacts and mitigation are summarised below:

4.1 ECOLOGY

The site comprises mostly intensively cultivated monoculture agricultural fields. Other habitat types on the site include a mosaic of forest and steppe fragments located in the valley system running form the north east to the south west through the site (Figure 4). There are also two groupings of buildings within the site, one of which is abandoned.

There are no nationally protected areas within the site boundary. There is a small area of locally designated ecological network in the northeast corner of the site.

Following consultation with the Institute for Nature Conservation is was apparent that the key ecological receptors for the proposed wind farm will be birds and bats.

Specialised bird surveys indicated that the site is currently used by 110 different bird species.

The suite of ornithological studies did not indicate that the site is along the route of any habitually used migration pathway for any birds including migratory raptors, wild fowl, water fowl and storks.

Figure 5: Common kestrel

The surveys indicated that the site is used for breeding by a number of species of birds including raptors such as common kestrel, Eurasian sparrowhawk (Figure 5) and common buzzard along with owl species; long-eared owl and little owl.

With regards to bats the surveys indicated that the site is utilised by at least 15 different species including Kuhl's pipistrelle, Noctule bat, Leisler's bat, common pipistrelle, serotine bat and Savi's pipistrelle along with a number of species groups such as Myotis bats and Vespertilionidae bats.

The development will not have any effect upon any nationally designated sites for nature conservation and wildlife.

Potential impacts of the proposed development on birds and bats include habitat loss, habitat fragmentation, disturbance and displacement and direct mortality during the construction, operation and decommissioning of the wind farm.

Mitigation to avoid, reduce or compensate for the effects upon bird and bats species will be implemented by the Applicant. It is proposed that both generic and species specific mitigation is implemented for the project to reduce any effects. Specific mitigation has been suggested for saker falcon, common buzzard, Eurasian sparrowhawk, common kestrel and all bats species. Mitigation will include the development of Species Protection Plans (SPP) and the

engagement of a suitably qualified ecologist to act as an Ecological Clerk of Works to oversee construction. The SPPs will outline the protection measures to be implemented in order to limit any effect on sensitive species. It is also considered that ecological enhancement is undertaken through new habitat creation such as woodland planting to improve the ecological diversity of the site.

Residual effects of low significance will remain in respect to direct mortality and habitat loss and disturbance for saker falcon, common kestrel, common buzzard, Eurasian sparrowhawk, wader, woodland and farmland birds and bats.

Further monitoring of these species will be undertaken in order to understand the use of the site by these species. This data will then be incorporated in the environmental management plans for the windfarm ensuring that nature conservation and wildlife protection is central to the proposed development.

Through the incorporation of all the mitigation measure outlined above the proposed development will comply with the conditions set out by the Institute for Nature Conservation of Vojvodina Province.

4.2 LANDSCAPE AND VISUAL

The landscape both of the site itself and of most of South Banat district is virtually flat, very gently rolling and intensively farmed, with few trees. The area is moderately populated, with small towns and villages separated by between 5-10 km of open and almost unpopulated countryside. As a result the landscape is very open and large scale. Views are long and extensive but there are few focal points and the sky is an important element in the view. Overhead power lines criss-cross the landscape and their pylons provide the main vertical element in most views.

There are no existing wind farms within sight of the proposed development but proposals for a number of other similarly sized developments nearby. The nature of wind turbines means that there is little mitigation possible to reduce their visual impacts. The introduction of wind turbines would therefore have an impact on the landscape character of the site and surrounding visual amenity. This impact would last for the operational period of the wind farm and be reversed on decommissioning.

Figure 6: Visualisation of site from Crepaja roadside

The landscape is well-managed and tidy, but there is little of scenic interest and the countryside is a place of agricultural production rather than a place for recreational activity.

The Kovačica Wind Park would be a major new feature and a key characteristic of how the landscape is perceived locally although it would directly affect only a very small proportion of the landscape.

The wind turbines would be clearly visible in the views from a small number of houses on the edges of Kovačica, Padina, Debeljača and Crepaja, and from some of the few houses in the countryside around Kovačica and Crepaja. However, from the towns as a whole there would be little or no view of the development.

The effect of the development would be significant within approximately 2-4 km of the site. As the distance from the site increases, the effect of the Kovačica Wind Park on both landscape character and visual amenity would reduce.

4.3 NOISE & VIBRATION

An assessment of potential noise and vibration impacts associated with the construction and operational phases of the Kovačica Wind Park Development has been undertaken. The assessment focussed on existing noise and vibration sensitive receptors in the vicinity of the proposed development. The assessment considered potential impacts associated with construction noise (including construction traffic noise), construction vibration, and operational phase turbine noise.

The assessment has confirmed that the impact of noise and vibration from construction activities (including construction traffic) will be within acceptable levels at residential dwellings, by a significant margin, and the impact can therefore be considered negligible to imperceptible.

Turbine noise during the operation of the site has also been assessed It is expected that, for the vast majority of locations and periods of the day, noise levels would not exceed the prevailing background noise levels, or that the prevailing background noise level would not be subject to significant increase. The significance of effect associated with operational turbine noise has therefore been identified to be 'Negligible' to 'Minor' at worst.

4.4 SOCIO-ECONOMICS

An assessment has been undertaken of the potential effects of the wind park on communities and individuals, as well as their social and economic assets, associated with land use, employment and procurement opportunities, livelihoods, community health, safety and security, revenue generation for local communities and infrastructure.

During construction, the proposed development could have minor to moderate impacts on livelihoods resulting from crop damage however a compensation package has been agreed with the farmers. . The delivery of large numbers of turbine elements is likely to take more than six months. It is expected that residents living along the route may be disturbed by the delivery convoys. The transportation route passes through Crepaja village and the developer will be preparing a Traffic Impact Assessment to ensure that the disturbance is as low as possible.

The proposed development will also have minor negative effects in terms of loss of agricultural land or access to land, as well as in terms of impacts on community health, safety and security, accidents and nuisances associated with transport. All negative impacts can be successfully mitigated through implementation of appropriate measures, primarily compensation of any losses and full reinstatement of affected land, as well as provision of timely information to affected people, grievance management. The project will also have some positive impacts related to creation of direct and indirect employment opportunities and associated benefit to livelihoods. To further enhance these impacts, it will be important to foster local hiring and local procurement of goods and services.

During operations, negative impacts on livelihoods associated with damaged crops during repairs of wind towers will be negligible and can be easily mitigated with appropriate compensation measures. At the same time, positive impacts in relation to creation of employment opportunities will also be negligible. However, the proposed development will result in generation of revenue for the local government / communities, enabling improvement of services for local residents. That, together with possible tourism development opportunities and Electrawinds direct support of community initiatives and attraction of new investments, will contribute to further economic development in the municipality. On-going communication and consultation with local communities will be key in enhancing these benefits.

4.5 CULTURAL HERITAGE

An Archaeological fieldwork survey was undertaken at the site of the wind park and this established the presence of archaeological remains of local significance. Three areas have been identified where differing levels of mitigation are

required. These mitigation vary in different areas of the site and include limited archaeological excavations prior to construction, the presence of an archaeologist to supervise construction and maintaining a watching brief in some areas to ensure that the Institute for the Protection of Cultural Monuments in Pančevo are informed if should any features of significance be uncovered.

4.6 SHADOW FLICKER

Shadow flicker is caused by the sun passing behind a wind turbine, which creates a shadow that appears to flick on and off. This effect can cause annoyance to nearby residents. However, due to the distance between the proposed wind turbines and the closest residential properties, shadow flicker is not expected to be experienced within these properties and is therefore not considered to be an issue.

Blade or tower glint also has the potential to occur when the sun strikes a blade or tower at a particular orientation. However, as the turbines will be coated in an industry standard non-reflective paint this is not considered to be an issue.

4.7 WASTE MANAGEMENT

Waste materials generated as part of the project are likely to be minimal. Any wastes generated routine maintenance activities are removed from site by the contractor and disposed of in an appropriate manner in accordance with applicable legislation. It has been recommended that a waste management procedure is developed to ensure the disposal of any hazardous substances in accordance with Serbian Legislation.

4.8 DECOMMISSIONING

A decommissioning plan will be prepared to ensure potential impacts associated with the removal of the turbines and associated infrastructure at the end of their operational life are adequately considered.

4.9 OTHER ENVIRONMENTAL DISCIPLINES

Based on the available information no significant environmental impacts or cumulative effects are considered likely on the following environmental topics and as such no mitigation measures have been proposed in relation to these:

- ground conditions and water resources;
- air quality;
- cultural heritage;
- electromagnetic interference;
- access; and
- shadow flicker.

5 GREENHOUSE GAS ASSESSMENT

An estimate of greenhouse gas savings potential for this project has been calculated using EBRDs Greenhouse Gas Assessment Methodology where renewable energy power generation projects are assumed to displace the emissions associated with the national average grid electricity generation.

Based on 38 2.75MW wind turbines in constant use with a possible annual generation of 915.4GWh, the Kovačica wind farm will provide CO_2 emissions savings in the order of 720 kt CO2-e/yr.

The above total does not take into account emissions associated with the construction phase and other life cycle impacts and that wind turbines will not be in constant operation throughout a year.

6 ENVIRONMENTAL AND SOCIAL ACTION PLAN

An Environmental and Social Action Plan (ESAP) has been developed to set out specific environmental and social actions required to minimise impacts associated with the wind farm scheme. It is a 'live' document and will be updated on a regular basis. The ESAP has been developed to ensure compliance with Serbian regulation as well as the environmental and social requirements of the international banks that may invest in the Project.

The key considerations relevant to the development of the wind farm include the following:

- Prepare and submit reports on status of ESAP implementation and environmental, health, safety and social performance, including resolution of grievances associated with the project.
- Develop and implement an Environmental and Social Management System (ESMS);
- Implement a monitoring programme to assess the impacts to birds and bats that may be occurring during the operational phase of the wind park;
- Undertake a health and safety risk assessment of all staff job functions and activities and implement health and safety action plan covering control measures and work instructions as required; and
- Develop and implement a decommissioning plan that includes a plan for minimising impacts during decommissioning.

7 STAKEHOLDER ENGAGEMENT PLAN (SEP)

A SEP has been developed with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of the project. The plan also identifies a formal grievance mechanism to be used by stakeholders for dealing with complaints, concerns, queries and comments. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date. The SEP will also be reviewed periodically during project implementation and updated as necessary. The SEP includes the following:

- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous engagement activities;
- Stakeholder engagement programme including methods of engagement and resources; and
- A grievance mechanism.

Stakeholders could be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. The definition applied to identify the key stakeholders is:

***'any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influence must be recognised if the work is to be successful'*.**