

European Bank for Reconstruction  
and Development

**Bitola– Solar PV Plant**

Environmental & Social Assessment:  
Non-technical Summary

REP/278197/004

Final | 11 May 2021

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Job number 278197

**Ove Arup & Partners International Ltd**  
The Arup Campus  
Blythe Gate  
Blythe Valley Park  
Solihull B90 8AE  
United Kingdom  
[www.arup.com](http://www.arup.com)

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		Name	Mark Barnard	Colette Curran	Colette Curran
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## Bitola Solar PV Plant

JSC Elektrani na Severna Makedonija (ESM), the Macedonian public electricity generation utility, is proposing to construct and operate a 20MW Solar Photovoltaic (PV) Power Plant on ~40ha of agricultural land under its ownership, adjacent to the REK Bitola thermal power plant and Suvodol opencast coal mine in Novaci Municipality, the Republic of North Macedonia (the Project).

A Preliminary Design for the Project is being prepared and has been subject to an Environmental and Social Assessment (ESA) in accordance with EBRD Environmental and Social Policy 2019. This Non-technical Summary (NTS) summarises the findings of the ESA.

The development of the Project aims to support the Government of North Macedonia's energy decarbonisation targets by contributing an estimated carbon reduction of 27,600 tonnes of Carbon Dioxide Equivalent per year.

Figure 1: Project location in the Pelagonija Valley



## Location

The Project site is currently used by ZIK Agricultural Combine for cereal crop production.

It is bordered to the north by the state road R1311, a buried water supply pipeline for REK Bitola and a drainage channel that forms part of the local drainage network for flood protection.

Beyond the road, power plant and mining complex the land use is agricultural.

There are a number of small villages locally, and the closest (Dolno Aglarci and Dobromiri) are ~2.5km away. There are no other properties in the vicinity of the Project site.

Figure 2: Project Site

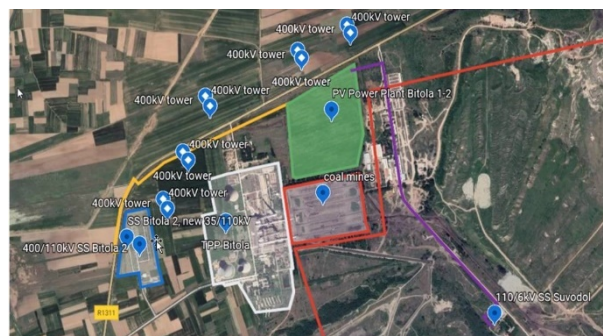


## Alternatives

Three alternative sites on ESM lands around REK Bitola were considered for the Project in addition to the Project site. The area is not suitable for wind power. The selected Project site was found to be one of two preferred options from an environmental and social perspective.

ESM is still to decide how the solar project will be connected to the grid. Options being considered are cabling or overhead line to the Bitola 2 substation (1.6 km) or a 110/35kV transformer located in the Suvodol mining complex (2 km).

Figure 3: Grid Connection Options



No environmental or social issues have been identified that would prevent any of the options. ESM is committed to assessing and mitigating

risks of the grid connection once a preferred option is selected.

## Construction

Construction is expected to take ~9 months.

Infrastructure to be constructed on the Project Site is expected to include an array of fixed solar panels mounted on metal frames, small Project control and electricity inverter buildings, access road and water supply (for cleaning).

Figure 4: Example PV array



Construction ground works will include limited site levelling, trenching for cables / pipes, foundation excavations and road preparation. Excavators and mini excavators will be used.

The solar panel frames will be fixed to steel piles, driven into the ground (~2m) by a small piling rig.

Small quantities of concrete will be required for foundation works and there will be limited oil and lubricant storage and use on the construction site.

Construction wastes will primarily comprise non-hazardous packaging wastes.

## Operation & Maintenance

The most frequent maintenance activity will be cleaning of the solar panels. Wet or dry-cleaning options are possible. Wet cleaning if selected, requires approximately 35,000 litres of water per cycle and the cleaning system is mounted on a tractor or truck.

Very small quantities of oil, grease and diesel will also be required for regular maintenance.

Wastes are expected to be small but may include damaged solar panels which contain potentially harmful substances.

## Decommissioning

Decommissioning will involve removal of the infrastructure. Potential impacts will be similar to construction.

Solar panels include harmful materials and ESM is committed to safe recycling / disposal of these according to good practice at the time.

## Permitting

A Spatial Planning Conditions Elaborate has been issued and Environmental Protection Elaborate approved. ESM is progressing with obtaining remaining permits required for construction and operation of the Project, which include the State Urban Planning Document, Construction Permit and approval from the Ministry of Economy.

## Pollution Prevention and Control

Emissions of pollutants to soil, water and air (including from e.g. oil spillages or erosion of soil by wind or rain) from Project construction activities, including wastes is possible but expected to be small and localised.

The Project is also located in industrial surroundings and, whilst noisy activities will take place on site (such as piling), there are no properties close by that could be adversely affected.

However, there are sensitive biodiversity features very near to the Project Site and construction workers could also be affected if management of pollution is not carried out effectively.

ESM is therefore committed to developing a series of plans that will set out how pollution risks will be avoided during construction or if avoidance is not possible (such as in the case of an accident), minimised in accordance with Good International Practice.

## Resource Use

ESM is committed to assessing the feasibility of options to minimise and measure water consumption during operations as part of the detailed design.

## Glint & Glare

Solar farms have the potential to cause nuisance or hazard to people nearby by reflecting the sun's rays. Potential safety risks to users of the local road next to the site are not expected as the solar panels will be angled away from the road; there are no other residential properties nearby that could be affected.

## Road Safety

There will be deliveries of machinery and materials, and transfer of construction workers to site each day. There will be a small increase in vehicles using local roads, and more frequent use of the junctions to the REK Bitola site.

If a grid connection to Bitola 2 substation is made by underground cable, it is possible that road works on the R1311 will be needed.

To minimise safety risks and nuisance to the public and Project workers, ESM is committed to assessing traffic risks and implementing road and traffic safety measures in accordance with Macedonian legislation and Good International Practice.

## Natural Hazards

The Project is located in a seismically active area and ESM is committed to designing the Project in accordance with Macedonian legal regulations for seismic protection.

## Land Needs

The company presently using the land that the Project will be situated on will be consulted and

a protocol of land exit signed in accordance with Good International Practice.

If the Project grid connection is made to the Bitola 2 substation, ESM is likely to require temporary access and to place infrastructure permanently in land that it doesn't own. ESM will agree land leases and wayleaves and make associated payments (including for any lost crops) in accordance with Macedonian law and Good International Practice.

## Biodiversity

Biodiversity surveys were undertaken and research into species that are likely to be present at the Project site was carried out.

These studies identified species of conservation value (and protected nationally or under EU Directives) relevant to the Project site.

Habitats on and surrounding the Project site that could be affected by the construction and operation of the Project were surveyed and biodiversity specialists assessed whether they were important (and being used or could be used) by the species of conservation value.

Figure 5: Watercourse & Riverside Habitat



The assessment concluded a number of habitats on or close to the Project site were 'Critical Habitat' for a number of amphibian and reptile species listed on Annex IV of the European Union's Habitats Directive or the National Red Lists of Amphibians and Reptiles. These species are listed below.

**Critical Habitat trigger Species identified on site***Amphibians:*

- Common newt
- Macedonian crested newt
- Green toad
- European tree frog
- Marsh frog
- Eastern spadefoot

*Reptiles*

- Hermann's tortoise
- Glass lizard
- Balkan green lizard
- Green lizard
- Erhard's wall lizard
- Common wall lizard
- Whip snake
- Smooth snake
- Grass snake
- Dice snake
- Nose horned viper

The 'Critical Habitats' important to these species include the watercourses and river-side 'riparian' habitats close to the Project site boundary, and the Eastern European poplar willow forests and blackberry (*rubus*) scrub present in patches around the edges of the Project site and its boundary.

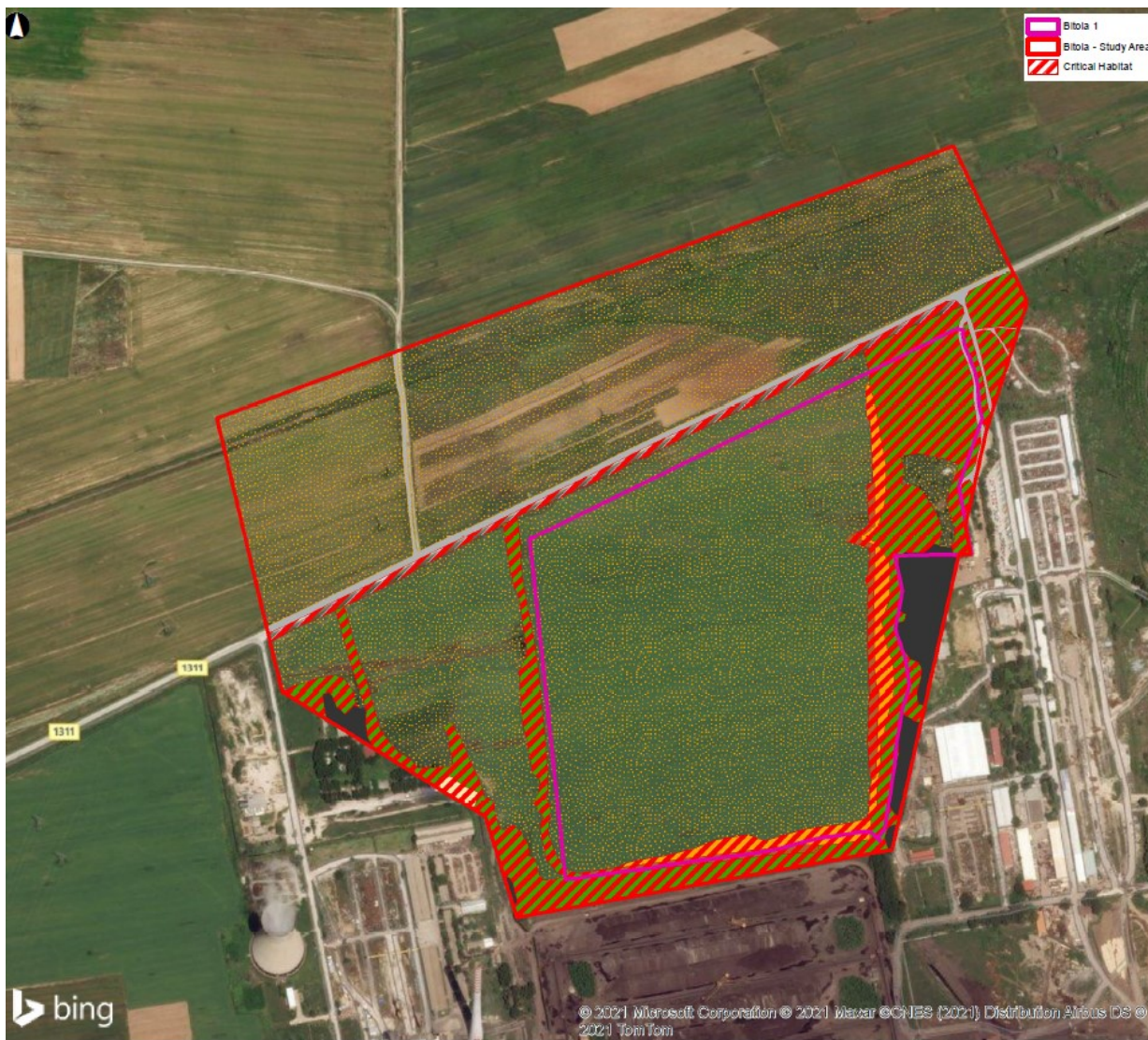
A map showing the location of these habitats is provided on the following page.

The Project is not expected to have any potential negative impact on bird species of conservation value unless an overhead line is selected for the grid connection. If that option is progressed ESM will carry out an environmental and social assessment of the line and identify mitigations for birds.

ESM is committed to implementing the following actions to manage potential biodiversity impacts:

- Avoid the watercourse and riverside habitats
- Amend the Project site boundary to avoid areas of Critical Habitat as far as possible
- For any Critical Habitat not avoided, plant replacement habitat in a suitable location for the area lost plus 10%
- Undertake vegetation clearance outside of breeding season for species of conservation value.
- Employ an ecological specialist to undertake pre-construction checks for species of conservation value and move any individuals found to a safe place.
- Undertake habitat reinstatement post-construction to maximise the potential of the terrestrial habitats under and adjacent to the solar PV cells for the species of conservation value.
- Implement Good International Practice pollution prevention to avoid contamination of habitats including wetlands.
- Design security fencing with access / migration gaps to allow free movement of species.
- Biodiversity monitoring post-construction to confirm mitigation was effective.

Figure 6: Critical Habitats



## Communications

ESM has identified the stakeholders who are likely to have an interest in the Project and has developed a Stakeholder Engagement Plan setting out who, how and when it will communicate with them. A copy of the Stakeholder Engagement Plan is available at:

[www.esm.com.mk](http://www.esm.com.mk)

Enquiries or grievances about the Project can be made to:

**Attention:** Office of General Manager and  
Julija Simjanovska – Environmental

**Address:** 11 October str. 9, Skopje

**Tel/Fax:** + 02 3149 121

**E-mail:** [contact@elem.com.mk](mailto:contact@elem.com.mk);

[julija.v.simjanovska@elem.com.mk](mailto:julija.v.simjanovska@elem.com.mk) (in cc)

A complaint form and overview of the complaints handling process for the Project is provided on the next page.

Full Name and Surname: <i>(you can remain <u>anonymous</u> if you prefer or request not to disclose your identity to the third parties without your consent)</i>	
Contact information: Please mark how you wish to be contacted (mail, telephone, e-mail)	By Post: (Please provide postal address) _____ _____ By phone: _____ By e-mail: _____
Preferred language of communication:	Macedonian Other: _____
Description of incident/grievance: What happened? Where did it happen? Who did it happen to? What is the result of the problem?	
Date of incident/grievance:	One-time incident/grievance (date _____) Happened more than once/how many times? (_____) On-going/currently experiencing problem
What would you like to see happen to resolve the problem?	
Signature:	Date:
Please return this form to: Office of General Manager and Julija Simjanovska – Environmental email: <a href="mailto:contact@elem.com.mk">contact@elem.com.mk</a> ; <a href="mailto:julija.v.simjanovska@elem.com.mk">julija.v.simjanovska@elem.com.mk</a> (in cc) Tel/Fax: + 389 (0)2 3149 121	Address: Elektrani na Severna Makedonija ul. 11 Oktovmri 9, 1000 Skopje Republic of North Macedonia

