

## Environmental and Social Data Sheet

*(Further guidance is contained in the Environmental and Social Practices Handbook)*

### Overview

Project Name: KHI SOLAR ONE TOWER PROJECT  
 Project Number: 2010-0589  
 Country: South Africa  
 Project Description: Construction and operation of a greenfield solar power tower with a 50 MW net power generating capacity.

EIA: Required ☒  
 Not required ☐

### Summary of Environmental and Social Assessment, including key issues and overall conclusion and recommendation

The project will apply a heliostat/receiver technology, with a 200 m high tower and a solar field area of around 300 ha. The project site is located ca. 15 km southwest of Upington, a town in the province of Northern Cape, in Northwest South Africa.

If the project were located in the EU, it would fall under Annex II of the EIA Directive 2011/92/EU, requiring the competent authority to determine the need for an Environmental Impact Assessment (EIA). Under South African Law, the project requires an EIA, including initial scoping and public consultation.

According to the EIA, environmental project impacts relate to effects on local vegetation and avifauna, water consumption and visual and noise impacts. They have been adequately mitigated, and are expected to be minor if the mitigating measures required in the environmental permit (Record of Decision, RoD) are effectively implemented.

The project does not involve any physical or economic displacement of local populations. Project social impacts are deemed to be overall positive, given the high levels of unemployment and poverty and the low levels of education in the surrounding areas, and the employment opportunities this project represents, in particular for low to semi-skilled workers. Negative social impacts such as those related to the presence of construction workers in the area are adequately mitigated.

### Environmental and Social Assessment

The CSP plant will emit significantly less gaseous and pollutant emissions, including greenhouse gases, than conventional thermal power plants. The current power plant mix in South Africa is dominated by coal. The CSP plant's construction and operation may represent an important employment opportunity for the communities around the project site that are suffering from high unemployment and limited commercial alternatives.

The EIA process has already been completed and an environmental permit was granted in April 2011. Public consultation was performed during the initial scoping phase and throughout the EIA process. It included inter alia, the identification of potential stakeholders and their issues and concerns related to the project, a 30-day public review period (for both the scoping and EIA reports), focus group meetings, a public meeting advertised in the local press, and written correspondence. In addition, a stakeholder meeting was held to provide feedback on the EIA findings. The EIA scope comprised a plot of land of 600 ha, which comprised the project (including its 132 kV overhead tie-line of ca. 5 km) and two other solar power plants not included in the project.

The project's main environmental impacts include effects on local vegetation and avifauna. The environmental study indicated potential environmental impacts on local vegetation including a 3 m tall threatened Quiver Tree and up to 19 protected Shepherd's Trees within the plot of land. The Quiver Tree is species of aloe indigenous to Southern Africa, specifically in the Northern Cape region and in Namibia. This species can be used as an ornament in gardens. Given its slow growth and rarity, tall specimens are quite valuable. The Quiver Tree was onsite more than a year ago, but it disappeared before the promoter took effective possession of the land in January 2012. Before this date, site access was not controlled by the promoter. Given the size of the specimen, the promoter believes it may have been stolen and has reported this situation to the relevant authorities, including the environmental authorities. Proposed mitigating measures for the impacts on the protected Shepherd's Trees on the site are to obtain permits from the environmental authorities before any protected tree is cleared. However, the promoter stated that none of the trees are within the projects' footprint, thus the impact is considered to be limited.

The potential effects on avifauna are the possibility of collisions of three threatened bird species with the connection tie-line are also likely to be limited after installing bird deterrent mechanisms and special marking devices in the overhead line and associated structures. Other environmental impacts included water consumption of ca. 1 Mm<sup>3</sup>/a. Although the project water consumption is minimal compared to other local usages such as irrigation, given the scarcity of water in the region the water authority (Department of Water Affairs) requested for alternative cooling options to be considered. This request and the relatively high investment needed for the water adduction infrastructure prompted the promoter to design a dry-cooling system for the project. This system reduces water consumption to ca. 165 000 m<sup>3</sup>/a, or about 6 times less water than a comparable wet-cooling system, which is the standard solution implemented in CSP plants to date.

The project's residual environmental impacts will be mainly visual. The central tower with a height of 200 m and the 10 m high flat mirrors covering 230 ha will be visible from all directions up to a distance of 16 km. The operation of the plant is expected to have a limited environmental impact. Noise will be kept within permitted limits and no atmospheric emissions are expected, as the plant will not use any auxiliary fuel.

The nearest site of natural interest is the Spitskop Provincial Nature Reserve, a 5 600 ha hunting reserve about 16 km from the site. The reserve is privately owned and used for recreational purposes, in particular for sighting local game species such as springbok or gemsbok. It is to be noted that none of species hosted by the reserve are endangered, vulnerable or near threatened, according to the IUCN Red List.

The project does not involve any physical or economic displacement of local populations. Project social impacts are deemed to be overall positive, given the high levels of unemployment and poverty and the low levels of education in the surrounding areas, and the employment opportunities this project represents, in particular for low to semi-skilled workers. Negative social impacts such as those related to the presence of construction workers in the area are adequately mitigated with the proposed measures inter alia, undertaking to engage local low to semi-skilled workers whenever possible and put in place a HIV/AIDS awareness program for all construction workers.

The project is expected to create 730 person-years of temporary employment, an average of 365 posts, peaking at 800 posts, during the 24 month construction period. Approximately, 80% of these jobs are expected to be filled by RSA citizens, of which up to 50% will target local unskilled labour. Permanent employment is expected to be 35 full-time jobs, of which more than 90% are expected to be RSA based citizens. In addition during its operation, the project is expected to outsource 40-60 full-time jobs to local suppliers and contractors for services such as cleaning, canteen, waste collection, gardening, vehicle rentals, security, etc. Indirect employment is expected to contribute to another 90 local full time job equivalents per annum. Under the REBID tender process promoters are required to submit a detailed economic development plan for evaluation. The promoter of this project has worked closely with representatives within the local communities, municipalities, suppliers and vendors to identify and maximise economic development opportunities. Up to 29% of the project company will be owned by a public sector national development finance institution that promotes economic growth and industrial development in South Africa. A special purpose

community trust will own 20% of the project company. The Trust will be used exclusively to promote the economic and social welfare of the population of the local communities.

### **EIB Carbon Footprint Exercise**

Absolute CO<sub>2</sub> emissions from the project in a standard year of operation will be zero.

The baseline emissions are calculated assuming that electricity generated by the project will displace generation from a mix of existing thermal power (coal) and new generation (coal and renewable). Compared to this baseline the project is estimated to save 181 kT of CO<sub>2</sub>e/yr.

The loan is expected to cover about 23% of total investment outlays. Pro-rated to this amount, the absolute emissions will be zero and estimated emission savings will be 42 kT of CO<sub>2</sub>e/yr.