

Bat Impacts Proposal for Phase three of Goedehoop Soventix Solar Project

The impacts of solar project developments on bats remains largely unknown. Collection of baseline data of bat activity in areas demarcated for solar projects are important for understanding the impacts of these developments on local and potentially regional biodiversity. The layout of the solar footprint could fall into sensitive bat areas which should be avoided or mitigated. Limited data has indicated that bat activity over a solar development was lower than over the natural areas. The impacts of the development extends beyond the alteration of habitat and available resources that would affect bat activity, abundance and diversity (Korine et al. 2016) but during the operational phase, the impacts of artificial light pollution (flood lights for security reasons), associated with the solar project, could change behaviour and abundances of bat species within the bat community including alteration of commuting routes and preferred foraging habitat (Stone et al. 2015, Voigt et al. 2020).

The potential of bats to collide with solar panels is largely speculative. Follow up monitoring after the development of the solar project is important to monitor the effects of the solar development i.e. follow up monitoring could provide evidence for or against the theory that bats may attempt to drink from the panels and or collide with them.

The potential impacts on bats concerning the first two phases of the proposed Goedehoop Soventix Solar Project has been previously investigated. The investigation into the third phase of the development needs to be undertaken according to Appendix 6 of the EIA Regulations 2014.

The following activities in relation to Phase 3 and infrastructure development of Phase 1 & 2 would trigger a bat scoping study (SABAA-South African Bat Assessment Association):

- Any disturbance or destruction of natural rocky outcrops and or roost type structures, both natural and anthropogenic.
- Disturbance within 500m of structures, above and below ground, that could be used as bats as roosting sites, natural and or anthropogenic.
- Disturbance or destruction of rivers and wetlands, or within 200m of riparian areas.

Due to the wet marshy conditions of the veld and prevailing weather conditions a deviation in the original methodology is presented below. Driven transects were not possible during the beginning of April 2022.

Three bat detectors have been placed centrally in each core area of potential development. One SongMeter SM3 with a SMM-U1 ultrasonic microphone and two SM4Mini bat detectors (Wildlife Acoustics, Inc.) to passively monitor bat activity over the proposed development area. Kaleidoscope Pro (Wildlife Acoustics, Inc.) will be used to convert the recorded sound files (.wav) into zero-crossing files (ZC). Bat call analysis will be done using a combination of AnalookW (Chris Corben) Kaleidoscope Pro. Calls will be initially filtered based on a minimum of four pulses per 10 seconds within a call. Bat calls will be classified to species level using self-designed filters in AnalookW based on call parameters from Monadjem et al. 2020. All calls will be manually checked and adjusted if any calls are incorrectly identified by the filters. When considering bat activity over a given area, due to the bat detectors being stationary, to lessen the bias of a single individual being recorded multiple times and over-representing activity, all

bat passes will be standardised to Activity Index (AI) based on Miller (2001). The data will be presented as activity index (AI) per species in each “active” minute interval.

The following objectives will be met from the survey:

- All species recorded in the area will be identified and their association with specific habitat types will be described.
- The potential impact of the development on bat populations in the area will be investigated.
- Bats of conservation importance will be identified if present but also the potential of their occurrence.
- Areas of importance to bats will be identified, buffer zones indicated and mitigation measures suggested to be put in place.

References

Korine, C., Adams, R., Russo, D., Fisher-phelps, M., Jacobs, D. (2016). Bats and water: anthropogenic alterations threaten global bat populations. In: Voigt, C., Kingston, T. (eds) *Bats in the Anthropocene: Conservation of bats in a changing world*. Springer, Cham. https://doi.org/10.1007/978-3-319-25220-9_8.

Miller, B.W. 2001. A method for determining relative activity of free flying bats using a new activity index for acoustic monitoring. *Acta Chiropterologica* 3: 93–105.

Monadjem, A., Taylor, P.J., Cotterill, F.P.D. and Schoeman, M.C. 2020. *Bats of Southern and Central Africa: A Biogeographic and Taxonomic Synthesis, Second Edition*. University of Witwatersrand Press, Johannesburg.

Stone, E.L., Harris, S., Jones, G. (2015). Impacts of artificial lighting on bats: a review of challenges. *Mamm. Biol.* 80:213-219. <https://doi.org/10.1016/j.mambio.2015.02.004>.

Voigt, C.C., Scholl, J.M., Bauer, J., Teige, T., Yovel, Y., Kramer-Schadt, S., Gras, P. (2020). Movement responses of common noctule bats to the illuminated urban landscape. *Landscape Ecol.* 35:189-201. <https://doi.org/10.1007/s10980-019-00942-4>.

Plan of Study for Phase 03 of Goedehoop Soventix Solar Project

Date	Time Period	Task	Progress
01 April 2022 (Arrival)	Sunset - ~ 4 hours	Driven Transect covering footprint of Phase 03 development	Terminated due to prevailing veld and weather conditions
02 April 2022	Sunset - ~ 4 hours	Driven Transect.	X
03 April 2022	Sunset - ~ 4 hours	Driven Transect. Potential roosting site inspections during the day.	X Potential roost inspections completed.
04 April 2022	Sunset - ~ 4 hours	Driven Transect.	X
05 April 2022	Sunset - ~ 4 hours	Transect	X
06 April 2022 – Departure from site			
01 April – Installation of three bat detectors across the site. 14 April 2022 – Decommissioning of bat detectors			Passive data collection initiated.
May 2022 – Data Analysis			
June – 15 July 2022 – Report writing & initial report submission			
01 August 2022 – Final report submission with any queries addressed			



Laephotis capensis