

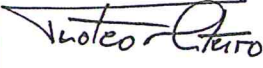



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0 CHANGE CONTROL

Version	Date	Description
00	06/03/2015	Initial Edition
01	13/11/2015	Allow use of herbicides. Remove the chapter about vegetation development.

1 OBJECTIVES AND SCOPE

The following document describes rules and resources existing in EDP Renewables Portugal to adequate management of vegetation in Solar Photovoltaic Plants owned by EDP Renewables Portugal and which are included in the in the EMS scope set out in the file *“Facilities in the EMS scope”*.

This procedure was developed according to the procedure: EXPR-GLB_TSO&M-SPV-00023 *“Vegetation Control”*, and will hereon act as an addition to this document regarding all related activities to vegetation control in PV Plants in Portugal.

2 REFERENCES

- ISO 14001:2004 standard.
- EMS Manual.
- EXPR-EU/EMS-GEN 00007 *“Operational control, monitoring and measurement”*.
- EXPR-GLB_TSO&M-SPV-00023 *“Vegetation Control”*

3 DEFINITIONS

- **“Biowaste”**: «biodegradable waste originated from gardens, parks, etc; as well as biodegradable waste originated from kitchens and the food industry » in DL 178/2006, de 5 de Setembro.

- **Green Waste:** biodegradable waste composed mainly by cellulose and predominantly originated from pruning and cleaning activities in gardens, parks and the like.
- **Waste:** «any substance or object disposed or which its owner intends to dispose of...», in DL 178/2006, de 5 de Setembro.

4 ABBREVIATIONS

- **EDPR PT:** EDP Renewables Portugal.
- **PV:** Photovoltaic Panel.
- **SP:** Operation and Maintenance Service Providers.
- **WTF:** Waste Transfer Note.

5 PROCEDURE

Vegetation control is an important activity for Solar Photovoltaic Plants due to a number of reasons.

- **Accessibility** – the uncontrolled growth of vegetation in the facility's area restricts general accessibility of service providers and other parties, and also conditions maintenance and transport activities in general;
- **Soil erosion** – the existence of vegetation is generally associated the promotion of soil cohesion and aggregation, due to both the plant's roots and the decrease of direct exposure to erosive factors;
- **Production** – the growth of some species of vegetation may lead to the decrease in energy production efficiency, due to the accumulation of pollen and similar substances which are formed during pollination season. Some species of plants may also grow sufficiently high to block direct sun light that would otherwise reach the PV modules;
- **Fires** – excessive vegetation growth increases the risk of fire in the facility.

Vegetation removal activities should always be delegated to the O&M Service Provider. This delegation should be based in an official support with legal value, which binds both parts.

5.1 VEGETATION REMOVAL

Service Providers are to quarterly assess the necessity for vegetation control in Solar Photovoltaic Plants and report to EDPR PT in order to receive approval, with clear indications on planned dates and needed means for the performance of pruning and other vegetation removal activities. These activities may only be executed after adequate approval by the EDPR PT EMS Manager and the Photovoltaic Plant Manager, and should always follow applicable legal dispositions.

This includes the identification of existing plant species according to their protection statutes, or on the other hand, as invasive to the ecosystem:

Alien / Invasive species – Plant species identified as exotic and invasive to the ecosystem should be removed before these have a chance to propagate, preferably while still in an early phase of their life cycle.

Vegetation removing activities should be done resorting to mechanical means, whenever possible. The use of herbicides as a method of vegetation removal, is permitted, but due to potential negative environmental impacts, it must respect requirements established by EDPR, that are identified in chapter 5.2. of this work instruction. The use of herbicides is justifiable when there are alien/invasive species.

Other specific methodologies may be adopted, as long as these are approved by EDPR PT.

Vegetation control and removal is to be executed at the base of PV modules and its surrounding areas, roads and all soil areas in the facility, in order to promote optimal accessibility to the Photovoltaic Plant and prevent losses in production efficiency due to overcast shadows.

Resulting green waste is to be identified according to its European Waste Catalogue code (20 02 01), and delivered to an adequate waste handling entity or collection point, which should prioritize recycling / recovery operations over elimination. In these cases, the corresponding waste handling and transfer evidences, namely copies of the Waste Transfer Notes are to be delivered to EDPR PT. Additionally, a quarterly report regarding produced quantities of this waste in the facility is also required to be delivered to EDPR PT by the Service Provider, according

to the procedure WIT-EU_EMS-SPF-00004 – “Waste Management Solar Photovoltaic Plants”. This information should then be included in the quarterly SIS report.

Whenever resulting green waste is produced in larger size, it may be used as fuel matter for biomass centrals, or as raw materials for applicable industries. In such a case, EDPR PT must approve these actions, and the associated registries and information, such as the WTFs must be provided to the EDPR PT EMS Manager and the Photovoltaic Plant Manager.

For specific situations and places where vegetation development and soil rehabilitation is needed, existing green waste, due to its biodegradable properties and composition, may be used as soil fertilizer. This action should, however, take the necessary precautions regarding fire hazard control, as well as other legislative impositions. Therefore, in these cases, caution regarding large volumes of green waste and proximity to electrical equipment is advised, and EDPR PT's approval is required, in terms of both environment and safety.

5.2 HERBICIDE APPLICATION

The use of herbicide inside PV Plants is authorized by EDPR-PT, provided the fulfilment of these requirements:

- The product to be used must be authorized by competent authorities.
- Applicators must possess specific certified training for herbicide application, duly recognized by official authorities.
- The applicator company must be authorized by competent authorities, to execute terrestrial application of herbicides.
- Only hard packages with less than 25 liters can be used.
- Instructions present at the label of the product and at the Safety data sheet, must be strictly enforced.
- Empty packages must be collected and delivered in authorized destination by the applicator company. Equipment cleaning, after herbicide application, must be executed in the applicator company installations.
- Good practices for herbicide application emitted by the product provider or by competent authorities, must be enforced.

In the end of the operations, the contractor should make a specific report with the following information:

- Details about the company (Name, TIN, contacts)
- PV Plant name
- Description of activities (methods, name of the herbicide used, tools, sites)
- Names of the applicators and identification of training certificate.
- Beginning and conclusion dates
- Destination of empty packaging

This report must be sent by the SP to the PV Plant Manager or the Regional Manager RP for approval.

6 RESPONSIBILITIES

EDPR PT EMS Manager:

- Approve all vegetation control activities and guarantee that no endangered species are harmed, all alien / invasive species are removed, minimize fire risk and comply with legal requirements in respect to forest fire risks and waste management.
- Report the obtained quarterly information regarding waste production in vegetation control operations in SIS.
- Determine environmental conformity of the company hired to launch herbicide, as well as its technicians and products to be used.
- Register non-conformities, whenever is communicated a serious or repeating deviation to this instruction and determine the necessary corrective actions.

EDPR PT O&M Manager for EMS:

- Guarantee that the SP provides immediate solution for any and all contract / side letter breaches.

Photovoltaic Plant Manager:

- Periodically check the state of all facility elements, including roads, ground and PV module bases regarding existing vegetation.
- Guarantee that all vegetation control operations are approved by EMS Manager, prior to their execution.
- Check the compliance of conditions established in the procedure on vegetation removal and herbicide application activities. If any deviation occurs, report immediately to EMS Manager, informing possible causes.
- Check implementation of corrective actions determined by the EMS Manager.
- Check veracity of information contained in the intervention records sent by the SP.

Service Provider:

- Register and report the necessity for vegetation control activities in Solar Photovoltaic Plants and propose the necessary actions for EDPR PT's approval.
- Register and report to EDPR PT, on a quarterly basis, all vegetation control activities and resulting waste produced from these operations, as well as corresponding Waste transfer Notes or other evidences.
- Uphold every legal and contractual aspect associated with these activities in EDPR PT's Solar Photovoltaic Plants.
- In the end of each herbicide application, present the report that complies with requirements established in this instruction.
- Send all documentation requested by the EMS Manager, which makes proof of environmental conformity of the company, its technicians, equipment and products used to herbicide application.
- In case of any deviation to this instruction, implement immediate solutions and corrective actions determined by EDPR-PT.

7 FORMS AND REGISTRIES

Not applicable.

