Prepared	Revised	Validated	Approved
EDPR PT EMS Manager	*EDPR EU EMS Manager*	*Country EMS Management Representative*	*EDPR EU EMS Management Representative*
Name: Vasco Soares	Name: Ángela Toledo	Name: Timóteo Monteiro	Name: MANUEL FERNANDES
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0 CHANGE CONTROL

Edition	Date	Description of the modification
00	16/11/2011	Initial edition
01	10/01/2012	Insertion of rules regarding the management of contaminated water from ECO74 turbines. Changes brought about the subscription of new O&M contracts entering into force during 2012.
02	04/01/2013	General revision of the TI, introduction of Annex 1 (table for waste identification and proper temporary storage locations) and introduction of annex 2 (responsibility flowchart)
03	14/11/2013	Changes in rules for paper/cardboard and plastic packaging waste. Updating of the waste identification table (Annex 1).

1 OBJECTIVE AND SCOPE

This document describes the rules and the existing means in EDPR PT to separate and manage the waste generated in the activities of operation and maintenance of the wind farms, with the exception of waste produced by the contractor “ENERCON”, where applies the WIT-EU/EMS-SPF-00002.

2 REFERENCES

- ISO 14001:2004 standard
- EMS Manual.
- EXPR-EU/EMS-GEN-00007 ”Operation Control, Monitoring and Measurement”
- EXPR-EU/EMS-SPF-00002 "Land clearing and application of PPP"
- EXPR-EU/EMS-SPF-00003 "Wastewater tanks cleaning operations"
- EXPR-EU/EMS-GEN-00008 "Near-miss and emergency preparedness & response"

3 DEFINITIONS

- **Waste:** “any substance or object which the holder discards or intends or is required to discard ...” in DL 178/2006 of September 5th.

- **Industrial waste:** "the waste generated in industrial processes ..." in DL 178/2006 of September 5th.
- **Hazardous Waste:** "the waste that has at least one characteristic of danger to the health or to the environment, particularly those identified as hazardous in the European Waste List", in DL 178/2006 of September 5th.
- **RCD (Construction and Demolition Waste)**: the waste from construction, reconstruction, extension, alteration, maintenance and demolition and collapse of buildings

4 ABBREVIATIONS

- **EMS:** Environmental Management System.
- **EDPR PT:** EDP Renováveis Portugal.
- **GAR:** Waste Transfer Note (Guia de Acompanhamento de Resíduos).
- **LER:** European Waste Catalogue.
- **RCD:** Construction and Demolition Waste (Resíduos de Construção e Demolição).
- **RSU:** Municipal Solid Waste (Resíduos Sólidos Urbanos).
- **SIRAPA:** Integrated Registration System of the Portuguese Environment Agency

5 PROCEDURE

5.1 IDENTIFICATION AND CHARACTERIZATION OF WASTE

It has been identified a set of wastes that are produced in normal conditions in the EDPR PT wind farms. In annex 1, can be accessed the list of those wastes, with the correspondent LER code.

If a waste is produced that doesn't fit in any of the listed in annex 1, the wind farm manager should inform the EMS manager, so he can characterize it, designate it's LER code and temporary storage location.

All the waste produced and subject to temporary storage should be properly identified. If, in the temporary storage zone, does not exists a specific location for particular waste, it should be posted a paper tag in the recipient that contains the waste, or other kind of support that clearly identifies the type of waste contained and it's LER code.

5.2 WASTE STORAGE

5.2.1 GENERAL CASE

The waste must be placed in the existing containers, generally located in the tool room, inside the control building of the wind farms. There are some exceptions, where the lack of space or the non-existence of control building, forced the implementation of alternative solutions. These exceptions are:

- Abogalheira wind farm- containers are located inside the wind turbines.
- Coentral-Safra wind farm – containers are located inside a maritime container, next to the control building/Substation.
- Pico Alto wind farm – In these wind farm there are only containers for municipal waste, other waste, when produced, must be transported to the Serra do Mú wind farm.
- Guerreiros wind farm – containers are shared with the Bordeira wind farm, located in the tool room, inside the control building of Bordeira.

The waste must be separated and selectively disposed in the corresponding containers. Each container is identified with the designation of the waste to deposit. In case of doubt, annex 1 of this TI should be consulted.

The liquid hazardous waste (ex: used oils, contaminated solvents) must always be located above the retention tray to minimize the risk of spills. It is emphasized the fact that these waste should not be poured into the sewage or in the rainwater network, under any circumstances. These liquids must be stored in appropriate tightness containers properly labeled indicating the waste stored and its correspondent LER code (see in annex 1).

As it's explained with more detail in EXPR-EU/EMSGEN-00008, if there is a spill of a hazardous substance, it should be stopped and cleaned with the absorbent material available in the wind farms (PIGPEAT, etc). Subsequently, the contaminated absorbent should be placed in the container for contaminated absorbents.

Contaminated wipers, paper air filters, silica and contaminated protective clothing should be placed in a resistant plastic bag, properly labelled with identification of the waste and correspondent LER code (see annex 1). This bag must be placed in the plastic container for dangerous waste.

Empty package of lubricants, when small in size, should be put inside a resistant plastic bag, properly labelled with identification of the waste and correspondent LER code (see annex 1). This bag must be placed in the plastic container for dangerous waste.

Empty packaging of oils, solvents, paints and other chemical products can be stored on the retention trays, in the proper place identified with the sign “contaminated packaging”.

In the particular case of metal waste (ex: reducers, valves, tubes) contaminated with oil or other hazardous substances, they must be placed previously in the container of used oils or contaminated packaging in order to let them drain. Once drained, they should be cleaned with absorbent cloths and then they can be placed in the container for mixed metals.

Waste from electric and electronic equipment should be segregated, depending on whether dealing with complete equipment or just parts of it (see annex). They should always be identified with a label (paper or other material) that identifies the name and LER code of the waste in accordance with the annex 1.

In the event of the production of damaged or obsolete, big size, plastic parts, they should be placed in the tool room, outside the containers, but properly identified with a paper label or other support, that identifies the waste and correspondent LER code (see annex 1).

Nacelle access covers ou other damaged parts made from glass fibre should be separately collected and properly labelled with the identification of the waste and correspondent LER code (see annex 1).

When the batteries used in some electronic equipment become waste, they must be placed in the “battery pack”, while the 24V batteries of the turbines processors must be placed in the containers for batteries. The batteries of auxiliary services and telecommunications are collected by the supplier at the time of any maintenance operation. Other batteries or capacitors which may arise as waste must be disposed in the container for batteries.

Employees must also store the used fluorescent lamps inside the new lamps boxes, placing them in the container called "fluorescent lamps".

The empty aerosols or still filled, but obsolete, should be placed in segregated plastic bags in the container identified with “embalagens sob pressão”. Each bag should be identified with the name of the waste and the correspondent LER code (see annex 1).

Waste sludge in the wastewater tanks should be directly collected in the tank and does not need other place for temporary storage. Requirements from EXPR-EU/EMS-SP-00003 should be attended.

Finally, the waste “water contaminated with oil”, should be collected and temporary stored in accordance with the chapter 5.2.3.

5.2.2 SPECIFIC SERVICES

In the particular case of construction works, like rehabilitation of roads and buildings, the contractor must put in his workplace the adequate means for a proper waste segregation, according to the applicable laws, and should install at least:

- One specific container for construction and demolition waste;
- Adequate equipment for deposition of hazardous waste, minimizing risk of spills to water or soil;
- One container for municipal solid waste.

The contractor should arrange the collection, transport and delivery of waste in the properly authorized destinations and should present to EDPR the corresponding evidences (waste transfer notes, licenses, acceptance certificates ...).

In the case of felling and pruning operations, rules from procedure EXPR-EU/EMS-SP-00002 should be fulfilled. Vegetable waste can be crushed and left in the field, complying with the requirements from EXPR-EU/EMS-SP-00002in order to reduce risk of fire. As for other kind of waste, the contractor should be responsible to provide adequate containers properly identified for every type of waste. Hazardous waste should be stored under conditions that do not represent any risk of spillage to soil or water. Finally, the contractor should transport the waste to authorized destination and present to EDPR the corresponding evidence.

The wind farm managers should verify the fulfillment of these rules and communicate any failure to the O&M Manager for the EMS.

5.2.3 CONTAMINATED WATERS FROM ECO74/ECO80 TURBINES

In the wind farms equipped with Ecotecnia ECO 74 and ECO80 turbines, there are containment basins in the bottom of the nacelle with the purpose of containing possible spillages in the gearbox or in the hydraulic power system. Sometimes the containment basins accumulate condensed water and even rain water that may have direct contact with grease or oil and consequently became contaminated; therefore it should be managed as a hazardous waste.

When it is necessary to collect contaminated water from the containment basins, the O&M contractor should be responsible for its collection in sealed containers with enough capacity to contain the volume of water from one turbine. Before performing that operation, they should inform EDPR with at least one week in advance and wait for the corresponding authorization.

Containers should be provided by the Waste handler and should be in good conditions and clearly identified in this way: “contaminated water – LER 13 05 07”. Containers should be sealed and cannot have easy opening valves at the bottom, to prevent spillages due to accidents or vandalism.

After receiving information from the contractor, the O&M manager for the EMS should hire, as soon as possible, the waste collection operation to an authorized company. The collection is made directly in the containers mentioned before, provided by the Waste handler.

The collection of contaminated water by the waste management operator must be supervised by the wind farm managers or by the O&M contractors that should assure proper filling of the waste transfer note (GAR), as well as assuring that the collection and transport is done according to the section 5.3 of this Technical Instruction.

5.3 WASTE COLLECTION AND TRANSPORT

5.3.1 Municipal Solid Waste

When containers become full, or after each cleaning service, the cleaning contractor should carry municipal solid waste – "mistura de RSU" - to the nearest municipal container.

Then, the cleaning contractor should fill in the Municipal Waste Register, specifying the amounts disposed in the containers. This record must be sent quarterly to the O&M manager for the EMS.

For paper and plastic waste, every time containers become full or maintenance is completed, the wind farm manager or the O&M contractors should report to the O&M manager for the EMS the necessity to collect the waste. The collection of waste is then hired by the O&M Manager for the EMS, who agrees with an authorized waste handler the date and time of the collection. In hiring the service operator, operations of recycling / recovery shall be privileged above elimination operations. Previously, should be requested to the waste handler, his transport and waste treatment permits, that should be up to date and verified by the EMS Manager to assess their conformity.

Collection of waste must be made, at least, once a year. Therefore, waste cannot be stored for periods longer than one year.

5.3.2 Industrial waste (dangerous or not)

For non-municipal waste, when it is verified that the containers are full or the maintenance is completed, the wind farm manager or the O&M contractors should report to the O&M manager for the EMS the necessity to collect the waste. The collection of waste is then hired by the O&M Manager for the EMS, who agrees with an authorized waste handler the date and time of the collection. In hiring the service operator, operations of recycling / recovery shall be privileged above elimination operations.

Previously, should be requested to the waste handler, his transport and waste treatment permits, that should be up to date and verified by the EMS Manager to assess their conformity.

Collection of waste must be made, at least, once a year. Therefore, waste cannot be stored for periods longer than one year.

The wind farm manager or O&M contractor should supervise the collection and sign the Form A - Waste transfer note (GAR) or the RCD transfer note, in case of construction works, and return the original (GAR) or its copy (RCD GAR) to the O&M Manager for EMS.

5.4 WASTE COLLECTION AND TRANSPORT SUPERVISION

During waste collection operations, the wind farm manager or the O&M contractor should fill in the GAR or the RCD guide in the field of the producer/holder, and also check if the transporter fills correctly the GAR or the RCD guide in its correspondent field. Also they should verify if the transport conditions are environmentally appropriate, in order to prevent leakage or spillage of waste.

The wind farm manager and/or O&M service provider should also verify the following conditions:

- The liquid and doughy waste must be stored in sealed tanks and its capacity should not exceed 98%;
- Solid waste can be packaged or transported in bulk, in a vehicle with a closed box, or open box with the load adequately covered;
- If during the loading, transport or unloading, a spill occurs, the contaminated area should be cleaned immediately, using absorbent products, in the case of liquid or doughy waste.
- One copy of the GAR or RCD guide should be retained and sent in the same day to the O&M manager for EMS by normal mail or internal mail.

In the case of collection of used oils, the wind farm manager or the O&M service provider should check the following:

- If during the loading or unloading of a vehicle which transports used oils, any spill occurs, the contaminated area must be cleaned up immediately using absorbent products.
- The packaging to use in the transport of used oils should be sealed and its capacity should not exceed 98%.
- During the transport, loading or unloading, the transporter should keep in the cab of the vehicle a safety data sheet, A4 form, according to legal requirements.
- If the transport of used oils is carried in tankers, they should have a written, legible and indelible record stating the term “Transport of used oil”.

5.5 WASTE MONITORING REGISTER

The O&M Manager for EMS fills the form TMP-EU/EMS-SPF-00003 “Waste Register” when the final receptor collects the waste. The following information is included in the register:

- Nº of Form A - Waste Transfer Note (GAR)
- LER code
- Non-hazardous or hazardous waste
- Type of waste
- Amount (kg)
- Facility
- Quarter
- Date of collection
- Final destination (Codes D or R)
- Carrier (and correspondent APA code)
- Receiver (and correspondent APA code)
- Comments

For MSW the O&M Manager for EMS should collect information from the records sent by the cleaning contractor and update the form TMP-EU/EMS-SPF-00004 “Municipal waste register”.

The O&M Manager for EMS, with the support of the EMS Manager, verifies if the copies of GAR or RCD guides were correctly filled and sent. In the case of the RCD, he also requires the RCD receipt confirmation from the final destination.

According to the EXPR-EU/EMS-GEN-00007, data related to the production of waste should also be entered into the SIS tool, every quarter, by the O&M Manager for EMS, based upon the registers TMP-EU/EMS-SPF-00003 and TMP-EU/EMS-SPF-00004.

In the first quarter of each year, the EMS Manager should submit on SIRAPA the annual data for waste production in EDPR, based upon the registers TMP-EU/EMS-SPF-00003 and TMP-EU/EMS-SPF-00004.

6 RESPONSIBILITIES

EMS Manager

- Verifies the conformity of the waste handlers permits
- Verifies if the forms GAR or RCD guide were duly completed
- Supports the O&M manager for EMS in the introduction of data in SIS
- Enters waste production data in SIRAPA
- Register NC's (non-conformities) originated in flaws to this instruction, detected on waste storage and waste collection operations and determines the necessary corrective and preventive actions.

O&M manager for EMS:

- Select and contract the collection of waste by an authorized waste handler, when the necessity of waste collection is reported by the O&M service providers or wind farm managers
- Requests up to date permits to the waste handlers
- Awards and authorizes the waste collection by the waste handler, after the permits conformity assessment done by the EMS manager
- Update and file the record of waste production (TMP-EU/EMS-SPF-00003) when waste is delivered to its final destination
- Update and file the record of municipal solid waste production (TMP-EU/EMS-SPF-00004) after receiving information from the cleaning contractor
- Check if were sent and correctly filled out the triple copies of GAR and the RCD transfer notes and in the latter case, require the certificate to the recipient receiving RCD.
- Enter data regarding waste generated in the SIS tool, with the support of the EMS manager.
- If the conditions included in this procedure are not met, O&M manager for the EMS should investigate the causes and assure the problem is solved. He/she should also communicate the fact to the EMS Manager, so that non-conformity can be open.

Wind farm manager:

- Separate and manage the different types of waste in accordance with this technical instruction.
- Supervise the fulfilment of the waste management rules by contractors and communicate any deficiency to the O&M Manager for EMS.
- Report to the O&M Manager for EMS the need to collect the waste when containers are full or the maintenance is finished.
- Supervise the waste collection, sign the Form A - Waste Transfer Note (GAR) or RCD Note (in case of construction works) and check the correct filling by the transporter, keep the triplicate or its copy and send it to the O&M Manager for EMS in the same day by mail or internal mail.
- Check if the conditions of waste transport are environmentally appropriate in order to prevent leakage or spillage of waste.
- Check if the liquid and doughy waste or used oils are stored in tightness containers and that its capacity does not exceed 98%.
- Verify if the solid waste is packaged or transported in bulk, in a vehicle with a closed box or open box with the load adequately covered.
- If any spill occurs during loading or unloading, verify that the contaminated area is immediately cleaned and that requirements from EXPR-EU/EMS-GEN-00008 are followed.
- During the transport operation, loading or unloading of used oils, verify if the carrier keeps in the vehicle cab a safety data sheet, according to legal requirements.
- If the used oils are carried by tankers, it should be verified that the tankers have a written, legible and indelible identification with the term “Transport of used oil”.
- Communicate to the O&M manager for the EMS eventual flaws in the enforcement of this instruction.

O&M Service Providers:

- Separate and manage the different types of waste in accordance with this technical instruction.
- Report to the O&M Manager for EMS when a collection of waste is needed whenever the containers are full or the maintenance is completed.

- Supervise the waste collection, sign the Form A - Waste Transfer Note (GAR) or RCD Guide (in case of construction works) and check the correct filling by the transporter and keep the triplicate or its copy and give it to the Wind Farm Manager.
- Check if the conditions of waste transport are environmentally appropriate in order to prevent leakage or spillage of waste.
- Check if the liquid and doughy waste or used oils are stored in tightness containers and that its capacity does not exceed 98%.
- Verify if the solid waste is packaged or transported in bulk, in a vehicle with a closed box or open box with the load adequately covered.
- If any spill occurs during loading or unloading, verify that the contaminated area is immediately cleaned and that requirements from EXPR-EU/EMS-GEN-00008 are followed.
- During the transport operation, loading or unloading of used oils, verify if the carrier keeps in the vehicle cab a safety data sheet, according to legal requirements.
- If the used oils are carried by tankers, it should be verified that the tankers have a written, legible and indelible identification with the term “Transport of used oil”.

Cleaning contractors

- Collect from wind farms the municipal solid waste, carry and place them adequately in the municipal container

  Communicate to the O&M Manager for the EMS quantities of RSU collected from wind farms and placed in the municipal containers/”Ecoponto”

7 FORMS

- *TMP-EU/EMS-SPF-00003 “Waste Register”*
- *TMP-EU/EMS-SPF-00004 “Municipal Waste Register”*

TMP-EU/EMS-SPF-00003

WASTE REGISTER

Last update:

GAR Nº	EWC CODE	HW / NHW	WASTE DESCRIPTION	QUANTITY (kg)	WIND FARM	QUARTER	COLLECTION DATE	FINAL DESTINATION (R/D)	CARRIER	APA code (carrier)	FINAL DESTINATION	APA code (final destination)	COMMENTS

O&M Responsible for filling in the register

Date & Signature

TMP-EU/EMS-SPF-00004

MUNICIPAL WASTE REGISTER

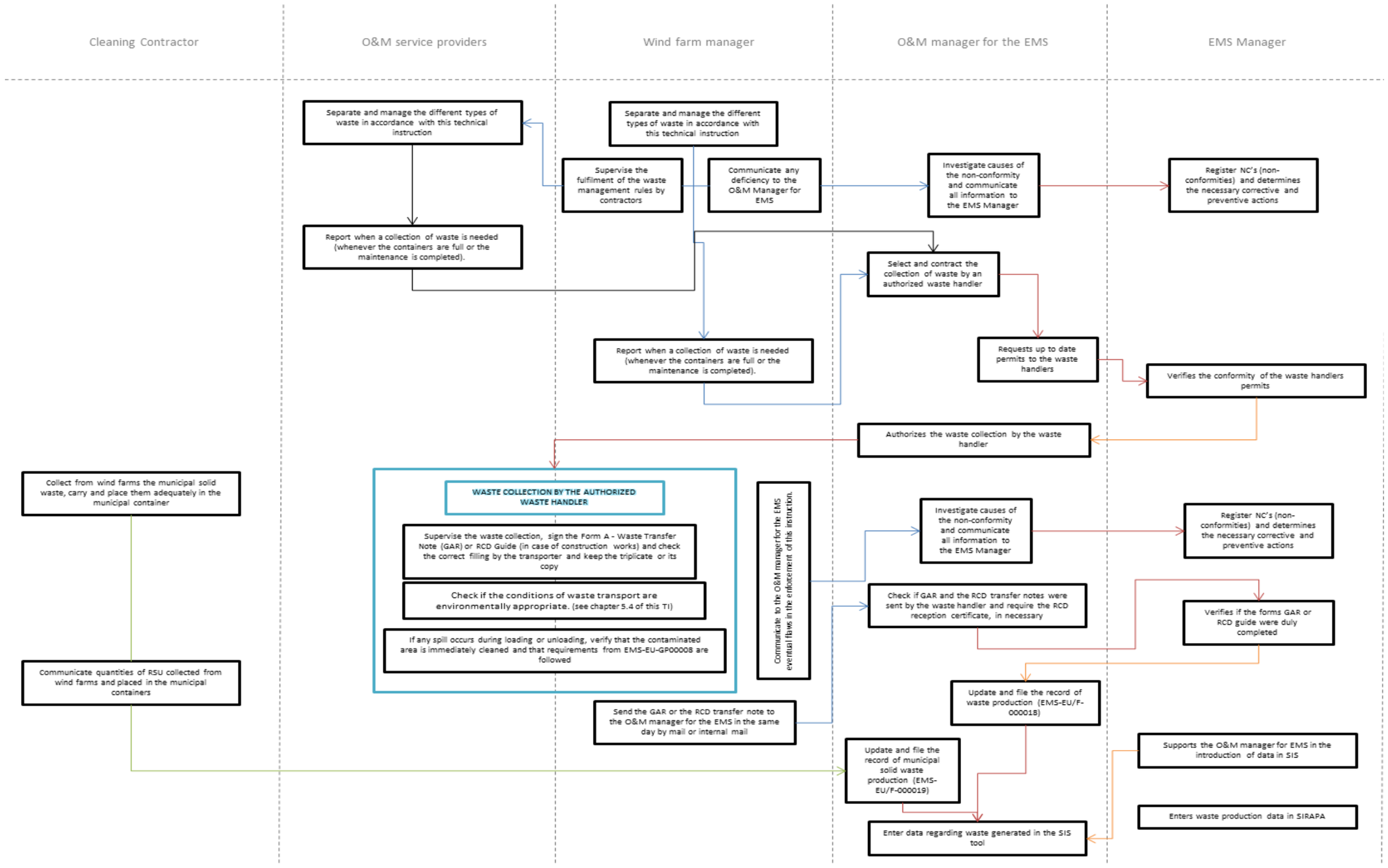
Last update:
Updated by:

EWC code	HW/NHW	WASTE DESCRIPTION	QUANTITY (kg/l)	WIND FARM	QUARTER	COLLECTION DATE	FINAL DESTINATION (RECYCLING BIN OR MIXED WASTE CONTAINER)	LOCATION (city)	COMMENTS

O&M Responsible for filling in the register

Date & Signature

8 Responsibilities Flowchart



WASTE IDENTIFICATION TABLE

EWC CODE				WASTE IDENTIFICATION	EXAMPLES
10	11	03		Waste glass-based fibrous materials	Access doors to nacelle and other damaged parts made from glass-based fibrous materials.
13	01	10	(*)	Mineral based non-chlorinated hydraulic oils	Mineral oils from hydraulic power units.
13	01	11	(*)	Synthetic hydraulic oils	Synthetic oils from hydraulic power units.
13	02	05	(*)	Mineral based non-chlorinated engine, gear and lubricating oils	Mineral oils from gearboxes, and yaw or pitch engines.
13	02	06	(*)	Synthetic engine, gear and lubricating oils	Synthetic oils from gearboxes, and yaw or pitch engines.
13	02	08	(*)	Other engine, gear and lubricating oils	Mixture of mineral and synthetic oils.
13	05	07	(*)	Oily water from oil/water separators	Contaminated water with lubricants from containment basins (Ecotecnia).
13	08	99	(*)	Oil wastes not otherwise specified	Wasted lubricant greases
15	01	03		Wooden packaging	Pallets and wooden boxes from the transportation of maintenance equipment/material.
15	01	10	(*)	Packaging containing residues of or contaminated by dangerous substances	Empty containers of greases, oils, solvents, paints and other chemical substances.
15	01	11	(*)	Metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers	Empty spray/aerosol cans.
15	02	02	(*)	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contamined by dangerous substances	Contaminated wipers, paper-based air filters, silica and protective clothing.
16	01	07	(*)	Oil filters	Hydraulic metal filters.
16	01	14	(*)	Antifreeze fluids containing dangerous substances	Antifreezers provenient from refrigerating systems (conversor or heat exchanger).
16	01	21	(*)	Hazardous components other than those mentioned in **16 01 07** to 16 01 11 and 16 01 13 and **16 01 14**.	Contaminated hydraulic pipes.
16	02	14		Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	Electric equipment containing several components such as electric engines, fans, entire conversors, entire pitch gearboxes, etc.
16	02	16		Components removed from discarded equipment other than those mentioned in 16 02 15	Isolated electronic or electric components, as circuit boards, electric cables, carbon brushes, contactors, relays, circuit breakers, fuses, etc
16	06	01	(*)	Lead batteries	Lead batteries (acid).
16	06	04		Alkaline batteries (except 16 06 03)	Nickel-cadmium batteries (alkaline).
17	04	07		Mixed metals	Damaged metal parts such as ladders, handrails, protection equipment metal parts, pipes, etc.
17	05	03	(*)	Soil and stones containing dangerous substances	Soils collected after spillage.
20	01	01		Paper and cardboard	Paper sheets and paper/cardboard containers.
20	01	21	(*)	Fluorescent tubes and other mercury-containing waste	Used lamps must be stored inside a cardboard container.
20	01	39		Plastics	Damaged plastic parts (such as protection equipment plastic parts), plastic film, plastic stripes, clamps, etc.
20	03	01		Mixed municipal waste	Organic compounds and mixed household waste.
20	03	04		Septic tank sludge	Slugde provenient from the septic tanks.