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Waste Regulation Policy for Lithium Ion Batteries & WEEE containing Lithium Ion Batteries

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1 Purpose

The purpose of this policy is to ensure the environmental protection standards for existing or new waste transfer stations or vehicle dismantlers are clear and considered consistently by the Department; reducing risk to the Environment, via

- Management of lithium-ion batteries (LIB) and Waste Electrical and Electronic Equipment (WEEE) containing sealed LIB in accordance with international best practice benchmarked against UK Environment Agency Standard Rules Statutory Guidance.

to:

- Collect, handle and store waste LIBs and WEEE containing LIBs in a safe manner to minimise the risk of fires and harm to the natural or built environment.

and:

- LIB are exported to a recovery facility under an Annex VII for non-damaged batteries.
- Any damaged batteries or WEEE containing sealed LIB should be shipped under a TFS.
- All LIB are classified as dangerous goods for transport.

The proposed policy has been developed from the point a battery or WEEE containing sealed LIB is identified or received at a waste facility, listing specific WDL conditions for the storage, handling, and management of LIB waste.

As the Waste Regulator, this policy has been developed to support waste facilities managing these types of LIB waste from the point when received on site, to minimise the potential impact of these wastes to the IoM environment.

1.1 Existing Operations

Existing waste transfer stations collect and store dry cell (portable batteries) or lead acid batteries (automotive batteries) for bulking up further to shipping off island, for recycling in the UK. Waste Electrical and Electronic Equipment containing sealed LIB are disposed of either in the metal skip or Energy from Waste Skip.

The current risks for these batteries include spontaneous fires and acid leaks. However, the risks are fairly minimal and when well managed can be mitigated. The same is not true for LIBs which if damaged physically, influenced by external conditions or simply degrade over time can generate flammable off-gassing or enter thermal run-away and self-ignite. Currently, there is a gradual increase in LIB waste and WEEE containing sealed LIB. Waste facilities have no current measures to safely manage these batteries, and there is no commercial route off the island for end of life LIBs, including electric vehicles or their batteries.

1.2 Conditions for LIB Waste Management

Current waste transfer stations and vehicle dismantling facilities will be required under this policy to apply for a variation to their licence and adhere to additional Waste Disposal Licence (WDL) conditions presented here in this policy. These conditions are based upon international best standards adopting recommendation from:

- a) UK Environment Agency Standard Rules for Vehicle Dismantling - SR2021 No.12;
- b) WISH Waste Industry Safety and Health Forum UK,
- c) Canadian guidance for Occupational Health and Safety Responsibilities prepared by the Automotive Retailers Association;
- d) German recommendations for loss prevention prepared by the German Insurers association.

Where the conditions of this policy cannot be reasonably or practically achieved an appropriate Risk Assessment shall be provided to justify divergence from these conditions including the control measures that will be implemented to reduce the risk.

2 Background

Lithium ion batteries are a new waste type arising from multiple different sources such as portable batteries from gaming remote controls, rechargeable toys, portable music players and speakers, in smart wristwatches, powering bicycle lights and household torches, automotive batteries such as new starter batteries replacing lead acid, and as industrial batteries used for traction in electric vehicles, e-bikes, scooters and hoverboards or other industrial applications like emergency lighting or solar street lights.

When disposed of incorrectly batteries are susceptible to damage and can ignite if punctured, crushed, heated or discharged incorrectly. Poor separation of these batteries from other wastes can lead to them becoming damaged, or coming into contact with conductive materials and causing a short circuit. These situations often lead to fires, which have high intensity, can be difficult to extinguish and can lead to spontaneous combustion of other lithium ion batteries (above 70 °C a lithium battery enters thermal runaway causing ignition).

3 Waste Disposal Licence

Application for a Waste Disposal Licence to deposit, process and/or to dispose of controlled (household, commercial and industrial) waste is required to be made through the Public Health Act 1990 s.57 or a Direction through s.64 for in relation to land occupied by the Department of Infrastructure. In accordance with:

- e) s.59 the Department shall not reject an application which benefits from appropriate planning approval unless satisfied that its rejection is necessary for the purposes of preventing pollution of water or danger to public health;
- f) s.60 the Department may include conditions in a WDL as it sees fit and in particular steps to be taken to prevent or minimise any health hazard or environmental hazard.

A WDL consists of multiple conditions, for which the licence holder must adhere to, when operating the facility. A WDL typically includes general management conditions, waste types and waste operating activities, site preparation and infrastructure, environmental control measures, site operations, and record keeping.

4 Scope

The following policy shall apply to all applications for, or variations of Waste Transfer Stations / Vehicle Dismantling Facilities / Direction received by the Department in accordance with the Public Health Act 1990 s.57, s.61 and s.64 for sites which receive LIBs or want to conduct handling and storage of LIBs prior to recycling.

5 Policy

Application for a WDL / Direction or variation of a WDL / Direction for transfer station or vehicle dismantling facility to handle Lithium Ion Batteries (LIB) will only be permitted where it can be demonstrated that there is no unacceptable risk of danger to public health, pollution of controlled waters, or risk of environmental hazard (PHA 1990, section 59(3)). A site must demonstrate this by meeting

the following conditions, unless agreed in writing with the Department further to an appropriate Risk Assessment which justifies divergence from these conditions including the control measures that will be implemented to reduce the risk.

5.1 Storage

5.1.1 Lithium Ion Batteries

- a) Any battery that is, or is suspected to be:
- a lithium or lithium ion industrial, commercial battery (as defined by the UK Waste Batteries and Accumulators Regulations 2009 – England only¹)
- or
- a portable battery pack > 1 kg
- or
- any damaged lithium ion battery of any size
- and
- lithium ion battery separated from mixed batteries to be able to comply with the transport and recovery requirements for unsorted batteries

Shall be stored in a watertight, lidded container filled with sand or vermiculite. The container should be filled with no empty voids to minimise movement during transit. The container shall be capable of protecting the battery or batteries stored within it from damage:

- i. the container shall be located at least 6 metres away from any buildings, plant equipment, waste or combustible materials;
 - ii. if the 6 metre distance cannot be achieved, the battery container shall be stored within a fire resistant enclosure.
 - iii. the battery container will conform to the UN packaging requirements to transit LIB
- b) Cover terminals or provide plastic covers for lithium batteries to prevent short circuiting.
- c) Do not store batteries in areas that are fire escape routes.
- d) Ensure waste batteries are regularly removed from premises to avoid significant accumulations.
- e) Electric or hybrid vehicles with water damage, fire damage or suffered a thermal battery event should be quarantined with a 15 meter radius unless they have been sat for 30 days.
- f) The battery storage containers and area must be clearly marked and only used for battery storage.
- g) Electric vehicle battery packs must:
- i. be stored flat, and if placed on pallets, strapped to the pallet;
 - ii. not be stored on their side;
 - iii. not be stacked on top of one another;
 - iv. not to be dismantled;
 - v. be kept dry at all times and not exposed to extreme temperatures.

¹ Waste Batteries and Accumulators Regulation 2009 <https://www.gov.uk/guidance/regulations-batteries-and-waste-batteries>

5.1.2 Waste Electrical & Electronic Equipment containing sealed Lithium Ion Battery

- a) All WEEE should be stored under a weather-proof cover – e.g. inside a dedicated building, under a large canopy or under large canvas sheets etc. This is because water (.g. rain) can cause short-circuits in loose batteries resulting in fires / explosions.
- b) The storage shall be located at least 6 metres away from any buildings, plant equipment, waste or combustible materials.
- c) Do not store the WEEE containing sealed LIB in areas that are fire escape routes.
- d) Ensure WEEE containing sealed LIB are regularly removed from premises to avoid significant accumulations.
- e) The WEEE storage containers and area must be clearly marked and only used for WEEE storage.

5.2 Quantity

- a) No more than 1 tonnes of batteries to be stored at any one time.
- b) No more than 10 tonnes of WEEE containing sealed LIB to be stored at any one time
- c) No more than 750 tonnes of waste electric or hybrid vehicles may be accepted per annum.
- d) No more than 5 electric vehicles on site unprocessed at any one time.

5.3 Working Conditions

5.3.1 Non-Electric Vehicle Lithium Ion Batteries & WEEE containing LIB

- a) A fire prevention plan is to be submitted to the Department and updated annually.
- b) All staff working in an area where LIB or WEEE containing sealed LIB may be present need to be competent on the safe handling, storage and identification of them and damaged LIB.
- c) Immediately remove any damaged or defective lithium battery from the storage area and store this temporarily in quarantine (15 meter perimeter) or in an area separated with fire protection technology.
- d) Any site receiving, handling or storing LIB or WEEE containing sealed LIB should have a clearly defined weatherproof covered storage area.
- e) Regular monitoring of the storage areas and applicable actions taken to minimise potential fire risks.
- f) The site Working Plan should be updated to reflect the special working conditions required to store the LIB and WEEE containing sealed LIB. The working plan should include:
 - i. A written safety policy;
 - ii. Inspection schedules and record keeping including, regular inspections, equipment inspections and inspection of safety and emergency procedures;
 - iii. Number of workers to perform each task;
 - iv. Education and training requirements for staff;
 - v. First Aid provisions;
 - vi. Storage locations for damaged and undamaged vehicles and batteries;

- vii. Risk assessment;
- viii. Fire Prevention Plan including access routes for emergency vehicles.
- ix. Spillage procedure with applicable PPE

5.3.2 *Electric Vehicle Lithium Ion Batteries*

- a) A fire prevention plan is to be submitted to the Department and updated annually.
- b) All staff working on EVs or hybrid vehicles must be competent to do so. An individual's competency must be demonstrated through appropriate training certification, accreditation or qualification.
- c) If conducting maintenance or dismantling of an end of life EV or hybrid vehicle, the site must have a segregated area for high voltage works, which prevents unauthorised access.
- d) Immediately remove any damaged or defective lithium battery from the storage area and store this temporarily in quarantine (15 meter perimeter) or in an area separated with fire protection technology.
- e) Removal of an EV battery or dismantling of an EV should be conducted in line with the International Dismantling Information System (IDIS).
- f) Regular monitoring of LIB storage areas and applicable actions taken to minimise potential fire risks.
- g) The site Working Plan should be updated to reflect the special working conditions required to dismantle EVs or store LIB batteries. The working plan should include:
 - i. A written safety policy;
 - ii. Inspection schedules and record keeping including, regular inspections, equipment inspections and inspection of safety and emergency procedures;
 - iii. Number of workers to perform each task;
 - iv. Education and training requirements for staff;
 - v. First Aid provisions;
 - vi. Storage locations for damaged and undamaged vehicles and batteries;
 - vii. Risk assessment;
 - viii. Fire Prevention Plan including access routes for emergency vehicles.
 - ix. Spillage procedure with applicable PPE

5.4 *Facility Location*

Facilities must be a minimum distance from sensitive sites:

- a) 200 metres of protected sites including an Area of Special Scientific Interest (ASSI), Marine Nature Reserves, Areas of Special Protection, RAMSAR sites or Bird Sanctuaries;
- b) 50 metres of a National Nature Reserve (NNR), Local Nature Reserve, Local Wildlife Site, Ancient Woodland or Scheduled Ancient Monument;
- c) 50 metres of a site that has species or habitats protected under the Biodiversity Action Plan;

- d) 50 metres of any well, spring or borehole used for the supply of water for human consumption. This includes private water supplies;
- e) 10 metres of an unculverted watercourse;
- f) 10 metres of high voltage power lines;
- g) 10 metres from a building, or road.

6 Procedure

Application for WDL / Direction or variation to a licence will require application information as specified in the policy (working plan updates, fire prevention plan, safety policy, identification of quarantine area, battery and WEEE handling area, risk assessments etc.). There is no expected change required to how a company applies for a variation to a licence or applies for a new licence.

7 Export for recovery

7.1 Lithium Ion Batteries

Lithium ion batteries are dangerous for the purposes of the Carriage of Dangerous Goods Regulations due to the risk of fire, but are not considered to be hazardous waste in terms of the European Waste Catalogue. In cases where a mixed load of portable batteries is to be disposed or where the types of portable batteries in the waste are unknown, it is necessary to treat the entire consignment of waste as hazardous waste.

Lithium batteries operating to specification are a 'Green List' waste to be sent for recovery under an Annex VII.

"The UK Environment Agency has confirmed lithium batteries can be sent for recovery under an Annex VII provided the casing is not damaged in any way."

<https://www.gov.uk/government/publications/waste-shipments-regulation-wsr-consolidated-waste-list/consolidated-waste-list#annex-iiib-additional-green-listed-waste-awaiting-inclusion-in-the-relevant-annexes-to-the-basel-convention-or-the-oecd-decision-as-referred-to-in-article-581b>

Basel code for Lithium Batteries is **B1090** Waste batteries conforming to a specification, excluding those made with lead, cadmium or mercury.

The shipping of lithium batteries are classified as 'Dangerous Goods' and shall comply with conditions specified under the Carriage of Dangerous Goods legislation for both road and sea. You should also check with the carrier as to their requirements.

Information on Annex VII requirements can be found on the DEFA Environmental Protection webpage, Import & Export of Waste - Classifying Green List waste under the 'Waste Shipments Regulation'.

<https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/environment-directorate/environmental-protection-unit/waste-regulation/tfs-green-list-waste/>

7.2 Waste Electrical & Electronic Equipment containing sealed Lithium Ion Batteries

The shipment of WEEE to the UK for recovery must be considered as hazardous waste (EWC 16 02 13* and 20 01 35*) unless it can be demonstrated that it is non-hazardous and shipped off island with a

Transfrontier Shipment Notification (TFS). Components of WEEE identified as likely to contain hazardous Persistent Organic Pollutants (POPs) include: printed circuit boards, plastic casing, cables insulation foam, plastic parts, cooling agents flame retardants, cathode ray tubes, capacitors, activated glass and screen phosphors and Ni-Cad batteries. You should check with the carrier as to their requirements for transport by road and sea.

7.3 Electric Vehicles and Electric Vehicle Lithium Ion Batteries

For electric or hybrid vehicles, where batteries are not removed from vehicles, the entire car must be considered to be hazardous waste (EWC 16 01 04*) and shipped off island with a Transfrontier Shipment Notification (TFS). You should check with the carrier as to their requirements (some carriers will require the battery to be removed in damaged vehicles or for the battery to have a low state of charge (SoC)).

Where batteries have been removed and are damaged and not operating to a specification, these batteries are considered to be hazardous waste and must be shipped off the island via a Transfrontier Shipment Notification, and under conditions specified under the Carriage of Dangerous Goods legislation. A removed damaged battery should be shipped in accordance with the provisions of the carrier.

8 Enforcement

Any unlicensed deposit, processing or disposal of controlled waste, unless subject of appropriate exemption in accordance with The Collection & Disposal of Waste Regulations 2000 will be investigated in accordance with provisions of s.57 of the Public Health Act 1990. The enforcement policy for the Department is to assist persons with compliance with law prior to any formal action unless there is a serious health or environmental hazard.

9 Frequently asked questions

Who does this policy affect?

This policy will primarily affect all persons who require a waste disposal licence for battery recycling or electric vehicle recycling, but there will also be a knock on effect to waste producers who want to deliver the waste to licenced sites.

How do I apply for a licence?

A WDL application form and guidance on Producing a Working Plan can be found at:

<https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/environment-directorate/environmental-protection-unit/waste-regulation>

10 Definitions

Automotive Battery means a battery of any size used for starting or ignition power for a vehicle engine or to power lighting within a vehicle

Battery Packs means battery cells connected together by an outer casing.

Industrial Battery means a battery or pack of any size or weight which is designed for industrial or professional use, is used as a source of power for propulsion, or is sealed and not a portable battery or unsealed and not an automotive battery.

Portable Battery means a battery or pack is sealed, weighs less than 4 kg, is not an automotive or industrial battery and not designed exclusively for industrial or professional use.

Waste means controlled waste within the meaning of the Public Health Act 1990 and The Collection & Disposal of Waste Regulations 2000.

WEEE means Waste Electrical and Electronic Equipment

11 Version History

Version No.	Date Issued	Description
1	10/02/2023	Original policy document
1	09/03/2023	Final Draft
1	22/03/2023	Final
2	04/07/2023	Final Revised for >1 kg portable batteries
3	11.03.2024	WEEE containing sealed lithium Ion Battery and revision after consultation