This document is a General Method statement covering the following principle activities and considerations when preparing and collecting used batteries from the market.

It is a live document and continues to be updated in accordance with various feedback from all interested parties both internal and external to the company

Risk assessments and safe systems of work support this procedure and other procedures in the Business and a full schedule of all Procedures and Assessments or Safe systems are available from the QHSE Department

This document is broken down into the following main sections;

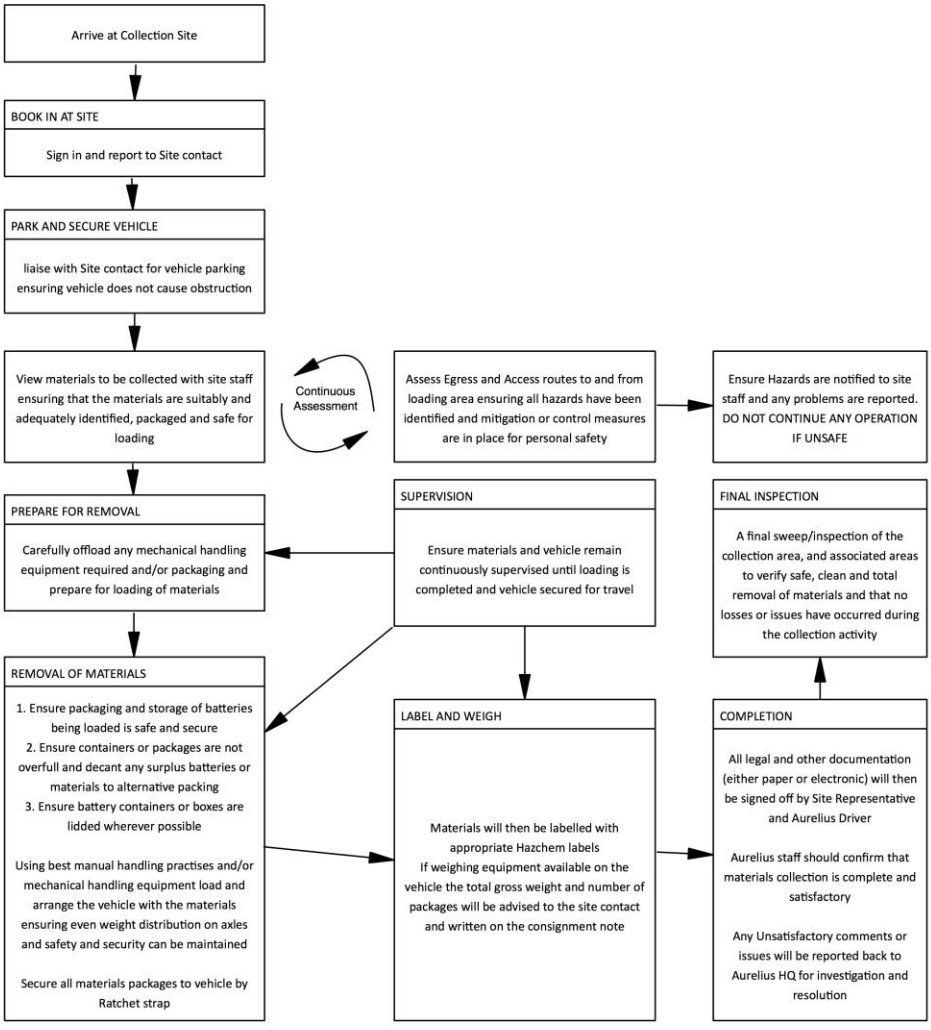
Section 1 – Battery Collections
Section 2 – Packing and Handling
Section 3 – Vehicle Loading
Section 4 – Carriage of Dangerous Goods

Section 1 Battery Collections

Summary

In consideration of minimising any impact to Human health & the environment whilst satisfying the customer's expectations for managing a professional waste management service, the commercial drivers will use the resources at their disposal (mechanical handling aids, ancillary tools and extra labour) to ensure that waste batteries are collected in an efficient and effective manner, and then returned to the recycling/treatment site safely so that the materials can be reclaimed, or sorted and consolidated for reclamation at an alternative facility.

Method



1. Employees must carry out daily checks of their vehicles prior to use in conjunction with the laid down procedure.
2. On arrival at the site, report to the site office / reception and notify arrival.
3. Seek instruction as to the location of the batteries and to gain information on any associated hazards and site rules. Do not enter any areas unless accompanied or authorised to do so.
4. All pedestrian and vehicle controls in force on the premises must be observed.
5. Whenever reversing a vehicle, ensure that someone is available to guide the driver and alert pedestrians and members of the public, if the driver cannot see clearly behind him.
6. Batteries must be treated with extreme caution in all situations.
7. Seal off the collection area and / or keep the area clear of any obstructions and to prevent access by anyone other than essential staff.
8. It is important that correct use is made of all handling equipment, i.e. pallet trucks and vehicle tail lifts, in order to reduce and avoid manual handling operations. Wherever possible avoid bending and stretching.
9. Ensure that wherever possible pallet trucks are used on good pathways. Where handling aids are difficult to use or impracticable, seek help to perform the task.
10. Before moving any loads ensure that they are stable. Never overload a pallet truck or any other trolley.
11. Take care to ensure that the small finger wheels on pallet trucks do not damage the base boards of wooden pallets.
12. Any broken wooden pallets must be doubled up with a slave pallet before being loaded. Do not collect any batteries on broken or incorrect pallets.
13. Employees must not operate any item of plant or equipment unless they have been trained and authorised to do so.
14. Care must be taken when loading batteries onto vehicles to avoid damage to the batteries therefore preventing leakage.
15. Ensure all containers are suitable to prevent escape and are labelled to identify the contents.
16. Ensure the load is properly stowed and secured to prevent movement prior to transit commencing.
17. Do not overload vehicles above the stated capacity.
18. Report all accidents and dangerous occurrences to management as soon as it is practicable.
19. Notify management of any incident in which damage is caused to property.
20. Report to the site office / reception and notify departure.
21. Employees must ensure that they comply with the requirements of The Carriage of Dangerous Goods by Road Regulations, The Hazardous Waste regulations and the 'duty of care' as respects waste, where appropriate. If in any doubt about correct action, seek management advice.

Hazards

1. Batteries contain corrosive substances which can cause severe damage to eyes and skin. These substances may attack many materials and clothing, and may attack metals with liberation of hydrogen, which is flammable and forms explosive mixture with air.
2. Some premises may be unmanned, resulting in an inability to raise the alarm in event of an accident.
3. Unfamiliarity of the location and associated hazards.
4. Strains and sprains, etc. due to manual handling.
5. Trips and falls.
6. Damage to property, vehicles, people during loading.
7. Carriage of batteries.

Precautions

1. Principal precaution is to wear eye protection, light protective clothing, protective gloves and safety footwear in order to prevent skin contact and protect the feet.
2. Wherever possible surveys are carried out prior to collections.
3. Ensure travelling first aid kit and eye wash bottle is available.
4. Ensure supplies are available to control spillages (see below).
5. Ensure a mobile phone is available when collecting from unmanned sites.

Accidents

- Eye Contact - Wash eye immediately with plenty of water for at least 15 minutes. Seek medical treatment.
- Skin Contact - Remove contaminated clothing immediately and wash affected skin with soap and water. Seek medical treatment.
- Spillage - Prevent liquid from entering sewers, work pits etc… Contain or absorb liquid with lime, sand, earth or other suitable material. Clear up as soon as possible. If in any doubt about correct action, seek management advice.

Section 2 – Handling, Packing and Preservation

Summary

In accordance with relevant legislation laid down by the HSC (Health & Safety commission) in the UK and the IMO (International Maritime Organisation) and derived from European / World agreements between OECD Countries the following applies;

Batteries will be packaged in the Battery Bins provided or on pallets or within wooden crates as long as they are carefully stacked in tiers, with batteries in one tier not supporting the weight of batteries in another tier by superimposed elements and that they are secure and packaged with insulating material in such a way as to protect them from short-circuit.

Alternatively where the batteries are dead (i.e. no charge exists we will package them in such a way as to provide containment of the batteries and their components, the protection against short-circuiting is then irrelevant).

Method

Any waste batteries must be packaged safely for subsequent transport by road, rail or sea.

To package batteries correctly the following procedure should be followed:

1. Sort all batteries to be packaged so that batteries of the same chemistry are to be packaged together – do not package batteries together of different chemistries.
2. Assess the integrity of the batteries to be packaged during the sorting process and isolate any batteries that are not integral, i.e. casings damaged or evidence of electrolyte leaks.
3. If using a crate, or any metal container for the packaging of batteries line the inside of the container with cardboard.
4. Arrange batteries to be packaged in such a way that the ends of the batteries can not come into contact with the terminal ends of other batteries. Ensure that any terminal leads on batteries are removed or isolated.
5. All batteries should be stored upright if the batteries contain 'wet electrolyte'. For dry cell batteries (typically the small battery types) the storage of the batteries can be in any orientation as long as there is no risk of short-circuiting across terminal ends.
6. Once you have built up a layer of batteries – 1 battery cell deep – lay a piece of cardboard across the top of the layer of batteries and then lay another row of batteries across the top of this.
7. Continue this procedure until the whole package has been filled with batteries.
8. Shrink wrap the battery package and label the battery package to identify the materials contained within it – use the UN approved labels available from the stores.
9. If packing automotive batteries in battery banks, or other Lead-acid batteries in battery banks they can all be packaged without insulating materials between them as long as the batteries are all standing vertically and the batteries cannot move or fall over during transit.
10. If batteries are known to be dead (completely discharged) then there is no need to pack the battery package with insulating material between the batteries.

Lead-acid Batteries

United Nations:

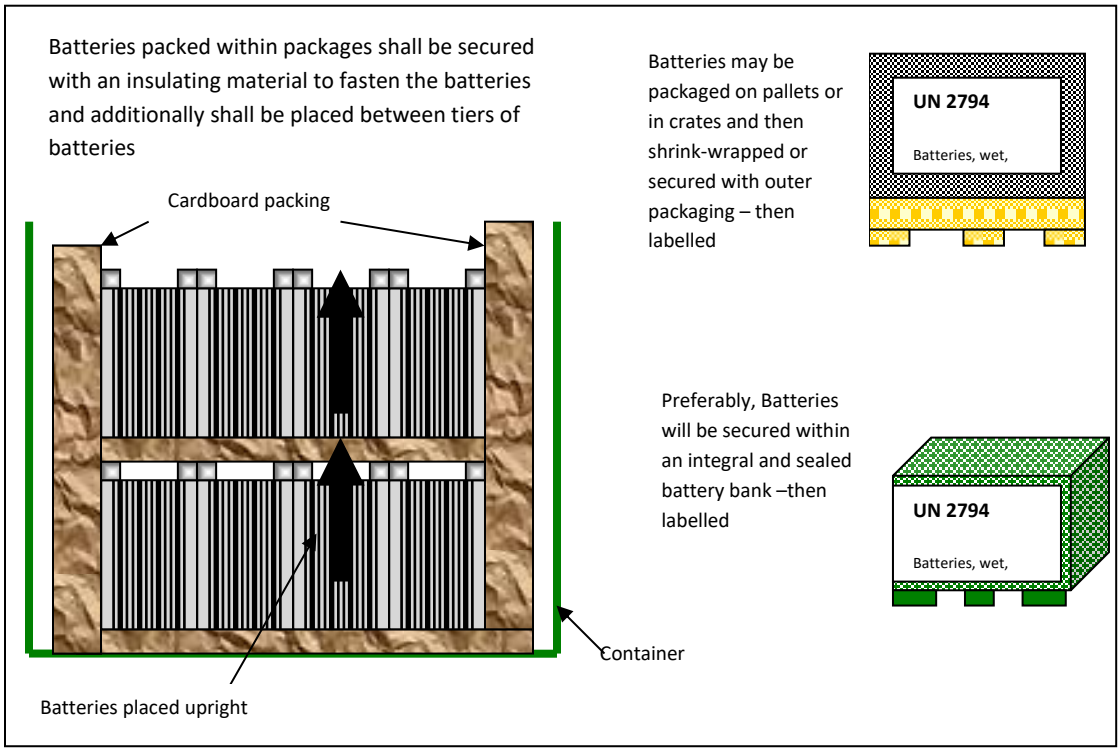
UN No.	2794; 2800
Classification:	8
Packaging:	Group III

Basic Requirements:

- Batteries shall be stacked and adequately secured in tiers.
- Each tier shall be separated by a layer of non-conductive material AND each battery should be isolated to prevent short-circuits.
- Battery terminals shall not in any case support the weight of superimposed elements.
- Batteries shall be fastened with inert cushioning materials.
- Glass batteries should be packaged in single tiers per package.
- Battery packages shall be labelled as required by regulation 8 of the CDGCPL2 regulations.

Prescriptive Methods for Packaging;

- Due to the size of these batteries it is generally practicable to arrange the batteries in tiers within a package and to separate the tiers of batteries with insulated materials.
  Example of how these batteries may be packaged is illustrated below:



- Collection and transportation of spent Pb-acid batteries should be carried out under cover, in leak proof containers and in a manner to prevent compaction, mutilation, or any other physical abuse that would destroy their physical integrity.
- They should not be exposed to fires or high temperatures.
- Caution: Cells and batteries, which are not fully discharged may leak, vent or explode when subjected to short circuit or other forms of electrical abuse.

Nickel Cadmium/Nickel Metal Hydride Batteries

United Nations:

UN No. 2795; 3028
Classification: 8
Packaging: Group III

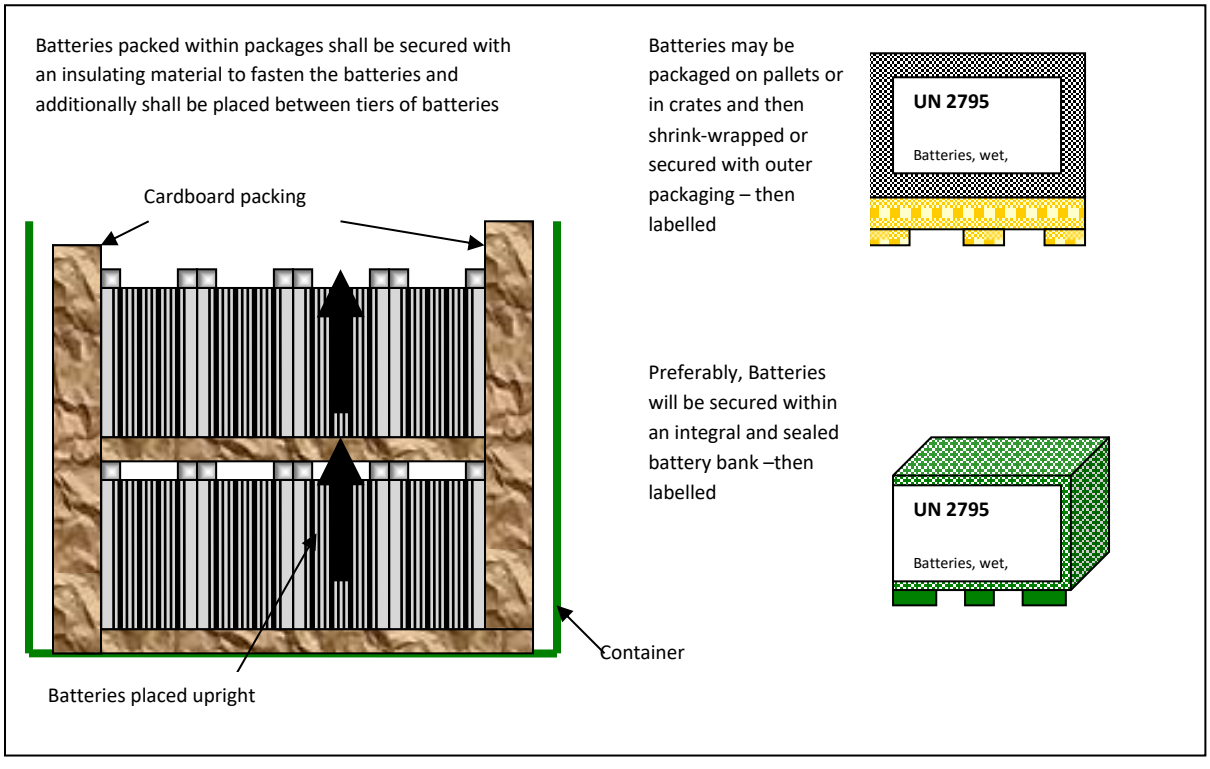
Basic Requirements:

- Batteries shall be stacked and adequately secured in tiers.
- Each tier shall be separated by a layer of non-conductive material AND each battery should be isolated to prevent short-circuits.
- Battery terminals shall not in any case support the weight of superimposed elements.
- Batteries shall be fastened with inert cushioning materials.
- Glass batteries should be packaged in single tiers per package.
- Battery packages shall be labelled as required by regulation 8 of the CDGCPL2 regulations

Prescriptive Methods for Packaging;

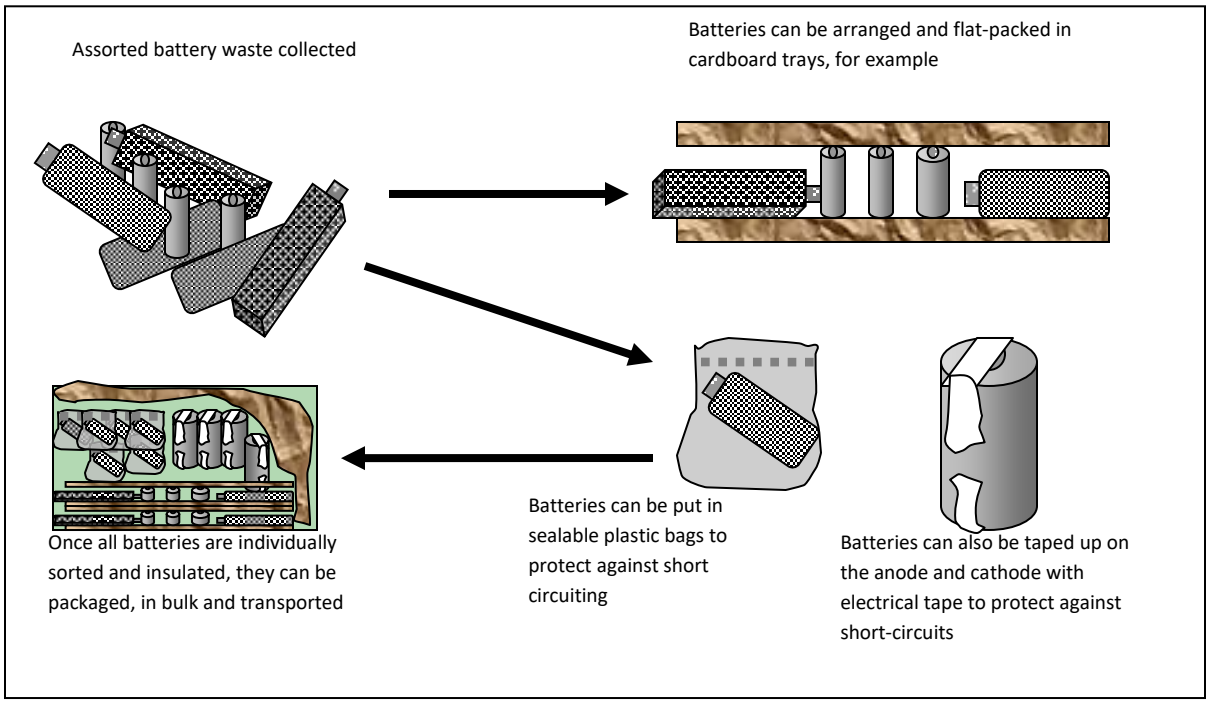
Industrial Batteries

- Due to the size of these batteries it is practicable to arrange the batteries in tiers within a package and to separate the tiers of batteries with insulated materials.
  Example of how these batteries may be packaged is illustrated below:



For Non-Industrial Batteries – including other alkaline battery types.

- As these batteries are relatively small and it is not practical to store them all in the same orientation and pack them so they are secure, it is necessary to arrange for the batteries to be randomly stored but in a manner that protects against short-circuits.
  Example of arrangements for such is illustrated below:



Specific Considerations for Ni-Cd batteries:

- Collection and transportation of spent Ni-Cd batteries should be carried out under cover, in leak proof containers and in a manner to prevent compaction, mutilation, or any other physical abuse that would destroy their physical integrity.
- They should not be exposed to fires or high temperatures.
- Caution: Cells and batteries, which are not fully discharged may leak, vent or explode when subjected to short circuit or other forms of electrical abuse.

Lithium Metal and Lithium-Ion Batteries

United Nations:

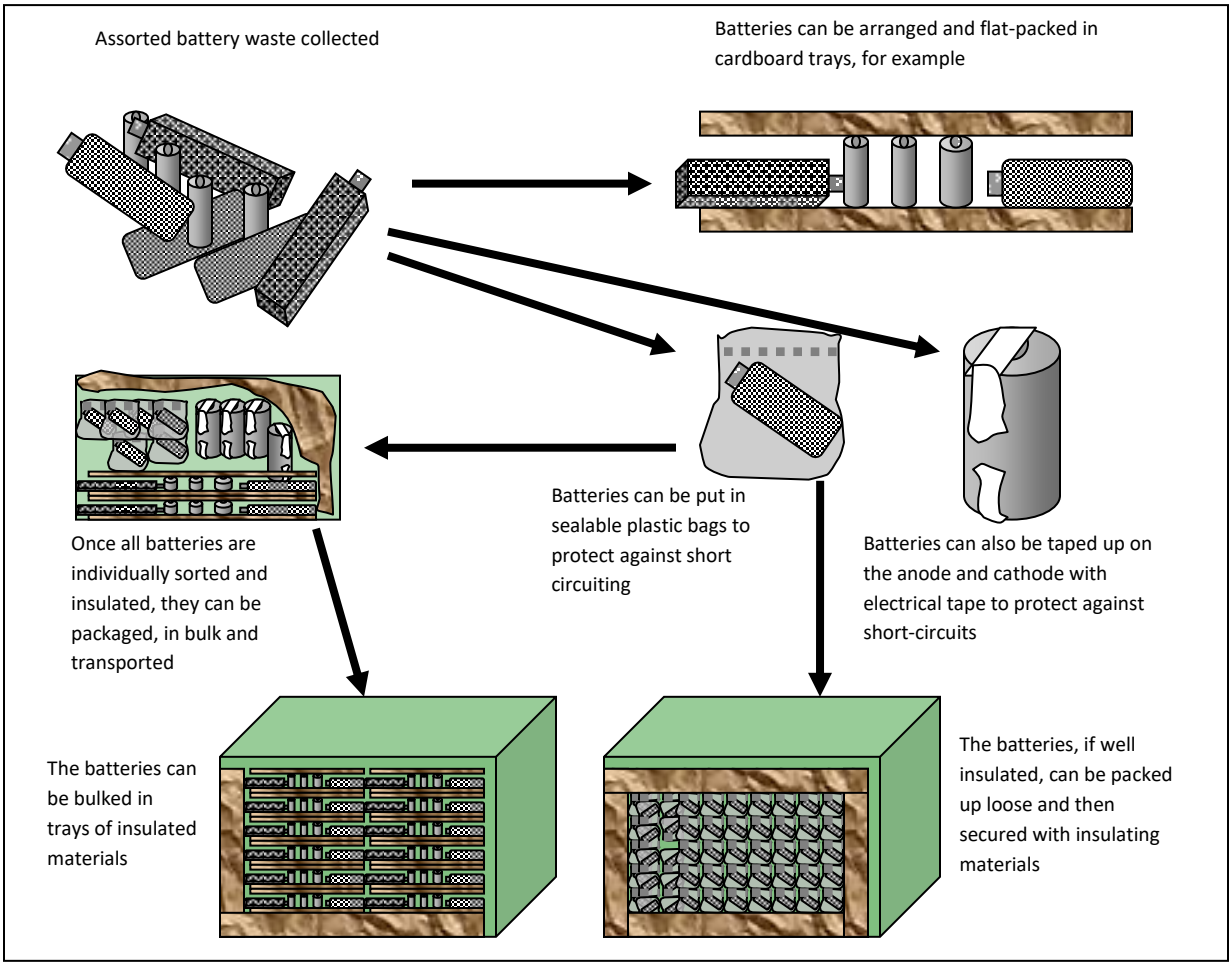
UN No.	3090 and 3480
Classification:	9
Packaging:	Group II

Basic Requirements:

- Batteries shall be adequately secured in tiers and in each tier, adequately stacked.
- Each tier shall be separated by a layer of non-conductive material AND each battery should be isolated to prevent short-circuits.
- Battery terminals shall not in any case support the weight of superimposed elements.
- Batteries shall be fastened with inert cushioning materials.
- Battery packages shall be labelled as required by regulation 8 of the CDGCPL2 regulations

Prescriptive Methods for Packaging;

- As these batteries are relatively small and it is not practical to store them all in the same orientation and pack them so they are secure, it is necessary to arrange for the batteries to be randomly stored but in a manner that protects against short-circuits.
  Example of arrangements for such is illustrated below:



Specific Considerations for Li and Li-Ion batteries:

- Collection and transportation of spent Lithium-Ion batteries should be carried out under cover, in leak proof containers and in a manner to prevent compaction, mutilation, or any other physical abuse that would destroy their physical integrity.
- They should not be exposed to fires or high temperatures.
- Caution: Cells and batteries, which are not fully discharged may leak, vent or explode when subjected to short circuit or other forms of electrical abuse.

Section 3 - Vehicle Loading

Summary

After the loading of a vehicle the materials to be transported must be assessed to ensure that the load to be moved is secure for transit. Security of load not only includes the stability of the load on the vehicle but includes the stability of individual articles or quantities of materials within each individual container and the ability to ensure that no escape of materials is allowed during transit.

Method

1. Vehicles are either loaded with various materials at the Fenix Operating facilities or at our customers premises for transport to alternative sites for disposal, consolidation and recovery.
   The types of materials to be loaded will vary, but in the main the materials transported are waste batteries and waste sulphuric acids.

2. The waste batteries will be transported in vehicles (from transit vans of gross weight 1.5 tonnes to LGVs of gross weight 44 tonnes) around the country. In respect of load security the batteries could be stolen, catch fire, fall off the vehicle (or out of their package) and leak electrolyte.

3. To maximise load security of waste batteries;
   Ensure that the batteries, if packed in a battery bin, are packed so the top of the battery does not protrude above the top of the bin and where a battery must protrude (as no room left to repackage in alternative containment) at least 70% of the battery is still within the bin.
   If using pallets/crates to pack the batteries, the batteries will be stacked securely in tiers, ensuring the packaging complies with the CDGR Regulations. The batteries will then be secured on pallets, by either shrink-wrapping or use of load straps to secure the batteries on the pallets.
   Where crates/pallets of batteries are double-stacked on a vehicle (which must be done to the satisfaction of both the driver and the customer) ratchet straps shall be used to secure the stacked packages together for security.

4. Only batteries of sound integrity should be packed on pallets or in crates - this means inspecting the batteries as they are being handled/loaded onto the lorry for signs of ageing, poor condition, external corrosion/contamination, hairline cracks/fractures, stress/strain marks on battery casing and so on (this list is not exhaustive). Any batteries of poor integrity or made of glass should be packaged within a battery bin.
   Please Note: It is favourable to use battery bins wherever possible.

5. Battery bins shall be inspected to ensure that any liquid contents can be contained both prior to and during transport. - The driver (responsible for the load) will check over the bin for any obvious holes/cracks which may allow acid leaking from batteries to escape (not recorded).
   Different battery types (i.e. Plastic/steel/glass casings or solid/gel electrolytes) have different levels of risk with regard to the spilling of electrolyte (a corrosive and toxic substance).

E.g. *Plastic/steel cased batteries are not likely to leak, unless already damaged, and even then there would probably be only one battery leaking, so a hole or crack near the middle or top of the bin would not allow spillage of the electrolyte.*
'Gel-filled' or batteries with solid electrolytes are classed as non-spillable so there would be no escape of acid/alkali.
Glass batteries are fragile and it is plausible that many batteries could break, releasing electrolyte into the bin, therefore it is important that these bins are properly inspected.

6. To help protect against short circuiting the driver/operator loading the batteries should ensure that there are no bare leads attached to terminals or terminals of batteries are not allowed to come into contact with other battery terminals in a random manner. Terminal leads should be insulated or 'cut off'.

7. In the event of an accident (not involving injury) or emergency action taken causing potential violent impacts of parts of the load on other parts of the load (Emergency stops, swerving etc...), the driver should ensure at his/her earliest opportunity that the load is still safe for transport on the public highways.

8. In the event of an incident on site the driver will report to the Site staff, whom should advise any local rules to be followed, and the driver should subsequently inform his/her departmental manager immediately.

9. In the event of an incident on the highways the Office shall be contacted to advise on other parties/regulators who may need notification of the incident.

   NO VEHICLE SHALL BE MANOEUVRED FOR ANY REASON UNTIL ALL PACKAGES/BATTERIES ARE SECURED (This includes Vehicle shunting)

Section 4 – Carriage of Dangerous Goods

To comply with the ADR Framework Directive, UK legislation on the road UK transport of dangerous goods is now aligned to the ADR Agreement. As the European ADR Agreement is revised every two years, the UK's domestic legislation must now implement any changes made to ADR.

The ADR Agreement must itself follow any changes made to the United Nations Recommendations on the Transport of Dangerous Goods and Model Regulations.

Legislation

UK legislation on the transport of dangerous goods by road is of two main types:

1. Rules of classification, packaging and labelling of dangerous substances, primarily the responsibility of the consignor.
2. rules on the carriage of dangerous substances in packaged form, bulk solids and in tanks, primarily the responsibility of the vehicle operator and driver.
3.

The main rules appear in the following statutory instruments (SI) made under the Health and Safety at Work Act 1974.

1. The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations (CPL2);
2. The Carriage of Dangerous Goods by Road Regulations (CDG Road);
3. The Carriage of Dangerous Goods by Road (Driver Training) Regulations (DTR2);

With the exception of the requirements relating to driver training (3 above), the regulations on explosive substances and radioactive materials are separate. The above statutory instruments are supported by the following approved documents:

1. The Approved Carriage List - A list of dangerous goods with their classification, UN numbers, packing groups and so on;
2. The Approved Requirements - Requirements and methods for the classification and packaging of dangerous goods for carriage.
3. The Approved Vehicle Requirements - Construction requirements for tank vehicle chassis cabs.
4. The Approved Tank Requirements - Vapour recovery requirements for petrol tankers.

The Health and Safety Executive has also published guidance giving less formal explanations of the aims and meanings of the regulations.

Method

Consignor's Responsibilities

The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and the Use of Transportable Pressure Receptacles Regulations 1996 (CPL2) govern the consignment of dangerous goods by road or rail in the UK. They were introduced on 1 September 1996 and replace the provisions of the 1994 CPL regulations.

The CPL2 regulations impose requirements on consignors by road or rail of substances, preparations and articles defined as "dangerous for carriage" (i.e. they present hazards during transport). This includes environmentally hazardous substances. CPL2 also covers the construction, testing and examination of transportable pressure receptacles (gas cylinders). Under CPL2 the consignor must:

1. evaluate the properties of the product and identify any hazards (classification);
2. ensure that any dangerous product is carried in an appropriate and adequate container (packaging);
3. ensure that the risks to the carrier, together with other information, are shown clearly on packages (labelling).

Classification
Substances dangerous for carriage are divided into nine main classes according to their properties during transport. The classification of pure products is shown in the document "Information approved for the carriage of dangerous goods by road and rail other than explosives and radioactive material" (**the approved carriage list**). Substances not appearing in the approved carriage list, and solutions and mixtures containing dangerous substances, must be classified by the consignor using the definitions and criteria in the documents "Approved requirements for the classification and packaging of dangerous goods (**approved requirements**). Suppliers' safety data sheets are required by the Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (**CHIPS**) and should be consulted for information on the appropriate classification of the goods.

Packaging
CPL2 regulation 6 requires packagings used for the carriage by road or rail of dangerous substances to be:

1. suitable for the purpose;
2. designed, constructed, maintained, filled, and closed to prevent escape of the dangerous substance;
3. compatible with the dangerous substance;
4. capable of being repeatedly reclosed, without escape of contents, if fitted with a replaceable closure (for example a screw cap lid);
5. capable of meeting any special conditions specified for a particular substance in the approved carriage list;
6. of a design that has been tested and approved and bears the appropriate approval mark (United Nations (UN) tested and approved packagings).

UN tested and approved packagings are not required for certain purposes. These include:

1. gas cylinders, which must comply with separate requirements;
2. tank containers, which must comply with separate legislation;
3. packagings with capacity exceeding three cubic metres;
4. dangerous goods consigned in limited quantities.

Non-UN tested and approved metal intermediate bulk containers (IBCs), stainless steel and aluminium drums manufactured before 1 July 1995 may be used for 15 years from the date of manufacture. Other metal and packaging manufactured before 1 July 1995 may be used for five years from the date of manufacture or until 31 December 1998 whichever is earlier.

Dangerous goods in limited quantities
UN tested and approved packaging is not required for dangerous goods in limited quantities. But the packaging requirements in 1 to 6 above must still be met.

The definition of limited quantity varies from 25ml to 5 litres per receptacle according to the hazard class and packing group of the product. The limits are specified in column 3 of schedule 3 of CPL2. Where limited quantity receptacles are placed in an outer package, the gross weight of the total package must not exceed 30kg.

Limited quantity consignments are exempt from some of the rules on marking.

Labelling
CPL2 regulation 8 requires packages containing substances dangerous for carriage to be marked and labelled to show clearly;

1. designation of the goods;
2. UN number (preceded by the letters UN);
3. danger sign (hazard warning diamond);
4. subsidiary danger sign, if any.

This information is specified in the approved carriage list for each substance for each substance or group of substances.

Individual receptacles that are exempt from the UN packaging requirements because of their size (limited quantities) need not show this information. But if two or more such receptacles are placed in one package, and are not consigned to a retailer for consumption by individuals for personal care or household use, the package must show the designation of the goods and the UN number. Where such packages contain different dangerous goods they may instead be marked either "Dangerous goods in limited quantities of class(es)…" Or show the appropriate UN numbers.

CPL2 regulations 9 and 10 permit certain information on packages to be combined with that required by CHIPS regulations. There is a transition period for the labelling of gas cylinders containing substances with no subsidiary hazards that would otherwise have to be relabelled to meet the CPL2 regulations.

Transport documents and information for drivers
CDG Road regulation 14 requires operators to ensure that before journeys start drivers have written transport documents that comprise:

1. the information provided by the consignor;
2. details on the quantity of goods carried;
3. emergency information covering:
    a. the nature and the danger of the goods;
    b. the safety measures to avoid the danger including use of personal protective equipment by the driver;
    c. first aid measures;
    d. fire fighting requirements;
    e. measures to be taken in case of breakage or deterioration of packages or spillage;
4. emergency action codes for tanks and dangerous goods in bulk.

Additional information is required for certain goods, for example temperature controlled substances.

There is no prescribed format for the transport documents. There is no requirement for all the information to be presented in a single document. Thus, the information may be presented in a mix of transport emergency cards, delivery notes, invoices, or any other documents provided by the consignor.

Where successive carriers are used operators must ensure that the consignor information is passed to the next carrier.

For each journey CDG Road regulation 16 requires a record of the information contained in the transport document (except the emergency information) to be kept by the operator for at least three months. This may be done by computerised means.

Emergency equipment and fire precautions
CDG Road regulation 21 requires operators to provide emergency equipment on vehicles so that drivers can safely take the emergency measures detailed in the emergency information. This equipment will be dependent on the goods carried and the requirements of the emergency information.

Respiratory protective equipment is required for escape purposes is required for the carriage of toxic gases.

CDG Road regulation 23 requires all persons dealing with dangerous goods vehicles to take all reasonable precautions to prevent fire or explosion. In general, vehicles over 3.5 tonnes permissible maximum weight should be equipped with at least:

1. one portable 2kg dry powder extinguisher or a suitable alternative with a test fire rating of at least 5A and 34B;
2. two portable 9kg dry powder extinguisher or equivalent for fighting a tyre fire or brake fire or a fire involving the load or a suitable alternative with a test fire rating of at least 21A and 183B. This may be a 2kg dry powder or equivalent extinguisher for vehicles less than 3.5 tonnes permissible maximum weight.

The cab extinguisher is not needed if the vehicle has an engine extinguisher fitted. Load extinguishers should stay with loaded trailers if they are detached from the motor vehicle.

Fire extinguishers should carry am appropriate approval mark, be fitted with a seal and if manufactured after 31 December 1996 show the date of next inspection. Operators must ensure that this date has not passed. Existing fire extinguishers that meet the new size requirements may continue to use the traditional practice of showing the date of the last inspection.

Placarding of vehicles (regulation 17 and schedule 10)
Vehicles carrying any quantity of dangerous goods in a tank or in bulk and vehicles that are carrying fully regulated packaged goods loads must show placards in accordance with CDG Road regulation 17 and schedule 10. Placards must be kept clean and free of obstructions. Vehicles must not display placards if dangerous goods are not carried and placards that do not relate to the goods carried must be removed or covered up. The materials used to cover orange plates must be resistant to 15 minutes fire engulfment.

Tanks (including road tankers) may continue to use the hazard warning panel format required under the road tanker regulations 1992 to show emergency action codes, UN numbers, telephone numbers and hazard warning diamonds. These panels may be of the vinyl stick on type or painted on.

The placarding of vehicles is split into requirements for:

1. orange panels;
2. hazard warning diamonds.

Orange panels
Orange panels for dangerous goods vehicles must measure at least 300mm x 400mm with a 15mm black border. These panels must generally be in the form of a rigid plate and UN numbers and emergency action codes shown on these panels must be indelible and remain legible after 15 minutes fire engulfment.

For all tank containers and bulk containers the orange panels can be vinyl stick-on sheets or painted on. These must be durable but need not meet the requirements to remain legible after 15 minutes fire engulfment.

The orange panels for UN numbers and emergency action codes for tanks (including road tankers) built before 1st January 1999 need not meet the requirements for indelibility or to remain legible after 15 minutes fire engulfment.

Orange panels fitted to vehicles after 1st January 1997 must be reflective.

All vehicles carrying dangerous goods within scope of the regulations must display a blank orange panel to the front. This includes tank vehicles. This requirement does not include trailers that are detached from motor vehicles.

Vehicles carrying packaged dangerous goods within scope of the regulations must show a blank orange plate to the rear.

Vehicles carrying dangerous goods in tanks (tankers and tank containers) must show:
1. an orange panel to the rear and on both sides showing the UN number of the goods and appropriate emergency action code
2. an emergency telephone number adjacent to each orange panel (with conditions this may be replaced with ‘consult local depot’ or ‘contact local depot’).

Tanks carrying different dangerous goods must show:
1. an orange panel at the rear showing the appropriate emergency code devised for the multi-load;
2. orange panels on both sides of each tank compartment containing dangerous goods showing the UN number of the goods. At least one set of these side panels must show the appropriate emergency action code;
3. an emergency telephone number on both sides and to the rear adjacent to the orange panels showing the emergency action code.

Petrol tankers carrying mixed loads of petrol (UN1203), kerosene (UN1223) or diesel (UN1202) may be placarded as a single substance tanker to show the most hazardous substance being carried. For example a mixed load of petrol and diesel can be placarded as UN1203, emergency action code 3YE. A mixed load of kerosene and diesel can be placarded as UN1223, emergency action code 3Y.

Where the most hazardous product is discharged but the operator has reasonable cause to believe there is a significant amount of residue or vapour left in the tank or its fittings, the placards may continue to show the UN number and emergency action code for that product.

Vehicles carrying dangerous goods in bulk are subject to the same requirements as tanks. For example ISO freight containers or bulk tippers are required to show coded orange panels on both sides and to the rear, blank orange panel to the front. There is no requirement for emergency telephone numbers.

Hazard warning diamonds and subsidiary hazard warning diamonds
Hazard warning diamonds must have sides of at least 250mm x 250mm. They may be of the rigid slot in type, the vinyl stick on type or painted on.

Where hazard warning panels are used in the format required by the 1992 road tanker regulations, hazard warning diamonds may have sides of 200mm x 200mm. Where loads requiring subsidiary hazard warning diamonds are carried, the appropriate subsidiary hazard warning diamonds should be placed adjacent to each hazard warning panel. The subsidiary warning diamond may have sides of 200mm x 200mm.

Vehicles carrying packaged dangerous goods in containers
The hazard warning diamonds and subsidiary hazard warning diamond placards required on the packages carried must be reproduced as placards on all four sides of the freight container, that is front, back or either side. The definition of freight container in CDG Road includes swap bodies greater than one cubic metre.

Vehicles carrying dangerous goods in bulk containers or dangerous goods in tank containers
Hazard warning diamonds and subsidiary hazard warning diamonds for the goods must be shown on both sides of the container as placards.

These diamonds must be repeated on both sides and the rear of the vehicle if they are not visible when the container is loaded onto the vehicle.

Tank vehicles (other than tank containers) and bulk vehicles (not bulk containers)
Hazard warning diamonds and subsidiary hazard warning diamonds for the goods must be shown on both sides and to the rear of the vehicle.

Training of drivers
Operators of vehicles carrying dangerous goods must ensure that drivers have received adequate instruction and training. Records of training must be kept.

Driver responsibilities
In addition to the statutory responsibilities imposed on all employees by the Health and Safety at Work Act 1974 CDG Road imposes specific duties on drivers of vehicles carrying dangerous goods.

General
Drivers should check that incompatible dangerous goods are properly segregated including food and toxic goods and food and infectious substances (regulations 12, 18, 19 and 23). Loads must be stowed and secured so they do not move during carriage. Special requirements for certain dangerous goods must be observed.

- Precautions against fire or explosion must be taken and smoking is prohibited in and around vehicles during loading and unloading operations. Spark proof torches should be used.
- Precautions against the overfilling of tanks and for earth bonding of tankers carrying flammable liquids or gasses must be taken.
- Vehicle engines must be turned off during loading and unloading unless they are required to drive pumps etc.
- Drivers of tank vehicles should ensure that all tank openings and valves are closed before the start of their journey and throughout it.
- Drivers must carry with them at all times during the carriage of regulated loads their original vocational driver training certificates. These must be valid for the loads carried.
- The carriage of passengers is not permitted unless allowed by the operator.
- Drivers should not open packaged goods unless they are allowed to do so by the operator.
- Spillages should be cleaned up as soon as possible and bulk vehicles must be cleaned out before reloading unless the same type of goods are being reloaded.

Transport documentation and emergencies
Operators must provide drivers with the relevant transport documents for the load including emergency information. This must be kept readily available in the vehicle. Regulation 15 of CDG Road requires drivers to ensure only information relating to the load being carried is available. Information on substances that have been unloaded should be passed to the consignee, destroyed or locked away.

If there is an accident or emergency involving the goods CDG Road regulation 22 requires that drivers should as far as it is safe to do so follow instructions in the emergency information. If the emergency cannot be controlled the emergency services should be notified.

The transport documentation must be left with the occupier of any premises where trailers are left or it should be attached to the trailer.

Placarding
Operators must provide dangerous goods vehicle placards but it is the drivers responsibility to ensure that the correct placards are displayed at the appropriate times. Drivers must ensure placards are kept clean and free from obstruction and that they are covered or removed if they do not relate to the goods carried.

Packing and supervision
CDG Road regulation 24 parking and supervision requirements apply to drives of packaged goods, bulk and tank vehicles carrying regulated loads above the following thresholds:

Transport Category	Parking and supervision thresholds ltr/kg
0	No lower limit
1	100
2	333
3	1000
4	Unlimited

For tanks these thresholds relate to the capacity of the tank.

For packaged goods only loads above the relevant receptacle size thresholds count towards the parking and supervision thresholds.

When vehicles are parked, the parking brake must be applied and they must be:
Supervised by a competent person aged 18 or over. Or:

1. parked and secured in an isolated place in the following order of suitability;
    a. unsupervised in a secure depot or factory;
    b. in a supervised vehicle park;
    c. in a public or private vehicle park where it is not likely to suffer damage;
    d. off the road away from houses and from places where the public pass or gather.

The parking and supervision requirements do not apply during loading and unloading operations.