IPPC Permit Application for AGV
Non Ferrous Malta Ltd

IPPC Form B Report

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1.0 Introduction

This report provides information on the activities and features of AGV Non Ferrous Malta Ltd to export batteries, accumulators and other non-hazardous waste materials, in the pursuit for an Integrated Pollution Prevention and Control (IPPC) Permit Application.

The requirement for an IPPC permit stems from the expansion of activities related to Category 5.5 listed in Schedule I of LN 10 of 2013, namely *Temporary storage of hazardous waste not covered under point 5.4 pending any of the activities listed in points 5.1, 5.2, 5.4 and 5.6 with a total capacity exceeding 50 tonnes, excluding temporary storage, pending collection, on the site where the waste is generated*.

This report aims to provide the following details as pertinent to Part B of the IPPC Application:

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2.0 Non-Technical Description

AGV Non Ferrous Malta Ltd operates a waste management facility of a variety of waste streams with premises located in a warehouse complex called Ta' Għadajma, in the limits of Mqabba. Due to the continuous expansion of activities, an IPPC permit is required for the temporary storage of hazardous waste that is expected to exceed the 50 tonnes capacity threshold. The facility is however responsible for the management of other types of non-hazardous waste.

One of the most prominent activities carried out is the temporary storage batteries and accumulators. All the different kinds of batteries are temporarily stored, packed and exported *tale quale*.

Non-hazardous waste such as paper, cardboard, plastic, rubber, ferrous and non-ferrous metals along with different types of waste packaging are also collected and temporarily stored as bales or loose material within designated areas on the premises. Consequently, all of the aforementioned kinds of non-hazardous wastes are transferred locally or exported via registered waste brokers.

3.0 Site maps and reports

3.1 Site report

The facility is located in the outskirts of Mqabba, in garage number 41 and 42 in a warehouse complex called Ta' Għadajma as shown in Section 3.2 (refer to Figure 1 and Figure 2), and operates at the address AGV Group, Braret Street, Birkirkara. The company has an area of approximately 116m² divided into two stores of the mentioned site, having more than 4,000m² of land. Ta' Għadajma is owned by Mr John Bonavia & Mr John Micallef, and is divided into a small yacht yard and a number of stores not bigger than 58m² each. A site layout plan is provided in Section 3.2 (refer to Figure 3).

AGV Non Ferrous Malta Ltd, part of AGV Group Malta, is a Maltese registered private company which started its operation in 2008. It is one of the leading producers and exporters of recycled scrap, mainly; paper and cardboard, plastic and rubber, waste packaging, ferrous and non-ferrous metals, and batteries and accumulators from several enterprises in Malta and Gozo.

The site layout consists of designated areas where sorting and storage of different waste streams are carried out indoors. As illustrated in Section 3.3 (refer to Figure 4), around 10m^2 of the area in garage number 42 that was previously used for the draining of 'wet lead batteries' is now being utilised as a storage area. The remaining area of the premises is used for the other activities, namely; office, storage areas for incoming waste, and storage area for sorted waste.

Stage	EC Guidelines for producing a baseline report	Materials	Verdict
1.	Identify which hazardous substances are used, produced or released at the installation and produce a list of these hazardous substances.	16 06 01* Lead batteries 16 06 02* Ni-Cd batteries 16 06 03* Mercury-containing batteries 16 06 04 Alkaline batteries (except 16 06 03*) 16 06 05 Other batteries and accumulators 20 01 34 Batteries and accumulators other than those mentioned in 20 01 33*	The adjacent list contains batteries stored on site. All of these batteries are hazardous, except for Alkaline batteries.
2.	Identify which of the hazardous substances from Stage 1 are 'relevant hazardous substances' (see Section 4.2). Discard those hazardous substances that are incapable of contaminating soil or	Lead acid batteries H314, H 315, H319 Nickel Cadmium batteries H290, H302, H314, H315, H317, H330, H332, H334, H341, H350, H350i, H351, H360, H361fd, H370,	Lead acid does not qualify as a 'relevant hazardous substance' because its health hazard statements are incapable of contaminating soil or groundwater. Nickel Cadmium batteries

	groundwater. Justify and record the decisions taken to exclude certain hazardous substances.	H372, H410, H412. Mercury containing batteries H290, H300, H302, H310, H314, H330, H332, H360D, H372, H373, H410	qualify as a 'relevant hazardous substance' because they are very toxic and harmful to aquatic life with long lasting effects. Mercury containing batteries qualify as a 'relevant hazardous substance' because they are very toxic to aquatic life with long lasting effects.
3.	For each relevant hazardous substance brought forward from Stage 2, identify the actual possibility for soil or groundwater contamination at the site of the installation, including the probability of releases and their consequences, and taking particular account of: the quantities of each hazardous substance or groups of similar hazardous substances concerned; how and where hazardous substances are stored, used and to be transported around the installation; where they pose a risk to be released; In case of existing installations also the measures that have been adopted to ensure that it is impossible in practice that contamination of soil or groundwater takes place.	Nickel-Cadmium batteries Mercury containing batteries	Ever since the start of operations, the facility only stored lead-acid batteries. Should Nickel-Cadmium and mercury containing batteries be introduced to the site at a later stage, the expected possibility for soil or groundwater contamination is very low. • Leakages are prevented by storing them in appropriate leak-proof containers. • The site is fitted with an impermeable concrete floor, and is also an entire storey above the ground, since other warehouses are found at level -2. • The facility is also equipped with a neutralisation spill kit that is used in cases of spillage.
4.	Provide a site history. Consider available data and information: In relation to the present use of the site, and on emissions of hazardous substances which have occurred and which may give rise to pollution. In particular, consider accidents or incidents, drips or spills from routine operations, changes in operational practice, site surfacing, changes in the hazardous substances used. Previous uses of the site that may have resulted in the release of hazardous substances, be	Until 2007, ta' Għadajma storage complex at Mqabba was non-existent, and instead constituted of a disused quarry covering an approximate area of 17,188m^2. This area had been backfilled with inert excavation material up to 8m below the road level which runs along the North of the site. The full development permit PA 4486/07 gave the green light for the construction of a storage facilities complex that exploits the depth of the quarry by locating the bulk of the development below ground level on two storeys. These warehouses are accessed via appropriately designed ramps at the periphery of the complex. The applicant's site is located in two of the thirteen differently sized warehouses present on the first level below ground (level -1). Ever since it started to operate in 2008, AGV Nonferrous Limited has never experienced accidental spillages, and posed no threat to the land and groundwater systems. Should there be any accidents in the future, the likelihood of land pollution risks should be contained since the floor of the site is fully covered by a thick impermeable layer of	

	the same as those used, produced or released by the existing installation, or different ones. Review of previous investigation reports may assist in compiling this data.	concrete. Mitigation measures are also adopted on site to prevent any harm from being done to the surrounding environment. Please refer to the Emergency Response Plan and Fire plan attached in Appendix III for more information.

3.2 Site Plan showing location of the facility

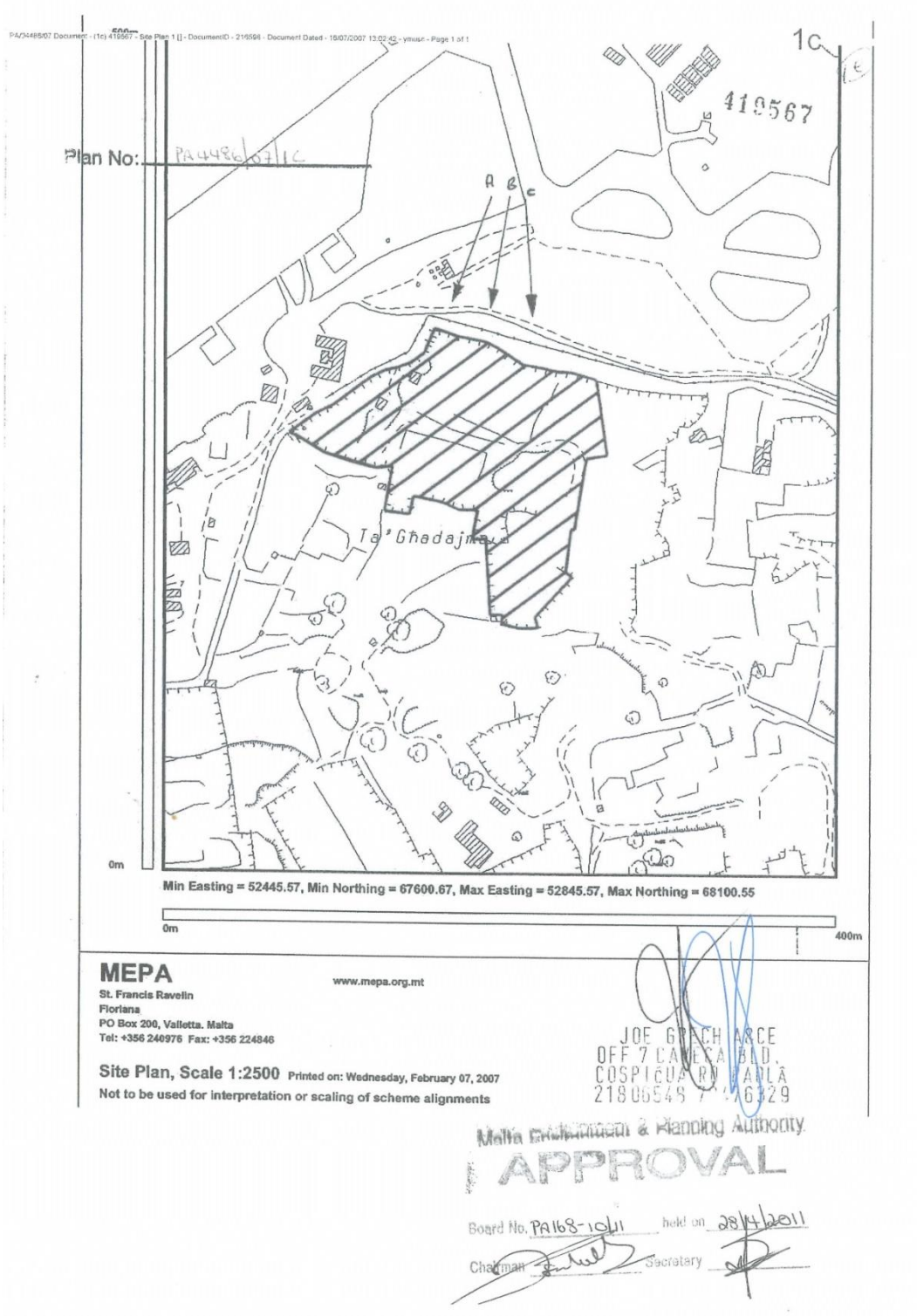

Figure 1: Site of Ta' Għadajma Complex, showing extent of area delineated in black

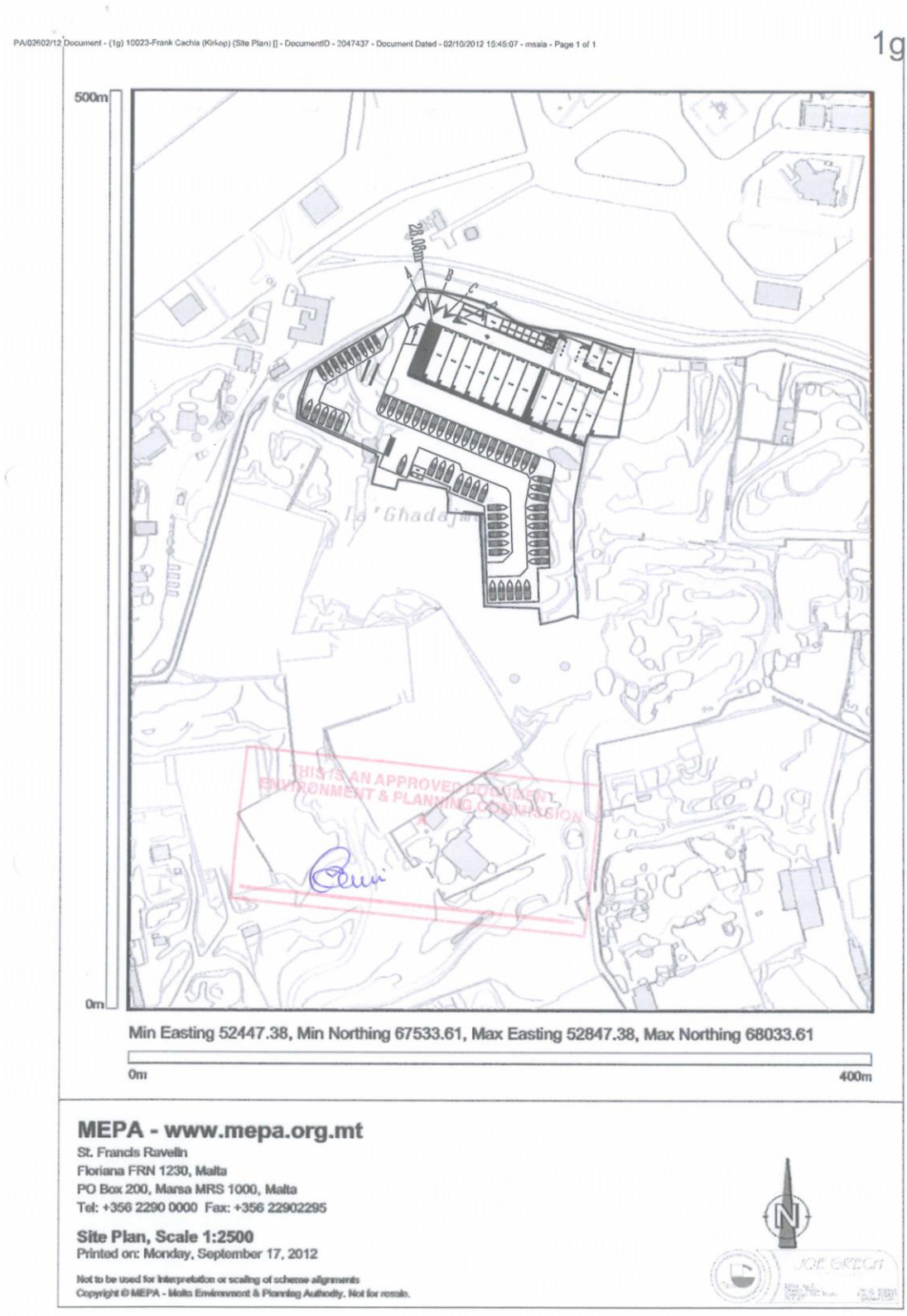

Figure 2: Site Plan showing the development layout

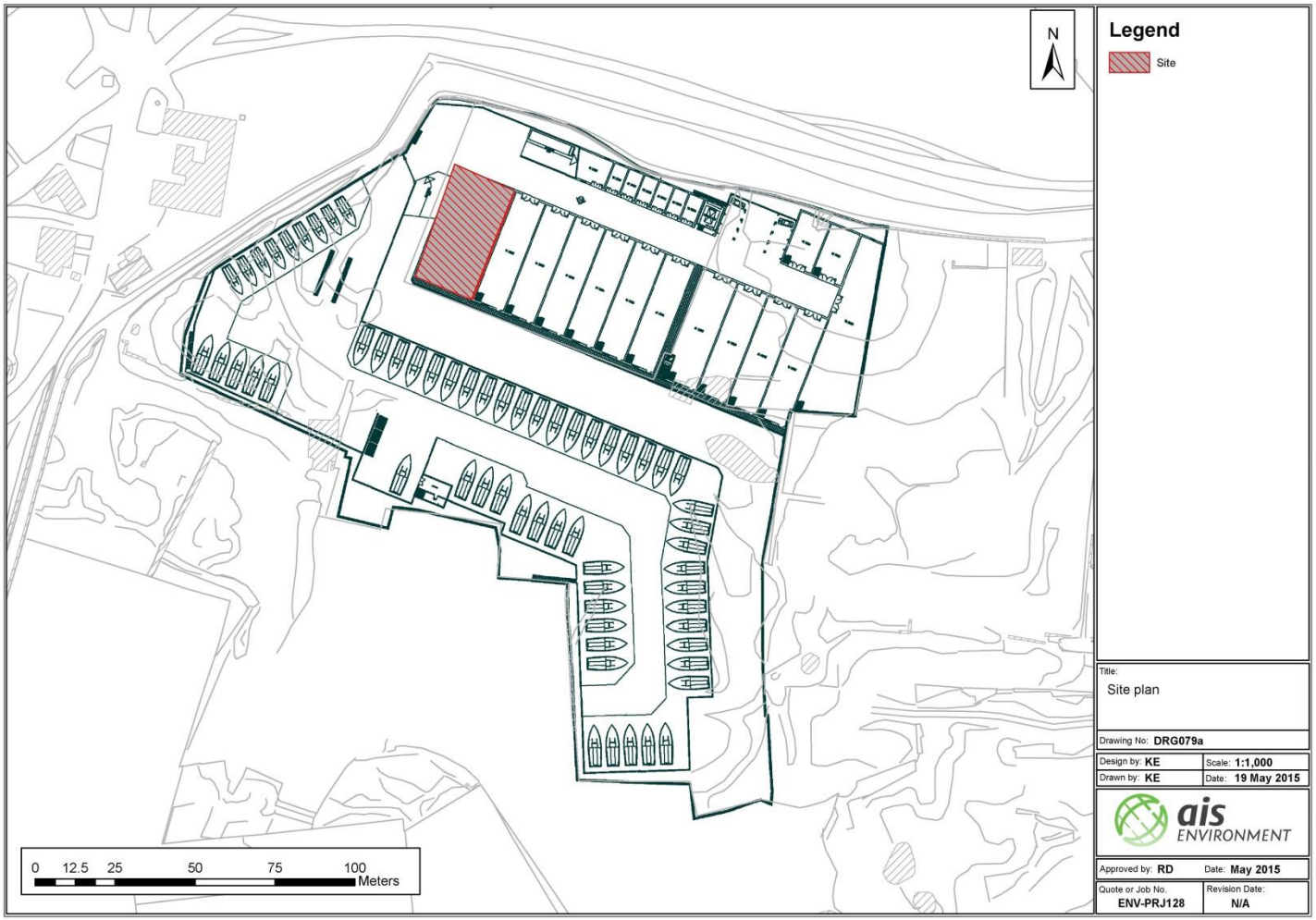

Figure 3: Site layout plan of permitted installation

3.3 Site plan showing location and nature of activities proposed on site

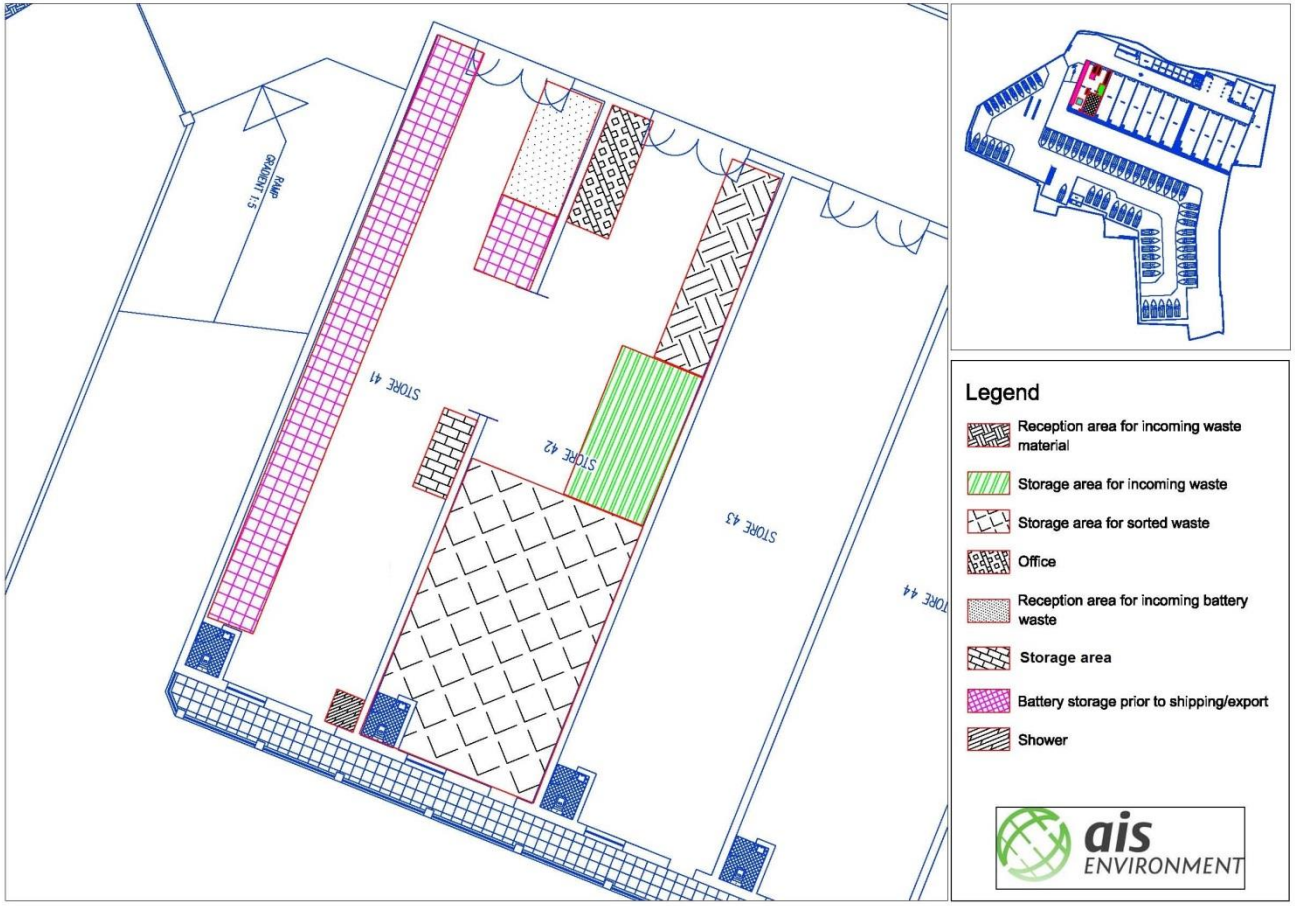

Figure 4: Site plan showing location and nature of activities that occur at the facility within warehouses 41 & 42

4.0 Environmental Management System

4.1 Management and Reporting Structure

The plant is located in the outskirts of Mqabba, in garage number 41 and 42 in a site called Ta' Għadajma as shown in Figure 2 and Figure 3, and operates at the address AGV Group, Braret Street, Birkirkara. The facility has an area of approximately 116m² divided into two stores of the mentioned site, having more than 4,000m² of land. Ta' Għadajma is owned by Mr John Bonavia & Mr John Micallef, and is divided into a small yacht yard and a number of stores not bigger than 58m² each, all with a different owner. A site layout plan is provided in Section 3.2 (Figure 3).

The person who will be responsible for managing environmental aspects of the installation is Mr Frank Cachia, who is the also the Managing Director and the Technically Competent Management.

The Curriculum Vitae of Mr Cachia is provided in Appendix I.

Contact number: +356 99846461

4.2 Environmental Policy

AGV Non Ferrous Malta Ltd commits itself to protect the environment and to prevent and minimise any potential impact arising from the operations of the facility on the social and physical environment and in particular to take every appropriate action to:

- Reduce the impact on the traffic,
- Minimise the generated waste,
- Employ recycling practices as much as possible,
- Employ noise and vibration reduction measures,
- Control dust and odour emissions to the environment,
- Consider the development of new and cleaner technologies whenever available,
- Protect the surface and groundwater resources,
- Exercise caution when working in vicinity of areas of ecological, geological and agricultural importance,
- Comply with relevant authorisations for discharges,
- Protect any cultural heritage features,
- Prevent pollution of land and incidents leading to pollution,
- Minimise the environmental impact caused from the potential decommissioning of the facility.

In order to achieve this aim, AGV Non Ferrous Malta Ltd shall motivate, train and empower the employees to apply this policy. This policy, driven by the Technically Competent Management, establishes a framework for a management approach designed to promote environmental excellence of work practices and performance, as described in detail in Section 4.3. The employees and any sub-contractors shall undertake their responsibilities in compliance with the requirements of all applicable environmental legislation, chiefly L.N. 337 of 2001, L.N. 106 of 2007, L.N. 55 of 2010 (amended to L.N. 245 of 2011).

4.3 Environmental objectives and targets

- It is the responsibility of the directors of AGV to ensure that the projected objectives are adhered to. These targets are to be reviewed and revised on an annual basis. Modifications from set objectives need to be flagged during the audit process with reasons pertaining to such modifications being made in writing.
- The aim of AGV is to extract the maximum resources out of the waste material delivered to its facilities both through collection operations and from deliveries by third parties. This can be achieved through adequate storaging keeping in mind the waste hierarchy with special attention to waste minimization followed by re-use, recovery and recycling.
- The aim of the facility is to have a zero waste operation whereby unrecoverable material is only sent for disposal. The level of performance of the facility is dependent upon the incoming material. Hence the first step to reduce waste is through the acceptance of good quality scrap for the purpose of the facility's operation. This can be achieved through strict inspection prior to loading (in the case of internal collection operation) or prior to accepting the material at the gate.
- Innovation also plays an important role in moving towards a zero waste operation. This can be achieved through the investigation of alternative reuse, reduction, recycling routes for current non usable material currently being disposed of in landfill.
- The company also aims to make efficient use of the available resources i.e. electricity, water and fuel. Although the consumption of such resources is rather low on the premises, the applicant plans to: i) service operating machines on a regular basis to ensure their efficient use, ii) shut down or turn off electrical and/or fuel (energy) based operations whenever possible, iii) restrict working hours to daylight conditions, iv) ensure that most working spaces are illuminated by sunlight, v) equip light fittings with energy saving bulbs, vi) enclose office spaces to render air-conditioning more efficient, vii) Ensure that the LPG used on site does not surpass the 150kg storage threshold (it is actually brought on site according to demand, which is rather low).
- AGV aims to reduce sound pollution coming from its daily operations through noise abatement measures when purchasing any new equipment.
- The applicant will adhere to the local health and safety regulations and will ensure that employees will keep with all health and safety practices whilst carrying out work related to the activities of AGV. In order to promote awareness within its team, AGV will ensure that all employees will attend health and safety courses.

4.4 Responsibility of environmental objectives and targets

It is the responsibility of the directors of AGV to ensure that the projected objectives are adhered to. These targets are to be reviewed and revised on an annual basis. Modifications from set objectives need to be flagged during the audit process with reasons pertaining to such modifications being made in writing.

4.5 Documentation

The aim of AGV is to extract the maximum resources out of the waste material delivered to its facilities both through collection operations and from deliveries by third parties. This can be achieved through adequate storaging keeping in mind the waste hierarchy with special attention to waste minimization followed by re-use, recovery and recycling.

The following records shall be kept:

- Maintenance records
- Staff training
- Incidents on site
- Recording of environmental performance (fuel, water and electricity usage)
- Complaints
- Movements of waste on and/or off the site (including quantities, dates of delivery or dispatch and final destination)

Table 1 and Table 2 show how movements of waste are recorded.

Export		**Quantities- Weight or Volumes**					
Date	**Destination**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**
		EWC Code	**EWC Code**	**EWC Code**	**EWC Code**	**EWC Code**	**EWC Code**

Table 1: Template for Recording Export of Waste

Stock Taking		Quantities- Weight or Volumes					
Date	Destination	Waste Type	Waste Type	Waste Type	Waste Type	Waste Type	Waste Type
		EWC Code	EWC Code	EWC Code	EWC Code	EWC Code	EWC Code

Table 2: Template for Annual Stock Taking

Incident diary				
Date	**Time**	**Location**	**Description of incident/near miss**	**Course of action**

Table 3: Template for incident diary

4.6 Corrective Action

Should any irregularities in the specified requirements of the IPPC permit not be fulfilled and identified through the environmental audit process, the Technically Competent Management will be responsible to identify and implement appropriate corrective measures. The following procedure will be adhered to:

- Identify the causes of irregularities.
- Maintain a register of third party complaints
- Identify appropriate corrective actions.
- Plan and implement corrective actions.
- Monitor corrective actions to verify their effectiveness.

Table 4 provides a template for recoding of corrective actions taken. Where irregularities are identified outside the audit process, the same procedure should be applied. The public authority should be informed on any irregularities and consulted on appropriate corrective actions prior to implementation.

Audited Area	**Date of Audit**
Description of Irregularity	
Corrective Action	**Date of implementation**
Corrective Verification	**Date of verification**

Table 4: Template for corrective action

4.7 Awareness and Training

A training plan is provided in Section 8.

4.8 Maintenance programme

A maintenance programme is provided in Section 6.

5.0 Proposed activities

5.1 Proposed installation activities

5.1.1 Transport of waste to the site

All the waste is delivered to the facility in trucks or in skips by waste carriers approved by the Authority – MEPA. The material is placed in leak-proof containers, placed on an authorised waste carrier and all the material reaching the premises is checked at the gate. Following acceptance the loaded vehicles delivering waste are weighed over a weighbridge before unloading the waste in the operational area. The material is directed accordingly to designated areas and stockpiled separately according to waste stream for eventual packaging.

All hazardous waste transferred to and from the site is accompanied by a valid hazardous waste Consignment Permit issued by the Authority, together with a Consignment Note. Records of the weight of each consignment received and/or removed from site are maintained.

5.1.2 Storage and processing of waste

The waste management facility is authorised to carry out the following activities:

- Storage of paper and cardboard;
- Storage of plastic and rubber;
- Storage of waste packaging;
- Storage of ferrous and non-ferrous metals; and
- Temporary storage and wrapping of batteries and accumulators.

The processes of the various waste streams are outlined in Table 5 till Table 9.

Name of waste	Paper and cardboard packaging
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 01 Paper and cardboard packaging 19 12 01 Paper and cardboard
Quantity (maximum site capacity in tonnage)	20
Projected quantity of waste to be processed annually (in tonnage)	10
Method of storage and containment	Ready baled material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 5: Storage of paper and cardboard

Name of waste	Plastic and rubber
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 02 Plastic packaging 16 01 19 Plastic 17 02 03 Plastic 19 12 04 Plastic and rubber 20 01 39 Plastics
Quantity (maximum site capacity in tonnage)	35
Projected quantity of waste to be processed annually (in tonnage)	25
Method of storage and containment	Ready baled material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 6: Storage of plastic and rubber

Name of waste	Waste packaging
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 03 Wooden packaging 15 01 04 Metallic packaging 15 01 06 Mixed packaging 15 01 07 Glass packaging
Quantity (maximum site capacity in tonnage)	20
Projected quantity of waste to be processed annually (in tonnage)	20
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 7: Storage of waste packaging

Name of waste	Ferrous and non-ferrous metals
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	16 01 17 Ferrous Metal 16 01 18 Non-Ferrous Metal

	17 04 01 Copper, bronze, brass 17 04 02 Aluminium 17 04 03 Lead 17 04 04 Zinc 17 04 05 Iron and Steel 17 04 07 Mixed metals 17 04 11 Cables other than those mentioned in 17 04 10* 19 10 02 Non-ferrous waste 19 12 02 Ferrous Metal 19 12 03 Non-Ferrous Metal 20 01 40 Metals
Quantity (maximum site capacity in tonnage)	70
Projected quantity of waste to be processed annually (in tonnage)	160
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12,GBR 00770/10

Table 8: Storage of metals

Name of waste	Batteries and accumulators
Category of Waste (Inert, Non-Hazardous, Hazardous)	Hazardous and Non-Hazardous
EWC code (from LN 337 of 2001)	- 16 06 01* Lead batteries - 16 06 02* Ni-Cd batteries - 16 06 03* Mercury-containing batteries - 16 06 04 Alkaline batteries (except 16 06 03*) - 16 06 05 Other batteries and accumulators - 16 06 06* Separately collected electrolyte from batteries and accumulators - 20 01 34 Batteries and accumulators other than those mentioned in 20 01 33*
Quantity (maximum site capacity in tonnage)	160
Projected quantity of waste to be processed annually (in tonnage)	750
Method of storage and containment	Leak proof containers/On pallets prior to shipping
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12,GBR 00770/10

Table 9: Storage of batteries and accumulators

Storage of all waste types is carried out in designated areas indoors as illustrated in Figure 5 till Figure 8. The processing of such wastes only includes plastic wrapping, prior to exportation.

Waste acceptance is ceased during shutdown periods should maximum capacity be reached. Such an occurrence is very remote given that it makes financial sense to export waste at the earliest to make space for incoming waste.

In view of the fact that a larger quantity of batteries could be stored during a shutdown period, frequent inspections are conducted to prevent uncontrolled inundation or percolation due to potential leakages. Other precautionary measures to contain potential leakages include:

a. Batteries are stored in approved fibre containers and stored in the upright position.
b. All areas where batteries are handled are impervious in nature.
c. Spill kits are available in areas where batteries are handled.
d. No surface drains are present in the immediate area.
e. Premises are situated over third party warehouses, separated by approximately 0.35m of concrete.

Currently, lead-acid batteries, nickel-cadmium batteries, mercury-containing batteries, alkaline batteries along with other types of batteries and accumulators are simply stored on site. No neutralisation processing or emptying procedures occur for these types of batteries and accumulators.

All batteries entering the facility are shrink-wrapped on plastic pallets with adequate trays to collect any leaking electrolytes. However, in case of accidental leakages of the batteries and spillages of the diluted acid, they are perpetually emptied immediately upon arrival, and placed in drip trays made of acid-proof material. The acid container is located within a trough which has a capacity of 110% of the container, in order to prevent any spillages from the possible crack of the container. The diluted acid is also equipped with a trough with capacity 110% that of the dilute acid container constructed in a way that prevent rapture and can only suffer, remotely, cracks that may result in the acid trickling down to the trough.

Hazardous waste (stored in warehouse 41) is segregated from the remaining non-hazardous combustible waste (stored in warehouse 42). This prevention mechanism ensures that any potential fumes released from batteries and accumulators are contained in one area.

The standard procedure entails that the batteries are temporarily stored, packed and exported *tale quale*. Both dry and wet-cell batteries are packaged in 1000 litre double density containers per week, and are exported to Italy for treatment at an authorised treatment plant, with all the documentation submitted to the Authority for approval prior to any transfer of the acid to the plant.

All other non-hazardous wastes leaving the site after storage and plastic wrapping are sent to licensed facilities, either locally or abroad. Disposal certificates are kept on record and made available for inspection.

Figure 5: Storage area for sorted waste

Figure 6: Storage of ferrous metal

Figure 7: Storage of non-ferrous metal (aluminium)

Figure 8: Temporary battery storage prior shipping/export

5.1.3 Machinery

The facility makes use of a variety of machinery mainly; a fork lifter, and two manual pallet jacks.

The mobile machinery, i.e. the fork lifter which is shown in Figure 8, is used to transport waste fractions within and outside the facility. While, the two manual pallet jacks provide means for stacking cases of goods or products onto a pallet.

The LPG used to operate the fork lifter is not stored on site. Alternatively, the fuel is simply bought according to consumption.

5.2 Proposed techniques and measures to prevent and reduce waste and emissions of substances and heat

Being a waste management facility, the prevention and reduction of waste generation from other sites is the main function at the premises.

The only waste deriving directly from the facility is municipal solid waste from office work and consumption of food, which is very minimal. Moreover, unpermitted waste is to be stored in a non-leaking skip or similar container in a designated area.

The main sources of emission are derived from the machinery used as outlined in Sections 11.0, 12.0 and 13.0. Possible energy saving measures are listed in Section 7.2.

5.3 Flow diagram summarising proposed installation activities

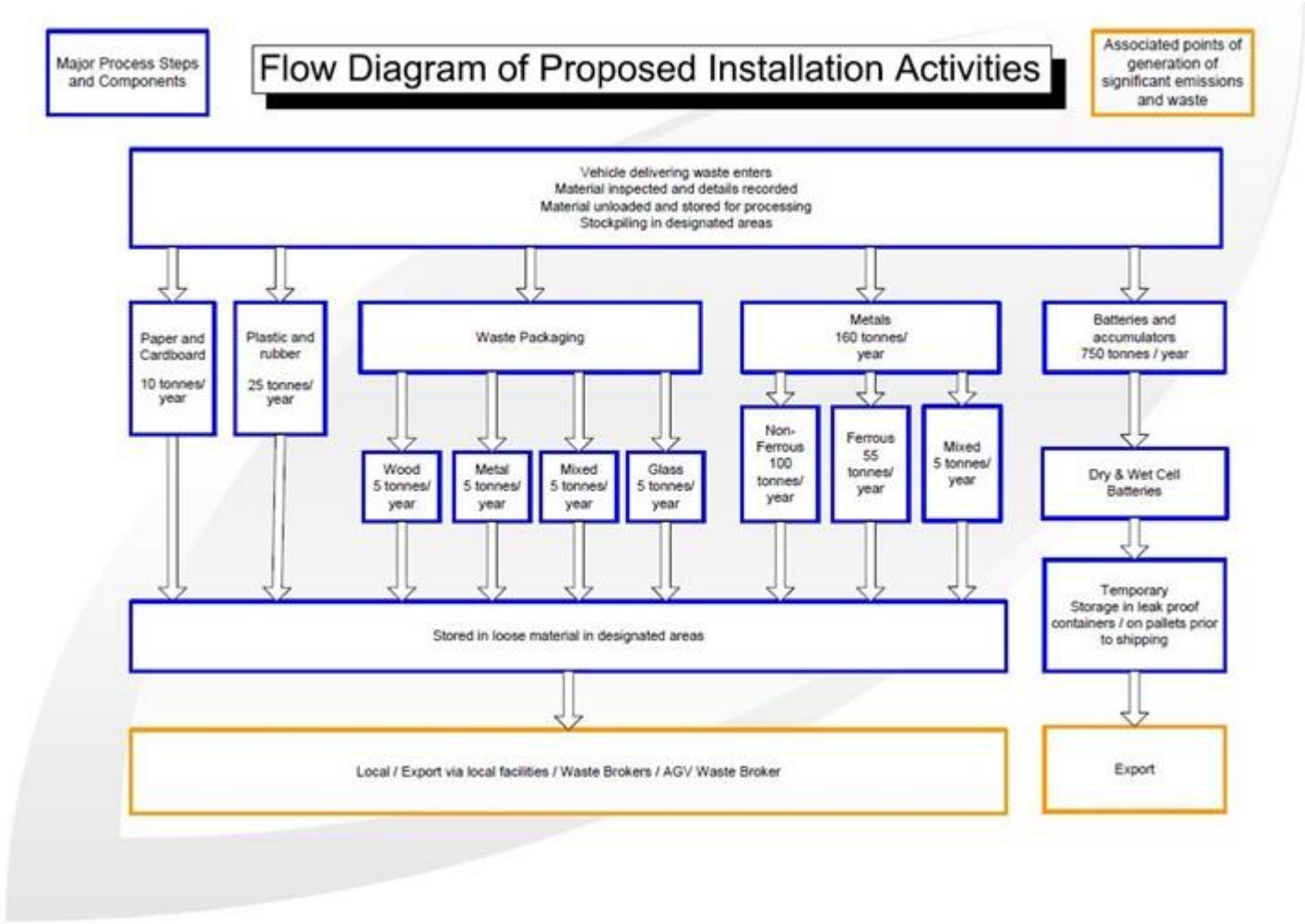

Figure 9: Flow diagram summarising proposed installation activities

5.4 Comparison of proposed activities with relevant BAT

A document on the comparison of the processes at AGV Ltd with the BREF for Emissions from Storage Section 1.2 is provided in Appendix IV.

5.5 Outline of main alternatives considered

No alternatives were considered in the technology, techniques and measures since the current status of the installation complies with BAT with regards to the storage of hazardous waste.

5.6 Raw materials

Being a waste management facility, the main raw materials stored on site are waste materials produced at other sites:

- Paper and cardboard;
- Plastic and rubber;
- Waste packaging;
- Ferrous and non-ferrous metals; and
- Batteries and accumulators.

10 boxes of plastic (amounting to 60 rolls a year) are used annually to wrap batteries on pallets. The consumption of such materials is recorded in spreadsheets for internal benchmarking.

The other raw material present on site is LPG in the form of cylinders (similar to the ones used for domestic purposes) due to the operation of the fork lifter; as indicated in Table 10. Material Safety Data Sheets (MSDS) of the chemical raw material is included in Appendix II.

Chemical	Maximum amount stored at any one time	Annual consumption	Use	Method of Storage and Containment
LPG Cylinders	One 25kg cylinder	6 cylinders	Fuel for fork lifter	No storage is required. The LPG cylinder is mounted on the fork lifter and consumed without additional storage on site.

Table 10: Use of chemical raw materials

A site plan showing major site features and activities is provided in Section 3.3.

Protective measures at the facility include CCTV systems around the perimeter, 24 hour security service through watchmen and lockable doors.

5.7 Ozone depleting substances and fluorinated greenhouse gases

No equipment using ozone depleting substances and fluorinated greenhouse gases with a fluid charge of 3kg or more are utilised on site.

6.0 Maintenance

The management is committed to keep detailed maintenance records of all machinery found at the facility (Section 5.1.3) in order to be kept in a good operating condition and without causing potentially polluting leaks and spillages or excessive noise. Table 11 provides the proposed maintenance programme while Table 12 shows a template form for keeping records of maintenance, which can be applied to any machinery.

The management also has put in place procedures for regular inspections and maintenance of storage areas and equipment to identify signs of damage, deterioration or leakage. This is performed on a daily basis by keeping records using the sheet shown in Table 12, once again.

Check	Lubrication/ Greasing	Fluid Levels	Fuel	Gauges	Tyres
Fork lifts	Moving joints need to be greased to prevent the harmful effects of friction. Fittings need to be greased on a regular basis and worn out ball bearings need to be changed.	Transmission and hydraulic fluids, coolants as well as motor oil levels need to be checked regularly depending on how often fork lift is used. If necessary daily inspections should be carried out.	Fuel levels need to be checked on a daily basis. Changing LPG cylinders should follow appropriate procedures ensuring safety protocols are adhered to.	Gauges and lights found on the instrument panel of the forklift give an indication when some part is malfunctioning. Therefore, attention must be paid to these instruments and the appropriate measurements taken, when they indicate any faults. Doing so will forestall more expensive repairs.	Air pressure and tyre condition should be checked regularly to avoid unbalance which could lead to damaging of the goods being carried. Worn out tyres are to be replaced.
Pallet jacks	Lifting chains and inside of channels are to be cleaned periodically and lubricated lightly with light oil every 6 months.	Hydraulic oil levels need to be checked with the fork in lowered position every 3 months.	Battery is to be charged accordingly depending on use. The battery should be kept fully charged.	N/A	Air pressure and tyre condition should be checked regularly to avoid unbalance which could lead to damaging of

					the goods being carried. Worn out tyres are to be replaced.

Table 11: Proposed maintenance programme

MAINTENANCE RECORD	
Equipment/ Machinery	
Date	
Technician	
Maintenance work description	
Comments	

Table 12: Template for keeping records of maintenance

7.0 Energy and water

7.1 Energy

The annual consumption of electricity from public utilities is estimated to be around 50 units and is used for the running of the premises. This includes lighting, and charging of machinery such as the pallet jacks. Office appliances include a mini-fridge, a coffee machine and office computers which also consume electricity.

7.2 Basic measures for improvement of energy efficiency

Energy generation and consumption has significant implications, both from an economical and environmental aspect. Energy efficiency and reduction in energy consumption is expected to be achieved by the following measures, according to practicality:

- Working hours are mostly restricted during the day;
- Most working spaces are illuminated by sunlight;
- Efficient luminaires equipped with energy saving lamps;
- Office spaces are enclosed, making air-conditioning more efficient.

7.3 Water

The water demand for the whole facility is estimated to be around 30 units per year. Water is used for:

- Shower that is used by the members of staff in emergency cases
- Sanitary facilities

The site floor is not washed with water, but is simply swept with a broom once a week. For this reason, no floor washings are generated. Additionally, the water used for the shower is segregated by a cubicle, and for this reason it is not possible for mixing to occur with potential floor washings.

8.0 Training

Most of the employees at AGV are manual workers and the company is committed to adhere to high safety standards and minimise possibility of avoidable accidents. All employees shall be provided with adequate training and written operating instructions to enable them to effectively carry out their duties. Staff dealing with the batteries waste management activities is fully trained in battery handling and all relative records are maintained.

Moreover, they will be expected to attend health and safety courses by a professional training provider in order enhance their awareness on occupational health and safety issues and how they can tackle emergency situations.

The management staff shall strive to attend any available professional training courses or public information sessions on best practices in waste management, recycling and environmental permitting obligations.

Mr Frank Cachia, on his capacity as a director, will be the person responsible for the provision of training both from internal or external training providers. Table 13 provides a template for keeping training records.

Name of institution providing course	Title of course	Dates	Names of Employees attended

Table 13: Proposed template for keeping training records

9.0 Cessation

Should decommissioning of the facility occur, the following procedure will be carried out:

- The wastes which remain on site will all be processed, packed accordingly, and sold to local or foreign markets. If the material is exported this is loaded in either containers or trailers and shipped to the respective waste management facilities overseas. If the material is sold locally, this shall be transported to the waste management facilities using MEPA registered waste carrier trucks.
- All furniture, machinery and appliances will also be put up for sale on the local and foreign market wither as second-hand equipment or as scrap material.
- Any other material which cannot be processed for recycling will be disposed of appropriately according to the legal requirements at the time.
- A land and groundwater contamination assessment will be carried out to confirm that no contamination has occurred from the activities of the facility. If any contamination from the facility's activity is detected, a decontamination plan will be commissioned and implemented to return the site to its original condition.

The Operator shall notify the Authority immediately upon a decision taken to cease business activity and shall submit a decommissioning plan to the Authority for approval.

10.0 Rainwater

Rainwater runoff from the area of the facility will be captured in a communal cesspit tank since AGV operates in two garages in a site called Ta' Għadajma as shown in Section 3.3. In accordance with the provisions of Water Intended for Human Consumption Regulations, L.N. 17 of 2009 as amended by L.N. 242 of 2009.

The harvested rain water is mixed with water used for sanitary facilities and should not be used for human consumption and firefighting. A water tank trunk is used to pump the mixture stored in the communal cesspit tank and is disposed of and treated in authorized facilities.

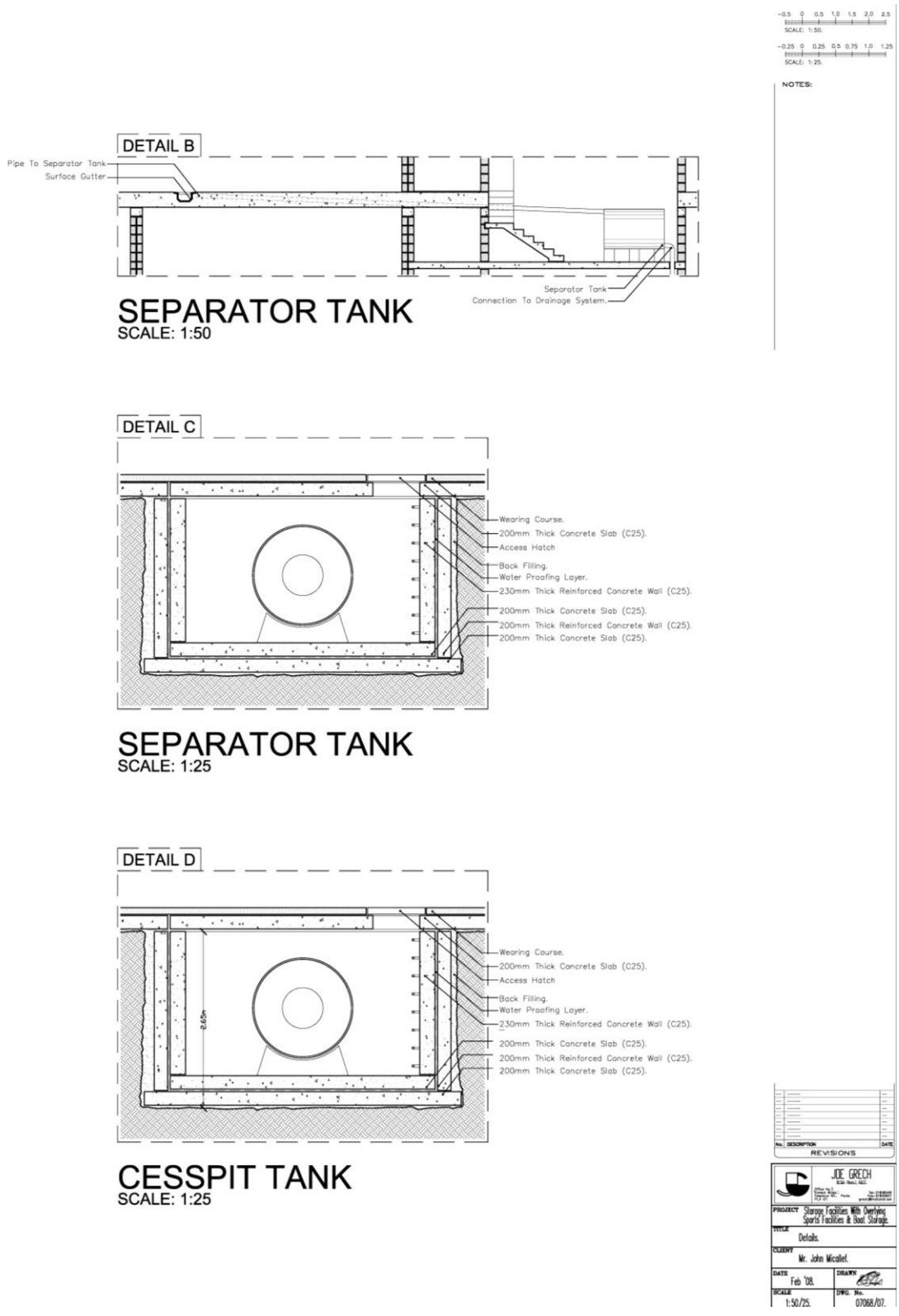

Figure 10: Drawings of the communal cesspit tank at Ta' Għadajma Complex

11.0 Emissions to air

None of the permitted installation and machinery mentioned in Section 5.1 is a source of air emissions. All waste is shrink wrapped in plastic (60 rolls used annually) and temporarily stockpiled on pallets.

12.0 Emissions to land

No substances are released directly onto land from the permitted installations.

However, AGV will undertake all necessary measures and precautions to prevent spillage of raw materials, intermediates, products, waste and any other materials. Accidental spillages of acid or other hazardous materials shall receive immediate attention to prevent escape to groundwater or land.

The probability of acid-spillage on land is mitigated by having an impermeable surface concrete floor and a neutralisation powder kit (Pyracidosorb) available on site to control any accidental spillages. This is made available and accessible to personnel responsible for the management of the battery storage areas.

Therefore, the possibility of acid being spread on the ground is remote. In case of acid spillage, the contaminated powder shall then be subject to chemical analysis for eventual disposal according to the local legal notices. In such a situation, a suitable manager/chemist will be present on site to ensure that no mixing of such discharges is conducted whilst transferring.

12.1 The possible risks and hazards associated with ground water contamination

Spillages of any solutions, as well as solids, shall not affect ground water resources since:

- The ground beneath the plant is impermeable,
- Further commercial premises are located at the level beneath AGV (the former has another 35cm of concrete),
- The volumes handled are small enough to prevent an uncontrolled inundation or percolation through the concrete floor or walls,
- The chemical composition complies with LN 139/2002.

The possibility of any solution permeating through the floor concrete or walls, and onto the warehouses located underneath, is remote.

13.0 Noise and vibration

The main sources of noise and vibration at the facility are very minimal, these result mainly during loading and unloading from the fork lifter and the pallet jacks.

14.0 Expenditure plan

The draft expenditure plan is based on potentially identified costs which could arise during the operational and decommissioning phases, even though certain costs are difficult to predict with confidence or be predicted at all.

14.1 Monitoring of emissions

Regular monitoring of the movements of wastes on and off site will be recorded. Details recorded will include the qualities, dates delivered on and off site, waste carrier and final destination. The monitoring of this data is an integral part of the commercial operations at the facility and can be carried out internally by the company. Therefore no additional external costs are envisaged.

No other monitoring requirements have been identified at stage. However, MEPA might require baseline environmental assessments or monitoring of emissions into the environment, which are assumed to be of minor importance such as groundwater, land and air quality, and noise.

Estimated external costs for environmental assessments and monitoring is not expected to exceed €2,000 for each study.

14.2 Clearing installation

The installation would need to be completely cleared to reinstate the site in its original condition. Decommissioning is planned to be carried out as outlined in Section 9.0. Since decommissioning mainly involves the clearing of waste material, it is an integral part of the commercial operations at the facility and can be carried out internally by the company. Therefore no additional external costs are envisaged.

14.3 Remedial action in the event of the failure of pollution control systems

The facility is considered to have a low potential of risk of major pollution incidences since the facility uses low quantities of chemicals, produces low quantities of emissions and most waste material stored is solid and can be effectively contained. The facility also bears impermeable concrete ground and all hazardous waste storage areas are roofed. Remedial action for potential spillage or emissions depends on the volumes involved and the toxicity of the hazardous material, which are difficult to generalise. A contingency budget of around €8,000 is considered adequate for any eventual failure of pollution control system incident.

Appendix I

CV and police conduct of person responsible for managing environmental aspects of the installation

Appendix II

MSDS of the Chemical Raw Materials

Appendix III

Risk Assessment, Fire & Emergency Response Plan (Doc 2.8)

Appendix IV

BREF (BATs)

Appendix V

Receipt of sewer discharge permit

IPPC Permit Application for AGV Non Ferrous Malta Ltd

IPPC Form B Report

DOCUMENT REF. NO: ENV332249/A/13
THIRD DRAFT

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DOCUMENT APPROVAL

Approval Level	Name	Signature
Internal Check	Ruth DeBrincat Tabone	
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DISCLAIMER

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This report provides information on the activities and features of AGV Non Ferrous Malta Ltd to export batteries, accumulators and other non-hazardous waste materials, in the pursuit for an Integrated Pollution Prevention and Control (IPPC) Permit Application.

The requirement for an IPPC permit stems from the expansion of activities related to Category 5.5 listed in Schedule I of LN 10 of 2013, namely *Temporary storage of hazardous waste not covered under point 5.4 pending any of the activities listed in points 5.1, 5.2, 5.4 and 5.6 with a total capacity exceeding 50 tonnes, excluding temporary storage, pending collection, on the site where the waste is generated*.

This report aims to provide the following details as pertinent to Part B of the IPPC Application:

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2.0 Non-Technical Description

AGV Non Ferrous Malta Ltd operates a waste management facility of a variety of waste streams with premises located in a warehouse complex called Ta' Għadajma, in the limits of Mqabba. Due to the continuous expansion of activities, an IPPC permit is required for the temporary storage of hazardous waste that is expected to exceed the 50 tonnes capacity threshold. The facility is however responsible for the management of other types of non-hazardous waste.

One of the most prominent activities carried out is the temporary storage batteries and accumulators. All the different kinds of batteries are temporarily stored, packed and exported *tale quale*.

Non-hazardous waste such as paper, cardboard, plastic, rubber, ferrous and non-ferrous metals along with different types of waste packaging are also collected and temporarily stored as bales or loose material within designated areas on the premises. Consequently, all of the aforementioned kinds of non-hazardous wastes are transferred locally or exported via registered waste brokers.

3.0 Site maps and reports

3.1 Site report

The facility is located in the outskirts of Mqabba, in garage number 41 and 42 in a warehouse complex called Ta' Għadajma as shown in Section 3.2 (refer to Figure 1 and Figure 2), and operates at the address AGV Group, Braret Street, Birkirkara. The company has an area of approximately 116m² divided into two stores of the mentioned site, having more than 4,000m² of land. Ta' Għadajma is owned by Mr John Bonavia & Mr John Micallef, and is divided into a small yacht yard and a number of stores not bigger than 58m² each. A site layout plan is provided in Section 3.2 (refer to Figure 3).

AGV Non Ferrous Malta Ltd, part of AGV Group Malta, is a Maltese registered private company which started its operation in 2008. It is one of the leading producers and exporters of recycled scrap, mainly; paper and cardboard, plastic and rubber, waste packaging, ferrous and non-ferrous metals, and batteries and accumulators from several enterprises in Malta and Gozo.

The site layout consists of designated areas where sorting and storage of different waste streams are carried out indoors. As illustrated in Section 3.3 (refer to Figure 4), around 10m^2 of the area in garage number 42 that was previously used for the draining of 'wet lead batteries' is now being utilised as a storage area. The remaining area of the premises is used for the other activities, namely; office, storage areas for incoming waste, and storage area for sorted waste.

Stage	EC Guidelines for producing a baseline report	Materials	Verdict
1.	Identify which hazardous substances are used, produced or released at the installation and produce a list of these hazardous substances.	16 06 01* Lead batteries 16 06 02* Ni-Cd batteries 16 06 03* Mercury-containing batteries 16 06 04 Alkaline batteries (except 16 06 03*) 16 06 05 Other batteries and accumulators 20 01 34 Batteries and accumulators other than those mentioned in 20 01 33*	The adjacent list contains batteries stored on site. All of these batteries are hazardous, except for Alkaline batteries.
2.	Identify which of the hazardous substances from Stage 1 are 'relevant hazardous substances' (see Section 4.2). Discard those hazardous substances that are incapable of contaminating soil or	Lead acid batteries H314, H 315, H319 Nickel Cadmium batteries H290, H302, H314, H315, H317, H330, H332, H334, H341, H350, H350i, H351, H360, H361fd, H370,	Lead acid does not qualify as a 'relevant hazardous substance' because its health hazard statements are incapable of contaminating soil or groundwater. Nickel Cadmium batteries

	groundwater. Justify and record the decisions taken to exclude certain hazardous substances.	H372, H410, H412. Mercury containing batteries H290, H300, H302, H310, H314, H330, H332, H360D, H372, H373, H410	qualify as a 'relevant hazardous substance' because they are very toxic and harmful to aquatic life with long lasting effects. Mercury containing batteries qualify as a 'relevant hazardous substance' because they are very toxic to aquatic life with long lasting effects.
3.	For each relevant hazardous substance brought forward from Stage 2, identify the actual possibility for soil or groundwater contamination at the site of the installation, including the probability of releases and their consequences, and taking particular account of: the quantities of each hazardous substance or groups of similar hazardous substances concerned; how and where hazardous substances are stored, used and to be transported around the installation; where they pose a risk to be released; In case of existing installations also the measures that have been adopted to ensure that it is impossible in practice that contamination of soil or groundwater takes place.	Nickel-Cadmium batteries Mercury containing batteries	Ever since the start of operations, the facility only stored lead-acid batteries. Should Nickel-Cadmium and mercury containing batteries be introduced to the site at a later stage, the expected possibility for soil or groundwater contamination is very low. • Leakages are prevented by storing them in appropriate leak-proof containers. • The site is fitted with an impermeable concrete floor, and is also an entire storey above the ground, since other warehouses are found at level -2. • The facility is also equipped with a neutralisation spill kit that is used in cases of spillage.
4.	Provide a site history. Consider available data and information: In relation to the present use of the site, and on emissions of hazardous substances which have occurred and which may give rise to pollution. In particular, consider accidents or incidents, drips or spills from routine operations, changes in operational practice, site surfacing, changes in the hazardous substances used. Previous uses of the site that may have resulted in the release of hazardous substances, be	Until 2007, ta' Għadajma storage complex at Mqabba was non-existent, and instead constituted of a disused quarry covering an approximate area of 17,188m^2. This area had been backfilled with inert excavation material up to 8m below the road level which runs along the North of the site. The full development permit PA 4486/07 gave the green light for the construction of a storage facilities complex that exploits the depth of the quarry by locating the bulk of the development below ground level on two storeys. These warehouses are accessed via appropriately designed ramps at the periphery of the complex. The applicant's site is located in two of the thirteen differently sized warehouses present on the first level below ground (level -1). Ever since it started to operate in 2008, AGV Nonferrous Limited has never experienced accidental spillages, and posed no threat to the land and groundwater systems. Should there be any accidents in the future, the likelihood of land pollution risks should be contained since the floor of the site is fully covered by a thick impermeable layer of	

	the same as those used, produced or released by the existing installation, or different ones. Review of previous investigation reports may assist in compiling this data.	concrete. Mitigation measures are also adopted on site to prevent any harm from being done to the surrounding environment. Please refer to the Emergency Response Plan and Fire plan attached in Appendix III for more information.

3.2 Site Plan showing location of the facility

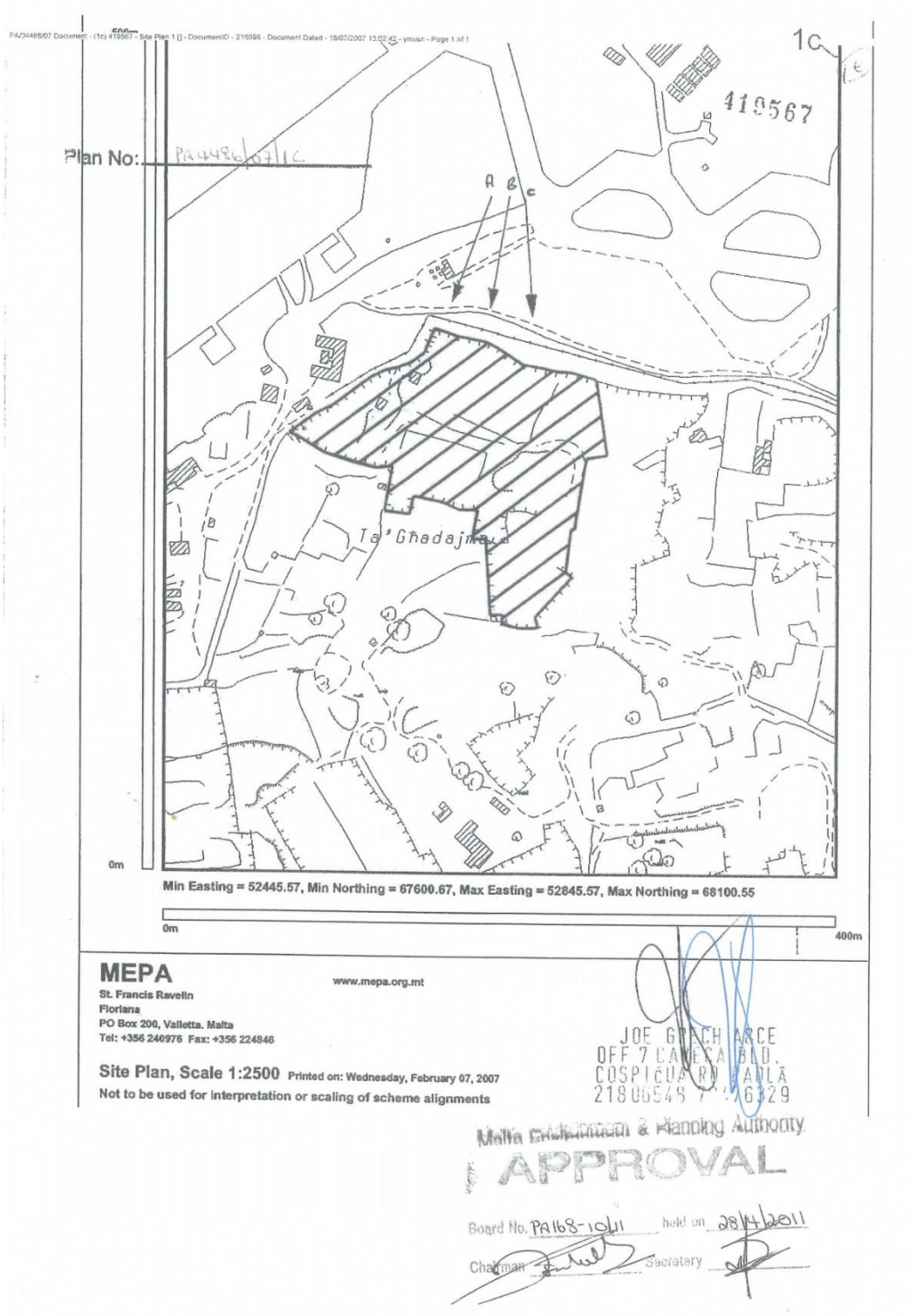

Figure 1: Site of Ta' Għadajma Complex, showing extent of area delineated in black

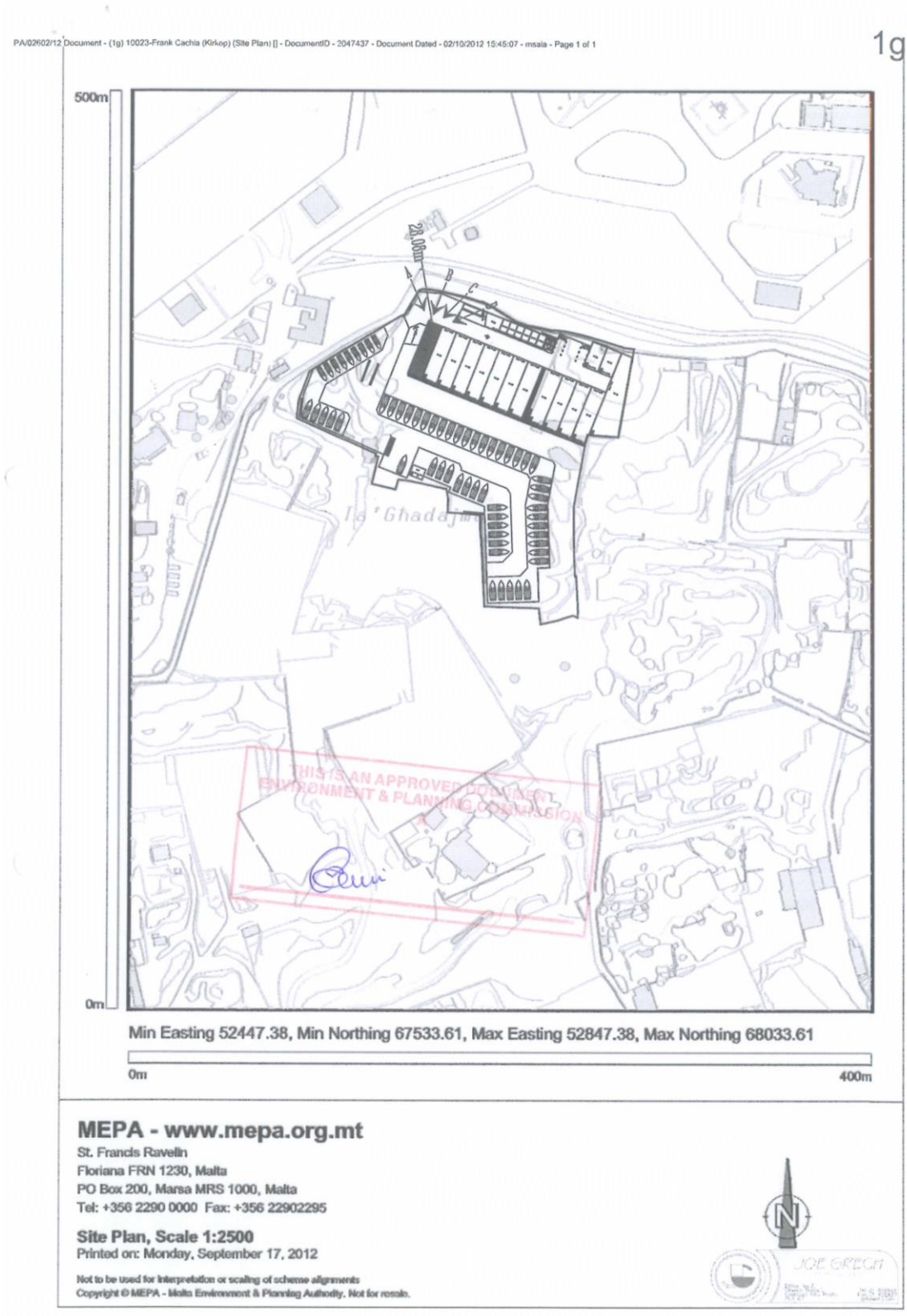

Figure 2: Site Plan showing the development layout

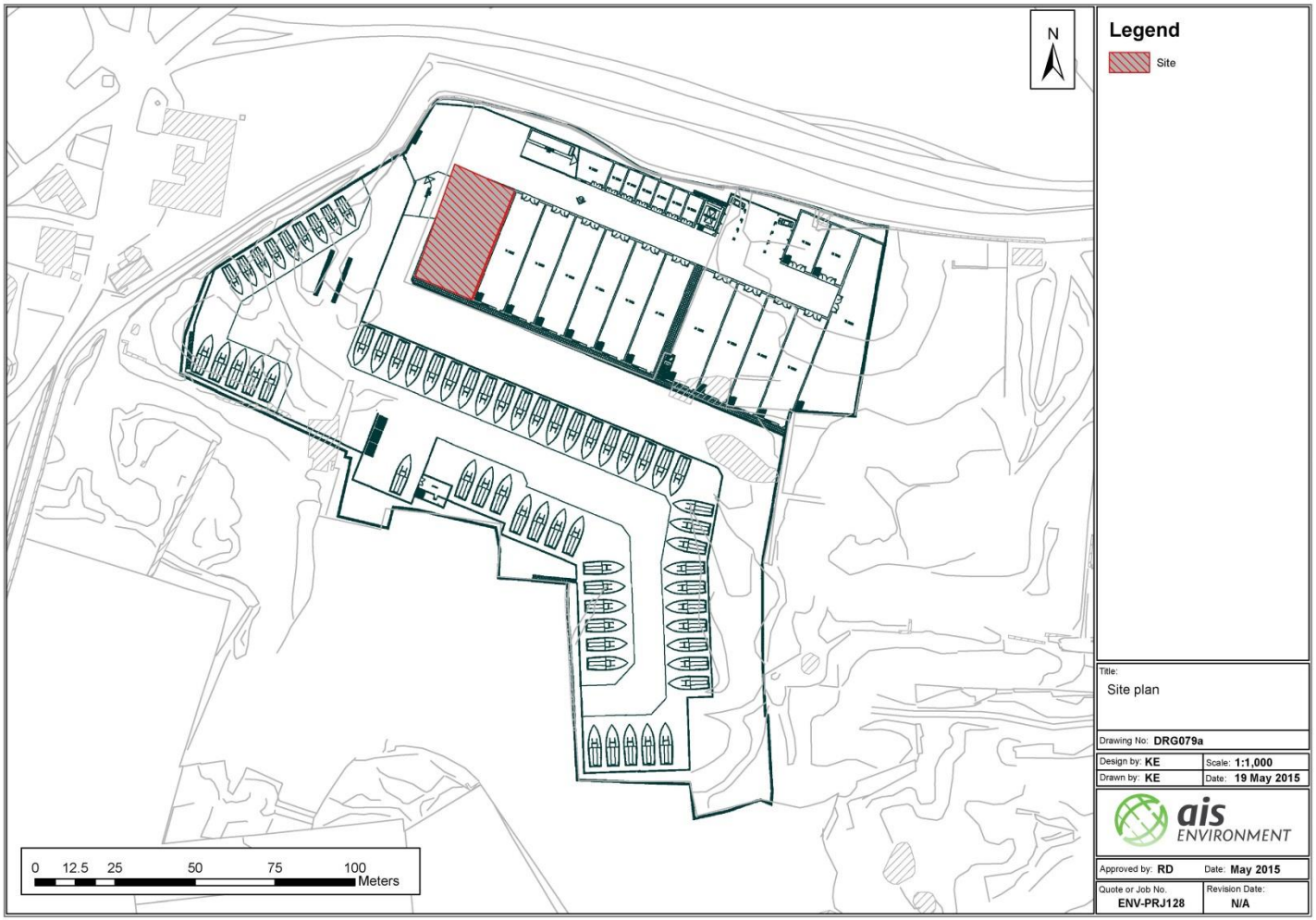

Figure 3: Site layout plan of permitted installation

3.3 Site plan showing location and nature of activities proposed on site

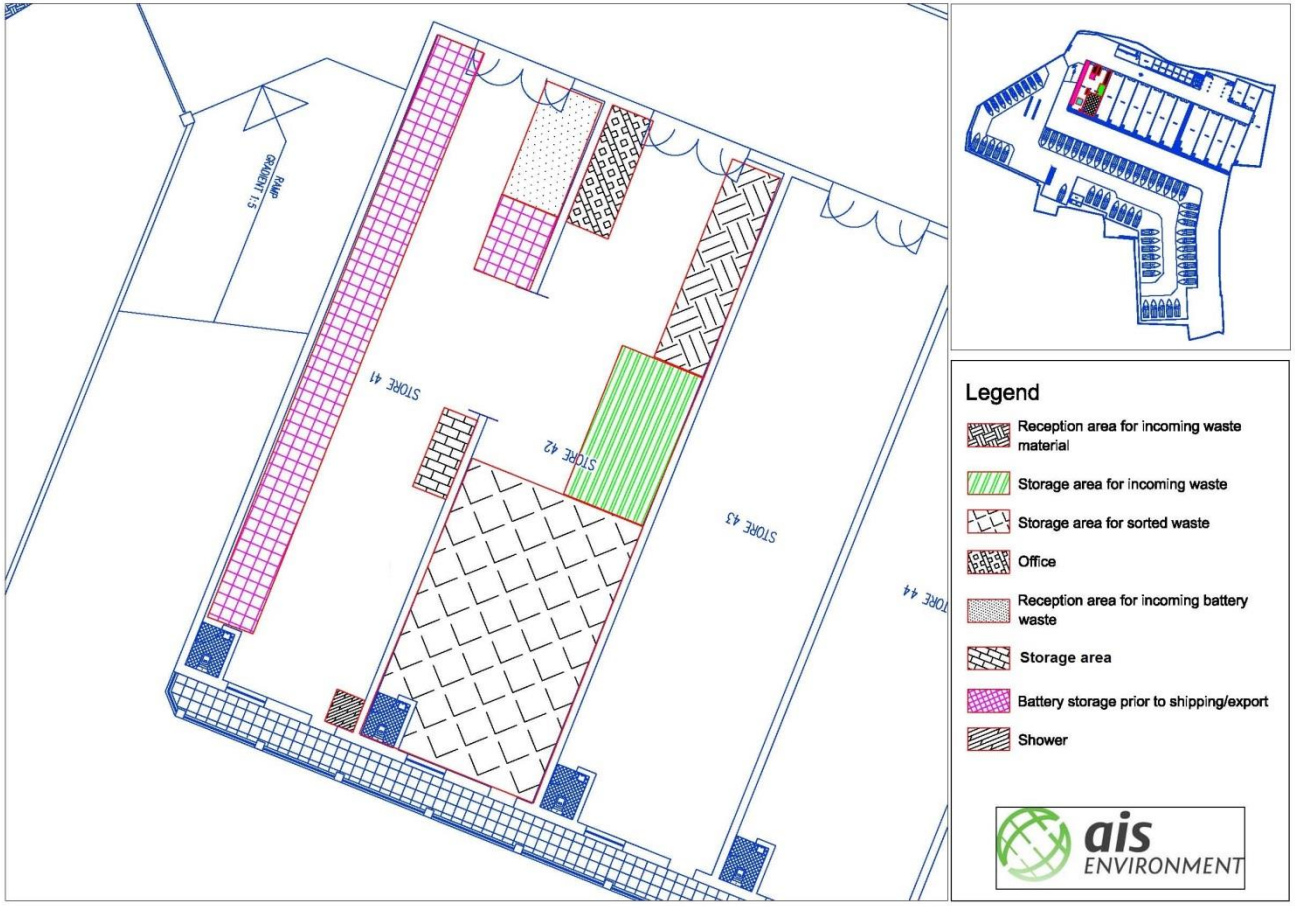

Figure 4: Site plan showing location and nature of activities that occur at the facility within warehouses 41 & 42

4.0 Environmental Management System

4.1 Management and Reporting Structure

The plant is located in the outskirts of Mqabba, in garage number 41 and 42 in a site called Ta' Għadajma as shown in Figure 2 and Figure 3, and operates at the address AGV Group, Braret Street, Birkirkara. The facility has an area of approximately 116m² divided into two stores of the mentioned site, having more than 4,000m² of land. Ta' Għadajma is owned by Mr John Bonavia & Mr John Micallef, and is divided into a small yacht yard and a number of stores not bigger than 58m² each, all with a different owner. A site layout plan is provided in Section 3.2 (Figure 3).

The person who will be responsible for managing environmental aspects of the installation is Mr Frank Cachia, who is the also the Managing Director and the Technically Competent Management.

The Curriculum Vitae of Mr Cachia is provided in Appendix I.

Contact number: +356 99846461

4.2 Environmental Policy

AGV Non Ferrous Malta Ltd commits itself to protect the environment and to prevent and minimise any potential impact arising from the operations of the facility on the social and physical environment and in particular to take every appropriate action to:

- Reduce the impact on the traffic,
- Minimise the generated waste,
- Employ recycling practices as much as possible,
- Employ noise and vibration reduction measures,
- Control dust and odour emissions to the environment,
- Consider the development of new and cleaner technologies whenever available,
- Protect the surface and groundwater resources,
- Exercise caution when working in vicinity of areas of ecological, geological and agricultural importance,
- Comply with relevant authorisations for discharges,
- Protect any cultural heritage features,
- Prevent pollution of land and incidents leading to pollution,
- Minimise the environmental impact caused from the potential decommissioning of the facility.

In order to achieve this aim, AGV Non Ferrous Malta Ltd shall motivate, train and empower the employees to apply this policy. This policy, driven by the Technically Competent Management, establishes a framework for a management approach designed to promote environmental excellence of work practices and performance, as described in detail in Section 4.3. The employees and any sub-contractors shall undertake their responsibilities in compliance with the requirements of all applicable environmental legislation, chiefly L.N. 337 of 2001, L.N. 106 of 2007, L.N. 55 of 2010 (amended to L.N. 245 of 2011).

4.3 Environmental objectives and targets

- It is the responsibility of the directors of AGV to ensure that the projected objectives are adhered to. These targets are to be reviewed and revised on an annual basis. Modifications from set objectives need to be flagged during the audit process with reasons pertaining to such modifications being made in writing.
- The aim of AGV is to extract the maximum resources out of the waste material delivered to its facilities both through collection operations and from deliveries by third parties. This can be achieved through adequate storaging keeping in mind the waste hierarchy with special attention to waste minimization followed by re-use, recovery and recycling.
- The aim of the facility is to have a zero waste operation whereby unrecoverable material is only sent for disposal. The level of performance of the facility is dependent upon the incoming material. Hence the first step to reduce waste is through the acceptance of good quality scrap for the purpose of the facility's operation. This can be achieved through strict inspection prior to loading (in the case of internal collection operation) or prior to accepting the material at the gate.
- Innovation also plays an important role in moving towards a zero waste operation. This can be achieved through the investigation of alternative reuse, reduction, recycling routes for current non usable material currently being disposed of in landfill.
- The company also aims to make efficient use of the available resources i.e. electricity, water and fuel. Although the consumption of such resources is rather low on the premises, the applicant plans to: i) service operating machines on a regular basis to ensure their efficient use, ii) shut down or turn off electrical and/or fuel (energy) based operations whenever possible, iii) restrict working hours to daylight conditions, iv) ensure that most working spaces are illuminated by sunlight, v) equip light fittings with energy saving bulbs, vi) enclose office spaces to render air-conditioning more efficient, vii) Ensure that the LPG used on site does not surpass the 150kg storage threshold (it is actually brought on site according to demand, which is rather low).
- AGV aims to reduce sound pollution coming from its daily operations through noise abatement measures when purchasing any new equipment.
- The applicant will adhere to the local health and safety regulations and will ensure that employees will keep with all health and safety practices whilst carrying out work related to the activities of AGV. In order to promote awareness within its team, AGV will ensure that all employees will attend health and safety courses.

4.4 Responsibility of environmental objectives and targets

It is the responsibility of the directors of AGV to ensure that the projected objectives are adhered to. These targets are to be reviewed and revised on an annual basis. Modifications from set objectives need to be flagged during the audit process with reasons pertaining to such modifications being made in writing.

4.5 Documentation

The aim of AGV is to extract the maximum resources out of the waste material delivered to its facilities both through collection operations and from deliveries by third parties. This can be achieved through adequate storaging keeping in mind the waste hierarchy with special attention to waste minimization followed by re-use, recovery and recycling.

The following records shall be kept:

- Maintenance records
- Staff training
- Incidents on site
- Recording of environmental performance (fuel, water and electricity usage)
- Complaints
- Movements of waste on and/or off the site (including quantities, dates of delivery or dispatch and final destination)

Table 1 and Table 2 show how movements of waste are recorded.

Export		**Quantities- Weight or Volumes**					
Date	**Destination**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**	**Waste Type**
		EWC Code	**EWC Code**	**EWC Code**	**EWC Code**	**EWC Code**	**EWC Code**

Table 1: Template for Recording Export of Waste

Stock Taking		Quantities- Weight or Volumes					
Date	Destination	Waste Type	Waste Type	Waste Type	Waste Type	Waste Type	Waste Type
		EWC Code	EWC Code	EWC Code	EWC Code	EWC Code	EWC Code

Table 2: Template for Annual Stock Taking

Incident diary				
Date	**Time**	**Location**	**Description of incident/near miss**	**Course of action**

Table 3: Template for incident diary

4.6 Corrective Action

Should any irregularities in the specified requirements of the IPPC permit not be fulfilled and identified through the environmental audit process, the Technically Competent Management will be responsible to identify and implement appropriate corrective measures. The following procedure will be adhered to:

- Identify the causes of irregularities.
- Maintain a register of third party complaints
- Identify appropriate corrective actions.
- Plan and implement corrective actions.
- Monitor corrective actions to verify their effectiveness.

Table 4 provides a template for recoding of corrective actions taken. Where irregularities are identified outside the audit process, the same procedure should be applied. The public authority should be informed on any irregularities and consulted on appropriate corrective actions prior to implementation.

Audited Area	**Date of Audit**
Description of Irregularity	
Corrective Action	**Date of implementation**
Corrective Verification	**Date of verification**

Table 4: Template for corrective action

4.7 Awareness and Training

A training plan is provided in Section 8.

4.8 Maintenance programme

A maintenance programme is provided in Section 6.

5.0 Proposed activities

5.1 Proposed installation activities

5.1.1 Transport of waste to the site

All the waste is delivered to the facility in trucks or in skips by waste carriers approved by the Authority – MEPA. The material is placed in leak-proof containers, placed on an authorised waste carrier and all the material reaching the premises is checked at the gate. Following acceptance the loaded vehicles delivering waste are weighed over a weighbridge before unloading the waste in the operational area. The material is directed accordingly to designated areas and stockpiled separately according to waste stream for eventual packaging.

All hazardous waste transferred to and from the site is accompanied by a valid hazardous waste Consignment Permit issued by the Authority, together with a Consignment Note. Records of the weight of each consignment received and/or removed from site are maintained.

5.1.2 Storage and processing of waste

The waste management facility is authorised to carry out the following activities:

- Storage of paper and cardboard;
- Storage of plastic and rubber;
- Storage of waste packaging;
- Storage of ferrous and non-ferrous metals; and
- Temporary storage and wrapping of batteries and accumulators.

The processes of the various waste streams are outlined in Table 5 till Table 9.

Name of waste	Paper and cardboard packaging
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 01 Paper and cardboard packaging 19 12 01 Paper and cardboard
Quantity (maximum site capacity in tonnage)	20
Projected quantity of waste to be processed annually (in tonnage)	10
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 5: Storage of paper and cardboard

Name of waste	Plastic and rubber
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 02 Plastic packaging 16 01 19 Plastic 17 02 03 Plastic 19 12 04 Plastic and rubber 20 01 39 Plastics
Quantity (maximum site capacity in tonnage)	35
Projected quantity of waste to be processed annually (in tonnage)	25
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 6: Storage of plastic and rubber

Name of waste	Waste packaging
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	15 01 03 Wooden packaging 15 01 04 Metallic packaging 15 01 06 Mixed packaging 15 01 07 Glass packaging
Quantity (maximum site capacity in tonnage)	20
Projected quantity of waste to be processed annually (in tonnage)	20
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12, GBR 00770/10

Table 7: Storage of waste packaging

Name of waste	Ferrous and non-ferrous metals
Category of Waste (Inert, Non-Hazardous, Hazardous)	Non-Hazardous
EWC code (from LN 337 of 2001)	16 01 17 Ferrous Metal 16 01 18 Non-Ferrous Metal

	17 04 01 Copper, bronze, brass 17 04 02 Aluminium 17 04 03 Lead 17 04 04 Zinc 17 04 05 Iron and Steel 17 04 07 Mixed metals 17 04 11 Cables other than those mentioned in 17 04 10* 19 10 02 Non-ferrous waste 19 12 02 Ferrous Metal 19 12 03 Non-Ferrous Metal 20 01 40 Metals
Quantity (maximum site capacity in tonnage)	70
Projected quantity of waste to be processed annually (in tonnage)	160
Method of storage and containment	Loose material in designated area
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12,GBR 00770/10

Table 8: Storage of metals

Name of waste	Batteries and accumulators
Category of Waste (Inert, Non-Hazardous, Hazardous)	Hazardous and Non-Hazardous
EWC code (from LN 337 of 2001)	- 16 06 01* Lead batteries - 16 06 02* Ni-Cd batteries - 16 06 03* Mercury-containing batteries - 16 06 04 Alkaline batteries (except 16 06 03*) - 16 06 05 Other batteries and accumulators - 16 06 06* Separately collected electrolyte from batteries and accumulators - 20 01 34 Batteries and accumulators other than those mentioned in 20 01 33*
Quantity (maximum site capacity in tonnage)	160
Projected quantity of waste to be processed annually (in tonnage)	750
Method of storage and containment	Leak proof containers/On pallets prior to shipping
Method of processing and/or disposal	Local/Export via Local Facilities/Waste Brokers/AGV Waste Broker Permit
Waste carrier/ broker	GBR 00383/12, GBR 00384/12, GBR 00385/12,GBR 00770/10

Table 9: Storage of batteries and accumulators

Storage of all waste types is carried out in designated areas indoors as illustrated in Figure 5 till Figure 8. The processing of such wastes only includes plastic wrapping, prior to exportation.

Waste acceptance is ceased during shutdown periods should maximum capacity be reached. Such an occurrence is very remote given that it makes financial sense to export waste at the earliest to make space for incoming waste.

In view of the fact that a larger quantity of batteries could be stored during a shutdown period, frequent inspections are conducted to prevent uncontrolled inundation or percolation due to potential leakages. Other precautionary measures to contain potential leakages include:

a. Batteries are stored in approved fibre containers and stored in the upright position.
b. All areas where batteries are handled are impervious in nature.
c. Spill kits are available in areas where batteries are handled.
d. No surface drains are present in the immediate area.
e. Premises are situated over third party warehouses, separated by approximately 0.35m of concrete.

Currently, lead-acid batteries, nickel-cadmium batteries, mercury-containing batteries, alkaline batteries along with other types of batteries and accumulators are simply stored on site. No neutralisation processing or emptying procedures occur for these types of batteries and accumulators.

All batteries entering the facility are shrink-wrapped on plastic pallets with adequate trays to collect any leaking electrolytes. However, in case of accidental leakages of the batteries and spillages of the diluted acid, they are perpetually emptied immediately upon arrival, and placed in drip trays made of acid-proof material. The acid container is located within a trough which has a capacity of 110% of the container, in order to prevent any spillages from the possible crack of the container. The diluted acid is also equipped with a trough with capacity 110% that of the dilute acid container constructed in a way that prevent rapture and can only suffer, remotely, cracks that may result in the acid trickling down to the trough.

Hazardous waste (stored in warehouse 41) is segregated from the remaining non-hazardous combustible waste (stored in warehouse 42). This prevention mechanism ensures that any potential fumes released from batteries and accumulators are contained in one area.

The standard procedure entails that the batteries are temporarily stored, packed and exported *tale quale*. Both dry and wet-cell batteries are packaged in 1000 litre double density containers per week, and are exported to Italy for treatment at an authorised treatment plant, with all the documentation submitted to the Authority for approval prior to any transfer of the acid to the plant.

All other non-hazardous wastes leaving the site after storage and plastic wrapping are sent to licensed facilities, either locally or abroad. Disposal certificates are kept on record and made available for inspection.

Figure 5: Storage area for sorted waste

Figure 6: Storage of ferrous metal

Figure 7: Storage of non-ferrous metal (aluminium)

Figure 8: Temporary battery storage prior shipping/export

5.1.3 Machinery

The facility makes use of a variety of machinery mainly; a fork lifter, and two manual pallet jacks.

The mobile machinery, i.e. the fork lifter which is shown in Figure 8, is used to transport waste fractions within and outside the facility. While, the two manual pallet jacks provide means for stacking cases of goods or products onto a pallet.

The LPG used to operate the fork lifter is not stored on site. Alternatively, the fuel is simply bought according to consumption.

5.2 Proposed techniques and measures to prevent and reduce waste and emissions of substances and heat

Being a waste management facility, the prevention and reduction of waste generation from other sites is the main function at the premises.

The only waste deriving directly from the facility is municipal solid waste from office work and consumption of food, which is very minimal. Moreover, unpermitted waste is to be stored in a non-leaking skip or similar container in a designated area.

The main sources of emission are derived from the machinery used as outlined in Sections 11.0, 12.0 and 13.0. Possible energy saving measures are listed in Section 7.2.

5.3 Flow diagram summarising proposed installation activities

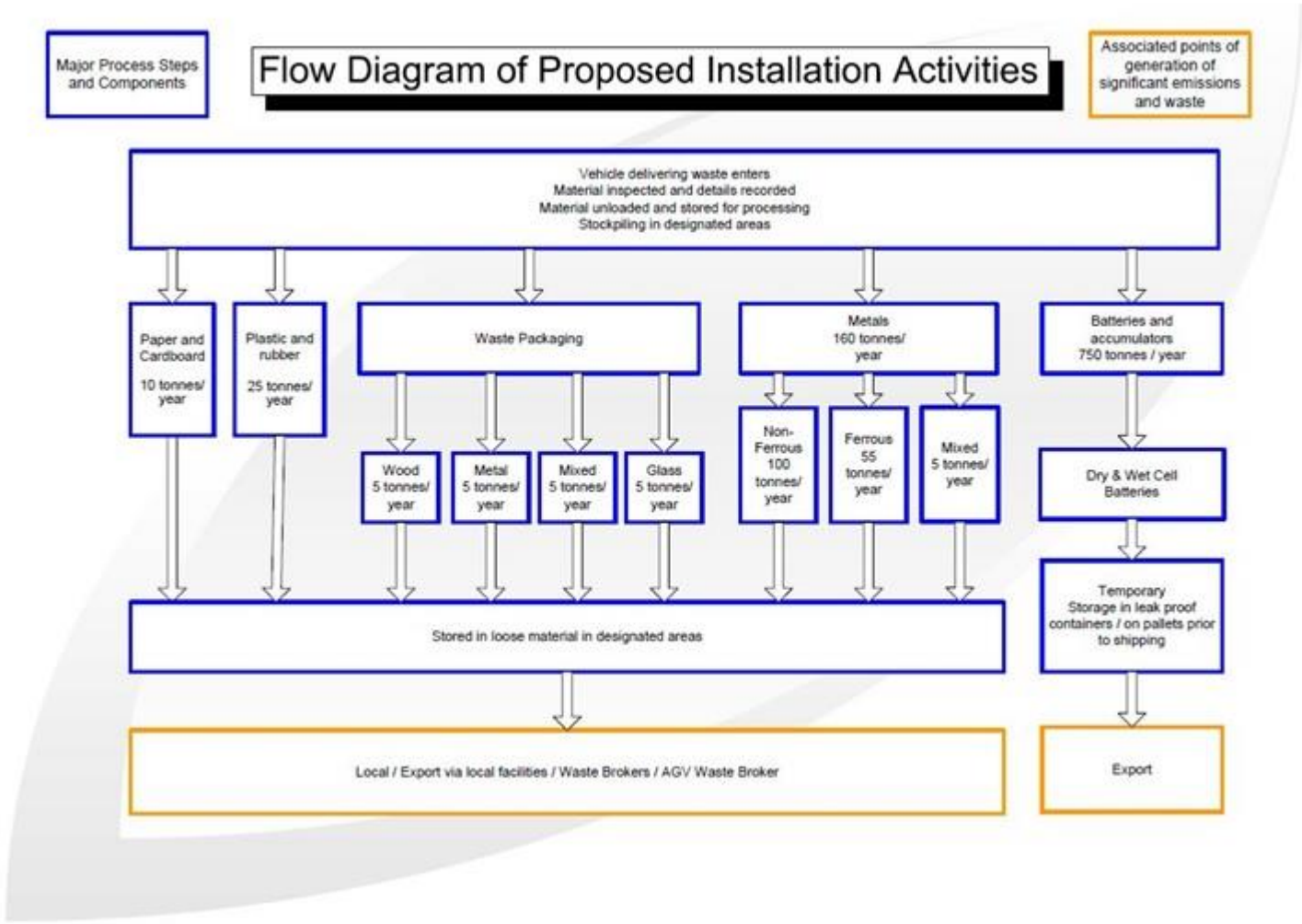

Figure 9: Flow diagram summarising proposed installation activities

5.4 Comparison of proposed activities with relevant BAT

A document on the comparison of the processes at AGV Ltd with the BREF for Emissions from Storage Section 1.2 is provided in Appendix IV.

5.5 Outline of main alternatives considered

No alternatives were considered in the technology, techniques and measures since the current status of the installation complies with BAT with regards to the storage of hazardous waste.

5.6 Raw materials

Being a waste management facility, the main raw materials stored on site are waste materials produced at other sites:

- Paper and cardboard;
- Plastic and rubber;
- Waste packaging;
- Ferrous and non-ferrous metals; and
- Batteries and accumulators.

10 boxes of plastic (amounting to 60 rolls a year) are used annually to wrap batteries on pallets. The consumption of such materials is recorded in spreadsheets for internal benchmarking.

The other raw material present on site is LPG in the form of cylinders (similar to the ones used for domestic purposes) due to the operation of the fork lifter; as indicated in Table 10. Material Safety Data Sheets (MSDS) of the chemical raw material is included in Appendix II.

Chemical	Maximum amount stored at any one time	Annual consumption	Use	Method of Storage and Containment
LPG Cylinders	One 25kg cylinder	6 cylinders	Fuel for fork lifter	No storage is required. The LPG cylinder is mounted on the fork lifter and consumed without additional storage on site.

Table 10: Use of chemical raw materials

A site plan showing major site features and activities is provided in Section 3.3.

Protective measures at the facility include CCTV systems around the perimeter, 24 hour security service through watchmen and lockable doors.

5.7 Ozone depleting substances and fluorinated greenhouse gases

No equipment using ozone depleting substances and fluorinated greenhouse gases with a fluid charge of 3kg or more are utilised on site.

6.0 Maintenance

The management is committed to keep detailed maintenance records of all machinery found at the facility (Section 5.1.3) in order to be kept in a good operating condition and without causing potentially polluting leaks and spillages or excessive noise. Table 11 provides the proposed maintenance programme while Table 12 shows a template form for keeping records of maintenance, which can be applied to any machinery.

The management also has put in place procedures for regular inspections and maintenance of storage areas and equipment to identify signs of damage, deterioration or leakage. This is performed on a daily basis by keeping records using the sheet shown in Table 12, once again.

Check	Lubrication/ Greasing	Fluid Levels	Fuel	Gauges	Tyres
Fork lifts	Moving joints need to be greased to prevent the harmful effects of friction. Fittings need to be greased on a regular basis and worn out ball bearings need to be changed.	Transmission and hydraulic fluids, coolants as well as motor oil levels need to be checked regularly depending on how often fork lift is used. If necessary daily inspections should be carried out.	Fuel levels need to be checked on a daily basis. Changing LPG cylinders should follow appropriate procedures ensuring safety protocols are adhered to.	Gauges and lights found on the instrument panel of the forklift give an indication when some part is malfunctioning. Therefore, attention must be paid to these instruments and the appropriate measurements taken, when they indicate any faults. Doing so will forestall more expensive repairs.	Air pressure and tyre condition should be checked regularly to avoid unbalance which could lead to damaging of the goods being carried. Worn out tyres are to be replaced.
Pallet jacks	Lifting chains and inside of channels are to be cleaned periodically and lubricated lightly with light oil every 6 months.	Hydraulic oil levels need to be checked with the fork in lowered position every 3 months.	Battery is to be charged accordingly depending on use. The battery should be kept fully charged.	N/A	Air pressure and tyre condition should be checked regularly to avoid unbalance which could lead to damaging of

					the goods being carried. Worn out tyres are to be replaced.

Table 11: Proposed maintenance programme

MAINTENANCE RECORD	
Equipment/ Machinery	
Date	
Technician	
Maintenance work description	
Comments	

Table 12: Template for keeping records of maintenance

7.0 Energy and water

7.1 Energy

The annual consumption of electricity from public utilities is estimated to be around 50 units and is used for the running of the premises. This includes lighting, and charging of machinery such as the pallet jacks. Office appliances include a mini-fridge, a coffee machine and office computers which also consume electricity.

7.2 Basic measures for improvement of energy efficiency

Energy generation and consumption has significant implications, both from an economical and environmental aspect. Energy efficiency and reduction in energy consumption is expected to be achieved by the following measures, according to practicality:

- Working hours are mostly restricted during the day;
- Most working spaces are illuminated by sunlight;
- Efficient luminaires equipped with energy saving lamps;
- Office spaces are enclosed, making air-conditioning more efficient.

7.3 Water

The water demand for the whole facility is estimated to be around 30 units per year. Water is used for:

- Shower that is used by the members of staff in emergency cases
- Sanitary facilities

The site floor is not washed with water, but is simply swept with a broom once a week. For this reason, no floor washings are generated. Additionally, the water used for the shower is segregated by a cubicle, and for this reason it is not possible for mixing to occur with potential floor washings.

8.0 Training

Most of the employees at AGV are manual workers and the company is committed to adhere to high safety standards and minimise possibility of avoidable accidents. All employees shall be provided with adequate training and written operating instructions to enable them to effectively carry out their duties. Staff dealing with the batteries waste management activities is fully trained in battery handling and all relative records are maintained.

Moreover, they will be expected to attend health and safety courses by a professional training provider in order enhance their awareness on occupational health and safety issues and how they can tackle emergency situations.

The management staff shall strive to attend any available professional training courses or public information sessions on best practices in waste management, recycling and environmental permitting obligations.

Mr Frank Cachia, on his capacity as a director, will be the person responsible for the provision of training both from internal or external training providers. Table 13 provides a template for keeping training records.

Name of institution providing course	Title of course	Dates	Names of Employees attended

Table 13: Proposed template for keeping training records

9.0 Cessation

Should decommissioning of the facility occur, the following procedure will be carried out:

- The wastes which remain on site will all be processed, packed accordingly, and sold to local or foreign markets. If the material is exported this is loaded in either containers or trailers and shipped to the respective waste management facilities overseas. If the material is sold locally, this shall be transported to the waste management facilities using MEPA registered waste carrier trucks.
- All furniture, machinery and appliances will also be put up for sale on the local and foreign market wither as second-hand equipment or as scrap material.
- Any other material which cannot be processed for recycling will be disposed of appropriately according to the legal requirements at the time.
- A land and groundwater contamination assessment will be carried out to confirm that no contamination has occurred from the activities of the facility. If any contamination from the facility's activity is detected, a decontamination plan will be commissioned and implemented to return the site to its original condition.

The Operator shall notify the Authority immediately upon a decision taken to cease business activity and shall submit a decommissioning plan to the Authority for approval.

10.0 Rainwater

Rainwater runoff from the area of the facility will be captured in a communal cesspit tank since AGV operates in two garages in a site called Ta' Għadajma as shown in Section 3.3. In accordance with the provisions of Water Intended for Human Consumption Regulations, L.N. 17 of 2009 as amended by L.N. 242 of 2009.

The harvested rain water is mixed with water used for sanitary facilities and should not be used for human consumption and firefighting. A water tank trunk is used to pump the mixture stored in the communal cesspit tank and is disposed of and treated in authorized facilities.

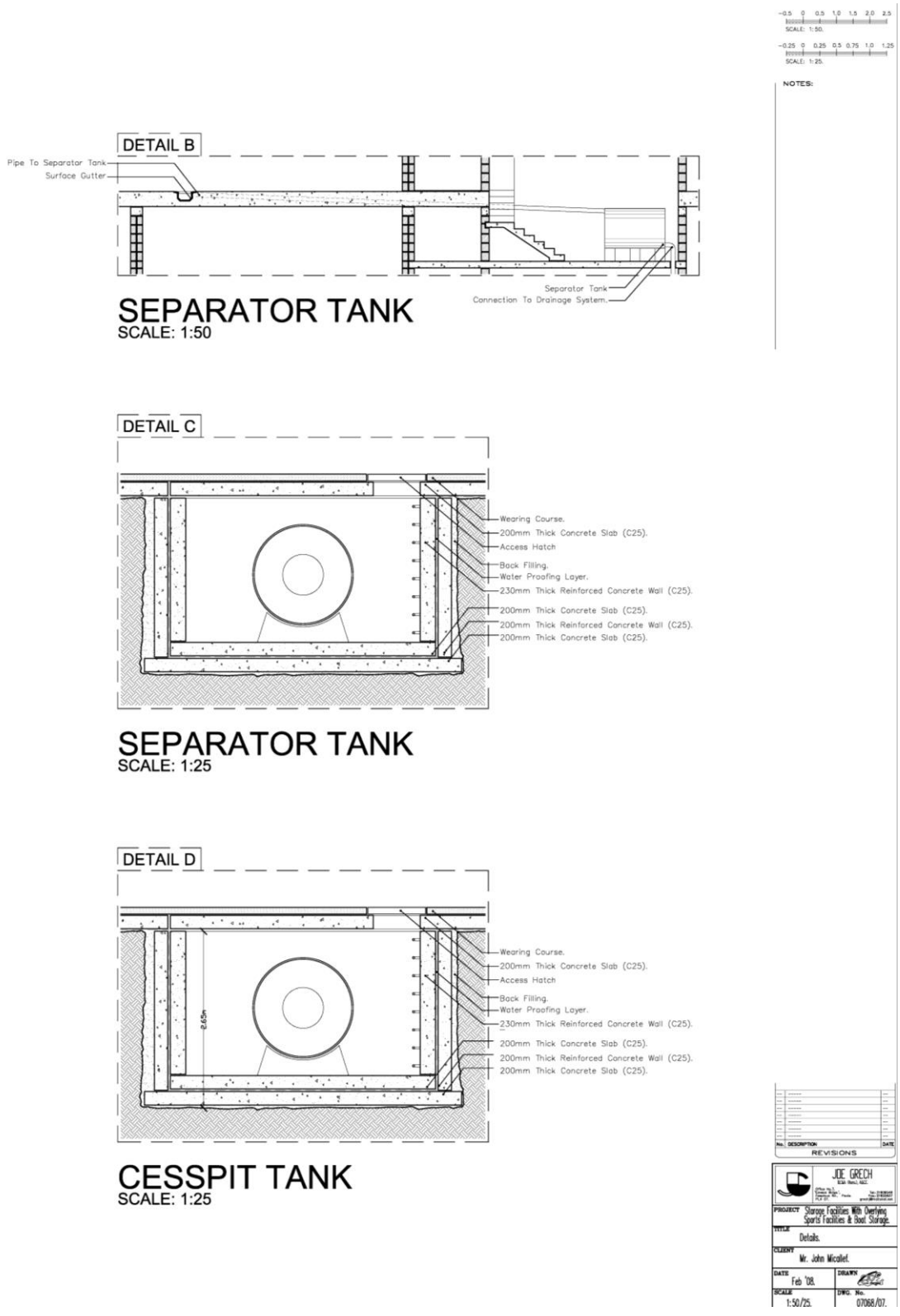

Figure 10: Drawings of the communal cesspit tank at Ta' Għadajma Complex

11.0 Emissions to air

None of the permitted installation and machinery mentioned in Section 5.1 is a source of air emissions. All waste is shrink wrapped in plastic (60 rolls used annually) and temporarily stockpiled on pallets.

12.0 Emissions to land

No substances are released directly onto land from the permitted installations.

However, AGV will undertake all necessary measures and precautions to prevent spillage of raw materials, intermediates, products, waste and any other materials. Accidental spillages of acid or other hazardous materials shall receive immediate attention to prevent escape to groundwater or land.

The probability of acid-spillage on land is mitigated by having an impermeable surface concrete floor and a neutralisation powder kit (Pyracidosorb) available on site to control any accidental spillages. This is made available and accessible to personnel responsible for the management of the battery storage areas.

Therefore, the possibility of acid being spread on the ground is remote. In case of acid spillage, the contaminated powder shall then be subject to chemical analysis for eventual disposal according to the local legal notices. In such a situation, a suitable manager/chemist will be present on site to ensure that no mixing of such discharges is conducted whilst transferring.

12.1 The possible risks and hazards associated with ground water contamination

Spillages of any solutions, as well as solids, shall not affect ground water resources since:

- The ground beneath the plant is impermeable,
- Further commercial premises are located at the level beneath AGV (the former has another 35cm of concrete),
- The volumes handled are small enough to prevent an uncontrolled inundation or percolation through the concrete floor or walls,
- The chemical composition complies with LN 139/2002.

The possibility of any solution permeating through the floor concrete or walls, and onto the warehouses located underneath, is remote.

13.0 Noise and vibration

The main sources of noise and vibration at the facility are very minimal, these result mainly during loading and unloading from the fork lifter and the pallet jacks.

14.0 Expenditure plan

The draft expenditure plan is based on potentially identified costs which could arise during the operational and decommissioning phases, even though certain costs are difficult to predict with confidence or be predicted at all.

14.1 Monitoring of emissions

Regular monitoring of the movements of wastes on and off site will be recorded. Details recorded will include the qualities, dates delivered on and off site, waste carrier and final destination. The monitoring of this data is an integral part of the commercial operations at the facility and can be carried out internally by the company. Therefore no additional external costs are envisaged.

No other monitoring requirements have been identified at stage. However, MEPA might require baseline environmental assessments or monitoring of emissions into the environment, which are assumed to be of minor importance such as groundwater, land and air quality, and noise.

Estimated external costs for environmental assessments and monitoring is not expected to exceed €2,000 for each study.

14.2 Clearing installation

The installation would need to be completely cleared to reinstate the site in its original condition. Decommissioning is planned to be carried out as outlined in Section 9.0. Since decommissioning mainly involves the clearing of waste material, it is an integral part of the commercial operations at the facility and can be carried out internally by the company. Therefore no additional external costs are envisaged.

14.3 Remedial action in the event of the failure of pollution control systems

The facility is considered to have a low potential of risk of major pollution incidences since the facility uses low quantities of chemicals, produces low quantities of emissions and most waste material stored is solid and can be effectively contained. The facility also bears impermeable concrete ground and all hazardous waste storage areas are roofed. Remedial action for potential spillage or emissions depends on the volumes involved and the toxicity of the hazardous material, which are difficult to generalise. A contingency budget of around €8,000 is considered adequate for any eventual failure of pollution control system incident.

Appendix I

CV and police conduct of person responsible for managing environmental aspects of the installation

Europass Curriculum Vitae

Personal information

Surname(s) / First name(s)	**Cachia Frank**
Address	Flat 1, Blk B, Ent2, Tas-Swatar Msida Malta
Telephone(s)	00356 21323665 Mobile 00356 99846461
E-mail(s)	frankcachia@gmail.com
Nationality	Maltese
Date of birth	07/08/1970
Gender	Male

Desired employment / Occupational field

Management

Work experience

Dates	30/06/2001 - 25/07/2010
Occupation or position held	Managing Director / Director
Main activities and responsibilities	Developing and implementing the strategic plan for my company in the most cost effective manner. Responsible for both the day-to-day running of the company and developing business plans for the long term future.
Name and address of employer	AGV Group Caroline Court, Appt 2, Mensija Road, SGN 1113 San Gwann (Malta)
Type of business or sector	Advertising, PR, Marketing & Events Organization

Dates	07/03/1998 - 25/09/2004
Occupation or position held	Manager
Main activities and responsibilities	My roll was to develop and oversee that support services are being implemented according to the standards and procedures indicated by the authorities.
Name and address of employer	National Commission Persons with Disability Vincenzo Bugeja Institute, High Street,, Santa Venera (Malta)
Type of business or sector	Administrative And Support Service Activities

Dates	04/02/1988 - 07/06/1998
Occupation or position held	Operations Manager
Main activities and responsibilities	My responsibility was to ensure that the business operations were effective on a 24/7 basis in terms of meeting our clients requirements.
Name and address of employer	Amusement Games Ltd Zejtun Road,, B'Bugia (Malta)
Type of business or sector	Gaming Industry

Education and training

Dates	02/06/2000 - 27/06/2000

Title of qualification awarded	Accessibility Audit
Principal subjects / occupational skills covered	"Access for All" - making all building accessible and creating an inclusive environment
Name and type of organisation providing education and training	University of Portsmouth Winston Churchill Av, , PO1 2UP Portsmouth (United Kingdom)
Dates	01/09/1999 - 30/11/1999
Title of qualification awarded	Business Management
Principal subjects / occupational skills covered	Setting up and running a business
Name and type of organisation providing education and training	University of Malta (Commerce) MSD 2080 Msida (Malta)

Personal skills and competences

Mother tongue(s) **Maltese**

Other language(s)

Self-assessment	Understanding				Speaking				Writing	
European level (*)	Listening		Reading		Spoken interaction		Spoken production			
English	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user
Italian	C1	Proficient user	C1	Proficient user	B2	Independent user	B2	Independent user	B2	Independent user
Arabic	B1	Independent user	A2	Basic User	B1	Independent user	B1	Independent user	A2	Basic User
Russian	A2	Basic User	A1	Basic User	A2	Basic User	A2	Basic User	A1	Basic User

(*) Common European Framework of Reference (CEF) level

Social skills and competences	Excellent communication skills, good ability to adapt to multicultural environments and to establish and maintain good working relations with people of different national and cultural backgrounds.
Organisational skills and competences	Ability to work under pressure in fast paced environment overcoming challenges and reaching targets, problem solving attitude.
Technical skills and competences	I have an extensive hands on experience in pc's hardware and in setting up of audio visual presentations.
Computer skills and competences	Operating systems: MS Windows 95, 98, 2000, XP, linux (ubuntu) and mac os, very good command of Microsoft Office tools (Word, Excel, Sage and PowerPoint).
Artistic skills and competences	I have excellent design drawing skills (freehand and photoshop), I've designed logos, brochures, posters, handbooks, company stationery for several customers.
Other skills and competences	I am a professional in advertising and marketing campaigns / events organization both national and international (launching of top brands, political campaigns, NGO's National fund raising events), PR & Marketing
Driving licence(s)	C, C1, B, B1

Additional information

Access for All - Design Guidelines - Yr 2000 – Co-Editor

Annexes

References

Nru. taċ-Ċertifikat: **427385**
Certificate No.: .....

FORMULA A
FORM A

PULIZIJA TA' MALTA
MALTA POLICE

ĊERTIFIKAT TAL-KONDOTTA
CERTIFICATE OF CONDUCT

Jien niddikjara illi, skond l-Ordinanza dwar iċ-Ċertifikati tal-Kondotta (Kap. 77),
I declare that, in terms of the Conduct Certificates Ordinance (Chap. 77),

isem u kunjom **FRANKIE (FRANCIS) CACHIA** , Nru. tal-Karta tal-Identita` **0415770M**
name and surname *Identity Card No.*

bin/bint **CARMELO** imwieled/imwielda fi' **07/08/1970** f' **ATTARD, MALTA**
son of/daughter of *born on the* *at*

u joqgħod/toqgħod **BLK B ENT 2 FL 1, TRIQ IS- SWATAR, MSIDA MALTA**
and residing at

huwa/hija persuna ta' kondotta tajba
is a person of good conduct

Kwartieri Ġenerali tal-Pulizija
Police H.Q
Malta

data **26/02/2015 10:42:21**
date

Dritt imħallas **€ 2.80**
Fee paid

(Data u inizjali)
(Date and initials)

PC 334 Matthew Bohm

Kummissarju tal-Pulizija
Commissioner of Police

Appendix II

MSDS of the Chemical Raw Materials

Safety data sheet
according to Regulation (EC) No. 1907/2006

Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

*
1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

Article number: 0411

Registration number
A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

1.2 Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Application of the substance / the preparation
Laboratory chemical

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Carl Roth GmbH + Co. KG
Schoemperlenstraße 3-5
76185 Karlsruhe
Germany
Telefon: +49/(0)721 5606-0 Telefax: +49/(0)721 5606-149 E-Mail: sicherheit@carlroth.de

Further information obtainable from: Department Health, Safety and Environment

1.4 Emergency telephone number:
Poison Centre Munich Telefon +49/(0)89 19240

*
2 Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Eye Irrit. 2 H319 Causes serious eye irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
Xi; Irritant
R36: Irritating to eyes.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS07

Signal word Warning

Hazard statements
H319 Causes serious eye irritation.

Precautionary statements
P280 Wear protective gloves and eye protection.

(Contd. on page 2)

Safety data sheet
according to Regulation (EC) No. 1907/2006

Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

(Contd. of page 1)

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3 Other hazards
All chemicals are potentially dangerous. They should only be handled by specially trained personnel.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

*
3 Composition/information on ingredients

3.2 Chemical characterization: Mixtures
Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:			
CAS: 497-19-8 EINECS: 207-838-8 Index Number: 011-005-00-2 Reg.nr.: 01-2119485498-19-XXXX	sodium carbonate	Xi R36 Eye Irrit. 2, H319	25-50%

Additional information: For the wording of the listed risk phrases refer to section 16.

*
4 First aid measures

4.1 Description of first aid measures
General information:
Remove any clothing soiled by the product.

After inhalation:
After inhalation of dusts:
Supply fresh air; if there is any trouble seek medical help.

After skin contact:
Rinse with water
If there is any trouble seek medical help.

After eye contact:
Rinse opened eye for 10 minutes under running water. Then consult a doctor.

After swallowing:
Rinse out mouth and then drink water.
If there is any trouble seek medical help.

4.2 Most important symptoms and effects, both acute and delayed
Irritations
Nausea
Vomiting

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

(Contd. on page 3)

Safety data sheet
according to Regulation (EC) No. 1907/2006

Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

(Contd. of page 2)

*
5 Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.

For safety reasons unsuitable extinguishing agents:
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Product non-combustible.
Ambient fire may liberate hazardous vapours.
In case of fire, the following can be released:
Carbon monoxide and carbon dioxide

5.3 Advice for firefighters

Protective equipment:
Wear self-contained respiratory protective device.

*
6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Avoid contact with the eyes and skin.
Do not breathe dust.

6.2 Environmental precautions
Do not allow product to reach sewage system or any water course.

6.3 Methods and material for containment and cleaning up
Pick up mechanically.
Dispose of the material collected according to regulations.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
7 Handling and storage

7.1 Precautions for safe handling
Prevent formation of dust.

7.2 Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles:
No special requirements.

Information about storage in one common storage facility:
Store away from foodstuffs.

Further information about storage conditions:
Keep container tightly sealed.
Store in dry conditions.

Recommended storage temperature: +15 °C - +25 °C

7.3 Specific end use(s)
No further relevant information available.

(Contd. on page 4)

Safety data sheet
according to Regulation (EC) No. 1907/2006

Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

(Contd. of page 3)

*
8 Exposure controls/personal protection

Additional information about design of technical facilities:
No further data; see item 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace: Not required.

8.2 Exposure controls

Personal protective equipment:

General protective and hygienic measures:
The usual precautionary measures are to be adhered to when handling chemicals.
Avoid contact with the eyes.
Do not breathe dust.
Wash hands before breaks and at the end of work.

Individual protection measures
Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.
Respiratory protection:

When dusts are generated: protective device filter P1.

Protection of hands:

Protective gloves

Material of gloves Nitrile, thickness: ≥ 0.11 mm

Penetration time of glove material
Value for the permeation: Level ≥ 6
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

Body protection:
Protective work clothing

(Contd. on page 5)

Safety data sheet
according to Regulation (EC) No. 1907/2006

Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

(Contd. of page 4)

*
9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information	
Appearance:	
Form:	Powder
Colour:	Grey
Odour:	Odourless
Odour threshold:	No information available.
pH-value:	Alkaline
Change in condition	
Melting point/Melting range:	No information available.
Boiling point/Boiling range:	No information available.
Flash point:	Not applicable.
Flammability (solid, gaseous):	No information available
Ignition temperature:	No information available
Decomposition temperature:	No information available
Self-igniting:	Product is not self-igniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	No information available.
Upper:	No information available.
Oxidizing properties:	No information available.
Vapour pressure:	No information available
Density:	No information available.
Relative density	No Information available.
Vapour density	No information available
Evaporation rate	No information available
Solubility in / Miscibility with water:	Soluble.
Partition coefficient (n-octanol/water):	No information available
Viscosity:	
Dynamic:	No information available.
Kinematic:	No information available.
9.2 Other information	No further relevant information available.

*
10 Stability and reactivity

10.1 Reactivity See section 10.3

10.2 Chemical stability

Thermal decomposition / conditions to be avoided:
No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions
Strong reaction possible with:
aluminum
Acids

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Alkaline earth metals
Alkali metals
nonmetallic oxides
organic nitro compounds

10.4 Conditions to avoid
No information available.

10.5 Incompatible materials:
light metals

10.6 Hazardous decomposition products:
In case of fire: see item 5.
Additional information:
Take up concentated mineral acids with ROTISORB®, then neutralize with PYRACIDOSORB-ROTH®.

*
11 Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification:
Quantitative data on the toxicity of this product are not available.

Primary irritant effect:

on the skin:
Slight irritations.

on the eye:
Irritating effect.

after inhalation:
Intensive contact with dusts may lead to irritations of the respiratory tract.

Sensitization:
No sensitizing effects known.

CMR effects:

Germ cell mutagenicity:
No information available.

Carcinogenicity:
No information available.

Reproductive toxicity:
No information available.

Aspiration hazard:
No aspiration toxicity classification.

Specific target organ toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

11.2 Further information:
The product should be handled with the care usual when dealing with chemicals.

Additional toxicological information:
After swallowing:
irritations in the mouth, throat, oesophagus, gastrointestinal tract.

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Nausea
Vomoting

*
12 Ecological information

12.1 Toxicity

Aquatic toxicity:
Quantitative data on the ecological effect of this product are not available.

12.2 Persistence and degradability
No further relevant information available.

12.3 Bioaccumulative potential
No further relevant information available.

12.4 Mobility in soil
No further relevant information available.

Ecotoxical effects:

Remark:
Do not allow to enter waters, waste water, or soil!

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

12.6 Other adverse effects
No further relevant information available.

*
13 Disposal considerations

13.1 Waste treatment methods

Recommendation
The disposal is regionally differently regulated, therefore the kind of disposal is to be inquired at the responsible authorities.

Uncleaned packaging:

Recommendation:
Disposal according to official regulations.

*
14 Transport information

14.1 UN-Number	
ADR, ADN, IMDG, IATA	Void
14.2 UN proper shipping name	
ADR, ADN, IMDG, IATA	Void
14.3 Transport hazard class(es)	
ADR, ADN, IMDG, IATA **Class**	Void

(Contd. on page 8)

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Printing date 26.02.2013 Version number 2 Revision: 26.02.2013

Trade name: PYRACIDOSORB-ROTH® for neutralizing acids

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14.4 Packing group	
ADR, IMDG, IATA	Void
14.5 Environmental hazards:	
Marine pollutant:	No
14.6 Special precautions for user	Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
ADR	
Remarks:	Not subject to transport regulations.
UN "Model Regulation":	-

*
15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations:

Information about limitation of use: Employment restrictions concerning juveniles must be observed.

Waterhazard class:
Water hazard class 1 (Self-assessment): slightly hazardous for water.

15.2 Chemical safety assessment
A Chemical Safety Assessment has not been carried out.

*
16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases
H319 Causes serious eye irritation.

R36 Irritating to eyes.
Recommended restriction of use
Take up concentrated mineral acids with ROTISORB®, then neutralize with PYRACIDOSORB-ROTH®.

Department issuing MSDS: Department: Health, Safety and Environment

Contact: Frau Weckemann
Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
LD50*: Lethal Dose, 50 percent (Not relevant for classification)
LD50*: Lethal Concentration, 50 percent (Not relevant for classification)
*** Data compared to the previous version altered.**

MATERIAL SAFETY DATA SHEET

SANYO Batteries
SANYO Energy
2055 Sanyo Ave.
San Diego, CA 92154

Telephone No.: (619) 661-4888
www.sanyobatteries.com
In case of emergency contact:
CHEMTREC at (800) 424-9300

Date of Preparation: 6/23/03

Section I — Product Identification

Product Name: Nickel Cadmium Battery

Trade Name: CADNICA

Nominal Voltage: 1.2V

Chemical System: Nickel/Cadmium

Designated for Recharge:

_X_ Yes ___No

Section II — Hazardous Ingredients

IMPORTANT NOTE: The battery cell should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances.

Chemical Name	CAS No.	%[1]	PEL	TLV
Cadmium	7440-43-9	11-26	0.005 TWA[2]	0.05 TWA
Cadmium hydroxide	21041-95-2	11-26	0.005 TWA	0.05 TWA
Nickel (powder)	7440-02-0	8-17	1 TWA	1 TWA
Nickel hydroxide	12054-48-7	5-12	1 TWA	1 TWA
Potassium hydroxide	1310-58-3	< 3	2 Ceiling	2 Ceiling
Nylon	N/A	< 2	N/A	N/A
Steel	N/A	12-13	N/A	N/A
Other	N/A	< 1	N/A	N/A
Total		**100**		

Notes: 1. Concentrations vary depending on the state of charge or discharge.
2. TWA is the time weighted average concentration over an 8-hour period.

Section III — Physical Data

The product is a manufactured article as described in 29 CFR 1910.1200. The battery cell is contained in a hermetically-sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery cell. However, if exposed to a fire, explosion, extreme abuse, misuse, or improper disposal that results in breaching of the battery cell case, hazardous materials may be released. The following physical data relating to the hazardous materials contained within the battery cell are provided for the user' s information. (Also see Section IV — Fire and Explosion Hazards, and Section VIII — Precautions for Safe Handling and Use.)

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SANYO ENERGY CORP. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

Cadmium:	Melting point (°F): 610	Boiling point (°F): 1,407
	% Volatile by Volume:	Vapor Pressure (mm Hg):
	Evaporation Rate:	Vapor Density (Air =1):
	Specific Gravity (H_2O): 8.65 @77¡F	
	Solubility in Water: Insoluble	
	Appearance and Odor: Silver-white, blue-tinged, lustrous metal	
Cadmium Hydroxide:	Melting Point (°F):	Boiling Point (°C):
	% Volatile by Volume:	Vapor Pressure (mm Hg):
	Evaporation Rate:	Vapor Density (Air =1):
	Specific Gravity(H_2O): 4.79	
	Solubility in Water: Practically insoluble	
	Appearance and Odor: Powder	
Nickel Powder:	Melting point (°F): 2,831	Boiling point (°F): 5,134
	% Volatile by Volume:	Vapor Pressure (mm Hg):
	Evaporation Rate:	Vapor Density (Air =1):
	Specific Gravity (H_2O): 8.90	
	Solubility in Water: Insoluble	
	Appearance and Odor: Powder	
Nickel Hydroxide:	Melting point (°F): *	Boiling Point (°F):
	% Volatile by Volume:	Vapor Pressure (mm Hg):
	Evaporation Rate:	Vapor Density (Air = 1):
	Specific Gravity (H_2O):	
	Solubility in Water: Insoluble	
	Appearance and Odor: Apple green powder	
	* Note: decomposes above 392¡F into NiO and H_2O.	
Potassium Hydroxide:	Melting point (°F):*	Boiling Point (°F):
	% Volatile by Volume:	Vapor Pressure (mm Hg):
	Evaporation Rate:	Vapor Density (Air =1):
	Specific Gravity (H_2O):	
	Solubility in Water: Soluble in 0.9 part water, 0.6 part in boiling water	
	Appearance and Odor: White or slightly yellow	
	* Note: Potassium hydroxide is present as a liquid or paste and acts as the electrolyte in the battery cell.	

Section IV - Fire and Explosion Hazard Data

Flash point: NA Lower Explosive Limit: NA Upper Explosive Limit: NA

Extinguishing Media: Any class of extinguishing medium may be used on the batteries or their packing material.

Special Fire Fighting Procedures: Exposure to temperatures of above 212°F can cause evaporation of the liquid content of the potassium hydroxide electrolyte resulting in the rupture of the cell. Potential for exposure to cadmium fumes during fire; use self-contained breathing apparatus.

Section V - Health Hazard Data

Threshold Limit Values: See Section II

Effects of a Single (Acute) Overexposure:

Inhalation:

During normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, should the batteries be exposed to extreme heat or pressures causing a breach in the battery cell case, cadmium dusts and fumes may be emitted. Inhalation of cadmium dusts or fumes may cause throat dryness, respiratory irritation, headache, nausea, vomiting, chest pain, extreme restlessness and irritability, pneumonitis, and bronchopneumonia. In the case of high concentration exposures (e.g., above 1 to 5 mg/m^3 during an eight hour period) death may occur within several days after the exposure.

Ingestion:

If the battery case is breached in the digestive tract, the electrolyte may cause localized burns. Ingestion of cadmium compounds may result in increased salivation, choking, nausea, persistent vomiting, diarrhea, abdominal pain, anemia, tenesmus, and kidney dysfunction.

Skin Absorption:

No evidence of adverse effects from available data.

Skin Contact:

Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to nickel may cause dermatitis in some sensitive individuals.

Eye Contact:

Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Carcinogenicity:

Cadmium and nickel have been identified by the National Toxicology Program (NTP) as reasonably anticipated to be carcinogens. U.S. EPA classified cadmium as a "B1" probable human carcinogen. The International Agency for Research on Cancer (IARC) recommended that cadmium be listed as a "2A" probable human carcinogen, and the American Conference of Governmental Industrial Hygienists (ACGIH) has proposed listing cadmium as an A2 carcinogen.

Other Effects of Repeated (Chronic) Exposure:

Repeated overexposures to cadmium may result in lung cancer; lung, kidney, and liver dysfunction; skeletal disease (e.g., osteoporosis) and reproductive toxicity. Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

Medical Conditions Aggravated by Overexposure:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure in unlikely to aggravate existing medical conditions.

Emergency and First Aid Procedures:

Swallowing:

Do not induce vomiting. Seek medical attention immediately.

Skin:

If the internal cell materials of an opened battery cell comes into contact with the skin, immediately flush with water for at least 15 minutes.

Inhalation:

If potential for exposure to cadmium or nickel fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

Eyes:

If the contents from an opened battery comes into contact with the eyes, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

Section VI - Health Hazard Data

The batteries are stable under normal operating conditions.

Hazardous polymerization will not occur.

Hazardous decomposition products: oxides of cadmium and nickel.

Conditions to avoid: heat, open flames, sparks, and moisture.

Potential incompatibilities (i.e., materials to avoid contact with): The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes, and carbamate compounds.

Section VII - Health Hazard Data

Spill and leaks are unlikely because cells are contained in an hermetically-sealed case. If the battery case is breached, don protective clothing that is impervious to caustic materials and absorb or pack spill residues in inert material. Dispose of as a hazardous waste in accordance with applicable state and federal regulations. Resultant spill residues may be characterized as D002 (caustic) and D006 (cadmium) pursuant to the federal Resource Conservation and Recovery Act (RCRA). See Section IV for response to fires or explosions.

Section VIII - Safe Handling and Use (Personal Protective Equipment)

Ventilation Requirements:	Not required under normal use.
Respiratory Protection:	Not required under normal use.
Eye Protection:	Not required under normal use.
Gloves:	Not required under normal use.

Section IX- Precautions for Safe Handling and Use

Storage:

Store in a cool place, but prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between -31°F and 95°F.

Mechanical Containment:

If there are special encapsulation or sealing requirements, consult your SANYO Energy Corp. representative about possible cell hazard precautions or limitations.

Handling:

Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture the battery cell case. Batteries packaged in bulk containers should not be shaken. Metal covered tables or belts used for assembly of batteries into devices can be the source of short circuits; apply insulating material to assembly work surface.

Soldering/welding:

If soldering or welding to the case of the battery is required, consult your Sanyo Energy Corp. representative for proper precautions to prevent seal damage or external short circuit.

Charging:

This battery is designed for recharging. A loss of voltage and capacity of batteries due to self-discharge during prolonged storage is unavoidable. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure which may result in damaging heat generation or cell rupture and or venting.

Section X- Recycling and Disposal

SANYO encourages battery recycling. Our Nickel Cadmium batteries are recyclable through the Rechargeable Battery Recycling Corporation's (RBRC) ***Charge Up to Recycle! Program***. For information call 1-800-8-BATTERY or see their website at www.rbrc.org. Ni-Cd batteries must be handled in accordance with all applicable state and federal laws and regulations.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SANYO ENERGY CORP. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212 F. Such treatment can vaporize the liquid electrolyte causing cell rupture. Incineration may result in cadmium emissions.

Section XI- Transportation

SANYO sealed Nickel Cadmium batteries are considered to be "dry cell" batteries and are not subject to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Administration (ICAO), the International Air Transport Association (IATA) or the International Maritime Dangerous Goods regulations (IMDG). More information concerning shipping, testing, marking and packaging can be obtained from Labelmaster at http://www.labelmaster.com. The only DOT requirement for shipping Nickel Cadmium batteries is Special Provision 130 which states: "Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals)." IATA requires that batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting.Nickel Cadmium batteries are classified as a D006 hazardous waste because of the presence of cadmium. This waste code is assigned because of toxicity, not corrosiveness. These batteries do not meet the definition of a corrosive waste.

Each SANYO cell or battery has been tested under provisions of the UN Manual of Tests and Criteria, Part III, Sub-section 38.3.

As a courtesy to our customers, Energizer has prepared copyrighted Product Safety Datasheets to provide information on the different Eveready/Energizer battery systems. As defined in OSHA Hazard Communication Standard, Section 1910.1200 (c), Eveready/Energizer batteries are manufactured "articles", which do not result in exposure to a hazardous chemical under normal conditions of use. For this reason, Material Safety Datasheets are not required. The information and recommendations set forth herein are made in good faith, for information only, and are believed to be accurate as of the date of preparation. However, ENERGIZER BATTERY MANUFACTURING, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM REFERENCE ON IT.

PRODUCT SAFETY DATA SHEET

PRODUCT NAME: EVEREADY Battery

Type No.:

Volts: 1.35/cell

TRADE NAMES: ENERGIZER; HEARWELL; OVERTIME

Approximate Weight:

CHEMICAL SYSTEM: Mercuric Oxide-Zinc

Designed for Recharge: No

NOT AVAILABLE FOR SALE IN USA

SECTION I - MANUFACTURER INFORMATION

Energizer Battery Manufacturing, Inc.
1359 Columbia Rd.
Westlake, OH 44145

Telephone Number for Information:

800-383-7323 (USA / CANADA)

Date Prepared: January 2015

SECTION II - HAZARDOUS INGREDIENTS

IMPORTANT NOTE: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Graphite (CAS# 7782-42-5)	15 mg/m^3 TWA (total dust) 5 mg/m^3 TWA (respirable fraction)	2 mg/m^3 TWA (respirable fraction)	1-3
Manganese Dioxide (CAS# 1313-13-9)	5 mg/m^3 Ceiling (as Mn)	0.2 mg/m^3 TWA (as Mn)	0-15
Mercury (CAS# 7439-97-6)	0.1 mg/m^3 Ceiling (as Hg)	0.025 mg/m^3 TWA (as Hg: elemental, inorganic compounds and vapor.)	0.3-1.5
Mercury Oxide (CAS# 21908-53-2)	0.1 mg/m^3 Ceiling (as Hg)	0.025 mg/m^3 TWA (as Hg: elemental, inorganic compounds and vapor.)	20-50
Potassium Hydroxide (CAS# 1310-58-3)	None established	2 mg/m^3 Ceiling	0-6

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Sodium Hydroxide (CAS# 1310-73-2)	2 mg/m^3 TWA	2 mg/m^3 Ceiling	0-6
Zinc (CAS# 7440-66-6)	15 mg/m^3 TWA (particulates not otherwise regulated-total dust) 5 mg/m^3 TWA (particulates not otherwise regulated-respirable fraction)	10 mg/m^3 TWA (particulates not otherwise classified-inhalable) 3 mg/m^3 TWA (particulates not otherwise classified-respirable)	5-15

SECTION III - FIRE AND EXPLOSION HAZARD DATA

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.

Fire fighters should wear self-contained breathing apparatus. Battery contains mercury and mercury oxide which produce highly toxic mercury vapors under fire conditions.

SECTION IV - HEALTH HAZARD DATA

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful.

Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. Contents include highly toxic mercury oxide, which can cause abdominal pain, vomiting, diarrhea, liver and kidney damage, and central nervous system disorders.

If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (202-625-3333) collect, day or night.

Inhalation: Contents of an open battery can cause respiratory irritation. Inhalation of mercury vapors can cause central nervous system impairment, chest pains, dypsnea, and coughing. Inflammation of the mouth and kidney damage may result. Provide fresh air and seek medical attention.

Skin Contact: Contents of an open battery can cause skin irritation and/or chemical burns. Mercury oxide can cause delayed burns and skin sensitization. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

Skin Absorption: Mercury and mercury oxide can be absorbed through intact skin causing symptoms similar to those of ingestion and inhalation.

Eye Contact: Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

SECTION V - PRECAUTIONS FOR SAFE HANDLING AND USE

Storage: Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult your Energizer Battery Manufacturing, Inc. representative for precautionary suggestions. Batteries normally evolve hydrogen which, when combined with oxygen from the air, can produce a combustible or explosive mixture unless vented. If such a mixture is present, short circuits, high temperature, or static sparks can cause an ignition.

Do not obstruct safety release vents on batteries. Encapsulation (potting) of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices.

If soldering or welding to the battery is required, consult your Energizer Battery Manufacturing, Inc. representative for proper precautions to prevent seal damage or short circuit.

Charging: This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

Labeling: If the Eveready label or package warnings are not visible, it is important to provide a package and/or device label stating:

> **WARNING: (1) KEEP AWAY FROM SMALL CHILDREN. IF SWALLOWED, PROMPTLY SEE DOCTOR; HAVE DOCTOR PHONE (202) 625-3333 COLLECT. (2) DO NOT DISPOSE OF IN FIRE OR RECHARGE - MAY EXPLODE OR LEAK AND CAUSE PERSONAL INJURY.**

Disposal: Dispose in accordance with all applicable federal, state and local regulations. Appropriate disposal technologies include incineration and land filling.

The contents of this battery, as a waste, may be regulated by the Resource Conservation and Recovery Act (RCRA) as a D009 (mercury) hazardous waste. However, batteries sent to a recycler (e.g., mercury recovery) in accordance with Standards for Universal Waste Management (40 CFR Part 273) are not fully regulated as hazardous wastes.

SECTION VI - SPECIAL PROTECTION INFORMATION

Ventilation Requirements: Not necessary under normal conditions.

Respiratory Protection: Not necessary under normal conditions.

Eye Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

SECTION VII - REGULATORY INFORMATION

Batteries marketed by Energizer Battery Manufacturing, Inc. have been classified as non-dangerous goods by the US Department of Transportation and the major international regulatory bodies and are therefore not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

1.1 Identification of the substance or preparation
1.1.1 Commercial Product Name
Hydro pneumatic piston accumulator with compressed nitrogen inside. (Accumulator)
1.2 Use of the Substance / Preparation
1.2.1 Expressed in writing
-
1.3 Company / undertaking identification

1.3.1	Supplier	Hydroll Oy
1.3.2	Contact information	
	Street address	Lohkarekuja 6
	Postcode and post office	FIN-62100 LAPUA Finland
	P.O.Box	P.O.Box 12
	Postcode and post office	FIN-62100 LAPUA Finland
	Telephone	+358 (0)20 765 7900
	Telefax	+358 (0)20 765 7901
	Business ID	1458247-8
	Email	info@hydroll.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This accumulator is a cylinder containing nitrogen, a colorless inert gas under pressure ranging between approximately 10 to 280 bar at 20˚ celcius.
Do not rupture, open or disassemble this accumulator.
Do not expose the accumulator to direct flame or heat.
Avoid any eye, skin or clothing contact with any gas venting from this accumulator.

INGESTION
- Not an anticipated route of entry.

INHALATION
- High concentration can cause suffocation. Symptoms can be lost of mobility / consciousness / death is imminent after losing consciousness.
  Suffocation can happen without advance warning.
  Use a breathing device and move a victim to fresh air.
  Keep the victim warm and rest. If not breathing, give artificial respiration.
  Call a physician.

SKIN CONTACT
- Do not expose skin to venting gas from this accumulator which can cause burns and blisters.

EYE CONTACT
- May cause cryogenic burns if exposed to venting gas

DELAYED EFFECTS
- None expected

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Hazardous components

3.1.1 CAS/EC and Reg.number	3.1.2 Chemical name and substance	3.1.3 Concentration	3.1.4 Classification
7727-37-9	Nitrogen, N_2	> 99,5 %	A

4. FIRST AID MEASURES

** if any of the symptoms persist, seek medical attention immediately **

4.1 INGESTION
- Not an anticipated route of entry.

4.2 INHALATION
- Use a breathing device and move a victim to fresh air.
  Keep the victim warm and rest. If not breathing, give artificial respiration.
  Contact a physician immediately.

4.3 SKIN CONTACT
- Warm skin by flooding or soaking with warm water. Do not use hot water.

4.4 EYE CONTACT
- Flood eyes with warm water. Contact a physician immediately.

4.5 ADVICE TP PHYSICIAN
- Treat according to symptoms present.

5. FIRE-FIGHTING MEASURES (TOKEVA T2b, compressed nitrogen)

5.1 Suitable extinguishing media
- Not flammable. Use extinguishing media appropriate for the surrounding area.

5.2 Extinguishing media which must not be used for safety reasons
-

5.3 Specific hazards
-

5.4 Special protective equipment for firefighters
-

5.5 Specific methods
- Accumulators exposed to high heat or flame may vent rapidly.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions
- Evacuate the area. Use oxygen (breathing) device if possible.
  Allow accumulator to vent until the gas has escaped. Do not attempt to stop the gas from venting from accumulator. Do not breathe gas. Avoid contact with skin, eyes and clothing.

6.2 Environmental precautions
- Open any ventilation, doors, windows.

6.3 Further information

7. HANDLING AND STORAGE

7.1. Handling

Always wear recommended personel protective equipment.
Keep the protective cap attached always when accumulator is not in use or when it is shifted.
Prevent the accumulator from falling by attaching it to the wall or a accumulator cart. Keep the valve closed always, when accumulator is not in use. Do not rupture the accumulator.

7.2 Storage

Storage the accumulators in well ventilated space away from heat- and inflammation sources (under 50 ‘c). Label the storage with appropriate warning signs.
Do not storage accumulators outside, unless accumulators are prepared and secured from oil-side with airtight plug.

7.3 Specific use(s)

Take care that there is efficient ventilation in working areas.
Observe the oxygen level in working areas.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Limit Values

8.1.2 Other information on limit values

-

8.2 Exposure controls

8.2.1 Occupational exposure controls

- Good ventilation in place of usage

8.2.1.1 Respiratory protection

- Good ventilation in place of usage

8.2.1.2 Hand protection

- Protective gloves

8.2.1.3 Eye protection

- Safety glasses are adequate for all users

8.2.1.4 Skin and body protection

- Normal clothing is sufficient

8.2.2 Environmental exposure controls

- General ventilation is sufficient to dissipate gas, should it be released

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1	General Information (appearance, odour)	
	Colourless, odourless	
9.2	Important Health Safety and Environmental Information	
9.2.1	pH	-
9.2.2	Boiling point / range	-196°C
9.2.3	Flash point	-
9.2.4	Flammability (solid, gas)	-
9.2.5	Explosive properties	
9.2.5.1	Lower explosion limit	-
9.2.5.2	Upper explosion limit	-
9.2.6	Oxidising properties	-
9.2.7	Vapour pressure	-
9.2.8	Relative density	0.97 (air = 1)
9.2.9	Solubility	
9.2.9.1	Water solubility	20 mg/l
9.2.9.2	Fat solubility (solvent – oil to be specified)	-
9.2.10	Partition coefficient (n-octanol/water)	-
9.2.11	Viscosity	-
9.2.12	Vapour density	-
9.2.13	Evaporation rate	-
9.3	Other information	

10. STABILITY AND REACTIVITY

10.1 Conditions to avoid
- Avoid direct heat and pressure.

10.2 Materials to avoid
-

10.3 Hazardous decomposition products
-

11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity
-

11.2 Primary irritation
-

11.3 Sensitisation
-

11.4 Subacute, subchronic and prolonged toxicity
-

11.5 Human experience
-

11.6 Other information of acute toxicity
- Simple asphyxiant

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity
12.1.1 Aquatic toxicity
- No ecological effects expected.

12.1.2 Toxicity to other organisms
-

12.2 Mobility
-

13. DISPOSAL CONSIDERATIONS

- Empty slowly in open-air or return to supplier.

14. TRANSPORT INFORMATION

14.1	**UN-No**	**3164**
14.2	**Packaging group**	**-**
14.3	**Land transport**	**ADR 2.2**
	Sea transport	**IMO 2.2**
14.3.1	**Class**	**2**
14.3.2	**Risk No.**	**20**
	ADR-RID-Labels	**2.2**

14.3.3	**Description of the goods**	**Articles, Pressurized, Pneumatic**
14.3.4	**Further Information**	**Avoid transporting in vehicles, with no separate trunk space. Make sure, that the driver knows the possible dangers and knows what to do in accident- and danger situation. Before transporting the accumulators, make sure that they are steadily attached and the accumulator valve is closed and not leaking.**
14.3.5	**Special provision applied in transport <u>when products meet the requirements</u>**	ADR - special provision 594 IMDG - special provision 283 IATA (DGR) - special provision A114 (283)

15. REGULATORY INFORMATION

15.1 Information on the warning label
15.1.1 Letter code of the warning symbol and indications of danger for the preparation
-
15.1.2 R phrase(s)
-
15.1.3 R phrase(s)
- S7/9 Keep container tightly closed and in a well-ventilated place.

15.1.4 Special regulations on certain preparations
-
15.1.5 Special Safety Assessment has been carried out for the substance
-
15.2 National regulatory information:
-

16. OTHER INFORMATION

16.1 Training advice
-
16.2 Recommended restrictions
- Before using this product in new processes or experiments, should thorough composition compatibility and security assessing performed.

16.3 Additional information available from:
- Sarlin Oy, telephone +358 (0)10 550 4505 (compressed nitrogen)
- Hydroll Oy, telephone +358 (0)20 765 7900 (accumulators)

16.4 Literary reference

1. Pyötsilä, J. Kemikaalilaki 6. painos, Chemas Oy Vol, 1&2, 2005.
2. Handbook of Compressed Gases, 4. edition, Kluwer Academic Publishers, 1999.
3. Nikunen, E., Leinonen, R., Kemiläinen, B. & Kultamaa, A 2000. Environmental Properties of Chemicals, 2 rev. edition, Edita Ltd. Vol 1&2.
4. Virtanen, L., Miettinen-Bellevergue, S., Suominen M, Häkkinen A, (Toim.) Vaarallisten aineiden kuljetus tiellä 2009. Edita Publishing Oy.
5. EIGA; European Industrial Gases Association.
6. HTP-arvot 2007, Helsinki, 2007. Sosiaali- ja terveysministeriön julkaisuja 2007:4.
7. European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2013)
8. IMDG Code, 2010 Edition Amdt 35-10
9. DGR 54th edition (IATA)

Current issue date: 18.10.2012
Previous issue: 15.3.2012

Changes to MSDS from previous issue date are due to following:
- Firetests has been conducted to accumulators on 24.11.2011 in EMERGENCY SERVICES COLLEGE in Kuopio, Finland.
- IMO-code has been updated for transportation 18.10.2012
- Special provisions has been updated for Transportation 18.10.2012

As a courtesy to our customers, Energizer has prepared copyrighted Product Safety Datasheets to provide information on the different Eveready/Energizer battery systems. As defined in OSHA Hazard Communication Standard, Section 1910.1200 (c), Eveready/Energizer batteries are manufactured "articles", which do not result in exposure to a hazardous chemical under normal conditions of use. For this reason, Material Safety Datasheets are not required. The information and recommendations set forth herein are made in good faith, for information only, and are believed to be accurate as of the date of preparation. However, ENERGIZER BATTERY MANUFACTURING, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM REFERENCE ON IT.

PRODUCT SAFETY DATA SHEET

PRODUCT NAME: Eveready / Energizer Battery

Type No.:

Volts:

TRADE NAMES: ENERGIZER, ENERGIZER e², INDUSTRIAL ZMA, HERCULES, EVEREADY, WONDER

Approximate Weight:

CHEMICAL SYSTEM: Alkaline Manganese Dioxide-Zinc

Designed for Recharge: No

SECTION 1 - MANUFACTURER INFORMATION

Energizer Battery Manufacturing, Inc.
25225 Detroit Rd.
Westlake, OH 44145

Telephone Number for Information:

800-383-7323 (USA / CANADA)

Date Prepared: February 2009

SECTION 2 – HAZARDS IDENTIFICATION

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.
Inhalation: Contents of an open battery can cause respiratory irritation.
Skin Contact: Contents of an open battery can cause skin irritation and/or chemical burns.
Eye Contact: Contents of an open battery can cause severe irritation and chemical burns.

SECTION 3 - INGREDIENTS

IMPORTANT NOTE: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	% / wt.
Graphite (CAS# 7782-42-5)	15 mg/m^3 TWA (total dust) 5 mg/m^3 TWA (respirable fraction)	2 mg/m^3 TWA (respirable fraction)	2-6
Manganese Dioxide (CAS# 1313-13-9)	5 mg/m^3 Ceiling (as Mn)	0.2 mg/m^3 TWA (as Mn)	30-45
Potassium Hydroxide (CAS# 1310-58-3)	None established	2 mg/m^3 Ceiling	4-8
Zinc (CAS# 7440-66-6)	15 mg/m^3 TWA PNOR* (total dust) 5 mg/m^3 TWA PNOR* (respirable fraction)	10 mg/m^3 TWA PNOC** (inhalable particulate) 3 mg/m^3 TWA PNOC** (respirable particulate)	12-25
Non-Hazardous Components Steel (iron CAS# 7439-89-6) Water, Paper, Plastic and Other	 None established None established	 None established None established	 18-22 Balance

* PNOR: Particulates not otherwise regulated
**PNOC: Particulates not otherwise classified

SECTION 4 – FIRST AID MEASURES

Ingestion: Do not induce vomiting or give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (202-625-3333) collect day or night.
Inhalation: Provide fresh air and seek medical attention.
Skin Contact: Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.
Eye Contact: Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.
Fire fighters should wear self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

To cleanup leaking batteries:

Ventilation Requirements: Room ventilation may be required in areas where there are open or leaking batteries.

Eye Protection: Wear safety glasses with side shields if handling an open or leaking battery.
Gloves: Use neoprene or natural rubber gloves if handling an open or leaking battery.
Battery materials should be collected in a leak-proof container.

SECTION 7 - HANDLING AND STORAGE

Storage: Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult your Energizer Battery Manufacturing, Inc. representative for precautionary suggestions. Batteries normally evolve hydrogen which, when combined with oxygen from the air, can produce a combustible or explosive mixture unless vented. If such a mixture is present, short circuits, high temperature, or static sparks can cause an ignition.

Do not obstruct safety release vents on batteries. Encapsulation (potting) of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices.

If soldering or welding to the battery is required, consult your Energizer Battery Manufacturing, Inc. representative for proper precautions to prevent seal damage or short circuit.

Charging: This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

Labeling: If the Eveready / Energizer Battery label or package warnings are not visible, it is important to provide a package and/or device label stating:

> **WARNING:** do not install backwards, charge, put in fire, or mix with other battery types. May explode or leak causing injury.
> **Replace all batteries at the same time.**
>
> Where accidental ingestion of small batteries is possible, the label should include:
>
> Keep away from small children. If swallowed, promptly see doctor; have doctor phone (202) 625-3333 collect.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Requirements: Not necessary under normal conditions.

Respiratory Protection: Not necessary under normal conditions.

Eye Protection: Not necessary under normal conditions.

Gloves: Not necessary under normal conditions.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point @ 760 mm Hg (°C)	Not applicable for an Article
Vapor Pressure (mm Hg @ 25°C)	Not applicable for an Article
Vapor Density (Air = 1)	Not applicable for an Article
Density (g/cm^3)	2.0 – 3.0
Percent Volatile by Volume (%)	Not applicable for an Article
Evaporation Rate (Butyl Acetate = 1)	Not applicable for an Article
Physical State	Solid
Solubility in Water (% by weight)	Not applicable for an Article
pH	Not applicable for an Article
Appearance and Odor	Solid object / no odor

SECTION 10 – STABILITY AND REACTIVITY

Alkaline batteries do not meet any of the criteria established in 40 CFR 261.2 for reactivity.

SECTION 11 – TOXICOLOGICAL INFORMATION

Alkaline batteries are not hazardous waste. Under normal conditions of use, alkaline batteries are non-toxic.

SECTION 12 – ECOLOGICAL INFORMATION

Issues such as ecotoxicity, persistence and bioaccumulation are not applicable for articles.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state and local regulations. Appropriate disposal technologies include incineration and land filling.

SECTION 14 – TRANSPORT INFORMATION

In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in "strong outer packaging" that prevents spillage of contents. All original packaging for Energizer alkaline batteries has been designed to be compliant with these regulatory concerns.

Alkaline batteries (sometimes referred to as "Dry cell" batteries) are not listed as dangerous goods under the IATA Dangerous Goods Regulations, ICAO Technical Instructions and the U.S. hazardous materials regulations (49 CFR). These batteries are not subject to the dangerous goods regulations provided they meet the requirements contained in the following special provisions. Special Provision A123 in the IATA Dangerous Goods Regulations and ICAO Technical Instructions and Special Provision 130 in 49 CFR 172.102 of the U.S. hazardous materials regulations require alkaline batteries are packed in such a way to prevent short circuits or generating a dangerous quantity of heat. In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words "not restricted" and the Special Provision number A123 be provided on the air waybill, when an air waybill is issued.

SECTION 15 - REGULATORY INFORMATION

Batteries marketed by Energizer Battery Manufacturing, Inc. are not classified as dangerous goods by the US Department of Transportation or the major international regulatory bodies and are therefore not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.

SECTION 16 - OTHER INFORMATION

None.

MATERIAL SAFETY DATA SHEET
LEAD ACID BATTERY WET, FILLED WITH ACID
(US, CN, EU Version for International Trade)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Lead Acid Battery Wet, Filled With Acid**
OTHER PRODUCT NAMES: Electric Storage Battery, SLI or Industrial Battery, UN2794

MANUFACTURER: East Penn Manufacturing Company, Inc.
DIVISION: Deka Road
ADDRESS: Lyon Station, PA 19536 USA

EMERGENCY TELEPHONE NUMBERS:
US: CHEMTREC 1-800-424-9300
CN: CHEMTREC 1-800-424-9300
Outside US: 1-703-527-3887

NON-EMERGENCY HEALTH/SAFETY INFORMATION: 1-610-682-6361

CHEMICAL FAMILY: This product is a wet lead acid storage battery. May also include gel/absorbed electrolyte type lead acid battery types.

PRODUCT USE: Industrial/Commercial electrical storage batteries.

This product is considered a Hazardous Substance, Preparation or Article that is regulated under US-OSHA; CAN-WHMIS; IOSH; ISO; UK-CHIP; or EU Directives (67/548/EEC-Dangerous Substance Labelling, 98/24/EC-Chemical Agents at Work, 99/45/EC-Preparation Labelling, 2001/58/EC-MSDS Content, and 1907/2006/EC-REACH), and an MSDS/SDS is required for this product considering that when used as recommended or intended, or under ordinary conditions, it may present a health and safety exposure or other hazard.

Additional Information
This product may not be compatible with all environments, such as those containing liquid solvents or extreme temperature or pressure. Please request information if considering use under extreme conditions or use beyond current product labelling.

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification:

Health	Environmental	Physical
Acute Toxicity – Not listed (NL) Eye Corrosion – Corrosive* Skin Corrosion – Corrosive* Skin Sensitization – NL Mutagenicity/Carcinogenicity – NL Reproductive/Developmental – NL Target Organ Toxicity (Repeated) – NL	Aquatic Toxicity – NL	NFPA – Flammable gas, hydrogen (during charging) CN - NL EU - NL

*as sulfuric acid

GHS Label: Lead Acid Battery, Wet

Symbols: C (Corrosive)

Hazard Statements	Precautionary Statements
Contact with internal components may cause irritation of severe burns. Irritating to eyes, respiratory system, and skin.	Keep out of reach of children. Keep containers tightly closed. Avoid heat, sparks, and open flame while charging batteries. Avoid contact with internal acid.

EMERGENCY OVERVIEW: May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant

women exposed to internal components may experience reproductive/developmental effects.

POTENTIAL HEALTH EFFECTS:

EYES: Direct contact of internal electrolyte liquid with eyes may cause severe burns or blindness.

SKIN: Direct contact of internal electrolyte liquid with the skin may cause skin irritation or damaging burns.

INGESTION: Swallowing this product may cause severe burns to the esophagus and digestive tract and harmful or fatal lead poisoning. Lead ingestion may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints.

INHALATION: Respiratory tract irritation and possible long-term effects.

ACUTE HEALTH HAZARDS:
Repeated or prolonged contact may cause mild skin irritation.

CHRONIC HEALTH HAZARDS:
Lead poisoning if persons are exposed to internal components of the batteries. Lead absorption may cause nausea, vomiting, weight loss, abdominal spasms, fatigue, and pain in the arms, legs and joints. Other effects may include central nervous system damage, kidney dysfunction, and potential reproductive effects. Chronic inhalation of sulfuric acid mist may increase the risk of lung cancer.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
Respiratory and skin diseases may predispose the user to acute and chronic effects of sulfuric acid and/or lead. Children and pregnant women must be protected from lead exposure. Persons with kidney disease may be at increased risk of kidney failure.

Additional Information
No health effects are expected related to normal use of this product as sold.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:	EC No.:
Lead, inorganic	7439-92-1	43–70 (average: 65)	231-100-4
Sulfuric acid	7664-93-9	20–44 (average: 25)	231-639-5
Antimony	7440-36-0	0-–4 (average: 1)	231-146-5
Arsenic	7440-38-2	<0.01	231-148-6
Polypropylene	9003-07-0	5–10 (average: 8)	NA

NA: Not applicable; ND: Not determined

Additional Information
These ingredients reflect components of the finished product related to performance of the product as distributed into commerce.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Flush eyes with large amounts of water for at least 15 minutes. Seek immediate medical attention if eyes have been exposed directly to acid.

SKIN CONTACT: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, shower for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.

INGESTION: If swallowed, give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.

INHALATION: If breathing difficulties develop, remove person to fresh air. If symptoms persist, seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE/UNSUITABLE EXTINGUISHING MEDIA:
Dry chemical, carbon dioxide, water, foam. Do not use water on live electrical circuits.

SPECIAL FIREFIGHTING PROCEDURES & PROTECTIVE EQUIPMENT:
Use appropriate media for surrounding fire. Do not use carbon dioxide directly on cells. Avoid breathing vapours. Use full protective equipment (bunker gear) and self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks, excessive heat or open flames.
SPECIFIC HAZARDS IN CASE OF FIRE:
Thermal shock may cause battery case to crack open. Containers may explode when heated.

Additional Information
Firefighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Avoid Contact with Skin. Neutralize any spilled electrolyte with neutralizing agents, such as soda ash, sodium bicarbonate, or very dilute sodium hydroxide solutions.
ENVIRONMENTAL PRECAUTIONS:
Prevent spilled material from entering sewers and waterways.
SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS:
Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations.

Additional Information
Lead acid batteries and their plastic cases are recyclable. Contact your East Penn representative for recycling information.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING AND STORAGE:
- Keep containers tightly closed when not in use.
- If battery case is broken, avoid contact with internal components.
- Do not handle near heat, sparks, or open flames.
- Protect containers from physical damage to avoid leaks and spills.
- Place cardboard between layers of stacked batteries to avoid damage and short circuits.
- Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.

OTHER PRECAUTIONS (e.g.; Incompatibilities):
Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:
Charge in areas with adequate ventilation.
VENTILATION:
General dilution ventilation is acceptable.
RESPIRATORY PROTECTION:
Not required for normal conditions of use. See also special firefighting procedures (Section 5).
EYE PROTECTION:
Wear protective glasses with side shields or goggles.
SKIN PROTECTION:
Wear chemical resistant gloves as a standard procedure to prevent skin contact.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Chemically impervious apron and face shield recommended when adding water or electrolyte to batteries.
Wash Hands after handling.
EXPOSURE GUIDELINES & LIMITS:

OSHA	Permissible Exposure Limit (PEL/TWA)	Lead, inorganic (as Pb)	0.05 mg/m^3
		Sulfuric acid	1.00 mg/m^3

EXPOSURE GUIDELINES & LIMITS:

		Antimony	0.50 mg/m^3	
		Arsenic	0.01 mg/m^3	
ACGIH	2007 Threshold Limit Value (TLV)	Lead, inorganic (as Pb)	0.05 mg/m^3	
		Sulfuric acid	0.20 mg/m^3	
		Antimony	0.50 mg/m^3	
		Arsenic	0.01 mg/m^3	
Quebec	Permissible Exposure Value (PEV)	Lead, inorganic (as Pb)	0.15 mg/m^3	
		Sulfuric acid	1.00 mg/m^3	TWA
			3.00 mg/m^3	STEV
		Antimony	0.50 mg/m^3	
		Arsenic	0.10 mg/m^3	
Ontario	Occupational Exposure Level (OEL)	Lead (designated substance)	0.10 mg/m^3	
		Sulfuric acid	1.00 mg/m^3	TWAEV
			3.00 mg/m^3	STEV
		Antimony	0.50 mg/m^3	
		Arsenic (designated substance)	0.01 mg/m^3	
Netherlands	Maximaal Aanvaarde Concentratie (MAC)	Lead, inorganic (as Pb)	0.15 mg/m^3	
		Sulfuric acid	1.00 mg/m^3	
Germany	Maximale Arbeitsplatzkonzentrationen (MAK)	Lead, inorganic (as Pb)	0.10 mg/m^3	
		Sulfuric acid	1.00 mg/m^3	TWA
			2.00 mg/m^3	STEL
		Antimony	0.50 mg/m^3	
United Kingdom	Occupational Exposure Standard (OES)	Lead	0.15 mg/m^3	
		Antimony	0.50 mg/m^3	
		Arsenic	0.10 mg/m^3	

TWA: 8-Hour Time-Weighted Average; STE: Short-Term Exposure; mg/m^3: milligrams per cubic meter of air; NE: Not Established; STEV: Short-Term Exposure Value; TWAEV: Time-Weighted Average Exposure Value; STEL: Short-Term Exposure Limit

Additional Information

- Batteries are housed in polypropylene cases which are regulated as total dust or respirable dust only when they are ground up during recycling. The OSHA PEL for dust is 15 mg/m^3 as total dust or 5 mg/m^3 as respirable dust.
- May be required to meet Domestic Requirements for a Specific Destination(s).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Industrial/commercial lead acid battery
ODOUR:	Odourless
ODOUR THRESHOLD:	NA
PHYSICAL STATE:	Sulfuric Acid: Liquid; Lead: solid
pH:	<1
BOILING POINT:	235-240° F (113-116° C) (as sulfuric acid)
MELTING POINT:	NA
FREEZING POINT:	NA
VAPOUR PRESSURE:	10 mmHg
VAPOUR DENSITY (AIR = 1):	> 1
SPECIFIC GRAVITY (H_2O = 1):	1.27–1.33
EVAPORATION RATE (n-BuAc=1):	< 1
SOLUBILITY IN WATER:	100% (as sulfuric acid)
FLASH POINT:	Below room temperature (as hydrogen gas)
AUTO-IGNITION TEMPERATURE:	NA
LOWER EXPLOSIVE LIMIT (LEL):	4% (as hydrogen gas)
UPPER EXPLOSIVE LIMIT (UEL):	74% (as hydrogen gas)
PARTITION COEFFICIENT:	NA
VISCOSITY (poise @ 25° C):	Not Available

DECOMPOSITION TEMPERATURE: Not Available

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU): As sulfuric acid
HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 2

SECTION 10: STABILITY AND REACTIVITY

STABILITY:	This product is stable under normal conditions at ambient temperature.
INCOMPATIBILITY (MATERIAL TO AVOID):	Strong bases, combustible organic materials, reducing agents, finely divided metals, strong oxidizers, and water.
HAZARDOUS DECOMPOSITION BY-PRODUCTS:	Thermal decomposition will produce sulfur dioxide, sulfur trioxide, carbon monoxide, sulfuric acid mist, and hydrogen.
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID:	Overcharging, sources of ignition

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments):
Sulfuric acid: LD50, Rat: 2140 mg/kg
LC50, Guinea pig: 510 mg/m^3
Lead: No data available for elemental lead

SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):
Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Additional Information
- Very little chronic toxicity data available for elemental lead.
- Lead is listed by IARC as a 2B carcinogen: possible carcinogen in humans. Arsenic is listed by IARC, ACGIH, and NTP as a carcinogen, based on studies with high doses over long periods of time. The other ingredients in this product, present at equal to or greater than 0,1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.
- The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY:
Lead is very persistent in soils and sediments. No data available on biodegradation.

BIOACCUMULATIVE POTENTIAL (Including Mobility):
Mobility of metallic lead between ecological compartments is low. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.

AQUATIC TOXICITY (Test Results & Comments):
Sulfuric acid: 24-hour LC50, fresh water fish *(Brachydanio rerio)*: 82 mg/l
96-hour LOEC, fresh water fish *(Cyprinus carpio)*: 22 mg/l (lowest observable effect concentration)
Lead (metal): No data available

Additional Information
- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:	Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.

MATERIAL SAFETY DATA SHEET
LEAD ACID BATTERY WET, FILLED WITH ACID
(US, CN, EU Version for International Trade)

HAZARDOUS WASTE CLASS/CODE:
US - Not applicable to finished product as manufactured for distribution into commerce.
CN – Not applicable to finished product as manufactured for distribution into commerce.
EWC – Not applicable to finished product as manufactured for distribution into commerce.

Additional Information
Not Included – **Recycle** or dispose as allowed by local jurisdiction for the end-of-life characteristics as-disposed.

SECTION 14: TRANSPORT INFORMATION

GROUND – US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	III	Labels	Corrosive

AIRCRAFT – ICAO-IATA:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	III	Labels	Corrosive

Reference IATA packing instructions 870

VESSEL – IMO-IMDG:

Proper Shipping Name	Batteries, Wet, Filled with Acid		
Hazard Class	8	ID Number	UN2794
Packing Group	III	Labels	Corrosive

Reference IMDG packing instructions P801

Additional Information
Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

SECTION 15: REGULATORY INFORMATION

INVENTORY STATUS:
All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

U.S. FEDERAL REGULATIONS:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – Export Notification: If the finished product contains chemicals subject to TSCA Section 12b export notification, they are listed below:

Chemical	**CAS #**
None	NA

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT)
Chemicals present in the product which could require reporting under the statute:

Chemical	**CAS #**
Lead	7439-92-1
Sulfuric acid	7664-93-9

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)
The finished product contains chemicals subject to the reporting requirements of Section 313 of SARA Title III.

Chemical	**CAS #**	**% wt**
Lead	7439-92-1	65
Sulfuric acid	7664-93-9	25

CERCLA SECTION 311/312 HAZARD CATEGORIES: Note that the finished product is exempt from these regulations, but lead and sulfuric acid above the thresholds are reportable on Tier II reports.

Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No
Immediate Hazard	Yes (Sulfuric acid is Corrosive)
Delayed Hazard	No

STATE REGULATIONS (US):

California Proposition 65

The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Chemical	CAS #	% Wt
Arsenic (as arsenic oxides)	7440-38-2	<0.1
Strong inorganic acid mists including sulfuric acid	NA	25
Lead	7439-92-1	65

California Consumer Product Volatile Organic Compound Emissions

This Product is not regulated as a Consumer Product for purposes of CARB/OTC VOC Regulations, as-sold for the intended purpose and into the industrial/Commercial supply chain.

INTERNATIONAL REGULATIONS (Non-US):

Canadian Domestic Substance List (DSL)

All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.

WHMIS Classifications

Class E: Corrosive materials present at greater than 1%

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.

NPRI and Ontario Regulation 127/01

This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/or Ont. Reg. 127/01:

Chemical	CAS #	% Wt
Lead	7439-92-1	65
Sulfuric acid	7664-93-9	25

European Inventory of Existing Commercial Chemical Substances (EINECS)

All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on, the European Inventory of Existing Commercial Chemical Substances.

European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.

R-Phrases	S-Phrases
35, 36, 38	1/2, 26, 30, 45

Additional Information

This product may be subject to Restriction of Hazardous Substances (RoHS) regulations in Europe and China, or may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as-intended by the manufacturer, or for distribution into specific domestic destinations.

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2).

Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

Sources of Information:

International Agency for Research on Cancer (1987), *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluations of Carcinogenicity: An updating of IARC Monographs Volumes 1-42, Supplement 7, Lyon,* France.

Ontario Ministry of Labour Regulation 654/86. Regulations Respecting Exposure to Chemical or Biological Agents.

RTECS – Registry of Toxic Effects of Chemical Substances, National institute for Occupational Safety and Health.

MSDS/SDS PREPARATION INFORMATION:

DATE OF ISSUE: ***30 April 2013*** SUPERCEDES: ***16 December 2011***

DISCLAIMER:

This Material Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. The information in the MSDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose or any other Warranty, Expressed or Implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do

not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

END

MATERIAL SAFETY DATA SHEET (MSDS)

1. CHEMICAL IDENTITY

Chemical Name	Liquefied Petroleum Gas	**Trade name**	LPG
Synonyms	LPG, Propane, Butane, Propylene, Purofax, Bottled gas	**Chemical classification**	Aromatic mixture
Formula	C3H6-C3H6-C4H10 (Mixture)	**CAS Number**	68476-85-7
UN number	1075	**UN Hazard class**	2
Hazchem code (EAC)	2WE		
REGULATED IDENTIFICATION		**Hazardous ingredients**	**CAS No.**
Shipping Name	Petroleum gases, liquified	Propane	
Shipping code/ Label	Flammable , class2	Butane 10	106-97-8
Hazardous waste Id No.	5	Propylene	115-07-1

2. PHYSICAL AND CHEMICAL DATA

Boiling point/ Range	>-40	**Physical state**	Gas at 15 c and 1 atm	**Appearance**	Colourless
Melting/ Freezing Point C	NP	**Vapour Pressure (at 20 C) mm Hg**	DNA	**Odour**	Mercaptane added for Odour
Vapour Density (Air =1)	1.5	**Solubility in water (at 30 C)**	Floats	**Other Information's**	
Specific gravity (at 50 C) (water =1)	0.51-0.58	**pH**	Not pertinent	Soluble in Organic solvents, Alcohol	

3. FIRE AND EXPLOSION DATA

Flash point C (CC) (OC)	NA	**Flammability LFL % v UFL % v**	1.9 9.5	**TDG Flammability**	2
Explosion sensitivity to impact	May explode	**Explosion sensitivity to static electricity**	May explode	**Auto ignition Temperature C**	466.1
Combustible Material	NO	**Explosive Material**	NO	**Hazardous Polymerization**	will not occur
Flammable Material	YES	**Oxidizer**	NO	**Corrosive Material**	NO
Pyrophoric Material	NO	**Organic Peroxide**	NO	**Other information**	
Hazardous Combustion Products		Emits CO, CO_2			

4. REACTIVITY DATA

Chemical stability	Stable
Incompatibility with other Materials	Strong oxidiser
Reactivity	No reaction with common materials but may react with oxidising materials.
Hazardous Reaction Products	Not available.

5. HEALTH HAZARD DATA

Route of entry	Inhalation, Skin			
Effect of exposure/ Symptoms	Concentration in air greater than 10 % causes dizziness in few minutes. 1 % conc. gives the same symptoms in 10 mts. High concentration causes asphyxiation. Liquid on skin causes frostbite.			
Emergency treatment	If inhaled remove the victim to fresh air area. Provide artificial respiration. Skin: Remove the wetted cloths and wash the affected area with plenty of water. Eyes: Flush with plenty of water for 15 min. seeks medical aid.			
Permissible Exposure Limit	**TLV-TWA (ACGIH)**	1000 ppm	**STEL(ACGIH)**	Not listed
LD 50 orl-rat: Not listed LCLo ihl-hmn:	**IDLH**		**Odour threshold**	5000 to 20000 ppm
NFPA Hazard signals	**Health 1**	**Flammability 4**	**Reactivity 0**	**Special -**

6. PREVENTIVE MEASURES

PERSONAL PROTECTIVE MATERIAL	Avoid contact with liquid or gas. Provide hand gloves, safety goggles, gas mask, protective clothing and shoes.
HANDLING AND STORAGE PRECAUTIONS	Keep in tightly closed cylinders in a cool, well ventilated area, away from heat, flame, sparks.

7. EMERGENCY AND FIRST AID MEASURES

FIRE (Class of fire : C)	
Fire extinguish media	Water spray, DCP, CO_2
Special Procedures	Keep the containers cool by spraying water if exposed to fire.
Unusual Hazards	Otherwise containers will explode in fire.
EXPOSURE	
First Aid Measures___	Eyes : Flush with plenty of water for at least 10 minutes Skin: Remove contaminated clothing and wash affected skin with water. Inhalation: Remove victims to fresh air. If not breathing, give artificial respiration. Ingestion: if conscious, have victim drink water or milk. Do not induced vomiting. Obtain medical attention immediately.
Antidotes/ Dosages	No specific antidote. Treat symptomatically.
SPILLS	
Steps to be taken	Shut off leaks if without risk. Warn everybody that air mixture is explosive.
Waste Disposal Method	Allow gas to burn under control.

8. ADDITIONAL INFORMATION/ REFERENCES

ECOLOGICAL INFORMATION	
Ecotoxicity	DNA
Persistence	DNA
OTHER INFORMATION	A common air contaminant. Flammable when exposed to heat or flame. Keep containers tightly closed. Slightly explosion hazard. No food chain concentration potential
REFERENCES (FOR OBTAINING MORE INFORMATION)	
1. Hazardous chemicals Data Book: G Weiss: Noyes Data corp USA	1. Hand book of environmental data: Karen Verschueren: van Nostrand Reinhold Co., USA

9. MANUFACTURER/SUPPLIER'S DATA

SHV Energy Private Limited IVth Floor, SDE Serene Chambers, 8.2.334, Road No.7, Banjara Hills, Hyderabad-34	**Contact person in Emergency**	Emergency leader
PH : +191-4023540079	**Local Bodies Involved**	The District Magistrate
Fax: +91-40-23540083	**Standard Packing**	By Tank trucks
	Term card details/ Ref	Not pertinent
	Others	-

10. DISCLAIMER

Information contained in this material safety data sheet is believed to be reliable but no representation; guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the user/distributor to ensure that the information contained in the material safety data sheet is relevant to the product manufactured/ handled or sold by him as the case may be. SHV makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose.

Appendix III

Risk Assessment, Fire & Emergency Response Plan (Doc 2.8)

RESOLVE CONSULTING

Resolve Consulting Limited
161A Labour Avenue Naxxar NXR 9025 Malta EU
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Email: info@resolveconsulting.com.mt
Web: www.resolveconsulting.com.mt

Loss Adjusting, Claims Management, Accident Investigation
Risk Management - Health & Safety, Fire Safety, ATEX
Management Systems - Quality, Health & Safety

CLAIMS AND RISK SOLUTIONS

Environment Risk Assessment Report (incl Fire Plan)

AGV Non Ferrous Malta Limited
41, 42,
Site at Ta' Ghadajma
Limits of Mqabba
Malta

DISCLAIMER

This report is compiled in good faith and is based on the information provided by the owners/representatives of AGV Non Ferrous Malta Limited. The information in this report was obtained verbally, through the provision of sample documentation and observation. The assessors disassociate themselves from any known or concealed information which was not forwarded to their attention during the risk assessment.

In compiling this report the assessors have relied on the information provided for its accuracy and completeness in forming an opinion and have taken steps to verify it were possible.

This report gives an opinion in respect of certain potential risk exposures, the quality of the control measures in place and also makes recommendations for risk improvement. While implementing these recommendations will reduce the risk, an element of risk shall still remain and therefore other actions may still be necessary.

Contents

File Reference	E15-0009-AIS-C
Date of Report	10th June 2015
Manager	Mr Frank Cachia AGV Non Ferrous Malta Limited 41, 42, Site at Ta' Ghadajma Limits of Mqabba Malta Mobile: +356 9984 6461 E-Mail: frankcachia@gmail.com Website: www.agvmalta.com
Report compiled by:	Ing. Claude Farrugia - Director B.Eng.(Mech) Hons, Eur.Ing., CMIOSH

1.0 Introduction

AGV Non Ferrous Malta Limited requested this office to carry out an environment risk assessment and prepare a fire plan taking into account the activities and substances handled at their facilities in Mqabba.

2.0 Brief

2.1 To carry out a risk assessment to identify, assess and minimise the environmental risks and hazards of accidents and their consequences occurring as a result of the operations and activities carried out by AGV Non Ferrous Malta Limited.

2.2 To prepare a fire plan, showing provision of fire extinguishing media, site access, etc.

3.0 Approach & Objectives

3.1 Environment Risk Assessment

The approach adopted to carry out the risk assessment consisted of the following:

Step	*Activity*	*Objective*
1.	Identify all the substances handled at the installation.	To determine EWC codes and establish between hazardous and nonhazardous.
2.	Identify activities which could give rise to potential contamination scenarios.	To determine the activities when the various substances are handled and establish potential contamination scenarios.
3.	For each substances and their corresponding potential contamination scenario, establish the consequences should no control measures be in place.	To determine the real extent of the effect of the waste substance on the environment.
4.	For each substances and their corresponding potential contamination scenario, establish the consequences with existing control measures be in place.	To determine the residual risk of the waste product on the environment with control measures in place.

The risk assessment is included in appendix 1.

3.2 Fire Plan

The undersigned carried out a survey of the premises to determine the existing arrangements to cater for an emergency situation such as a fire evolving on site. These were drawn on a plan clearly indicating the provisions in place and access to emergency vehicles. Due to the fact that no water reservoir is available within the warehouse complex of Ta' Ghadajma, provision of adequate water supplies in case of fire will be provided by road tankers coordinated by the Civil Protection Department. These are documented in appendix 2.

4.0 Conclusions

The effects on the environment from the wastes handled by AGV Non Ferrous Malta are considered to be minor in view of the following:

a. For every potential source of contamination noted in the assessment, AGV Non Ferrous Malta Limited has taken precautionary measures to address same under normal operational conditions.
b. All areas where batteries are handled are impervious in nature.
c. Batteries are stored in approved fibre containers and stored in the upright position.
d. Temporary storage of all wastes is indoors in secure warehouses.
e. Spill kits are available in areas where batteries are handled.
f. No surface drains are present in the immediate area.
g. Premises are situated over third party warehouses, separated by approximately 0.35m of concrete.
h. Limited volumes of batteries are stored at any one time, small enough to prevent uncontrolled inundation or percolation.
i. There are no records of any accidental uncontrolled contamination on or from AGV Non Ferrous Malta Limited to the surrounding areas.
j. In the event of a fire, adequate fire provision has been provided, including safe evacuation for personnel and access to fire fighting vehicles.

Appendix 1 – Risk Assessment

Possible contamination scenarios were assessed against the criteria noted in tables 1, 2 and 3.

Table 1 – Severity

Descriptor	Numeric Rating	Definition
Catastrophic	5	Very serious environmental effects with impairment of ecosystem function. Long term, widespread effects on significant environment.
Critical	4	Serious environmental effects with some impairment of ecosystem function. Relatively widespread medium-long term impacts.
Marginal	3	Moderate effects on biological or physical environment (e.g. air, water) but not affecting ecosystem function. Moderate short/medium-term widespread impacts (e.g. significant spills)
Negligible	2	Minor effects on biological or physical environment. Minor short/medium-term damage to small area of limited significance
Insignificant	1	No land and ground water environmental contamination by release. Limited damage to minimal area of low significance.

Table 2 – Probability

Descriptor	Rating	Definition	D Guideline frequency
Almost Certain	A	Consequence is expected to occur in most circumstances	Occurs more than once per month
Likely	B	Consequence will probably to occur in most circumstances	Occurs once every 1 month - 1 year
Occasionally	C	Consequence should occur at some time	Occurs once every 1 year - 10 years
Unlikely	D	Consequence could occur at some time	Occurs once every 10 years - 100 years
Rare	E	Consequence may only occur in exceptional circumstances	Occurs less than once every 100 years

Table 3 - Risk Matrix

Likelihood	Consequence				
	1: Insignificant	2: Minor	3: Moderate	4: Major	5: Catastrophic
A: Almost Certain	Low	Moderate	Extreme	Extreme	Extreme
B: Likely	Low	Moderate	High	Extreme	Extreme
C: Occasionally	Very Low	Moderate	High	High	Extreme
D: Unlikely	Very Low	Low	Moderate	High	High
E: Rare	Very Low	Very Low	Moderate	Moderate	High

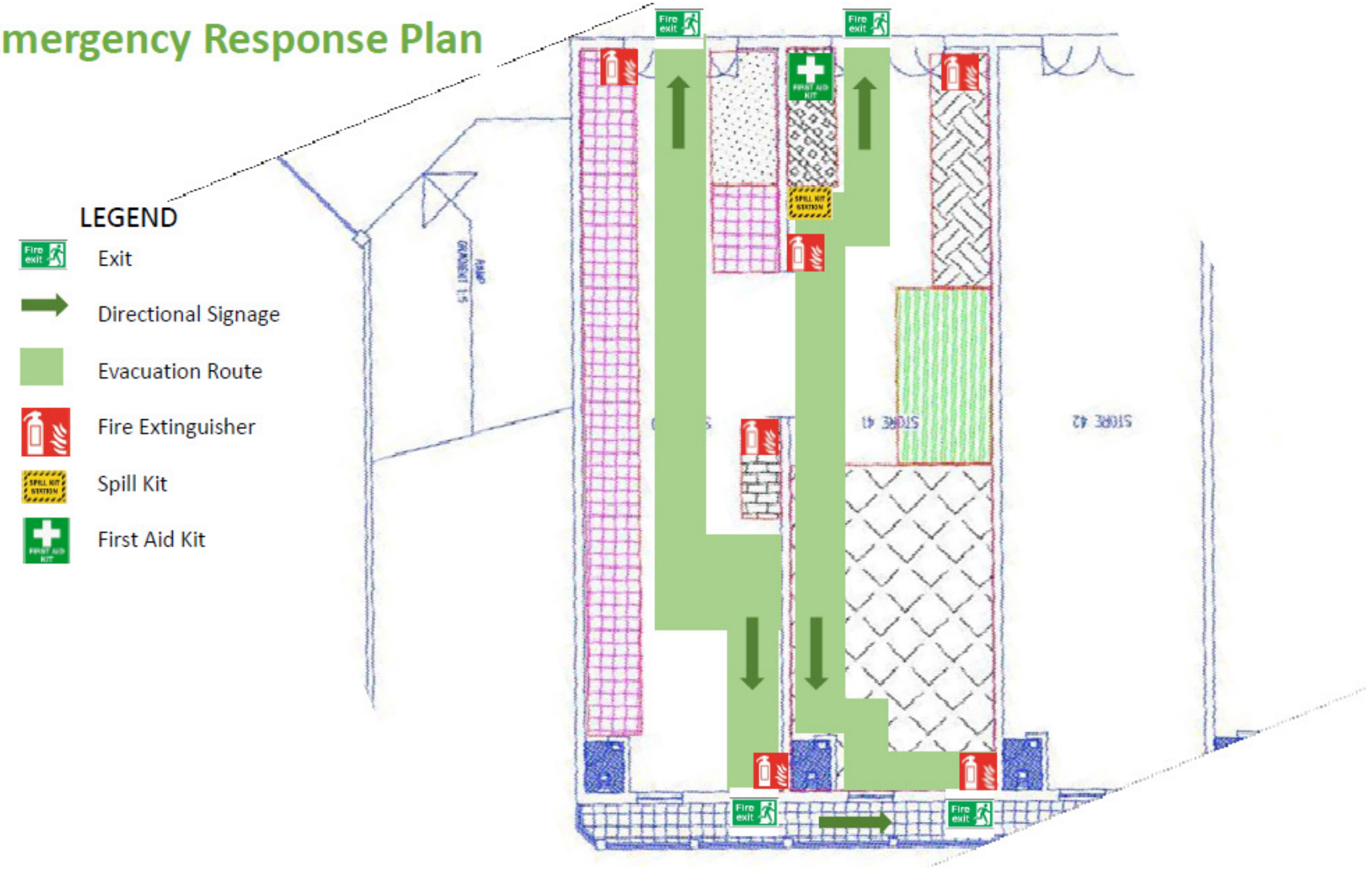
The detailed risk assessment is presented in table 9, found overleaf.

No	Potential source of contaminant	EWC code (from LN 337 of 2001)	Activity	Contamination Scenario	Receptor (Land/Air/Groundwater)			Severity	Probability of contamination occurring	Risk Level without mitigation measures	Control measures in place to prevent contamination	Risk Level with mitigation measures
					Land	Air	Ground-water					
1	Paper and cardboard	15 01 01 Paper and cardboard packaging 19 12 01 Paper and cardboard	Collection / Transfer to waste facility	- Material left lying on the ground at client premises. - Fire	Yes	Yes	No	2	C	Very Low	- Visual inspection prior to leaving client premises. - Authorised vehicles used to carry waste by road. - Waste is secured in vehicles. - Fire extinguisher in vehicle.	Very Low
			Temporary storage	- Material exposed to the elements. - Fire	Yes	Yes	No	1	C	Very Low	- All waste is stored in a covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Sorting and packaging	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Activity carred out in covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Delivery	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Approved packaging in closed containers used to transport waste.	Very Low
2	Plastic and rubber	15 01 02 Plastic packaging 16 01 19 Plastic 17 02 03 Plastic 19 12 04 Plastic and rubber 20 01 39 Plastics	Collection / Transfer to waste facility	- Material left lying on the ground at client premises. - Fire	Yes	Yes	No	1	C	Very Low	- Visual inspection prior to leaving client premises. - Authorised vehicles used to carry waste by road. - Waste is secured in vehicles. - Fire extinguisher in vehicle.	Very Low
			Temporary storage	- Material exposed to the elements. - Fire	Yes	Yes	No	1	C	Very Low	- All waste is stored in a covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Sorting and packaging	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Activity carred out in covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Delivery	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Approved packaging in closed containers used to transport waste.	Very Low
3	Waste packaging	15 01 03 Wooden packaging 15 01 04 Metallic packaging 15 01 06 Mixed packaging 15 01 07 Glass packaging	Collection / Transfer to waste facility	- Material left lying on the ground at client premises. - Fire	Yes	Yes	No	1	C	Very Low	- Visual inspection prior to leaving client premises. - Authorised vehicles used to carry waste by road. - Waste is secured in vehicles. - Fire extinguisher in vehicle.	Very Low
			Temporary storage	- Material exposed to the elements. - Fire	Yes	Yes	No	1	C	Very Low	- All waste is stored in a covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Sorting and packaging	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Activity carred out in covered warehouse. - No smoking on the premises. - Fire extinguishers available.	Very Low
			Delivery	- Material exposed to the elements - Fire	Yes	Yes	No	1	C	Very Low	- Approved packaging in closed containers used to transport waste.	Very Low

No	Potential source of contaminant	EWC code (from LN 337 of 2001)	Activity	Contamination Scenario	Receptor (Land/Air/Groundwater)			Severity	Probability of contamination	Risk Level without	Control measures in place to prevent contamination	Risk Level with mitigation measures
4	Ferrous and non-ferrous metals	16 01 17 Ferrous Metal 16 01 18 Non-Ferrous Metal 17 04 01 Copper, bronze, brass 17 04 02 Aluminium 17 04 03 Lead 17 04 04 Zinc 17 04 05 Iron and Steel 17 04 07 Mixed metals 17 04 11 Cables other than those mentioned in 17 04 10* 19 10 02 Non-ferrous waste 19 12 02 Ferrous Metal 19 12 03 Non-Ferrous Metal 20 01 40 Metals	Collection / Transfer to waste facility	Material left lying on the ground at client premises	Yes	No	No	1	C	Very Low	- Visual inspection prior to leaving client premises. - Authorised vehicles used to carry waste by road. - Waste is secured in vehicles.	Very Low
			Temporary storage	Material exposed to the elements	Yes	No	No	1	C	Very Low	- All waste is stored in a covered warehouse.	Very Low
			Sorting and packaging	Material exposed to the elements	Yes	No	No	1	C	Very Low	- Activity carred out in covered warehouse.	Very Low
			Delivery	Material exposed to the elements	Yes	No	No	1	C	Very Low	- Approved packaging in closed containers used to transport waste.	Very Low
5	Batteries and accumulators	16 06 01* Lead batteries 16 06 02* Ni-Cd batteries 16 06 03* Mercury-containing batteries 16 06 04 Alkaline batteries (except 16 06 03*) 16 06 05 Other batteries and accumulators 16 06 06* Separately collected electrolyte from batteries and accumulators	Collection	- Spillage of acid due to malhandling, poor containment during transit, damaged containers. - Fire	Yes	Yes	Yes	2	B	Low	- Batteries are collected in approved fibre containers and held in the upright position. - Authorised vehicles used to carry waste by road. - Waste is secured in vehicles. - Fire extinguisher in vehicle.	Low
			Temporary storage	- Spillage of acid due to malhandling and/or use of damaged containers. - Fire	Yes	Yes	Yes	1	C	Very Low	- Batteries are stored in approved fibre containers and stored in the upright position. - Storage is inside a covered warehouses; no contact with wet weather. - Sorting is carried out over impervious surface. - No surface drains in the immediate area. - Premises are situated over third party warehouses. - Personnel operating fork lift trucks and pallet jacks are competent. - Spill kits readily available. - Limited volumes of batteries stored at any one time, small enough to prevent uncontrolled inundation or percolation. - Storage periods of materials is time-bound. - The chemical composition complies with LN 139/2002. - No smoking policy. - Fire extinguishers on site.	Very Low
			Sorting and packaging	- Spillage of acid due to malhandling, failure of lifting equipment resulting in batteries falling to the ground, damaged containers, etc. - Fire	Yes	Yes	Yes	1	C	Very Low		Very Low
			Delivery	- Poor packaging. - Fire	Yes	Yes	Yes	4	C	High	- Approved packaging.	Moderate

Appendix 2 – Fire Plan

Emergency Response Plan



Appendix IV

BREF (BATs)

Annex I: Comparison of the processes at AGV Ltd with the BREF for Emissions from storage (published July 2006).

1.2 Storage of packaged dangerous substances

Aspect of BAT	BAT	Status at AGV Ltd
Safety and risk management	Operational losses do not occur in storing packaged dangerous materials. The only possible emissions are from incidents and (major) accidents. Companies that fall under the scope of the Seveso II Directive are required to take all measures necessary to prevent and limit the consequences of major accidents. They must, in any, case have a major accident prevention policy (MAPP) and a safety management system to implement the MAPP. Companies in the high risk category (Annex I of the Directive) must also draw up a safety report and an on-site emergency plan and maintain an up-to-date list of substances. However, companies storing dangerous substances not falling under the scope of the Seveso II Directive can also cause emissions from incidents and accidents. Applying a similar, maybe less detailed, safety management system is the first step in preventing and limiting these. BAT in preventing incidents and accidents is to apply a safety management system as described in Sections 4.1.6.1. The degree of detail of the system is clearly dependent on various factors such as: the quantities of substances stored, specific hazards of the substances and the location of the storage. However, the minimum level of BAT is to assess the risks of accidents and incidents on the site using the five steps described in Section 4.1.6.1	The facility does not fall under Seveso II Directive. Risk Assessment compiled by Ing. Claude Farrugia is found in Appendix III of Report Form B.

Aspect of BAT	BAT	Status at AGV Ltd
Training and responsibility	BAT is to appoint a person or persons who is or are responsible for the operation of the store. BAT is to provide the responsible person(s) with specific training and retraining in emergency procedures as described in Section 4.1.7.1 and to inform other staff on the site of the risks of storing packaged dangerous substances and the precautions necessary to safely store substances that have different hazards.	Refer to Section 8 of the document enclosed within Form B. The person appointed is Frank Cachia, whose CV is attached in Appendix I.
Storage area	BAT is to apply a storage building and/or an outdoor storage area covered with a roof, as described in Section 4.1.7.2. For storing quantities of less than 2500 litres or kilograms dangerous substances, applying a storage cell as described in Section 4.1.7.2 is also BAT.	All hazardous waste material, i.e. batteries, are stored within an enclosed facility (roof confirming with standards given in Section 4.1.7.2) with an impermeable concrete ground and a suitable roof. The ventilation system on site is simple allowing the necessary air exchanges through the warehouse by means of doors and windows. These are kept open throughout the daily operations. Given that the no emissions are generated on site except in case of accidental leakages, this ventilation system is sufficient for daily operations.
Separation and segregation	BAT is to separate the storage area or building of packaged dangerous substances from other storage, from ignition sources and from other buildings on- and off-site by applying a sufficient distance, sometimes in combination with fire-resistant walls. Member States apply different distances between the (outdoor) storage of packaged dangerous substances and other objects on- and off-site; see Section 4.1.7.3 for some examples. BAT is to separate and/or segregate incompatible substances. For the compatible and incompatible	Different waste fractions are stored separately in designated areas according to different EWC codes. Hazardous waste is not mixed, either with other categories of hazardous waste or with other wastes, substances or materials. In fact, hazardous waste is stored in warehouse 41, segregated from other non-hazardous waste stored in warehouse 42 by a brick wall.

Aspect of BAT	BAT	Status at AGV Ltd
	combinations see Annex 8.3 of the BREF. Member States apply different distances and/or physical partitioning between the storage of incompatible substances; see Section 4.1.7.4 for some examples.	
Containment of leakage and contaminated extinguishant	BAT is to install a liquid-tight reservoir according to Section 4.1.7.5, that can contain all or a part of the dangerous liquids stored above such a reservoir. The choice whether all or only a part of the leakage needs to be contained depends on the substances stored and on the location of the storage (e.g. in a water catchment area) and can only be decided on a case-by-case basis. BAT is to install a liquid-tight extinguishant collecting provision in storage buildings and storage areas according to Section 4.1.7.5. The collecting capacity depends on the substances stored, the amount of substances stored, the type of package used and the applied fire-fighting system and can only be decided on a case-by-case basis.	Implemented. Batteries containing potential leachate (electrolyte) are stored in leak-proof containers. Concrete floors ensure that any leaks are contained within the storage area, and not leached into the groundwater. Implemented. Concrete floor ensures that contaminated extinguishant is contained within the storage area, and not leached into the groundwater. The material is collected in leak-proof containers and transported to the closest civic amenity site for disposal.
Fire-fighting equipment	BAT is to apply a suitable protection level of fire prevention and fire-fighting measures as described in Section 4.1.7.6. The appropriate protection level has to be decided on a case-by-case basis in agreement with the local fire brigade.	Implemented. Please refer to the Fire response plan found in Report B Appendix III.
Preventing ignition	BAT is to prevent ignition at source as described in Section 4.1.7.6.1.	Implemented. • Smoking is not tolerated in the actual storage areas. Signs are set up on the premises. • Fire extinguishers are available in the storage areas. These are frequently inspected and all personnel in the facility are properly trained to use such equipment. • Stored material is partitioned to control the

Aspect of BAT	BAT	Status at AGV Ltd
		dispersion of fire in case of an accident. Combustible non-hazardous waste is placed in warehouse 42, away from hazardous waste that is stored in warehouse 41 and segregated by a brick wall. • The use of electrical equipment within the storage areas is limited to lighting, which is also kept as far away as possible from the source. • Also refer to the fire response plan and risk assessment reports attached in Report B Appendix III.

Appendix V

Receipt of sewer discharge permit

Data: *10-04-2012*
Date:

Nru. ta' l-irċevuta **Nº** 122347
Receipt No.

Irċivejt mingħand *MR. JOHN MICALLEF*
Received from

is-somma ta' *ELEVEN* Ewro
the sum of *Euro*

65 ċenteżmi
cents

€ 11.65

għal *DHU 6692*
in respect of

Joseph Bonnici
Enforcement Inspector
Discharge Permit Unit
Water Services Corporation

Firma *J. Bonnici*
Signature

Riċevuta mhux valida jekk iċ-ċekk ma jissarrafx.
Dishonoured cheques automatically invalidate this receipt.

WATER SERVICES
CORPORATION

Triq Qormi, Luqa LQA 9043
Freephone: (+356) 8007 2222
Fax: (+356) 2244 3900
E-mail: customercare@wsc.com.mt
Website: www.wsc.com.mt
VAT No. MT12435416
VAT Permit No. 71/04

Nru. taċ-Ċekk
Cheque No.

FIN 323/3.1x1 04/08