

ATTACHMENT D.1: INFRASTRUCTURE

This attachment comprises the following sections:

- D.1.1: List of all Infrastructure**
- D.1.2: Equipment in the proposed Fuel Blending Facility**
- D.1.3: Extension to the Existing Warehouse**
- D.1.4: Relocation of Existing and Provision of New Storage Boxes**

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ATTACHMENT D.1.1: INFRASTRUCTURE

The following is an overall description of the infrastructure, plant and equipment of the transfer station.

<p>D.1.a</p>	<p>Site Security Arrangements The site is completely surrounded by chain link fencing 2 m high, or by a wall 2 m high. There are 2 gates, the principal truck access to the site and a gate into the car park. The gates are power operated and opened either by the receptionist or by use of an electronic key. All gates are normally shut. See Drawing # 25041-1, Revision A (Attachment B.2) for the location of the fence, wall and gates. The gate from the car park to the neighbouring property is locked shut at all times. This drawing reflects the modified site arrangements after the construction of the wall in the North East corner. This wall will replace the existing fence and planting and is necessitated by the construction of the new Fermoy/Rathcormac by-pass.</p>
<p>D.1.b</p>	<p>Design of Site Roads The site, excepting the boundary screening is completely paved so there are no site roads per se.</p>
<p>D.1.c</p>	<p>Hard Standing The site, including bunds is covered with 200 mm reinforced concrete (35 Newton) on 300 mm well compacted hardcore. The reinforcing is to international standard (A393).</p>
<p>D.1.d</p>	<p>Plant And Equipment</p> <p>1. EXISTING</p> <p>1. Warehouse A 600 m² warehouse is provided. This is divided into 2 areas for the storage of flammable and corrosive wastes respectively. There are loading docks for each store and a decant room for mixing, blending and weighing and also a vault for the storage of waste regulated substances such as out of date medicines etc. A baling machine is located in the decant room and is connected with the room to WSCF-1 located in the adjacent Bund D.</p> <p>2. Asbestos Handling Asbestos is accepted on site only if double wrapped in 200 µm plastic sheeting in sealed containers. These containers are stored in Bunds L and M. Transfer of asbestos between box containers is only carried out in Bund L.</p> <p>3. Dichloromethane Separation Equipment Tankers of aqueous dichloromethane are phase separated in Bund D, where all equipment is located. The lower organic phase is transferred to a separate tanker and the upper water phase is then bulked up into another tanker if required. The equipment used consists of hoses, a pump and conductivity detector which automatically shuts down the pump when the interface is detected. Hoses are emptied to the respective tanks as appropriate before disconnection. The tanks are connected to a header, which is vented to atmosphere via a wet scrubber/carbon absorber (WSCF-1).</p> <p>4. Washbay A wash bay is located on the southwest of the site. In the wash bay is located the following equipment:</p>

- **Truck and tank washing.** A fixed tanker washing system is installed including water heater/boiler, hoses, wash nozzles and an access gantry. Both the outside and the inside of tanks can be washed and inspected. The equipment being washed is vented to atmosphere via the acid gas scrubber (AGS-1) located in Bund H. Tanker internal washings are stored in a tank in Bund H for export for incineration. External wash water and internal rinse water are stored in tanks in Bund GH for transfer to tankers and transfer to the Fermoy waste water treatment plant.
- **Drum washing.** A permanent system of nozzles mounted in a vented cabinet is installed to wash drums. Steam is provided from the same water heater/boiler as is used for tank washing. The cabinet is vented to atmosphere via the acid gas scrubber (AGS-1) located in H. The wash waters are collected in the cabinet sump and are pumped to tanks in H for export as hazardous or non-hazardous waste as appropriate.
- **Parts Washing Facility.** Parts from the disassembly of used equipment are cleaned with high pressure water in an enclosed unit which is vented to AGS-1 located in Bund H
- **Aluminium Oxide Bulking.** Aluminium oxide solid is received in skips which are placed on an elevating platform. The skips are then emptied into a hopper and the contents are transferred by screw conveyor to a special 20 ft box container. About 3 skip loads fill each container. The bulked aluminium oxide is exported for use in the cement industry. The hopper is vented to atmosphere via a dust filter.
- **Sludge Bulking:** Industrial wastewater treatment sludge is bulked into box containers using equipment similar to that used for the aluminium oxide. The box container and the hopper are vented to the acid gas scrubber (AGS-1) located in bund H.

Located alongside the wash bay is a bay containing:

- **Drum Crusher:** Metal drums, after washing, are crushed and packed into IBC's before being shipped out to a metal recycler.
- **Plastic Shredder:** Plastic drums and other plastic items are shredded before being packed into FIBCs for export for recycling or incineration.

5. Crane

A 25 ton capacity mobile container crane is used to move tanks and containers on and off skellys and around the site. The crane allows containers to be stacked 3 high.

6. Weighbridge

A weighbridge is installed as shown on Drawing # 25041-1, Revision A (**Attachment B.2**). It is controlled from the adjacent hut, which also acts as the waste reception office. In the weighbridge hut is a cabinet for storing the facility safety equipment, SCBA units, protective clothing etc.

7. Bunds

There are a total of bunds located in the lower part of the yard (see Drawing # 25041-1, Revision A (**Attachment B.2**)) used as follows:

A & B: Above ground bunds for storage of containers or ISO tanks. Each

bund can contain up to 18 number 20 ft container equivalents.
C: Easy entry bund for storage of containers on skellys.
D: Easy entry bund for storage of containers on skellys. Used for the dichloromethane phase split.
E: Easy entry bund for storage of containers on skellys.
F: Easy entry bund for storage of containers on skellys.
G: Above ground bund containing 3 25,000 l plastic tanks for holding wash and rinse waters.
H: Above ground bund containing the acid gas scrubber and the acid storage tank.
J: This bund, formerly containing the small waste oil tank, has been demolished. The waste oil is now stored in a new specially designed double walled tank.
K: Above ground bund associated with 50,000 l diesel fuel storage tank.
L: Easy entry bund for storage of asbestos containers and transfer between same.
M: Easy entry bund for storage of 2 containers on skellys. (To be used in association with New Bund R)
N: Above ground bund associated with 10,000 l diesel fuel storage tank.
P: Easy entry bund for storage of containers or tanks on skellys.

8. Wastewater Storage Tanks

3 no 25,000 l plastic storage tanks used to store wash and rinse water from the wash bay.

9. Acid Storage Tank

100,000 l plastic lined fiberglass tank used for storage of aluminium chloride solution located in Bund K. See Drawing # 25041-1, Revision A (**Attachment B.2**).

10. Inspection Areas

Tanks and other bulk loads are inspected in the area adjacent to the weighbridge. Packed loads are inspected in the warehouse after unloading and before being placed in storage. Currently an area in Store 2 is used. A separate inspection area and improved store 2 are proposed. See below.

11. Storage Boxes

3 no special storage boxes, located in the upper yard, are used to store incompatible materials (e.g. Classes 4.2 and 5.2)) and also for quarantining unidentified materials. These are constructed of steel and have an integral bund.

12. Waste Oil Tank

There is a tank located adjacent to the workshop for the holding of waste oil from the workshop. used by South Coast Transport). It is a specially constructed tank with its own integral bund.

2. PROPOSED

1. Fuel Blending Facility

A fuel blending facility comprising 6 tanks as described in detail in Attachment D.1.2 is proposed to be located in new Bund R located between Bunds M and K on the lower section of the site (See Drawing # 25041-1, Revision A (**Attachment B.2**)).

	<p>2. Extension to Warehouse The extension to the existing warehouse, in fact a separate similar building connected to the existing via a breeze way and containing in addition to the hazardous waste store, a store room for packaging etc., a new changing room and a canteen is described in Attachment D.1.3. The proposed location is shown in Drawing # 25041-1, Revision A (Attachment B.2)</p> <p>3. Additional Storage Boxes It is proposed to relocate the storage boxes in the upper yard to make way for the extension to the warehouse. At that time 2 no additional boxes will be installed to facilitate the storage of incompatible materials. The locations of these and the relocated current boxes and their specifications are given in Attachment D.1.3</p>
D.1.e	<p>Wheel-wash As the site is fully paved no wheel wash is required.</p>
D.1.f	<p>Laboratory Facilities A laboratory is located in the Southwest corner of the warehouse structure (See Drawing # 25041-1, Revision A (Attachment B.2)) It is equipped with: Gas chromatograph with mass ion and FID detectors and a mass spectrometer. Ion chromatograph. Flash point apparatus. Calorimeter for determining calorific value. pH meters Moisture analyzer Automatic Karl Fischer Titrator UV/Vis Spectrophotometer Fume hood</p>
D.1.g	<p>Fuel Storage Areas Fuel (diesel) is stored in steel tanks in 2 locations (See Drawing # 25041-1, Revision A (Attachment B.2)).</p> <ul style="list-style-type: none"> • Bund K contains 5a 0,000 I tank for road fuel • Bund N contains a 10,000 I tank for fueling the water heater/boiler in the wash bay. <p>Both tanks are fully banded in accordance with BAT.</p>
D.1.h	<p>Waste Quarantine Areas Waste is quarantined in 2 ways. Smaller containers of waste, such as drums are stored in a storage case located in the upper yard. Tanks or box containers of quarantined material are appropriately labeled and segregated and stored in the bund appropriate to the material being stored. .</p>
D.1.i	<p>Waste Inspection Area Tankers of waste are inspected and sampled in the area adjacent to the weighbridge as marked on Drawing #. Boxes and consignments of smaller containers are inspected in Bund, as they are being unloaded into the warehouse (See Drawing # 25041-1, Revision A (Attachment B.2)).</p>
D.1.j	<p>Traffic Control Though a traffic control system is implemented on site no infrastructure is required other than the power gates. Unbanded areas of the site can be used for parking empty trucks, box</p>

	<p>containers and clean, empty tanks. 30 car parking spaces and 3 visitor parking spaces are provided adjacent to the office building (see Drawing#).</p>
D.1.k	<p>Sewerage and Surface Water Drainage Infrastructure</p> <ul style="list-style-type: none"> • Sewerage: Two septic tanks are installed on site, a small one to handle the waste from the laboratory building, and a larger one to handle the waste from the office block. Effluent from both septic tanks flows to a common percolation area located under the upper yard. These are shown in the services plan (Drawing # 25041-4, Revision A (Attachment B.2)) • Connection to Public Sewer: It is planned to bring a main sewer to the vicinity in due course. At that time a connection to the site will be made and sewerage from the offices and laboratory buildings and the wash water currently transported to Fermoy WWTP will be sent via sewer. The route of the sewer and its design and construction will be agreed with the agency and the sanitary authority before work begins.. • Surface Water: Surface water from the yard is collected via surface drains to Class 1 oil and grit interceptors. The site is divided into 4 zones, each of which drains to a separate interceptor. The drainage system is shown on the services plan (Drawing # 25041-4, Revision A (Attachment B.2)). The surface water underflows from the oil interceptors to a mixing tank where it is sampled continuously for pH, Total Organic Carbon and conductivity. An automatic valve closes if any measured parameter is out of range. The surface water if it is within specification passes the valve and is piped to the Shanowennendrina stream. Surface water that collects in the bunds is tested and, if within specification is pumped to the oil and grit interceptors. If it is out of specification it is pumped into a tanker for disposal.
D.1.l	<p>Other Services Services are shown on the service plan (Drawing # 25041-4, Revision A (Attachment B.2)).</p> <ul style="list-style-type: none"> • Mains water is used for human consumption and use in the laboratory, canteens and restrooms etc. • WBoreshole water is used for washing trucks and the yard, pressure testing tankers and the bunds, and other non-potable applications. • Diesel fuel is delivered by tanker when required. • Power: A 480 V 3-phase supply is provided by the ESB from the local substation. • The facility has a telephone system based round equipment in the office building. There is a fax machine with a separate number in the office and also a server connected to the World Wide Web. Telecommunications lines fun through a duct under the car park outside the office building. • A diesel powered emergency generator, located as shown on Drawing # 25041-1, Revision A (Attachment B.2), is available to power essential services during a mains power outage.
D.1.m	<p>Plant Sheds, Garages, and Equipment Compound See Drawing # 25041-1, Revision A (Attachment B.2)</p> <ul style="list-style-type: none"> • Behind the offices is a workshop building where vehicles are serviced. • Adjacent to the weighbridge office is the parking area for the on-site fire

	<p>engine and the trailer carrying the foam generator and other fire fighting equipment.</p> <ul style="list-style-type: none"> • A small building located next to the gate is used for storing and charging the electric forklift trucks used in the facility. • A very small building holds the pump for the borehole. • All site buildings are constructed of fire resistant materials (steel, concrete, concrete block work and metal cladding).
D.1.n	<p>Site Accommodation The office building contains offices for both AVR-Safeway and South Coast Transport, a fax machine designated to AVR-Safeway, canteens, changing rooms, toilets, the fire monitoring system and computer systems. In addition there is a changing room/toilet and a canteen located next to the laboratory.</p>
D.1.o	<p>Fire Control System Monitoring: A comprehensive fire monitoring system comprising automatic sensors in the warehouse and other buildings, along with manual pull stations is provided. The locations of the monitoring points and pull stations were decided in consultation with the Cork County Council Fire Department. An automatic central control station is located in the office-building lobby. The control station is connected to a manned station for out of hours monitoring. Fire Fighting: Two fire hydrants with 1 in nozzles are provided as shown on Drawing # . These are provided with water at pressure from number pumps of capacity. In addition a mobile fire engine and a trailer equipped with foam generating equipment are maintained on site at all times. Fire extinguishers are provided as shown on Drawing # 25041-1, Revision A (Attachment B.2). All fire monitoring and fighting equipment is tested and maintained in accordance with the manufacturers' and installers' recommendations. Firewater is stored in 3 number 150 m³ tanks located to the south of the office building.</p>
D.1.p	<p>Civic Amenity Facilities There will be no Civic amenity facilities included in the development.</p>
D.1.q	<p>Any Other Waste Recovery Infrastructure All waste recovery infrastructure is described above.</p>
D.1.r	<p>Composting Infrastructure No composting will be carried out in the facility.</p>
D.1.s	<p>Construction and Demolition Waste Infrastructure Only hazardous Construction and Demolition waste will be accepted in the facility. This will be handled according to its hazardous components (e.g. asbestos).</p>
D.1.t	<p>Incineration Infrastructure Incineration will not be carried out in the facility.</p>
D.1.u	<p>Other Infrastructure There is no other infrastructure other than that described above.</p>

ATTACHMENT D.1.2 PROPOSED FUEL BLENDING FACILITY

DESCRIPTION

The fuel blending tank farm will be located on the lower level of the site in Area 3, between Bunds M and K. Tankers will be loaded and unloaded in Bund M.

EQUIPMENT

Six tanks as described below will be used.

TANK #	DESCRIPTION	APPROX. CAPACITY
T-1	Waste Storage Tank	80 m ³ (3 – 4 bulk loads)
T-2	Waste Storage Tank	80 m ³ (3 – 4 bulk loads)
T-3	Waste Storage Tank	80 m ³ (3 – 4 bulk loads)
T-4	SP Waste Storage Tank	30 m ³ (1 Bulk load)
T-5	SP Waste Storage Tank	30 m ³ (1 bulk load)
T-6	Fuel Blending Tank	120 m ³ (5-6 bulk loads of fuel)

The tanks will be cylindrical in shape, mounted vertically and constructed of stainless steel. They will be flat bottomed with slightly conical tops to aid rainwater runoff. The bottoms of the tanks will be slightly sloped to allow them to drain almost completely. Each tank will be equipped with a man-way, two 50 mm nozzles and a 75 mm nozzle on the top. The outlets will be a 75 mm diameter side mounted nozzle located towards the bottom of the tank and a 50 mm nozzle for tank residue removal, located at the lowest point. An inlet nozzle will be side mounted about 0.75 m above the bottom of the tank and equipped with an induction mixing jet, which will allow efficient mixing of the tank contents as material is introduced. An additional, 75 mm inlet nozzle, with mixing jet will be installed on the side of T-6. There will be corresponding spare (blanked) 75 mm nozzles on the side near the bottom of Tank T-1 to T-3. All the tanks will be fitted with PVRV conservation vents and will be vented via a common vent header to a pollution abatement device, consisting of a wet scrubber and carbon absorber. In case of overflowing a swan neck vent will relieve to the bund. Each tank will be equipped with a ladder and an inspection platform to access the man-way and nozzles on the top. Warning of corrosion will be provided by the installation of corrosion coupons in each tank and their annual inspection.

An area in Bund M will be used to unload smaller quantities of liquids from drums, via a dip pipe and a valve connected to P-3. The drum contents will be pumped to T-4 Or T-5 for premixing before being transferred to other tanks.

The tanks will be interconnected with stainless steel piping and butterfly valves so that it will be possible to carry out most transfers. Ball valves will be installed for the loading and offloading lines (V-1, V-21 and V-22) to minimise the potential for leaks. All valves will be fitted with locks to prevent accidental opening. The offloading and loading lines and all tank inlet lines will be fitted with check valves to prevent back-flow. It will be possible to empty all the tanks directly to tankers if necessary. Mixing will be accomplished by recirculation of the tanks using the mixing jets. Sampling

will be by means of sample lines off the mixing lines. Narrow bore tubes and ball valves will be used to minimise spills and emissions.

Three pumps will be used:

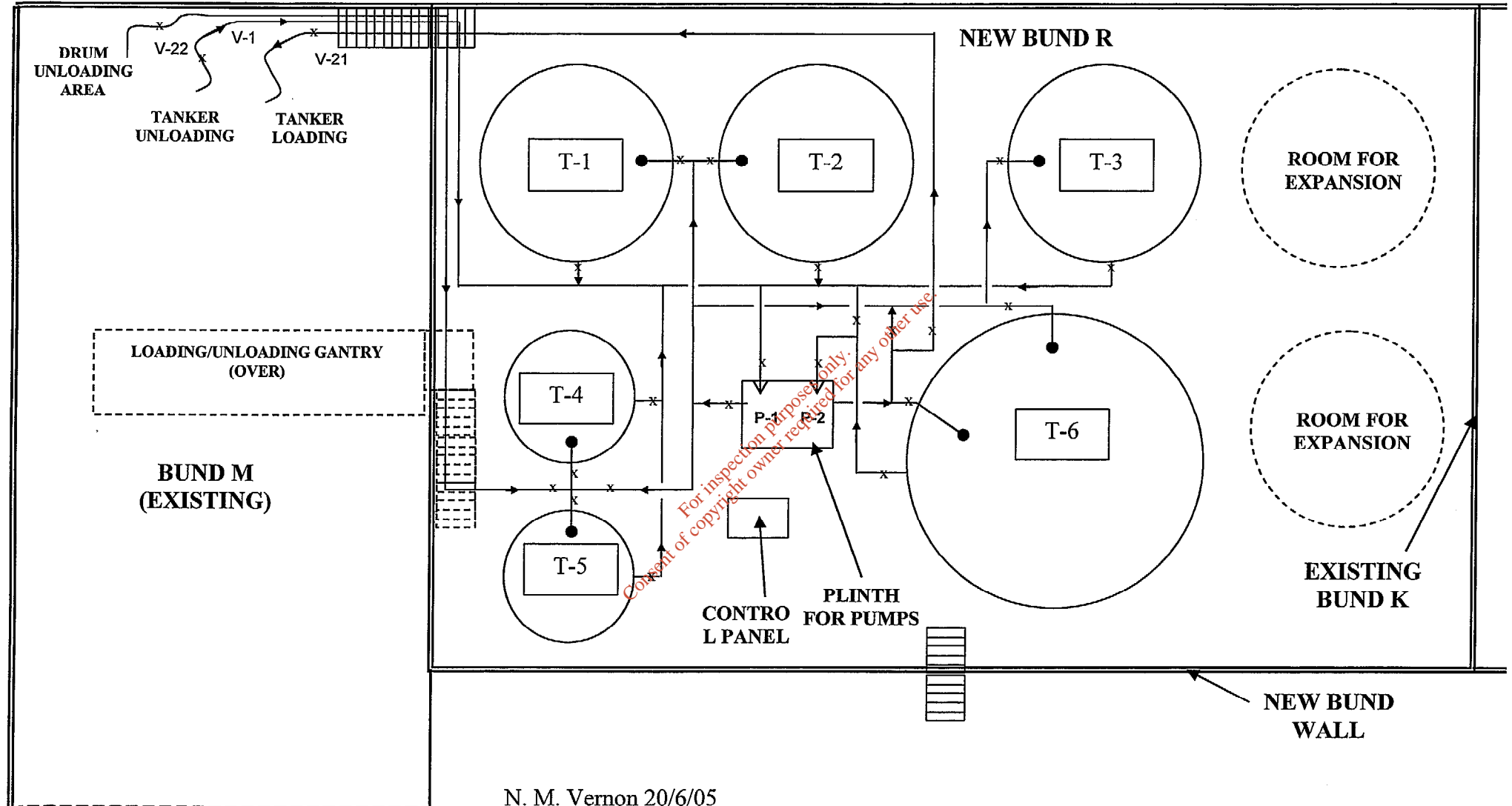
1. A self priming centrifugal pump (P-1, ca. 100 gpm) will be used to unload tankers and transfer material between tanks as well as recirculate the waste tanks to keep them mixed.
2. A second, larger centrifugal pump (P-2, ca. 200 gpm) will be used to recirculate the blended fuel in the mixing tank T-6, and also effect transfers between the tanks if P-1 is out of commission. Both P-1 and P-2 can be used to load the fuel into tankers.
3. Positive displacement pump for unloading drums from Bund M into tanks T-4 or T-5.

Both P-1 and P-2 will be piped up so that key services can be carried out using either pump, permitting most operations to continue despite a pump being temporarily out of service. It will also be possible to recirculate and thus efficiently mix T-6 while transferring material in from T-1 – T-5.

Instrumentation will consist of high-level switches fitted to one of the top 50 mm nozzles of each tank and a removable high-level switch for the tanker being loaded. Mass flow meters (FQ-1 and FQ-2) will be fitted on the outlet of P-1 and P-2. These will allow the operator to determine the amounts transferred and also the levels in each tank, as well as acting as no-flow detectors to protect the pumps. A radar level gauge (LT) will be fitted to T-6 as will an RTD. The other tanks will be fitted with temperature gauges.

The tank farm will be banded with a concrete wall 1 m high. The bund (Bund R) will be 20 x 12 m in size. The total banded volume, less the volume occupied by the tanks is 169 m³. The existing open-ended Bund M will be used for tanker loading and unloading. Both bunds will be equipped with sumps to allow the collection of liquid and its transfer.

LAYOUT OF FUEL BLENDING FACILITY



N. M. Vernon 20/6/05

ATTACHMENT D.1.3: EXTENSION TO EXISTING WAREHOUSE

DESCRIPTION

To facilitate the operation of the warehouse for the reception, inspection, sorting labelling, storing, repackaging and export of packed waste, it is proposed to convert the existing Store 2 into a receiving area and build a new, larger Store 2 to the south of the existing. Because of the location of the existing yard drain it will be necessary to separate the new structure from the old. A new canteen will occupy some of this space and there will be a corridor between the existing and new buildings. The arrangement of the existing and new structures is recorded in Drawing Number 25041-01 Revision A, **Attachment B.2.**

NOTES:

1. To enable construction to take place without interrupting operations in existing Bunds E and F, the new structure will be constructed on the upper level. Thus the west wall will sit about 3 m west of the existing building line.
2. Existing Store 2 will become new Receiving/Inspection area.
3. New opening will be installed in Loading Dock 2 to allow access to new building.
4. The new Store 2 will be curbed, fitted with access ramps and the floor sealed as per existing.
5. The new structure will be the same wall height and roof pitch as the existing warehouse. Because it is slightly narrower the roof height will be slightly less.
6. The structure and all surface treatments etc. of the new building will match the existing warehouse as closely as possible.
7. Provision is included in the plans for a new canteen. This will require a sink, water and drain connections, and an electric instant water heater. The window will provide a fire escape.
8. Provision is included in the plans for a new changing room. This will require a sink with an electric instant water heater, a shower with the same and a toilet.
9. Both the changing room and canteen drains will connect to the foul sewer.
10. A store for packaging materials will be included.
11. The canteen, changing room and store areas will be roofed at the same height as the existing lab building
12. The existing storage boxes in the upper yard will be moved further south to make room for the new structure and to provide a construction yard during construction of the new facility. (See Drawing Number 25041-01 Revision A, **Attachment B.2** for the revised location of the storage boxes.

**ATTACHMENT D.1.4:
ISOLATION STORES**

Because of the hazardous nature of many of the materials stored on site strict segregation rules must be adhered to. These are outlined in Procedure SW 109. In particular there should be separate bunded storage areas for:

- Spontaneously combustible materials (Class 4.2)
- Oxidizing agents (Class 5.1)
- Organic peroxides (Class 5.2)
- Toxic and inert pressurised gases (Classes 2.1 and 2.3)
- Quarantined material

The three existing isolation stores will be relocated and two new ones installed. The storage boxes are manufactured by Chemstore Ltd, Clondrinagh Ind. Est, Ennis Road, Limerick, phone: 061-327792, fax 061-327985, to their standard designs, which comply with all regulations including internal bunds. Appendix 1 is taken from the Chemstore web site and describes some of the features of these boxes. The various stores, their sizes, their capacities and the materials that will be stored in them are given in Table D.1.4.

TABLE D.1.4: ISOLATION STORAGE TO BE RELOCATED/INSTALLED

STORE NO.	APPROX SIZE (l x w x h)	CAPACITY (200 l drums)	STORAGE FOR:
Store 3 (Existing)	5 x 2.5 x 2.5 m	64	Class 4.2
Store 4 (Existing)	5 x 2.5 x 2.5 m	64	Class 4.2
Store 5 (Existing)	5 x 1.25 x 2.5 m	32	Quarantine area (Packed Waste)
Store 6 (New)	5 x 1.25 x 2.5 m	32	Class 5.1
Store 7 (New)	1.25 x 1.25 x 2.5 m	2	Class 5.2
Gas Storage area. (New)	2.5 x 1.25 m (no roof)	n.a.	Classes 2.1 and 2.3

Compressed gases are to be stored outside. The gas storage area will be enclosed with 1.8 m high chain link fence with a gate fitted with a padlock. Only Class 2.1 and 2.3 gases will be stored in this area. Flammable gases (Class 2.2) will continue to be stored in the warehouse.

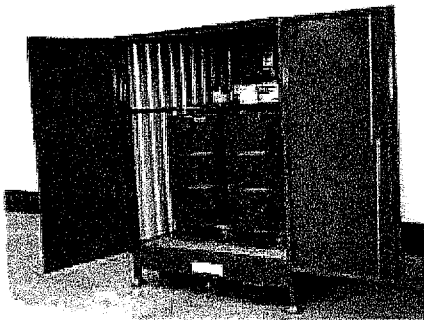
The location of the Stores 3 – 7 and the gas storage area are given on Drawing # in Attachment B.2.

**APPENDIX 1:
 INFORMATION FROM THE CHEMSTORE WEB SITE
 (www.chemstore.ie)**

Multi Drum Storage Units Previous Page

Delivered to site fully assembled, Chemstore Bunded Multi Drum storage units provide an immediate solution to the problems encountered in complying with environmental legislation while storing large quantities of drums.

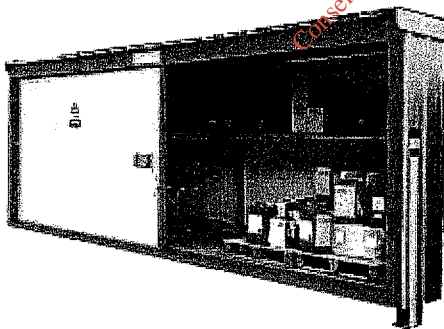
The Chemstore units are available in a range of size and storage options and can be customised to suit your particular storage requirements.



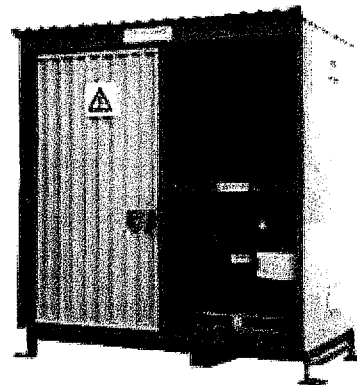
4DSD



8DSD



16DSDWI



16 DSD STD

Model	Dimensions LxWxH	Storage Capacity	Sump Capacity
4DSD	1680x1830x2230	1 Pallet-4x200L Drums (8x25L Drums)	205 litres
8DSD	3200x1900x2630	2 Pallets-8x200L Drums	425 litres
16DSD STD	3200x1900x3230	4 Pallets-16x200L Drums	900 litres
16DSD W1	5900x1900x2630	4 Pallets-16x200L Drums	900 litres

Standard features include:

- | | |
|---|---|
| <ul style="list-style-type: none">• Robust all welded steel construction.• Fully weatherproof and secure.• Spillage collection sump with capacities in excess of current environmental regulations (25% of total volume stored).• Ventilation panels to prevent build up of hazardous vapours.• 3 coat anti corrosive paint system. | <ul style="list-style-type: none">• Optional Polypropylene sump liners for aggressive materials.• Flexibility - Chemstores can easily be relocated by forklift truck.• No site works required.• Minimal lead-time.• Provides full and immediate compliance with environmental regulations and insurance requirements. |
|---|---|

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ATTACHMENT D.2: OPERATION OF THE TRANSFER STATION

D.2.1: Current Transfer Station Operations

D.2.2: Proposed Fuel Blending Facility Operations

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 AVR AVR-SAFEWAY Ltd.	AVR-SAFEWAY LTD. PROCESS DESCRIPTIONS	Date:
		20/6/05

1. CURRENT OPERATIONS

AVR-Safeway Ltd. operates a hazardous waste transfer station. Waste, primarily hazardous and principally from the Irish pharma-chem industry is received on site, stored, repackaged or bulked up as required and then sent off site to appropriate recovery or disposal facilities. A very rigorous waste acceptance procedure is followed including the detailed analysis of much of the waste in the on-site laboratory.

Bulk waste (in tankers or skips) is stored in bunds in Park 2 following a strict segregation policy. Packed waste (less than bulk tanks) is kept in Stores 1 and 2 (in the warehouse) or Stores 3 – 7 (movable bunded storage boxes) according to its hazard classification.

A comprehensive list of materials that can be stored at the transfer station was provided with planning application number N/97/2106. This list remains unchanged. The transfer station is licensed to accept all categories of hazardous waste other than Classes 1 and 7. (Class 1 = Explosives, Class 7= Radioactive)

2. PROPOSED DEVELOPMENT

At present the facility has the licensed capability to blend various liquid waste streams to make a waste derived fuel for power stations or cement kilns. The new tank bund will facilitate this process. The wastes will be received as per existing procedures, analysed and then offloaded into storage tanks depending on its properties. Batch blends of fuel will be prepared, tested and then shipped to customers.

The warehouse contains 2 separate storage areas, (According to the segregation policy). Other classes of material are stored in the smaller self-contained units in Park 1. The current warehouse building is rather cramped, as there is no designated area for unloading, inspecting and receiving packed waste. It is proposed to build an extension to contain a new Store 2 and convert the existing Store 2 into an inspection and reception area.

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ATTACHMENT D.2.1: CURRENT TRANSFER STATION OPERATIONS

D.2.1.1: OPERATIONS

All procedures related to the operation of the existing plant infrastructure are listed in Procedure SW 402 Master List of Documentation included as Appendix 1 of this document.

D.2.1.2: WASTE HANDLING

All current waste handling procedures are listed in **Attachment H.3**.

Procedure SW 478 Disposal Facilities List, listing all the current outlets to which material is sent for recovery or disposal is included as Appendix 2 of this document.

D.2.1.3: HEALTH, SAFETY AND ENVIRONMENTAL PROCEDURES

All procedures related to the preservation of health, the maintenance of safe working and the environmental performance of the transfer station are listed in Table D.2.1.3 along with the latest revision dates.

The procedures cover all aspects of the transfer station including safe work permits, training, codes of practice and the conduct of audits.

Please note that AVR-Safeway currently operate to 18001 which also includes an annual health check for each operator.

TABLE D.2.1.3: HEALTH, SAFETY AND ENVIRONMENTAL PROCEDURES

SW 303	Certificates and reports	01/01
SW 304	License training	05/04
SW 307	Permit to work	10/03
SW 308	Control of subcontractors	11/03
SW 309	Contractors code of practice	11/03
SW 312	Site audit	07/03
SW 403	Awareness and training	10/04
SW 412	Environmental policy	05/02
SW 414	Staff structure	12/03
SW 420	Internal audits	05/04
SW 423	Control of documentation	02/04
SW 429	Control of legislation	01/04
SW 431	Non conformance procedure	09/04
SW 433	Complaint record	02/02
SW 435	Communications	03/02
SW 437	Aspect scoring	06/04
SW 440	Audit schedule	01/04
SW 450	Management review	01/02
SW 451	Objectives and targets	01/02
SW 452	Evaluation of aspects/impacts	08/04
SW 453	Environmental programs	07/02
SW 454	Aspects and impacts	06/04
SW 455	Safety statement	12/03
SW 459	Visitors card	05/04
SW 460	EMP	09/04
SW 461	Site rules	06/04
SW 462	Environmental Committee	04/04
SW 463	Outfall valve closure form	07/03
SW 466	External site audit	03/03
SW 468	Audit questionnaire	11/03
SW 484	Site inspection	05/04
SW 423	Control of documentation	02/04


D.2.1.2: EMERGENCY RESPONSE

Current emergency response procedures are listed and discussed in **Attachment J**.

APPENDIX 1


SW-402 MASTER LIST OF DOCUMENTATION

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 AVR AVR-SAFEWAY LTD.	Master List Of Documentation	SW 402
		Date Created: 20/06/2005

SW1xx: Transfer station building procedures.

Doc control no.	Document title	Author	Distribution	Revision no./Date																
				1	2	3	4	5	6	7	8	9	10							
SW101	Obsolete																			
SW102	Inspection of packages	MP	W,O	08/00	06/03	12/03	04/04													
SW103	Repackaging of waste	MP	W,O	08/00	06/03															
SW104	Obsolete																			
SW105	Earthing	TC	O	08/00																
SW106	Disposal of waste	ER	O	08/00	12/03															
SW107	Label selection	TC	O	08/00	02/04															
SW108	Obsolete																			
SW109	Segregation	NC	W,O	08/00	01/02	07/02	12/03													
SW110	Obsolete																			
SW111	Metal catalyst	NC	W,O	02/01																
SW112	CET reagent	NC	W,O	07/01																
SW113	DCM separation	MP	W,O	04/03	05/03	06/03	09/03	04/04												
SW114	Obsolete																			
SW115	Aluminium oxide	MP	W,O	12/02																

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SW 2xx Laboratory Procedures.

Doc control no.	Document title	Author	Dist.	Revision no./Date											
				1	2	3	4	5	6	7	8	9	10		
SW201	Sample receipt	AH	W,O	08/00	01/02	02/04	02/04	06/04	07/04						
SW202	Water monitoring	MP	L,O	08/00	02/04	04/04									
SW203	Obsolete														
SW204	Environmental incidents	MP	L,O	08/00	01/02	04/02	04/04								
SW205	Recording environmental info.	MP	L,O	08/00	01/01	04/04									
SW206	Monitoring of emissions	MP	L,O	08/00	01/01	04/04	10/04								
SW207	MSDS	ER	L,O	08/00	01/01										
SW208	Test procedure	MP	L,O	08/00	01/01	04/04									
SW209	Instrument calibration	MP	L,O	03/02	04/04	09/04									
SW210	Sampling bulk containers	MP	O	08/00	01/01	02/04	03/04								
SW211	Sampling packed waste	MP	O	08/00	01/01	09/01	11/02								
SW212	Online pH meter	MP	O,L	05/01	07/02	04/03									
SW213	Online conductivity meter	MP	O,L	05/01	07/02	04/03									
SW214	Obsolete														
SW215	Obsolete														
SW216	Obsolete														
SW217	GC-MS	ER	L,O	05/01	06/04										
SW218	DCM/Water analysis	MP	L,O	06/03	09/03	04/04									
SW219	Online TOC	MP	L,O	08/00	01/01	04/04	09/04								
SW220	PID	MP	L,O	08/02	04/04										
SW221	Obsolete														
SW222	Obsolete														



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SW 402
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Doc control no.	Document title	Author	Dist.	Revision no./Date									
				1	2	3	4	5	6	7	8	9	10
SW223	Obsolete												
SW224	Obsolete												
SW225	Obsolete												
SW226	Obsolete												
SW227	Compatibility testing	MP	O,L	08/02	02/03								
SW228	Obsolete												
SW229	Obsolete												
SW230	Obsolete												
SW231	Cleaning validation cert	ER	O	08/02									
SW232	Obsolete												
SW233	Obsolete												
SW234	Obsolete												
SW235	Bomb Calorimeter	MP	O,I	06/03									

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SW 3xx Transfer station buliding procedures

Doc control no.	Document title	Author	Dist.	Revision no./Date									
				1	2	3	4	5	6	7	8	9	10
SW301	Acceptance of waste	NC	O,W	11/00	04/01	01/02	07/02	04/03	08/03	04/04	02/05	05/05	
SW302	Completion of TFS document	AH	O	08/00	01/01	06/02	05/03	10/04					
SW303	Certificates and reports	ER	O	08/00	01/02								
SW304	Licence training	MP	O	05/04									
SW 305	Obsolete												
SW 306	Obsolete												
SW 307	Permit to work	MP	O	08/00	01/01	10/03							
SW 308	Control of subcontractors	MP	O	08/00	11/03								
SW 309	Contractors code of practice	MP	O	08/00	11/03								
SW 310	Filling ISO tanks	MP	O	08/00	01/02	11/03							
SW 311	Obsolete												
SW312	Site Audit	MP	O	08/00	01/02	01/02	12/02	01/03	04/03	07/03			
SW 313	Spillage Procedure	MP	O,W	08/00	01/02	01/02	11/03						
SW 314	Fire Procedure	NC	A	08/00	01/02								
SW 315	Operation of interceptors	MP	O,W	05/04									
SW 316	Samples by courier	AH	O	03/05									
SW 317	Obsolete												
SW 318	Obsolete												
SW 319	Obsolete												
SW 320	Obsolete												
SW 321	Obsolete												
SW 322	Obsolete												

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Doc control no.	Document title	Author	Dist.	Revision no./Date																
				1	2	3	4	5	6	7	8	9	10							
SW323	Obsolete																			
SW324	Energy Procedure contractors	NC	O	08/00	01/02															
SW325	Emergency Procedure drivers	NC	O	08/00	01/02															
SW326	Chlorine emergency	NC	O	08/00	01/02															
SW 327	Asbestos emergency	NC	O,W	08/00	10/01	01/02														
SW 328	Asbestos acceptance	NC	O,W	08/00	07/01	08/03														
SW 329	Obsolete																			
SW 330	Bunds, Sumps, Interceptors	MP	O,W	05/04	06/04	06/04														
SW 331	Operation of fork lift	TC	O,W	01/02																
SW 332	Refuelling vehicles	TC	O,W	01/02																
SW 333	Cleaning wash bay	TC	O,W	01/01	05/04															
SW334	Washing, crushing, shredding	NC	O,W	01/02	06/03	06/03	01/04													
SW 335	Obsolete																			
SW 336	Obsolete																			
SW 337	Obsolete																			
SW 338	Obsolete																			
SW 339	Obsolete																			
SW 340	Drivers off site emergency	TC	O	08/00	07/01	08/01	07/04													
SW 341	Obsolete																			
SW 342	Off site spillage procedure	AH	O	08/00	07/01	08/01														
SW 343	Obsolete																			
SW 344	Obsolete																			

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				1	2	3	4	5	6	7	8	9	10	
SW345	Delivery to Fermoy UDC	AG	O	04/02	06/02									
SW346	Obsolete													
SW347	Obsolete													
SW348	Obsolete													
SW 349	Obsolete													
SW 350	Controlled substances	ER/AH	O	09/03	10/03									

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				1	2	3	4	5	6	7	8	9	10	
SW401	Procedure for SOPs	MP	O	08/00	02/04									
SW402	Master list	MP	O	04/05										
SW403	Awareness and Training	MP	O	08/00	06/03	05/04	10/04							
SW404	Acceptance confirmation	NC	O	08/04	10/04	11/04								
SW 405	Obsolete													
SW 406	Obsolete													
SW 407	Obsolete													
SW 408	C1 Log	TC	O	08/00	09/01									
SW 409	Emergency response	NC	O	08/00	01/02									
SW 410	TFS Log	NC	O	08/00	09/01									
SW 411	Paperwork Check list	NC	O	08/00										
SW412	Classification of waste	AG	O	08/00	06/02									
SW 413	Environmental Policy	ER	O,L	08/00	01/01	06/01	09/01	05/02	01/05					
SW 414	Staff Structure	MP	O	08/00	03/00	05/02	12/02	12/03						
SW 415	Load Checklist	NC	O	08/00										
SW 416	Controlled substance register	ER/AH	O	09/03	10/03									
SW 417	Obsolete													
SW 418	Sales Report	RN	O	03/04										
SW 419	Contact report	RN	O	03/04										
SW 420	Internal Audits	MP	O	08/00	02/02	11/02	05/04							
SW 421	Obsolete													
SW 422	Obsolete													

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Doc control no.	Document title	Author	Dist.	Revision no./Date									
				1	2	3	4	5	6	7	8	9	10
SW423	Control of documentation	MP	O	12/00	06/01	01/02	04/02	06/02	02/03	02/04			
SW424	Obsolete												
SW425	Incident control board	NC	O	08/00									
SW 426	Obsolete												
SW 427	Additional Charges	TC	O	08/00									
SW 428	Obsolete												
SW 429	Control of Legislation	MP	O	01/04									
SW 430	Obsolete												
SW 431	Non conformance procedure	ER	O	03/01	09/04								
SW 432	Maintanance request form	ER	O,W	08/00									
SW 433	Complaint record	ER	O	08/00	02/02								
SW 434	Bund Log	NC	O	08/00	09/01								
SW 435	Communications	ER	O	08/00	03/01	06/01	09/01	03/02					
SW 436	Obsolete												
SW 437	Aspect scoring	MP	O	09/01	03/02	02/03	06/04						
SW 438	Communications policy	GB	O	04/05									
SW 439	Computer policy	GB	O	04/05									
SW 440	Audit schedule	MP	O	12/00	07/01	01/04	01/05						
SW 441	Obsolete												
SW 442	Obsolete												
SW 443	Obsolete												
SW 444	Obsolete												
SW 445	Obsolete												
SW 446	Obsolete												
SW447	Obsolete												

Doc control no.	Document title	Author	Dist.	Revision no./Date										
				1	2	3	4	5	6	7	8	9	10	
SW448	Obsolete													
SW449	Obsolete													
SW450	Management review	ER	O	01/01	01/02									
SW 451	Objectives and Targets	ER/MP	O	01/01	01/02	12/04								
SW 452	Evaluation of aspects/impacts	MP	O	01/01	06/02	06/02	08/04							
SW 453	Environmental programmes	ER	O	01/01	07/02									
SW 454	Aspect and Impacts	ER/MP	O	01/01	01/02	06/04	12/04							
SW 455	Safety Statement	AH	O	03/01	08/02	12/03								
SW 456	Obsolete													
SW 457	Obsolete													
SW 458	Obsolete													
SW 459	Visitors Card	TCr	O	03/01	09/01	06/03	05/04							
SW 460	Obsolete													
SW 461	Site Rules	MP	O	03/01	07/02	06/04								
SW 462	Environmental Comitee	MP	O	03/03	05/03	04/04								
SW 463	Outfall valve closure form	MP	O	01/01	07/03									
SW 464	Obsolete													
SW 465	Tank wash request form	NC	O	01/01	06/03									
SW 466	External site audit	MP	O	03/03										
SW 467	Audit report form	ER	O	07/01										
SW 468	Audit Questionnaire	AH	O	01/01	08/02	11/03								
SW 469	Asbestos declaration	NC	O	07/01	07/02	08/03	07/04							
SW 470	Completion of C1	AH	O	03/01										
SW 471	Records	ER	O	02/01										
SW472	Drum crushing log	NC	O,W	12/01										


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				1	2	3	4	5	6	7	8	9	10
SW473	Obsolete												
SW474	Obsolete												
SW475	Obsolete												
SW 476	Obsolete												
SW 477	Log of drums sampled	AG	L	05/02									
SW 478	Disposal facilities list	MP	O	07/01	09/03	10/03	12/03	02/04	05/04	08/04	09/04	06/09	
SW 479	Obsolete												
SW 480	Obsolete												
SW 481	Obsolete												
SW 482	Obsolete												
SW 484	Site Inspection	MP	O	07/03	12/03	09/03	12/03	05/04	11/04				
SW 485	Wash Cert book	NC	O	07/03									
SW 486	Obsolete												
SW 487	Obsolete												
SW 488	Obsolete												
SW 489	Obsolete												
SW 490	Obsolete												
SW 491	Rerouting waste (Janssen)	MP	O	08/03									
SW 492	Rerouting notification	MP	O	08/03									
SW 493	Obsolete												
SW 494	Controlled substance drum list	ER	O	06/03									
SW 495	Identifier log (bulk)	NC	O	10/03									
SW 496	Identifier log (packed)	NC	O	10/03									
SW 497	Strong room log	NC	O	11/03									

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				1	2	3	4	5	6	7	8	9	10	
SW 501	Collection from Novartis	NC	O	03/05										
SW 502	Collection of waste (Ballina)	NC	O	03/05										

Notes:

Authors:

NC: Noel Coleman
ER: Ed Roycroft
MP: Mike Powell
JmN: Joe McNamara
AH: Arie Hoen
Aha: Aileen Hartigan
TC: Tim Collins
TCr: Tom Creagh

Distribution List:


O: Office
W: Warehouse
L: Laboratory

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APPENDIX 2

SW-478 DISPOSAL FACILITIES LIST

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 Essen
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 Licence number: E17016018/E56252039

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 East Ord Ind. Estate
 Berwick on Tweed,
 England.
 Licence no. AP 1590

AGR Entsorgung mbh
 Im Emscherbruch 11
 45699 Herten
 Germany
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Atlas Oil
 Clonminam Industrial Estate
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 Co. Laois
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 Waldaustr.
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 PO Box 30
 4780 AA
 Moerdijk
 Holland.
 Licence number:
 298105 Prov NB 930607.002/4

AGR Zentral Deponie Emsherbruch
 Wiedehopfstr. 30
 45892 Gelsenkirchen
 Germany.
 Licence no. E51351047

AVIRA Afvalverwerking
 Doesburgerweg 16
 6902 PN Zevenaar
 The Netherlands
 Licence no. MW99.47444

Akzo Nobel Base Chemicals BV
 Welplaatweg 12,
 Rotterdam-Botlek,
 The Netherlands.
 Licence no.
 SF620011449512
 20075068/220100

AVR Chemie BV
 Rotterdam-Botlek
 Holland
 Licence number: 340618

Alescon Millieu
 Havenkade 12
 Assen
 Holland.
 Licence number:
 12-WAMIL-A19-9614288

Bayer AG
 Fahrsk45,
 25541 Brunsbittel,
 Germany.
 Licence number: A51D10521/A51R01521

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 Transfer Station
 License No. 50-1

Corrin, Fermoy
 County Cork
 Ireland

T: +353 - (0) 25 - 42944
 F: +353 - (0) 25 - 33885
 E: info@avr-safeway.com

www.avr-safeway.com

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E31632082/AZ55.8851.8.1-64 193

Caldic Chemie BV
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Holland
Licence number: 695619/695624

Ciment O'Bourg
Mons
Belgium
Licence number: REC92.014

Cleanaway
Ellismere Point,
United Kingdom
Licence number: 3/92/1979/85NW

Claushuis Metaalmaatschappij B.V.
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Holland.
Licence number: 12GT8

Cork Metal.
Dublin hill,
Cork.
Licence number: CKWMC26/01

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NL-3313 LB Dordrecht,
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Licence no. DWM/2000/9204

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Shanballymore,
Mallo,
Co. Cork.
Licence no. CK WM C22-01

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Cullenagh,
Fermoy.
Licence number: 107-1

Gollan/AVG
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Germany.
Licence number: A55E00002

GMVA mbH
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46018 Oberhausses,
Germany.
Licence number: 56/8851.8.1-4110


G.V.S mbH and Co.
Essener Strasse
Mannheim
Germany.
Licence number H19139480

Dow Chemical (Haltermann)
Cargo Fleet Road
Middlesborough,
United Kingdom.
Licence number: AG8420/AR7343

Dow Chemical (Billingham)
Processing Park,
Road 11,
Billingham
United Kingdom
Licence number BT 8944

HIM GmbH,
Marburg
Germany.
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V1-79N12/01(16189)-5

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Co. Kildare
Waste licence 81-2

Holcim Obourg
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Lafarge Ciment
Usine du Havre-Saint Vigor
Zoning Industrial du Port Autonome
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B-9130 Doel- Beveren
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BMV00004195/604

Nickelhutte Aue GmbH
Rudolf Breitscheid Str.
08280 Aue
Sachsen
Germany.
Licence number: E12/1.0.006/97

Innovatherm
Frydagstr.47
44536 Lunen,
Germany.
Licence no. 56.88511.1.3/8 1-G

P+R Disposal Services Ltd
Moss side industrial estate,
Leyland,
Lancashire,
United Kingdom
Licence no. AN 8438


Johnson Matthey plc.
Brimsdown,
Middlesex,
UK-EN3 7PW
England,
Licence no. AN8712PA-01

Recyalloy Developments Ltd.
Pye Bridge Industrial Estate
Somercotes,
Derby,
United Kingdom.
Licence number: AS6802.

KWA mbH
Graftstr. 25
47475 Kamp-Lintfort,
Germany.
Licence number: 56.8851.8.1-4044

Recydur B.V.
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Apeldoorn,
Holland.
Licence number: MW95.59744-6093091

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Reduce Re-use & Recycle Ltd.
 Waste Management Centre,
 Western Industrial Estate
 Dublin 12.
 Licence no. 95-1

Remondis Industry Service Bramsche
 Am Kanal 9
 49565 Bramsche
 Germany
 Licence number C7D00000

Remat Chemie BV
 Vossenbeemd 5
 5705 CL Helmond
 Holland.
 Licence no. LGM 640455

RWE SAVA GmbH
 Osterweute 1,
 Brunsbuttel,
 Germany.
 Licence number: A 51 G 00 508

Remondis Production GmbH
 Brunnenstr. 138
 Lunen
 Germany
 Licence no. 21/Fo/Tho-G61/93

Scoribel
 Rue de Courreire 49
 B-7181 Seneffe,
 Belgium
 Licence no. 38.152/BP

Remondis Electro
 Industriestr. 33
 Selm,
 Germany.
 Licence number: E97804926

Shanks Chemical Services Ltd.
 Granton ,
 Edinburgh,
 Licence number:
 IPC/001/1994 amend 19/11/01

Returnbatt Ltd.
 Unit 35,
 Kildare Enterprise Centre,
 Kildare.
 Licence no. 105-1

Shanks Fawley
 Charleston Rd.
 Hardley,
 Southampton.
 United Kingdom.
 Licence number: AG8047


ReTherm GMBH
 Brunnenstr. 138
 DE-44536
 Lunen
 Germany.

Shanks Vlaanderen
 Regenbeek Str.7c
 B-8800 Roeselare,
 Belgium
 Licence no. 36015/28/A/4

Robinson Brothers
 Pheonix St.
 West Bromwich
 B70 0AH
 U.K.
 Licence number AN8984

Shannon Environmental Services
 Smithstown Industrial Estate,
 Shannon,
 Co.Clare.
 Licence number: Waste Licence 41-1

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 Bedrijvenpark Twente 243
 7602 AH Almelo
 The Netherlands
 Licence no. EMT/2001/3519

SRM North Shields
 Hayhole Rd.
 North Shields,
 England
 Licence no. AG8128

Soltec (Ireland Ltd)
 Mullingar Buisness Park,
 Mullingar,
 Co. Westmeath.
 Licence number: Waste Licence 115-1

SUC Gmbh,
 Lortzingstr. 35
 D-01307 Dresden,
 Germany.
 Licence no. SD 6231706 N/L

SRM Ltd.
 Rye Harbour,
 East Sussex,
 United Kingdom.
 Licence number: AE 8039

Tate Medical Engineering Ltd.
 Leeds Road,
 Otley,
 West Yorkshire
 United Kingdom
 Licence number: EAWML 66063

SRM Ltd.
 Middleton Road
 Morecambe,
 Lancashire,
 United Kingdom
 Licence number: AG9248

Treibacher Ind. AG
 Althofen,
 Germany.
 Licence no. 56532

SRM Ltd
 Hendon Dock
 Sunderland
 United Kingdom.
 Licence number: AG8420

Van Peperzeel
 Tolweg 22
 NL-3851 SK Ermelo
 The Netherlands.
 Licence no. MW98.35991


SRM Limited
 C/O Castle Cement,
 Ketton,
 England.
 Licence no. 95-1

Van Klaveren
 Rostock Str.5
 NL-7400 Deventer
 The Netherlands.
 Licence no. EMT/2003/2067

SRM Knottingley
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 England.
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 Boxberg,
 The Netherlands.
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 The Netherlands
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D.2.2: PROPOSED FUEL BLENDING FACILITY OPERATION

D.2.2.1: SELECTION OF WASTE FUEL BLENDING

This section presents a simplified process for selecting wastes for mixing and blending to make fuel.

Stage 1 Testing - Screening

1. AVR-Safeway technical personnel will screen waste streams for suitability for fuel blending. This screening is based on the characteristics already known. Each existing stream has a completed Analysis Request Form (SW 208 F-1). New streams will be analysed in accordance with SW 301 and a SW 208 F-1 completed before being considered for fuel blending.

Stage 2 Testing - Compatibility

2. AVR-Safeway contacts the producer when a suitable stream is identified.
3. With the agreement of the customer AVR-Safeway obtains a sample of the waste stream if not already available.
4. The sample is submitted to full Fuel Blending Testing. (See Section 4).
5. AVR-Safeway technical personnel review the results of the testing.
6. If the material is deemed appropriate for blending, a detailed Fuel Blending Target Analysis (TA) is prepared, which is referenced to the stream's Internal Material Code (IMC).

Stage 3 Testing – Trial Batches

7. The producer is contacted and a trial blending operation is scheduled.
8. If the material is deemed inappropriate for blending the customer will be informed and alternative arrangements to dispose of or recover the stream are made.
9. During the trial blending operation very careful observations made and recorded.
10. AVR-Safeway technical personnel review the results of the trial blending operation. If the material is still deemed appropriate, further blending operations can be scheduled.
11. The next two loads of the same IMC are submitted to full testing to confirm the TA and the streams' suitability for fuel blending and consistency.

Procedure for Each Load

1. Each load for blending is sampled and tested. Meanwhile the load is stored in the bund appropriate to its hazard characteristics.
2. If found to be in accordance with that stream's TA the load is scheduled for fuel blending.
3. If a load does not conform to the characteristics of the given IMC, compatibility testing (Step 4 – 6 above) is carried out.
4. If the material is deemed suitable for mixing blending it is given a new IMC and a new TA is drawn up so that similar loads (after the 3rd) only need reduced testing.
5. The load is submitted for fuel blending under its new IMC.
6. If the material is unsuitable for fuel blending the producer is contacted and alternative arrangements are made for its recovery/disposal.

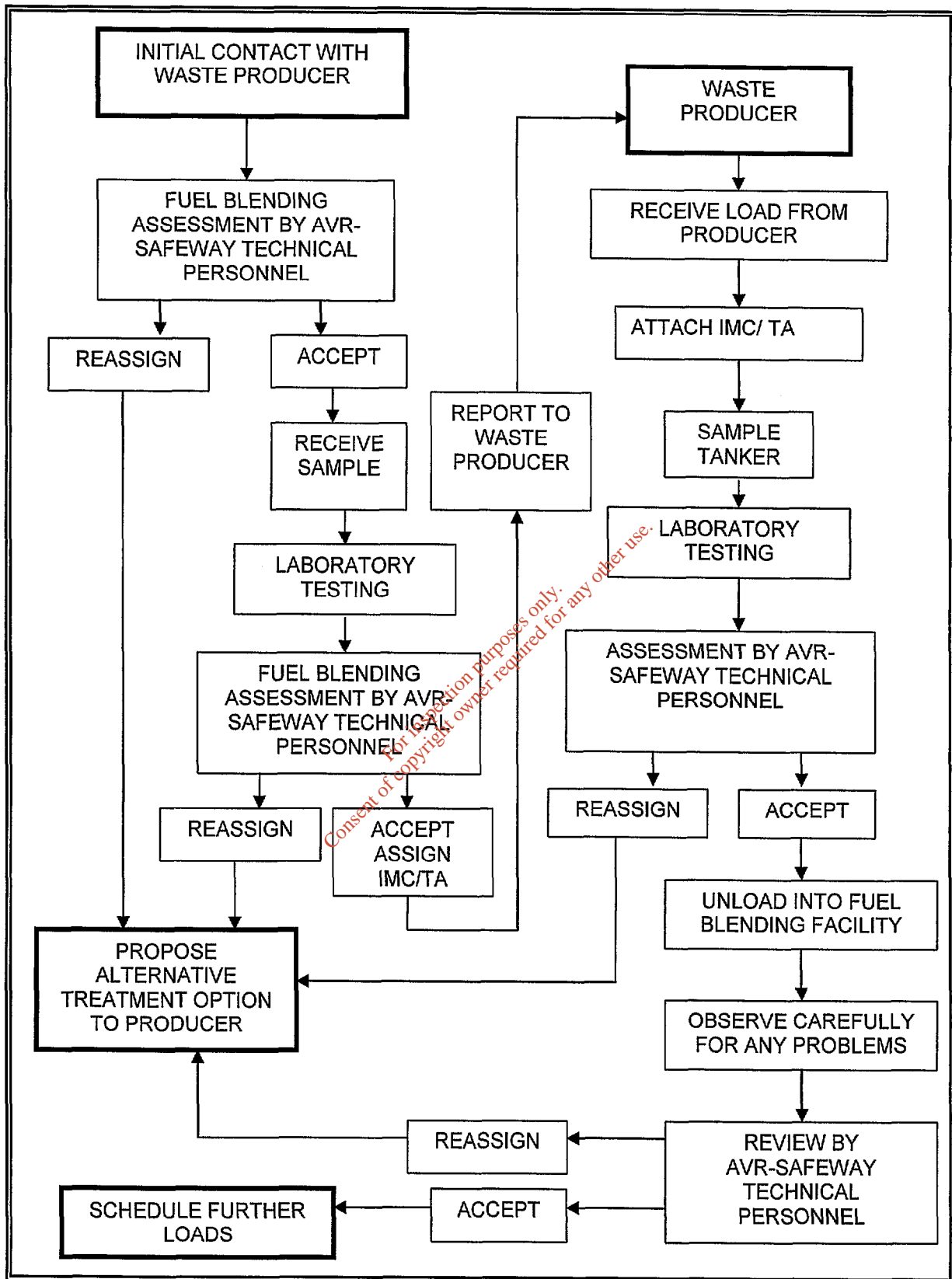
A flow sheet for the selection process is attached as Figure D2.2.1.

Two smaller tanks (T-4 and T-5) are available for storage of waste that needs to be mixed in smaller amounts into a blend. Such a waste (called a "SP Waste" hereafter) will either have a very high CV, or contain substances that may cause problems to the outlets if present in high concentrations in the blend.

Only multiple drums of the same material will be screened for fuel blending suitability. Drum lots will be sampled ($\sqrt{(\text{number of drums})+1}$). All lots of drummed waste used for fuel blending will first be bulked up into T-4 or T-5, and then transferred to the appropriate storage tank T-1 – T-5 as per usual procedures, after mixing, sampling, analysis, and assignment of a IMC.

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FIGURE D.2.2.1: WASTE SELECTION FOR MIXING AND BLENDING



D.2.2.2: TESTING OF SAMPLES

The following techniques will be used for testing materials before accepting them for fuel blending.

a. Characterisation

- **Karl Fisher Water Analysis (KF):** The water content is crucial to the CV and also aids in stream identification.
- **Gas Chromatography/Mass Spectrometry (GCMS):** Use of the mass spectrometer will aid in the identification of the various components from their MS fingerprint, whilst a flame ionisation detector will aid in determining the concentration.
- **Halogen Measurement:** The presence of halogens in the stream may render it unsuitable for use as a fuel.
- **pH:** The pH of the stream is measured to identify possible corrosion problems and to forewarn of possible reaction hazards. High or low pH material is more likely to undergo reaction.
- **Calorific Value (CV):** This is measured using a bomb calorimeter. It can also be calculated if the exact composition is known.

b. Mixing Testing

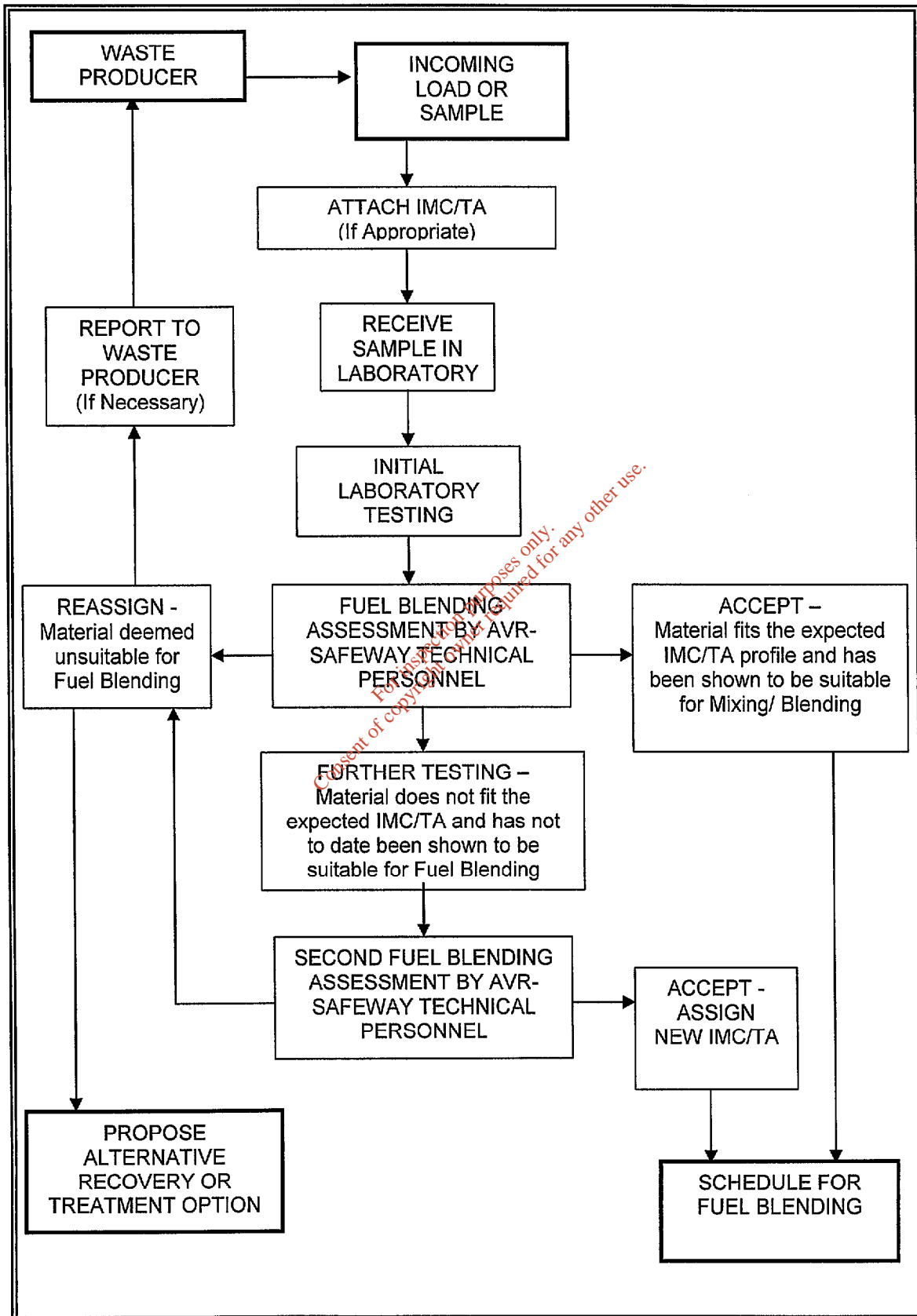
- **Calorimetry:** Produces accurate data on the rate and quantity of heat evolved in a process.
- **Gas Evolution and/or Solid Gelling Formation:** Gas evolution or solids formation are seen by careful observation of a mixing test.
- **pH:** Observation of a change of pH during a mixing test indicates that a reaction is occurring. Also the pH of both the mixture and the individual components can indicate possible corrosion issues.

D.2.2.3: STREAM CHARACTERISATION

The stream is assigned a unique number (the IMC) that has a unique characterisation (TA). A sample TA form is attached as Appendix 1 The Acceptable Ranges are revised based on the results of the initial loads. Any load that analyses outside the Accepted Range must be reviewed by AVR-Safeway Technical personnel and further testing carried out. If the material is deemed sufficiently similar to an existing TA the Acceptable Range may be revised subject to approval from AVR-Safeway Technical personnel.

The decision tree to be followed is detailed Figure D.2.2.3

FIGURE D.2.2.3: CHARACTERISATION OF WASTE FOR FUEL BLENDING - Including both samples of “new” waste streams from customers and the testing of incoming loads



D.2.2.4: FUEL BLENDING EQUIPMENT

The equipment consists of 3 tanks designated for low/medium and high CV waste storage, special waste storage (2 tanks), bulking up drums of waste, and a larger blending tank as described in **Attachment 4.1.2**

D.2.2.5: OPERATIONS

A. Waste Acceptance Procedure

The AVR-Safeway Waste Acceptance Procedure (SW-301) is followed for every load (See **Attachment H.2**). The steps to be taken are summarised schematically in Figure D.2.2.5. A check sheet of the process is included as Appendix 2.

B. Mixing Blending Procedures

Detailed procedures for the operation of the mixing and blending equipment will be drawn up when the equipment is selected and installed.

The following procedures are included in Appendix 3

SW-FB-1: Acceptance of Waste for Fuel Blending
SW-FB-2: Fuel Blending Testing
SW-FB-3: Unloading Waste from ISO Tanks
SW-FB-4: Fuel Blending Procedure

Current procedures that will be used for fuel blending are included in Appendix 4.

A more detailed analysis of the mixing/blending process is given in Appendix 5, reviewing:

- Process Description
- Inputs and Outputs
- Emissions
- Abnormal Situations
- Maintenance

FIGURE D.2.2.5: ON-SITE ACCEPTANCE OF WASTE LOAD FOR FUEL BLENDING

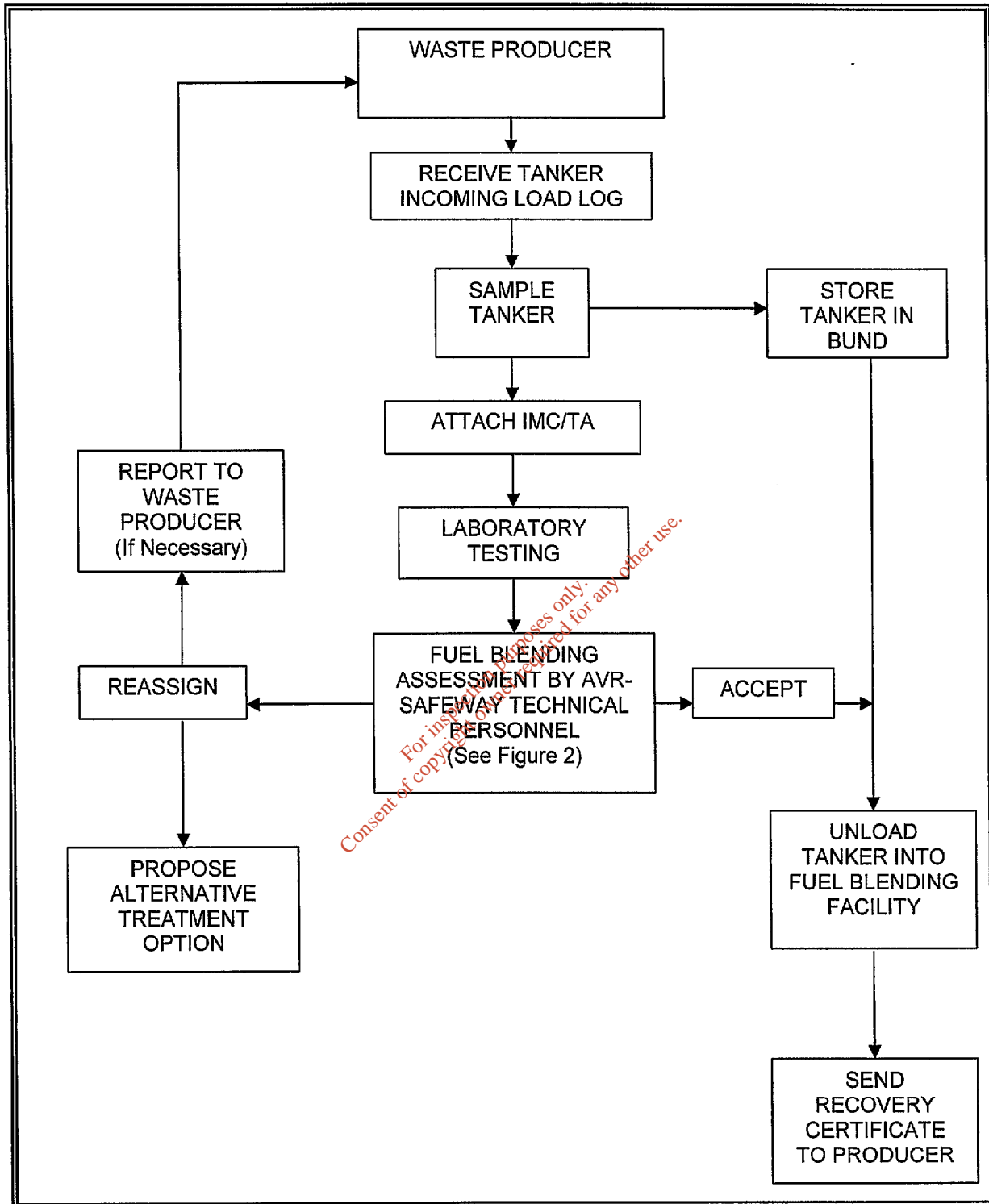
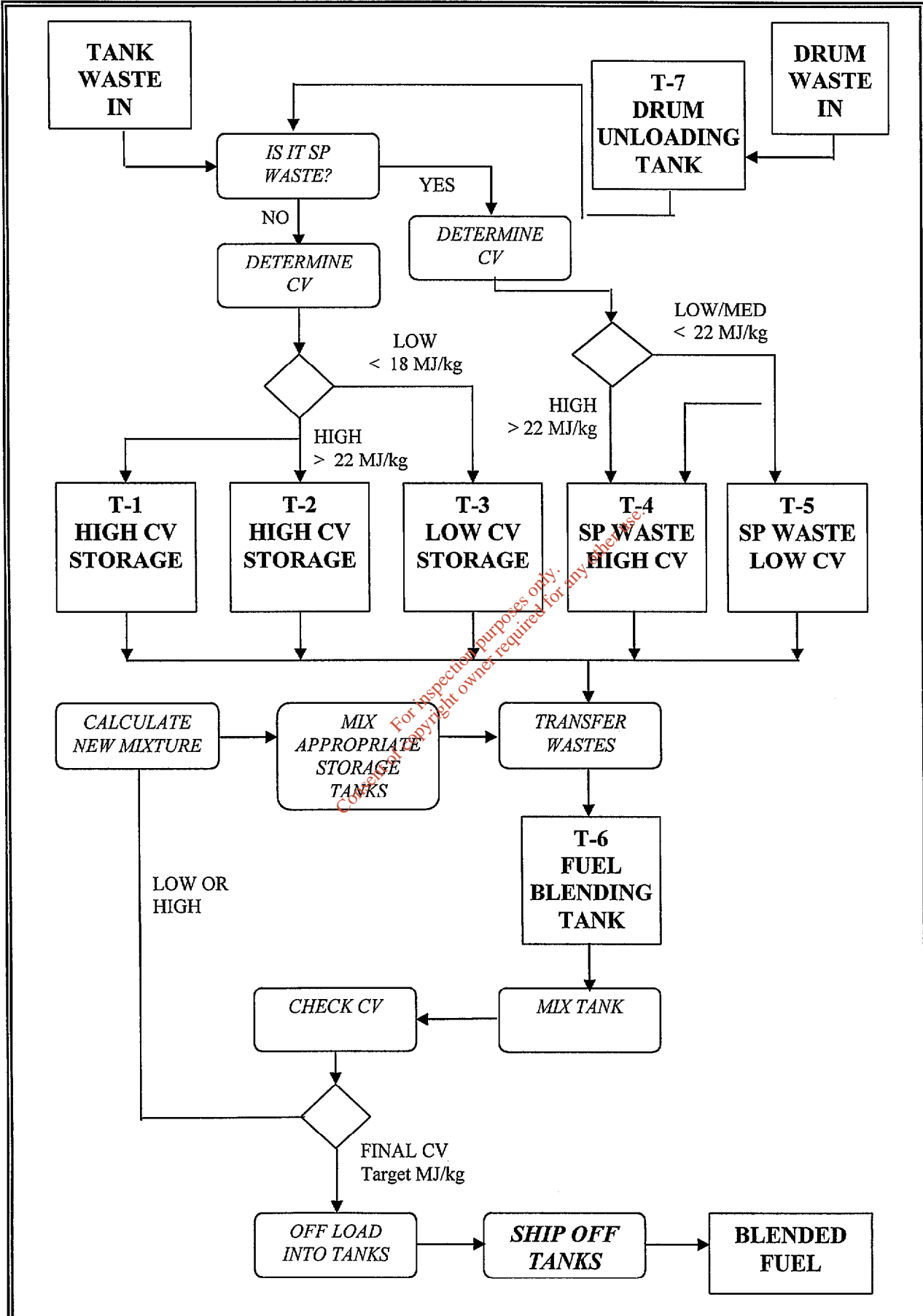



FIGURE D.2.2.6: FUEL BLENDING FLOW DIAGRAM



APPENDIX 1: EXAMPLE FORM

	FUEL BLENDING ANALYSIS FORM (TA)		Procedure Number, SW-FB-2-F 1
			Revision DRAFT
Created by; Nick Vernon	Approved by; P.O'Flynn	Date 07/07/2005	Page 9 of 1
IMC: XXxxxx			
SOURCE/STREAM:	Producer:	Producer Stream No:	
DATE:	TIME:	SAMPLED BY:	
TANK NUMBER:		SAMPLE #: (If different)	
TRACKING NUMBER	<i>Assigned on receipt</i>		
PARAMETER	ACTUAL AMOUNT (%)	INITIAL	ACCEPTABLE RANGE
Water (KF)	14	NMV	10 – 15 %
SOLVNETS - GCMS:		NMV	
Methanol	<u>39</u>		35 – 45 %
Ethanol	<u>34</u>		30 – 40 %
Isopropanol	<u>8</u>		5 – 10 %
THF	<u>5</u>		0 - 5 %
Other: (Please name)			
Total Halogen	<u>0.05</u>	NMV	< 2 %
pH	<u>4.9</u>	NMV	>4 and < 10
CV	<u>21</u> MJ/kg	NMV	20 - 22 MJ/kg
IS IT "SP" WASTE?	Y	DESTINATION	T-4 T-5
(Circle one)	N	DESTINATION	T-1 T-2 T-3
SUITABLE FOR FUEL BLENDING	BY	DATE	
CHECKED:	BY	DATE	
UNSUITABLE BECAUSE:			INITIAL:

APPENDIX 2: PROCEDURE FOR THE ON-SITE VERIFICATION OF A LOAD FOR FUEL BLENDING

OPERATION	DESCRIPTION	RESPONSIBILITY	PROCEDURE		RESULT	
Arrival	Visual Check Weighing Documentation Sampling – a representative sample is obtained using the special samplers.	Operations Operations Operations Operations	SW301 SW301 SW301 SW210 & SW211	Y N ____ Tonnes Correct Sample No:		
Testing	Karl Fisher (Water) pH GC/MS Bomb Calorimeter	Laboratory	SW208 SW217 SW235			
Retention	Samples are retained for 3 months or until the receipt of the Disposal Certificate, whichever is longer.	Laboratory	SW201			
Accept load for blending	The load fits the expected profile and is suitable for blending	Laboratory & Operations	SW-FB-1	Accepted by:	Destination:	Not Accepted:
Further Characterisation	The load is further characterised and trial blending experiments are carried out as appropriate	Laboratory	SW-FB-2	Assigned by:	New IMC	
Accept load for blending	Based on the new characterisation the load is deemed suitable for blending.	Laboratory & Operations	SW-FB-1	Accepted by:	Destination:	Not accepted
Re-assign load	The load is deemed unsuitable for blending; alternative disposal or recovery arrangements are made	Operations & Sales	SW 301	Destination:		

APPENDIX 3: DRAFT FUEL BLENDING PROCEDURES

SW-FB-1: Selection of Waste for Fuel Blending


SW-FB-2: Compatibility Testing of Waste Intended for Fuel Blending

SW-FB-3: Tanker Unloading Procedure

SW-FB-4: Procedure for Fuel Raw Material Storage, Blending and Waste-Derived Fuel Storage

SW-FB-5: Tanker Loading Procedure

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 AVR AVR-SAFEWAY Ltd.	SELECTION OF WASTE FOR FUEL BLENDING		<i>Procedure Number,</i> SW-FB-1
			Revision DRAFT
<i>Created by;</i> Nick Vernon			Page 1 of 3
<i>Approved by;</i> P.O'Flynn			<i>Date:</i> 17/06/05

1. PURPOSE

This procedure provides guidance as to the selection of waste for fuel blending. It outlines the criteria on which such a selection should be based and identifies the characteristics of the waste that should be investigated.

This procedure is subsidiary to SW 301 Waste Acceptance Procedure. All waste must be accepted under SW 301 before being approved for fuel blending.

2. SCOPE

This procedure provides an outline of the process to be followed in selecting a waste as suitable for fuel blending. It applies to new waste streams proposed by customers and also to material already on site.

3. RESPONSIBILITY

The Operations Manager will coordinate with the Sales Department and the Lab. The operations manager is responsible for approving any waste for fuel blending.

It is the responsibility of all technical personnel, in sales, operations, and the laboratory to assist in identifying wastes suitable for fuel blending.

The site chemist is responsible for evaluating wastes for suitability for fuel blending.

Laboratory personnel will carry out testing of wastes under the direction of the Environmental Laboratory/Compliance Manager.


4. RELATED DOCUMENTATION

SW 301	Waste Acceptance Procedure
SW 208	Test Procedure
SW 208 F-1	Analysis Request Form
SW-FB-2	Compatibility testing of waste intended for fuel blending
	The technical document " Waste Selection Criteria For Fuel Blending " should be consulted in considering the above parameters.

5. PROCEDURE

A Screening

- Both current and new waste streams are screened by AVR-Safeway technical personnel for suitability for fuel blending. This screening is based on the


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characteristics already known.

2. Any new waste stream should be regarded as a possibility for fuel blending.
3. Each existing stream has a completed Analysis Request Form (SW 208 F-1).
4. AVR-Safeway technical personnel review the completed Analysis Request Form (SW 208 F-1).
5. When a suitable stream is identified, the sales department contacts the producer
6. With the agreement of the customer the sales department obtains a sample of the waste stream is obtained (if not already available),
7. The sample is submitted to full Fuel Blending Testing. (See SW-FB-2).
8. AVR-Safeway technical personnel review the completed Fuel Blending Test Sheet SW-FB-2 F-1).
9. If the material is deemed appropriate for blending, a detailed Fuel Blending Target Analysis (TA) (SW-FB-2 F2) is prepared, which is referenced to the stream's Internal Material Code (IMC).
10. The producer is contacted and a trial blending operation is scheduled.

B Trial Loads

1. Each trial load is sampled and fully tested on receipt as per SW 301 and SW-FB-2. Meanwhile the load is stored in the bund appropriate to its hazard characteristics.
2. If the load is approved it is scheduled for fuel blending according to SW-FB-4.
3. During the trial blending operation very careful observations made and recorded.
4. AVR-Safeway technical personnel review the results of the trial blending operation. If the material is still deemed appropriate, further blending operations can be scheduled.
5. The next two loads of the same IMC are submitted to full testing to confirm the TA and the streams' suitability for fuel blending and consistency.

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C On-Site reception

1. Each load for blending is sampled and tested as per SW301. Meanwhile the load is stored in the bund appropriate to its hazard characteristics.
2. If the load is found to be in accordance with that stream's TA the load is scheduled for fuel blending.
3. If a load does not conform to the characteristics of the given IMC, compatibility testing (Step A 7 –9 above) is carried out.
4. If the load is deemed suitable for fuel blending and it is sufficiently similar to the existing TA it is submitted for fuel blending under its existing IMC.
5. If the material is deemed suitable for fuel blending but is very different from that expected under the IMC for that stream, it is given a new IMC and a new TA is drawn up so that similar loads only need reduced testing. The load is then submitted for fuel blending trials under its new IMC. See Section B above.
6. If the material is unsuitable for fuel blending the producer is contacted and alternative arrangements are made for its recovery/disposal.

6. SELECTION CRITERIA

The following criteria should be considered when evaluating a waste for fuel blending.

1. **Homogeneity:** Issues of homogeneity must be addressed. The fuel should not settle rapidly or be difficult to mix.
2. **Solids Formation:** The fuel, on mixing with other fuels should not precipitate a significant amount of solid or form a gel.
3. **Gas Evolution:** The fuel, on mixing with other fuels should not evolve gas
4. **Heat Evolution:** The fuel, on mixing with other fuels should not or evolve heat.
5. **Halogen content:** The fuel should not contain significant quantities of halogens.
6. **Corrosivity:** The fuel should be compatible with the materials of construction of the tanks in which it will be transported and stored.

	COMPATABILITY TESTING OF WASTE INTENDED FOR FUEL BLENDING		<i>Procedure Number, SW-FB-2</i>
			Revision DRAFT
Created by; Nick Vernon			Page 1 of 4
Approved by; P.O'Flynn			Date: 22/05/05

1. PURPOSE

Before fuel blending can take place a compatibility test must be carried out. The aim is to ensure that there are no reactions occurring that could evolve heat, gas, or precipitates.

This procedure is based on the ASTM procedure number 5058-90 (Re-approved 2001) 'Standard Test Methods for Compatibility of Screening Analysis of Waste'.

2. SCOPE

This procedure describes the lab process for carrying out fuel blending testing (use-testing). All new waste streams that may be suitable for fuel blending must be tested and the results documented.

3. RESPONSIBILITY

The Operations Manager will coordinate with the Laboratory to determine which wastes need to be tested.

The Sales Department will obtain samples of all new wastes from the customer as part of the AVR-Safeway Waste Acceptance Procedure. If they are deemed to be potential candidates for fuel blending the Laboratory will be informed.

It is the responsibility of the Site Foreman to ensure that Samples of all on-site material for fuel blending are provided to the Laboratory when requested.


The Fuel Blend Testing will be carried out by trained Laboratory Personnel under the direction of the Environmental Laboratory/Compliance Manager.

4. RELATED DOCUMENTATION

SW-201	Sample Receipt
SW-208	Test Procedure
SW-227	Compatibility Testing


5. PROCEDURE

1. Obtain ca. 250 ml composite samples of all wastes to be blended. Log the wastes on the Fuel Blending Test Sheet.
2. Check analyses of these wastes against information provided by the producer. If there are any serious discrepancies continue analysis until you


	COMPATABILITY TESTING OF WASTE INTENDED FOR FUEL BLENDING		<i>Procedure Number, SW-FB-2</i>
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are sure of the contents.

3. Record the calorific value of the fuel, pH and the water content on the Fuel Blending Test Sheet.
4. **(Initial test)**
In the fume hood take small samples (1-2 ml) of the wastes and sequentially mix them in the designated beaker. Observe any dramatic temperature effect or off gas formation.
5. If the **initial test** indicates that it is safe to continue with the trial mixing go to the next step. If not report immediately to the Operations Manager for direction.
6. Add about 50 ml of Waste 1 to the calorimeter flask. Stir for a few minutes and check that the temperature is equilibrated.
7. Add about 50 ml of Waste 2 to the material already in the calorimeter flask. Stir for a few minutes and record the temperature **every 30 sec.**
8. Note carefully any temperature rise. **If it is more than 3°C the wastes should not be mixed.**
9. Carefully observe any off gas. Any sign of reaction, bubbling, fumes, odour, etc., **any of the preceding signs, indicates that the wastes should not be mixed.**
- 10 Stir the mixture gently until the temperature is fully equilibrated, about 15-30 min. It is important to give any possible reaction time to take place.
- 11 Stop the stirrer and carefully note any phase separation, liquid form liquid or solid from liquid. Remember that the amount of material separating could be very small and could be formed on the top or bottom.
- 12 Look carefully for sticky material adhering to the sides of the calorimeter flask and or the stirrer.
- 13 If a phase forms record how much and whether it is readily re-suspended.
- 14 If there are further wastes to be mixed repeat Steps 6-12 for each additional waste.
- 15 Carefully record the results on the Fuel Blending Test Sheet
- 16 Send completed Fuel Blending Test Sheet for review by Operations/AVR-Safeway Technical Personnel.

 AVR AVR-SAFEWAY Ltd.	FUEL BLENDING TEST SHEET		Procedure Number, SW-FB-2 F-2
			Revision DRAFT
Created by; Nick Vernon			Page 4 of 4
Approved by; P.O'Flynn			Date: 22/05/05

IMC:			
SOURCE/STREAM:	<i>Producer:</i>	<i>Producer Stream No:</i>	
DATE:	TIME:	SAMPLED BY:	
TANK NUMBER:		SAMPLE #: (If different)	
TRACKING NUMBER	<i>Assigned on receipt</i>		
PARAMETER	ACTUAL AMOUNT (%)	INITIAL	ACCEPTABLE RANGE
Water (KF)			
SOLVNETS - GCMS: Methanol Ethanol Isopropanol THF Other: (Please name)			
Total Halogen			
pH			
CV			
DRUM WASTE?	Y N		
IS IT "SP" WASTE?	Y	DESTINATION	T-4 T-5
(Circle one)	N	DESTINATION	T-1 T-2 T-3
APPROVALS:			
SUITABLE FOR FUEL BLENDING	BY		DATE
CHECKED:	BY		DATE
UNSUITABLE BECAUSE:			INITIAL:

	TANKER UNLOADING PROCEDURE		<i>Document Number, SW-FB-3</i>
			DRAFT
Revised by; N. Vernon			Page 1 of 2
Approved by; P.O'Flynn			<i>Date;</i> 07/01/2005

1 Purpose

This procedure is to unload tankers of waste into the fuel blending facility or into another tanker using the fuel blending facility pump.

2 Scope

This procedure applies to the unloading of all tankers excepting those used for the DCM separation. This procedure should be used in conjunction with SW-FB-4.

3 Responsibility

It is the responsibility of the Operations Manager to:


- Guide and instruct the Site Foreman. In the above procedure, operators are required to use their practical experience and care to ensure the safe discharge of the material.
- Ensure the correct PPE is used and training is provided.

4 Related Documentation

SW301 Waste acceptance procedure
Spillage Procedure SW313
Emergency Response Procedure SW409
Compatibility Analysis SW227
Procedure for pumping out of Bunds SW330
Filling ISO-tanks SW310


5 Procedure

- 5.1. All Tankers are weighed, recorded and the data inputted into the plant inventory (Tracking system)
- 5.2. Ensure that Bund M is free from water; if not, pump out the water according to procedure SW 330.
- 5.3. Position the tank(s) in Bund M ensuring that adequate space is available for access to the emergency shut-off core of the loaded Tanker
- 5.4. Ensure that the tank(s) and lines are electrically bonded to ensure that static electricity does not cause a spark hazard.
- 5.5. Refer to the **SW-FB-4-F1** Instruction sheet"
- 5.6. Connect the discharge point of the loaded tanker to the tanker unloading hose
- 5.7. Connect the nitrogen line to the manifold on the unloading hose.
- 5.8. Don the appropriate PPE.
- 5.9. Ensure that all connections are secure and that all gaskets are Viton.
- 5.10. Carry out a safety check on the system by introducing nitrogen into the lines with both the tanker valve(s) and the valve prior to the discharge pump still in the closed position, check for leaks at the connections.
- 5.11. Ensure the vent valve on Loaded Tanker is open to prevent implosion.

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- 5.12. If all is in order, start transferring the contents of the loaded Tanker to the fuel blending facility, as follows:
- 5.13. Firstly open the tank inlet valve in the blending facility (see SW-FB-4) Tank and then open the valves in sequence towards the loaded tanker,
- 5.14. This will flood the system from the loaded tanker and this is visible via the sight glass.
- 5.15. Start the pump and record the time.
- 5.16. The tanker must be manned at all times during off-loading.
- 5.17. The sight glass as well as a shudder in the hose will alert the operator that the loaded tank is empty
- 5.18. When the loaded Tanker is empty stop the pump and close the loaded tanker's outlet valve.
- 5.19. With the remaining valves still in the open position, open the nitrogen line, (regulated @10psi) to clear the line.
- 5.20. Close the nitrogen after purging for 1 minute and immediately close the valve V-1.
- 5.21. Close all the other valves. Before disconnecting any hoses ensure that all valves are in the closed and locked position.
- 5.22. Disconnect the tanker unloading hose from the tanker, taking care to ensure that any pressure remaining in the hose is diverted downwards.
- 5.23. Weigh the empty Tank.
- 5.24. Update the site inventory (tracking System).
- 5.25. Complete all necessary paperwork.

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<i>Revised by;</i> N. Vernon			Page 1 of 2
<i>Approved by;</i> P.O'Flynn			<i>Date;</i> 07/06/2005

1 Purpose

This procedure is to load tankers of fuel or other material from the fuel blending facility

2 Scope

This procedure applies only to the loading of tankers from the fuel blending facility. It should be used in conjunction with SW-FB-4.

3 Responsibility

It is the responsibility of the Operations Manager to:


- Guide and instruct the Site Foreman. In the above procedure, operators are required to use their practical experience and care to ensure the safe discharge of the material.
- Ensure the correct PPE is used and training is provided.

4 Related Documentation

SW301 Waste acceptance procedure
 Spillage Procedure SW313
 Emergency Response Procedure SW409
 Compatibility Analysis SW227
 Procedure for pumping out of Bunds SW330
 Filling ISO-tanks SW310
 Tanker loading procedure SW-FP-3

5 Procedure

- 5.1. Check carefully how much material is to be transferred using the site inventory and the capacity of the tank to be filled. It is essential not to overfill the tank.
- 5.2. Identify the tanker to be loaded and whether it needs to be cleaned.
- 5.3. The empty tanker is weighed, recorded and the data inputted into the plant inventory.
- 5.4. Ensure that Bund M is free from water; if not, pump out the water according to procedure SW 330.
- 5.5. Position the tanker in Bund M.
- 5.6. Ensure that the tanker and lines are electrically bonded to ensure that static electricity does not cause a spark hazard.
- 5.7. Connect the tanker loading hose to the tanker inlet.
- 5.8. Connect the nitrogen hose to the manifold downstream of to V-21.
- 5.9. Connect the vent valve of the tanker to the vent system and thus to the wet scrubber/carbon filter (WSCF2) (to avoid emissions) and to the High Level Probe (to avoid overfilling).
- 5.10. Don the appropriate PPE.

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- 5.11. Ensure that all connections are secure and that all gaskets are Viton or Teflon.
- 5.12. Carry out a safety check on the connection by introducing nitrogen into the line with the tanker valve still in the closed position and check for leaks.
- 5.13. If all is in order, start transferring the fuel to the tanker as follows:
- 5.14. Firstly set the flow meter (FQ-1 or FQ-2) to zero.
- 5.15. Check the amount of fuel to be transferred from the **"SW-FB-5-F1 Instruction Sheet"** (printed from the tracking system).
- 5.16. Firstly open the discharge line valves from the Blend Tank (T6) and then open the valves in sequence towards the tanker,
- 5.17. This will flood the system from the Blend Tank and this is visible via the sight glass.
- 5.18. Open the Tanker valve, Start the pump and record the time
- 5.19. When FQ-1 or FQ-2 indicates that the correct amount of fuel has been transferred stop the pump and close the pump outlet valve, and then the other valves in the fuel blending facility.
- 5.20. With the tanker valves in the open position, but with V-21 closed, open the nitrogen line, (regulated @10psi) to clear the line.
- 5.21. Close the nitrogen after purging for 1 minute and immediately close the tanker valves.
- 5.22. Before disconnecting any hoses ensure that all valves are in the closed and locked position.
- 5.23. Disconnect the tanker loading hose from the Tanker, taking care to ensure that any pressure remaining in the hose is diverted downwards.
- 5.24. Disconnect the Vent line/High level probe and hose from the Tanker.
- 5.25. Weigh the Tanker.
- 5.26. Update the site inventory (Tracking System)
- 5.27. Complete all necessary paperwork.

APPENDIX 4: ASSOCIATED PROCEDURES

TABLE 1: LIST OF PROCEDURES RELATED TO MIXING AND BLENDING

PROCEDURE #	TITLE	NOTES
EXISTING		
SW105	Earthing	See Continuity Testing Below
SW107	Label Selection	
SW109	Segregation	
SW301	Waste Acceptance Procedure	
SW310	Filling ISO Tanks	Needs slight revision
SW313	Spillage Procedure	
SW314	Fire Procedure	Will be revised to reflect new equipment/tanks
SW330	Bunds Sumps and Interceptors	
SW409	Emergency Response	Will be revised to reflect new equipment/tanks
SW425	Incident Control Board	Will be revised to reflect new equipment/tanks
SW432	Maintenance Request Form	Will be revised to reflect new equipment/tanks
SW495	Identifier Log (Bulk)	
SW201, 208, 209, 217, 220, 227, 235	Specific Lab Procedures	
NEW		
DRAFT PROCEDURES (SEE APPENDIX 3)		
SW-FB1	Acceptance of Waste for Fuel Blending	
SW-FB2	Fuel Blending Testing	
SW-FB3	Unloading Waste from ISO Tanks	
SW-FB4	Fuel Blending Procedure	
PROCEDURES THAT CAN ONLY BEEN WRITTEN ONCE DETAILED ENGINEERING OF THE PROPOSED FACILITY IS COMPLETE		
	Fuel Blending Equipment Operating Procedures	To be agreed with Agency
	Fuel Blending Equipment Maintenance Procedures	To be agreed with Agency
	Electrical Continuity Testing	To be agreed with Agency
	Line Pressure Testing	To be agreed with Agency

APPENDIX 5: MIXING AND BLENDING PROCESS

1: PROCESSES DESCRIPTION

Bulk loads of waste destined for fuel blending will be accepted, weighed and sampled as per Procedure SW301, and then stored in the appropriate banded area in accordance with Procedure SW109. Drum waste will be selected from storage in the warehouse for approval for fuel blending.

Once approved for fuel blending the waste will be moved to Bund M and unloaded into the appropriate waste storage tank according to whether it is SP waste (material requiring mixing of small quantities into the final blend), and its CV.

The draft procedures are appended in Appendix 3. Detailed operations procedures for the various equipment will be drawn up when such equipment is selected and installed and will be approved by the agency before any fuel blending takes place.

2: INPUTS AND OUTPUTS

The inputs to the fuel blending facility will be:

- Waste in either tanks or drums
- Electricity for pumps
- Diesel fuel for tank movements, emergency generator and fire pumps
- Absorbent spill pads and other absorbent material
- Maintenance materials

The outputs will be:

- Waste derived fuel for cement kilns or power stations, which will be tanked off site.
- Off-specification material, which will be sent for disposal or recovery as appropriate and as detailed in the waste selection and handling procedures.
- Tank cleaning waste. From time to time the tanks will be emptied and cleaned see below. Section 4.5.
- Used, contaminated spill pads and absorbents (See below).
- Spent maintenance consumables, which will be packed and disposed of appropriately.
- Contaminated clothing and PPE, which will be treated the same as used spill pads etc. (See below).

3: EMISSIONS

Emissions that could occur from normal operation of the facility will either be to the ground, to air or noise emissions. These are dealt with below:

Emissions to Ground

The primary source of emissions to ground will be from the disconnection of hoses. The lines will be blown clear before disconnection using nitrogen. This procedure has been refined and tested on the existing dichloromethane separation at AVR-Safeway and has proved very successful at eliminating emissions and spills.

Large spills due to failure of equipment or operations are discussed under Abnormal Situations below.

Emissions to Air

Air emissions will come from the following sources:

- The evaporation of spilled solvents
- Sampling of tanks
- The operation of the tank venting system
- From associated vehicle movements
- From back-up generator and fire pumps

Spilled solvents will be dealt with as described in the Emergency Response Procedure – SW 409.

Sampling will be by narrow-bore tubes with valves off the recirculation return lines. These will be designed to minimise the flow rate and thus prevent spills or other emissions.

The tank vents will be piped into a common vent header. Thus transfers between tanks will result in back venting the receiving tank into the discharging tank, giving no overall emission. Only transfers from tanks or drums into the fuel blending equipment will result in an emission from the vent header, which will in turn be vented to a pollution abatement device (PAD), a water scrubber backed by a carbon absorber. The PAD is a very efficient device and will cut emissions to virtually zero. Breakthrough of the carbon filter will be detected by monthly monitoring using a PID detector and it will be replaced. Connection and disconnection of the carbon absorber will only take place when transfer and mixing operations at the facility are not taking place so that emissions will be very small. WSCF-2 will be similar to WSCF-1 the existing PAD located in Bund D (WSCF-2 will also be able to cope with excess airflow (i.e. normal operation 20m³/hour capacity of 120m³/hour)).

The Sampling Procedures (SW 210 and SW 211) are followed when bulk tanks and packed waste are sampled respectively. There will always be some unavoidable fugitive emissions, which the procedures are designed to minimize. Samples are stored in a fireproof cabinet and when their retention period ends are bulked up and disposed of appropriately.

Vehicle movements will be unavoidable, but will be carried out in such a way as to minimize emissions. All vehicles operated on site will be maintained to the highest order to minimize pollution.

Both the back-up generator and the fire pumps are diesel powered. Both will produce emissions comparable with a vehicle movement. Both will be tested regularly in accordance with the manufacturers recommendations, but otherwise should not be needed.

Noise Emissions

The following are possible sources of noise emissions:

- Pumps: Quiet running pumps will be used. These are almost silent, noise emission being an indicator of a malfunction, in which case the pump will be stopped, isolated and taken out of service, until it is repaired. The design of the piping allows P-1 and P-2 to be used interchangeably if necessary.
- The PAD: The scrubber pump and the fan will be the only noise sources. These will be quiet running types. The comments under pumps above will apply for these systems.
- Vehicle movements: Noise is unavoidable with vehicle movements, being comprised of engine noise and reversing sirens. Procedures will be determined to minimize both, though an audible reversing siren on each vehicle is essential for safe operation.

4: ABNORMAL SITUATIONS

The following abnormal situations could possibly occur.

- Mains power failure
- Over/under pressure in storage tanks
- Over-filling of storage tanks
- Temperature build-up in tanks
- Hose or pipe rupture

Mains Power Failure

In the event of a mains power failure a back-up diesel generator provides power to essential functions on site, to include those associated with the fuel blending facility, instrumentation, the control computer, fire control and suppression systems.

Over/Under Pressure in Storage Tanks

Each tank will be fitted, via a flame arrestor, with a combination conservation vent. If the tank pressure falls below atmospheric, air will be admitted. If the pressure rises the tank will vent to the PAD. The conservation vent and the flame arrestor will be inspected regularly for safe operation.

Additionally each tank will have a swan neck venting to the bund. see below.

Over-filling of Tanks

There will 3 tiers of overflow prevention. The inventory system will only allow material to be transferred into a tank if there is sufficient room, as input from the calculated contents. In

addition each tank will be fitted with a level indicator. Finally each tank will be fitted with a high level switch, which will sound an alarm and interlock the pumps to stop transfer. If all overflow protection fails a swan neck overflow with about 1 m hydrostatic head will direct material to the bund in the event of the failure of the other systems. A removable high-level switch will be used when filling ISO-tanks. In addition all the precautions against over-pressuring a tank will apply.

Temperature Build-Up

The selection process for wastes intended for fuel blending will prevent situations in which heat generation occurs. However in the unlikely event of temperature build up in the tanks warning will be given by the installed temperature indicator. The tanks can be cooled by spraying water at a rate exceeding two litres/min/m² tank area, using the fire hose system. A rise of more than 3°C per hour will cause an alarm and appropriate response procedures will be activated.

Hose or Pipe Rupture or Other Large Spill

This will be treated as an emergency and the Emergency Response (SW 409) and Spill Response (SW 313) procedures will be implemented. Pumps will be fitted with both emergency and automatic shut offs so that any spill can be minimized.

All transfers will take place within the banded areas. The bunds will be tested after installation and every three years thereafter.

5: MAINTENANCE

Routine Inspection and Maintenance: All tanks, pipes, valves and pumps will be visually inspected weekly for leakage and potential problems. This will be added to the weekly inspection schedule already carried out. All equipment will receive the routine maintenance recommended by the manufacturer.

Corrosion Minimisation: Corrosive wastes and wastes that could react to produce corrosive by-products will not be selected for fuel blending. In addition each tank will be fitted with a bracket on which welded corrosion coupons will be mounted. These will be removed and inspected annually as an indicator of potential corrosion problems. In addition each tank will be emptied, cleaned and inspected on a regular basis.

Tank Cleaning: Most solids in the waste should be readily suspended and pumped out with the fuel. Some however will adhere to the sides and bottom of the tank. Tanks will be emptied and inspected as required. If necessary, a specialist tank cleaning contractor will be employed to clean the tanks, under the supervision of AVR-Safeway technical personnel. All tanks cleaning waste will be shipped off-site for incineration or other approved disposal.

6: FIRE PROTECTION

A fixed fire monitor is located close to the facility to provide fire protection. In the unlikely event of a fire it will supply sufficient water spray to cool the tanks. In addition, the facility's onsite foam generator and fire engine will be used to deal with a fire in the vicinity of the tanks, or in the tanks themselves. All fires, however small are treated as emergencies, and the fire (SW 314) and emergency response (SW 409) procedures will be followed.

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