5 DESCRIPTION OF THE PROPOSED DEVELOPMENT

5.1 CHARACTERISTICS OF THE APPLICATION

Indaver Ireland Ltd. intend to apply for amendments to the existing permission PL17.219721 and SA/901467. The proposed amendments are detailed in Section 5.1.2 below.

5.1.1 Description of Site Layout

The 10ha site is located at Carranstown, Duleek, Co. Meath off the R152 regional road. The site is bounded to the north, west and east by agricultural land and to the south by the R152 road.

The site is located approximately 2.5 km north east of Duleek and approximately 3km south west of Drogheda. There are approximately 40 houses within 1km of the site boundary (Figure 6.1).

The Meath WTE Facility began operating on the site in October 2011, after the completion of a three year construction phase.

Existing developments within the vicinity of the site include a cement factory and quarry located to the north of the property. A commercial freight railway is located approximately 60 metres north of the site boundary. This line is used for the transport of freight for Tara Mines, Navan and the Platin cement factory.

A 110kV power line traverses the proposed site, however there will be no requirement for line diversion as a result of the proposed amendments.

A natural gas pipeline runs directly under the development site. There is also a low pressure gas mains running along the R152. There will be no requirement for diversion of the gas main as a result of the proposed amendments.

5.1.2 Description, Design, Size and Scale

Summary

- 20,000 tonnes or 10% increase in annual throughput
- Inclusion of additional EWC Codes (hazardous and non hazardous)
- Amendment of waste acceptance hours:

Current	Proposed	Period
08:00 – 18:30	06:00 – 20:00	Mon - Fri
08:00 – 14:00	06:00 – 14:00	Sat

- Unrestricted hours for the dispatch of residues from site
- Future additional capacity ammonia storage tank and fuel oil tank
- Convert hardcore area for contractor parking during construction to permanent status
- Conversion from temporary to permanent status of two structures:
    - Spare Parts Warehouse & associated electrical switchgear building with hard core surround.
    - Single storey modular office block & associated electrical switchgear building and to include:
        - Effluent treatment plant
        - Paved roadway (with hard cored area to each side) leading to office block
        - 22 additional paved car parking spaces added to existing car park

5.1.3 Description of Existing Development

A 70MW MSW incineration plant and associated infrastructure has been built on the site in line with Planning Permissions PL17.219721 & SA60050 (Final Grant October 15 2007) & SA901467 (Final Grant 14/12/2009).

The construction phase of the project is now complete and in August 2011 Indaver began accepting waste at the site for hot commissioning. Electricity generation & export to national grid began in January 2012. Aerial photographs of the operational facility at March 8th 2012 can be seen in Figures 5.1 and 5.3 below.

Figure 5.1 Aerial View of Site March 2012

to work within an operating envelope of between 165,000 and 230,000 tonnes per annum depending on the average calorific value of the incoming waste stream.

Additional raw materials may be required for use in the de-NO_x and flue gas cleaning systems and these increases are highlighted in Section 5.7 below. There will not be any additional staff required for waste acceptance and handling. Indaver is confident that the addition of the proposed new waste types will not materially alter the emission values in the stack and that the measured values will continue to be well below the limits set in the existing waste licence W0167-02, and will not be requesting any changes to emission values in this licence as a result of the proposed new waste types or annual throughput. The increase in throughput will merely realise the full potential of the technology which is designed based on thermal throughput as opposed to tonnage throughput.

5.4.2 Additional EWC Codes

Likewise, the inclusion of additional EWC Codes (including those marked in the European Waste Catalogue with an asterisk and defined as hazardous for disposal) to allow for separately collected fractions of waste which are present in the MSW waste stream nationally, and select waste streams from industrial customers, do not require any adjustment in waste handling processes (other than the direct feed of any infectious wastes if accepted) or the flue gas cleaning technology currently in place. Varying the types of waste input to the plant will affect the concentration of pollutants in the untreated flue gases, but due to the redundancy of acid and dioxin removal steps in the installation, this simply means that more lime, dry lime, expanded clay and activated carbon may be used in treating the flue gases. Having a two stage acid and dioxin removal system is part of the robust design envisaged by Indaver for Irelands first waste to energy plant. Ultimately the emission limits prescribed in Indavers Waste Licence must be adhered to and to date the facility has demonstrated that it can perform well below the limits specified – please refer to Appendix 5.1 This is discussed further in Section 5.6 below. The list of proposed additional waste types and their associated EWC Codes are shown in Figure 5.2 below,

EWC	Example of Material	Industry Source	Waste Management Region
160507*	Toilet bowl or other cleaners, detergents etc.	All industry	ALL Regions
160508*	Denture fixative waste	All industry	ALL Regions
160303*	Colourings used in cosmetic manufacture	All industry that generates off specification or redundant products	ALL Regions
160305*	Cosmetic eye shadow base, mascara, lipstick	All industry that generates off specification or redundant products	ALL Regions
150202*	Rags and cloths contaminated with paints	All industry that uses aborbents/filters/PPE etc	ALL Regions
150110*	Plastic jerricans previously containing cleaning	All industry that uses packaging	ALL Regions

	agents		
170204*	Wood from dismantled warehouse contaminated with creosote or other preservative	Construction & Demolition projects	ALL Regions
170903*	Construction & Demolition waste such as window frames from a pharmaceutical building - may contain trace pharmaceutical powders.	Construction & Demolition projects	ALL Regions
170505*	Dredging spoil from firewater retention ponds	Construction & Demolition projects	ALL Regions
170503*	Soil & stones from clean up operations resulting from building foundations where possible contamination has occurred (e.g. on pharma site - old building)	Construction & Demolition projects	ALL Regions
180103*	Medical/Infectious Wastes.(Excluding Sharps) from Clinics, nurses stations etc.	Healthcare industry, users of healthcare/diagnostic/research products	ALL Regions
130701*	Waste fuel oil and diesel	Manufacture/supply use of oils & fuels	ALL Regions
070101*	Water from a spill clean up containing trace oils and adhesive powders.	Manufacturers or users of organic chemicals	ALL Regions
080308	Waste Ink Solution (Water and Non hazardous Ink Solids) , paint and water mixture	Manufactures or users of paints & inks	ALL Regions
200137*	Treated wood from Civic Amenity sites	Municipal/Industrial/Commercial Waste	ALL Regions
200127*	Paint cans, and paint waste from Civic Amenity sites	Municipal/Industrial/Commercial Waste	ALL Regions
200128	Water based paint from Civic Amenity sites	Municipal/Industrial/Commercial Waste	ALL Regions
070501*	Rinsewaters containing trace pharmaceutical residues.	Pharmaceutical manufacturers or users	ALL Regions
070513*	Headache tablets	Pharmaceutical manufacturers or users	ALL Regions
070511*	Waste water treatment sludge from pharmaceutical plant - trace pharma powders may be present	Pharmaceutical manufacturers or users	ALL Regions

191303*	Sludges from soil remediation - e.g. illegal dumping clean up	Soil & Groundwater remediation Projects	ALL Regions
160107*	Discarded oil filters from garages and mechanics	Vehicle/Machinery Maintenance	ALL Regions
191206*	Wood (treated) from waste management facilities	Waste Management Facilities	ALL Regions
191211*	Shredded paint buckets and cans - contents previously pumped off and packaging shredded	Waste Management Facilities	ALL Regions
191003*	Material from shredding of white goods (after recycling) may contain some trace hazardous materials such as plastics with brominated flame retardants.	Waste Management Facilities where there is metal shredding	ALL Regions
190811*	Waste water treatment sludge from local authority treatment plants where possible contamination may have occurred	Waste water treatment plants	ALL Regions
030104*	Wood shavings and small pieces of wood, treated with preservative, from furniture/window manufacturers	Wood Processing/Furniture manufacturer	ALL Regions
190113* 190107* 190112	Flue Gas Treatment residues, bottom ash and boiler ash, temporarily returned to site before being re-sent for treatment	Indaver Ireland WTE, Carranstown	NE Region

Figure 5.2 List of proposed new EWC codes and waste types

The acceptance of select additional EWC codes is based on experience gained at our existing installations and handling these waste streams for our existing customers, Indaver Ireland Ltd is a registered Waste Broker (IRE AG040/12). Indaver have operated in Ireland moving hazardous waste for over 30 years, mainly for export under EC1013/2006.

In 2010, Indaver managed 65,952 tonnes of hazardous waste for its customers, the majority of which was exported for treatment. It was from this exported material that certain waste streams were identified as being suitable for diversion from export, to treatment at the Meath WTE facility. In addition

to these waste streams which were managed by Indaver Ireland directly, it is assumed that other waste brokers in Ireland will also have suitable material in their waste portfolio.

Grate incineration technology is not suited for all types of hazardous waste. Careful consideration was given when identifying streams that Indaver currently export, that would be suitable for the Meath Grate WTE.

5.4.3 Adjustment to waste acceptance hours

An extension of the hours during which waste may be accepted is proposed to spread the delivery of waste more evenly throughout the day. Currently waste can only be accepted between 08:00 and 18:30 Monday– Friday and between 08:00 and 14:00 on Saturdays. Waste collections from households and deliveries from waste transfer stations are typically done in the early morning hours, and there is great demand for earlier delivery slots. When the waste collectors have delivered to site, they would typically return to their collection routes or transfer stations for afternoon collections/deliveries to the site. The extension of waste acceptance hours in the afternoon would facilitate second deliveries, while at the same time mitigating the impact on peak hour commuter traffic. It is proposed that waste can be accepted on site between 06:00 and 20:00 Monday to Friday and 06:00 and 14:00 on Saturdays.

5.4.4 Unrestricted waste dispatch hours

It is also proposed that the restriction on the hours of waste dispatch from the site be removed completely. Currently, the dispatch of residues from the process (boiler ash, flue gas cleaning residues, bottom ash & waste waters) are only permitted during the hours of waste acceptance. Presently this is not a major issue for the majority of the truck movements (bottom ash), as they are bound by the hours of waste acceptance at a landfill site which is reasonably close by. However, if another landfill were to be used in the future (or as a backup to the current nearby facility,) that was further away from the site, then trucks may have to leave the site earlier than 08:00 in the morning.

The flue gas residues and boiler ash are subject to regulation EC1013/2006 (Movement of waste) and the pre-notification procedure contained therein means that each Notified shipment must move off-site to Dublin Port for export on the date notified in Box 6 of Notification Form 1B. If the waste containers being filled on-site encounter any delays, then the restrictions on dispatch times will affect these movements, resulting in cancellation of the shipment with the National TFS Office, plus containers having to be stored on site overnight.

This material is being exported via Dublin Port for treatment abroad and is not bound by waste acceptance hours at Irish licensed facilities. As mentioned in Section 13 (Traffic), the number of truck movements associated with this material is also small (approximately 2 loads per day) and hence should not adversely impact on the surrounding environment. As the facility is operational 24 hours per day

and 7 days per week, it is logical that the removal of such waste loads should not be bound by the hours of waste acceptance.

5.4.5 Conversion of status – structures and car park area

The proposal also includes the change of status of two existing structures on site from temporary to permanent. The first is the spare parts warehouse to the north-east of the site – this was installed to facilitate storage of spare parts and maintenance equipment for the contractors during the construction and commissioning phases of the project. The strict guarantees required by Indaver on the reliability and availability of the plant during the guarantee period (24 months) meant that the main equipment suppliers insisted on having higher multiples of spare parts available on site at all times during this period.

After the guarantee period, this warehouse is proposed as a Central Maintenance Depot to continue to house maintenance equipment and spare parts for the Meath WTE facility as well as other facilities in Indaver's Irish portfolio, comprising of a Transfer Station and Solvent Blending facility in Dublin Port as well as the proposed Cork WTE plant in Ringaskiddy, Co Cork. Associated with this structure is the Electrical Switchgear building and an area of hardcore to the north-east of the building (see Figure 5.2 and the drawings accompanying the application for details). It is estimated that a Centralised Maintenance Depot would result in 2-3 additional personnel on site.

The second structure for which conversion to permanent status is requested, is a single storey modular office block to the east of the site, which was used during the construction phase of the project to house visiting staff, meeting rooms and a visitor's centre. It is proposed to convert the status of this structure in order to continue to facilitate visiting staff from other Indaver installations, as well as contractors who may need office space during the guarantee period of 2 years and during scheduled annual shutdown periods. This is to limit the amount of people (staff & visitors) accessing the main process building at any one time. To facilitate access to the office block, the approach will be paved (please refer to the drawings accompanying the application) with areas of hardcore on either side. A Puraflo® sewage treatment system is proposed to replace the current holding tank for effluent treatment associated with the modular office block.

To accommodate the visiting personnel, it is proposed that an additional 22 car parking spaces be added to the existing car park.

During periods of routine maintenance shutdowns and any other on-site projects, the hard cored area that was designated as parking for contractors during the construction phase may be needed again. Until the experience is gained of the amount of car-parking spaces required during these shutdown periods, it is proposed also to convert this area to permanent status.

Figure 5.3 Aerial View of the Proposed Amendments (March 2012)

5.4.6 AMMONIA AND FUEL OIL STORAGE TANKS – FUTURE ADDITIONAL CAPACITY

It is anticipated that at some future date, additional storage capacity on site for Ammonia and Fuel Oil would be beneficial to operational efficiency. This would enable the frequency of deliveries to be optimised. Currently, the storage capacity for Fuel Oil is 44m^3 and Ammonia is 62m^3. If determined that additional capacity is necessary, it is proposed to install duplicate storage tanks beside the existing storage tanks, in effect doubling the capacity of each. The layout of the possible additional tanks are shown on Figure 5.4 The addition of an extra oil tank would also allow for the possibility to burn waste oil to balance with the burning of low CV wastes but only when the temperature in the furnace is above 850°C.

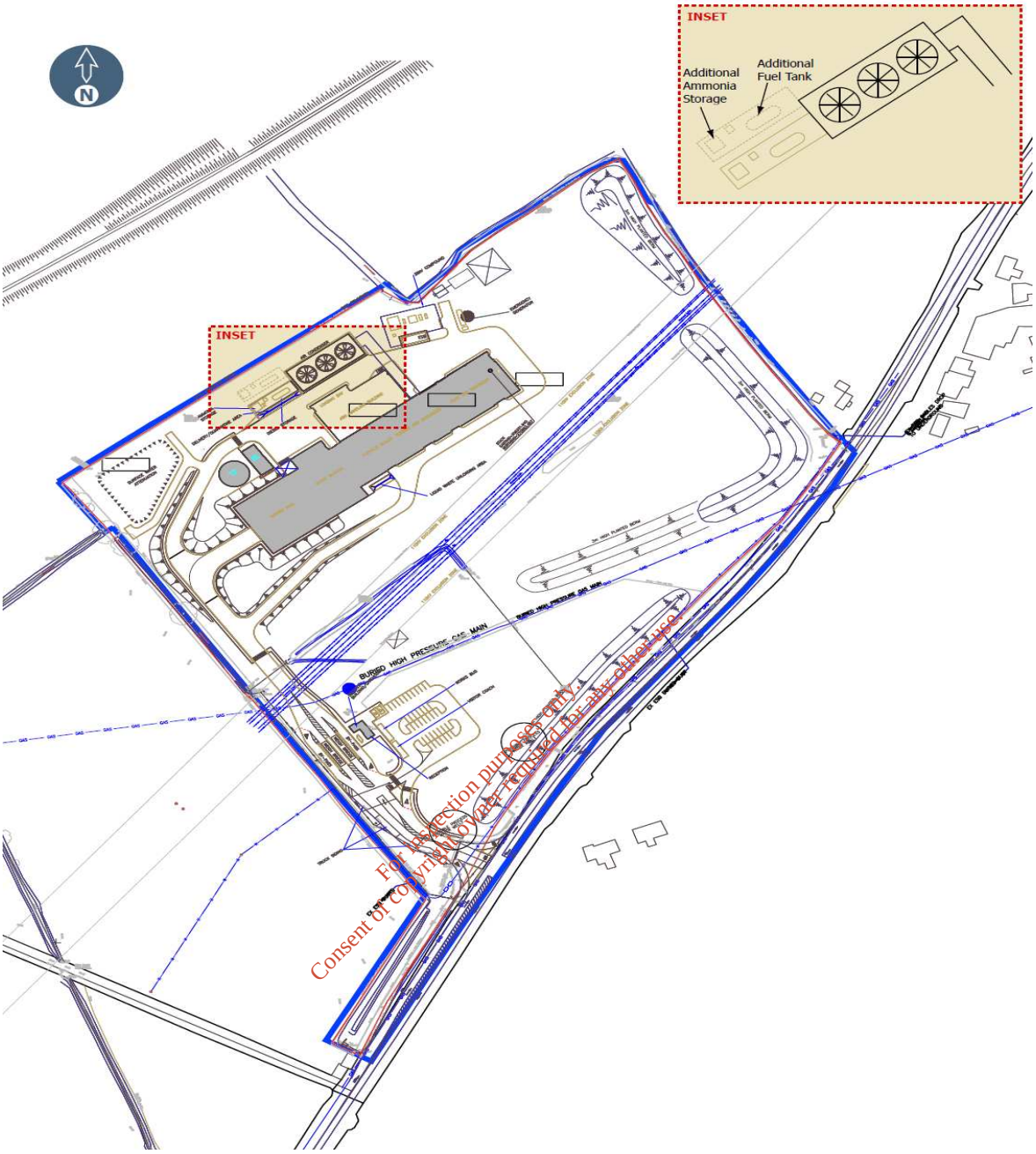

Figure 5.4 Proposed Additional Ammonia and Fuel storage

5.5 GENERAL OPERATION

As described in Section 5.4, the main impact on general operations would be the extension of the hours of waste acceptance and the removal of the restriction on the dispatch of residues from the site. An examination of delivery and dispatch patterns of the now operational facility reveal that 12% of the daily movements occurred between the hours of 08:00 and 08:30. A similar peak between 13:00 and 13:30 of 10% has been recorded. The half hour periods between 08:30 and 13:00 reflect an average of 5%, and the afternoon half hour blocks between 13:30 and 18:30 reflect an average of 3%. The

change of the hours of waste acceptance will allow for a more measured distribution of waste deliveries to the site which will also reduce the impact on the peak hour traffic flows on the local road network.

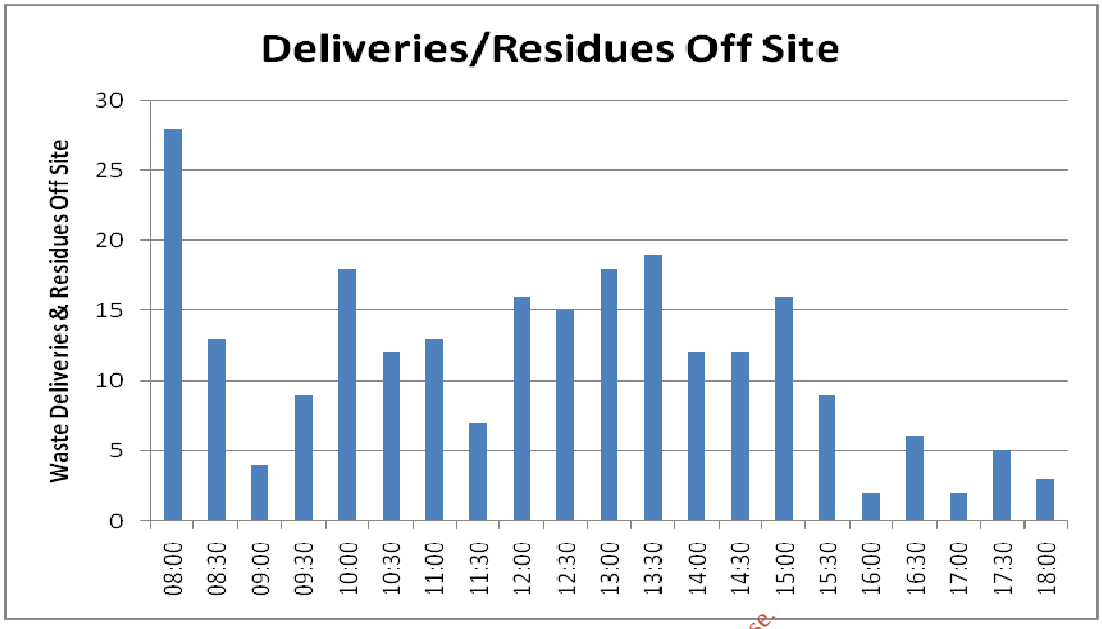

Figure 5.5 Data from MCC Traffic Survey 21-26 November 2011

It is foreseen that only minor adjustments will have to be made to the existing Waste Acceptance Procedure and Waste Handling Procedure (ENV 01.00 and ENV 02.00 respectively) to reflect the acceptance of the proposed additional waste codes. These procedures are included in Appendix 5.2 and 5.3 and this topic is discussed in detail in Section 5.6.1 below.

The location of the Central Maintenance Depot on the site will facilitate business continuity for the plant, as well as Indaver's facilities in Dublin Port and (proposed) Cork WTE. As discussed in Section 5.4 there will be an additional 2-3 persons on site to manage this storage and warehouse facility. The impact of the additional personnel is discussed in section 5.8.

5.6 PROCESSES

An assessment of the impacts of the additional tonnage and waste types is outlined in the following sections. The incineration process and associated flue gas cleaning and energy recovery systems are unchanged from that outlined in the EIS of 2009. A schematic of the process is shown below in Figure 5.5

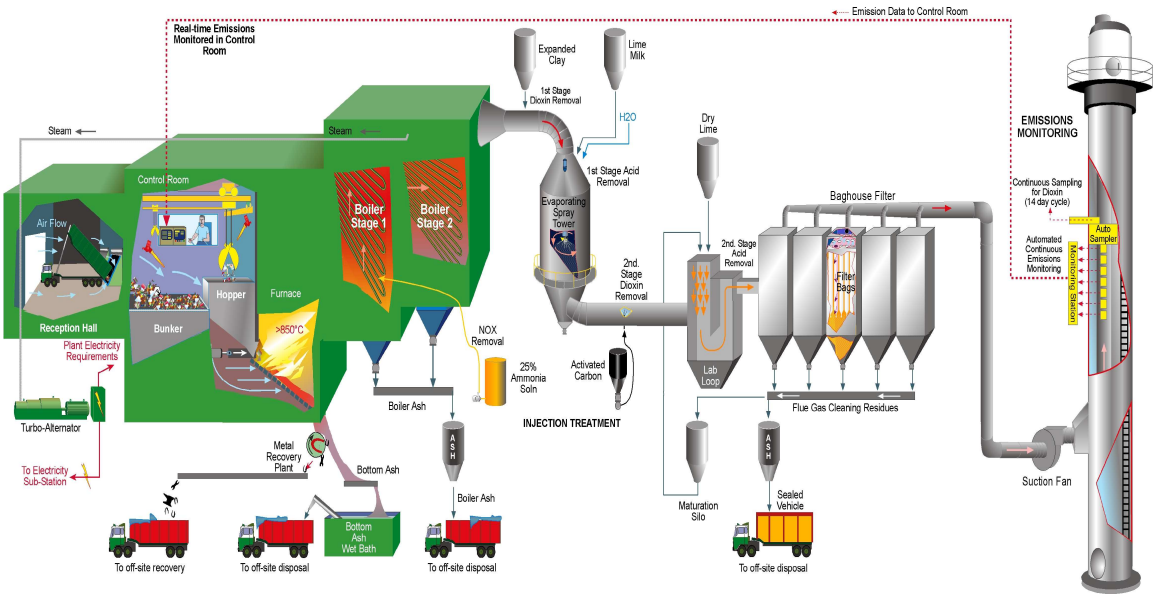

Figure 5.6 Process Schematic

5.6.1 Waste Characterisation and Classification

Specific BAT (Best Available Techniques) for hazardous waste incineration Section 5.4 (69) states that "knowledge of the process or origin of the waste is important as certain hazardous characteristics are difficult to determine analytically". This would apply to some types of material proposed for the Meath WTE which are mainly made up of mixed types of solids, and thus standard laboratory analysis is not possible. For example, one such stream which has been specifically identified is bales of PPE (Personal Protective Equipment), empty plastic bottles, bags and liners contaminated with pharmaceutical residues. Where each bale may vary in proportional composition, the components and contaminants will remain constant. The production process, its location on site, and all possible feed streams were explored with the waste producer before it's suitability for the Meath WTE was determined.

The above process will be applied to all waste streams that are identified as being suitable for the Meath WTE. Liquid wastes (hazardous & non-hazardous) will be sampled and analysed to ensure that the composition is well known and is suitable for treatment.

A complete screening of any proposed waste streams will be done, to ensure that the waste streams will;

- Have a known calorific value range
- Have a known flashpoint range > 55°C
- Not contain elevated levels of PCBs, Halogens, heavy metals or radioactive material.
- Comply with the requirements of IED (Industrial Emissions Directive 2010/75 EU); Art. 45.2 (a) and Art. 52.3

Competence, Procedures and Traceability

Indaver Ireland Ltd. has a Technical Team (part of the Quality, Environmental, Safety & Health (QESH) Dept) whose responsibility is waste classification. The Technical Team consists of highly qualified personnel known as Technical Advisors.

As many of the proposed waste streams are currently being exported, they have been classified by the Technical Team of Indaver Ireland Limited, to comply with the very strict transport regulations of ADR & IMDG, EC1013/2006, as well to ensure they meet the acceptance criteria of the Waste Outlet to which they are being sent. This is in accordance with Indaver Ireland Procedure Operations 4.2 "Classification and Identification of waste". This procedure is included in Appendix 5.2

The Technical Advisor will consult all the necessary regulations/legislation to determine the waste classification.

Currently waste is classified under the following criteria:

- UN Number(s)
- PSN (Proper Shipping Name):
- Class/Subrisk(s)
- PG (Packing Group)
- Limited Quantities if applicable
- Marine Pollutant if applicable
- Segregation rules (from IMDG)
- EWC Code
- Hazard Characteristics (Waste Mgmt. Act 1996)
- Ozone depleting substance or not
- Controlled drug or not

Waste Handling

It is foreseen that only minor adjustments will have to be made to the existing Waste Acceptance Procedure (Env 01.00) and Waste Handling Procedure (ENV 02.00) to reflect the proposed additional waste codes, as the wastes will still ultimately be tipped into the waste bunker and fed to the furnace using the grab cranes. Extra precautions may also have to be taken for inspecting waste loads, but this will relate mainly to additional PPE requirements for the operators. The only exception to this would be if infectious waste (EWC Code 180103*) was to be accepted at the plant and in this case a direct feeding method of this waste to the furnace would have to be provided. This is a requirement of the BAT Guidelines (Section 5.6) and the Industrial Emissions Directive (Article 50.6) which state that infectious clinical waste must be placed straight into the furnace without being mixed and without direct handling. This waste is typically delivered in closed wheeled bins and will be placed on a mechanical bin lift system to avoid any direct handling of the waste. The direct feeding system will be located in the

reception hall, and will consist of a closed conveyor system which will feed the waste directly into the furnace. Hence, this waste would not be introduced to the bunker and mixed with the other wastes. Prior to acceptance of any infectious clinical waste, the Meath WTE will ensure full compliance with these criteria.

As is currently the case, new customers or new waste streams from existing customers for MSW are assessed both in advance of their arrival at the site also upon arrival. This will also be the case for the separately collected fractions of waste carrying a hazardous EWC code. The screening of these wastes will ensure for example that no wastes with a low flash point are accepted at the facility.

Wastes carrying a hazardous EWC code will be tipped into the bunker directly from the reception hall and hence no extra handling procedures are proposed for the acceptance of such solid wastes. Liquid wastes with non-hazardous EWC codes are currently permitted to discharge directly into the furnace. These liquid wastes are typically water with various contaminants that make them unsuitable for treatment at waste water treatment plants or physico-chemical treatment plants and hence must be incinerated. It is proposed that the same types of wastes (high water content) which, due to the nature of the contaminants contained within, require them to have a hazardous EWC code can be treated at the facility. The same method of direct injection would be used and hence no changes are proposed to the waste acceptance and handling techniques at the plant. It is not proposed to accept solvents or highly chlorinated wastes (>1% Chlorine) for direct injection at the plant.

5.6.2 Moving Grate Incinerator

The new waste streams proposed have been selected based on the successful treatment of such wastes in similar grate furnace technology throughout Europe. Hence, the waste streams proposed do not pose a difficulty for the grate furnace which is a proven robust technology. Grate furnace installations such as the one owned by AVR in Rotterdam and the Ekokem plant in Finland are taking similar waste types successfully.

5.6.3 De-NO_x - Ammonia Solution Injection

The production of NO_x during the incineration process is primarily a result of the air supplied to support the combustion process. NO_x production and hence the efficiency of removal of NO_x will not be affected by the additional tonnage or new waste streams proposed as the addition primary air (supplied to support combustion on the furnace itself) and secondary air (provided in the space above the furnace to ensure complete combustion of the off-gases) is balanced depending on the CV value of the incoming waste. Hence, with more low CV value waste, more primary air is required to support combustion on the grate but less secondary air is needed to ensure complete combustion of the off-gases. Likewise, with higher CV value waste, less air is required on the furnace to support combustion but more secondary air is required to ensure complete combustion of the off-gases. To adopt a

conservative approach on the use of raw materials and the traffic movements to the site however, a 10% increase in ammonia and water solution is used.

5.6.4 Waste Heat Boiler

There will be no impact on the waste heat boiler as the boiler is designed based on thermal capacity and as stated previously will allow for a more stable steam production by running the plant at full capacity at all times.

5.6.5 Steam/Turbine Generator

Again, there will be no impact on the turbo-generator as it is designed to run at full plant load.

5.6.6 Expanded Clay Injection (1st Stage Dioxin Removal System)

It is likely that the rate of clay injection will not change as a result of the new wastes proposed. The clay is injected at a fixed rate and this rate has been previously defined based on a very conservative assessment of the potential dioxin & furan concentrations in the raw flue gases. This is borne out by the analysis results for dioxins in the flue gases which as seen in Appendix 5.1 are on average 100 times below the limit value. The clay injection is also backed up by the injection of activated carbon further downstream in the process. Adopting a conservative approach in the usage of raw materials (and associated traffic movements), an estimated increase of 10% has been projected.

5.6.7 Evaporating Spray Reactor (1st Stage Acid Removal)

As is currently the case, the evaporating spray reactor is controlled by monitoring of the concentration of HCl, HF & SO2 in the stack in conjunction with the concentration of these pollutants measured at the exit of the boiler in the untreated flue gases. The rate of lime addition is adjusted to control the above parameters to set levels. This will not change with the addition of the new wastes or capacity but the use of lime may increase if there are elevated levels of chlorine or sulphur in the raw flue gases and to ensure levels in the stack are kept well below the emission limit value set in the licence. The plant is currently operating well below the limits set for HCl, HF & SO_2 which can be seen in Appendix 5.1.

5.6.8 Activated Carbon Injection (2nd Stage Dioxin Removal System)

It is likely that the rate of activated carbon injection will not change as a result of the new wastes proposed. The activated carbon is injected at a fixed rate and this rate has been previously defined based on a very conservative assessment of the potential dioxin & furan concentrations in the raw flue gases. However as with the case of expanded clay above, an estimated increase in usage of 10% has been projected. Again, results for dioxins in the flue gases as shown in Appendix 5.1 are on average 100 times below the limit value.

5.6.9 Dry Lime Injection (2nd Stage Acid Removal System)

As is currently the case, the rate of addition of dry lime into the flue gases is controlled by monitoring of the concentration of HCl, HF & SO2 in the stack and in the raw flue gases. The rate of lime addition is adjusted to control the above parameters to set levels. This will not alter with the proposed changes but the use of dry lime may increase if there are elevated levels of chlorine or sulphur in the raw flue gases and to ensure levels in the stack are kept well below the emission limit value set in the licence. The plant is currently operating well below the limits set for HCl, HF & SO_2 as can be seen in the results in Appendix 5.1

5.6.10 Baghouse Filter (Dust Removal System)

The operation of the baghouse filter will not be impacted by the proposed changes. If there is an increase in the addition of lime as a result of the proposed changes, the modules of the baghouse filter and the surface area of the bags themselves are designed to cope with this increase. There is also one module of the six modules within the baghouse filter that is fully redundant to allow for the changing of bags whilst the facility is still in operation.

5.6.11 Induced Draft Fan & Stack

The operation of the ID fan and the maintaining of underpressure in the furnace will not be impacted by the proposed changes as the fan has been designed based on the maximum flue gas flowrates associated with the operation of a furnace and boiler of 70MW capacity. The stack diameter and height has been determined by the air emission modelling exercise carried out as part of the 2006 & 2009 EIS's. As explained in Section 5.7 below, the modelling exercise was robust and does not need to be reviewed on the basis of the proposed changes.

5.6.12 Ash Handling

There are no changes proposed to the handling of the ash residues as a result of the proposed changes. A conservative 10% increase in residue production is assumed in order to ensure that a robust assessment of changes to traffic flows to and from the site is done. The additional EWC codes applied for will not impact the composition of these residues. The increases are outlined in the following table.

RESIDUE TYPE	ESTIMATED TONNAGE 2009	PROJECTED TONNAGE 2012[1]	ESTIMATED TONNAGE[2]
Bottom Ash	50,000	54,000	59,400
Boiler Ash	3,000	1,360	1,500
Flue Gas Cleaning Residues	10,000	7,500	8,200
TOTALS	63,000	62,860	69,100

[1] Based on actual operational plant data from 2012
[2] Assuming a 10% increase in residue production

The Bottom Ash is non hazardous and is currently sent to landfill locally. The Flue Gas Residues and Boiler ash are currently sent for re-use in the remediation of salt mines in Germany. The increase in residues produced will result in a small increase in traffic movements to dispose/re-use of the residues. The impact of this is discussed in detail in Chapter 13. Based on experience from other grate furnaces in Europe burning additional wastes of the type proposed, the classification of the bottom ash will remain unchanged. The classification of the other residues produced will also remain unchanged.

5.7 DESCRIPTION OF PROCESS INPUT AND OUTPUT REQUIREMENTS

The EIS of 2009 assessed the impact of the inputs and outputs from a facility with a "nominal" capacity of 200,000 tonnes per annum. The capacity of an incineration plant is based on the thermal design capacity and the calorific value of the incoming waste combined with the amount of available operating hours per annum (plant availability). The plant, because of its thermal design capacity (70 MW) and the fact that the incoming waste is of a lower calorific value than expected, can therefore process more tonnage per annum than originally anticipated.

As conservative estimates were used in the 2009 assessment, the request for an additional 20,000 tonnes per annum (10% tonnage increase) does not correlate directly to a 10% increase in raw materials used or in residue production. However, in order to ensure a robust assessment of the extra traffic movements to and from the facility, the worst case scenario has been taken and the 10% increase has been applied to raw materials usage and residue production in addition to the increase in waste input.

The main inputs are waste, water, raw materials and light fuel oil. The main outputs are ash, electricity and emissions from the stack. The additional water requirement will be approximately 3.52% (about 300 litres per hour). There will be no additional fuel oil requirement as a result of the proposed change, indeed the use of fuel oil may decrease if the addition of waste oil (EWC 13 07 01*) is granted.

Raw Materials Use

The use of raw materials may increase as described above and these changes are outlined in the table below.

Use	Raw Material	Estimated 2009 (kg/hr)	Actual 2012 (kg/hr)	Proposed (kg/hr)
Flue gas cleaning	Hydrated Lime	13.4	140[3]	154
Flue gas cleaning	Quicklime	307.2	320[3]	352

[3] Consumption of hydrated lime and quicklime are on average higher than expected due to commissioning phase and prior to fine tuning of the installation

Flue gas cleaning	Activated Carbon	13.4	16.5	18
Flue gas cleaning	Expanded Clay	26.7	27.5	30.25
Flue gas cleaning	Ammonia Solution	130	75	82.5
De-mineralisation	Ammonia Solution	3.8	5	5
De-mineralisation	Hydrochloric Acid*	3.8	Not Used	Not Used
De-mineralisation	Nitric Acid*	-	0.5	0.5
De-mineralisation	Sodium Hydroxide	3.5	5.8	5.8

*Nitric acid was substituted for hydrochloric acid in the demineralization process

Ash

The proposed changes to the ash quantities are outlined in section 5.6.12 above.

Electricity

The amount of electricity produced is limited by the thermal capacity of the boiler; the electrical design output is 18MW, with 2MW required for running the plant, giving a net export of 16MW to the national grid. The current output is averaging at 16.56MW due to lower calorific value of waste and the plant being in a start-up phase and not operating at 100% capacity.

As the plant moves out of the start-up phase and with the proposed new waste types assisting in raising the average Calorific Value of the waste, this will reach the 16MW net export to the grid predicted.

There will be a small increase in electrical demand associated with the office accommodation and warehouse, but the load in these areas is required only for space heating and lighting.

Stack Emissions

In the 2006 EIS and subsequently in the 2009 EIS Amendment application, the emissions from the plant were assessed based on the maximum allowable limits in the Waste Incineration Directive (which will be replaced by the Industrial Emissions Directive 2010/75/EU) and 110% of the estimated flue gas flow rate at the plant nominal capacity. Recent measurements of the short term average nominal flue gas flowrate have shown that the flue gas flowrate is higher than was anticipated and in order to ensure that assessment from 2009 was still valid, the model was re-run and shows (as explained in Section 7.4) that the variation in flowrate does not materially alter the original conclusions and that the

assessment is still valid. This, combined with the fact that the actual emissions from the plant are well below the limits modeled, ensures that the assessment of the impact on air quality is robust.

The lower average calorific values of the waste as currently recorded can be caused by either higher water content or the inclusion of inert material (stones, ceramics, metals etc) which do not combust. The water, when converted to water vapour in the process is not calculated as part of the overall flue gas flowrate for the purposes of reporting and modeling, as the reference condition is dry and hence the additional weight of the water does not add to the flue gas flowrate. If inert waste is causing the lower CV of the waste, then this waste does not contribute to the incineration process and hence acts as ballast in the system and the weight of this material in the waste does not contribute to the flue gas flow either. The requested additional tonnage of 20,000 tonnes per annum is to guarantee that the plant can operate at full thermal capacity and an increase in the annual average flowrate is not anticipated as result of the additional tonnage.

The next point to consider is the effect of the proposed additional waste types on the measured levels of pollutants in the stack. Again, it is important to stress that the types of new waste proposed in this application are of similar characteristics as material already being treated successfully on site and will not impact on the emission limit values currently in place. This combined with the two stage dioxin removal and acid gas removal system provides a buffer in the capacity to treat elevated levels of pollutants in the raw flue gases if they do occur. The upstream measurement of pollutants in the raw flue gases also ensures that correct amounts of lime are added to the flue gases at each step to keep the emission values measured in the stack well below the limits specified in the waste licence. The addition of activated carbon and expanded clay at the two stages in the system is set to a fixed rate that is conservative to ensure that the measured levels of dioxins are well below the limits set. Additional ammonia solution can also be added to manage NO_x levels in the stack, but as explained in Section 5.6.3 above, the production of NO_x is more related to the total amount air introduced into the furnace and overall does not change relative to the type or quantity of waste input. Hence, Indaver is confident that the addition of the proposed new waste types will not materially alter the emission values in the stack and that the measured values will continue to be well below the limits set in the waste licence, The current measured emission values have been presented in Appendix 5.1

5.8 OCCUPANTS/STAFFING

Currently, there are 20 shift workers who work in teams of 4 to run and control the plant on a 24 hour basis. There are another 22 employees split between the following functions:

- Management and Administration
- Operations
- Quality Control and Assessment
- Maintenance

Other persons who may be on site intermittently would include:

- Visiting Staff from other Indaver Sites (both in Ireland and Europe)
- Contractors employed for servicing or repairs
- Educational visits/Site Inspections from a broad range of companies and institutions.

The proposed establishment of a Centralised Maintenance Department in one of the structures will result in an increase of staffing levels by 2-3 persons.

The conversion from temporary to permanent of the single storey modular office block is proposed in order to accommodate visiting staff, contractors and so on, away from the main working areas and offices of the facility. Additional meeting rooms and general office storage and filing space are proposed for this structure also.

5.9 DESCRIPTION OF NATURAL RESOURCES USED

Requirements for natural resources are discussed under Section 17 – Material Assets

5.10 DESCRIPTION OF SECONDARY PROCESS/ACTIVITIES

Off Site Traffic Movements

As stated in Section 5.12, there will be a small increase in traffic to take waste residues off site. This is discussed in Chapter 13. The upgrade of the R152 road outside the plant has been completed to the satisfaction of Meath County Council as required under permission PL.17.219721. There are no further upgrades required to accommodate the proposed amendments. This has been outlined in Chapter 13 Traffic.

On Site Waste/Personnel Movements

The proposed amendments will involve no change to the manner in which on-site traffic is managed. The waste material transported to the facility is directed to the waste reception and processing building for unloading into the waste bunker. Staff are provided with parking facilities located to the east of the gatehouse and weighbridges. No unauthorised personnel are permitted access beyond the gatehouse.
The conversion of the single storey modular office building is designed to keep pedestrian traffic away from the office area of the main facility.

Electricity Generation & Substation

The waste-to-energy plant exports electricity to the local electrical distribution system via a 38 kV line to Rathmullan Substation about 2.5km north of the site. The line is installed as an underground cable and hence does not have any visual impact.

Water

The mains water supply piped along the R152 road supplies many of the residential dwellings in the area. The development uses a small quantity of mains water as a potable supply for the facility. On site water well(s) were installed at the site in June 2011. These are used to supply process water within the facility as detailed in Section 5.7 above.

Sanitary Services

Domestic sewage from toilets, changing and kitchen areas discharge via the foul drainage system into the on site effluent treatment system which pass through a percolation area to ground as detailed in Chapter 9 and 10. There are currently two such percolation areas, one for the main process building facilities and one for the gatehouse. An additional effluent system is proposed for the modular office block as described in Chapter 1.

Telecom

A telecommunications network is in place to the main process building and to all areas of the site where telemetry or remote monitoring is required. All cables are underground and ducted. The proposed amendments do not entail any changes to the existing network.

Monitoring

It is not anticipated that any additional environmental monitoring will be required as a result of the proposed changes. The review of the existing waste licence with the EPA will identify any such requirements.

Security

The proposed amendments do not entail any change to Site Security procedures. All traffic (both vehicular and pedestrian) to the main site must route through the Gatehouse. This is manned by Security Personnel who ensure the procedure for access to site are followed.

A record is kept of all visitors to the site, as well as deliveries and dispatches of waste. All visitors to the site are monitored and supervised at all times.

There is 2.4m high palisade fencing along the frontage to the R152 and the remaining site perimeter boundaries consist of a 2.4m chain link fence.

There are also CCTV cameras at strategic locations around the site which are displayed in the control room.

5.11 REGULATORY CONTROL

In order to operate the waste management facility, Indaver require a licence from the EPA. Indaver currently have a waste licence (ref. W0167-02), and this EIS has also been prepared for a licence review application to the EPA to increase the annual tonnage and to add the new waste types proposed.

5.12 DESCRIPTION OF DECOMMISSIONING

A detailed Closure, Residuals and Aftercare Management Plan (CRAMP) and Environmental Liabilities Risk Assessment (ELRA) have been prepared and submitted to the EPA as part of compliance with Condition 10 of the Waste Licence. As part of this exercise, the costs associated with closing the facility were identified and a bond has also been put in place to the satisfaction of the EPA to cover these costs.

Indaver is currently in discussion with Meath Co. Co. to ascertain if there are additional bonding requirements to meet the planning conditions set out in Conditions 27 & 28 of PL.17.219721.

5.13 DESCRIPTION OF OTHER DEVELOPMENTS

5.13.1 Design & Construction Health and Safety

The facility has been built in accordance with the Safety Health and Welfare at Work Act, 2005, Health, Safety and Welfare at Work (General Application) Regulations, S.I. No. 299 of 2007 and associated Regulations.

The plant was designed and built by skilled personnel according to internationally recognised standards, design codes, legislation, good practice and experience.

Disabled access certificates will be applied for to cover the modular office building and the Central Maintenance Depot.

5.13.2 General Operational Safety

No changes are proposed to the systems and general approach to operational safety. Design Review Risk Assessments including Hazard and operability studies (HAZOPs) were carried out at the detailed design stage of the project. These studies were a systematic method of identifying design hazards and determining necessary mitigation measures.

As outlined in Section 5.6 wastes that will pose a danger to Indaver Personnel or the facility will not be accepted on site, and the screening procedures will ensure that wastes accepted will not require any additional safety aspects to be implemented (other than direct feed for potentially infectious wastes). The transport, acceptance and handling of all materials will be in accordance with all the existing procedures.

Indaver operates a combined Quality, Environmental, Safety & Health (QESH) Management System. It is proposed to apply all of the internationally recognised quality, environmental and health and safety standards/assessment series of our existing hazardous waste business (which operates to ISO 9001:2000, ISO 14001 and OHSAS 18001) to the Meath Facility also.

The QESH policy are the top-level documents of each of these management systems. It defines Indaver's overall aims and objectives with respect to the provision of a quality service to customers, the provision of a quality workplace to employees and the control over the environmental and health & safety impacts of its activities respectively.

Indaver carries out Health & Safety Risk Assessments to identify the health & safety hazards associated with Indaver's activities, assess the level of risk presented by those hazards and determine appropriate safety controls to prevent/minimize risk. The Risk Assessments will be updated to incorporate the proposed new activities at the facility.

Prior to start up a comprehensive set of operational procedures covering all aspects of the different activities were drawn up. The purpose of these procedures is to ensure that Indaver:

- Maintains control over the environmental, quality and safety aspects of its activities;
- Meets the aims laid down in the Environmental, Quality and Health & Safety Policies; and
- Remains compliant with all relevant operating licences, permits and legislative requirements.

In compliance with the Safety, Health and Welfare at Work Act, 2005, Indaver Ireland drew up a safety statement covering the operation of the plant.

The Employees of Indaver represent the Company's greatest asset. By providing opportunities, facilities and financial resources, the Company aims to ensure that all members of staff are in possession of the knowledge, skills and experience necessary to perform their jobs to a satisfactory standard.

The incineration process is controlled manually and automatically by employees and a computerised control system in the control room. Through recruitment, training, performance management, employee development and succession planning, Indaver provides employees with sufficient training, experience & knowledge for their roles and ensures that they are competent to perform them.

In the unlikely event of a failure of the plant, and a simultaneous failure of the supply from the electrical distribution system, the plant's un-interruptible power supply (UPS) will supply electricity to the critical systems, such as the gas cleaning and computer systems. The UPS will be designed to maintain a power supply to the control systems for 15 to 30 minutes.

The emergency generator will come on line at the same time as the UPS and will supply electricity to motors, pumps and fans until the plant is safely shut down.

The plant has an Emergency Response Procedure (SAF 01.00) and dedicated Emergency Response Team (ERT) to respond to any emergency situations that may arise. Please refer to Appendix 5.4

5.13.3 Fire Safety

Due to the waste screening measures proposed and the exclusion of certain waste types, it is not proposed to change the approach to the existing fire safety and systems which have been agreed in detail with the local fire officer.

Indaver now have in place fire safety certificates for the main building, the gatehouse, pumphouse and the 38KVa substation.

Fire safety certificates will be required for the office accommodation and the maintenance warehouse.

5.13.4 Potential Operating Hazards

There is no change to the operating hazards identified or the safety measures proposed in the application of 2006 or as detailed in amendment to existing permission in the EIS in 2009.

5.14 SITE STATUS IN RELATION TO THE EU CONTROL OF MAJOR ACCIDENTS HAZARDS INVOLVING DANGEROUS SUBSTANCES DIRECTIVE

The site is not a Seveso site. During the course of the previous applications, the HSA has assessed the site and formed the view that the Regulations of SI No. 74 of 2006 do not apply. The proposed amendments will not result in any change in status. This is because the wastes, with a hazardous designation, proposed to be accepted in this application will not be listed substances under the directive nor will they qualify under any of the generic hazard criteria. There is no proposed change to any storage capacities for any substances that are in scope of the Directive and hence there can be no further contribution to the maximum inventory calculations on the site. In addition, part of the screening assessment for new waste streams will include exclusion criteria for such materials.

Appendix 5.1

Month overview validated day-averages (incl. confidence interval)

Month **Sep-11**

ME1

Day/Month	CO	Dust	HCl	HF	NOx	SO_2	TOC	Temp oven 1
	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	°C
Limit	**50**	**10**	**10**	**1**	**200**	**50**	**10**	**850**
Average	3.9	0.1	0.4	0.0	102.5	3.8	0.9	899

N.A. : Not Available
S.D. : Shut Down

Measurements standardised at normal conditions (licence condition 4.2)
Confidence interval taken in account (licence condition 4.1.1.2)
Start-up and shut down excluded (licence condition 4.1.1.1)

Month overview validated day-averages (incl. confidence interval)

Month **Oct-11**

ME1

Day/Month	CO	Dust	HCl	HF	NOx	SO_2	TOC	Temp oven 1
	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	°C
Limit	**50**	**10**	**10**	**1**	**200**	**50**	**10**	**850**
Average	2.6	0.0	0.8	0.0	102.1	2.5	0.9	917

N.A. : Not Available
S.D. : Shut Down

Measurements standardised at normal conditions (licence condition 4.2)
Confidence interval taken in account (licence condition 4.1.1.2)
Start-up and shut down excluded (licence condition 4.1.1.1)

Month overview validated day-averages (incl. confidence interval)

Month **Nov-11**

ME1

Day/Month	CO	Dust	HCl	HF	NOx	SO_2	TOC	Temp oven 1
	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	°C
Limit	**50**	**10**	**10**	**1**	**200**	**50**	**10**	**850**
Average	2.1	0.1	0.6	0.0	121.3	8.0	0.4	915

N.A. : Not Available
S.D. : Shut Down

Measurements standardised at normal conditions (licence condition 4.2)
Confidence interval taken in account (licence condition 4.1.1.2)
Start-up and shut down excluded (licence condition 4.1.1.1)

Month overview validated day-averages (incl. confidence interval)

Month **Dec-11**

ME1

Day/Month	CO	Dust	HCl	HF	NOx	SO_2	TOC	Temp oven 1
	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	mg/Nm3 dr, by 11% O2	°C
Limit	**50**	**10**	**10**	**1**	**200**	**50**	**10**	**850**
Average	2.8	0.1	1.2	0.1	124.4	21.2	0.2	929

N.A. : Not Available
S.D. : Shut Down

Measurements standardised at normal conditions (licence condition 4.2)
Confidence interval taken in account (licence condition 4.1.1.2)
Start-up and shut down excluded (licence condition 4.1.1.1)

F079940 SGS IRELAND LTD
Attn: Eugene Kirwan
GROUND FLOOR
HAZEL HOUSE
MILLENNIUM PARK
NAAS
IRELAND

ANALYTICAL REPORT : IAC12-00431

Your reference:	Dioxin Cartridge - 05/01 - 19/01/2012
Number of samples:	1
Date of receipt:	24/01/2012

Identification of the samples:

Cartridge LAB INDAVER-Measurement 1 - 5/1/12 u 19/1/12-AMESA 2

Analytical results:

B Determination of 2,3,7,8 substituted PCDF's and PCDD's
(HRGC/HRMS; ECO/AV/IAC/001 (EN1948-2 & 3))

The analyses marked with B are Belac ISO17025 accredited (N.005-TEST)

ANTWERP, 14/02/2012

I.A.C.
A division of SGS Belgium NV

ISO17025 (N.005-TEST)

Marc Van Ryckeghem
Division Manager

ANALYTICAL REPORT : IAC12-00431

Determination of 2,3,7,8 substituted PCDF's and PCDD's

Sample identification : IAC12-00431.001

Your reference: Cartridge LAB INDAVER-Measurement 1 - 5/1/12 u 19/1/12-AMESA 2

Start date: 05/01/2012

End date: 19/01/2012

Sampled volume (Nm³): 136,395

Oxygen concentration(vol%): 8,1133

Component	Concentration (ng/Nm³)	I-TEF	I-TEQ (ng/Nm³)
2,3,7,8-TCDF	0,00025	0,1	0,000025
2,3,7,8-TCDD	0,000063	1	0,000063
1,2,3,7,8-PeCDF	0,00035	0,05	0,000017
2,3,4,7,8-PeCDF	0,00093	0,5	0,00046
1,2,3,7,8-PeCDD	0,00053	0,5	0,00026
1,2,3,4,7,8-HxCDF	0,00070	0,1	0,000070
1,2,3,6,7,8-HxCDF	0,00086	0,1	0,000086
2,3,4,6,7,8-HxCDF	0,0014	0,1	0,00014
1,2,3,7,8,9-HxCDF	<0,000073	0,1	< 0,0000073
1,2,3,4,7,8-HxCDD	0,00054	0,1	0,000054
1,2,3,6,7,8-HxCDD	0,0015	0,1	0,00015
1,2,3,7,8,9-HxCDD	0,0010	0,1	0,00010
1,2,3,4,6,7,8-HpCDF	0,0035	0,01	0,000035
1,2,3,4,7,8,9-HpCDF	<0,00092	0,01	< 0,0000092
1,2,3,4,6,7,8-HpCDD	0,0050	0,01	0,000050
OCDF	<0,0018	0,001	< 0,0000018
OCDD	0,0064	0,001	0,0000064
Total			0,0015 - 0,0016
Total 11% O2			0,00119 - 0,00120

The TEQ values have been calculated using the toxicity equivalence factors according to J.A. van Zorge et al. (Chemosphere 19 (1989), 1881-1895).

The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.
The RSD of the control sample is less than 10%.

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Recovery standards - 2,3,7,8 substituted PCDF's and PCDD's	
Sample identification : IAC12-00431.001 Your reference: Cartridge LAB INDAVER-Measurement 1 - 5/1/12 u 19/1/12-AMESA 2 Start date: 05/01/2012 End date: 19/01/2012 Sampled volume (Nm³): 136,395 Oxygen concentration(vol%): 8,1133	
Recovery sampling standards	
Component	Recovery 13C-sampling standards (%)
13C-1,2,3,7,8-PeCDF	108
13C-1,2,3,7,8,9-HxCDF	113
13C-1,2,3,4,7,8,9-HpCDF	86,2
Recovery extraction standards	
Component	Recovery 13C-extraction standards (%)
13C-2,3,7,8-TCDF	97,7
13C-2,3,4,7,8-PeCDF	105
13C-1,2,3,4,7,8-HxCDF	82,1
13C-1,2,3,6,7,8-HxCDF	78,8
13C-2,3,4,6,7,8-HxCDF	83,1
13C-1,2,3,4,6,7,8-HpCDF	72,9
13C-OCDF	47,0
13C-2,3,7,8-TCDD	80,9
13C-1,2,3,7,8-PeCDD	103
13C-1,2,3,4,7,8-HxCDD	82,3
13C-1,2,3,6,7,8-HxCDD	82,9
13C-1,2,3,4,6,7,8-HpCDD	70,4
13C-OCDD	56,7

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ADDENDUM ANALYTICAL REPORT : IAC12-00431

- **Precision of the method :**

The precision of the method is expressed in the intra-laboratory reproducibility and the repeatability, based on the results of the control sample and the results of the validation of the method.

Intra-laboratory reproducibility
Control sample: RSD = 5,6 % (amount sum 17 toxic congeners = 5000 ng TEQ / kg ; n = 33).
(RSD = Relative Standard Deviation).

Repeatability
Emission: RSD = 3,3 % (amount sum 17 toxic congeners = 0,02 ng TEQ ; n = 7).
Emission: RSD = 1,0 % (amount sum 17 toxic congeners = 0,5 ng TEQ ; n = 7).
(RSD = Relative Standard Deviation).

Measurement uncertainty
The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.

- **Sample storage:**

Temperature of the sample storage: below 4 °C.
Date and time that the sample was stored in the sample storage, see column 2.

- **Extraction :**

The part of the sample (filter, condensate or XAD-2) to which the extraction standard was added: XAD-2
The part of the extraction standard which was added to the XAD-2: 100 %.
Date and time that the extraction standard was added to the XAD-2, see column 3.
Weight condensate, see column 6 (whenever applicable).

- **Evaporation :**

Volume of the extract after evaporation: 0,25 ml.

- **Addition of the injection standard :**

Date and time that the injection standard was added, see column 4.
Date and time of the injection, see column 5.

Volume of the extract at injection: 25 µl.

Sample number	Storage date - time	Extraction std date - time	Injection std date - time	Injection date - time
IAC12-00431.001	24/1/2012 - 12:47	01/2/2012 - 14:20	03/2/2012 - 12:55	12/2/2012 - 19:26

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F079940 SGS IRELAND LTD
Attn: Eugene Kirwan
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ANALYTICAL REPORT : IAC12-00674

Your reference:	Dioxin Cartridge - 19/01 - 02/02/2012
Number of samples:	1
Date of receipt:	6/02/2012

Identification of the samples:

Cartridge LAB INDAVER-Measurement 2 - 19/1/12 u 2/2/12-AMESA 1

Analytical results:

B Determination of 2,3,7,8 substituted PCDF's and PCDD's
(HRGC/HRMS; ECO/AV/IAC/001 (EN1948-2 & 3))

The analyses marked with B are Belac ISO17025 accredited (N.005-TEST)

ANTWERP, 16/02/2012

I.A.C.
A division of SGS Belgium NV

ISO17025 (N.005-TEST)

Marc Van Ryckeghem
Division Manager

ANALYTICAL REPORT : IAC12-00674

Determination of 2,3,7,8 substituted PCDF's and PCDD's

Sample identification : IAC12-00674.001

Your reference: Cartridge LAB INDAVER-Measurement 2 - 19/1/12 u 2/2/12-AMESA 1

Start date: 19/01/2012

End date: 02/02/2012

Sampled volume (Nm³): 152,932

Oxygen concentration(vol%): 8,3

Component	Concentration (ng/Nm³)	I-TEF	I-TEQ (ng/Nm³)
2,3,7,8-TCDF	0,00037	0,1	0,000037
2,3,7,8-TCDD	0,000095	1	0,000095
1,2,3,7,8-PeCDF	0,00053	0,05	0,000026
2,3,4,7,8-PeCDF	0,0011	0,5	0,00057
1,2,3,7,8-PeCDD	0,00059	0,5	0,00029
1,2,3,4,7,8-HxCDF	0,00077	0,1	0,000077
1,2,3,6,7,8-HxCDF	0,00094	0,1	0,000094
2,3,4,6,7,8-HxCDF	0,0011	0,1	0,00011
1,2,3,7,8,9-HxCDF	<0,000065	0,1	< 0,0000065
1,2,3,4,7,8-HxCDD	0,00045	0,1	0,000045
1,2,3,6,7,8-HxCDD	0,0012	0,1	0,00012
1,2,3,7,8,9-HxCDD	0,00077	0,1	0,000077
1,2,3,4,6,7,8-HpCDF	0,0056	0,01	0,000056
1,2,3,4,7,8,9-HpCDF	<0,00082	0,01	< 0,0000082
1,2,3,4,6,7,8-HpCDD	0,0031	0,01	0,000031
OCDF	0,0030	0,001	0,0000030
OCDD	0,0031	0,001	0,0000031
Total			0,00163 - 0,00164
Total 11% O2			0,00128 - 0,00130

The TEQ values have been calculated using the toxicity equivalence factors according to J.A. van Zorge et al. (Chemosphere 19 (1989), 1881-1895).

The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.
The RSD of the control sample is less than 10%.

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Recovery standards - 2,3,7,8 substituted PCDF's and PCDD's	
Sample identification : IAC12-00674.001 Your reference: Cartridge LAB INDAVER-Measurement 2 - 19/1/12 u 2/2/12-AMESA 1 Start date: 19/01/2012 End date: 02/02/2012 Sampled volume (Nm³): 152,932 Oxygen concentration(vol%): 8,3	
Recovery sampling standards	
Component	Recovery 13C-sampling standards (%)
13C-1,2,3,7,8-PeCDF	109
13C-1,2,3,7,8,9-HxCDF	126
13C-1,2,3,4,7,8,9-HpCDF	109
Recovery extraction standards	
Component	Recovery 13C-extraction standards (%)
13C-2,3,7,8-TCDF	84,4
13C-2,3,4,7,8-PeCDF	84,0
13C-1,2,3,4,7,8-HxCDF	68,5
13C-1,2,3,6,7,8-HxCDF	66,3
13C-2,3,4,6,7,8-HxCDF	72,1
13C-1,2,3,4,6,7,8-HpCDF	75,6
13C-OCDF	78,8
13C-2,3,7,8-TCDD	75,0
13C-1,2,3,7,8-PeCDD	87,7
13C-1,2,3,4,7,8-HxCDD	79,4
13C-1,2,3,6,7,8-HxCDD	81,6
13C-1,2,3,4,6,7,8-HpCDD	83,8
13C-OCDD	91,7

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ADDENDUM ANALYTICAL REPORT : IAC12-00674

- **Precision of the method :**

The precision of the method is expressed in the intra-laboratory reproducibility and the repeatability, based on the results of the control sample and the results of the validation of the method.

Intra-laboratory reproducibility
Control sample: RSD = 5,6 % (amount sum 17 toxic congeners = 5000 ng TEQ / kg ; n = 33).
(RSD = Relative Standard Deviation).

Repeatability
Emission: RSD = 3,3 % (amount sum 17 toxic congeners = 0,02 ng TEQ ; n = 7).
Emission: RSD = 1,0 % (amount sum 17 toxic congeners = 0,5 ng TEQ ; n = 7).
(RSD = Relative Standard Deviation).

Measurement uncertainty
The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.

- **Sample storage:**

Temperature of the sample storage: below 4 °C.
Date and time that the sample was stored in the sample storage, see column 2.

- **Extraction :**

The part of the sample (filter, condensate or XAD-2) to which the extraction standard was added: XAD-2
The part of the extraction standard which was added to the XAD-2: 100 %.
Date and time that the extraction standard was added to the XAD-2, see column 3.
Weight condensate, see column 6 (whenever applicable).

- **Evaporation :**

Volume of the extract after evaporation: 0,25 ml.

- **Addition of the injection standard :**

Date and time that the injection standard was added, see column 4.
Date and time of the injection, see column 5.

Volume of the extract at injection: 25 µl.

Sample number	Storage date - time	Extraction std date - time	Injection std date - time	Injection date - time
IAC12-00674.001	07/2/2012 - 09:40	13/2/2012 - 15:15	15/2/2012 - 14:00	15/2/2012 - 22:19

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F079940 SGS IRELAND LTD
Attn: Eugene Kirwan
GROUND FLOOR
HAZEL HOUSE
MILLENNIUM PARK
NAAS
IRELAND

ANALYTICAL REPORT : IAC12-00953

Your reference:	Dioxin Cartridge - 02/02 - 16/02/2012
Number of samples:	1
Date of receipt:	20/02/2012

Identification of the samples:

Cartridge LAB INDAVER-Measurement 2 - 2/2 u 16/2/12

Analytical results:

B Determination of 2,3,7,8 substituted PCDF's and PCDD's
(HRGC/HRMS; ECO/AV/IAC/001 (EN1948-2 & 3))

The analyses marked with B are Belac ISO17025 accredited (N.005-TEST)

ANTWERP, 06/03/2012

I.A.C.
A division of SGS Belgium NV

ISO17025 (N.005-TEST)

Marc Van Ryckeghem
Division Manager

ANALYTICAL REPORT : IAC12-00953

Determination of 2,3,7,8 substituted PCDF's and PCDD's

Sample identification : IAC12-00953.001

Your reference: Cartridge LAB INDAVER-Measurement 2 - 2/2 u 16/2/12

Start date: 02/02/2012

End date: 16/02/2012

Sampled volume (Nm³): 199,723

Oxygen concentration (vol%): 9,3019

Component	Concentration (ng/Nm³)	I-TEF	I-TEQ (ng/Nm³)
2,3,7,8-TCDF	0,00021	0,1	0,000021
2,3,7,8-TCDD	0,000058	1	0,000058
1,2,3,7,8-PeCDF	0,00039	0,05	0,000020
2,3,4,7,8-PeCDF	0,00057	0,5	0,00029
1,2,3,7,8-PeCDD	0,00028	0,5	0,00014
1,2,3,4,7,8-HxCDF	0,00028	0,1	0,000028
1,2,3,6,7,8-HxCDF	0,00054	0,1	0,000054
2,3,4,6,7,8-HxCDF	0,0013	0,1	0,00013
1,2,3,7,8,9-HxCDF	<0,00012	0,1	< 0,000012
1,2,3,4,7,8-HxCDD	0,00035	0,1	0,000035
1,2,3,6,7,8-HxCDD	0,0010	0,1	0,00010
1,2,3,7,8,9-HxCDD	0,00059	0,1	0,000059
1,2,3,4,6,7,8-HpCDF	0,0020	0,01	0,000020
1,2,3,4,7,8,9-HpCDF	<0,0014	0,01	< 0,000014
1,2,3,4,6,7,8-HpCDD	0,0026	0,01	0,000026
OCDF	<0,0029	0,001	< 0,0000029
OCDD	<0,0029	0,001	< 0,0000029
Total			0,00098 - 0,0010
Total 11% O2			0,00084 - 0,00087

The TEQ values have been calculated using the toxicity equivalence factors according to J.A. van Zorge et al. (Chemosphere 19 (1989), 1881-1895).

The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.
The RSD of the control sample is less than 10%.

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Recovery standards - 2,3,7,8 substituted PCDF's and PCDD's	
Sample identification : IAC12-00953.001 Your reference: Cartridge LAB INDAVER-Measurement 2 - 2/2 u 16/2/12 Start date: 02/02/2012 End date: 16/02/2012 Sampled volume (Nm³): 199,723 Oxygen concentration (vol%): 9,3019	
Recovery sampling standards	
Component	Recovery 13C-sampling standards (%)
13C-1,2,3,7,8-PeCDF	157
13C-1,2,3,7,8,9-HxCDF	125
13C-1,2,3,4,7,8,9-HpCDF	67,7
Recovery extraction standards	
Component	Recovery 13C-extraction standards (%)
13C-2,3,7,8-TCDF	113
13C-2,3,4,7,8-PeCDF	78,9
13C-1,2,3,4,7,8-HxCDF	130
13C-1,2,3,6,7,8-HxCDF	94,6
13C-2,3,4,6,7,8-HxCDF	95,0
13C-1,2,3,4,6,7,8-HpCDF	90,6
13C-OCDF	57,5
13C-2,3,7,8-TCDD	91,0
13C-1,2,3,7,8-PeCDD	89,8
13C-1,2,3,4,7,8-HxCDD	102
13C-1,2,3,6,7,8-HxCDD	87,4
13C-1,2,3,4,6,7,8-HpCDD	63,5
13C-OCDD	53,9

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ANALYTICAL REPORT : IAC12-00953

ADDENDUM ANALYTICAL REPORT : IAC12-00953

- **Precision of the method :**

The precision of the method is expressed in the intra-laboratory reproducibility and the repeatability, based on the results of the control sample and the results of the validation of the method.

Intra-laboratory reproducibility
Control sample: RSD = 5,6 % (amount sum 17 toxic congeners = 5000 ng TEQ / kg ; n = 33).
(RSD = Relative Standard Deviation).

Repeatability
Emission: RSD = 3,3 % (amount sum 17 toxic congeners = 0,02 ng TEQ ; n = 7).
Emission: RSD = 1,0 % (amount sum 17 toxic congeners = 0,5 ng TEQ ; n = 7).
(RSD = Relative Standard Deviation).

Measurement uncertainty
The measurement uncertainty has been determined and is available in the laboratory. On request, the data will be transmitted.

- **Sample storage:**

Temperature of the sample storage: below 4 °C.
Date and time that the sample was stored in the sample storage, see column 2.

- **Extraction :**

The part of the sample (filter, condensate or XAD-2) to which the extraction standard was added: XAD-2
The part of the extraction standard which was added to the XAD-2: 100 %.
Date and time that the extraction standard was added to the XAD-2, see column 3.
Weight condensate, see column 6 (whenever applicable).

- **Evaporation :**

Volume of the extract after evaporation: 0,25 ml.

- **Addition of the injection standard :**

Date and time that the injection standard was added, see column 4.
Date and time of the injection, see column 5.

Volume of the extract at injection: 25 µl.

Sample number	Storage date - time	Extraction std date - time	Injection std date - time	Injection date - time
IAC12-00953.001	21/2/2012 - 09:49	01/3/2012 - 13:50	05/3/2012 - 13:30	06/3/2012 - 07:37

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Appendix 5.2

	Procedure Title:	**Waste Acceptance Criteria**		
	Procedure Ref.	ENV 01.00		
	Version:	0	**Pages:**	8
	Issue Date:		**Last Modified:**	18.07.2011
	Owner:	Aidan Kennedy Process Engineer		

1. Purpose

This document has been prepared to give clear guidelines on the type of waste that can be accepted at Meath Waste-to-Energy.

2. Definition

EWC - European Waste Catalogue
LIMS - Laboratory Information Management System
MSW - Municipal Solid Waste
WAC – Waste Acceptance Criteria
QESH – Quality, Environmental Safety and Health
SAP – Management Software System

3. Responsibilities

The process engineer has responsibility to approve waste based on criteria listed below before it arrives on site.

4. References

Waste handling procedure ENV 02.00
Waste Licence W0167-02

5. Procedure

<u>Details on the methodology for waste profiling for new and existing customers:</u>

Pre-Acceptance

Information requested from potential customer:

- A meeting takes place between the Account Manager and customer contact.
- Licence conditions are made known to the customer such as waste acceptance criteria, source segregation, facility opening hours.
- Potential waste type(s) for acceptance are discussed and may be viewed in certain cases by the Process Engineer.
- Information is gathered from the customer and this information, such as waste type, source of waste including the process producing the waste, composition, physical state and appearance,

packaging type is sent to the technical department for classification (see classification procedure Operations 4.2). Should there be insufficient information to classify the waste a chemical analysis may be required.

- Waste is then put into any of the following categories:
    - MSW or equivalent
    - Sludge
    - Liquids
    - Non MSW

- The EWC code is checked versus the licence to ensure that the waste type can be accepted under the licence.
- If the customer is the haulier for the waste, a letter of acceptance is created from Indaver (or this may have been completed in advance of the signing of the contract) and sent to the customer to ensure that their waste collection permit is updated with our facility. Then a copy of the updated waste collection permit is sent to our QESH department for filing.
- The contract is then put in place with the customer.
- The contract is valid for the period stated in the contract.
- Based on the contract deliveries are planned in advance. All loads and sales orders are stored on our SAP system. The classification is stored in the Laboratory Information Management System (LIMS) and reports can be produced at any time which show the classification of the waste type.

Sampling and Analysis

Number of analyses required:

- Number of analyses required will be decided upon on the basis of information received on the waste stream. In many cases one analysis is sufficient to accept the waste stream.
- In the case of municipal waste or where reliable and complete composition and information on the waste is received, analysis will not be required.

Who completes the sampling and analysis:

- The sampling can be completed by either the customer or an Indaver representative.
- The analysis of the samples are to be completed by an approved contracted laboratory.

Approach to verification sampling and analysis by Indaver, during initial profiling and on an ongoing basis, including frequency of testing:

- After the results of the sample have shown compliance with the Indaver WAC a trial load can be organised. This is agreed with the planner and the Process Engineer.
- Should there be any changes to the process or composition then a new sample may be requested. It is the customers responsibility to inform Indaver of these updates/changes to process.
- When the contract for this waste stream gets renewed, the quotation is reviewed and updated as necessary on the SAP system.
- During the contract should there be any anomalies with the waste stream this will be raised and preventative and corrective measures would be investigated. This could include a reclassification of the waste stream or update on the composition of the waste or analysis.

Non-conforming Waste

Actions in the event of a non-conformance with waste acceptance criteria:

- Should a waste stream be inspected and found to be in non compliance with the original composition of the waste then the Planner/ Account Manager is informed. An investigation will then occur. Here the received waste type will be investigated as to whether it is possible to treat the waste under the licence and operationally. Should the waste stream not be treatable under our licence or operationally then the waste is moved to quarantine and is quarantined as per ENV 02.00.
- Should the waste be outside tolerable limits and not be feasible to be treated within the process then the waste will not be accepted.

Specific Waste Acceptance Criteria:

Waste acceptance criteria are designed to fulfil the requirements of:

- Licence and planning conditions
- Operational conditions such as size
- Safety procedures
- Chemical restrictions
- Practical experience of operating a waste to energy plant

Licence and planning conditions

- Waste will only be accepted from known customers or new customers subject to initial profiling and characterisation.
- Deliveries of waste will only be accepted from authorised or exempted carriers under national or European legislation.
- Deliveries must be booked in advance.
- Waste collectors must hold a valid waste collection permit and Indaver will hold copies of this in their internal system.
- Delivery of waste is allowed between 08.00 and 18.30 from Monday to Friday and 08.00 and 14.00 on Saturdays.
- All waste accepted at the plant will be characterised prior to planning the acceptance of the load.
- Loads must be covered when they arrive on site.

The full list of acceptable waste streams, by EWC code, is provided in Schedule A of the current waste licence. Only EWC codes listed on our current waste licence are acceptable.

The following categories will not be accepted;

- EWC codes not on the current waste licence
- Source segregated recyclable material, unless by agreement with the EPA (i.e. due to contamination or a failure in the recycling market)

Procedure: Classification & Identification of Waste

Reference	Status	Version	Owner
Operations_4.2	Authorised	13	Denise Cunningham

Type Operations Manual **Sub-Type** Classification & Identification of Waste

1. Purpose

The purpose of this procedure is to define the steps to be taken when an item or list of items, requiring identification & classification, is received by the technical department from the Commercial Department, Waste Treatment Department, Logistics Department, TWM Department, Customer Support/Sales Support department or from a customer or any other route and how the identification & classification is recorded.

All waste material must be identified & classified as follows under all relevant regulations prior to collection:

1. Categorise waste as Green or Amber under the Waste Movement Regulations - Council Regulation EC No 1013 of 2006 on shipments of waste and S.I. 419 of 2007 Waste Management (Shipments of Waste) Regulations 2007
2. Identify the most appropriate EWC number for a waste stream from the European Waste Catalogue/Hazardous Waste List
3. Identify the most appropriate TFS code for the waste stream, either BASEL Code, OECD code or EWC code
4. Select appropriate hazard numbers if any from Part III of the Second Schedule of the Waste Management Act 1996
5. Classify the waste in accordance with the ADR & IMDG Code regulations governing the transport of dangerous goods by road and sea
6. If the waste is going for Landfill then classify in accordance with 2003/33/EC (establishing criteria and procedures for the acceptance of waste at landfills)

2. Definition

TFS - Transfrontier Shipment Form - A TFS is a document consisting of a Notification Form and a Movement/Tracking Form and associated annexes,contracts and financial guarantee. It is the legal documentation required for shipping material under EC No. 1013 of 2006 enacted in Ireland under Waste Management (Shipments of Waste) Regulations S.I. 419 of 2007. Essentially it is an export licence
EWC - European Waste Catalogue
HWL - Hazardous Waste List (The European Waste Catalogue and the Hazardous Waste List have been

amalgamated into a single list by indicating on the EWC if a waste is on the hazardous waste list by means of an asterisk)
ADR - Regulations governing the transport of dangerous good by road
IMDG - Regulations governing the transport of dangerous good by sea
RID - Regulations governing the transport of dangerous good by rail
Basel Code - Code consisting of a letter followed by 4 numbers. Originates from Basel Convention
OECD Code - Code consisting of 2 letters followed by 3 numbers. Originates from the OECD
ODS - Ozone Depleting Substance
WCP – Waste Collection Permit

3. Responsibilities

It is the responsibility of the Technical Department to ensure that all materials prepared for shipment are correctly identified & classified in accordance with all relevant waste and transport regulations.

Only a member of the Technical Department can perform classifications. It is the responsibility of each member of staff involved in the shipment of waste material to ensure the material being shipped has been classified by an appropriate person.

It is the responsibility of the Quality & Environmental Manager to ensure that the most up to date versions of the EWC/HWL, ADR & IMDG are available to members of the technical team and that the most up to date versions of the EWC/HWL, Consolidated Basel & OECD list are available to all members of the logistics team.

4. References

Raising a TFS (Operations 3.6)
Obtaining Licenses for the shipment of Controlled Drugs (Operations 2.4)
Safety Data Sheets (Operations 4.8)
Meath Waste to Energy Facility Licence (W0167-02)
SAP TS Catalogue

Waste Regulations:

Waste Management (Shipments of Waste) Regulations 2007 - S.I. No. 419 of 2007
Council Regulation (EC) No. 1013 of 2006 on shipments of waste
Waste Management Act 1996
Waste Management (Amendment of Waste Management Act, 1996) Regulations 1998
Waste Management (Amendment) Act, 2001
2003/33/EC (establishing criteria and procedures for the acceptance of waste at landfills) - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:011:0027:0049:EN:PDF
European Communities (Shipments of Hazardous Waste Exclusively Within Ireland) Regulations 2011 (S.I. 324 of 2011)

Transport Regulations:

International Maritime Dangerous Goods Code - current edition
ADR Regulations - current edition
RID Regulations - current edition
S.I. 616 of 2010 European Communities (Carriage of Dangerous Goods by Road Act 1998)(Amendment) Regulations 2010
S.I. 349 of 2011 European Communities (Carriage of Dangerous Goods by Road and Use of Transportable Pressure Equipment) Regulations 2011

Note: For waste to be transported by Rail again the Technical team must be consulted so that an outside

contractor can be contacted to approve this. Finbarr O' Mahony of Environmental Health & Safety is our consultant for RID

Other Transport Regulations
IATA (International Air Transport Authority) Dangerous Goods Regulations
ICAO (International Civil Aviation Organisations) Technical Instructions for the Safe Transport of Dangerous Goods by Air
CFR 49 (Code of Federal Regulations)

Note: Indaver's Technical Team do not classify waste for Air Transport or for transport in the United States

EWC Commission Decisions:

The current European Waste Catalogue and hazardous waste list is based on current EU legislation, i.e. Commission Decision 2000/532/EC on 3rd May 2000. This introduced a replacement waste list and hazardous waste list and came into force on 1st January 2002. This replacement list was amended a further three times as detailed below.

As amended by:

Commission Decision 2001/118/EC

Commission Decision 2001/119/EC

Commission Decision 2001/573/EC

Therefore all four documents are needed to have a complete list. The current consolidated document 'European Waste Catalogue and Hazardous Waste List' is a consolidated version of all four commission directives.

EPA Publication - European Waste Catalogue and Hazardous Waste List.

European Waste Catalogue & Hazardous Waste Lis

Other sources of information:

"Procedure for the Identification of the Hazardous Components of Waste" developed for the EPA by the Clean Technology Centre

Procedure for the Identification of the Hazardous Components of Waste - Main Re

Paper Tool.pdf Hazardous Waste Classification Worksheet

Appropriate Chemical Dictionaries e.g. SAX's Dangerous Properties of Industrial Materials, Hawley's Condensed Chemical Dictionary.
Customer Material Safety Data Sheet Folders in Adest
Sigma Aldrich Online Material Safety Data Sheet Database
Internet MSDS Libraries
Consolidated Basel Code & OECD Code list
Regulation (EC) No 2037/2000 on substances that deplete the ozone layer
S.I. No. 281 of 2006 Control of Substances that Deplete the Ozone Layer Regulations 2006

CHIP Regulations (Approved Supply List published by HSC - Chemicals (Hazard Identification and Packaging for Supply) Regulations
S.I. No 62 of 2004 European Communities (Classification, Packaging and Labelling of Dangerous Preparations) Regulations 2004
S.I. No 116 of 2003 European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations 2003
BAM List Requirements for Tanks for the Transport of Dangerous Goods
AVG Repacking Spreadsheet

Offer_Irland_new.xls

5. Procedure

Requesting Classification

Upon receipt of a list of materials to be classified from a customer the sales support/customer support must enter the details on the mastertable for that customer. The mastertable must then be sent to Technical for the initial classification of the materials (Level 1 classification).

If the customer is a key account or 'Top 60' customer then the dedicated Technical person, as per the customer focus group should be emailed directly with the request and approximate timeframe for completion given.
If the customer is a 'small' customer then the request should be emailed to 'to be classified'.

On receipt of a classification request the Technical Advisor must then go to the relevant mastertable for the customer and populate the following cells on the spreadsheet:

1. Waste Description
2. EWC Code
3. State of Matter
4. UN Code
5. Packaging Group
6. Remarks (if any)

The customer waste descriptions should also be reviewed and changed if necessary so that as many waste types as possible can be moved on the same waste material number.
Waste can fit under the same Material Number if they have the same UN number, EWC Code, Segregation Details and Organic/Inorganic.

When choosing a waste description, the SAP TS Catalogue must first be checked and wherever possible and existing waste description should be chosen from this list so that waste descriptions are consistent.

If this is not possible and a new material needs to be set up for the waste, then a request should be sent to Waste Treatment department (WT) to get the new waste description and EWC code added to the catalogue.

Wherever possible a pre-categorised MM number should be chosen so that as many wastes as possible can be moved on that description. Customer specific materials should only be set up for waste streams that move in high tonnages or for very dangerous substances that would move often.

Identification of Appropriate EWC Number

European Waste Catalogue / Hazardous Waste List:

All waste moved by Indaver must be assigned a European Waste Code. These codes are listed in the European Waste Catalogue / Hazardous Waste List.

A consolidated version of this list and the associated amendments was published by the EPA and hard copies of this publication is provided to all logistics personnel as part of their TFS training. (Amended versions and details of amendments to this list are circulated to members of staff by the Quality & Environmental Manager).

The EWC list is broken down into 20 chapters (detailed below). Each chapter deals with a different process or industry of generation of the waste

01 Waste resulting from exploration, mining, quarrying, physical and chemical treatment of minerals
02 Waste from agricultural, horticultural, aquaculture, forestry, hunting and fishing, food preparation and processing
03 Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard
04 Wastes from leather, fur and textile industries
05 Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal
06 Wastes from inorganic chemical processes
07 Wastes from organic chemical processes
08 Wastes from the manufacture, formulation, supply and use (MFSU) of coatings, (paints, varnishes and vitreous enamels), sealants and printing inks
09 Wastes from the photographic industry
10 Wastes from thermal processes
11 Waste from chemical surface treatment and coating of metals and other materials; non-ferrous hydro-metallurgy
12 Wastes from shaping and physical and mechanical surface treatment of metals and plastics
13 Oil wastes and wastes of liquid fuels (except edible oils, 05 and 12)
14 Wastes organic solvents, refrigerants and propellants (except 07 and 08)
15 Waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified
16 Waste not otherwise specified in the list
17 Construction and demolition wastes (including excavated soil form contaminated sites)
18 Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)
19 Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use
20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions.

See the European Waste Catalogue/Hazardous Waste List for the complete listing of codes in each chapter

Identifying the Appropriate EWC Numbers:

From the full European Waste Catalogue listing the following steps should be followed:

- Identify if the process that generated the waste is described by any of the chapters **01 to 12 or 17 to 20**.

  If yes then identify if there is an appropriate six-digit code within the chosen chapter (excluding the codes ending in 99) that describes the waste (The codes ending in 99 should be chosen only as a last option after all 20 chapters have been reviewed)

  Note :

  A specific industry/process of generation may need to classify its wastes in several chapters. For

instance, a car manufacturer may find its wastes listed in any of the following, Chapter 12 (Wastes from shaping and physical and mechanical surface treatment of metals and plastics), Chapter 11 (Waste from chemical surface treatment and coating of metals and other materials; non-ferrous hydro-metallurgy), or Chapter 08 (Wastes from the manufacture, formulation, supply and use (MFSU) of coatings, (paints, varnishes and vitreous enamels), sealants and printing inks)

- If no appropriate waste code can be found in chapters 01 to 12 or 17 to 20 **then the chapters 13, 14 and 15** must be examined to identify the waste. If none of these waste codes apply, then the waste must be identified according to **chapter 16**.

- Finally if the waste is not described in chapter 16 then the 99 code (waste not otherwise specified) within the chapter describing the process that generated the waste must be used e.g. 070599

Note: Currently due to Waste collection Permit (WCP) restrictions the following 99 codes can only be selected. If we have a waste stream that is classified as another '99' code then we must contact the QESH Department to ensure that this code is added to the relevant WCP can be updated and this list must then be also updated.

02 07 99
06 01 99
06 08 99
07 01 99
07 05 99
07 06 99
08 01 99
08 03 99
08 04 99
10 01 99
10 10 99
12 01 99
13 08 99*
19 09 99
20 01 99

EWC codes with mirror entries:

If the EWC number chosen is one with a mirror entry then the EPA Procedure for the Identification of the Hazardous Components of Waste must be followed in order to determine which of the mirror entries should be used to describe the waste if there is a doubt over the choice of the mirror entry i.e. hazardous or non hazardous.
This procedure has been developed in order to interpret current and anticipated Irish and EU legislation with regard to the classification of waste as hazardous or non hazardous. A worksheet has been provided to record the decision path and substantiate any conclusions. The detailed instructions to follow are outlined in the Paper Tool.

To determine if a material is hazardous or non hazardous then the paper tool should be completed. To do this both the CHIP regulations and S.I. No 62 of 2004 European Communities (Classification, Packaging and Labelling of Dangerous Preparations) Regulations 2004 may be consulted to determine the Risk Phrases of the constituents of the waste.

Once the paper tool has been completed then it should be submitted to the EPA for approval.
If the waste is originating from an IPC/IPPC licensed customer then it should be sent to the customer to forward to their inspector.
If the waste is destined to go or from to the Meath Waste to Energy Facility then it should be sent to our inspector.
If the customer is not an IPC/IPPC Licensed customer then we should keep all records on file to prove our

classifications should there be any questions relating to it from the waste outlet.

Note:

If an EWC code is followed by an asterisk then the EWC code describes waste which is hazardous. The list of codes, which have an asterisk originates from the Hazardous Waste List (HWL). However this does not mean that a waste assigned an EWC code which does not have an asterisk (therefore not on the HWL) is non-hazardous waste.
Hazardous Waste is defined in section 4(2) of the Waste Management Act 1996 and 2001 as waste which appears on the Hazardous Waste List or waste which displays any of the properties specified in Part III of the Second Schedule of the Waste Management Act 1996 i.e. explosive, oxidising, flammable, irritant, harmful, toxic or corrosive etc. (see section on Classification of Waste as Hazardous under the Waste Management Act 1996)
Hence if there is no appropriate EWC code on the Hazardous Waste List then an EWC code that does not have asterisk may be used.

EWC codes with aqueous/halogenated:

Certain EWC codes use the terms aqueous, halogenated solvents and other solvents. After seeking advice from the authorities in Europe on what is the definition of halogenated and aqueous etc in waste mixtures we have decided on the following rules and have notified the EPA on these in 2005.

1. If you have >95% water in a mixture then the stream should be classified as aqueous for the purpose of EWC codes
2. If you have <95% water and any amount of halogenated solvents or salts (e.g. chlorides) then the stream should be classified as halogenated for the purpose of EWC codes
3. If you have <95% water and no halogenated compounds then the stream should be classified as non-halogenated (i.e. 'Other') for the purpose of EWC codes

Note:

Some customers are only allowed to use certain pre-determined EWC codes as specified in Table 17 of their IPC/IPPC licence. These customers are identified on the Technical consultation document.
It is the responsibility of each Technical Advisor to update the consultation document as required and to check it when classifying waste to ensure that we classify the waste in accordance with the customer's IPC/IPPC licence.

Also some customers use their own interpretation of when waste is considered Halogenated or not. In this case and if they have always reported their figures to the Agency as such we will continue to operate on their interpretations once they are in accordance with the procedure for assigning EWC Codes as outlined above.

Once you have determined the most appropriate EWC Number the SAP TS Catalogue should be searched for that EWC code and the most appropriate description chosen that fits the waste should be chosen and inputted onto the mastertable.

Classification of Waste in accordance with Transport Regulations

The material must be classified in accordance with the IMDG and ADR regulations governing the transport of dangerous goods by road and sea. For material which is to be transported by rail or air the RID, IATA and ICAO regulations must also be referred to. If this is the case then a qualified consultant must be contacted as no member of the Technical team has qualifications in these regulations.

Classification is the process by which a UN number is assigned to a material. The UN number is an internationally recognised 4-digit number. Their purpose is to uniquely identify a substance, overcoming

language barriers and the fact that many substances have many synonyms.

- Each item must be searched for in accordance with the following hierarchy of reference;

    a) By chemical name in the IMDG and ADR regulations
    b) By customer/manufacturer MSDS (if available)
    c) By chemical name or product code in the Online Sigma Aldrich MSDS database
    d) By chemical name in a variety of Internet MSDS libraries, manufacturer's website etc
    e) By chemical name in a variety of chemical dictionaries

- Transport Regulations: If the item is listed in the transport regulations for the relevant mode of transport then the UN Number, Packing Group and technical information for that particular item is assigned automatically.

  Other sources: If the item is not listed in the transport regulations then other sources (MSDS, chemical dictionaries or sample analysis results) are used to determine the items hazard class(es) as per chapter 2 of ADR/IMDG

- If there is more than one hazard class, the table of precedence must be employed to determine the primary hazard. Once the primary hazard class has been determined the UN number, packing group and relevant technical name (required for the DGN) can be assigned.

- If there is insufficient information to perform a classification then further information must be obtained from the customer. This information can be provided in the form of an MSDS from the customer or details of the chemical composition of the material (analysis).

- When the classification is complete the UN Number and packing group must be are entered on the customer Mastertable

NOTE: Generic Classifications:

As per ADR 2011, Chapter 2.1.3.5.5, waste may classified when the precise composition is unknown based on consignor's knowledge. This is done based on the information the customer provides in relation to possible contents and using a worst case principle to assign the UN number and Packing Group. This procedure may only be used when transporting Bulk tanks to the transfer station or elsewhere for sampling as this provision is not available in IMDG. The tank is then sampled and analysed and the exact composition is used to then classify the waste for its onward IMDG and TFS movement.

If using this provision, then the following must be inputted into the hazard inducers box in LIMS so when logistics are moving the waste they can copy it onto SAP and it will print on the transport documentation as required by ADR 2011.

'WASTE IN ACCORDANCE WITH 2.1.3.5.5'

NOTE: Segregation

When you have assigned the UN number to the waste stream, if the UN number is for a specific substance, e.g. Sodium Cyanide then the segregation box will be automatically populated with the segregation for that substance when entered onto LIMS.

If a generic UN number is assigned then the specific segregation instructions for that substance must be typed into this box in LIMS, e.g. UN1759, Waste Corrosive Solid, N.O.S. for lab smalls containing Sodium Cyanide.

It is very important when classifying a material to check the limited quantity provisions of both the ADR and IMDG codes. The maximum quantities can be different in the ADR and IMDG so it is vital to check

both codes and go with the stricter option. Classifying something as a limited quantity, especially items that have difficult segregation requirements, e.g. Class 5.1, 5.1, 4.2, 4.3 makes it much easier to ship from our transfer station and should be used whenever possible.

If the UN number you have assigned is not in the dropdown box on the classification technical screen then it needs to be added to the IMDG database on LIMS. To do this all the relevant information must be added to the DG Key spreadsheet and then the request emailed to BIS Support.
S:\3_Projecten\SAP\Project\waste rollout IRL\1_Preparation\Waste optim project\dbo_IMDG screened by tech.xls

NOTE:

If typing in segregation notes it is vital that the segregation is filled in on LIMS so that this prints on the Dangerous Goods note (DGN).

Note: If at any stage the classification of any material needs to be changed then it is very important that the Transfer Station operations team is aware of this so that they can ensure the package(s) get relabelled prior to shipment. To do this once classified the Technical Advisor must email the Facility Manager and Deputy Facility Manager, who will then ensure the package gets re-labelled and once this is complete the item can be removed from quarantine to allow the item to be consigned and shipped.

Note:

UN2907 ISOSORBIDE DINITRATE MIXTURE, Class 4.1, PGII - This material cannot be transported to Belgium (Antwerp port)

Categorisation of Waste as Green or Amber under the Movement Regulations

For all waste destined to be exported by Indaver must be categorised as Green or Amber under the Waste Movement Regulations - Council Regulation EC No 1013 of 2006 on the shipments of waste.

Movements of waste from Ireland for recovery, treatment or disposal must comply with the Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No 419 of 2007). These Regulations are for the purposes of giving effect to EC No 1013/2006 on the shipments of waste within, into and out of the European Community.

The essence of the regulations is to develop a supervision and control system for shipments of waste, normally by means of a tracking system. The system must record, supervise and control all waste shipments whether hazardous or non-hazardous.

Control System:

The control system established is that of Transfrontier Shipment Forms (TFS's). A TFS is a document consisting of a Notification Form, Movement/Tracking Form, associated annexes, contracts and financial guarantee. It is the legal documentation required for shipping of material under EC No. 1013/2006

The Notification form is intended to provide the competent authorities of dispatch, transit and destination with all the information they need to make a decision as to whether they shall consent to a proposed waste movement. Once authorised the Notification form covers the shipment of a specified number of loads/tonnes of a defined waste stream.

A Movement/Tracking Form travels with each waste load at all times from its departure from the waste producers' site to its arrival at the recovery/disposal site in another country. Space is provided on the form for entering details of the first and any subsequent carriers and to record the passage of the consignment through Customs Posts. Finally the form is used by the disposal/recovery facility to certify that the consignment has been received and also as a disposal/recovery certificate.

For the purpose of this control system regulation EC No. 1013/2006 categorises waste into two categories (Green and Amber) based on their potential to present a risk to the environment. Annexes III, IIIA, IIIB and IV of 1013/2006 gives the two lists; Green and Amber. The controls applied to waste shipments is dependent on which category the waste falls into, as follows:

Green List Waste destined for recovery - Green List waste destined for recovery is generally excluded from the control procedure (i.e. does not require a TFS) of this regulation since such waste should not normally present a risk if properly recovered in the country of destination. (See section on Control System for Green Waste destined for recovery

Green List Waste destined for disposal - Green List wastes destined for disposal must be a controlled movement under these regulations and must have a Transfrontier Shipment Form raised for their shipment.

Amber Waste - Amber wastes destined for either recovery or disposal must be a controlled movement under these regulations and must have a Transfrontier Shipment Form raised for their shipment.

Therefore in order to ship waste Indaver must first decide which category of waste the material falls under.

Categorisation of waste as Green or Amber:

Annexes III, IIIA, IIIB and IV of 1013/2006 lists wastes by type e.g. Nickel waste and scrap, Wood waste and scrap etc. and also by process of generation e.g. Wastes from the production and preparation of pharmaceutical products. When categorising the waste you must refer to annex III, IIIA, IIIB and IV and identify if either the waste type or process by which waste was generated is listed in either of the annexes.

When determining if material is Green or Amber *all annexes must be consulted* as it is possible for a waste to be covered by entries in two different annexes e.g. both the Green and Amber.

Example: Spent Nickel catalyst is given on the Green list. However all waste from the production and preparation of pharmaceutical products is listed on the Amber list. Hence if you have Spent Nickel Catalyst waste generated from the preparation of pharmaceuticals then this is covered by both the Green and Amber lists.

If this happens then the more controlled annex must be selected (i.e. in the example above the waste would be categorised as amber list waste).

The selected category must then be entered on the info card in LIMS. LIMS is automatically defaulted to Amber as the vast majority of waste Indaver Ireland moves is classified as Amber so if you are changing this to Green then you need to select the button on the info card.

Control System for Green Waste:

For all Green list waste destined for recovery approval to ship as Green waste and confirmation that waste is Green list must be received from the National TFS office (NTFSO). If you want advice from the NTFSO then all information, MSDS etc should be sent to nationaltfs@dublincity.ie. The correspondence relating to this must be saved in the customer info file.

Should any waste be classified as green list for recovery and is waste generated at the Indaver Waste to Energy Facility W0167-02 then this needs to agreed with the EPA prior to shipment.

Identifying Appropriate TFS Code:

The underlying principle of the new TFS regulations state that each TFS should have one defining code. This code should be either a Basel Code, an OECD code or an EWC code in that order of precedence.

So when assigning a code the most appropriate TFS code must be selected, whenever possible this should be a Basel Code and if none available then an OECD code and if none available then an EWC code.

To select the most appropriate Basel/OECD code please consult the Consolidated Basel Code & OECD Code list. In conjunction with this list you should also consult the TFS listing report so that you only choose a TFS code that Indaver has a TFS in place for.

The TFS Code must then be entered on the info card in LIMS.

Classification of Waste as hazardous under the Waste Management Act 1996

Hazardous Waste is defined in section 4(2)(a) of the Waste Management Act 1996 as waste which appears on the Hazardous Waste List (see section on Identifying the Appropriate EWC Numbers) or waste which displays any of the properties specified in Part III of the Second Schedule of the Waste Management Act 1996 i.e. explosive, oxidising, flammable, irritant, harmful, toxic or corrosive etc.

The appropriate hazard properties and hence hazard numbers for the material must be identified from Part III of the Second Schedule of the Waste Management Act 1996.

The hazard numbers must be entered on the linked document in LIMS.

To determine the hazard number you must consult the SDS for the material. In section 15 of the SDS the Risk phrases and EC classification is listed. This will be listed in section 2 in the new REACH format SDS' s.

Classification of Waste Leaving Meath Waste to Energy Facility

In accordance with our Facility Licence W0167-02 and Waste Regulations all waste that Indaver moves offsite must be classified.

All Indaver's waste is classified in accordance with all the waste regulations as described and detailed above. All classifications are recorded in our LIMS system and then subsequently moved in our SAP system which tracks all waste movements in accordance with the licence.

For Flue Gas, Bottom Ash and Boiler residues these wastes will be tested in accordance with Schedule C.4 of W0167-02.

These results will be reviewed and Waste Classification will then be carried out. EWC codes will be assigned and results and findings will be forwarded to the Agency in the case of a non-hazardous mirror image being selected.

All hazardous waste will then be exported as Amber waste under TFS to suitable outlets.

All classifications are recorded on the LIMS system which has an audit trail to allow for the checking of who classified the waste, when and if the classification was changed at any stage also.

Last Change :
Added in a note on UN2907 ISOSORBIDE DINITRATE MIXTURE, Class 4.1, PGII - This material cannot be transported to Belgium (Antwerp port). Denise Cunningham (24/08/2011)
Mary Miller 24/08/2011 09:43:52 Version: 13

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Change History :
Previously Word Operations 10.5 New Document
Patricia McGrath 02/07/2001 12:06:28 PM Version: 0

_____
Previously Word Operations 10.5, Issue no 1; 01/12/00
Patricia McGrath 24/04/2001 17:39:39 Version: 1

_____
Sigma Aldrich now appears before Chemical dictionaries in order of hierarchy when performing classification
Patricia McGrath 24/01/2002 17:28:29 Version: 2

_____
Procedure amended to incorporate signing of on classification and filing Classification Record Forms and classified lists of materials in Customer MSDS files.
Patricia McGrath 23/07/2002 17:06:17 Version: 3

_____
Procedure reviewed to reference RID, IATA and ICAO regulations. Completed classifications to be saved on separate files not on MSDS files. Overall responsibility changed from that of Site Operations Manager to that of Tech Manager.
Patricia McGrath 30/10/2002 09:57:24 Version: 3.02

_____
Laura and Ger passed procedure for issue verbally
Patricia McGrath 31/10/2002 10:00:37 Version: 4

_____
Procedure has been amended to include the recording of TREMCARD details and Suitable UN Packaging on the Classification Record Form.
Patricia McGrath 13/01/2003 15:46:17 Version: 5

_____
Amalgamtion of Ops4.2, Ops 4.9 and Ops 4.20. Addition of selection of appropriate hazard numbers from the Waste Management Act 1996 (second schedule).
Patricia McGrath 09/07/2003 15:24:05 Version: 6

_____
Addition of a section detailing what happens when a review of the classification of a waste stream is conducted
Patricia McGrath 25/07/2003 11:38:23 Version: 7

_____
Packaging Types must now also be specified on part A of classification request form.
Patricia McGrath 20/08/2003 15:34:16 Version: 8

_____
Procedure reviewed by Ger Gallagher. Classification Record Form no longer used, information now entered on Tracker and locked down by technical team.
Patricia McGrath 31/08/2004 13:02:35 Version: 9

_____
Procedure reviewed by Denise Cunningham and the Technical team on 8th December 2008. Changes made include updating all references to EU 259/93 to the new TFS regulations (EC) No 1013/2006. Changes were made to the responsibilities section and to the references section taking out the specific editions of the transport regulations and updating waste legislation Also added new references on ODS and Basel/OECD code, CPL and CHIPS. Changes were made in relation to the TFS code and the new regulations. Screen shots were added of the classification technical screens. A section was added on how to add a new UN number to tracker.
Mary Miller 22/01/2009 16:23:07 Version: 10

_____
The Technical Manager, Denise Cunningham reviewed this procedure and made the following changes
1. Removed TWM from the responsibilities as no one in TWM classifies currently
2. Removed all references to Tremcards as per ADR 2009
3. Add the list of approved 99 EWC codes we are allowed to use
4. Changed the section on Green list waste as Competent authorities on TFS's will no longer approve classifications

5. Added a note on hiding classifications on tracker
6. Removed older reference to 'to be classified Cork and Dublin' folders and added line on customer focus groups
7. Added section on generic classifications for Bulk tanks as per ADR 2009 (Denise Cunningham 22/12/2009)
8. Added note in relation to changing classification and getting it re-labelled (Denise Cunningham 07.01.2010)
Mary Miller 07/01/2010 14:36:17 Version: 11

Procedure was reviewed and amended to incorporate the changes to LIMS and SAP and also to include the classifications of waste leaving Meath. Added reference to Waste Treatment Department under the purpose section. Added WCP to the definitions list. Reviewed list of 99 codes. Changed reference to Technical Manager to Quality & Environmental Manager. The regulations were updated and new hyperlinks were added for the SAP related links. Screenshots from tracker were also removed. Added reference to European Communities (Shipments of Hazardous Waste Exclusively Within Ireland) Regulations 2011 (S.I. 324 of 2011). Removed references to S.I. 617 of 2010, S.I. 618 of 2010, S.I. 619 of 2010 & S.I. 620 of 2010 and replaced with European Communities (Carriage of Dangerous Goods by Road and Use of Transportable Pressure Equipment) Regulations 2011 (S.I. 349 of 2011) (DC 16.08.2011)

Mary Miller 22/08/2011 14:20:47 Version: 12

Added in a note on UN2907 ISOSORBIDE DINITRATE MIXTURE, Class 4.1, PGII - This material cannot be transported to Belgium (Antwerp port). Denise Cunningham (24/08/2011)
Mary Miller 24/08/2011 09:43:52 Version: 13

- End of Document -

Appendix 5.3

	Procedure Title:	**Waste Handling**		
	Procedure Ref.	ENV 02.00		
	Version:	1	**Pages:**	5
	Issue Date:	18.7.2011	**Last Modified:**	18.7.2011
	Owner:	Aidan Kennedy		

1. Purpose

This procedure covers waste handling in the Meath Waste to Energy facility. It covers all movements of waste from the security gate to the feeding hopper.

2. Definition

EPA - Environmental Protection Agency
WAC - waste acceptance criteria

3. Responsibilities

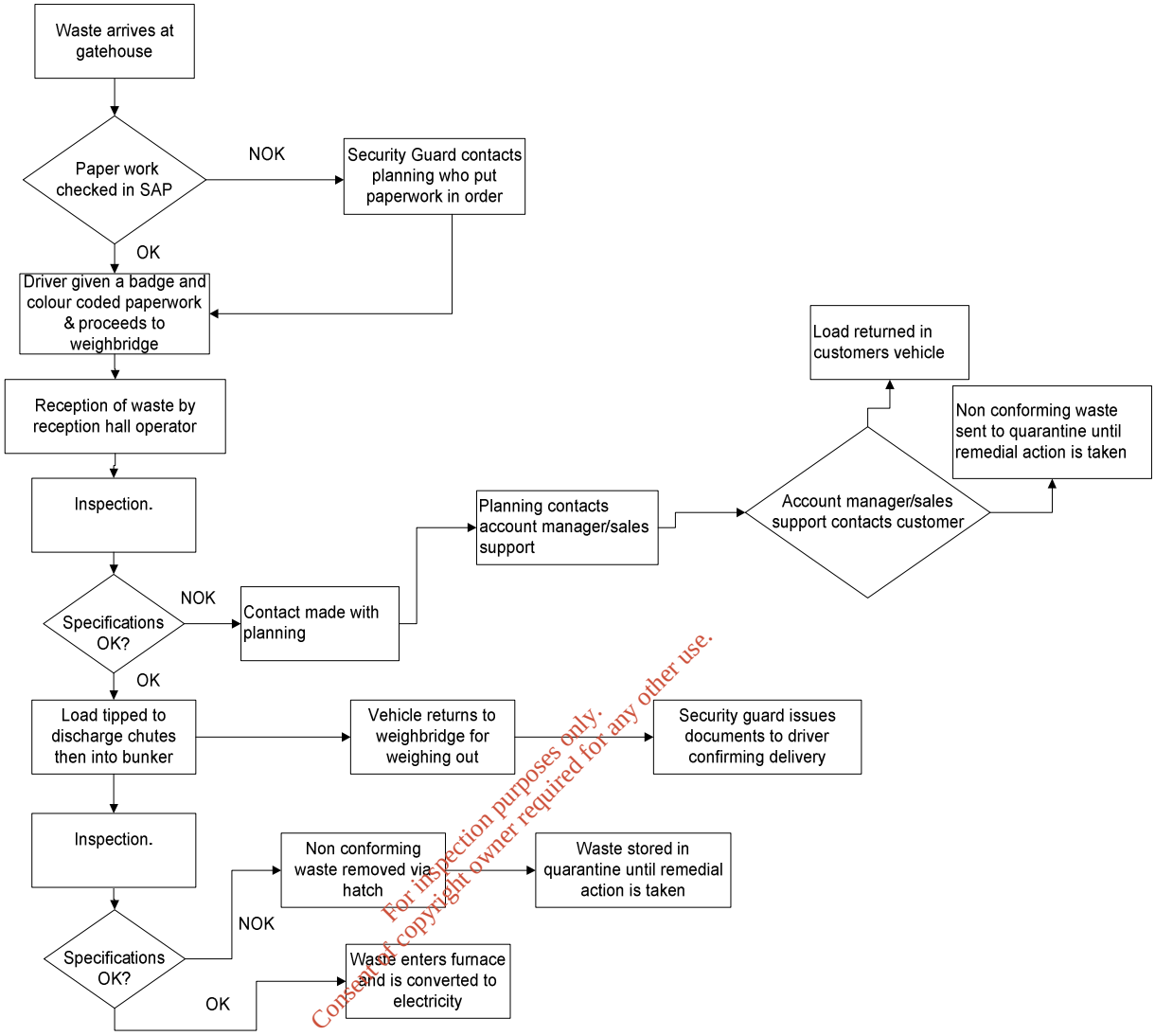
Indaver's customers have a responsibility to deliver waste in compliance with the waste acceptance criteria. The Tipping Hall Operator is responsible for conducting visual checks of the waste to ensure compliance with the waste acceptance criteria. The crane driver is responsible for performing visual checks as they clear the discharge chutes and mix the waste. They are also responsible for checking the closed circuit TV screen on the hopper as a final check. The security guard is responsible for enforcing the opening hours.

4. References

Waste acceptance criteria ENV 01.00
Waste Licence W0167-02
Waste inspection checklist ENV 02.01
Waste acceptance daily report ENV 02.02

5. Procedure

Overall work flow



1 Reception of waste truck.

Waste is only accepted if it is planned and scheduled in the SAP system and in accordance with the requirements of the licence. All waste supplied must be in conformance with Indaver's waste acceptance criteria (WAC).The criteria for acceptance are outlined in the WAC procedure.

The vehicle parks in a designated bay and the driver walks to the reception/security hut via a designated walkway. When a driver arrives on site for the first time they must complete an induction before entering the site. The opening hours of the facility in accordance with the licence W0167-02 will be adhered to unless in extreme cases where to do so would pose a significant threat to the environment or public safety.

1.1 Document check

The security personnel checks that the paperwork supplied with the vehicle matches what is available on the SAP system. The following information is recorded by the security guard:

a) the date and time
b) the name of carrier (and waste collection permit details if appropriate)
c) the vehicle registration number
d) the trailer, skip, or other unique identification (where relevant)
e) the name of producer/ collector of waste as appropriate
f) the name of waste facility from which the load originated, including the waste licence or waste permit register number
g) description of the type of waste including EWC codes
h) quantity of waste in tonnes
i) details of the treatment(s) to which the waste has been subjected, if any.
j) the classification or coding of the waste, including whether MSW or otherwise.
k) name of person checking the load
l) if a load is rejected/ removed detail the date, type of waste and facility to which they were removed
m) if applicable a consignment note number (CMR number)
n) Badge number (which is handed to the driver).

Once everything is confirmed as acceptable, the security guard hands the driver details of the waste, to inform the Tipping Hall Operator where to direct the load and grants the driver access to the reception hall and a badge to activate the weighbridge. The paper work is coded for each waste type with a colour as per the table below.

MSW or equivalent	No mark on paper
Sludge	Blue mark
Non MSW	Yellow mark
Liquids	Green mark

If an unscheduled load arrives at the gate, the security guard makes contact with the planning department. The planning department then ensures the SAP system is updated as required.

Should an anomaly arise the planning department will ensure the matter is dealt with appropriately. All anomalies will be recorded by the planning department.

The records of waste accepted are submitted to the planning authority on a monthly basis as agreed in line with Condition 4 of planning permission PL 17.219721 and will be summarised in the annual environmental report. The records of waste accepted will be maintained at the facility and reported as part of annual environmental report.

1.2 Weighing in

The vehicle drives to the 'in' weighbridge where they use the badge to activate the weighing of the load. There is no requirement to leave the cab during weighing. This weight is automatically recorded on the SAP system. On receiving a green light the driver moves the vehicle towards the reception hall.

The security guard will look out for anomalies on the weighing scales (too heavy/light may indicate waste is out of specification). If the security guard notices any anomalies the Tipping Hall Operator is notified via the hand held radio system.

1.3 Reception hall

Entry to the reception hall is controlled by the Tipping Hall Operator. The tipping hall operator gives a signal to the driver and then the driver may enter the reception hall. The relevant paper work is handed to the acceptance Tipping Hall Operator. If materials meet the acceptance criteria, the vehicle driver is directed to the appropriate discharge chute. Liquids loads will be sent for direct injection. More detailed inspections may be carried out periodically as outlined below.

2 Inspections

There are various options for waste inspections. For every load received checklist ENV 02.02 is completed by the person inspecting the waste. At least one of the following must be performed on every load received.

Should any anomalies be noted the Tipping Hall Operator makes contact with the planning department. They in turn contact the relevant account manager, who contacts the customer to discuss return of the load or additional costs for Indaver to dispose of the load on their behalf. Depending on the wishes of the customer, the waste in question is returned to the suppliers or moved to the quarantine area to await removal from site at the customers expense. Photographs may be taken by the Tipping Hall Operator as evidence. Should anomalies be noticed inside the bunker the waste is removed via the hatch to await correct disposal offsite.

2.1 Visual on discharge

This inspection is carried out in the waste inspection area of the reception hall. As the load is being tipped into the reception chutes the Tipping Hall Operator watches for any non conformance to the waste acceptance criteria. If a non conformance is spotted the Tipping Hall Operator immediately radios the crane driver who will remove the waste in question via the bunker hatch to await correct disposal offsite. The tipping hall operator will also notify the planning department who contacts the relevant account manager.

2.2 Visual in truck

This may be carried out if the Tipping Hall Operator suspects non compliance and it is possible to inspect vehicle before load is discharged. CCTV cameras are in place at the weighbridge and waste can be inspected using this e.g. tipper trucks where the cover has been pulled back. Another possible method would involve the Tipping Hall Operator using a ladder or mobile platform to look into the truck. Should any waste not be in conformance with the WAC a detailed inspection will follow.

2.3 Detailed inspections

These will be carried out periodically as required to ensure that customers do not supply waste outside the WAC. As a minimum one random inspection per week will be carried out. During such inspections the contents of the load are tipped onto the reception hall floor and the tipping hall operator completes a check of the contents to ensure compliance with the WAC. Once it is shown that the waste is in accordance with the WAC/licence, the waste is loaded into the bunker using a front loader. The front

loader will only be used by trained personnel. Should anomalies be noticed the non conforming waste is segregated to await correct disposal offsite.

For a new customer the frequency of inspection will be increased to ensure that the waste has been characterised correctly and that it meets the WAC.

Records of the detailed inspections will be completed by the Tipping Hall Operator and maintained on site. These records will contain as a minimum, the name of the person carrying out the inspection, the customers details, the trucks licence plate number and whether any non conformities were spotted.

2.4 Camera inspection

There is a camera in the bunker/hopper area of the plant. This camera is a moveable camera and can be directed to inspect waste in the bunker or in the hopper. The monitor for this camera is in the control room where a crane operator can ensure that only acceptable waste loaded into the hopper.

2.5 Inspection by crane operator

As the crane operator mixes and transfers the waste they must always be vigilant for any waste that does not conform to the waste acceptance criteria. Should any non conforming waste be found it is removed via the hatch to be disposed of in a correct manner.

3 Weighing out

The Vehicle follows the one way route, observing the speed limit, and exits via the 'out' weighbridge. A tare weight is then recorded on SAP. The security guard stamps/signs the paper work for the driver. The security guard then gives the driver the relevant paperwork. A recovery certificate will be provided to the customer in due course to prove that Indaver accepted and treated their waste.

4 Waste to energy

The waste is mixed in the bunker and fed to the hopper where it enters the furnace and is converted into energy.

Appendix 5.4

	Procedure Title:	Meath Emergency Response Procedure		
	Procedure Ref.	Operations XX.X		
	Version:	Draft	Pages:	20
	Issue Date:	30.05.11	**Last Modified:**	30.05.11
	Owner:	Colum Smith, Health & Safety Manager		

Contents

1 Purpose

This procedure describes the emergency response process in place at Indaver Ireland's Meath Waste to Energy facility. The purpose of the procedure is to:

- Describe the emergency response process including roles & responsibilities, resources, facilities & equipment to identify, respond to, and address emergency situations
- Contain and control emergency situations so as prevent/minimise the effects of emergency situations on personnel, property and the environment

2 Definitions

The following types of emergency situation are defined:

2.1 Local Emergency

These are smaller incidents that can be handled at a local level by the operational team and/ or plant Emergency Response Team (ERT) without impacting on others part of the plant, personnel or environment e.g. first aid injury, minor spill etc.

2.2 Plant Emergency

These are incidents that could have a significant adverse impact on on-site personnel and/or the Indaver plant and site environment e.g. serious injury, major fire.

2.3 External Emergency

These are incidents that could have an adverse off-site impact e.g. major bunker fire with release of smoke-plume off-site, significant damage to off-site environment etc.

With respect to the above emergency situations, three different types of alarm signal may be generated:

2.4 Local Alarm

Individual local areas of the plant (Flue Gas Cleaning, Bottom Ash Hall, Steam/Condensate Area & Turbine, Furnace Boiler, Tipping Hall & Bunker, and Administration Building) are equipped with local Sounders (different sound to Plant Alarm) and Strobes which are activated by smoke / heat / flame detectors and break glass units in the local area.

These detectors and break glass units are not linked to the Plant Alarm which requires manual activation from the Control Room. Local sounders in noisy areas (Shredder Area, ID Fan, Compressor Room, and Turbine) are set at a higher decibel level. A direct communication (via radio) will be sent from the Control Room to the Emergency Response Team (ERT) Members to respond to any local alarms.

2.5 Plant Alarm - Start:

Description: Slow waving klaxon siren (approx. 5 times / min.)
Meaning: Plant wide alarm (e.g. for large fire). Activated by key switch in Control Room.
In the event of a malfunction of the plant alarm siren, the Control Room will issue an alarm message over the radio system to individual personnel and a Manual Plant Horn will be activated by both the Shift Supervisor in the building and by the Security Guard outside the security hut.

2.6 Plant Alarm - End:

Description: Continuous non-waving flat sound of klaxon siren (approx. 1 minute)
Meaning: End of Alarm. Activated from the Control Room.

3 Roles & Responsibilities

3.1 Incident Controller (Plant Manager)

- Overall responsibility for ensuring there are adequate resources, training, facilities and equipment in place to address any emergency situations that may arise at the Meath plant
- Establishes Emergency Control Centre (ECC) in Plant Managers Office or alternative location if emergency situation/safety considerations dictate
- Proceeds to ECC in order to ascertain as much detail (i.e. number of injured persons, location, nature and extent of incident etc.) of the emergency as possible from the ERT Leader or from the person discovering the incident
- Briefs other ECC Members and co-ordinates activities in the Emergency Control Centre
- Communicates with ERT Leader for duration of emergency situation
- Communicates with the Site Evacuation Co-Coordinator to ensure all persons are accounted for in the event of an evacuation at Assembly Point
- Communicates with Process Controller in Plant Control Room on any process control required during the emergency situation
- Communicates with External Emergency Services before they arrive on site.
- Manages all other external communication required during emergency: relatives of employees, regulatory authorities (HSA, EPA, CER, ESB etc), press/media (through Indaver Managing Director and Communications Manager), neighbouring establishments
- Notifies Indaver senior management and organisation of incident as required
- Decides on End of Emergency following consultation with ERT Leader and Emergency Services (if present on site) and instructs Panel Operator to sound Plant Alarm End
- Follows (as appropriate) Incident Controller Prompt Sheet attached to this procedure.

3.2 Communications Officer (Process Engineer)

- Proceed to Emergency Control Centre (ECC) if directed by Incident Controller
- Establishes contacts with external agencies and personnel (Emergency Services, Employee Relatives, Regulatory Authorities, Neighbouring Establishments) as directed by the Incident Controller
- Alerts Indaver Ireland Managing Director and Indaver organisation (flash mail) as directed by Incident Controller

- Answers all incoming telephone calls
- Meets external officials arriving on-site as directed by the Incident Controller

3.3 Incident Recorder (HR & Admin Officer)

- Proceeds to the ECC if directed by Incident Controller
- Records and documents the timing and sequence of events during the emergency situation
- Assists the Communication Officer as required

3.4 QESH Advisor (Q &E Manager)

- Proceed to Emergency Control Centre (ECC) if directed by Incident Controller
- Advises Incident Controller on any actions required to mitigate EHS consequences of incident
- Assists Incident Controller in communication with relevant authorities (EPA, HSA)

3.5 Emergency Response Team (ERT) Leader (Production Manager)

- Proceeds to ERT Room
- Contacts Control Room and ECC in order to ascertain as much detail of the emergency as possible from the person discovering the incident.
- Briefs the ERT Members on the situation in the ERT Room, designates role to each ERT member giving them specific instructions, assigns PPE for each role, and ensures they are adequately equipped
- Completes roll-call of ERT members and informs ECC of same
- Proceeds to incident scene with the ERT and co-ordinates and leads the actions of the ERT
- Directs Indaver occupational first aiders to treat any injured personnel as required
- Assesses the incident scene and decides on additional actions and resources required
- Contacts the ECC ASAP with the request for External Emergency Services support
- Briefs the External Emergency Services and acts as the Indaver point of contact after their arrival on site. Takes lead from and provides assistance to Emergency Services Commander who takes control of incident after arrival on site.
- Stays in contact with the control room shift supervisor with regards to any required process actions (e.g. stop production equipment)
- Informs the ECC about the status and progress of the emergency response
- Determines when the site is safe to return to normal operations with Emergency Services Commander and communicates to Incident Controller to declare End of Emergency

3.6 ERT Members (Mechanical and E&I Technicians)

- Proceed to ERT Room
- Immediately don emergency PPE and undergo briefing by ERT Leader
- Executes the ERT role and tasks assigned by the ERT Leader in accordance with their training
- Check their equipment and PPE including SCBA is in good working order prior to use
- Always consider their own safety and that of their fellow team members before undertaking any hazardous tasks as part of emergency response

3.7 Occupational First Aiders

- If notified of personnel injury, proceed to location of injured personnel (provided it is safe to do so) with First Aid Kit. If injured person is located in hazardous area, proceed to safe location to administer first aid in agreement with ERT Leader

- In event of plant alarm, proceed to Assembly Point with First Aid Kit in event of Plant Alarm and await instruction from ERT Leader
- Provide first aid to injured personnel in accordance with training given
- Remain with injured personnel until the arrival of the Emergency Services

3.8 Site Evacuation Co-Coordinator (Maintenance Manager)

- Manages activities of personnel (Roll Caller, Traffic Entry Controller, Visitors Guide), evacuees, and vehicles at the designated Assembly Point (Security Guardhouse or alternative)
- Obtains list of persons present on site from Security Guard and organizes roll-call
- If any persons are missing, asks assembled personnel where missing persons were last seen
- Informs the Emergency Control Centre (ECC) about roll-call status and any missing persons
- Maintains contact with the ECC and changes Assembly Point location if situation dictates
- Co-ordinates access control to site during emergency
- Informs the ECC about arrival of external authorities and others (e.g. media)) at Security Guardhouse

3.9 Roll Caller (Warehouse Supervisor)

- Conducts roll-call of personnel at assembly point using list obtained from Security Guard and informs Site Evacuation Co-Coordinator of any missing persons
- Manages evacuees present at Assembly Point to ensure they act appropriately during emergency situation (i.e. no smoking, no photographs, no standing in way of traffic, vehicles parked at side of road and engines switched off, access for emergency services)
- Assists the Traffic/Entry Controller to control access and egress from site as required
- Assist the Visitors Guide manage visitors if required

3.10 Traffic/Entry Controller (Security Guard)

- Prints out list of persons present on site and hand to Site Evacuation Co-Coordinator at Assembly Point
- Stops all incoming and outgoing traffic and manages traffic at entrance to ensure Emergency Services vehicles have free access
- Directs Emergency Services to ERT Leader/incident location on arrival on site
- Controls entry of all persons to site. Prohibits entry of unauthorized persons unless specifically directed by Site Evacuation Co-Coordinator. Keeps all external persons (e.g. journalists) outside security entrance.

3.11 Visitors Guide

- Ensures public visitors are briefed on emergency procedures prior to commencing site visit
- Guides the public visitors back to the Visitors Room (standard procedure) in event of Local Alarm
- Guides the public visitors to designated Assembly Point in event of Plant Alarm
- Completes a roll-call of visitors and informs Site Evacuation Co-Coordinator of roll-call and any missing persons
- Organizes a debriefing of Visitors after end of emergency situation

3.12 Process Controller (Shift Supervisor)

- Proceeds to Control Room in emergency situation
- Coordinates the production activities during the Emergency Situation

- Completes roll-call of personnel present in Control Room and informs ECC of same
- Decides on activation of Local and Plant Alarms based on consultation with Panel Operator and ERT Leader
- Maintains contact with ERT Leader and ECC during emergency and makes any process changes (e.g. start/stop equipment) on request of ERT Leader
- Co-ordinates activities of the Panel Operator and Production Operators during emergency situation
- Directs the Panel Operator to activate End of Alarm Signal upon request of Incident Controller
- Outside normal business hours:
    - Initiates the emergency response, co-ordinates activities of Panel Operator and Process Operator, and activates the Local and/or Plant Alarm as deemed necessary.
    - Contacts the Emergency Services
    - Contacts the Plant Manager and Manager on Duty to inform them of the situation.

3.13 Process Operators (1 x Shift Operator, 1 x Day Operator)

- Proceeds to Control Room in emergency situation as directed by Process Controller
- Undertakes tasks as directed by the Process Controller
- Outside normal business hours, if instructed by Process Controller, meet the Emergency Services at security gate and direct them to incident scene.

3.14 Panel Operator (Control Room Panel Operator)

- Acts as collecting point for initial alarm messages
- Activates the Local and Plant Alarm Signals on direction of Process Controller or ERT Leader or based on own assessment of severity of situation
- Alerts the ERT of emergency situations using radio system
- Executes the process related actions as directed by the Process Controller

3.15 Persons without Specific Responsibilities in Emergency Situation

On discovering fire, spill, or other emergency situation:

- In case of fire, activate the local area fire alarm by using the nearest Break Glass Unit
- Contact Control Room on Extension 4017 or by radio and follow their instructions
- Make your job safe where possible e.g. stop machinery etc.
- Evacuate area as appropriate
- Only tackle hazard (e.g. small fire or small spill) if safe to do so and if you have received appropriate training

On hearing Local Alarm

- Make your job safe where possible
- Evacuate the local area following emergency exit signage and proceed to the Control Room (unless unsafe to do so)
- Walk, Do Not Run, Do Not Stop to Collect Personnel Belongings.
- Await further instruction from the Control Room.

On hearing Plant Alarm:

- Make your job safe
- Proceed to the designated external Assembly Point following emergency exit signage and lighting.
- Walk, Do Not Run, Do Not Stop to Collect Personnel Belongings.
- Report to the Site Evacuation Co-Coordinator at the Assembly Point for Roll-Call.

Visitors or contractors should follow the instructions of their Indaver host/contact .

4 References (Attachments to Procedure)

4.1 Meath Emergency Telephone Contact List
4.2 Incident Controller Prompt Sheet
4.3 Specific Emergency Scenarios & Response Spreadsheet
4.4 Principal Chemicals & Materials List
4.5 Drawings
- 4.5.1 Site Layout
- 4.5.2 Location of principal chemicals/materials storage areas
- 4.5.3 Site Services
- 4.5.4 External Firemain and Hydrants
- 4.5.5 Internal firefighting systems schematic
- 4.5.6 Line Electrical Drawing

5 Procedure

5.1 Emergency Response Facilities and Equipment

5.1.1 Plant Design

The Meath plant buildings, facilities and equipment have been designed in accordance with regulatory requirements and best practice including:

- Building Regulations Technical Guidance Note B-Fire Safety (Fire Certificate received from local authority)
- Relevant Irish/European Standards (IS EN)
- Insurance Company Standards (FM Global)
- Indaver Corporate guidelines which are based on operational experience of similar plants
- Consultation with Fire Brigade

5.1.2 Means of Escape

Escape routes, fire protection and ventilation of escape routes, travel distances to exits, emergency exits, and normal and emergency lighting, have been designed and provided in accordance with the requirements of the Building Regulations and relevant Irish & European standards. A fire safety certificate was received from the local authority approving the building and facilities design with respect to the above. A drawing showing the location of exits and designated assembly point is included as an attachment to this procedure.

5.1.3 Fire Detection & Alarm System

The fire alarm system is the primary means of alerting people to an emergency situation and the need to evacuate. The devices on the system include:

- Optical Smoke Detectors, Heat detectors, and UV/IR Flame Detectors located throughout plant
- VESDA Aspirating Smoke Detectors in MCC Room cabinets, VSD room, Technical Galleries and Turbine Hall
- CCTV monitoring of key process operations (i.e. shredder, hopper, bunker, turbine etc.)
- Fire Alarm Break Glass Units located throughout plant
- Local alarms (sounders and strobes) in individual areas and sitewide klaxon evacuation alarm
- Master fire alarm panel located in MCC Room Boiler Area a Repeater Panel (fully functional) located in Control Room

- Mimic Panel (Synoptic Board) located in Control Room showing Building Layout, Individual Zones and LED Display showing location of alarm activation

Inspection and testing of the fire detection and alarm system is carried out in accordance with relevant Irish standards (IS EN series) and regulatory requirements.

5.1.4 Firefighting Systems

Firewater is supplied in an external 250mm fire main to external fire hydrants and an internal 250mm fire main to fixed hose-reels, landing valves, water canons, sprinkler heads, and foam deluge systems on site.

The ring main is supplied by a combined firewater and process water tank. The tank has a total capacity of 2185m^3 with a minimum firewater reserve capacity of 1855m^3 which is sufficient to provide firewater for up to two hours under maximum flow conditions. The tank is supplied with water from the on-site well.

The firewater pump house is equipped with 3 No. diesel pumps (2 Duty/1 Standby) and an electrical jockey pump which are designed to maintain the pressure in the fire main between 10 -12 bar. Pressure regulating valves at the fire-hydrants reduce the pressure to 4 - 6 bar for use with fire hoses. This arrangement ensures the availability of firewater for emergency response even if certain essential services such as electricity are unavailable during an emergency.

The firemain provides firewater to the following systems:

- External Fire hydrants located throughout the site
- Internal fixed hose reels and landing valves
- Automatic/Manual Dry and Wet Sprinkler Systems in the following areas: Tipping Hall Shredder Unit & Lay-down Area, Bunker Crane Lay-down Areas, Feeding Hopper, Auxiliary Burners, Firewater Pumphouse, and Turbine Bearings (water droplet)
- Automatic/Manual Foam Deluge Systems in the following area: Turbine Lube Oil Tank and Pipework, Turbine Cellar and Turbine Control Oil Pack
- 4 No. Water Cannons in Bunker Area.

The deluge systems on the Hopper (High Level), Shredder, and Turbine Building can also be activated manually using the Manual Pull Station in the local area.

A.F.F.F foam is stored in a 1.3 m^3 foam tank which provides foam to the foam deluge system.

An automatic/manual Inergen gas suppression system is provided in the Variable Speed Drive (VSD) room. Stage 1 and Stage 2 alarms together with sounders and strobes located inside and outside room will warn personnel to evacuate/not to enter room in event of Inergen activation.

Fire cabinets located close to external fire hydrants contain sections of fire hose, branchpipe hose nozzles, hydrant keys, bars and standpipes. Fire cabinet(s) located close to oil tanks (i.e. diesel tank) have sections of fire hose, containers of foam concentrate, foam branchpipes, and foam uniductors.

Different types of portable fire extinguisher (water, foam, carbon dioxide, dry powder) are mounted in prominent positions throughout the site.

Drawings showing the location of the external firemain and hydrants and an schematic of the internal fire-fighting system are included as attachments to this procedure.

5.1.5 Fire Blankets

Fire blankets are mounted in prominent positions throughout the site which are suitable for small fires and wrapping individuals in.

5.1.6 Smoke Ventilation

Automatic smoke vents linked to the fire detection system are located in the Tipping Hall, the Bunker, Bottom Ash Hall, and Administration Building Stairwells. With respect to the smoke vents in the Bunker these will activate once sufficient temperature has built up to activate the dry sprinkler heads above the cranes in the bunker. Heat vents (permanently open air louvres) located on the building roof will also dissipate smoke from the building in the event of a fire situation.

5.1.7 Control of Plant and Equipment in Fire Situations

In the event of certain fire situations the DCS will automatically bring to a safe state and/or shutdown specified plant and equipment including:

- Burner Gas Supply Slam Shut Valves Activated
- Shutdown Fuel Oil Pumps
- Shutdown Shredder
- Close Primary Air Intake Damper at Bunker
- Shutdown Flue Gas Residue Unloading
- Cranes in bunker return to home position
- Turbine shutdown

In addition, lifts will automatically return to ground floor in event of fire detection/plant alarm.

5.1.8 Explosion Mitigation & Protection

An Explosion Protection Document (EPD) has been prepared for the site which details the measures taken to prevent the formation of flammable/explosive atmospheres, prevent ignition sources (e.g. EX-rated equipment) occurring, and mitigate the effects of an explosion. Areas with potential flammable atmospheres (EX-rated areas) identified on site are the Activated Carbon Silo & System, Ammonia Storage Tank & Unloading Area, Pilot Fuel Propane Gas Cylinders, Hydrogen Cell and Cylinder at CEMS Room, and Flammable Chemical Storage Cabinets. Equipment in these areas is appropriately EX-rated. The activated carbon silo also incorporates a nitrogen inertion system and explosion pressure relief venting to a safe location.

5.1.9 On-Site Locations for Management of Emergency Response

The on-site emergency response will be co-ordinated from the following locations:

- Emergency Control Centre (ECC): Plant Managers Office on Level 4 of Administration Building or Control Room if Office is unsafe to use in emergency situation
- Control Room: Level 5 of Administration Building
- Assembly Point : Outside Entrance at Security Guard-House or alternative location if unsafe to use in emergency situation
- Emergency Response Team (ERT) Room: Located adjacent to Control Room on Level 5 of Administration Building

The ECC, Control Room and Security Guard-House contain the following equipment and documentation for use in an emergency situation:

- Radio, Landline & Mobile Phone
- Access to MSDSs for all chemicals used on site
- Emergency Response Procedure
- Indaver Emergency Contact Telephone List
- Site Plan Drawings showing building layouts and location of emergency equipment

The relevant documentation described above will also be stored in the Indaver Head Office and a copy provided to the Navan and Drogheda Fire Brigades.

5.1.10 Communications

All ERT, production and maintenance personnel can communicate using radios in an emergency situation.

The Administration Building, Control Room and Security building will also be equipped landline phones.

The Control Room/ERT can be contacted on the radio system or by dialing Extension 4017 in an emergency situation. The Control Room will then notify the ERT using radios provided to the individual ERT members.

An Emergency Contact List (included as Attachment X to this procedure and link on the intranet homepage) contacts names of relevant Indaver personnel and external emergency services and agencies to be contacted in an emergency situation.

5.1.11 First Aid

There will be a minimum of one occupational first aider on site at any one time. In addition, all members of the Emergency Response Team (ERT) are trained in emergency first aid. The names and contact numbers for the site occupational first aiders are displayed on prominent signage throughout the site. First aiders can also be contacted by dialing the control room on Extension 4017. First aid boxes are located throughout the site. If necessary individual offices in the administration block can be used to administer first aid in an emergency situation.

5.1.12 Safety Showers and Eyewash Stations

Safety showers and/or eyewash stations are located in areas of the site where there is a potential for exposure to hazardous materials. External safety showers and eyewash stations are fitted with trace-heating to prevent freezing during the winter months. A drawing showing the location of safety showers and eyewash stations is included as an attachment to this procedure.

5.1.13 PPE

Appropriate Personal Protective Equipment (PPE) is provided for use by the site Emergency Response Team (ERT) and other site personnel in emergency situations. The exact PPE to be worn will depend on the emergency situation, but may include some or all of the following:

- Safety Glasses & Goggles
- Chemical Resistant Boots
- Chemical Resistant Gloves: Inner Nitrile and Outer Gauntlet (Nitrile) Gloves
- Heat Resistant Gloves
- High Visibility Clothing
- Hard Hats
- Tyvek F Chemical Resistant Suits
- 3M Full Face Masks with ABEK2P3 Filters
- Portable self contained breathing apparatus (SCBA)
- Protective Clothing for Firefighting (Helmet, Flash Hood, Jacket, Leggings, Gloves, Boots)

The PPE for use by the ERT is stored in a dedicated ERT room located adjacent to the Control Room.

5.1.14 Containment of Liquid Releases (Spills/Leaks)

5.1.14.1 Process Building

All waters produced from wash down etc. and any leaks/spills within the process building are directed to a underground spill containment tank with a capacity of 100m^3. Water from this spill tank will be used to supplement process water requirements or will be transported off-site for treatment or disposal to an appropriately permitted or licensed facility. There is no process effluent discharged from the facility.

5.1.14.2 Storage of Hazardous Materials

Bulk tanks containing hazardous materials (ammonia, diesel fuel oil) are double skinned and equipped with interstitial leak detection. The tanks are also fitted with level monitoring and overfill protection. Crash barriers are located around the bulk tanks to prevent potential vehicle collision and spills. Pipework from the bulk tanks is located over-ground over paved areas and undergoes regular visual inspection.

There is a designated bulk tanker unloading area for diesel and ammonia which is graded towards an ACO channel. Prior to unloading a diversion valve on the surface water drainage system is activated which diverts the drainage from the ACO channel to an underground Full Retention Forecourt Separator. This ensures that during tanker unloading any spills/leaks are contained within the unloading area and underground separator. Any contained spills of hazardous materials will be treated appropriately.

All other hazardous materials on site are stored in smaller quantities (e.g. 200L drums, IBCs etc.) in individual bunded areas (e.g. spill pallets, trays, chemical storage cabinets) to contain any spills/leaks.

5.1.14.3 Surface Water Drainage System

The site surface water drainage system has been designed in general accordance with Sustainable Drainage Systems (SuDS) principles and collects rainwater from all roofs, hardstanding areas, roads on site and which fall naturally towards these areas. A site services drawing showing the layout of the surface water drainage system is included as an attachment this procedure.

The surface water drainage system routes the surface water (rainfall) from roads, hardstanding areas and building roofs to:

- a Class 1 Bypass Separator
- a continuous online monitoring chamber (TOC, pH, Conductivity)
- a surface water attention pond with a capacity of 1600m^3
- a continuous online monitoring chamber (TOC, pH, Conductivity) on the outfall from the attention pond
- local surface water drainage network and River Nanny

The Class 1 Bypass Separator is designed to retain any oil/hydrocarbons present in the surface water runoff.

The pre-attenuation pond monitoring chamber diverts any contaminated runoff to an underground diverted water tank with a capacity of 300m^3. This water is re-used in the process where possible while the remainder is stored within the tank for off site treatment or disposal to a suitably licensed facility. Should this storage tank be filled the pre-attenuation pond t monitoring chamber will go into overflow mode and allow water to pass into the attenuation pond.

The surface water attenuation pond and outfall pump is designed to provide a controlled pumped discharge from the site to the local surface water drainage network to prevent any downstream flash

flooding. The discharge rate of 59.8 litres/second has been agreed with the local authority. The attenuation pond has been designed to cater for 1 in 30 year and 1 in 100 year storm events.

A second continuous online monitoring chamber on the outfall from the attenuation pond shuts-off the discharge pumps from the attenuation pond if any contamination in the discharge and retains the contaminated runoff in the attenuation pond.

The surface water attenuation system described above will prevent the discharge of any contaminated runoff from the site in the event of accidental leaks/spills or emergency situations.

5.1.14.4 Contaminated Firewater Retention

Fire suppression is provided by an on site firewater storage tank with an effective fire-fighting storage volume of 2185 m^3 as described in Section 5.1.4. Of the total tank capacity 330 m^3 is provided for process water requirements with 1855 m^3 fully reserved for fire fighting. However in the event of a fire, the process water requirement will not be needed and potentially all 2185 m^3 will be available for fire fighting.

The greatest potential for fire at the facility arises within the waste bunker (water-tight) where localised heating can occur due to decomposition of organic material. Up to the level of the tipping hall, the bunker has a capacity of ca. 5670 m^3 approximately. If a 50% voidage ratio is assumed for the waste, then there would be a retention capacity of 2835 m^3 within the waste bunker. With 2185 m^3 of water available for fire fighting, this demonstrates that all of the water would be retained within the bunker even in the most extreme fire event.

With respect to a fire occurring elsewhere in the process building or other buildings on site the firewater run-off will drain either to the process building 100m^3 capacity spilled water tank or be contained by collection in the surface water drainage system as described in Section X.X. which incorporates a 300m^3 diverted water tank and a 1600 m^3 surface water attenuation pond.

A firewater retention study has been carried out for the facility to demonstrate that the above containment facilities are adequate to contain the maximum projected volumes of firewater runoff in an emergency situation.

5.1.14.5 Spill Response Materials

Spill response materials such as spill mats, absorbent materials, brushes, non-sparking shovels, drum putty, drain blockers, litmus paper are located in designated locations in the plant.

5.1.15 Monitoring Equipment

Monitoring equipment used on site to detect potential emergency situations and/or process upsets include:

- Smoke, heat and flame detectors
- Closed Circuit Television Monitoring (CCTV) of key process operations
- Process monitoring (Pressure, Temperature, Level etc.) as part of the DCS control system
- Continuous emissions monitoring of atmospheric and surface water discharges
- Interstitial leak detection on double-skinned chemical storage tanks
- Level monitoring on bulk chemical tanks
- Portable Gas Detectors (LEL, O_2, CO, H_2S) used by the ERT and for specified types of work (e.g. confined space entry) on site
- Ammonia detector at bulk ammonia tank
- Oxygen Depletion and Hydrogen Detectors in Central Emissions Monitoring Room (CEMS)
- Litmus paper used for checking spills/leaks

5.1.16 Weather Monitoring

A windsock is located on the top of the main process building which can be used for monitoring wind direction during an emergency.

5.1.17 Other Rescue Equipment

A variety of other equipment may also be used on site in emergency situations such as rescue equipment for confined spaces and work at height (e.g. Tripods & Winches, Harnesses & Lanyards, Escape Sets etc.).

5.1.18 Inspection and Checking

All emergency equipment and facilities are inspected and maintained in accordance with regulatory requirements, relevant standards, and corporate requirements and is managed as part of the site maintenance management system using SAP.

5.2 Emergency Response Organisation

5.2.1 Structure

The roles and responsibilities of individual personnel in an emergency situation are described in Section 3 and actions to be undertaken by individuals in an emergency situation are described in Section 5.3 and 5.4.

The full emergency response organisation including ERT is only present on-site during normal business hours (Monday to Friday 08:00 – 16:30) during which time full production (i.e. waste deliveries etc.) and maintenance activities take place. However, the plant incineration process operates on a 24-hour seven day per week basis, but with a reduced manning level outside normal business hours. Therefore due to the difference in manning levels, the emergency actions taken on-site will differ between normal business hours and outside normal business hours.

The management structure for dealing with emergencies is shown during normal business hours and outside normal business hours in shown in Figures 1 and 2 respectively.

5.2.2 Backup Personnel

In the event of absence (holidays, sick-leave, off-site business) of key personnel in the Emergency Response Organisation, the following personnel are nominated as backup.

Emergency Response Role	Nominated Backup Personnel
Emergency Control Centre	
Incident Controller	Process Engineer
Communications Officer	HR and Admin Officer
Incident Recorder	Q&E Manager or H&S Manager
QESH Advisor	Health & Safety Manager
Emergency Response Team (ERT)	
ERT Leader	Maintenance Manager
ERT Members	Mechanical Technician 4 and E&I Technician 4
Evacuation and Headcount (Assembly Point)	
Site Evacuation Co-Coordinator	Mechanical Technician 3 or E&I Technician 3
Roll Caller	Mechanical Technician 3 or E&I Technician 3

Control Room Process Operator	Day Shift Operator 2 or Day Shift Supervisor

5.2.3 Training and Emergency Drills

Appropriate training is delivered to members of the Emergency Response Organisation which is backed up by periodic drills and training exercises. The behaviour of personnel is monitored during all drills and exercises with to continuously improve both the instructions for emergency responses and the personnel's implementation of these responses.

Training is provided for all personnel who have key roles in emergency management, encompassing all levels of the emergency response organisation. This includes a comprehensive programme for the Emergency Response Team (ERT) including:

- Fire Fighting
- Chemical Spill Response
- Use of PPE and Self-Contained Breathing Apparatus
- Search and Rescue
- Emergency First Aid
- Confined Space Entry & Rescue

ERT personnel participate in quarterly drills that simulate specific emergency scenarios that could potentially arise on site. Any lessons learned from these exercises are incorporated as necessary into the emergency response procedure and addressed in subsequent drills.

Evacuation drills are conducted every six months to test the adequacy of alert systems, evacuation arrangements and the response of employees, and visitors. A record is maintained of the details of each drill.

The Navan and Drogheda Fire Brigades will be given periodic tours of the site to ensure they are familiar with site layout and emergency equipment.

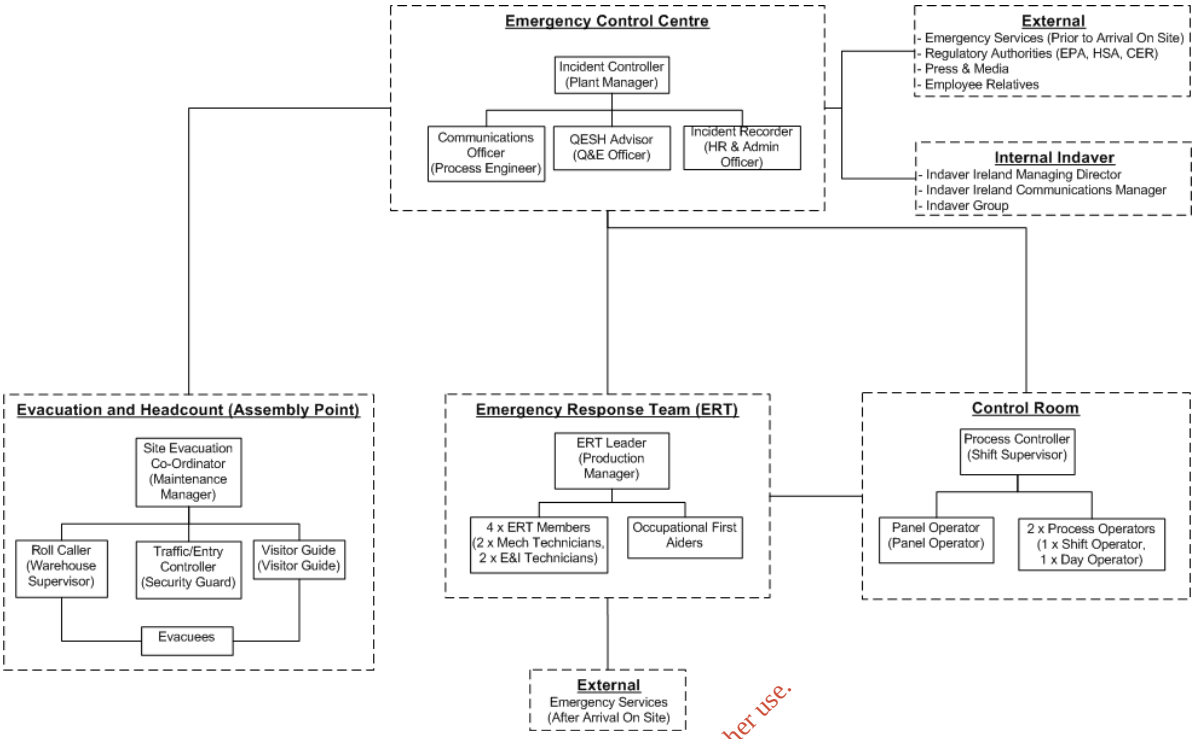


Figure 1: Structure of Emergency Response Organisation (During Normal Business Hours)

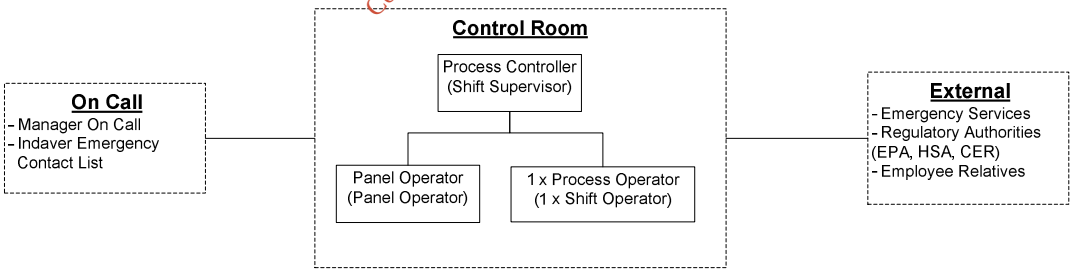


Figure 2: Structure of Emergency Response Organisation (Outside Normal Business Hours)

5.3 Activation of Alarms

Local Alarms (area sounders and strobes) are activated automatically by the local heat/smoke/flame detectors in the area. Local alarms can also be activated by personnel using the Break glass Units located in the specific area if personnel notice a fire or other situation requiring emergency action. Alternatively personnel can contact the Control Room on Extension 4017 or by radio to inform them of the situation and the Control Room can then activate the Local Alarm as required.

The Plant Alarm can only be activated from the Control Room using a designated key switch. The Control Room can be notified of an emergency situation by activation of a Local Alarm as described above or by contacting the Control Room on Extension 4017 or by radio.

After being informed or otherwise notified of an emergency situation, the Panel Operator in the Control Room shall consult with the Process Controller (Shift Supervisor) who shall assess the need for the activation of the Plant Alarm based on the severity of the situation and if deemed necessary shall instruct the Panel Operator to activate the Plant Alarm using the key switch in the Control Room.

The Panel Operator may also activate the Plant Alarm without consulting with the Shift Supervisor if the severity of the emergency situation so requires and/or if instructed to do so by the ERT Leader (Production Manager) or Incident Controller (Plant Manager).

If the Plant Alarm malfunctions/does not operate the Panel Operator shall contact the Shift Supervisor and the Security Guard who will operate the Manual Mobile Alarm in the building and outside the Security Gatehouse respectively. The Panel Operator will inform all personnel of the Plant Alarm over the radio system.

At the end of the Emergency situation, the Panel Operator shall generate the End of Plant Alarm signal after being instructed to so do by the Incident Controller (during normal business hours) or the Shift Supervisor (outside normal business hours).

5.4 Actions to be taken in event of Alarm / Emergency Situation

The full emergency response organisation including ERT (as shown in Figure 1) is only present on-site during normal business hours (Monday to Friday 08:00 – 16:30), during which time full production (i.e. waste deliveries etc.) and maintenance activities take place. However, the plant incineration process operates on a 24-hour seven day per week basis, but with a reduced manning level outside normal business hours. Therefore due to the difference in manning levels, the emergency actions taken on-site will differ between normal business hours and outside normal business hours.

5.4.1 During normal business hours

5.4.1.1 Personnel Discovering the Incident/Hearing Alarm

Fire

- Activate the local area fire alarm by using the nearest Break Glass Unit
- Contact Control Room on Extension 4017 or by radio and follow their instructions
- For small fires, having regard for personal safety and the safety of others, undertake ‘reasonable action’ to extinguish small fires or prevent escalation e.g. shut off source of ignition and attack fire with appropriate extinguisher if trained to do so.
- If this is not possible, do the following:
    - Make your job safe – stop machinery, hot work etc
    - Evacuate local area

Spill of Hazardous Material

- Contact the Control Room on Extension 4017 or by radio to report the spill giving them as much information as possible about the nature of the spill (material names, size of spill, location etc.) and follow their instructions (e.g. evacuate area)
- Make your job safe - stop machinery, hot work etc
- For small spills/leaks, having regard for personal safety and the safety of others, undertake 'reasonable action' to contain/clean up small spill using local spill kit if trained and properly equipped (e.g. correct PPE) to do so

Injury to Person(s)

- Contact the Control Room on Extension 4017 or by radio to report the injury and request them to send first aider
- Remain with the injured person until the arrival of the First Aider
- Follow the instructions of the First Aider

All other accident/incident/emergency situations

- Contact the Control Room on Extension 4017 or by radio and follow their instructions

Personnel Hearing Local or Plant Alarm

- On hearing plant or local alarm, personnel who are part of the Emergency Organisation shall carry out their specific duties as defined in Section 3 and in accordance with their training
- Personnel without specific responsibilities in an emergency should do the following:
    - On hearing Local Alarm
        - Make your job safe where possible
        - Evacuate the local area following emergency exit signage and lighting and proceed to Control Room
        - Walk, Do Not Run, Do Not Stop to Collect Personnel Belongings.
        - Await further instruction from the Control Room.
    - On hearing Plant Alarm:
        - Make your job safe where possible
        - Proceed to the designated external Assembly Point following emergency exit signage and lighting
        - Walk, Do Not Run, Do Not Stop to Collect Personnel Belongings.
        - Report to the Site Evacuation Co-Coordinator at the Assembly Point for Roll-Call.
    - Plant visitors or contractors should also follow the instructions of their Indaver host/contact

5.4.1.2 Local Alarm

- Control Room is notified of emergency situation in local area (e.g. fire, chemical spill, personnel injury etc.)
- Production and/or Maintenance personnel discovering incident in local area take first action to address situation if safe to do so (e.g. extinguish small fire, contain small spill)
- The Control Room decides whether or not to activate Local Alarm (sounders and strobes) in area if not already activated by smoke/heat/flame detectors in area or Break Glass Unit
- If the Local Alarm Sounders and Strobes are activated, the local area will be evacuated and evacuees will proceed to Control Room and await further instruction from the Control Room. Normal operation will continue in other areas of the plant.
- If there are any public visitors on site, the Control Room Panel Operator shall inform the Public Visitor Guide by radio about the restricted area and if necessary not to leave the visitors room.
- The Control Room Panel Operator shall alert the ERT by radio
- Members of the ERT will report to ERT Leader, don the appropriate PPE and equipment and execute the necessary mitigation actions to address the emergency in the local area
- The ERT Leader will inform the Control Room Panel Operator when the emergency situation has been contained or the requirement to upgrade the Local Alarm to Plant Alarm

- The Panel Operator shall inform the Incident Controller (Plant Manager) of the situation if appropriate (e.g. serious incident/severe personal injury/potential for escalation)

5.4.1.3 Plant Alarm

After being informed or otherwise notified of an emergency situation, the Panel Operator in the Control Room shall consult with the Process Controller (Shift Supervisor) who shall assess the need for the activation of the Plant Alarm based on the severity of the situation and if deemed necessary shall instruct the Panel Operator to activate the Plant Alarm using the key switch in the Control Room.

The Panel Operator may also activate the Plant Alarm without consulting with the Shift Supervisor if the severity of the emergency situation so requires and/or if instructed to do so by the ERT Leader (Production Manager) or Incident Controller (Plant Manager).

On activation of the Plant Alarm the following actions will take place:

- Persons with a specific role in the Emergency Organisation shall carry out their duties as defined in Section 3 and in accordance with their training
- All other persons should:
  - Make their job safe
  - Proceed to the designated external Assembly Point following emergency exit signage and lighting.
  - Walk, Do Not Run, Do Not Stop to Collect Personnel Belongings.
  - Report to the Site Evacuation Co-Coordinator at the Assembly Point for Roll-Call.
- All radios shall be turned to the Emergency Radio Channel. Personnel responsible for control of operational equipment shall remain on separate operational radio channel if instructed to do so by Control Room.
- All non-emergency radio and telephone calls will be stopped.
- All vehicles shall be moved to the side of the road/designated parking area and shut down to allow access by Emergency Services.
- The Emergency Control Centre shall contact the Site Evacuation Co-Coordinator to confirm all personnel present and accounted for at Assembly Point.
- The ERT Leader reports to the Emergency Control Centre on the scale and nature of the emergency situation and requirement for Emergency Services support
- The Emergency Control Centre contacts the Emergency Services and other external organizations as required. Note: Fire Brigade will always be contacted in event of any fires which cannot be immediately contained by Indaver.
- If deemed necessary the Incident Controller shall inform Indaver Ireland Managing Director of the situation who in turn will inform Indaver Group management if necessary.
- After the Emergency situation, the Head of the Coordination Centre inform personally the eventual present Public Visitors.
- During the Emergency situation, nobody except the Emergency Services will be allowed to enter the plant. All other external personnel will be kept outside the entrance at the Security Gate House unless specific authorization to enter is given by the Incident Controller.

5.4.2 Outside Normal Business Hours

Outside of normal business hours, a minimum of three personnel (1 x Shift Supervisor, 2 x Production Operators) may be on site at any one time. At least one person shall be a trained occupational first aider.

The Shift Supervisor shall be responsible for initiating the emergency response and activating the Local and/or Plant Alarm as deemed necessary.

The Shift Supervisor shall initiate any appropriate actions (e.g. process control) to contain/ mitigate/ prevent escalation of the emergency situation if safe to do so.

In the event of a Local and/or Plant Alarm all personnel shall evacuate the area and proceed to the Control Room or other safe Assembly Point as instructed by the Shift Supervisor (or pre-defined assembly point during planned maintenance

The Shift Supervisor shall contact the Emergency Services to respond to:

- any fire situation
- any significant spill of hazardous materials
- personal injury requiring medical attention
- other emergency situation requiring the intervention of the Emergency Services

The Shift Supervisor shall send one of the Production Operators to meet the Emergency Services at the entrance gate (if safe to do so) and direct the Emergency Services to the emergency location on site.

The Shift Supervisor shall contact the Plant Manager and Manager on Duty to inform them of the situation. The Manager on Duty are required to proceed to the site and liaise with Shift Supervisor in the Control Room if the Emergency Services attend site.

5.4.3 End of Emergency Situation

The end of a Local Alarm is decided by the Control Room (Shift Supervisor and Panel Operator) after consultation with the ERT Leader. The Control Panel Operator will switch of the Local Alarm sounders and beacons in the local area.

The end of a Plant Alarm is decided by the Incident Controller after consultation with the ERT Leader and Emergency Services (if present on site). The Incident Controller will inform the Control Room Panel Operator to activate the End of Alarm Signal.

Following an emergency situation, the incident scene should remain undisturbed until the necessary information (e.g. photographs etc.) has been gathered as part of the incident investigation or until as instructed by the Plant Manager.

Following the end of the emergency situation, the ERT Leader shall ensure that any equipment (e.g. spill kits, BA cylinders, PPE, fire extinguishers etc.) used during the emergency situation is checked and cleaned/re-stocked/re-filled as required so that it is available for future use.

The Incident Controller shall:

- Ensure the Health & Safety Manager and Quality & Environmental Manager are informed of any accident and emergency situations so that an investigation is carried out and regulatory authorities (EPA, HSA etc.) are notified as appropriate.
- Liaise with the Guide for any public visitors so they receive the necessary information about the incident
- Consult with Indaver Ireland Managing Director regarding requirement to issue company wide update and/or media release on incident

Outside normal business hours, similar actions to the above are taken at the end of the emergency with the following exceptions:

- The end of a Local Alarm is decided by the Shift Supervisor. The Control Panel Operator will switch of the Local Alarm sounders and beacons in the local area.
- The end of a Plant Alarm is decided by the Shift Supervisor after consultation with the Plant Manager/Manager on Duty and Emergency Services (if present on site). The Shift Supervisor shall inform the Control Room Panel Operator to activate the End of Alarm Signal.

5.5 Controls and Actions to be Taken for Specific Emergency Situations

The plant controls in place and actions to be taken to address specific emergency scenarios are summarised in the spreadsheet attached to this procedure.

5.6 Notification of Emergency Situations to Regulatory Authorities

If the nature or scale or the emergency situation / incident requires regulatory authorities (e.g. HSA, EPA, RPII etc.) to be notified, the relevant authorities will be contacted in accordance with site licence(s) and/or regulatory requirements. An Emergency Contact List with contact numbers for relevant authorities is included as an attachment to this procedure. *Operations 6.4 Environmental Incident Investigation and Reporting* details the procedure to be followed for notifying the EPA and other authorities of environmental incidents.