

Appendix H1: Draft Waste Acceptance Procedure

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Procedure: Acceptance of Waste at the Carranstown Waste Management Facility

Reference	Status	Version	Owner
Draft_1	Unauthorised : New	0	Patricia McGrath

Type Operations Manual **Sub-Type** Incinerator

1. Purpose

The purpose of this procedure is to outline the acceptance procedure for waste entering the Meath Waste Management Facility - Waste to Energy Plant

2. Definition

WTE - Waste to Energy

3. Responsibilities

It is the responsibility of the Plant Manager and Operations Team to ensure this procedure is adhered to.

4. References

Waste Handling at the Meath Waste Management Facility
Haulier Approval and Monitoring

Operations_Draft2
Operations 11.1

5. Procedure

Waste will only be accepted from Local Authority waste collection or transport vehicles or holders of waste permits who have been screened in line with Operations 11.1_Haulier Approval and Monitoring.

Waste Scheduling:

The planning department is responsible for scheduling the acceptance of waste materials at the facility.

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The scheduling takes place on two levels:

1. Scheduling of "Standard Contract" Waste Materials
2. Scheduling of "Non-contract" Waste Materials

1. "Standard Contract" Waste Materials:

This is non-hazardous domestic and commercial waste materials. Standard contract waste materials have the following characteristics:

- A high degree of homogeneity
- The material arrives in bulk form, i.e. the waste unloads directly into the plants waste bunker

Indaver Ireland will have contracts in place with the suppliers of these non hazardous waste materials. These contracts will detail the overall annual intake quantities and the schedule for the arrival of the material on site over the year.

These waste materials will be supplied regularly (daily) and will comprise of a fixed batch. A fixed batch is created by the planner for a certain number of loads and is linked to an expiry date. A fixed batch is clearly identified by an accompanying waste certificate.

These loads are not planned for a precise intake date but the fixed batch of loads must arrive on site prior to the associated expiry date. The scheduling of the individual loads is agreed with the planner on a day to day basis.

2. "Non-contract" Waste Materials - WTE Plant

Non-contract waste is all other non-hazardous material arriving at the facility not covered by a contract as with standard contract waste material. These waste materials are supplied less frequently than those in a fixed batch.

The loads are planned by the planner for a specified delivery date and are incorporated into the WTE plant intake schedule. The intake schedule takes into account the spread of material arriving on site and the logistics requirements for acceptance and unloading of the material.

They are allotted a batch number upon arrival at the facility.

Acceptance of a consignment, i.e. one load of waste, therefore takes place according to the intake schedule's (non-contract waste) or as per the agreed contracts with suppliers (standard contract waste).

The scheduling process is covered in more detail in the following procedures:

- Procedure for intake planning
- Procedure for drawing up and registration of intake planning in waste tracking system

Waste Acceptance:

Reporting at the gate

Trucks with a fixed batch card (standard contract waste) report to the weighbridge operator and then proceed immediately to be weighed.

All other loads (non contract waste) report to the weighbridge operator who then checks the

WTE plant intake schedule, comparing it with the delivery docket, and issue's the driver with a batch card. The driver then proceeds to be weighed.

The following information is entered onto the tracking system for all waste material entering the facility:

- Name of Haulier/Carrier
- Name of Producer/Collector of Waste
- Registration number of truck
- Batch number.
- EWC Code and Description of Waste
- Date
- Name of Weighbridge Operator
- Details of rejected load (if applicable)

Weighing

The driver positions the truck on the weighbridge and the gross weight is recorded on the batch card. This information is automatically sent to the tracking system. After weighing the truck proceeds to the reception hall.

Arrival and unloading of trucks

At the reception hall the operator in charge directs the loads to a suitable discharge chute, and the load can be off-loaded into either:

1. Disposal bunker for bulk waste deliveries

- This is a concrete bunker.
- This bunker is fitted with 5 discharge chutes for emptying waste trucks.
- The waste bunker and reception hall themselves are maintained under negative pressure; the air extracted is used as combustion air for the furnace. After the daily intake period the reception hall is sealed by means of a roller shutter.

2. Bulky waste shredder

- A bulky waste shredder is located in the reception hall, allowing waste of large dimensions (e.g. furniture, mattresses etc.) to be reduced prior to further processing.

Visual Inspection:

A percentage of the waste entering the waste to energy plant is visually checked by the reception hall operator. This is to ensure that the waste arriving at the plant is in compliance with Indaver Ireland's waste acceptance criteria and are only those that are permitted under the site waste licence. This inspection is carried out in the waste inspection area of the reception hall. These inspections are carried out on waste loads from both new and existing contractors.

The following features are checked for:

1. Bulk waste for disposal bunker

- Danger symbols, which may indicate the presence of dangerous waste materials (or their packaging).
- Specified dimensions (sheets: max. 1.0 X 1.0 X 0.1 m./ cubes: max. 0.5 X 0.5 X 0.5 m).
- Excess Dust

- Excess Liquid
- 2. Bulk waste for shredder**
- Danger symbols which may indicate the presence of (or packaging of) dangerous waste.
 - Specified dimensions (max. 1.9 X 1.4 X 3.0 m)
 - Heavy gauge metals or building rubble

If irregularities are detected by the reception hall operator the process supervisor (or shift operator) must be notified of these immediately.

Waste Quarantine:

All non conforming material will be held in the quarantine area within the reception hall until a further course of action has been agreed.

The following courses of action may be taken:

- 1. The load may be processed without major additional cost** (e.g. the load may contain a number of large bulky items that will need to be shredded). In such a case the load may be accepted.
- 2. The load may be processed, but the additional cost is likely to be major** (> 5 man-hours required or the use of special equipment/services etc.) In this case the process supervisor (or shift operator) gets in touch with the planner so that the latter can discuss this with the customer and reach an agreement (refusal and return of load / acceptance of load subject to additional cost etc.)
- 3. The load cannot be processed or is not acceptable** (e.g. hazardous waste). In such circumstances the load is refused and the process supervisor (or shift operator) notifies the planner and the manager or his deputy.

All loads that are refused will be recorded. Reasons for refusal, quantities and other comments will be noted. A list of all the non conforming material is presented and discussed during the regular meetings of the planning department with the operations department. These anomalies are also recorded in the minutes of this meeting.

Tare weighing

After unloading the truck proceeds once more to the weighbridge and a tare weight is recorded. The weight of discharged material is the gross weight minus the tare weight. A weigh ticket is automatically printed out for the driver.

If the truck has a fixed batch (contract waste):

- The information is automatically sent to the tracking system.
- The truck leaves the facility and the driver retains the weigh docket and batch (card).

If the truck has a temporary batch:

- The information is automatically sent to the tracking system.
- The driver hands in his batch (card).
- He receives the signed-off delivery docket

The weighbridge operator keeps the white weigh docket and a copy of the delivery docket.

Last Change:

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Appendix H2: Draft Waste Handling Procedures

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Procedure: Waste Handling at the Carranstown Waste to Energy Facility

Reference	Status	Version	Owner
Draft_2	Unauthorised : New	0	Patricia McGrath

Type Operations Manual **Sub-Type** Incinerator

1. Purpose

The purpose of this procedure is to outline the waste handling procedure for waste entering the Waste to Energy plant in Carranstown.

2. Definition

3. Responsibilities

It is the responsibility of the Plant Manager and Operations Team to ensure this procedure is adhered to.

4. References

Waste Acceptance at the Meath Waste Management Facility Operations_Draft1

5. Procedure

On arrival at the Waste to Energy Plant, non hazardous waste is tipped directly into the waste bunker via one of the five discharge chutes in the reception hall. (See procedure for acceptance of waste at the Meath Waste Management Facility Operations_Draft1)

Waste Shredder:

Bulky waste (e.g. furniture) the dimensions of which are too large to be discharged through the chutes must be passed through a shredder.

The material is loaded into the shredder by means of a crane.

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The material from the shredder is then loaded into the waste bunker.

Hydraulic Grabs:

Waste material is moved within the waste bunker by means of an hydraulic grab located above the waste in the bunker.

The hydraulic grab must only be operated by a trained operator.

The grab operator works from the control room. A large window in the control room enables the operator to see the whole of the waste bunker while operating the grab. There are also closed circuit television cameras located in the waste bunker, reception hall, furnace hopper and in the furnace itself so that the operator can see all of these areas.

The grab operator must perform the following tasks:

- The operator uses the grab to keep the discharge chutes clear of waste material. This is essential in order to enable the ongoing unloading of material into the chutes from the reception hall.
- The operator uses the grab to mix the waste while in the bunker. This is essential to ensure a uniform mix of waste entering the furnace which is necessary to ensure the smooth operation of the plant.
- The operator uses the grab to load material into the hopper. It is essential that the levels of waste in the furnace hopper are sufficiently maintained at all times. In the event of a low level being achieved in the furnace hopper an advisory alarm will be activated in the control room to alert the grab operator of this fact. If waste is not added to the hopper within a specified time when this alarm activates the plant will go into automatic shutdown.

Once the waste has entered the furnace, the process of handling becomes automatic and is controlled by the plants computer system, which is monitored by the process supervisors and shift operators.

There are 3 levels of interlocks in place to ensure the plant operates within all specified limits with shift operator input where necessary but automatic shutdown for critical parameters.

Movement of the the grab to the hopper is automatic to prevent spillage.

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Appendix H3: Hazardous Waste Recovery and Disposal

TABLE H.1(i): WASTE - Hazardous Waste Recovery/Disposal

Waste material	EWC Code	Main source	Quantity		On-site Recovery/Disposal	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
			Tonnes / month	m ³ / month	(Method & Location)		
Flue gas treatment residues	19 01 05: <i>Filter cake from gas treatment</i> , 19 01 10: <i>spent activated carbon from flue gas treatment</i> 19 01 13: <i>Fly ash containing dangerous substances</i>	Flue gas treatment residues include a mix of reagents such as activated carbon, expanded clay and lime as well as reaction products including salts, minerals, and entrained heavy metals and dioxins	833	1,389	Conveyed via enclosed conveyors to two residue silos in the main process building, each with a volume of 210m ³ .		Export in fully enclosed containers for final disposal to a hazardous waste landfill in Europe, pending the establishment of such capacity in Ireland. It is expected the residues will be classified non-hazardous for transport.
Boiler ash ¹	19 01 15 : <i>Boiler dust containing dangerous substances</i>	Boiler ash consists of light ash particles entrained in the flue gas. These drop out in the boiler where the gas velocity is decreased.	84	167	Boiler ash is removed via enclosed conveyors to two storage silos with a total capacity of 100m ³ in the main process building.		If hazardous, boiler ash will be exported for final disposal to a hazardous waste landfill in Europe, as for flue gas treatment residues. All transportation will be in fully enclosed trucks or containers.

¹ From experience operating similar facilities in Belgium, boiler ash is typically non-hazardous. The classification of boiler ash as hazardous or non-hazardous will depend on leaching test outcomes

Waste material	EWC Code	Main source ¹	Quantity		On-site Recovery/Disposal	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
Flue gas treatment system overhaul residues	19 01 06: <i>Aqueous liquid wastes from flue gas treatment and other aqueous liquid wastes</i>	Contaminated water from the annual maintenance of the flue gas treatment system	2.5	2.5	The residues will be discharged to a contained and labelled tank or container for storage prior to removal from site		Exported for final disposal to a hazardous waste landfill as for the flue gas treatment residues above.
Spent refractory material	19 01 99: <i>wastes not otherwise specified</i>	Spent refractory material as arising	0.4	(²)	The material will be stored in an enclosed and labelled container prior to removal from the site		Exported for final disposal to a hazardous waste landfill as for the flue gas treatment residues above.
Spent baghouse filter bags	19 01 99: <i>wastes not otherwise specified</i>	Spent baghouse filter bags from 3-year overhaul	Minor	Minor	The material will be stored in an enclosed and labelled container prior to removal from the site		Exported for final disposal to a hazardous waste landfill as for the flue gas treatment residues above.
Other wastes	20 01 35, 20 01 21, 20 01 29	Please refer to Table H.4.b in Section H.4.					

² Difficult to estimate at this stage – quantity will be small

Appendix H4: Other Waste Recovery/Disposal

TABLE H.1(ii) WASTE - Other Waste Recovery/Disposal

Waste material	EWC Code	Main source ¹	Quantity		On-site recovery/disposal ² (Method & Location)	Off-site Recovery, reuse or recycling (Method, Location & Undertaker)	Off-site Disposal (Method, Location & Undertaker)
			Tonnes / month	m ³ / month			
Bottom ash and grate siftings	19 01 12 : <i>Botom ash and slag other than those mentioned in 19 01 11</i>	Residue remaining after burnout on the moving grate, consisting of inert materials such as silicates, minerals, metal pieces and glass compounds	4,166	2,778	The material will be conveyed to an ash bunker where a sieve separates out oversized ash particles (>200mm). It will then pass under an overband magnet to separate out ferrous metals. Ash and metals fractions will be stored n separate containers in the ash bunker.	Please refer to Attachment H.4.1 for more details.	Bottom ash will be sent to a non-hazardous landfill in the short term. (see Attachment H.4) All transportation will be in fully enclosed trucks or containers.
Boiler ash ³	19 01 16 : <i>Boiler dust other than those mentioned in 19 01 15⁴</i>	Boiler ash consists of light ash particles entrained in the flue gas. These drop out in the boiler where the gas velocity is decreased.	84	167	Boiler ash will be removed via enclosed conveyors to two storage silos with a total capacity of 100m ³ in the main process building.		If non-hazardous, the residue will be reused (see Attachment H.4.1) or disposed of to a non-hazardous landfill in Ireland. All transportation will be in fully enclosed trucks or containers.
Ferrous metals	19 01 02: <i>Ferrous metals removed from bottom ash</i>	Ferrous metals are recovered from the bottom ash	417	477 ⁵	Ferrous metals will be recovered from the bottom ash when it passes under an overband magnet. Metals are stored in a separate container in the ash bunker.	Ferrous metals will be sent offsite to an appropriate and licensed recycling facility.	
Other wastes	Please refer to Table H.4.b in Section H.4.						

³ From experience operating similar facilities in Belgium, it is expected that the boiler ash will typically be non-hazardous.

⁴ The classification of boiler ash as hazardous or non-hazardous will depend on leaching test outcomes

⁵ Difficult to estimate as depends on type of metals in waste e.g. density of stored wire differs significantly from density of small motors

Appendix H5: Ash Properties at Indaver facility in Belgium

	Parameter (mg/kg DS)	Detection limits (mg/kg DS)	Bottom Ash	Boiler Ash	FGT Residues
			AVERAGE	AVERAGE	AVERAGE
Total concentration of metals	As	100	<	10	<
	Al		45000	52500	13000
	Br	100	89	N/A	N/A
	Ca	500	175000	190000	240000
	Cd	100	<	12	135
	Co	300	280	200	<
	Cu	100	3460	789	1210
	Cr	100	460	936	302
	Fe	500	28000	22500	4200
	K	500	7800	16000	38500
	Mn	100	580	965	285
	Mo	500	<	<	<
	Ni	100	250	115	26
	Pb	100	1805	1630	4365
	Sb	300	330	440	750
	Se	100	<	4	<
	Sn	100	320	325	690
	Tl	100	<	<	<
	V	500	<	<	<
	Zn	100	8185	5720	3910
Hg	50	8	<	12	
Cl	1000	12727	N/A	N/A	
S	1000	18333	N/A	N/A	
Si	500	186667	N/A	N/A	