Attachment H.1: Waste Types and Quantities

As outlined in this application Indaver intend to apply for an increase in annual tonnage of wastes accepted at the Carranstown Facility. It is proposed to increase the annual tonnage accepted from 200,000 to 220,000 tonnes. It is also proposed to accept a number of suitable hazardous wastes and non hazardous wastes as detailed below.

Table H.1.a Proposed Additional Waste Types

EWC Description	EWC	EST QTY P.A.
Aqueous Wastes: Rinse waters containing sugar coating solution and pharmaceutical residues, ink and water mixtures, aqueous washings from spill cleanups.	070501* 080308 070101*	Not exceeding 15,000MT per annum of these materials.
Contaminated Packaging/Clothing. These waste types from pharmaceutical, computer chip or chemical manufacturers are commonly classified as hazardous waste due to the potential contamination from exposure to the materials that they were designed to protect people from. The level of risk is very low but again because they have been assigned a hazardous EWC code, they must be exported to incinerators abroad. An example being empty paint tins, or rags and wipes contaminated with paint/glues/inks etc	150110* 150202*	
Redundant or Off Specification Materials/Products. Mascara, lipstick and other make-up. Eye drops, eye baths that are out of date. Headache Tablets, Starch and Sugars used for coating capsules & filler powders.	070513* 160303* 160305* 160507* 160508*	
Treated or Contaminated Wood. Once wood/timber has been treated, it can no longer be recycled. If treated with certain preservatives, this then makes the waste "hazardous" even though the same timber is used on decking, furniture, schools etc.	170204* 170903* 191206* 200137* 030104*	
Medical Wastes Bandages, gauze/wipes, incontinence pads, used cotton wool from Nurses Stations & veterinary/dental practices etc., expired medicines, gloves and gowns, expired medications / chemicals	180103*	
Sludges from waste water treatment plants (municipal & industrial) can currently be treated at the facility provided that they are classified as non hazardous. Some sludges are still spread on land as a fertiliser, but industrial facilities with waste water treatment plants of their own have moved away from this practice in recent years. Due to the possibility (but not the certainty) of certain contaminants being present in some industrial sludges, environmentally conscious companies commonly assign	070511* 190811*	

hazardous EWC codes to their sludges as a precaution. Despite the fact that these sludges are no different to other non-hazardous sludges, we cannot accept them at the facility without further permission to do so.		
Other soils, and sludges similar to waste water treatment sludges from land decontamination projects	170505* 170503* 191303*	
Shredded and pre-mixed Material such as car shred waste and shredded paint containers	191003* 191211*	
Discarded paint and inks: This material is currently mainly disposed of by domestic waste producers at Civic Amenity sites (and exported to similar facilities on the continent)	200127* 200128	
Discarded Oil Filters	160107*	
Waste Oil	130701*	
Return to site of any reject Bottom Ash, FGR & Boiler Ash	190113* 190107* 190112	

Indaver also request that EWC Code 19 12 12 have the restriction of Max: 50,000 tpa removed, and to be listed alongside Non- Hazardous residual municipal waste. There are large quantities of this material available in the market with very limited treatment capacity elsewhere

Attachment H.2: Waste Acceptance

H.2.1: Waste Acceptance Procedures

Appendix H1 contains a copy of the waste acceptance SOP (Env 01.00) as employed at the facility. If the proposed amendments are granted, this procedure will be amended. As outlined in Section 5.6.1 of the EIS, where the waste is not suited for laboratory analysis, the process and origin of the waste at the producer site will be reviewed as well as all possible components to assess the suitability for treatment.

Attachment H.3: Waste Handling

H.3.1 Waste Handling Procedures

Appendix H2 contains a copy of the waste handling SOP (Env 02.00) as employed at the facility. As discussed in Section 5.6.1, this will be amended to reflect the non-manual handling and feeding of wastes with EWC Code 18 01 03*, but it is not proposed to change other aspects of the Waste Handling Procedure – solid wastes will continue to be fed into the bunker, and liquid wastes will continue to be fed into the furnace by direct injection.

Attachment H.4: Waste Arising

H.4.1 Solid Residues

H.4.1.a Solid Residues Generated

It is not foreseen that the characteristics of the solid residues (bottom ash, boiler ash and flue gas treatment residues) will change with the addition of the types of new waste streams proposed. The proposed increase in capacity of 20,000 tonnes per annum will result in an increase in the quantities of residues produced – detail on this increase is given in Section 5.6.12 of the EIS.

H.4.1.b Storage of Residues

The handling and storage of bottom ash, boiler ash, flue gas treatment residues and ferrous metals are outlined in Chapter 5 of the accompanying EIS.

H.4.1.c Reuse / Disposal of Residues

All residues are removed by appropriately permitted waste management contractors and sent for reuse or disposal to suitably licensed facilities. At present the majority of bottom ash is being sent to Louth County Council Whiteriver Landfill, Collon, Co Louth.

Across the EU, bottom ash is commonly either sent to non-hazardous landfill or is pre-treated to recover components for reuse in the construction or similar industries.

To facilitate reuse, Member States set quality criteria that define the quality of recovered material and the conditions under which they can be reused. Such criteria facilitates the development of markets for treated ash by guaranteeing the quality of the material.

For bottom ash to meet this criteria it must be of a higher grade than if it were to be disposed of in a landfill. This improvement in quality can be achieved by treating the ash in an ash recovery plant. At present there is no bottom ash recovery plant in Ireland and there are no bottom ash reuse criteria. However, it is the intention of Indaver to proactively identify potential outlets for bottom ash and to work with the EPA in establishing reuse criteria. With these in place, it may become feasible to develop an ash recovery plant or other pre-treatment system to produce bottom ash components that can be reused.

Boiler Ash

As boiler ash is classified as hazardous there are limited reuse options. At present boiler ash is exported with flue gas treatment residues for remediation of a salt mine. .

Flue Gas Treatment Residues

Due to their leachate characteristics, flue gas treatment residues are classified as hazardous waste. Although some reuse options for flue gas treatment residue are emerging, Indaver NV considers it more environmentally preferable to concentrate and isolate such hazardous material from the environment through safe disposal.

Currently the flue gas treatment residues are exported to a licensed hazardous waste facility for remediation of salt mines.

Indaver has over 20 years of experience sourcing suitable outlets, both in Ireland and abroad, for the disposal of hazardous waste. Indaver also operates its own hazardous waste landfill in Antwerp, Belgium. It is the policy of Indaver to approve waste facilities before sending any material to them the first time in line with the company's internal procedure *Operations 11.2 Approval and Monitoring of Waste Facilities*. To obtain approval, waste facilities must prove that they have the relevant legal licences and/or permits, adequate insurance and operate within their legal operational parameters.

Recovered Metals

Ferrous metals recovered from bottom ash are sent off-site to an appropriate and licensed recycling facility. It is not possible to recover non-ferrous metals. This is because a non-ferrous metal recovery system requires a homogeneous, dry, evenly distributed layer of ash to be spread on a conveyor belt, which is difficult to achieve without pre-treating bottom ash. As less than 1% of the metal in the input waste will be non-ferrous, the effort required to present bottom ash in this manner does not outweigh the environmental gain.

As previously mentioned, Indaver intends to proactively identify opportunities for the development of an ash recovery plant in Ireland.

H.4.2 Other Wastes

Other wastes arising from the facility will include minor quantities of waste from facility operations and staff and visitor facilities. These are listed in Table H.4.b.

Table H.4.b: Other wastes arising

Waste	EWC Code[1]	EWC description	Description and quantities	Handling, Reuse and Disposal
Maintenance Dept. Waste	13 01 10* 13 01 11* 13 01 12* 15 01 02 15 02 03	Mineral-based non-chlorinated hydraulic oil Synthetic hydraulic oils Readily biodegradable hydraulic oils Empty oil containers Absorbents, filter materials, clothing etc.	Used oil from the lubrication and cooling of moving parts throughout the waste-to-energy plant. Protective clothing, spill absorbents etc. from maintenance activities. Arising in minor quantities only.	Waste oils will be stored in a properly bunded area and sent offsite for recycling. Empty containers will be sent for recycling off site. Contaminated clothing, rags, spill absorbents etc will be taken to the bunker on site.
Petrol interceptor residues	13 05 06* 13 05 07* 13 05 02*	Oil from oil/water separators Oily water from oil/water separators Sludges from oil/water separators	Residues such as grit, stones or oily water removed from petrol interceptors during regular inspections. Arising in minor quantities only.	Oily water and sludges are stored in a properly bunded area and sent offsite for physico chemical treatment.
Electrical and Electronic Equipment	16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13	Redundant items of equipment from the plant arising in minor quantities	Discarded equipment will be either be sold on if in good condition, or will be sent offsite to be scrapped for parts or for disposal to an appropriately licensed facility.
Kitchen waste	20 01 01 20 01 02 20 01 08 20 01 25 20 01 39 20 01 40	Separately collected: Paper and cardboard Glass Biodegradable kitchen and canteen Edible oil and fat Plastics Metals	Wastes arising from the canteen and kitchen catering for approximately 50 onsite staff. Arising in minor quantities only.	Where possible, biodegradable waste will be composted onsite or sent offsite for composting. Otherwise, it will be sent to the waste-to-energy facility for treatment. Separately collected recyclable waste such as glass and plastics will be sent offsite for recycling.

[1] European Waste Codes are detailed in the EU Directive 2001/118/EC, List of Wastes

Office waste	20 01 01 20 01 21* 20 01 29* 20 01 30 20 01 33* 20 01 35* 20 01 39 20 01 40	Separately collected: Paper and cardboard Fluorescent tubes and other mercury-containing waste Detergents containing dangerous substances Detergents other than those mentioned in 20 01 29 Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components Plastics Metals	As there will be approximately 50 onsite staff, minor quantities of office waste are expected.	Separately collected recyclable waste such as paper, electronic equipment, etc. will be sent offsite for recycling where possible. Any materials that cannot be recycled e.g. detergents will be sent offsite for disposal at appropriately licensed facilities or if permitted, sent to the WTE plant for treatment
Waste from landscaping	20 02 01 20 02 02	Biodegradable waste Soil and stones	Garden and green waste from onsite landscaping will be expected in minor quantities.	If possible, garden and green waste will be composted onsite or sent offsite for composting.
General waste or rejected bunker waste	20 01 38 20 03 07 17 04 05	Wood other than that mentioned in 20 01 37 Bulky waste Iron and steel	Pallets from the delivery of equipment will occur in relatively minor quantities. Or bulky waste unsuitable for the bunker e.g. mattresses or large pieces of metal or wood.	Where possible materials such as wood waste will be sent for recycling. Otherwise it will either be sent to the waste-to-energy plant or removed from site by appropriately permitted waste contractors.

Appendix H1

	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)

Appendix H2

	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

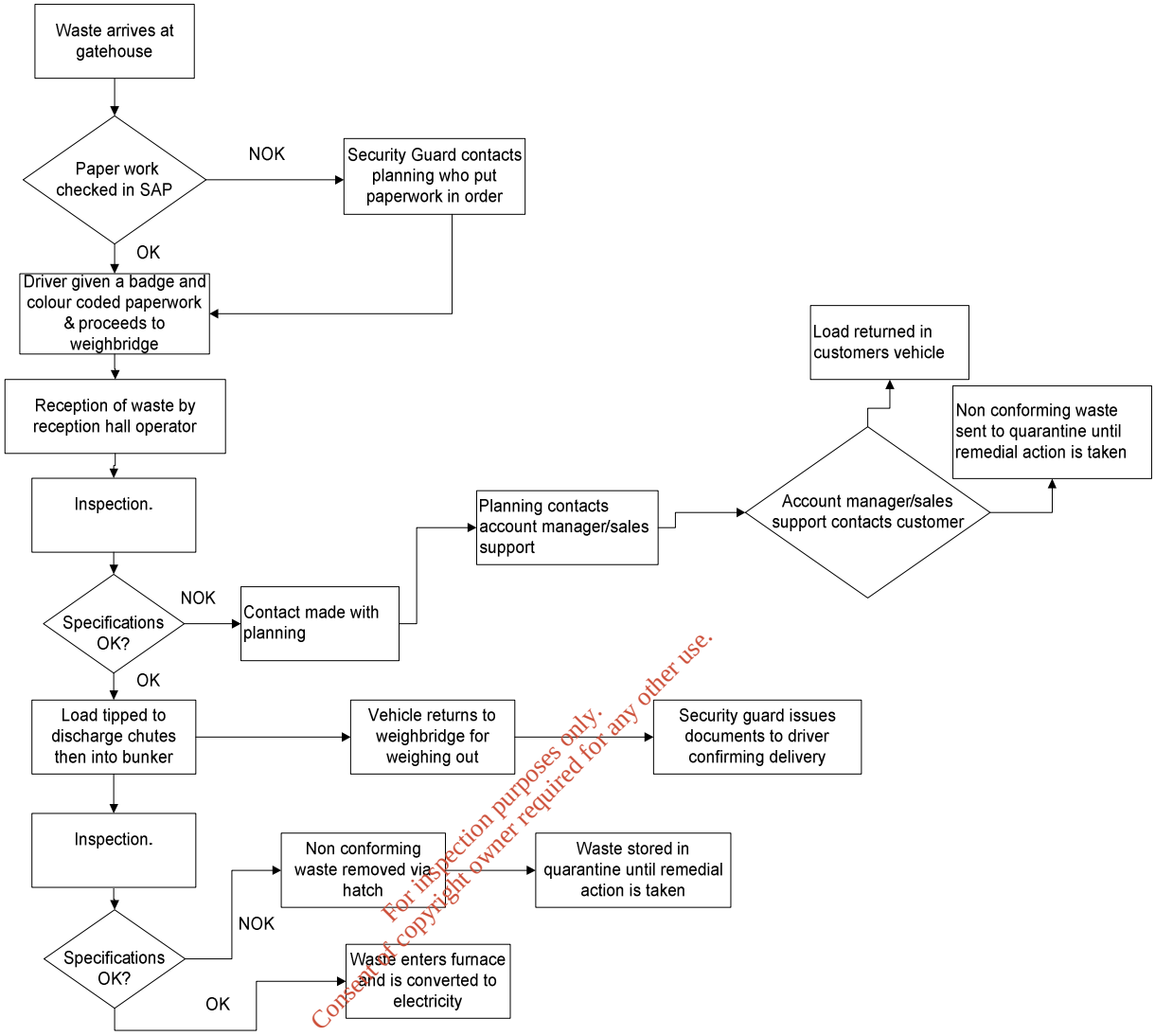
Indaver's customers have a responsibility to deliver waste in compliance with the waste acceptance criteria. The Tipping Hall Operator is responsible for conducting visual checks of the waste to ensure compliance with the waste acceptance criteria. The crane driver is responsible for performing visual 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.