

# Abbott Vascular, Clonmel

## Annual Environmental Report (AER) 2010



<b>Name:</b>	Abbott Vascular, Ireland. Clonmel Site.
<b>Location address:</b>	Cashel Road, Clonmel, Tipperary.
<b>IPPCL Application Ref:</b>	Reg No: P0847-01
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## 1.0 Introduction

### 1.1 General

Abbott Ireland (Abbott), Cashel Road, Lawlesstown, Clonmel, Co. Tipperary, holds an IPPC Licence register no. P0847-01, for “*The use of coating materials in processes with a capacity to use at least 10 tonnes per year of organic solvents*”. The Licence was issued by the EPA on 16th of December 2008.

This Annual Environmental Report (AER) covers the period from January 01, 2010 to December 31, 2010 and has been prepared in accordance with the EPA ‘Guidance Note for Annual Environmental Report’ and other relevant updated guidance notes as provided by the EPA on the agency website ([www.epa.ie](http://www.epa.ie)).

### 1.2 Brief Site Description

The site is located on a 7.8 hectare site, 2 km north of Clonmel town. Abbott is a medical device manufacturer which manufactures bare metal cardiac stents, drug coated cardiac stents and balloon dilatation catheters. There are three main production areas:

#### 1. Implants (Bare Metal Stent Manufacture)

The stent manufacturing process involves the cutting of small diameter metal tubes using high powered laser cutters. Stents are polished and cleaned with acids and solvent.

#### 2. Stent Delivery System (SDS)

In SDS stent delivery catheters are assembled, the principal operations are physical assembly, tubing necking (ie, thinning tubing down to a specific diameter) and bonding (usually by table-top laser).

#### 3. Drug Eluting Stent (DES)

In the DES process the stent is coated with a solvent based drug/polymer solution. Solvents are also used here for both cleaning and spraying equipment.

Site support services include offices, canteen, laboratories, shipping, utilities, etc.

The site currently employs approximately 1,600 personnel and operates two 8-hour shifts per day, Monday to Thursday, and two 7-hour shifts on Friday.

### 1.3 Environmental, Health and Safety Policy



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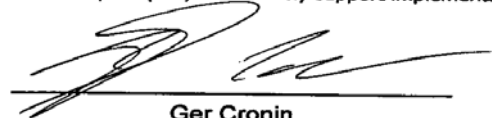
Abbott Vascular  
Environment, Health & Safety Policy

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Abbott is committed to the protection of human health, safety and the environment in all of the global communities where we conduct our business. Attainment of our long-range targets to eliminate employee injuries, to lower environmental emissions, and to reduce our use of natural resources in all aspects of our operations remains a top priority. Meeting our targets, along with all of our other environment, health and safety objectives, is the continuation of a long legacy of responsible business practices at Abbott that reflect our core values: *Pioneering, Achieving, Caring and Enduring*. Toward this end our current key objectives include:

- Fostering a work environment that promotes employee health and productivity, and is ultimately free of injuries;
- Continuously improving the efficiency and sustainability of our business activities and products, resulting in the lowering of greenhouse gas emissions and water use, and minimising wastes destined for landfill, including working with our suppliers to reduce their environmental impact on our activities by:
  - Use of processes and practices that avoid, reduce or control pollution
  - Using energy, resources and raw materials efficiently
  - Managing hazardous materials responsibly
  - Maintaining trained personnel to control and mitigate emergencies
- Expecting that contractors doing work on behalf of Abbott conform to regulatory requirements and meet applicable internal EHS standards;
- Implementing processes in all aspects of the business that ensure compliance with applicable Irish and EU laws and regulations, corporate policies, industry codes and best practices;
- Establishing meaningful goals and strategies annually, for continuous EHS improvement within the enterprise and reviewing our progress toward achieving them;
- Routinely monitoring our operations for accountability to this policy.

This policy applies to all Abbott Vascular Clonmel Employees. It is the responsibility of every employee to work safely, to adhere to the letter and spirit of this policy, and to report practices or conditions which are inconsistent with this policy or which pose recognised or unacceptable risks to human health or the environment. The primary responsibility for implementation of this policy rests with the site Vice President and Directors. In addition, every Abbott leader shall promote a workplace climate that enables employees to practice these principles, and actively support implementation of this policy.

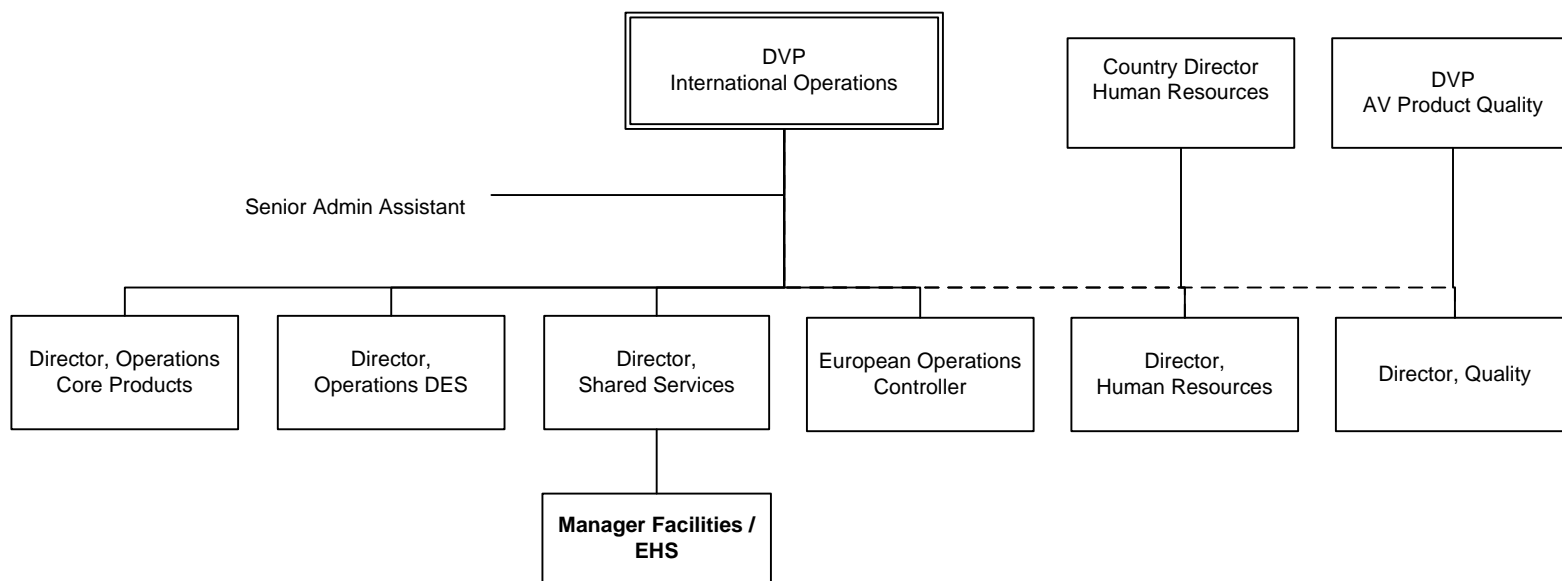


Ger Cronin  
Divisional Vice President, International Operations

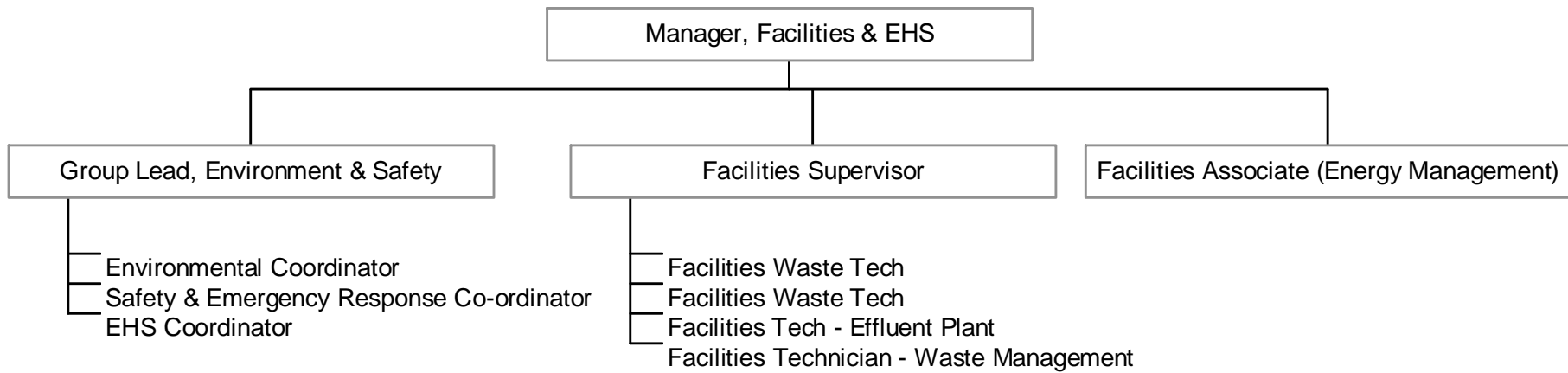
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### 1.4 Organisational Structure -- ADMINISTRATION



### 1.5 Organisational Structure --- ENVIRONMENTAL



## 2.0 Summary of Emissions 2010

### 2.1 Emissions to Atmosphere

A summary of emissions to atmosphere for 2010 are outlined in Table 2.1. Sampling of emissions was conducted in accordance with Schedule B.1 & C.1.2 of the Licence for the operational licensed emission points. Of the eight main emission points only four (A2-1, A2-2, A2-7 and A2-8) were operational during 2010. The results for these four emission points were calculated using the relevant quarterly or biannually sample data. A mass emission (kg/hr) was calculated for each sample and an average figure over the year was determined for each parameter. The average value was then multiplied by the hours of operation to retrieve an annual mass emission value.

**Table 2.1** Summary of Emissions to Atmosphere 2010

Parameter	Emission Point	Monitoring frequency	Mass Emissions (Kg's) 2009	Mass Emissions (Kg's) 2010	Licensed Mass Emission Limit (Kg's)*
Volatile Organic Carbon	A2-1	Quarterly	127.9	111.69	4785
	A2-2		898.0	923.1	3790
	A2-7		56.5	77.32	4785
	A2-8		63.75	40.29	3790
Pharma Dust	A2-1	Biannually	0.16	0.02	4.1
	A2-2		<L.O.D.	0.021	4.1
	A2-7		<L.O.D.	0.02	4.1
	A2-8		<L.O.D.	0.022	4.1

\*Based on the mass emissions limit (kg/hr) x 16 (hrs/day) x 255 (days/yr).

<L.O.D. – Less than the Analytical Limit of Detection

There were no exceedances of Emission Limit Value's (ELV's) for emissions to atmosphere during 2010.

**Note:** Suite 3 (A2-5, A2-6) is being used for basic equipment research and development. It is not generating VOC or pharma dust emissions therefore no monitoring has been commenced in relation to this area. Suite 4 (A2-3, A2-4) is unoccupied.

## 2.2 Emissions to Sewer (Trade Effluent)

A summary for trade effluent emissions to sewer for 2010 are included in Table 2.2. Sampling of emissions was conducted in accordance with Schedule B.3 & C.3.2 of the Licence for the licensed emission point, SE-1. The results are based upon average composite sample monitoring data for each parameter. The average figures were multiplied by the total annual flow to calculate the mass emissions for 2010.

**Table 2.2** Summary of Emissions to Sewer 2010

Emission Point	Parameter	Mass Emissions (Kg's) 2009	Mass Emissions (Kg's) 2010	Licensed Mass Emission Limit (Kg's)*
SE-1	Volume	10,135 m <sup>3</sup>	11,003 m <sup>3</sup>	73,000 m <sup>3</sup>
	Temperature	11.53 °C (Max)	11.27 °C (Max)	35°C
	pH	5.94 - 9.32	Min:6.82 – Max:9.42	5-10
	BOD	939	1519.3	29,200
	COD	3955	3002.1	45,625
	Suspended Solids	1756	1791.2	29,200
	Orthophosphate (as P)	28.3	25.6	730
	Oils, Fats and Grease	53.2	21.0	2,738
	Sulphate	423	624.2	3,650
	Total Heavy Metals	1.9	3.8	73
	Organics: Acetone	63.9	182.7	N/A
	Organics: IPA	42.6	25.3	N/A
	Other Organics**	<L.O.D	<L.O.D	N/A

\*Based on 365 days/year, i.e, kg/day Emissions Limit Values x 365.

\*\* Results for other Organic Compounds (other than Acetone and IPA) were below their respective limits of detection (LOD) – this includes DCM, Heptane, Cyclohexanone, Methanol and Acetonitrile.

There were no exceedances of ELV's for trade effluent emissions to sewer during 2010.



### 2.3 Emissions to Surface Water

A summary of emissions to surface water for 2010 are included in Table 2.3. Sampling of emissions was conducted in accordance with Schedule C.2.3 of the Licence for the licensed emission point, SW-1. The range of results for each parameter is presented below.

**Table 2.3** Summary of Emissions to Surface Water 2010

<b>Emission Point</b>	<b>Parameter</b>	<b>Monitoring frequency</b>	<b>Result 2010</b>
SW1	Visual Inspection	Weekly	No Issues
	pH	Weekly	6.05 – 8.76
	Conductivity (uS/cm)	Monthly	383 - 4350
	COD (mg/l)	Monthly	<10 - 26

## 2.4 Waste Management

Abbott maintains full records of all waste streams arising from site activities. Table 2.4.1 presents the yearly totals for hazardous waste produced on site while Table 2.4.2 presents the yearly totals for non-hazardous waste. A summary of waste quantities is presented in Table 2.4.3. Disposal/recovery routes for each waste stream and permit/licence details of all waste contractors are outlined in the AER Returns Worksheet submitted electronically by uploading to the EPA website as required by the Licence. A copy of the AER Returns Worksheet has also been enclosed as Appendix A.

**Table 2.4.1** Summary of Hazardous Waste 2010

Waste Type	EWC Code	2010 (Tonnes)
Neutralised Wetbench Waste	110111*	113.56
Solid waste potentially contaminated with trace quantities of Drug (Everolimus)	070513*	39.75
Drug (Everolimus) Solvent Waste	070504*	39.5
6:1:1 Vision Polishing Solution	060106*	36.084
Solid waste (e.g. gloves, wipes, aprons, etc.) contaminated with trace amounts of acid - Sulphuric, hydrochloric, phosphoric and nitric.	150202*	26.61
Empty uncleaned plastic bottles/glass jars that previously contained orthophosphoric acid	150110*	16.40
Crushed Glass contaminated with flammable liquid residue	150110*	10.71
Solid Waste contaminated with Isopropanol	150202*	6.745
Air Filters contaminated with Everolimus	150202*	1.79
E272 Vision	110106*	1.72
Electroglo	060101*	1.127
Plastic containers contaminated with flammable liquid residue	150110*	1.021
Interceptor waste (oily water)	130507*	1.0
Plastic bottles that previously contained Waste E.272 Vision	150110*	0.592
Spill Kits contaminated with 6:1:1.	150202*	0.407
Nitric Acid	060105*	0.483
Glassware contaminated with Nitric Acid	150110*	0.211
Plastic drums previously containing 36% Hydrochloric Acid	150110*	0.08
Hydrochloric Acid	060102*	0.253
Fluorescent Tubes	200121*	0.21
Sporklenz	160508*	0.106
Empty Contaminated Drums	150110*	0.09
Lab Smalls	160506*	0.078
Plastic drums previously containing 30% Caustic Solution	150110*	0.052
Biological Waste	180103*	0.04
Miscellaneous Contaminated Waste Drums	150110*	0.294
	<b>TOTAL</b>	<b>298.913</b>

**Table 2.4.2 Summary of Non-hazardous Waste 2010**

<b>Waste Type</b>	<b>EWC Code</b>	<b>2010 (Tonnes)</b>
Mixed Packaging	150106	121.54
Mixed Municipal Waste	200301	114.37
Cardboard	150101	107.08
Food/Compost	200108	41.84
Timber	200138	37.1
Paper	200101	35.17
Grease from Grease Trap	200125	30.0
Metal	200140	25.97
Plastic	150102	13.64
Const. and Indust. Dry Mixed	200307	10.74
Computer Equipment	160214	2.26
Canteen Oil Waste	200125	2.03
Toner Cartridges	080318	0.72
	<b>TOTAL</b>	<b>542.46</b>

**Table 2.4.3 Summary of Waste Arisings**

<b>Waste</b>	<b>2010 (Tonnes)</b>
<b>Total Waste Quantity</b>	<b>841.373</b>
Total waste disposed	372.46
Total waste recycled	468.91
Total Waste Recycling %	<b>55.7%</b>
<b>Non-Hazardous Waste</b>	<b>542.46</b>
Non-hazardous disposed	114.37
Non-hazardous recycled	428.09
Non Hazardous Waste Recycling %	<b>78.9%</b>
<b>Hazardous Waste</b>	<b>298.913</b>
Hazardous disposed	258.095
Hazardous recycled	40.818
Hazardous Waste Recycling %	<b>13.66%</b>

## 2.5 Resource Consumption

A summary of site energy and water consumption for 2010 is presented below.

**Table 2.5.1** Summary of Energy Consumption 2010

Year	2010
Electricity Imported (MWh)	14444.6
Natural Gas (MWh)	24396.2
Diesel (L)	200

**Table 2.5.2** Summary of Water Consumption 2010

Year	2010
Water (m <sup>3</sup> )	50078

## 2.6 Environmental Incidents & Complaints

There was one Category 3 (non-urgent) incident at the site in 2010. This incident is summarised in Table 2.6.

**Table 2.6** Summary of Environmental Incidents

Incident	Date	Cause	Corrective Action
Release of 1000 Kg's of refrigerant gas, HFC134a	26-Oct 2010	Chiller System Leak	Non urgent incident reported to the EPA. System remains shutdown pending the completion of a full technical investigation by the Chiller supplier.

No environmental complaints were received by the site in 2010.

## 2.7 Agency Monitoring and Enforcement

A site inspection and assessment was completed by Martina Kirwan (EPA) on the 25<sup>th</sup> February 2010. There were no non-conformances noted as a result of this visit.

The following table summarises emissions monitoring undertaken by the Agency during 2010.

**Table 2.7** Agency Emissions Monitoring 2010

Monitoring Type	Monitoring Date	Non-compliance with ELV's
Trade Emissions Monitoring (SE-1)	01/09/2010	None*
Trade Emissions Monitoring (SE-1)	22/11/2010	None*
Air Emissions Monitoring (A2-8)	29/09/2010	None*

\*There was no significant difference in the results of compliance monitoring conducted by the Agency's when compared with monitoring completed by Abbott.

### 3.0 Management of the Activity

#### 3.1 Environmental Management Programme (EMP)

##### 3.1.1 EMP Report 2010

Abbott Vascular Clonmel's 2010 Environmental Management Program consisted of 30 individual tasks covering seven of the sites most significant environmental aspects.

28 tasks have been completed during 2010 with the remaining two tasks carried into the sites 2011 Environmental Management Program. Three out of the sites six 5-year goals (normalised for sales) were achieved during 2010 (Fugitive Emissions, Energy and Water).

A full update of the sites 2010 EMP is provided in Appendix B.

##### 3.1.2 EMP Proposal 2011

Abbott Vascular Clonmel's 2011 Environmental Management Plan has been prepared and is included in this document (Appendix C) for the Agencies review and approval.

#### 3.2 Pollution Release and Transfer Register (PRTR)

##### 3.2.1 Report 2010

Under the European Pollutant Release and Transfer Register Regulation (EC) No. 166/2006, and subsequently the site's Licence, Abbott are required to annually report emissions of relevant substances and wastes to the EPA. Abbott reviewed the 91 PRTR pollutants (detailed in Annex II of EC Regulation No. 166/2006) to determine the pollutants relevant to Abbott's activities. The following PRTR substances have been identified as emitted from the site and are reported in the PRTR for 2010:

Pollutant No.	Pollutant
2	Carbon Monoxide
3	Carbon Dioxide
4	Hydro-fluorocarbons (HFCs) - HFC134A
7	NMVOC's
8	Nitrogen Oxides (NOx/NO <sub>2</sub> )
11	Sulphur Oxides (SOx/SO <sub>2</sub> )
17-24	Metals
35	Dichloromethane (DCM)
80	Chlorine and inorganic compounds (as HCL)

Other pollutants which are outlined in the Licence are also tracked and reported. The quantities emitted have been reported on the AER Returns Worksheet and submitted electronically by uploading to the EPA website as required by the Licence.

A copy of the AER Returns Worksheet has also been enclosed as Appendix A. In addition, a copy of the PRTR has been submitted to the Water Services Authority (South Tipperary County Council) as required by the Licence.

### *3.2.2 2011 PRTR Proposal*

The substances to be tracked and reported for 2011 will remain the same as 2010, unless any changes in processes results in a new PRTR pollutant. The Agency will be notified accordingly should any new substances/processes require approval.

## 4.0 Licence Specific Reports

### 4.1 Noise Monitoring Report Summary

Abbott is required to conduct a noise survey of site operations annually. An environmental noise assessment was conducted on 16<sup>th</sup> and 17<sup>th</sup> February 2010 by Abbott Global Environmental, Health & Safety. Monitoring and measurements were based on the International Standard ISO 1996-1, ISO 1996-2 and ISO 1996-3: *Description and Measurement of Environmental Noise*.

In addition the survey was conducted in accordance with the Agency's Guidance Document on Environmental Noise Surveys.

The nearest noise sensitive location (NSL) was monitored at daytime and night time. A summary of the results, including Licence Limits are presented in Table 4.1.

**Table 4.1** Summary of results from the Annual Noise Survey 2010

Location	Description	L <sub>Aeq</sub>		Tonal	Noise Sources
		Daytime	Nighttime		
<b>Licence Limits</b>		<b>55</b>	<b>45</b>	<b>None</b>	
NSL1	House situated approx 25m east and 30m north of the roundabout at the site entrance and 200m from site boundary	68.0	63.7	None	The only noise source is traffic. No audible or tonal noise arising from the Abbott site

The nearest NSL to the site is a private house situated approximately 200 meters to the north east of site boundary. Monitoring at the NSL indicated no tonal noise and that the main noise source is traffic with the Abbott Vascular contribution being negligible.

Monitoring was also conducted at 4 boundary locations to monitor for any tonal noise arising from the site. No tonal noise was identified at any of the 4 boundary monitoring locations.



## **4.2 Solvent Management Plan**

### **4.2.1. Introduction**

A Solvent Management Plan (SMP) is required to be submitted for each calendar year. An SMP for 2010 has been prepared based on a mass balance approach and taking into account the guidelines outlined in Annex III of the Solvents Directive.

Solvents in use at Abbott, as outlined in the IPPCL application, are:

Acetone  
Isopropyl Alcohol (IPA)  
Cyclohexanone  
Heptane  
Dichloromethane (DCM)  
Methanol  
Acetonitrile

### **4.2.2. Solvent Mass Balance**

A mass balance on solvent input and output has been performed on each of these solvents for 2010 and is outlined in Table 4.2 below.

Table 4.2 Solvent Management Plan Mass Balance 2010 (Kg's)

Component	Methanol	IPA	Acetone	DCM	Cyclohexanone	Heptane	Acetonitrile	TOTAL
I1 – Inputs	108	21502	17691	62.21	445.0	135.9	1661.9	41606
I2 – Internal recycle (N/A)	0	0	0	0	0	0	0	0
<b>I - TOTAL INPUT</b>	<b>108</b>	<b>21502</b>	<b>17691</b>	<b>62</b>	<b>445</b>	<b>136</b>	<b>1662</b>	<b>41606</b>
O1 Solvent emissions in waste gases	0	85	1810	0	39	0	0	1934
O2 Solvents lost in water	7	23	181	0	0	0	5	216
O3 Solvents residue on Product	0	0	0	0	0	0	0	0
O5 Solvent Treated or Reacted	0	0	116	0	50	0	0	166
O6 Collected Waste Solvent	0	2865	72	0	0	0	0	2937
O7 Solvent for sale as a product (N/A)	0	0	0	0	0	0	0	0
O8 Solvent for reuse elsewhere	207	17585	11784	16	457	64	1451	30564
O9 Solvent released in other ways (N/A)	0	0	0	0	0	0	0	0
<b>O-TOTAL OUTPUT</b>	<b>214</b>	<b>20588</b>	<b>12963</b>	<b>0</b>	<b>546</b>	<b>64</b>	<b>1456</b>	<b>35817</b>
<b>O4 FUGITIVE EMISSIONS/ UNACCOUNTED</b>	<b>(106)</b>	<b>967</b>	<b>4909</b>	<b>46</b>	<b>(101)</b>	<b>72</b>	<b>206</b>	<b>6005</b>

Fugitive Emissions % **14.43**

The sources of data used for each input and output to complete the mass balance are outlined below (these reflect the terminology used in the Solvents Directive):

### **Solvent Inputs (I):**

**I1 - Solvent inputs** – the amount of fresh solvent input to the process was calculated from amounts issued to production/laboratories by Supply Chain during 2010.

**I2 – Internal Recycle** – no recovered solvent is used in the process, as only fresh solvent is used as an input at Abbott Vascular.

### **Solvent Outputs (O):**

**O1 - Solvent emissions in waste gases.** This has been calculated based on results of quarterly monitoring of main emissions points which were operational during 2010:– A2-1, A2-2, A2-7 and A2-8.

During 2010 monitoring was completed in the Hazmat Lab (A3-11) and small amounts of IPA were picked up during the solvent mixing task, these figures have been incorporated into the SMP calculation. There are no other point source emissions on site likely to give rise to detectable levels of VOC's.

**O2 - Solvents lost in water.** This has been calculated based on monitoring results for organic solvents in the trade effluent and the total trade effluent flow for 2010.

**O3 - Solvents residue on Product** - finished product (stents) are tested in the onsite Analytical Laboratory and the results for residual solvent on stents are typically zero.

**O5 - Solvent Treated or Reacted** (Absorbed or incinerated) – Solvent used as part of the Primer Spray process is captured in an activated carbon filter.

**O6 - Collected Waste Solvent** – Waste containing solvent sent off site for disposal (as opposed to recovery) includes wipes used for cleaning with acetone and IPA. The content of IPA and acetone on these wipes has been estimated using results of weighing wipes before and after use. Solvent which is sent for reuse/recovery is classed under O8 (Solvent Reused/Recovered Off-Site) below.

**O7 - Solvent for sale as a product** - This term does not apply to the Abbott Vascular site.

**O8 - Solvent for reuse elsewhere** – this includes waste from Abbott Vascular which is sent off-site for recovery as the definition of recovery for reuse under the legislation is *'the use of organic solvents recovered from an installation for any technical or commercial purpose and including use as a fuel'*. Drums of solvent waste for recovery offsite were analysed for solvent in 2009 and 2010. This data was used as a basis to estimate the breakdown of all waste solvent sent off site for recycling during 2010.

**O9 - Organic Solvents released in Other Ways** - This term is not relevant to the Abbott Vascular site.

**O4 - Fugitive Solvent Emissions** – fugitive emissions have been calculated based on solvent mass balance difference, i.e., the unaccounted value. In addition, solvents lost in water (O2) and solvent residue on product (O3) are required to be counted as fugitive emissions. Hence, the unaccounted value resulting from the mass balance, plus O2 and O3, has been taken as the level of fugitive solvent emissions from the site.

$$\text{Fugitive/Unaccounted Losses} = I1+I2 - (O1+O2+O5+O6+O8)$$

**Spillages/Incidents:** There were no incidents involving solvent during 2010.

#### **4.2.3. Discussion on SMP Result - Assessment of compliance with VOC Fugitive Emission Limit**

The mass balance shown above in Table 4.2, demonstrates that the unaccounted for figure treated as fugitive emission is **14.43%** of the solvent input, which is below the VOC fugitive emissions limit of 20% of the solvent input set by the sites IPPC licence. Hence, the site is compliant with the VOC fugitive emission limit.

#### **4.2.4. 2010 Fugitive Emissions Reduction Update**

The following actions were completed during the course of 2010:

1. Monitoring of additional VOC point source (Hazmats) was completed during 2010, as discussed in section 4.2.2
2. Inspections are now completed on a regular basis to ensure all solvent waste containers remain closed when not in use.
3. Bunds are now monitored on a weekly basis so any solvent spills within bunds are identified and cleaned up in a timely manner.
4. The use of solvent for general cleaning was reviewed; there is currently limited scope to reduce solvent for this business critical operation. Solvent is dispensed from small dedicated solvent bottles to minimise the amount lost to spills and to ensure only the quantity required for the cleaning task is accurately dispensed.
5. Facilities waste handlers now check waste solvent bottles are empty prior to collection, only bottles that are empty are removed.
6. The sites Chemical Management Procedure was updated to include guidance on solvent management (eg, handling, transport, waste containers, etc.).

### 4.3 Energy Efficiency Auditing

#### Introduction

The last comprehensive site energy audit was completed by Abbott Facilities in December 2009 based on the Agency’s Guidance Note on Energy Efficiency Auditing, 2003.

Energy usage is a key environmental metric for the Clonmel site with one Facilities engineer dedicated to tracking energy usage and coordinating energy reduction projects on site.

#### Overview of Sites Energy Management System

There were approximately 1600 people working onsite. The facility operates a 5 day, 2 x 8 hour shift basis with clean-room quality maintained over the course of the weekend. Occasionally there is overtime on Saturdays between 7am – 1pm.

The current energy management system includes the following:

- Electrical consumption data is downloaded from the ESBI website. Detailed breakdown of site energy consumption is calculated using the information from the onsite Energy Brain (approximately 91 meters installed).
- Gas consumption data is provided by ESBI through monthly billing. The onsite BMS also records gas consumption data for the site and for the Combined Heat & Power plant (CHP).
- Data from the Energy Brain Electrical Metering System & the Building Management System (BMS) is used to produce a monthly trend report for the key site utilities on site – HVAC, Chilled Water, Lighting, 208 Voltage System and Compressed Air. This trend report is updated monthly and has historical data from August 2008.

#### Energy Streams on site

Table 4.3 summarises the consumption of different energy streams at the site. (This has been updated to include all data for 2010 for the purposes of this AER)

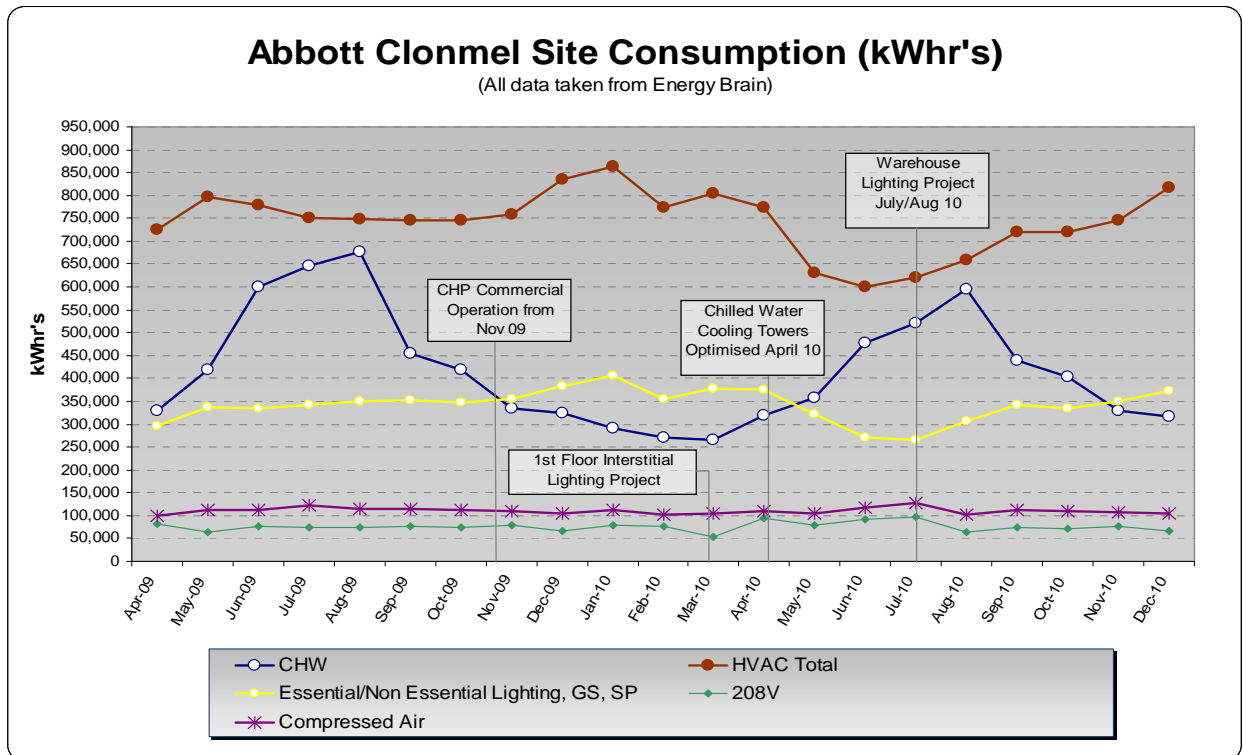
Table 4.3 Consumption of different energy streams on site

Site Energy Usage 2010		
Energy Stream	Annual Quantity (kWhr)	Comments
Electricity Consumed Onsite	22,415,154	Includes total imported from ESBI & generated by CHP
Electricity Imported	14,444,654	Includes total imported from ESBI only
Electricity Generated Onsite (CHP)	7,970,500	CHP Only
Natural Gas Total	24,396,194	Includes Gas consumed by Boilers, CHP & Kitchen
Natural Gas for CHP	18,828,296	CHP Only

### Main Energy Consumers

The main consumers of electricity on site are highlighted in the graph below which trends data from April 2009 to Dec 2010. Gas is only used for CHP and for heating boilers.

Figure 1 Main Electricity Consumers on site (April 2009 to Dec 2010)



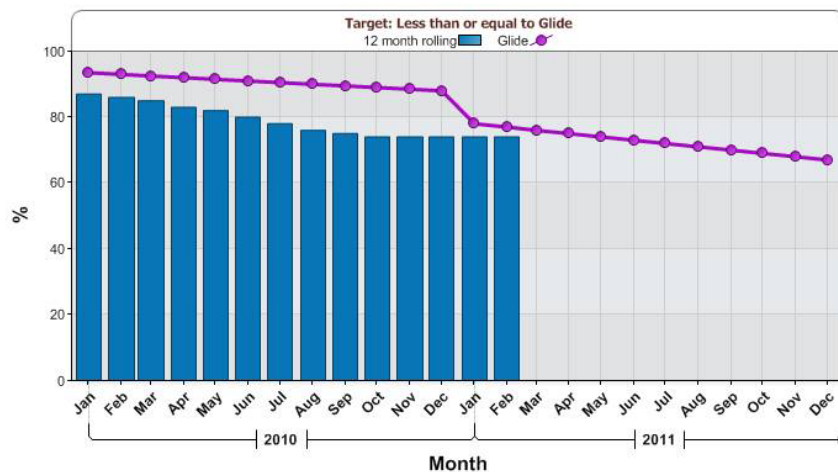
### Energy Performance Indicators

The site sets annual goals for energy reduction on site. The graph below, Figure 2, shows the Key Performance Indicator (KPI) for CO2 emissions (based on contributions from Electricity and Natural Gas), this information is presented to the management team at the Monthly Business Review and is available online to all employees on site.

## CO2 Environmental Scorecard

✔ Metric Sponsor: Ger Murphy

✔ Metric Owner: Kieran Ryan



### Key Take Away

- ▶ 2011 goal is to reduce CO2 emissions by 5% (Natural gas & Electricity imported)
- ▶ Increased CHP electricity generation capacity from 999KW to 1131KW (13%).

View By: Admin | Shared Services | My Metrics | << Prev | Next >>

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Figure 2, CO2 Environmental Scorecard (from Business Performance Scorecard)

Note : Glide sets target for annual improvement of 5%  
Actual = actual CO2 emissions as a percentage of a 2008 baseline.

### Previous Audits/Actions Completed to date

Previous Energy Usage Reviews include:

- Site Energy Survey, (Dec 2009)
- Chilled Water Site Survey Audit Report (Johnson Controls/Retrofit Services, Aug 2008)
- HVAC Energy Savings Audit Report (Curley Smith Design Ltd, Nov 2007)
- Sustainable Energy Ireland (SEI) Audit (Sept 2007)
- Abbott Global Energy Group (GEM) Audit (July 2007)

Energy Improvement Projects identified from such audits are shown in the table below:

Table 2 Energy Improvement Projects completed 2007 – Current.

Area	Project Description	Payback Period (Approx)	Resp.	kWhr Reduction	Kg's CO2 Reduction
Lighting	232 x 28W Fluorescent tubes removed from corridors. Time-clocks & PIR's fitted in toilets in Building B	2 Mths	Facilities Manager	34,000	16,595
	Intelligent Lighting System In New Building Now Running at 100% Efficiency	2 Yrs	Facilities Manager	190,000	92,738
	Warehouse Lighting Project. 250W High Bays replaced with 120W Induction Fittings	2.6Yrs	Facilities Manager	58,000	28,000
	Interstitial Lighting Project. PIR's installed	2Yrs	Facilities Manager	228,000	111,000
HVAC's	Non cGMP Critical HVAC's Schedules Modified to Suit Occupancy Humidity & Temperature Deadbands introduced HVAC's Serving Unused Suites Shutdown: DES Suites 1, 3 and 4	3 Mths	Facilities Manager	2,500,000	1,220,249
	Air Change Rates Reduced in HVAC 3, 4, 5 & 6	1.5 Yr	Facilities Manager	1,591,200	776,664
Chilled Water System	Set-Point Temperature changed from 2°C to 5 °C in 1 °C steps	1 Mth	Facilities Manager	520,000	253,811
	System Performance Optimised	0.5 Yr	Facilities Manager	2,800,000	1,366,679
	Modify sequencing of Cooling Towers on Chilled Water System to achieve better use of free cooling by minimizing chiller condense water temperature.	0.5 Yr	Facilities Manager	212,765 to 283,687	103,850 to 138,467
Building Envelope	Thermographic Survey of Building A & B Envelopes highlighted areas of poor insulation that were subsequently repaired.	0.5 Yr	Facilities Manager	500,000	102,250
CHP	Installation & Commissioning of a 1.0MW(e), 1.0MW(t) Combined Heat & Power Plant (CHP)	2.5 Yrs	Facilities Manager	Expected to generate 7.4GWhr Electrical/ 7.4GWhr Thermal	2,843,827



## Current Energy Improvement Projects

Detailed energy mapping has identified the following energy improvement projects:

Table 3 Current Energy Improvement Projects

Area	Recommendation	Payback Period (Approx)	Resp.	kWhr Reduction	Kg's CO2 Reduction	Update
HVAC	Air Change Reduction in SDS/Implant HVAC. Set Back Air Changes Per Hour	1-1.5 Yrs	Facilities Manager	1,021,276	498,484	Ongoing
	Implement Relative Humidity Deadbands	<1 Yr	Facilities Manager	141,843 – 212,765	69,233- 103,850	Ongoing
Chilled Water System	Modify sequencing of Cooling Towers on Chilled Water System to achieve better use of free cooling by minimizing chiller condense water temperature.	0.5 Yr	Facilities Manager	212,765 - 283,687	103,850 - 138,467	Complete (See Table 2 for details)
Lighting	Review of all lighting internal/external to assess opportunity for introduction of induction lighting:	4-5 Yrs	Facilities Manager	59,234	28,477	Complete (see table 2 for details)
Heat Recovery	Install New Calorifier in Building B to optimize LPHW usage.	1.5 Yr	Facilities Manager	TBC	TBC	Pending Capital Approval
Heat Recovery/ HVAC	Pre-Heat feed water to all Humidifiers using heat exchanger thus utilising waste heat from CHP	2 Yr	Facilities Manager	TBC		On-going
General	Implement "Equipment Off" approach where possible in manufacturing areas	1-2 Yrs	Facilities Manager	212,765 – 496,453	103,850 - 242,318	On-going

Audits have identified the primary energy consumers on site as the HVAC and the Chilled Water System. Three other high energy consumers were identified as Lighting, Compressed Air and the 208 Voltage System. These key energy consumers will continue to be the focus of energy improvement programme's over the coming years.

#### **4.4 Decommissioning Management Plan (DMP) Review**

There are no proposed amendments to the DMP at this time.

#### **4.5 Environmental Liabilities Risk Assessment (ELRA) Review**

There are no proposed amendments to the ELRA at this time.

#### **4.6 Statement of Measures**

A statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities) is required to be submitted in the AER.

Abbott Corporation will act as guarantor for any environmental liabilities.

Environmental liabilities on site will continue to be controlled as outlined in the ELRA. There was one mitigation measure recommended in the ELRA Report (ie, installation of an emergency isolation system on the surface water outlet to prevent discharge of contaminated firewater in the event of a fire). This control is to be installed before Q3 2011.

#### 4.7 Testing & Inspection of underground tanks, sewer pipes and bunds

The testing and inspection of all underground pipes, tanks and bunds is scheduled for 2011.

#### 4.8 Other reports required to be submitted in the AER

The following areas are required to be reported on in the AER as outlined under Schedule D of our Licence:

##### Waste Reduction - Prevention, Minimisation and Recycling Summary

During 2010 the site continued its efforts to reduce hazardous waste generation on site and to continue to increase non-hazardous waste recycling rates. Total hazardous waste quantities for the site dropped from 316 tonnes in 2009 to 298.8 tonnes in 2010. Hazardous waste generation normalised to sales saw a drop from 49.19 to 29.1. The sites 5-year target is set at 25% of our 2008 baseline level.

Aspect	2008 Baseline	2009 Actual	2010	2011	2012	2013
Hazardous Waste	100	49.19	29.1			25

The sites main focus in relation to hazardous waste in 2010 was full implementation of the drug waste segregation program in DES manufacturing suites. The 2010 projected DES waste figure was 141 tonnes, the actual figure generated following the introduction of waste segregation facilities was 39.75 tonnes. Initiatives to further reduce the amount of Hazardous waste generated are being explored, see 2011 EMP.

Non-hazardous waste generation normalised to sales saw a drop from 37.7 to 27.3, below the sites 5-year target of 32% of our 2008 baseline level.

Aspect	2008 Baseline	2009 Actual	2010	2011	2012	2013
Non Hazardous Waste	100	37.7	27.3			32

Non-hazardous waste recycling onsite has increased in 2010 from 71% to 78.8%.

##### Raw Material Usage and Efficiency

Solvent reduction has been the sites main focus for 2010. The sites Solvent Reduction Team completed a number of milestones which included completion of feasibility studies and identification of solvent reduction improvements. The site is expecting to see its first absolute reduction in Coating Solvent usage in 2011. Solvent usage normalised for sales saw a reduction from 51 to 36.

Aspect	2008 Baseline	2009 Actual	2010	2011	2012	2013
Solvent Usage	100	51	36			27

Key solvent reduction developments in 2010 include:

- DES parts washing using water washing unit examined – not feasible.
- DES parts washing using lower concentration of solvent examined – not feasible.
- Replacement of spraying syringes from glass (requires cleaning) to plastic (no cleaning) implemented in January 2011 (Estimated Solvent Reduction per annum: 5.5 tonnes).
- DES Clean Stent Stations to be removed Q3 2011 (Estimated Solvent Reduction per annum: 1.75 tonnes.).
- Further solvent reduction projects have been identified and are detailed in the sites 2011 EMP Proposal (Appendix C).

### **Minimisation of Water Demand and Trade Effluent**

2010 saw a reduction in water usage of 3%. This was as a result of installation of water efficient WC valves. Water management will remain a continued focus for the site during 2011.

#### **4.9 Other reports submitted to the EPA during 2010**

The following reports were submitted in full to the EPA during the year:

- Hydrogeological Survey – This follow on survey included sampling and analysis of the onsite well and the 'Holy Well' as requested by the EPA. Monitoring showed an extremely low level of groundwater contamination for the site.

# **APPENDIX A – AER Returns Worksheet**

# AER Returns Worksheet

<b>REFERENCE YEAR</b>	2010
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## 1. FACILITY IDENTIFICATION

Parent Company Name	Abbott Ireland Limited
Facility Name	Abbott Ireland Limited
PRTR Identification Number	P0847
Licence Number	P0847-01

### Waste or IPPC Classes of Activity

No.	12.2.2
	The manufacture or use of coating materials in processes with a capacity to make or use at least 10 tonnes per year of organic solvents, and powder coating manufacture with a capacity to produce at least 50 tonnes per year, not included in paragraph 12.2.
12.2.2	
Address 1	Cashel Road
Address 2	Lawlesstown
Address 3	Clonmel
Address 4	County Tipperary
Country	Ireland
Coordinates of Location	-7.7226 52.3733
River Basin District	IESE
NACE Code	2561
Main Economic Activity	Treatment and coating of metals
<b>AER Returns Contact Name</b>	Mr. Nigel Hickey
<b>AER Returns Contact Email Address</b>	nigel.hickey@av.abbott.com
<b>AER Returns Contact Position</b>	Environmental Coordinator
<b>AER Returns Contact Telephone Number</b>	052-6173103

## 2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General

## 3. SOLVENTS REGULATIONS (S.I. No. 543 of 2002)

Is it applicable?	<b>No</b>
Have you been granted an exemption ?	n/a
If applicable which activity class applies (as per Schedule 2 of the regulations) ?	n/a
Is the reduction scheme compliance route being used ?	n/a

## 4.1 RELEASES TO AIR

## SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

RELEASES TO AIR									
POLLUTANT		METHOD			QUANTITY				
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year	0.0
			Method Code	Designation or Description					
					0.0	0.0	0.0		0.0

## SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR											
POLLUTANT		METHOD			QUANTITY						
No. Annex II	Name	M/C/E	Method Used		Main Emission Pts (A2-1, A2-2, A2-7 and A2-8)	Boilers (A3-3, A3-4, A3-5) and CHP (A3-19).	Minor Emission Pt/Scrubber (A3-13)	Minor Emission Point A3-11 Hazmats	T (Total) KG/Year	(Accidental) KG/Year	(Fugitive) KG/Year
			Method Code	Designation or Description							
07	Non-methane volatile organic compounds (NMVOC)	C	MAB	MAB and EN12619 USEPA Method 26 (Modified). SMP for fugitive levels. Measurement for main emissions points.	1849.3	0.0	0.0	85.1	7893.4	0.0	5959.0
80	Chlorine and inorganic compounds (as HCl)	M	CRM	FTIR Analysis using ASTM D6348-03	0.0	0.0	14.4	0.0	14.4	0.0	0.0
35	Dichloromethane (DCM)	C	MAB	SMP: Input minus recovered in waste.	0.0	0.0	0.0	0.0	62.0	0.0	62.0
02	Carbon monoxide (CO)	M	EN 15058:2004	Using Bord Gais Conversion Factor: 205.6 gCO <sub>2</sub> /kWhr.	0.0	22366.0	0.0	0.0	22366.0	0.0	0.0
03	Carbon dioxide (CO <sub>2</sub> )	C	OTH		0.0	5015857.5	0.0	0.0	5015857.5	0.0	0.0
08	Nitrogen oxides (NO <sub>x</sub> /NO <sub>2</sub> )	M	EN 14792:2005		0.0	13527.7	0.0	0.0	13527.7	0.0	0.0
11	Sulphur oxides (SO <sub>x</sub> /SO <sub>2</sub> )	M	EN 14791:2005		0.0	6483.6	0.0	0.0	6483.6	0.0	0.0
04	Hydro-fluorocarbons (HFCs)	E	OTH	Charge of chiller unit.	0.0	0.0	0.0	0.0	1000.0	1000.0	0.0

## SECTION C : REMAINING POLLUTANT EMISSIONS

RELEASES TO AIR												
POLLUTANT		METHOD			QUANTITY							
Pollutant No.	Name	M/C/E	Method Used		A2-1 Emission Point 1	A2-2 Emission Point 2	A2-7 Emission Point 3	A2-8 Emission Point 4	A3-11 Emission Point 5	T (Total) KG/Year	A Accidental KG/Year	F Fugitive KG/Year
			Method Code	Designation or Description								
351	Total Organic Carbon (as C)	M	ALT	EN12619	111.69	923.1	77.32	40.29	51	1203.4	0.0	0.0
337	Pharmaceutical actives	M	ALT	EN13284-1:2002	0.02	0.02	0.02	0.02	0	0.08	0.0	0.0

**4.2 RELEASES TO WATERS**
**SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS**

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
					0.0	0.0	0.0	0.0

**SECTION B : REMAINING PRTR POLLUTANTS**

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
No. Annex II	Name	M/C/E	Method Used		Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
					0.0	0.0	0.0	0.0

**SECTION C : REMAINING POLLUTANT EMISSIONS**

RELEASES TO WATERS								
POLLUTANT					QUANTITY			
Pollutant No.	Name	M/C/E	Method Used		SW1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description	Emission Point 1			
306	COD	M	ALT	G/03 Based on APHA 2005, 21ST Edition, 5220D, Closed Reflux, colorimetric method.	684.2	684.2	0.0	0.0



**4.3 RELEASES TO WASTEWATER OR SEWER**
**SECTION A : PRTR POLLUTANTS**
**OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER**

POLLUTANT		METHOD			QUANTITY			
No. Annex II	Name	M/C/E	Method Used		SE1 Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
19	Chromium and compounds (as Cr)	M	CRM	Heavy Metals: G/57 ICP-MS based on EP Method 200.8	0.06	0.06	0.0	0.0
20	Copper and compounds (as Cu)	M	CRM	Heavy Metals: G/57 ICP-MS based on EP Method 200.8	0.43	0.43	0.0	0.0
24	Zinc and compounds (as Zn)	M	CRM	Heavy Metals: G/57 ICP-MS based on EP Method 200.8	4.06	4.06	0.0	0.0

**SECTION B : REMAINING POLLUTANT EMISSIONS**
**OFFSITE TRANSFER OF POLLUTANTS DESTINED FOR WASTE-WATER TREATMENT OR SEWER**

POLLUTANT		METHOD			QUANTITY			
Pollutant No.	Name	M/C/E	Method Used		SE1 Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
			Method Code	Designation or Description				
303	BOD	M	CRM	G/04 APHA 2005, Method 5210B	1519.3	1519.3	0.0	0.0
306	COD	M	CRM	G/03 APHA 2005 Method 5220D	3002.1	3002.1	0.0	0.0
314	Fats, Oils and Greases	M	CRM	G/32 APHA 2005 Method 5520B	21.0	21.0	0.0	0.0
330	Organic solvents	M	CRM	G/14 Based on ASTM Method D3695	207.96	207.96	0.0	0.0
332	Ortho-phosphate (as PO4)	M	CRM	G/67 APHA 2005, 4500-P.E	25.6	25.6	0.0	0.0
343	Sulphate	M	CRM	G/67 Konelab	624.2	624.2	0.0	0.0
347	Total heavy metals	M	CRM	USEPA 200.8	3.8	3.8	0.0	0.0
240	Suspended Solids	M	CRM	G/19 APHA 2005, Method 2540B	1791.3	1791.3	0.0	0.0

## 5. ONSITE TREATMENT &amp; OFFSITE TRANSFERS OF WASTE

Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	11 01 11	Yes	90.266	Neutralised wet bench waste	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	11 01 11	Yes	23.3	Neutralised wet bench waste	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	07 05 13	Yes	34.264	Solid waste potentially contaminated with trace quantities of Drug (Everolimus)	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	07 05 13	Yes	5.49	Solid waste potentially contaminated with trace quantities of Drug (Everolimus)	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	07 05 04	Yes	28.766	Drug (Everolimus) Solvent Waste	R3	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	SRM Ltd, BL7302ID, Middleton Road, Morecambe, Lancashire,CA3 3JW, UK	Middleton Road, Morecambe, Lancashire, CA33JW, United Kingdom
To Other Countries	07 05 04	Yes	10.734	Drug (Everolimus) Solvent Waste	R2	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	SRM Ltd, BL7302ID, Middleton Road, Morecambe, Lancashire,CA3 3JW, UK	Middleton Road, Morecambe, Lancashire, CA33JW, United Kingdom

Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	06 01 06	Yes	36.646	6:1:1 Vision polishing Solution	D9	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	11 01 06	Yes	1.72	E.272 Vision	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2,H amburg,22113, Germany	BorsigstraBe2, Hamburg, 22113, Germany
To Other Countries	15 02 02	Yes	22.397	Solid waste (e.g. gloves, wipes, apron, etc.) contaminated with trace amounts of acid- Sulphuric , hydrochloric, Phosphoric, Nitric	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg, 22113, Germany	BorsigstraBe2, Hamburg, 22113 Germany
To Other Countries	15 02 02	Yes	4.217	Solid waste (e.g. gloves, wipes, apron, etc.) contaminated with trace amounts of acid- Sulphuric , Hydrochloric, Phosphoric, Nitric	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030, Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	15 01 10	Yes	14.092	Empty unclean plastic bottles/glass jars that previously contained Orthophosphoric Acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg, 22113, Germany	BorsigstraBe2, Hamburg, 22113 Germany
To Other Countries	15 01 10	Yes	2.314	Empty unclean plastic bottles/glass jars that previously contained Orthophosphoric acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030, Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium

Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	15 01 10	Yes	10.71	Crushed glass contaminated with flammable liquid residue	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg, 22113, Germany
To Other Countries	15 02 02	Yes	1.594	Air filters contaminated with Everolimus	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	15 02 02	Yes	0.199	Air filters contaminated with Everolimus	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	06 01 01	Yes	0.948	Electroglo	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2,H amburg,22113, Germany
To Other Countries	06 01 01	Yes	0.179	Electroglo	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	06 01 05	Yes	0.483	Nitric Acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2,H amburg,22113, Germany
To Other Countries	11 01 06	Yes	0.474	Empty unclean plastic bottles that previously contained waste E.272 Vision	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2,H amburg,22113, Germany

Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	11 01 06	Yes	0.12	Empty unclean plastic bottles that previously contained waste E.272 Vision	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	15 01 10	Yes	0.253	Packaging containing residues of or contaminated by dangerous substances	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	15 01 10	Yes	0.211	Empty unclean glassware that previously contained Nitric Acid 70% Acidic	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2,H amburg,22113G ermany
To Other Countries	15 01 10	Yes	0.158	Empty unclean drum/bottles previously containing 36-37% Hydrochloric Acid	D15	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
Within the Country	15 01 10	Yes	0.082	Empty unclean drum/bottles previously containing 36-37% Hydrochloric Acid	D15	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Rialta Enviromental Ltd,W0193-02, Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 02,Grants Drive, Greenogue Business Park,Rathcoole Co. Dublin, Ireland
Within the Country	15 01 10	Yes	0.052	Empty drums contaminated with 30% Caustic Soda	D15	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 02,Grants Drive, Greenogue Business Park,Rathcoole Co. Dublin, Ireland

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Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	15 01 10	Yes	0.744	Empty plastic containers contaminated with flammable substances	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	15 01 10	Yes	0.277	Empty plastic containers contaminated with flammable substances	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030,Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	15 01 10	Yes	0.002	Empty Poly (ethylene) Oxide	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113 Germany
Within the Country	15 01 10	Yes	0.006	Empty drums that previously contained Antichlor	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland
Within the Country	15 01 10	Yes	0.005	Empty drums that previously contained MB 215	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland
Within the Country	15 01 10	Yes	0.005	Empty drums that previously contained Chem Aqua 85000MT contains 10-25% Sodium Hydroxide	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland

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Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
Within the Country	15 01 10	Yes	0.032	Empty unclean drum previously containing 6:1:1 Vision	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland
Within the Country	15 01 10	Yes	0.06	Empty IBC that previously contained Neutralised wet bench waste	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port,Dublin D1,Ireland	Rialta Enviromental Ltd,W0193- 02,Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland	Block 402, Grants Drive, Greenogue Business Park, Rathcoole Co. Dublin,Ireland
To Other Countries	15 01 10	Yes	0.043	Empty unclean bottles previously containing Phosphoric acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port,Dublin D1,Ireland	AVG,IB2234/AV G-GenB- 2,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	15 01 10	Yes	0.046	Packaging containing residues of or contaminated by dangerous substances	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	15 02 02	Yes	0.472	Solid waste contaminated with IPA (Isopropanol)	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port,Dublin D1,Ireland	Indaver,NV MIAVI/98000004 85,Pold ervlietweg 5,Haven 550, Antwerp 3,BE- 2030, Belgium	Pold ervlietweg 5,Haven 550,Antwerp 3,BE-2030, Belgium
To Other Countries	15 02 02	Yes	6.273	Solid waste contaminated with IPA (Isopropanol)	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany



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Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M / C / E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility <u>Non Haz Waste:</u> Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility <u>Non Haz Waste:</u> Address of Recover/Disposer	Name and Licence / Permit No. and Address of Final Recoverer / Disposer (Hazardous Waste Only)	Actual Address of Final Destination i.e. Final Recovery / Disposal Site (Hazardous Waste Only)
To Other Countries	150202	Yes	0.407	Spill kits and absorbant material contaminated with 6:1:1 Vision polishing solution containing 75% sulphuric acid, 12.5% hydrochloric acid and 12.5% phosphoric acid	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB-2, BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	16 05 06	Yes	0.078	Lab Smalls	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
To Other Countries	16 09 03	Yes	0.106	Sporklenz	D10	M	Weighed	Abroad	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	AVG,IB2234/AV G-GenB- ,BorsigstraBe2, Hamburg,22113, Germany	BorsigstraBe2, Hamburg,22113, Germany
Within the Country	13 05 07	Yes	1.0	Interceptor Waste	R9	C	Volume Calculation	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port, Dublin D1,Ireland	ENVA Ireland Limited,W0184- 01, Clonminam Industrial Estate, Portlaoise,Co. Laois, Ireland	Clonminam Industrial Estate, Portlaoise,Co. Laois Ireland
Within the Country	20 01 21	Yes	0.21	Fluorescent Tubes	R13	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port Dublin D1,Ireland	Irish Lamp Recycling,WFP- KE-08-0348-01, Woodstock Industrial Estate, Kilkenny Road, Athy,Kildare, Ireland	Woodstock Industrial Estate,Kilkenny Road, Athy, Kildare Ireland
Within the Country	18 01 03	Yes	0.04	Biological Waste	D9	M	Weighed	Offsite in Ireland	Indaver, W0036-02	Tolka Quay Road Dublin Port Dublin D1,Ireland	SRCL/Ecosafe,5 4-2,Unit 1A, Allied Industrial Estate, Kylemore Road, Ballyfermot, Dublin 10,Ireland	Unit 1A,Allied Industrail Estate, Kylemore Road, Ballyfermot Dublin 10, Ireland



Transfer Destination	EWC	Hazardous	Quantity Tonnes per Year	Description of Waste	Waste Treatment Operation	M/C/E	Method Used	Location of Treatment	Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Non Haz Waste: Address of Recover/Disposer
Within the Country	15 01 06	No	121.54	Mixed Packaging	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 03 01	No	114.37	Mixed Muncpal Waste	D1	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	15 01 01	No	107.08	Cardboard	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 08	No	41.84	Food and Compost	R3	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 38	No	37.1	Timber other than that mentioned in 20 01 37	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 01	No	35.17	Paper	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 25	No	30.0	Grease from grease trap	D10	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 40	No	25.97	Metals	R4	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	15 01 02	No	13.64	Plastic	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 03 07	No	10.74	Construction and Industrial Dry Mixed	D1	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	16 02 14	No	2.26	Computer equipment	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland
Within the Country	20 01 25	No	0.506	Canteen Oil Waste	R9	M	Volume Calculation	Offsite in Ireland	AGRI Energy, WCP-DC-09-1172-01	240 St. Annes, Clohran, Swords, Co. Dublin, Ireland
Within the Country	20 01 25	No	1.52	Canteen Oil Waste	R9	M	Volume Calculation	Offsite in Ireland	FRYLITE, WCP/KK/186/04	Unit J1, Ballymount Industrial Estate, Ballymount Drive, D12, Ireland
Within the Country	08 03 18	No	0.72	Toner Cartridges	R13	M	Weighed	Offsite in Ireland	Greenstar, KK-08-0006-01	Unit 15/16, Hebron Industrial Estate, Hebron Road, Kilkenny, Ireland

# APPENDIX B – EMP Report 2010

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Objective	Targets & Objectives	Status	Update
1. Air Emissions	3.1. Complete recommendations detailed in 2009 Fugitive Emissions Report (Ref. 0097219) completed by ERM Consulting, November 2009.	Complete	
	3.2 Complete solvent monitoring of IPPC minor discharge points on site.	Complete	Minor VOC's (<3ppm) picked up from Hazmat Lab Stack, figures used to revise SMP Calculations.
5 -Year Goal (2014)	Reduce Site Fugitive Emission Value to <15%.	Complete	Fugitive emissions reduced to 14.43%, below 5-year goal.
Objective	Targets & Objectives	Status	Update
2. Energy	4.1 Install new front end energy monitoring system.	Complete	
	4.2 Explore opportunities to optimise air changes per hour.	Complete	Feasibility studies completed for SDS Manufacturing
	4.3 Explore feasibility of installing software to automatically turn off PC's in production and offices.	Complete	Not practical given nature of operations.
	4.4 Upgrade on site lighting, where feasible (longer life tubes, etc.).	Complete	
5 -Year Goal (2014)	Reduce Site Energy Usage to 20% of 2009 baseline, Total Site Kwhr usage figure normalized to throughput.	Complete	Absolute primary energy usage reduced by 14%. Normalised energy goal met. Reduced from 40% (2009) to 20%.
Objective	Targets & Objectives	Status	Update
3. Waste	1.1 Complete detailed review of recycling opportunities in DES, SDS and Implants.	Complete	
	1.2 From 1.1, identify and implement changes to increase waste recycling.	Complete	New recycling bins introduced in DES, more user friendly waste disposal procedure implemented. Improved segregation in SDS and Implants planned for 2011.
	1.3 Identify actions required to re-classify empty solvent bottles as non-hazardous waste.	Complete	Initial review completed, triple cleaning of bottles will generate an additional waste stream. Final decision to be taken in 2011.
	1.4 Complete annual review of drug contamination levels in the DES Suite.	Complete	
5-Year Goal (2013)	Reduce Total Waste to 20% of 2008 baseline normalised for throughput.	On Track	Total waste generated on site normalised for sales reduced to 28.5%. (Base year: 100, 2009: 41.61%.)
	Increase Site Non Hazardous Recycling Percentage to 85% by 2013.	On Track	Recycling rate increased from 71% to 78.9%.
Objective	Targets & Objectives	Status	Update
4. Resource Usage	5.1 Complete feasibility study into use of aqueous based dishwasher for cleaning parts (to replace solvent cleaning.)	Complete	Not Feasible. Water alone is not effective and a detergent is not permitted due to the process.
	5.2 Replace glass syringes with plastic syringes.	Complete	Implemented in Jan 2011. Predict a 5.5 tonne annualised solvent reduction.
	5.3 Consider use of lower concentration solvent for DES Parts washing.	Complete	Not feasible, use of a lower concentration solvent does not give an effective clean.
5-Year Goal (2013)	Reduce Coating Solvent Usage to 20% of 2008 baseline, normalised to throughput.	On Track	Coating Solvent used normalised for sales reduced to 36%. (Base year: 100, 2009: 51%)

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Objective	Targets & Objectives	Status	Update
<b>5. Water Usage Reduction &amp; Optimisation</b>	6.1 Investigate feasibility of installing a more water efficient flushing mechanism for WC's.	Complete	
	6.2 From 6.1, Install new WC Valves, if feasible.	Complete	More water efficient flushing valve fitted to WC's.
	6.3 Complete evaluation of best practices for water conservation and identify improvement opportunities.	Complete	
	6.4 Installation of surface water discharge isolation system (Firewater Retention)	Carried into 2011 EMP	Works are to be completed on private property, permissions recently obtained, work to be completed summer 2011.
	6.5 Complete groundwater monitoring as required under the sites Hydrogeological Survey.	Complete	
5-Year Goal (2014)	Reduce Site Water Usage to 25% of 2009 baseline, normalised to throughput.	Target Achieved	Absolute water usage reduced by 3%. Water usage normalised for Sales is at: 22, a 38% reduction versus 2009 (35.7).
Objective	Targets & Objectives	Status	Update
<b>6. Environmental Awareness</b>	8.1 Update Hazardous Communication CBT to include relevant references to IPPC Licence Requirements.	Complete	
	8.2 Complete two ISO14001 Audit Awareness Training sessions for new supervisors.	Complete	
	8.3 Prepare the 2009 Annual Environmental Report (AER) and submit to the EPA. Add AER to Viewpoint as a Report document.	Complete	
	8.4 Prepare 'easy to read' summary version of AER and make available to managers and staff.	Complete	
	8.5 Organise an onsite environmental awareness week for the Clonmel site with at least 3 specialist presenters.	Complete	
	8.6 Agree and implement a full program of onsite activities to raise general environmental awareness on site (eg, poster campaigns, use of monitors, monthly communication slides, etc.)	Carried into 2011 EMP	Project carried into 2011 EMP to align with sites 'Moving to Zero (MTZ)' EHS Awareness Program.
Objective	Targets & Objectives	Status	Update
<b>7. Improve Control of Key Environmental Suppliers &amp; Contractors</b>	2.1 Complete quarterly performance reviews of key environmental suppliers and contractors to the AV Clonmel site.	Complete	
	2.2 Prepare a detailed Green Procurement Policy document for the Clonmel site and implement policy within the Supply Chain Department.	Complete	

# **APPENDIX C – 2011 EMP Proposal**

### ***Abbott Clonmel 2011 Environmental Management Programme***

Environmental Management Programme 2011 Overview:

In accordance with Condition 2.2.2.3 an Environmental Management Programme (EMP) proposal for 2010 for the site is presented below. The EMP includes Objectives and Targets prepared in accordance with Condition 2.2.2.3.

The EMP for the site has been prepared taking into account the significant environmental aspects identified during an evaluation exercise of each aspect conducted in accordance with ISO: 14001:2004. Specific IPPC Licence related requirements and specific site and/or Abbott Corporate related goals are also included.

The Aspects identified and evaluated are outlined as follows: -

- Aspect 1: Non-Hazardous Waste
- Aspect 2: Trade Effluent Emissions to Wastewater
- Aspect 3: Hazardous Waste
- Aspect 4: Supply Side Activities
- Aspect 5: Energy and Resource Usage
- Aspect 6: Emissions to Atmosphere
- Aspect 7: Hazardous Materials
- Aspect 8: Contractors Activities
- Aspect 9: Transport
- Aspect 10: Surface Water & Non Trade Effluents
- Aspect 11: Visual Impact
- Aspect 12: Environmental Noise
- Aspect 13: Potential Land Contamination

The objectives within the sites 2011 EMP were identified from the following:

- A review and re-rating of the sites environmental aspects to identify significant aspects.
- A review of any open actions from the 2010 EMP.
- Identification of any IPPC related actions to be completed during 2011.
- A review of internal environmental audits and compliance reviews.
- Any other site and/or Abbott Corporate specific requirements.

The objectives and targets to be achieved within the EMP are outlined below and include the means and timeframe by which they will be achieved and responsibilities for implementation.

All the major environmental aspects on site have long-term programmes associated with them. These include Energy, Water Conservation and Waste Reduction.

The 2011 EMP presents many of the shorter-term actions required to achieve continued environmental improvement.

**O&T 1, Managerial Responsibility: Facilities Manager**

Objective 1	Aspect	Actions	Responsibility	Completion Date
<b>Emissions to Air</b>	Aspect 6: Greenhouse Gas (GHG) Management	3.1. Submit summary report to EPA outlining actions taken to date to identify root cause of Chiller System Failure.	Barry McGrath	Quarter 1, 2011
		3.2 Verify full compliance with EPA Guidance for management of stationary HFC containing refrigerant systems (eg, HFC Usage Tracking, Maintenance, Testing, Record Keeping, Contractor Certification and Training.	Barry McGrath	Quarter 1, 2011
		3.3 Review Sites Communications Procedure to ensure compliance with latest EPA Guidance on Environmental Incident Reporting.	Nigel Hickey	Quarter 1, 2011
		3.4 Issue final Chiller System Failure Investigation Report to the EPA.	Barry McGrath	Quarter 4, 2011

**Resources required:** Estimated internal man hours: 2 weeks, Estimated external support (external contractor): 5 days, Estimated budget: €15000

**O&T 2, Managerial Responsibility: Facilities Manager**

Objective & Target 2	Aspect	Actions	Responsibility	Completion Date
<b>Energy 2011 Objective:</b> Reduce Primary Energy Use by 5% versus 2010.  <b>5 Year Objective (2014):</b> Reduce Site Energy Usage to 10% of 2009 Normalised Usage Figure	Aspect 5:	4.1 CHP Run Time Optimisation.	Kieran Ryan	Quarter 1, 2011
		4.2 Re-Launch Site Energy Reduction Team	Kieran Ryan	Quarter 2, 2011
		4.3 MAHU 15 Out of Hours Shutdown	D Kelleher, P Burke	Quarter 3, 2011.
		4.4 External Lighting Upgrade	Kieran Ryan	Quarter 3, 2011.
		4.5 EFFTRACK Chiller Diagnostic Review.	Kieran Ryan	Quarter 3, 2011.
		4.6 Seek Corporate Capital Approval for LPHW Improvement Works.	Kieran Ryan	Quarter 4, 2011.
		4.7 Production Equipment Turn Off Feasibility Trial	Kieran Ryan	Quarter 2, 2011.



**Resources required:** Estimated internal man hours: 5 weeks, Estimated external support (external contractors): 2-5 days, Estimated budget: €40,000

**O&T 3, Managerial Responsibility: Facilities Manager**

Objective 3	Aspect	Targets	Responsibility	Completion Date
<p><b>Waste Prevention, Reduction &amp; Recycling</b></p> <p><b>2011 Objective:</b></p> <p>5% Reduction in Absolute Total Waste Generation versus 2010.</p> <p>Increase non hazardous waste recycling percentage to 80% in 2011.</p> <p><b>5 Year (2013) Objective:</b></p> <p>Reduce Total Waste to 20% of 2008 figure (Using 2008 baseline, normalised for throughput.)</p>	Aspect 1:  Non-Hazardous Waste	1.1 Improve waste recycling arrangements in tray collection area in canteen.	Shane Greene – Facilities	Quarter 1, 2011.
		1.2 With EHS complete a detailed review of recycling opportunities within SDS and Implants. Implement any improvements identified.	Shane Greene Nigel Hickey	Quarter 2, 2011.
		1.3 In conjunction with GEHS, introduce a Total Waste Management Program for the Clonmel site.	Shane Greene & Tom O’Riordan	Quarter Q2/Q3, 2011.
		1.4 Supply Chain in liaison with main suppliers to review opportunities for packaging reduction and reuse.	Tom O’Riordan	Quarter 3, 2011
	Aspect 3:  Hazardous Waste	1.5 Fully commission the Implants Waste Acid Treatment System.	Ger Quinn - Facilities	Quarter 1&2, 2011.
		1.6 Complete annual review of drug contamination levels in the DES Manufacturing Suites.	Nigel Hickey	Quarter 2, 2011.
		1.7 Examine feasibility of cleaning/recycling waste solvent bottles.	Nigel Hickey	Quarter 3, 2011.

**Resources required:** Estimated internal man hours: 3 weeks, Estimated external support (external consultant): 10 days, Estimated budget: €4000

**O&T 4, Managerial Responsibility: Facilities Manager**

Objective & Target 4	Aspect	Actions	Responsibility	Completion Date
<p><b>Resource Usage</b></p> <p><b>2011 Objective:</b> Reduce coating solvent usage to 35 tonnes in 2011.</p> <p><b>5 Year (2013) Objective:</b> Reduce coating solvent use to 20% of 2008 figure (using throughput as the normalisation factor)</p>	Aspect: 6	5.1 Supply Chain to commence monthly tracking of site solvent usage.	Andrew McMahon	Quarter 1, 2011
	Solvent Usage Tracking	5.2 Complete an operational review of solvent usage to characterise usage (solvent used for cleaning-not coating related, solvent used for coating, etc.)	Nigel Hickey	Quarter 2, 2011
	Solvent Substitution, Reuse & Recovery Options	5.3 Agree milestones for Solvent Reduction at Ultrasonic Cleaning.	Frank Maloney	Quarter 1, 2011.
		5.4 Examine solvent evaporation losses at Parts Cleaning, DES.	Sarah Noonan	Quarter 2, 2011.
		5.5 Remove Stent Clean Stations in DES.	Sarah Noonan	Quarter 3, 2011.
		5.6 Finalise phase out plans for Methylene Chloride usage on site.	Frank Maloney	Quarter 2, 2011.
		5.7 Quantify potential solvent reduction opportunities arising from Multiple Stent Coating Project.	Alan Igoe	Quarter 4, 2011
		5.8 Finalise 2012 Solvent Reduction Milestones.	Nigel Hickey	Quarter 4, 2011.

**Resources required:** Estimated internal man hours: 4 weeks, Estimated external support (external contractor): 0 days, Estimated budget (all projects): ~€10,000 (Clean Stent Project Costs)

**O&T 5, Managerial Responsibility: Facilities Manager**

Objective 5	Aspect	Actions	Responsibility	Completion Date
<b>Water</b>  <b>5 Year (2014) Objective:</b>  Reduce water usage to 20% of 2008 figure by 2013 (using throughput as the normalisation factor)	Aspect 2 & 10: Water Usage	6.1 Complete comprehensive site water mass balance to identify the sites main water users and to identify potential water reduction projects.	Kieran Ryan	Quarter 2, 2011.
	Surface Water	6.2 Install site surface water discharge isolation system (Firewater Retention)	Sean Reade	Quarter 3, 2011.
		6.3 Update site inventory of storage tanks and bunds.	Nigel Hickey	Quarter 1, 2011.
		6.4 Complete review of diesel and oil deliveries.	Barry McGrath	Quarter 2, 2011.
	Trade Effluent	6.5 Agree New Trade Effluent Conveyancing Agreement with South Tipperary County Council.	Nigel Hickey	Quarter 2, 2011.
		6.6 Support the Acid Treatment Project to ensure full compliance with IPPC Licence Emission Limits.	Nigel Hickey	Quarter 1, 2011.
		6.7 Complete 3-yearly testing of bunds & underground pipe systems.	Barry McGrath	Quarter 3, 2011.

**Resources required:** Estimated internal man hours: 4 weeks, Estimated external support (external contractor): 5 days, Estimated budget: €2000

**O&T 6, Managerial Responsibility: Facilities Manager**

Objective 6	Aspect	Actions	Responsibility	Completion Date
<b>Environmental Awareness &amp; Training</b>	Not Applicable.	8.1 Complete site Environmental Management Review.	Nigel Hickey	Quarter 1, 2011
		8.2 Prepare Annual Environmental Report and submit to EPA. Add AER to Viewpoint as a Report document.	Nigel Hickey	Quarter 1, 2011
		8.3 Complete ISO14001 Awareness Training for new supervisors.	Nigel Hickey	Quarter 1, 2011
		8.4 Submit a minimum of 2 nominations for the Annual Abbott Global EHS Awards (Energy and Waste Reduction).	Nigel Hickey Kieran Ryan	Quarter 1, 2011.
		8.5 Submit End of Year Environmental Data to Corporate to support Abbot's Annual Sustainability Report.	Nigel Hickey	Quarter 1, 2011.
		8.6 Achieve ISO14011 Recertification.	Nigel Hickey	Quarter 1, 2011.
		8.7 Agree a suite of environmental indicators to be used at various levels on site, incorporate into sites Moving to Zero Program.	Nigel Hickey	Quarter 2/3, 2011
		8.8 Run an onsite environmental awareness week.	Nigel Hickey	Quarter 3, 2010

**Resources required:** Estimated internal man hours: 4 weeks, Estimated budget: €1000