INDORAMA VENTURES

WELLMAN INTERNATIONAL LTD.

Wellman International Limited

Licence No. P0236-02

Annual Environmental Report

March 2014

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Facility Information Summary

Licence register number: P0236-02

Name & location: Wellman International Ltd., Mullagh, Kells, Co. Meath.

NACE code: 1310

Class of activity: 8.4 Manufacture of synthetic fibres

Significant changes/environmental performance during reporting period:

- New IPPC issued in April 2013
- 85% recycled materials used in raw material mix.
- 5.5% of flake was sourced in Ireland
- 95% reduction in waste to landfill from 2001 levels
- Energy audit completed
- ELRA & DMP prepared and submitted to EPA
- All out-standing works completed on foul drains. Survey of foul drains completed.
- Fridge register prepared
- Trials completed on waste finish to determine treatment options prior to disposal through WWTP
- Electronic waste record implemented
- Trigger limits set for storm water discharges
- Groundwater borehole monitoring completed.
- Biotower was reinstated.
- There were two reportable incidents
- No complaints were received
- All air emissions monitoring results were compliant
- All water monitoring results were compliant
- Noise levels were compliant
- Production, waste generation and resource consumption consistent with previous year.
- The installation of new Unit 1 extruder and associated equipment is planned for 2014. This will result in an increase in production of ca. 8%.

1.0 Introduction

This Annual Environmental Report of Wellman International Limited (WIL) covers the period January 2013 to December 2013.

For 40 years WIL has been a recognised leader in Europe of the innovative use of recycled materials. WIL began operations in 1973 to convert post-industrial waste polymer materials into first grade fibre products. Polyester fibres made from these raw materials are sold across Europe to customers who in turn make a wide variety of finished goods such as car parts, soft filled household and bed products, furniture and personal hygiene items.

Household collection systems are the source of this raw material with over to 5 million post consumer PET bottles being recycled at the plant daily.

Wellman International Limited is situated close to the village of Mullagh, Co. Cavan, fifty miles from Dublin. In addition to the four-storey production plant, the 27-acre site contains storage silos, warehouses, workshops, an ESB substation, a wastewater treatment plant and firewater retention ponds. The total covered area is 33,500m^2. The company employs 260 people.

1.1 Products

Polyester staple fibre products manufactured by Wellman International Limited (WIL) are sold worldwide under trade names that include Fillwell®, Fillwell® Hygiene, Fillwell® Softflex, Wellene®, Cirrus®, Sensifil™, Fillwell® Wellbond, Dreamfil™, Wellman HealthGuard, Wellcare Protect, Wellcare AM and Wellman Profile. WIL fibres are widely used in non-woven and filling applications including home furnishings, car interiors, carpets, hygiene products, geotextiles and technical textiles. The end uses to which these products are put are shown in the following table.

In line with changing market demands, business objectives and WIL's commitment to be Europe's leading producer of polyester staple fibre the company have developed and now produce a range of fibres which offer the high performance characteristics required for the demanding hygiene market sector. These speciality fibre products are manufactured to exacting standards of quality and performance and are independently tested and approved for hygiene applications. The manufacture of fibres for this market is a key element of WIL's future business strategy helping to ensure company's continued position as a leading European supplier of polyester stable fibre.

Product			**Product**		
Fillwell®	Regular Polyester fibre	1	Cirrus®	Moisture Management Polyester	8
Fillwell® Plus	Resilient Polyester fibre	2	Fillwell® Wellcare	Anti Dust/Microbial Polyester Fibre	9
Fillwell® h	Hollow Polyester fibre	3	Fillwell® Hygiene	Hygiene Polyester Fibre	10
Fillwell® hs	Hollow Siliconised Polyester	4	Fillwell® Wellbond	Bi-component Polyester fibre	11
Fillwell® huf	Hollow Soft Hand Polyester	5	Wellene	Spun dried Black & White Polyester	12
Fillwell® softflex	Hollow Spiral Polyester Filling	6	Wellman HealthGuard	Anti Dust/Microbial Polyester Fibre	13
Dreamfil™	Lightweight Polyester	7	Sensifil™	Allergy and sensitive friendly	14

Product	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**Description**
Abrasive Products	*											*			• Domestic and industrial cleaning and scouring pads
Apparel products	*		*	*				*			*	*		*	• Skiwear • Non-woven interlinings • Pile fabrics
Bedding products	*	*	*	*	*	*	*	*	*	*	*		*	*	• Quilts • Sleeping Bags • Pillows • Mattresses • Waterbeds
Construction Products	*	*							*		*	*	*		• Geotextiles • Insulations • Concrete/Asphalt • Flame Retardant • Roofing felts
Filtration products	*								*		*		*	*	• Heavy industrial filters • Air conditioning filters • Liquid filters • Domestic appliances
Floor covering products											*	*			• Spun Yarn • Carpet Backing • Needlepunch
Automotive Products	*								*		*	*	*		• Bootliners • Footwells
															• Headliners
															• Filters
															• Carpet
Hygiene Products										*					• Distribution layers in diapers • Femcare Products

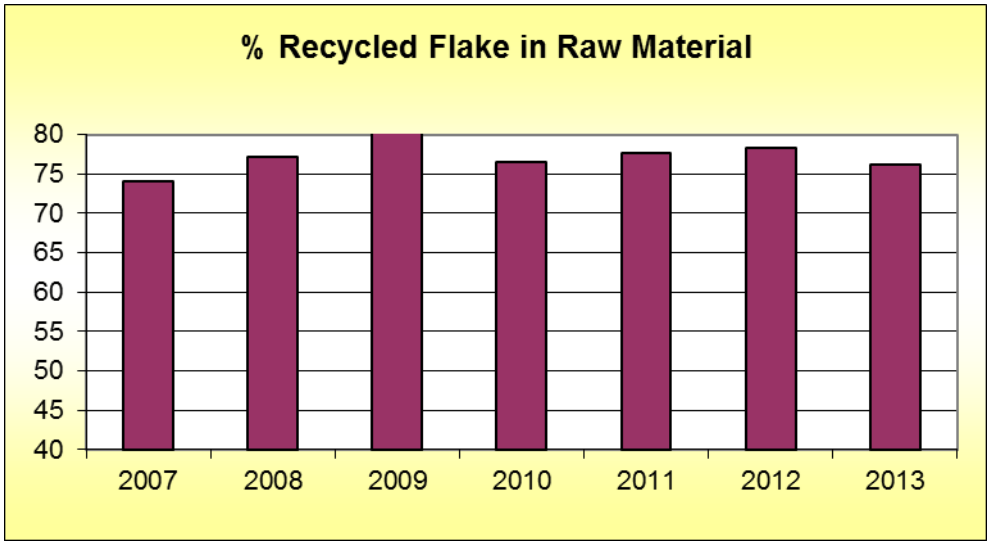
1.2 Raw Material

Raw materials are sourced world-wide. WIL has over 100 raw material suppliers. These sources of raw material can be broken down as follows:

- PET post consumer bottles, which are sorted, washed and granulated at WIL's Dutch and French facilities.
- Fibre from other major polyester fibre production plants.
- Out-of specification polymer granules from polymer production plants.
- By-products from the major producers of film and packaging materials.
- Virgin chip

WIL itself uses almost 5 million post-consumer bottles daily that would otherwise have to be sent to landfill or incinerated. 76% of our raw material mix in 2013 came from post-consumer bottle flake. 300,000 tonnes of harmful air emissions are saved annually by the recycling activities of WIL alone. The percentage of recycled bottle flake used in the raw material is shown in Figure 1.

Figure 1: Percentage recycled bottle flake in raw-material mix

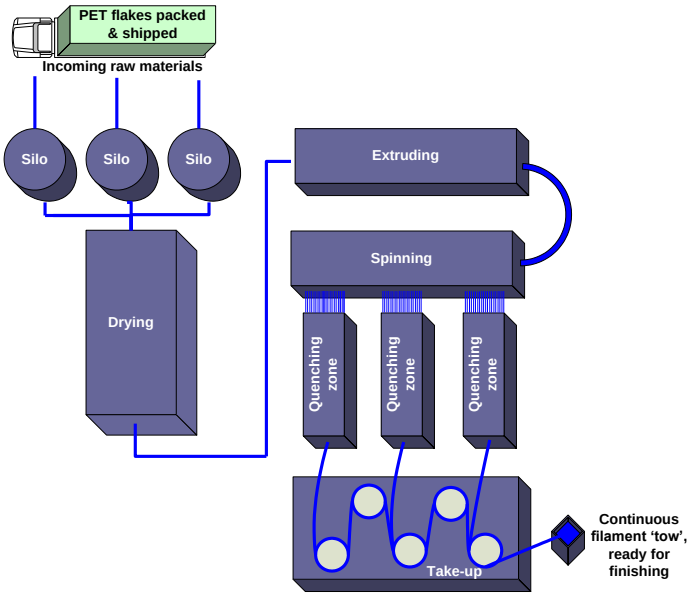


1.3 Production Process

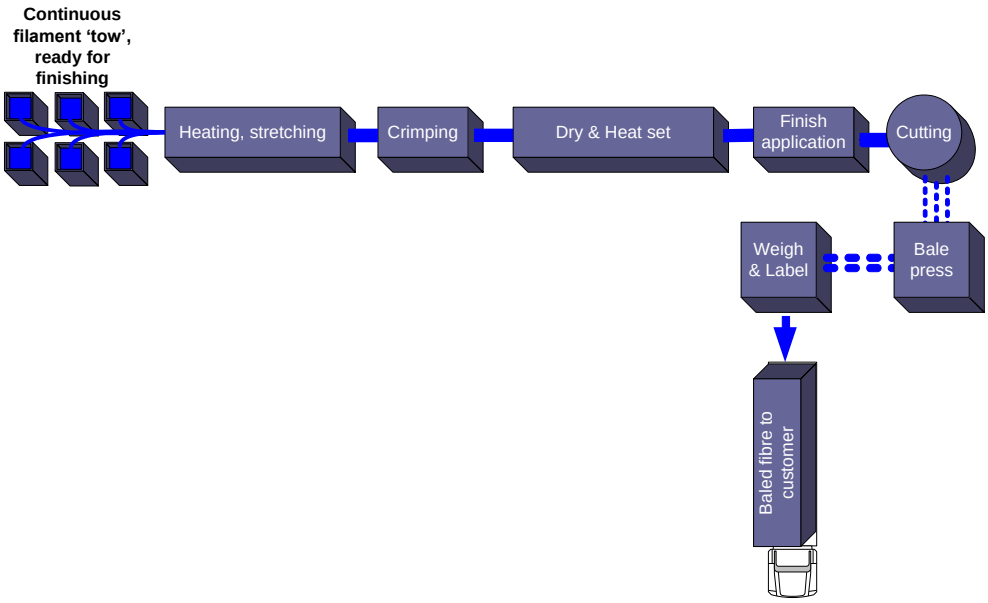
The process of making staple fibre is shown schematically overleaf and can be summarised as follows:

- Raw material is tested, sorted, prepared and dried for delivery to the extruder.
- The clean, dried raw material is melted and filtered in the extruder and molten polymer is delivered at pressure to spin packs.
- The spin pack creates thousands of individual strands of polymer fibre which are cooled using air.
- The material is collected in cans as a tow band.
- The tow bands are heated and stretched to give it strength.
- The strands are crimped to give bulk and set to maintain the crimp.
- They are then coated with a lubricant to enable further processing by the customers.
- Finally the strands are cut to the required length, baled and wrapped for delivery to the customer.

Fibre process stage 1



Fibre process stage 2



1.4 Environmental Issues

As an organisation involved in the recycling of plastic material there is a strong awareness of environmental issues. Since WIL was established, the company has demonstrated their commitment to sound management practice and a sustainable business model. This is demonstrated through good business and environmental standards and practice. This commitment has been shown through registration to the following standards and achievement of awards:

1990 Registered to ISO 9002
1997 Registered to ISO 14001/IS 3.10
1998 Obtained Integrated Pollution Control Licence. (Classification of Activity: 8.4 - The Manufacture of Synthetic Fibres.)
2001 Registered to ISO 9001:2000
2004 Registered to OHSAS 18001
2005 Registered to ISO 14001 2004
2007 Registered to OHSAS 18001:2007
2007 Short-listed in the Sustainable Energy Awards for a project entered into the 'Energy Efficiency in Large Industries' category
2007 Commendation in IBEC Environmental Awards
2008 Obtained technical amendment to existing licence which brings it up to IPPC standard
2009 Re-accredited to ISO 14001:2004
2012 Sustainable exporter of the year
2013 IPPC P0236-02 issued

1.5 Environmental Policy

A copy of the integrated health and safety, environmental and product quality policy is attached as **Appendix I**.

2.0 Emissions to atmosphere

2.1 Boiler Emissions

Process steam requirements are supplied by a main boiler, which operates on natural gas. This boiler has a capacity of 8000 kg/hr and operates at 250 psi. Backup is provided by a standby boiler, which is also run on natural gas. This boiler has a capacity of 7000 kg/hr and operates at 250 psi.

Boiler emissions are monitored at emission point reference number A1-2 as per Schedule 1 (iii) of the licence. Outlined in Table 1 below are the results for boiler emissions for the last seven years.

Table 1 Combustion equipment emissions at A1-2

Year	CO, ppm	NO_x, ppm
2007	2	35
2008	1	33
2009	8	0
2010	0	28
2011	8.11	18.2
2012	5	62
2013	1	88

Space heating is provided by three domestic type burners, which heat the canteen and the training centre. These are not considered to present any significant environmental impact and as such no routine monitoring is carried out.

2.2 Process Air Emissions

2.2.1 Description

There are ten licensed process air emission points currently being monitored. A brief description of each is presented below.

Monomer Exhausts (A2-2, A2-3, A2-5, A2-6, A2-8, A2-12)

The monomer exhausts are fume extract systems, which also assist in the quenching of fibre on exit from the spinnerette. On quenching of molten fibre, volatile organic compounds may be released. These emission points are monitored biannually for TA Luft Organics Class I, II and III compounds.

Rosin Dryers (A2-27)

The rosin dryers are used to dry raw materials prior to extrusion. Since the raw materials used are recycled, volatile organic compounds in addition to moisture may be released during drying. Air from the dryers is treated using a water spray scrubber prior to discharge through a single emission point (ref: A2-27). This emission point is monitored biannually for TA Luft Organics Class I, II and III compounds.

Unit 3 Dryer (A2-10, A2-11)

The unit 3 dryer is also used to dry raw material prior to extrusion. As with the rosin dryers, volatile organic compounds in addition to moisture may be given off. Biannual monitoring is conducted for TA Luft Organics Class I, II, and III compounds.

Hypox (A2-28)

The hypox system is used for cleaning purposes and removes contaminants and residual polymer from the metal components used in the fibre spinning process. It is monitored biannually for TA Luft Organics Class I, II and III compounds.

2.2.2 Results

The following graphs present a summary of air emission monitoring results from the last seven years (Fig. 2, 3 & 4).

Monitoring is conducted bi-annually and the mass emission rate in Kg/annum is determined from the measured concentration (mg m^{-3}) and flow rate. The emission rate depicted below is an average value of each set of results.

All monitoring results, including concentration limits, mass flows and volumetric flows for 2013 were within licensable parameters (Refer to Tables 2, 3, 4, 5 & 6). The results are higher than the previous year but this is thought to be related to change in sampling and monitoring contractor as opposed to actual changes in concentrations. The emissions from A2-8 were elevated during Q1 monitoring compared to previous results, however they were still within the licensable limit. Emissions are variable due to raw material blend at time of monitoring.

Figure 2: TA Luft Organics Class 1

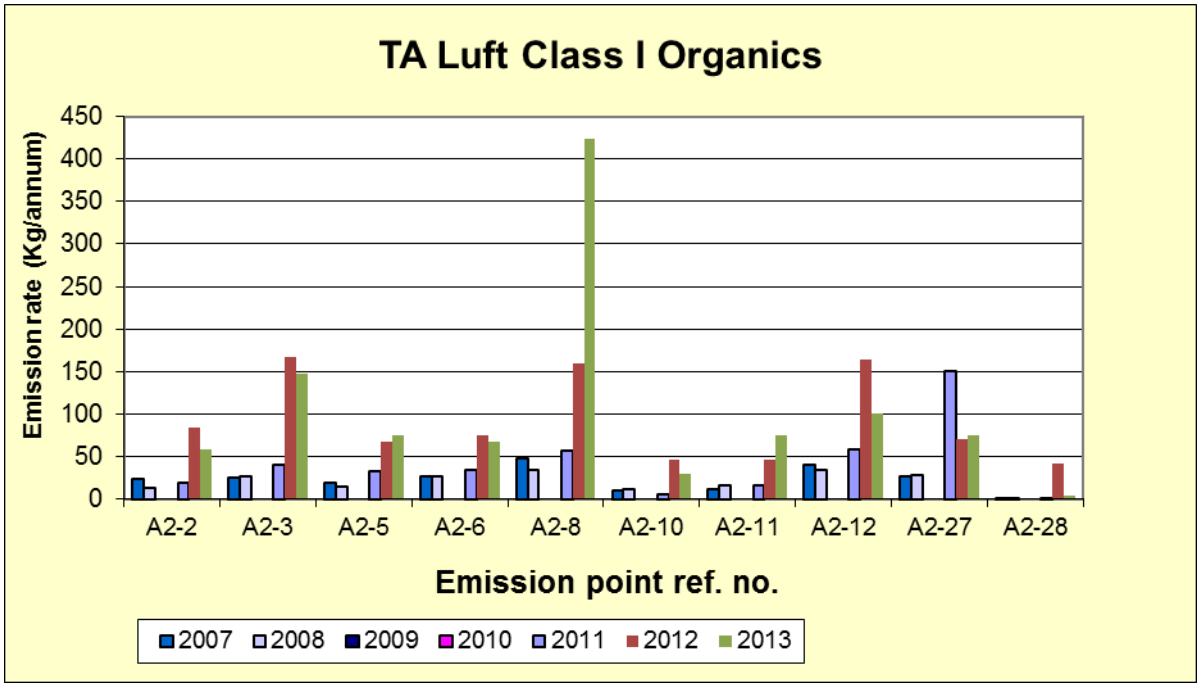


Figure 3: TA Luft Organics Class II

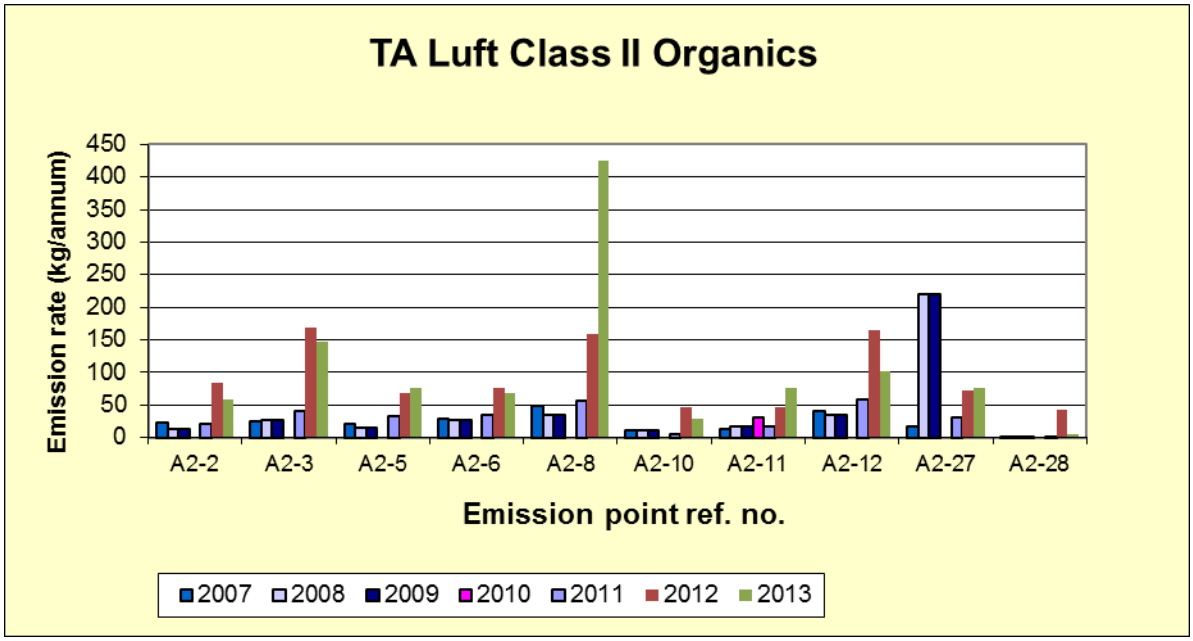
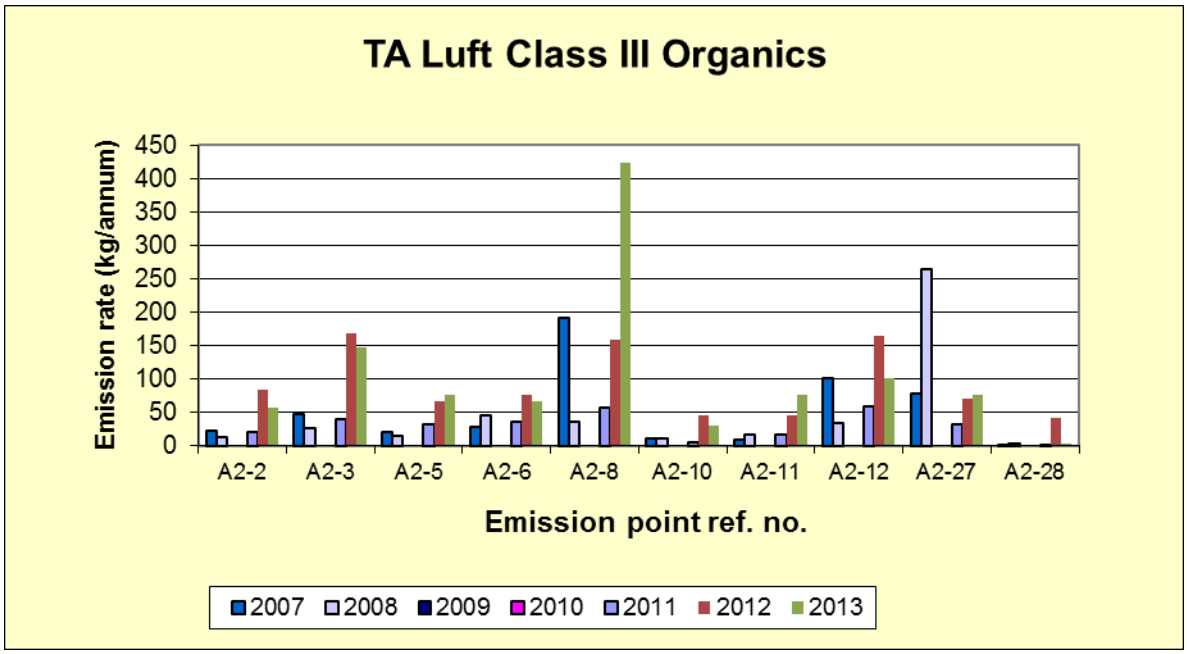


Figure 4: TA Luft Organics Class III



All TA Luft Organics Class III measurements have been well within the licence limits for the last seven years.

2.2.3 Non-compliances

There were no non-compliances with the licence in terms of air emissions during 2013.

Table 2 Concentration results for bi-annual air emissions monitoring 1

	IPPC Limits	Concentration (mg/m^3)									
	ELV mg/m^3	A2-2	A2-3	A2-5	A2-6	A2-8	A2-10	A2-11	A2-12	A2-27	A2-28
TA Luft Organics Class I	20	<1.4	<1.8	<1.9	<1.5	<1.8	<2	<1.6	<0.2	<1.8	<1.4
TA Luft Organics Class II	100	<1.4	<1.8	<1.9	<1.5	<1.8	<2	<1.6	<0.2	<1.8	<1.4
TA Luft Organics Class III	150	<1.4	<1.8	<1.9	<1.5	<1.8	<2	<1.6	<0.2	<1.8	<1.4

Table 3 Concentration results for bi-annual air emissions monitoring 2

	IPPC Limits	Concentration (mg/m^3)									
	ELV mg/m^3	A2-2	A2-3	A2-5	A2-6	A2-8	A2-10	A2-11	A2-12	A2-27	A2-28
TA Luft Organics Class I	20	<0.8	<1.1	<0.8	<1.1	<1.1	<1.1	<0.8	<1	<0.8	3.6
TA Luft Organics Class II	100	<0.8	<1.1	<0.8	<1.1	<1.1	<1.1	<0.8	<1	0.8	<1.1
TA Luft Organics Class III	150	<0.8	<1.1	<0.8	<1.1	<1.1	<1.1	<0.8	<1	<0.8	<1.1

Table 4 Mass flow emission results for bi-annual air emissions monitoring 1

	Mass flow threshold kg/h	Flow (kg/h)									
		A2-2	A2-3	A2-5	A2-6	A2-8	A2-10	A2-11	A2-12	A2-27	A2-28
TA Luft Organics Class I	0.1	<0.007	<0.022	<0.011	<0.007	<0.078	<0.003	<0.0072	<0.004	<0.012	<0.001
TA Luft Organics Class II	2.0	<0.007	<0.022	<0.011	<0.007	<0.078	<0.003	<0.0072	<0.004	<0.012	<0.001
TA Luft Organics Class III	3.0	<0.007	<0.022	<0.011	<0.007	<0.078	<0.003	<0.0072	<0.004	<0.012	<0.001

Table 5 Mass emission results for bi-annual air emissions monitoring 2

	Mass flow threshold kg/h	Flow (kg/h)									
		A2-2	A2-3	A2-5	A2-6	A2-8	A2-10	A2-11	A2-12	A2-27	A2-28
TA Luft Organics Class I	20	<0.007	<0.013	<0.007	<0.009	<0.023	<0.004	<0.008	<0.02	<0.006	<0.001
TA Luft Organics Class II	100	<0.007	<0.013	<0.007	<0.009	<0.023	<0.004	<0.008	<0.02	<0.006	<0.001
TA Luft Organics Class III	150	<0.007	<0.013	<0.007	<0.009	<0.023	<0.004	<0.008	<0.02	<0.006	<0.001

Table 6 Volumetric flow for air emissions monitoring

Monitoring location	IPPC limit	Bi-annual monitoring 1 Flowrate (m^3/h)	Bi-annual monitoring 2 Flowrate (m^3/h)
A2-2	17000m^3/h	5153	8350
A2-3	17000m^3/h	12299	12510
A2-5	17000m^3/h	6050	9017
A2-6	17000m^3/h	4864	8503
A2-8	23150m^3/h	15392	20519
A2-12	23150m^3/h	17848	21021
A2-27	10000m^3/h	8645	7598

3.0 Emissions to water

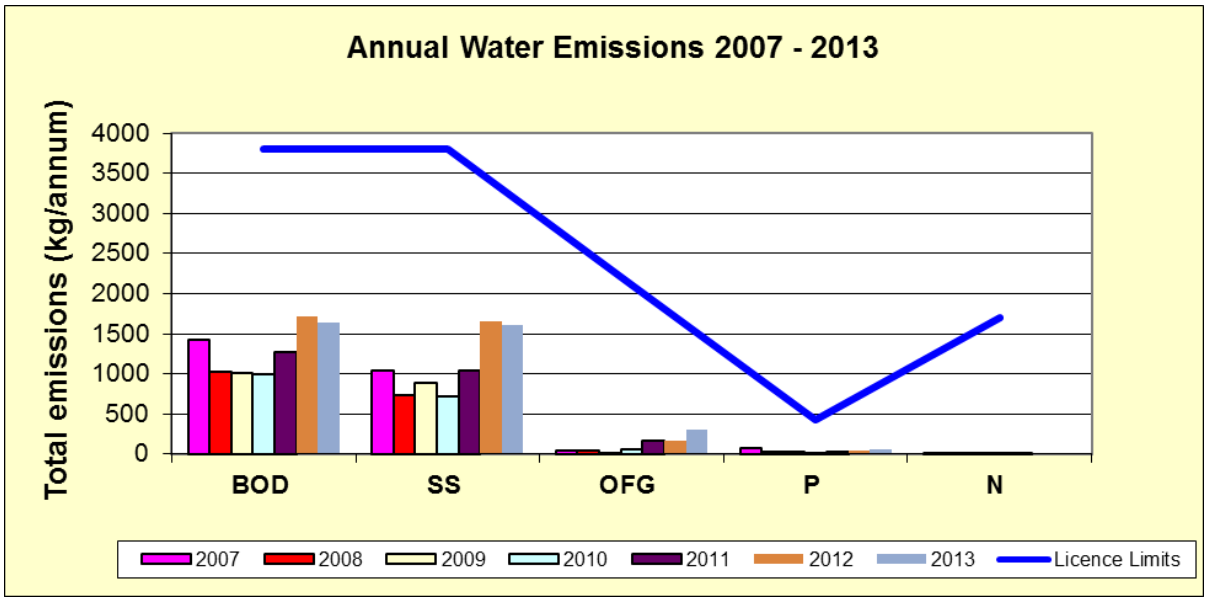
3.1 Wastewater discharges

Wastewater is discharged from the site at monitoring point SW1. This final effluent is then mixed with non-contact cooling and storm water and returned to the River Borora. The following table summarises the monitoring carried out at SW1 over the last 7 years (Table 7). All emissions to water were within the licensable limits.

Table 7 Monitoring at SW1 2007-2013

Parameter (Kg/year)	IPPC Limits	2007	2008	2009	2010	2011	2012	2013	% Compliance for 2013
BOD	3811	1431	1029	1009	996	1279	1717	1645	100
SS	3811	1048	740	886	719	1044	1649	1604	100
OFG	2117	36	44	19.3	63.8	172.3	169	305	100
P	423	77.6	26.3	28.5	12.6	33.3	38.5	60.4	100
N	1694	6.9	5.9	0.9	2.7	9.9	17	11.4	100

Figure 5: Monitoring at SW1 2007-2013



3.2 Heavy metal content

A heavy metal scan is carried out on wastewater discharges at SW1 on an annual basis as outlined in Schedule 2(iii) of the licence. The results of this monitoring are outlined below. Samples of waste water discharge from SW1 were taken in September 2013; ANUA completed the required analysis.

Table 8 Heavy metals content at SW1 (2007-2013)

Parameter	2007	2008	2009	2010	2011	2012	2013
Aluminium, ppb	<2	23	20	12	16	517	5
Antimony, ppb	205	207	174	17	111	7	350
Arsenic, ppb	<2	<2	<2	<2	<2	7	<2
Barium, ppb	53	177	95	347	258	26	152
Beryllium, ppb	<2	<2	<2	<2	<2	<2	<2
Cadmium, ppb	<2	<2	<2	<2	<2	<2	<2
Chromium, ppb	<2	<2	2	<2	2	3	<2
Cobalt, ppb	2	7	7	<2	9	<2	4
Copper, ppb	<2	<4	6	3	413	27	<2
Iron, ppb	<100	<100	200	300	<2	2.2(ppm)	0.15(ppm)
Lead, ppb	<2	<2	<2	<2	6	6	<2
Manganese, ppb	5	32	15	14	62	465	30
Mercury, ppb	<1	<1	<1	<1	<1	<1	<1
Nickel, ppb	3	5	11	<2	10	6	4
Selenium, ppb	<2	<2	<2	<2	<2	4	<2
Silver, ppb	<2	<2	<2	<2	<2	<2	<2
Tin, ppb	<2	<2	<2	<2	<2	<2	<2
Zinc, ppb	47	152	168	18	474	28	38

3.3 Acute Toxicity

Acute toxicity testing was carried out on a sample of the final effluent in September 1999, March 2003, January 2006, September 2009, September 2012 and November 2013.

These reports are summarised in Table 9 below.

Table 9 Acute toxicity testing at SW1

Sample Desc	Test Required	Test Species	1999 No. Toxic Units	2003 No. Toxic Units	2006 No. Toxic Units	2009 No. Toxic Units	2012 No. Toxic Units	2013 No. Toxic Units	Comments
Effluent	48h EC_{50} to *Daphnia magna*	*Daphnia magna*	<1 @ 100% vol/vol	<1 @ 100% vol/vol	<1 @ 100% vol/vol	<1 @ 100% vol/vol	1.9 @ 51.7% vol/vol	<1 @ 100% vol/vol	No *Daphnia* were immobilized at 100% vol/vol (1999 – 2009 & 2013). In 2012 70% *Daphnia* were immobilized at 100% vol/vol
Effluent	5, 15 min EC_{50} to *Vibrio fischeri (30min EC_{50} in 2012)*	*Vibrio fischeri*	<2.2 @ 45%vol/ vol	<2.2 45%vol/ vol	<2.2 @ 45%vol/ vol	<2.2 @ 45%vol/ vol	<2.2 @ 45%vol/ vol	<1 @ 100% vol/vol (toxicity, no light inhibition test conducted)	No light inhibition occurred at 45% vo/vol after 5 or 15 minutes exposure compared to control (1999-2009). In 2012 less than 17% light inhibition occurred at 45% vol/vol after 30 mins.

Overall, toxicity levels are low.

This monitoring will be repeated in 2016.

Monitoring Point Reference No. SW1

3.4 Macroinvertebrate bioassessment

A macroinvertebrate bioassessment of the River Borora, upstream and downstream of the WIL wastewater discharge point was conducted in August 2013.

Samples were taken at two points upstream of the discharge point (S1 & S6). Four samples were taken down stream from the discharge point (S2, S3, S4 & S5) at points immediately downstream, 60m downstream, 250m downstream and 1.3km downstream respectively.

The results of the pH determinations ranged between 7.33-8.24 pH units upstream and downstream of the discharge point. All measurements were within the accepted ranges set out by the Freshwater Fish Directive (78/659/EEC) and the Salmonoid Waters Regulations.
The dissolved oxygen results range from 6.8 – 9.3 mg/L which indicates sufficient dissolved oxygen present to sustain life within the river. The temperature of the river was 16.6-18.2^{0}C.

Water quality varies from poor to fair both up-stream & down-stream of our discharge point. Discharge from WIL has been consistent in volume and quality for the last number of years and the acute toxicity report for 2013 indicted the toxicity unit to be <1 at 100% vol/vol for *Daphnia magna* and *Vibrio fischeri.*
There was evidence of sewage fungus at S1, S3, S4 & S5. Phosphate analysis showed elevated phosphate levels at all locations also, which is consistent with nutrient overloading. Land use in the area is primarily agricultural.

4.0 Waste

Waste removed from the site during 2013 is outlined in **Appendix II** (EPA AER Returns Worksheet).

4.1 Waste management indices

Gross WaMI

= [Waste Produced (t) / Raw Material Usage (t)] x 100

Nett of Process WaMI

$$= \frac{[\text{Waste Produced (t)} - \text{Amount Recovered on Site (t)}]}{\text{Raw Material (t)}} \times 100$$

Nett of Site WaMI

$$= \frac{[\text{Waste Produced (t)} - \text{Amount Recovered on Site (t)} - \text{Amount Recovered off Site (t)}]}{\text{Raw Material Usage (t)}} \times 100$$

Raw Material (Nett):	79787 tonnes
Waste Produced on Site:	5622.2 tonnes
Amount Recovered On-Site:	3855 tonnes
Amount Recovered Off-Site:	1684.7 tonnes

Table 10 Waste management indices 2007-2013

	2007	2008	2009	2010	2011	2012	2013
Gross WaMI	7.42	6.82	6.58	7.2	6.99	7.2	7.05
Nett of Process WaMI	2.02	1.93	2.00	2.33	2.4	2.3	2.21
Nett of Site WaMI	1.0	0.91	0.94	0.89	0.8	0.2	0.1

Waste generation has been relatively consistent over the last number of years however there has been a decrease in all waste management indices from 2012 levels. Considerable efforts have been made to reduce the volume of waste produced and to recycle any waste that is produced.

The volume of waste produced on annual basis is directly related to fibre production. On average 65-70% of the total waste produced on-site may be and is recycled through the manufacturing process. It may be observed from Figure 6 that there is gradual progress

in increasing the proportion of waste which can be recycled while decreasing the volume going to non-sustainable disposal options such as landfill. This is reflected in the 'Nett of Site' waste management index also refer to Table 6. Since 2001 over 95% of waste generated has been diverted from landfill. This has included the diversion of landfill waste to a waste-to-energy facility.

Figure 6: Waste produced, recovered and disposed, 2007-2013

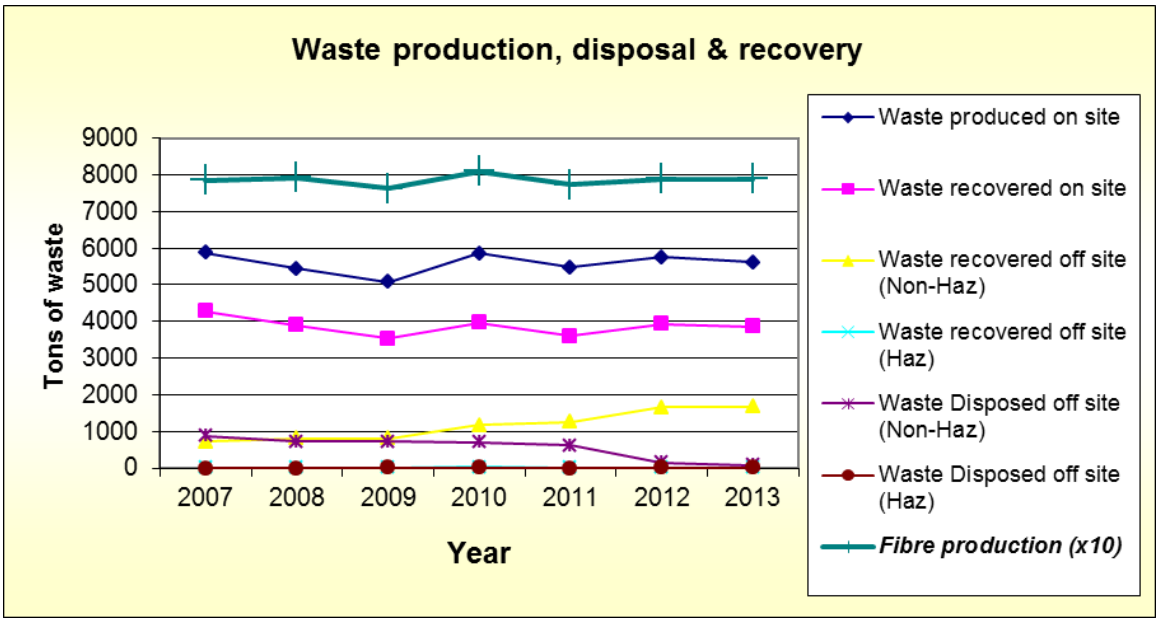


Table 11 Quantity waste landfilled, 2001-2013

Year	Landfill, tonnes	Reduction, %
2001	1555.74	
2002	1330.6	
2003	1249.39	
2004	1035	
2005	926.47	
2006	740.45	52
2007	583.82	62
2008	570.07	63
2009	538.8	65
2010	663.8	57
2011	610.22	61
2012	149.21	90
2013	68.06	96

4.2 Sludge analysis

As per schedule 3(iii) of the IPPC licence the sludge from the wastewater treatment process is analysed for organic content, heavy metals and water content each year. The wastewater treatment plant is de-sludged from the biotower and the aeration tank/settlement tank at alternate times. The sludge from each system is dried using a de-watering press, loaded into a skip and removed off-site for composting. The biotower was de-commissioned in 2012 (& re-commissioned in 2013), however a sample was taken prior to completion of the decommissioning. The results are outlined in Table 12 below:

Table 12 Sludge analysis 2013

Parameter	**Biotower de-watered sludge**	**Aeration tank de-watered sludge**
Heavy metals		
Aluminium	153 µg/g	61 µg/g
Antimony	145 µg/g	40 µg/g
Arsenic	<0.5 µg/g	<0.5 µg/g
Barium	25 µg/g	21µg/g
Beryllium	<0.5 µg/g	<0.5 µg/g
Cadmium	<0.5 µg/g	<0.5 µg/g
Cobalt	2.1 µg/g	1.4 µg/g
Copper	44 µg/g	17 µg/g
Iron	0.72 mg/g	0.5 mg/g
Lead	11 µg/g	3.9 µg/g
Manganese	76 µg/g	13 µg/g
Nickel	2.2 µg/g	1.2 µg/g
Selenium	<0.5 µg/g	<0.5 µg/g
Silver	<0.5 µg/g	<0.5 µg/g
Tin	1.9 µg/g	1.0 µg/g
Zinc	87 µg/g	5.7 µg/g
Organic content	90.4%	91.2 %
Moisture	90.7%	91.4 %

5.0 Resource consumption

5.1 Water consumption

Process water is supplied primarily from the nearby river Borora. A totaliser on the pumps records the volume of water consumed.

The volume of river water consumed over the last seven years is summarised below (Table 13).

Table 13 River water consumption 2007-2013

Year	m^3/year	m^3/tonne
2005	84153	1.10
2006	88590	1.19
2007	84052	1.07
2008	73295	0.93
2009	66263	0.87
2010	82955	1.03
2011	76719	0.99
2012	68073	0.86
2013	63385	N/A

Water is also supplied to the site from two wells. In total 76693m^3 water was consumed, this is equivalent to 0.97m^3/tonne fibre produced.

A comprehensive review of water usage on-site was done prior to 2005 and from the review a number of water saving initiatives were introduced, including the installation of the cooling towers at the production finishing lines.

In 2013 the average daily abstraction rate from the river was 190 m^3 per production day and 40m^3 from the wells.

Proposals to minimise water demand & reduce effluent discharges

The technology being used introduced as part of the Unit 1 project involves closed loop cooling and dryer-less technology. This will improve efficiencies, resulting in a reduction in water usage per tonne fibre produced. The system is designed to give more efficient finish application also. This will result in less finish for disposal per tonne fibre produced

i.e. there will no additional demand on the wastewater treatment plant even though a greater volume of fibre will be produced.

Monitoring is carried out biannually on the wells and the results are summarised in section 10.0 of this report (groundwater monitoring summary).

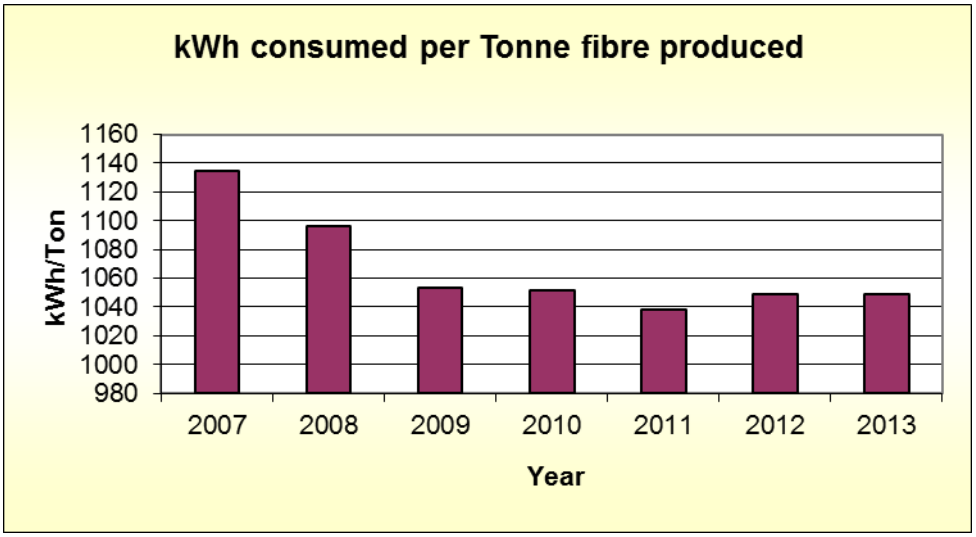
5.2 Energy and Fuel consumption

5.2.1 Energy

Three sources of energy are used at WIL; Natural Gas, LPG and Electricity. Almost half of the energy used is from electricity and slightly more than half is natural gas. The total amount of energy consumed in the last seven years has varied between a maximum usage of 1191 kWh per tonne in 2006 and a minimum of 1038 kWh per tonne in 2011. There was a slight increase in 2012, this was due to dryers being run at higher temperatures for producing hygiene products and the installation of Xaloy screws in extruders. Energy consumption in 2013 was equivalent to 2012.

Considerable resources have been put into reducing energy consumption. Information relating to improvements made in energy consumption can be reviewed in additional detail in **Appendix III**, Project 5.2

Figure 7 Energy consumed per Tonne fibre produced 2007-2013



6.0 Environmental incidents and complaints summary

6.1 Incidents

There were two reportable incidents in 2013. Both related to the breakdown of the pH monitor or data logging equipment. During the downtime the pH of the final effluent was manually recorded every 6 hours. As the pH of the final effluent is neutral the likelihood of a negative environmental impact was minimal. Both incidents were classified as Category 1.

6.2 Complaints

No complaints were received during the period January 2013 to December 2013.

7.0 Environmental management programme & schedule of environmental targets

In order to manage the effect our business has on the environment, Wellman International Limited has an Environmental Management System (EMS) accredited to ISO 14001.
Within the EMS there is an Effects Register and a Register of Legislation. Based on both these registers WIL have set the following core environmental objectives:

1.0 Reduce the impact of effluent discharges on the water quality of the River Borora.
2.0 Reduce noise emissions from the site
4.0 Optimise energy efficiency and resource usage
5.0 Minimise risk posed to groundwater
6.0 Minimise waste generation and promotion of the use of renewable resources
7.0 Environmental Communication

Under these core objectives a number of 5-year projects have been implemented and each year a set of targets are established under each project. Additionally, targets are set based on Environmental Communications and findings from internal and external audits. Details of the 5-year projects and the annual targets for 2014 are provided in Table 14. **Appendix III** provides a detailed report of the progress made on each EMP project in 2013.

Table 14 EMP Projects & Schedule of Annual Targets

Core objective reference	Project title	Project timeframe	2014 targets
1.0	Up-grade & refurbishment projects in the effluent treatment plant (Project No. 1.4)	Jan. 14 – Dec. 19	• Install screen at balance tank. • Assess condition of biotower. • Investigate options to renovate/replace biotower • Up-date WWTP risk assessment & manual.
2.0	Reduce noise levels from the plant (Project No. 2.2)	Jan. 11 – Dec. 15	• Review options to replace tannoy system • Evaluate noise at Unit 3/Type A silo, investigate options to reduce noise.
4.0	Energy reduction projects (Project No. 5.3)	Jan. 13 – Dec. 19	• Review options to resize cooling tower pumps to suit their application • Review energy audit report submitted by DEVKI Energy Consultants.
	Alternative energy sources (Project 8.0)	Jan. 10 – Dec. 14	• Review options for implementing CHP/gas turbine (A number of thermal energy projects will be generated if this proceeds).
5.0	Examine & renovate foul water systems on-site by 2015 (Project 6.2)	Jan. 11 – Dec. 15	• Review 2013 manhole cards and establish a renovation plan. • Review condition of FWRP & penstock valves. Carry out necessary repairs.
6.0	Waste Management Projects	Jan. 11 – Dec. 15	• Complete an audit of 2 waste contractors

	Use of renewable sources		• Implement system for handling flammable waste • Maintain flake/recyclate content of raw material mix at 71.5%/85.7%.
7.0	Environmental Communications	Jan. 11 – Dec. 15	• Training on relevant environmental procedures for Team Leader group. • Training on relevant environmental procedures for lab personnel • Specific environmental training for MSC personnel. • Review GE/090 Handling Health & Safety Incidents to include environmental incidents & make EP12 obsolete.

8.0 Pollution Release and Transfer Register

Outlined below is a list of releases to air and water from our facility which have been reported in compliance with SI123 of 2007.

Air

- Carbon di-oxide (CO_2)
- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Sulphur dioxide (SO_2)
- Particulate matter (PM_{10})

TA Luft Class I, II & III were monitored at the licensed emission points.

Water

- Arsenic & compounds
- Chromium & compounds
- Copper & compounds
- Lead & compounds
- Mercury & compounds
- Nickel & compounds
- Zinc & compounds
- Cadmium & compounds

Details of the emissions are recorded in the EPA AER Returns Worksheet **(Appendix II)**

9.0 Noise Monitoring

Noise monitoring was conducted in the fourth quarter of 2013 in accordance with the EPA Guidance note NG4.

The results of the survey are included in the Effects Register and noise reduction projects are devised accordingly. Progress with noise reduction projects is addressed through the annual Objectives & Targets programme.

There have been no changes relevant to site noise emissions since the last noise survey in 2012.

Table 15 summarises the results of the Annual Noise Survey Report from the Wellman International Ltd (WIL) site, conducted in 2013. The full report is available on-site and a copy has been submitted to the EPA.

Table 15 Noise monitoring summary

Date of monitoring	Time period	Noise location	NSL	LA_{eq}	LA_{90}	LA_{10}	LA_{max}	LA_{RT}	Tonal or impulsive noise	If tonal/impulsive was 5dB penalty applied	Comments
27/11/13	10:51-11:06	N2	✓	51	49	52	64	51	No	N/A	Silo farm noise, product conveying through pipework, dogs barking in the distance, excavator operating in neighbouring property
27/11/13	11:06-11:21	N2	✓	50	49	51	65	50	No	N/A	
27/11/13	11:22-11:37	N2	✓	49	48	50	56	49	No	N/A	
13/11/13	02:15-02:30	N2	✓	43	38	45	59				Product impacts, blowers turning on & off, dogs barking in the distance.
13/11/13	02:31-02:46	N2	✓	45	43	47	61				
04/12/13	13:01-13:16	N4	X	57	56	58	61	57	No	N/A	Fans on spinning roof, product impacts through pipework, diverter valves opening & closing
04/12/13	13:18-13:33	N4	X	58	57	59	61	58	No	N/A	
04/12/13	13:35-13:50	N4	X	58	57	58	61	58	No	N/A	
12/11/13	23:38-23:53	N4	X	54	53	55	58				Fans on spinning roof, product impacts through pipework, diverter valves opening & closing
12/11/13	23:53-00:08	N4	X	54	53	55	63				
27/11/13	16:03-16:18	N5	X	59	54	62	64	59	No	N/A	Fans on spinning & finishing roofs, product impacts through pipework. Dogs barking in the distance.
27/11/13	16:19-16:34	N5	X	59	56	61	67	59	No	N/A	
27/11/13	16:35-16:50	N5	X	57	51	61	64	57	No	N/A	
13/11/13	00:12-00:27	N5	X	58	51	65	68				Fans on spinning & finishing roofs, product impacts through pipework. Dogs barking in the distance.
13/11/13	00:28:00:43	N5	X	58	51	64	68				
04/12/13	11:02-11:17	N7	X	46	42	47	63	46	No	N/A	Fans on spinning roof, bulk material filling to silos, blower noise & product impacts.
04/12/13	11:18-11:33	N7	X	48	43	51	59	48	No	N/A	
04/12/13	11:35-11:50	N7	X	48	45	49	53	48	No	N/A	
13/11/13	03:55-04:10	N7	X	46	41	47	52				Fans on spinning roof, blower noise & product impacts.
13/11/13	04:11-04:26	N7	X	44	41	46	57				
04/12/13	12:01-12:16	N8	X	54	52	56	73	54	No	N/A	Forktruck activity in the yard, fan and product impacts through pipework.
04/12/13	12:16-12:31	N8	X	52	51	53	60	52	No	N/A	
04/12/13	12:32-12:47	N8	X	53	51	55	69	53	No	N/A	
13/11/13	00:47-01:02	N8	X	54	51	56	58				Fan & product impacts through pipework.
13/11/13	01:02-01:17	N8	X	53	51	55	58				

Date of monitoring	Time period	Noise location	NSL	LA_{eq}	LA_{90}	LA_{10}	LA_{max}	LA_{RT}	Tonal or impulsive noise	If tonal/impulsive was 5dB penalty applied	Comments
27/11/13	15:06-15:21	N10	X	56	55	57	72	56	No	N/A	Blowers turning on & off, product impacts through pipework, dogs barking in the distance.
27/11/13	15:22-15:37	N10	X	56	56	57	65	56	No	N/A	
27/11/13	15:40-15:55	N10	X	57	56	58	67	57	No	N/A	
13/11/13	00:47-01:02	N10	X	49	44	52	57				Blowers turning on & off, product impacts through pipework, dogs barking in the distance.
13/11/13	01:02-01:17	N10	X	50	38	54	57				
27/11/13	14:01-14:16	N13	X	52	51	53	62	52	No	N/A	Fans on spinning roof, product impacts through pipework.
27/11/13	14:17-14:32	N13	X	52	51	53	59	52	No	N/A	
27/11/13	14:34-14:49	N13	X	52	51	53	63	52	No	N/A	
12/11/13	23:01-23:16	N13	X	54	54	55	63				Fans on spinning roof, product impacts through pipework.
12/11/13	23:16-23:31	N13	X	54	54	55	62				
27/11/13	09:59-10:14	N14	✓	49	45	52	58	49	No	N/A	Blowers turning on & off, product impacts through pipework, dogs barking in the distance, excavator operating in neighbouring property.
27/11/13	10:15-10:30	N14	✓	50	46	52	62	50	No	N/A	
27/11/13	10:31-10:46	N14	✓	50	47	52	59	50	No	N/A	
13/11/13	01:40-01:55	N14	✓	47	42	51	65				Blowers turning on & off, product impacts through pipework.
13/11/13	01:55-02:10	N14	✓	47	42	51	56				
27/11/13	11:52-12:07	N15	✓	45	42	47	55	45	No	N/A	Fan noise and faint product impacts through pipework, local farmyard activity.
27/11/13	12:07-12:22	N15	✓	44	41	47	56	44	No	N/A	
27/11/13	12:23-12:38	N15	✓	45	41	47	58	45	No	N/A	
13/11/13	03:00-03:15	N15	✓	39	35	42	51				Fan noise and faint product impacts through pipework.
13/11/13	03:15-03:30	N15	✓	42	34	46	55				

All noise results were within licensable limits.

10.0 Groundwater monitoring summary

Ground water monitoring is scheduled to be carried out bi-annually, as outlined in Schedule C.6 of the licence. The results for the monitoring completed in 2013 are summarised below.

Table 16 Groundwater Monitoring Results

Parameter		GW1 (cooling water)		GW2 (drinking water)		*Drinking water std (µg/l)
		Mar-13	Sept-13	Mar-13	Sept-13	
pH		7.1	7	7.1	7.1	6.5-9.5
COD (mg/l)		5	10	7	5	
Conductivity mS/cm@20°C		570	590	620	750	2500
Nitrate (mg/l asN)		2.4	1.5	2.4	1.5	50
Total Nitrogen (mg/l)		2.0	1.6	2.0	1.6	
Chloride (mg/l)		24	29	24	29	250
Trace Organics (mg/l)	Methanol	<0.5	<0.5	<0.5	<0.5	-
	Acetonitrile	<0.5	<0.5	<0.5	<0.5	-
	Ethanol	<0.5	<0.5	<0.5	<0.5	-
	Acetone	<0.5	<0.5	<0.5	<0.5	-
	IPA	<0.5	<0.5	<0.5	<0.5	-
	USEPA 524.2	7.71 (Trichloroethane)	4.05 (Trichloroethane)	7.11 (Trichloroethane	<1	-
Heavy Metals (µg/l)	Aluminium	<2	<2	3	<2	200
	Boron	11	13	11	13	1000
	Iron (mg/l)	<0.1	<0.1	<0.1	<0.1	200
	Manganese	<2	<2	<2	<2	50
	Copper	20	2	20	2	2000
	Zinc	49	2	52	<2	-
	Barium	92	86	90	82	-
	Arsenic	<2	<2	<2	<2	10
	Cadmium	<2	<2	<2	<2	5
	Chromium	<2	<2	<2	<2	50
	Mercury	<1	<1	<1	<1	1
	Nickel	<2	<2	<2	<2	20
	Lead	<2	<2	<2	<2	25
	Antimony	<2	<2	<2	<2	5
	Selenium	<2	<2	<2	<2	10
	Cobalt	<2	<2	<2	<2	-
	Silver	<2	<2	<2	<2	-
	Beryllium	<2	<2	<2	<2	-
	Tin	<2	<2	<2	<2	-

The reference numbers for the two groundwater wells on site are GW1 and GW2. GW1 is located at the Southwest boundary of the site and is used for cooling water purposes and GW2 is located at the northeast boundary of the site and is used for drinking water purposes. There is a third well on-site GW3, which is located adjacent to GW2, and is used as a back-up for GW2. The use of GW2 & GW3 is interchangeable.

Analysis results for GW2 were in compliance with the limits specified in the European Communities (Drinking Water) (No. 2) Regulations 2007 (S.I. No. 278 of 2007) which is used for drinking water purposes.

11.0 Surface water monitoring summary

Surface water discharges are monitored at M/235/S as outlined in Schedule C.2.3 of the licence. The results are presented in Fig. 8 below.

The results for M/000/S, the combined discharge to the river are monitored as outlined in Schedule C.2.2 of the licence. See Fig. 9.

Figure 8 Monitoring at M/235/S 2010-2013

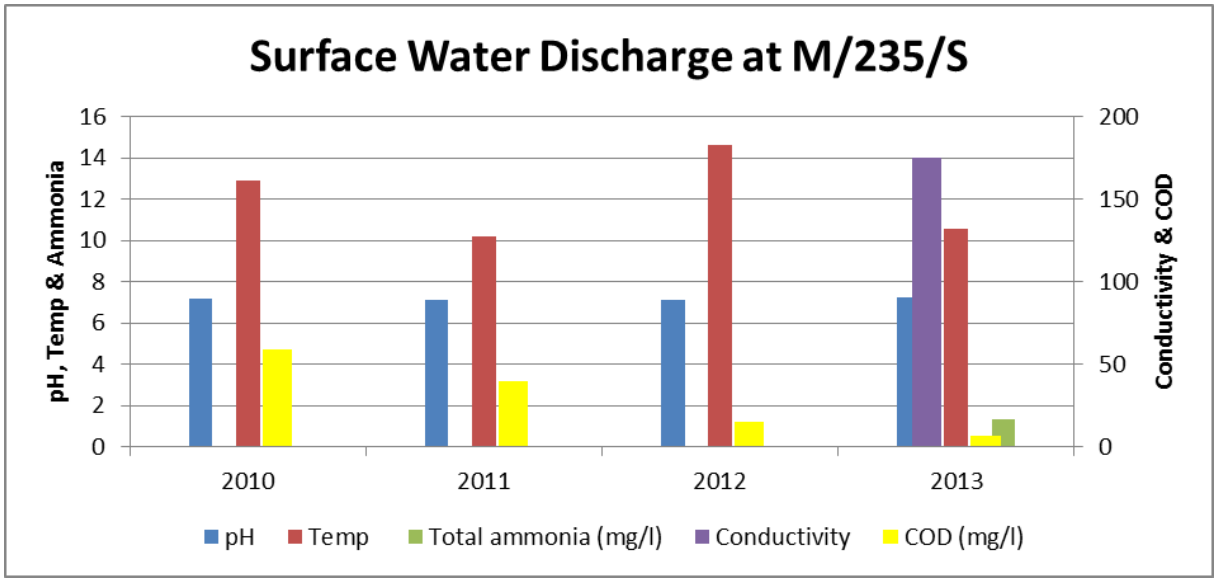
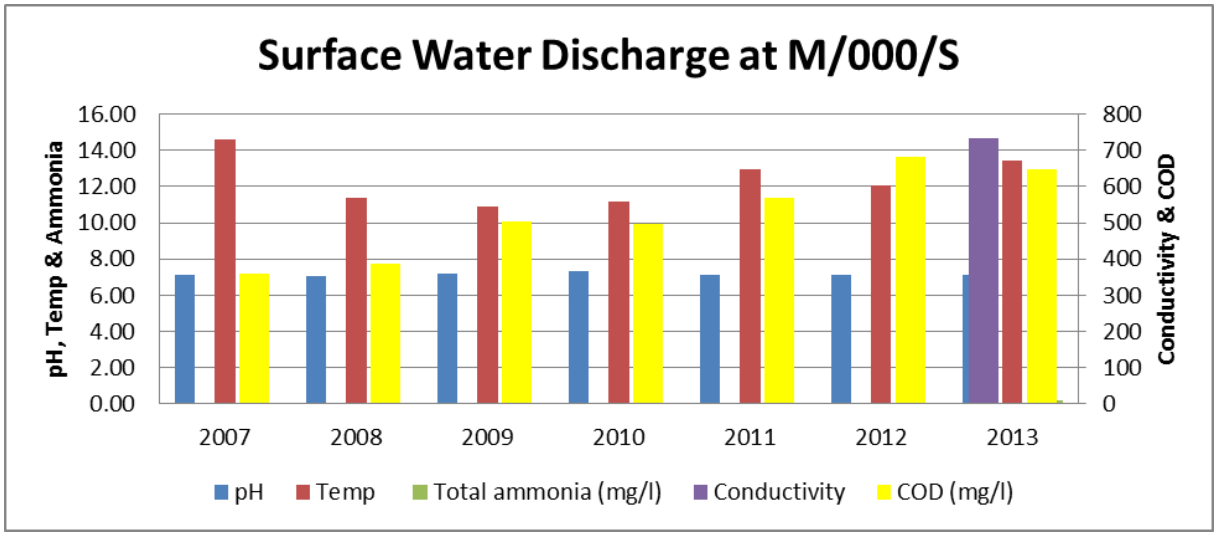


Figure 9 Monitoring at M/000/S 2007-2013



There were no non-compliances in relation to surface water monitoring during 2013.

12.0 Bund integrity testing

The bunds were integrity tested and certified by TGP, Consulting Civil & Structural Engineers in 2012.

Certification is required again in 2015.

A copy of the certificate has been included in **Appendix V**.

13.0 Inspection of underground effluent & foul sewer pipes

A CCTV survey of the underground effluent & foul sewer pipes was conducted by McBreen Environmental Services during 2013. All foul drains are currently in good condition and require no further rehabilitation works.

The next survey of the foul system is scheduled for 2016.

14.0 Spending on environmental protection

Environmental Projects Jan 13- Dec 13

	€
Replacement of water main	45,806.00
Lighting upgrade projects	17,929.00
Asbestos removal project	19,085.00
CHP project	15,750.00
Total	**98,570.00**

Consultants & Environmental Management Fees

AES	82,819.00
McBreen Environmental	18,247.00
S.S.I Environmental Limited	2,710.00
EPA	6,993.00
NSAI	10,900.00
TMS Environment	1,262.00
Rowan Engineering Consultants Ltd	2,631.00
Antaris Consulting	3,600.00
ANUA	1,189.00
KD Environmental	3,580.00
TOTAL	**133,931.00**

15.0 Decommissioning Management Plan

A Decommissioning Management Plan was prepared by Rowan Engineering Consultants Ltd. in 2013. This is currently under review by the EPA.

WIL has been categorised as Risk Category 2.

The costs associated with obtaining a 'clean closure' have been estimated at €385,801. The closure cost assumes that the facility structures will remain in place and that the future use of the site will be industrial in nature.

16.0 Environmental Liabilities Risk Assessment

An Environmental Liabilities Risk Assessment was prepared by Rowan Engineering Consultants Ltd. in 2013. This is currently under review by the EPA.

A total of 28 potential risks were identified. All are low level risks and indicate a need for continuing awareness and monitoring on a regular basis.

Statement of Measures

WIL have been in operation for the last 40 years. During this time environmental risk management has been a core value and it is reflected in the level of reasonably low level of risk identified in the risk assessment. The proposed/continued mitigation measures are outlined below.

Risk	Risk score	Mitigation measure
Loss of integrity of fuel bunds	3	Continue bund certification
Loss of integrity of diesel bund at river pump house	3	Continue daily inspection & weekly maintenance checks of bunds.
Loss of integrity of foul underground pipelines	2	Carry out CCTV survey of underground pipelines.
WWTP tanks or sumps overflowing	4	Continue weekly alarm checks
Uncontrolled & prolonged release of the final discharge outside the ELVs	6	Review & up-date existing WWTP manual
Release of significant noise emissions beyond the boundary of the site.	2	Continue annual noise monitoring

Release of uncontrolled gaseous emissions following malfunction of equipment.	2	Scrubber checked regularly as part of sites preventative maintenance
Extreme cold temperatures (potential impact on WWTP)	3	Review WWTP procedures & controls in place for cold weather.
Major site fire	8	Review emergency response procedures in relation to firewater management.
Prolonged power failure	3	Review WWTP procedures & controls in place for power failure.
Asbestos	3	Plan in place to phase out asbestos.

Based on the risk assessment environmental liabilities have been costed at €134,100 which is 'worst case scenario' with a 20% contingency.

Appendix I

Wellman International Limited
Policies on Health & Safety, the Environment and Product Quality

Wellman International Limited is Europe's leading producer of polyester staple fibre and our goal is to deliver to our customers products and services that meet or exceed their expectations.

It is our policy

- To achieve and maintain the highest standards of product quality, health & safety and environmental responsibility throughout the company and in all our activities.
- To comply with all applicable national and international legislation related to health & safety and environmental matters.
- To identify hazards and eliminate or minimise risks so as to prevent injury or ill health to employees, contractors and visitors.
- To work in partnership with our employees to ensure the highest standards of product quality, health & safety and environmental performance are achieved.

We are committed to

- The efficient use of resources.
- The minimisation of waste.
- The prevention of pollution.

We will reuse waste wherever practicable, promoting the use of recycled materials to reduce our environmental impact.

We will routinely set and review achievement of specific objectives for continuous improvement in the fields of quality, health & safety and environmental management and comply with the standards of independently verified management systems including ISO 9001, ISO 14001 and OHSAS 18001.

We will use appropriate training, involvement and communication with all our employees and other relevant parties to actively promote

- awareness of health & safety,
- responsibility towards the environment,
- understanding of product quality

and we will devote sufficient resources to ensure that this policy is implemented throughout the company.

Frank Gleeson
Managing Director

Appendix II

| PRTR# : P0236 | Facility Name : Wellman International Limited | Filename : P0236_2013.xls | Return Year : 2013 |

Guidance to completing the PRTR workbook

AER Returns Workbook

Version 1.1.17

REFERENCE YEAR	2013

1. FACILITY IDENTIFICATION

Parent Company Name	Wellman International Limited
Facility Name	Wellman International Limited
PRTR Identification Number	P0236
Licence Number	P0236-02

Waste or IPPC Classes of Activity

No.	**class_name**
8.4	The manufacture of synthetic fibres, not included in paragraph 5.12

Address 1	Mullagh
Address 2	Kells
Address 3	Co. Meath
Address 4	
	Meath
Country	Ireland
Coordinates of Location	-6.92903 53.8121
River Basin District	IEEA
NACE Code	1310
Main Economic Activity	Preparation and spinning of textile fibres
AER Returns Contact Name	Niamh Murray
AER Returns Contact Email Address	niamh.murray@wellman-intl.com
AER Returns Contact Position	HS & E Officer
AER Returns Contact Telephone Number	046-9280249
AER Returns Contact Mobile Phone Number	
AER Returns Contact Fax Number	046-9280300
Production Volume	78950.0
Production Volume Units	Tonnes
Number of Installations	1
Number of Operating Hours in Year	7992
Number of Employees	262

User Feedback/Comments	There is >50% variation in some heavy metals released to water. The results are based on a grab sample taken annually, which are then extrapolated to kg/annum. Expect variation in this figure as there are also variations in the in-coming water.
Web Address	

2. PRTR CLASS ACTIVITIES

Activity Number	Activity Name
50.1	General

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

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

4. WASTE IMPORTED/ACCEPTED ONTO SITE Guidance on waste imported/accepted onto site

Do you import/accept waste onto your site for on-site treatment (either recovery or disposal activities) ?	Yes

This question is only applicable if you are an IPPC or Quarry site

PRINT THIS SHEET

HELP

CREATE AER XML RETURN & UPLOAD

4.1 RELEASES TO AIR

###########

Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

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

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used		A1-2			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
03	Carbon dioxide (CO2)	C	OTH	Standard emission rate for gas burning	3754896.0	8071574.0	0.0	4316678.0
02	Carbon monoxide (CO)	C	OTH	Standard emission rate for gas burning	1284.0	2759.0	0.0	1475.0
08	Nitrogen oxides (NOx/NO2)	C	OTH	Standard emission rate for gas burning	2953.0	6347.0	0.0	3394.0
11	Sulphur oxides (SOx/SO2)	C	OTH	Standard emission rate for gas burning	32.0	69.0	0.0	37.0
86	**Particulate matter (PM10)**	C	OTH	Standard emission rate for gas burning	225.0	483.0	0.0	258.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (As required in your Licence)

RELEASES TO AIR					Please enter all quantities in this section in KGs			
POLLUTANT		METHOD				QUANTITY		
			Method Used					
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

4.2 RELEASES TO WATERS

Link to previous years emissions data

SECTION A : SECTOR SPECIFIC PRTR POLLUTANTS

Data on ambient monitoring of storm/surface water or groundwater, conducted as part of your licence requirements, should NOT be submitted under AER / PRTR Reporting as this only concerns Releases from your facility

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

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION B : REMAINING PRTR POLLUTANTS

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used		SW1			
No. Annex II	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year
17	Arsenic and compounds (as As)	M	OTH	Based on EPA method 200.8	0.082	0.082	0.0	0.0
19	Chromium and compounds (as Cr)	M	OTH	Based on EPA method 200.8	0.082	0.082	0.0	0.0
18	Cadmium and compounds (as Cd)	M	OTH	Based on EPA method 200.8	0.082	0.082	0.0	0.0
20	Copper and compounds (as Cu)	M	OTH	Based on EPA method 200.8	0.082	0.082	0.0	0.0
22	Nickel and compounds (as Ni)	M	OTH	Based on EPA method 200.8	0.16	0.16	0.0	0.0
23	Lead and compounds (as Pb)	M	OTH	Based on EPA method 200.8	0.082	0.082	0.0	0.0
24	Zinc and compounds (as Zn)	M	OTH	Based on EPA method 200.8	1.56	1.56	0.0	0.0
21	Mercury and compounds (as Hg)	M	OTH	Based on EPA method 200.8	0.04	0.04	0.0	0.0
					0.0	0.0	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

SECTION C : REMAINING POLLUTANT EMISSIONS (as required in your Licence)

RELEASES TO WATERS					Please enter all quantities in this section in KGs			
POLLUTANT					QUANTITY			
			Method Used		SW1			
Pollutant No.	Name	M/C/E	Method Code	Designation or Description	Emission Point 1	T (Total) KG/Year	A (Accidental) KG/Year	F (Fugitive) KG/Year

303	BOD	M	OTH	In-house BOD test based on Standard Methods for the Examination of Water & Wastewater	1645.0	1645.0	0.0	0.0
306	COD	M	OTH	In-house COD test based on Standard Methods for the Examination of Water & Wastewater	45370.0	45370.0	0.0	0.0
240	Suspended Solids	M	OTH	In-house SS test based on Standard Methods for the Examination of Water & Wastewater	1604.0	1604.0	0.0	0.0
314	Fats, Oils and Greases	M	OTH	Extraction & FTIR	305.0	305.0	0.0	0.0
355	Aluminium	M	OTH	G57 Based on EPA method 200.8	0.21	0.21	0.0	0.0
374	Boron	M	OTH	G57 Based on EPA method 200.8	1.48	1.48	0.0	0.0
357	Iron	M	OTH	G57 Based on EPA method 200.8	6.16	6.16	0.0	0.0
321	Manganese (as Mn)	M	OTH	G57 Based on EPA method 200.8	1.23	1.23	0.0	0.0
373	Barium	M	OTH	G57 Based on EPA method 200.8	6.24	6.24	0.0	0.0
205	Antimony (as Sb)	M	OTH	G57 Based on EPA method 200.8	14.36	14.36	0.0	0.0
370	Selenium	M	OTH	G57 Based on EPA method 200.8	0.082	0.082	0.0	0.0
356	Cobalt	M	OTH	G57 Based on EPA method 200.8	0.16	0.16	0.0	0.0
354	Silver	M	OTH	G57 Based on EPA method 200.8	0.082	0.082	0.0	0.0
358	Tin	M	OTH	G57 Based on EPA method 200.8	0.082	0.082	0.0	0.0
332	Ortho-phosphate (as PO4)	M	OTH	Spectrophotometry	60.4	60.4	0.0	0.0
238	**Ammonia (as N)**	M	OTH	Spectrophotometry	11.4	11.4	0.0	0.0

* Select a row by double-clicking on the Pollutant Name (Column B) then click the delete button

Please enter all quantities on this sheet in Tonnes

Transfer Destination	European Waste Code	Hazardous	Quantity (Tonnes per Year)	Description of Waste	Waste Treatment Operation	Method Used M/C/E	Method Used	Location of Treatment	Haz Waste : Name and Licence/Permit No of Next Destination Facility Non Haz Waste: Name and Licence/Permit No of Recover/Disposer	Haz Waste : Address of Next Destination Facility Non Haz Waste: Address of Recover/Disposer	Name and License / 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	04 02 15	No	14.44	wastes from finishing other than those mentioned in 04 02 14	D9	M	Weighed	Offsite in Ireland	Rilta Environmental Ltd,W0192-03	Block 402 Grant's Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland		
Within the Country	04 02 20	No	163.84	sludges from on-site effluent treatment other than those mentioned in 04 02 19	R3	M	Weighed	Offsite in Ireland	Kilmainham Compost,W0195-01	Ballynalurgan,Kilmainhamwood,Meath,,,Ireland		
Within the Country	04 02 22	No	68.08	wastes from processed textile fibres	R1	M	Weighed	Offsite in Ireland	Indaver Ireland,W0167-02	Carranstown,Duleek,Meath,,,Ireland		
To Other Countries	04 02 22	No	177.39	wastes from processed textile fibres	R3	M	Weighed	Abroad	Colm MacDowell & Associates,IRE/AG 0009/11	Unit C1 Magna Drive,Magna Business Park,Citywest,Dublin 24,Ireland		
To Other Countries	04 02 22	No	281.68	wastes from processed textile fibres	R3	M	Weighed	Abroad	Choice Waste Management,CB/WE5536VU	Denmark House Brick Close,Kiln Farm Milton Keynes, Buckinghamnshire, MK11 3DP, United Kingdom		
To Other Countries	04 02 22	No	373.82	wastes from processed textile fibres	R3	M	Weighed	Abroad	WTS-J,IRE/G235/11	nam Fr. Krizika 2840,Tabor,,,,Czech Republic		
Within the Country	04 02 22	No	3855.0	wastes from processed textile fibres	R3	M	Weighed	Onsite of generation	Wellman International Ltd,P0236-02	Mullagh,Kells,Co. Meath,,,Ireland		
Within the Country	08 03 18	No	0.0013	waste printing toner other than those mentioned in 08 03 17	D15	M	Weighed	Offsite in Ireland	Cartridge Retrieval & Sales,.	15 Watergate Est,Tallaght,Dublin 24,,,Ireland		
Within the Country	08 03 18	No	0.029	waste printing toner other than those mentioned in 08 03 17	R3	M	Weighed	Offsite in Ireland	Cartridge Retrieval & Sales,.	15 Watergate Est,Tallaght,Dublin 24,,,Ireland		
Within the Country	11 01 13	Yes	0.48	degreasing wastes containing dangerous substances	R13	M	Volume Ca	Offsite in Ireland	Safety Kleen Ltd,W0099-01	Unit 5,Airton Rd,Tallaght,Dublin 24,Ireland	Tradbe, TP3334SF, Weeland Rd ,Knottingly, West Yorkshire, WF11 8DZ, UK	Weeland Rd, Knottingly, West Yorkshire, WF11 8DZ, UK
Within the Country	13 02 08	Yes	3.7	other engine, gear and lubricating oils	R9	M	Weighed	Offsite in Ireland	ENVA Ireland Ltd,W0184-01	Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland	ENVA Ireland Ltd,W0184-01,Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland
Within the Country	13 05 08	Yes	2.14	mixtures of wastes from grit chambers and oil/water separators	R9	M	Weighed	Offsite in Ireland	ENVA Ireland Ltd,W0184-01	Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland	ENVA Ireland Ltd,W0184-01,Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland	Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland
Within the Country	15 01 01	No	13.2	paper and cardboard packaging	R12	M	Weighed	Offsite in Ireland	AES ,W0131-02	Proudstown Rd.,Navan,Co. Meath,,,Ireland		
Within the Country	15 01 02	No	31.6	plastic packaging	R3	M	Weighed	Offsite in Ireland	Leinster Environmentals,WFP-LH-11-0002-01	Clermont Business Park,Haggardstown,Dundalk,Louth,Ireland		
Within the Country	15 01 03	No	128.96	wooden packaging	R3	M	Weighed	Offsite in Ireland	Conroy Recycling ,WFP-WH-2009-0002-01	,,Slanemore,Mullingar,Co. Westmeath,Ireland		
Within the Country	15 01 05	No	18.76	composite packaging	R4	M	Weighed	Offsite in Ireland	Rilta Environmental Ltd,W0192-03	Block 402 Grant's Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland		
Within the Country	15 01 10	Yes	0.11	packaging containing residues of or contaminated by dangerous substances	R4	M	Weighed	Offsite in Ireland	Rilta Environmental Ltd,W0192-03	Block 402 Grant's Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland	Hegarty Metals Processors Ltd T/A A1 Metals, ATFWMP007E, Acragar, Mountmellick, Laois Ireland	Acragar,Mountmellick, Laois,,,Ireland
To Other Countries	15 01 10	Yes	0.24	packaging containing residues of or contaminated by dangerous substances	D15	M	Weighed	Abroad	Rilta Environmental Ltd,W0192-03	Block 402 Grant's Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland	Delta Containers,CB/GN5976BQ,Preston Street,West Gorton,Manchester, M18 8DB,United Kingdom	Preston Street,West Gorton,Manchester,M18 8DB,United Kingdom
Within the Country	16 01 07	Yes	0.4	oil filters	R4	E	Weighed	Offsite in Ireland	ENVA Ireland Ltd,W0184-01	Clonminam Ind Est,Portlaoise,Co. Laois,,,Ireland	R.D. Recycling,31727/1/KD,Centrumzuid,Houthalen,,,,Belgium	Centrumzuid,Houthalen,,,,Belgium
Within the Country	17 09 04	No	80.38	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	R5	M	Weighed	Offsite in Ireland	AES ,W0131-02	Proudstown Rd.,Navan,Co. Meath,,,Ireland		
Within the Country	19 08 09	No	0.4	grease and oil mixture from oil/water separation containing only edible oil and fats	R3	M	Volume Ca	Offsite in Ireland	Kilmainhamwood Compost,W0195-01	Ballynalurgan,Kilmainhamwood,Meath,,,Ireland		
Within the Country	20 01 08	No	0.32	biodegradable kitchen and canteen waste	R3	M	Weighed	Offsite in Ireland	Kilmainham Compost,W0195-01	Ballynalurgan,Kilmainhamwood,Meath,,,Ireland		
Within the Country	20 01 21	Yes	0.095	fluorescent tubes and other mercury-containing waste	R4	M	Weighed	Offsite in Ireland	Irish Lamp Recycling Company,WFP-KE-08-0348-01	Woodstack Industrial Estate,Athy,Co. Kildare,,,Ireland	Irish Lamp Recycling Company,WFP-KE-08-0348-01,Woodstack Industrial Estate,Athy,Co. Kildare,,,Ireland	Woodstack Industrial Estate,Athy,Co. Kildare,,,Ireland
Within the Country	20 01 25	No	0.515	edible oil and fat	R9	C	Volume Ca	Offsite in Ireland	Frylite (Dublin) Ltd.,WFP-DS-10-0009-01	Unit J1,Ballymount Drive,Ballymount Industrial Estate,Dublin 12,Ireland		
Within the Country	20 01 40	No	21.28	metals	R13	M	Weighed	Offsite in Ireland	AES ,W0131-02	Proudstown Rd.,Navan,Co. Meath,,,Ireland		
Within the Country	20 03 01	No	74.8	mixed municipal waste	D1	M	Weighed	Offsite in Ireland	AES ,W0131-02	Proudstown Rd.,Navan,Co. Meath,,,Ireland		
Within the Country	20 03 01	No	300.58	mixed municipal waste	R1	M	Weighed	Offsite in Ireland	Indaver Ireland,W0167-02	Carranstown,Duleek,Meath,,,Ireland		
Within the Country	20 03 99	No	4.21	municipal wastes not otherwise specified	R12	M	Weighed	Offsite in Ireland	AES ,W0131-02	Proudstown Rd.,Navan,Co. Meath,,,Ireland		
To Other Countries	17 06 05	Yes	5.7	construction materials containing asbestos (18)	D1	M	Weighed	Abroad	Rilta Environmental Ltd,W0192-03	Block 402 Grant's Drive,Greenogue Business Park,Rathcoole,Co. Dublin,Ireland	Grossenasper Entsorgungsgesellschaft,EC0108,Grossenasperfeld 0, Grossenaspe,,,24623, Germany	Grossenasperfeld 0,Grossenaspe,,,24623,Germany
Within the Country	04 02 99	No	0.007	wastes not otherwise specified	D15	E	Volume Ca	Offsite in Ireland	SRCL Ltd,W0055-02	Units 420-430 Beech Road,Western Industrial Estate,Naas Road,Dublin 12,Ireland		

* Select a row by double-clicking the Description of Waste then click the delete button

Link to previous years waste data
Link to previous years waste summary data & percentage change
Link to Waste Guidance

Appendix III

Project No 1.3. Up-Grade & Refurbishment Projects in the Effluent Treatment Plant

1.3.1 Relationship to Objectives and Targets

In line with the objective to ensure that the final effluent quality does not impact on receiving water body.

1.3.2 Reason for undertaking project

To ensure the effluent treatment plant is maintained in good working order.

1.3.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

1.3.4 Project overview

Project 1.3	2008	2009				2010				2011				2012				2013			
Quarter	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																					
Phase 2																					
Phase 3																					
Phase 4																					

Phase 1 **Dec 2008, 2009, 2010, 2011, 2012**

Identify potential up-grades required in the effluent treatment plant. Account should be taken of the general efficiency of the plant, the general appearance of the plant, EPA, NSAI, insurance and internal audits, internal communications, the aspects & impacts register and the legislative register.

All potential up-grades should be listed within this project in the last quarter of each year. The feasibility of the proposed up-grades will be examined (under Phase 2 of this project) in the first quarter of the following year

Phase 2 **Mar 2009, 2010, 2011, 2012, 2013**

Evaluate the proposed potential up-grades and determine the feasibility of the project. All proposed up-grades must be approved by management and must attain budgetary approval prior to being included in the annual targets. Proposed up-grades may be postponed or abolished depending on (a) reason for requiring the up-grade (b) feasibility and (c) budget availability.

Phase 3 **Dec 2009, 2010, 2011, 2012, 2013**

Complete approved up-grade works.

Phase 4 **Dec 2009, 2010, 2011, 2012, 2013**

Evaluate up-grades.

1.3.5 Designation of responsibility

The HS & E Manager and Technical & Development Manager are responsible for the implementation of this project.

1.3.6 Project implementation

Objectives set for 2009

- Up-grade sludge press
- Paint clarifier
- Up-grade aeration tank
- Replace automatic sampler and flow meter

Progress made in 2009

- The sludge press underwent a major service, costing €3270. It is working very well since. It was recommended that a similar service be done approximately every 5 years to keep the press in good working order.
- The clarifier was painted.
- The aeration tank was certified by Thomas Garland & Partners and therefore no up-grades were done on the tank.
- The automatic sampler & flow meter was replaced.

Objectives set for 2010

- Re-line effluent sump
- Re-wire dewatering press
- Service de-watering press equipment
- Install guttering system around aeration tank
- Install improved water filtration system on river infeed to plant

Progress made in 2010

- Effluent sump was re-lined during the summer shutdown. It was a major project costing €8580, however it was very successful and the sump is in good working order
- Re-wiring of the dewatering press was not completed, however it has been included in the 2011 targets programme
- Guttering system was installed around the aeration tank
- The preparatory work for the installation of new filters was completed in 2010. The appropriate filters were ordered, however, they were not delivered on time for the project to be completed in 2010.

Objectives set for 2011

- Re-wire dewatering press
- Service dewatering press equipment
- Review options to replace aeration system
- Obtain EPA approval and install agreed aeration system
- Decommission biotower or renovate distribution plates

Progress made in 2011

- Dewatering press was re-wired
- CEFR (capital expenditure form) was drawn up for the replacement of the aeration system and submitted to the directors for approval
- EPA approval for new aeration system was received
- Distribution plates in the biotower were renovated – splash plates now in use instead of spray nozzles, which has improved distribution
- Work on the improved water filtration system for the river infeed was also completed in early 2011

Objectives set for 2012

- Service dewatering press
- Obtain approval from directors and senior managers for the installation of the agreed aeration system
- Install agreed aeration system

Progress made in 2012

- There were subsequent plans made to move the de-watering press, the equipment will be serviced after that. There was some preventative maintenance works done on the press during the year and spare parts purchased.
- Approval attained for the installation of new aeration system.
- Aeration system successfully installed.
- The biotower was also decommissioned during the year as a result of the successful installation of the new aeration system.

Targets set for 2013

- Review options to treat finish before disposing to biological plant

- Review areas of direct release of finish to drains. Determine control methods and implement.
- Install new delivery system from 12000gallon tank to sump.
- Replace pipework from settlement tank to clarifier.
- Install screen at balance tank.

Progress made in 2013

- During 2013 a number of trials were done to determine options to treat finish prior to disposal to WWTP. The finish contributes to the COD and is relatively stable and difficult to break down. The following methods were trialled (i) pH adjustment (both up & down), (ii) charging using electronic plates (iii) ozonation & Fenton's reagent. Neither the pH adjustment nor charging reduced the COD. The ozonation project yielded up to 27% reduction in COD. This is quite an expensive option and will be developed further in the event that the volume of finish for disposal increases.
- A number of areas of direct release of finish from production into the WWTP were identified. Through an awareness campaign, it was possible to minimise & control releases to the drains.
- The 12000gallon tank was emptied and thoroughly cleaned. This had the effect of improving flow from the tank. In view of this it was not necessary to install a new delivery system.
- Replacement of pipework from the settlement tank to the clarifer is low priority and was not completed.
- A Capital Expense request was submitted to the financial department. To-date approval has not been received. This target will be included in the 2014 plan.

Project 1.4 Up-Grade & Refurbishment Projects in the Effluent Treatment Plant

Project 1.3 was due for completion in 2013. As there is more work in this area a new project (1.4) will be initiated in 2014.

Targets set for 2014

- Install screen at balance tank
- Assess condition of biotower (external engineer)
- Investigate options to replace/renovate the biotower.

Project No. 2.2: Reduce noise levels from the plant by December 2015

2.2.1 Relationship to Objectives and Targets

In-line with the company's objective to reduce noise emissions from the site.

2.2.2 Reason for undertaking project

To ensure that noise levels throughout the site are continuously assessed and that modifications are made, where practicable, to reduce noise emissions. Although the noise levels continue to be within the licensable limit, the noise levels at NSL14 at night-time are close to the limit and it is a main objective of the company to decrease this value where possible.

2.2.3 Target

To reduce noise levels from the site by December 2015 with a view to ensuring that the night-time limits as specified in the IPPC licence are always met particularly at N14.

2.2.4 Project summary

Project 2.1	2010	**2011**				**2012**				**2013**				**2014**				**2015**			
Quarter		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																					
Phase 2																					
Phase 3																					
Phase 4																					

Phase 1:

Set specific annual targets for reducing environmental noise.

This will be reviewed annually in the final quarter.

Phase 2:

Carry out appropriate projects as identified during phase 1.

Phase 3:

Measure noise reductions achieved during each project.

Phase 4:

Assess noise reductions achieved as a result of the implementation of all annual targets. Particular attention should be paid to noise reductions achieved at NSLs.

2.2.5 Project implementation

Phase 1: Set specific annual targets for reducing environmental noise

2010 (Potential noise reduction projects identified during Q4, 2010 to be implemented in 2011).

2011 targets

- Install QFT on exhaust fan No. 2 A-line.
- Review options for reducing noise at Silo 33.
- Review options for reducing noise at Bin 3.
- Assess current pipework lagging in the silo farm area and up-grade lagging if required.

Progress made in 2011

- Measurements to be completed on potential QFT inserts are planned for early 2012 – the QFT will then be installed on exhaust fan No. 2 A Line if suitable
- Review of noise at Silo 33 completed – further investigation required to determine if any further noise reduction can be achieved
- Review of noise at Bin 3 completed – further investigation required to determine if any further noise reduction can be achieved
- The current pipework lagging in the silo farm area was assessed. Additional lagging materials to be ordered as required

2012 targets

- Install QFT on exhaust fan No. 2 on A Line and main exhaust fan on B line.
- Further review of options to reduce noise at Silo 33.
- Further review of options for reducing noise at bin 3.
- From assessment of pipework lagging in the silo farm, identify pipework in need of additional lagging and fit lagging as required.
- Complete survey of Tannoy timer setting to ensure that relevant Tannoys are deactivated at night where appropriate.
- Survey Tannoys and assess suitability of each Tannoys volume and adjust if deemed appropriate.
- Review noise monitoring requirements in view of new EPA guidance document.
- Assess noise impact from moving Unit 0 extruder motor fan and extruder panel cooling fan.

Progress made in 2012

- QFT for A-line was designed and fitted
- At present there are no feasible options for reducing noise at Silo 33 and Bin 3.
- Additional lagging fit to pipes where required.
- Based on assessment some tannoys were turned down, this had an overall positive effect on noise levels.
- Noise monitoring was conducted as required new EPA Guidance document.
- Noise impact from moving Unit 0 extruder motor fan was assessed. There was no effect.

2013 targets

- Review options to replace tannoy system
- Continue to review options to reduce noise at Silo 33 & Bin 3

Progress made in 2013

- A number of options were reviewed, including a mobile phone system. A cost analysis is underway.
- No feasible options for reducing noise at Silo 33 and Bin 3 were identified.

2014 targets

- Review options to replace tannoy system
- Continue to review options to reduce noise at Silo 33 & Bin 3
- Evaluate noise at Unit 3/Type A silo, investigate options to reduce noise.

2.2.6 Designation of responsibility

The Managing Director has overall responsibility for this project. The technical department are responsible for implementing the project.

Project No. 4.0 Waste Management Project

4.0.1 Relationship to Objectives and Targets

In line with the objective to minimise waste generation & to recycle waste materials whenever possible.

4.0.2 Reason for undertaking project

Review of waste management practices is an on-going process at WIL and setting objectives & targets provides a focus for ensuring that all progressive waste management practices are considered and implemented in a timely manner. Also waste generation is rated as a significant impact in the Effects Register.

4.0.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

4.0.4 Project overview

Project 4.0	2010	2011				2012				2013				2014				2015			
Quarter	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																					
Phase 2																					
Phase 3																					
Phase 4																					

Phase 1 **Dec 2010, 2011, 2012, 2013, 2014**

Set specific targets for improved waste management practices each year.

Phase 2 **Mar 2009, 2010, 2011, 2012, 2013**

Review all options for meeting targets and evaluate feasibility.

Phase 3 **Dec 2009, 2010, 2011, 2012, 2013**

Complete approved projects.

Phase 4 **Dec 2009, 2010, 2011, 2012, 2013**

Evaluate projects.

4.0.5 Project implementation

Phase 1

Dec 2010 (Projects identified in December 2010 for implementation during 2011)

- Complete an audit of 2 waste contractors
- Look at options for segregating and separately collecting jumbo sacks
- Implement procedure for segregating food waste at source

Dec 2011 (Projects identified in December 2011 for implementation during 2012)

- Complete an audit of another 2 waste contractors
- Explore the option to divert waste from landfill to “waste to energy” solution

Dec 2012 (Projects identified in December 2012 for implementation during 2013)

- Complete an audit of two waste contractors.
- Implement electronic record for waste movements (off-site)
- Audit waste management from Stores area of plant
- Compare waste generation to material consumption

Dec 2013 (Projects identified in December 2013 for implementation during 2014)

- Implement system for handling flammable waste within the factory
- Complete an audit of two waste contractors.

Phase 2
2011

Examination of feasibility of 2011 projects

- Complete an audit of 2 waste contractors - feasible
- Look at options for segregating and separately collecting jumbo sacks - feasible
- Implement procedure for segregating food waste at source - feasible

Examination of feasibility of 2012 projects

- Complete an audit of another 2 waste contractors - feasible
- Explore the option to divert waste from landfill to "waste to energy" solution - feasible

Examination of feasibility of 2013 projects

- Complete an audit of two waste contractors – feasible
- Implement electronic record of waste movements off-site – feasible
- Review waste management from Stores area of plant – very small volumes of waste generated in this area of the plant and there are segregated bins already available – impractical
- Compare waste generation to material consumption – on review, raw material consumption and waste generation have been consistent for the last 10 years – not feasible.

Phase 3

Implementation of 2011 projects

- Complete an audit of 2 waste contractors – 2 waste contractors were audited during 2011. The waste contractors audited were Kilmainhamwood Composting and Irish Lamp. These contractors treated our effluent plant sludge and our fluorescent lights respectively. Both contractors were observed to be compliant. Target Complete.
- Look at options for segregating and separately collecting jumbo sacks – a new baler was purchased in order to bale up used jumbo sacks. The jumbo sacks are

then stored in bale form before being sent via container to Midland Waste. Target Complete.

- Implement procedure for segregating food waste at source – a segregation system for the separation of food waste at source was investigated and implemented. Segregated food waste is now stored in designated compostable bins. The bins are then collected at regular intervals by Midland Waste. Target Complete.

Implementation of 2012 projects

- Complete an audit of 2 waste contractors – Rilta & Leinster Environmentals were audited in 2012. Rilta recycle IBCs and are approved to take hazardous waste. Leinster Environmentals recycle jumbo sacks.

- Explore the option to divert waste from landfill to "waste to energy" solution – Over 400Tonnes of waste was diverted from landfill and treated in the Indaver 'waste-to-energy' facility in Duleek, Co. Meath.

Implementation of 2013 projects

- Complete an audit on 2 waste contractors – McBreen's and Indaver were audited in 2013. McBreens provide a tanker service for cleaning of finish tanks, sludges and the greastrap. Mixed municipal waste and clunker are incinerated by Indaver.
- An electronic waste management record was successfully implemented.

PHASE 4

Evaluation of projects

- The segregation and separate collection of baled jumbo sacks started in October 2011. From that time until the end of the year, 14.88 Tonnes of material was collected. In three months of operation 14.88T of waste material has been diverted from landfill and this material is being recycled.

- The segregation and separate collection of food waste started in September 2011. The volumes of these bins are very small; however this initiative ensures that our legal obligation to divert organic waste from landfill is being met. In the process of organising this project a separate collection system for dry recyclables from the canteen area was also implemented. As a result of this there is no longer a requirement for a compactor at the canteen.

- Clunker for disposal and mixed municipal waste were always segregated on-site. In Q1 2012, they were transferred directly to Indaver rather than to landfill. This is a more sustainable solution and increases the overall waste recovery figure for the organisation.

- In 2013, only 1% of waste generated on-site was disposed through landfill.

4.0.6 Designation of responsibility

The HS & E manager is responsible for the implementation of this project.

Project No 5.2. Energy Reduction Projects

5.2.1 Relationship to Objectives and Targets

In line with the objective to reduce energy consumed per tonne fibre produced.

5.2.2 Reason for undertaking project

This project has been under-taken as a follow-up to project 5.1.

The aim of Project 5.1 was to reduce energy consumption by 6% by 2008, based on 2004 figures. This was not achieved due to the introduction of a number of necessary process developments which off-set previous reductions achieved.

A complete energy audit was conducted in 2005 by an external consultant. The audit recommended a number of energy saving projects, not all of which have yet been implemented. This project will be used as a platform for implementing and tracking the progress of the recommended energy saving projects.

5.2.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

2009 specific target: To achieve overall energy savings of 685000kWh on specific projects as outlined in Section 5.2.6.

2010 specific target: To achieve overall savings of 219500kWh on light saving projects.

2011 specific target: To achieve overall savings of 219500kWh on light saving projects, 88000kWh on Macawber optimisation, 19000kWh savings

on Lesni scrubber project. The savings to be gained by changing from electrical to gas heating has not yet been determined. The savings to be gained by replacing air operated diaphragm pumps with electrically operated diaphragm pumps has not yet been determined.

2012 specific target: To achieve overall savings of 219500kWh on light saving projects, 88000kWh on Macawber optimisation, 19000kWh savings on Lesni scrubber project.

5.2.4 Project overview

Project 1.3	2008	2009				2010				2011				2012				2013			
Quarter	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																					
Phase 2																					
Phase 3																					
Phase 4																					

Phase 1 **Dec 2008, 2009, 2010, 2011, 2012**

Identify potential energy saving projects. Account should be taken of the 2005 energy audit, recommendations made by the energy management team, energy usage figures, energy cost profiles and energy initiatives offered by State & Semi-state bodies (e.g. SEI).

All potential energy saving projects should be listed within this project in the last quarter of each year. The feasibility of the proposed projects will be examined (under Phase 2 of this project) in the first quarter of the following year.

Phase 2 **Mar 2009, 2010, 2011, 2012, 2013**

Evaluate and determine the feasibility of the proposed projects. All proposed projects must be approved by management and must attain budgetary approval prior to being included in the annual targets. Proposed projects may be postponed or abolished depending on (a) reason for project (b) feasibility and (c) budget availability.

Phase 3 **Dec 2009, 2010, 2011, 2012, 2013**

Complete approved projects.

Phase 4 **Dec 2009, 2010, 2011, 2012, 2013**

Evaluate projects.

5.2.5 Project implementation

Outlined below is a list of potential energy saving projects identified during Phase 1 of the project.

Phase 1

2008 (Potential projects identified in Q4 2008 to be carried out in 2009 subject to budgetary and management approval)

- Install controls on the Saxlund
- Introduce timers and heat sensors on the AmbiRads
- Introduce variable speed drives (VSD) on Unit 0 recycle fan no. 1, 30T recycle fan no. 1, 38T recycle fan no. 1.
- Replace existing fan on the chip-dryers with a low pressure Roots blower (Unit 0, 30T & 38T).
- Introduce controls on the factory lighting systems
- Introduce power-management controls on office PCs.
- Install automatic switch on Heat Set Dryer B
- Use exhaust air from TIO_2 system to replace ambirad at chip filling area
- Use hot air from compressor to heat Can-Upender area
- Install thermostatic controls on office radiators.

The feasibility of each of these projects will be examined in Quarter 1 2009. These combined projects should yield savings of 685000kWh.

2009 (Potential energy saving projects identified in Q4 2009 to be carried out in 2010, subject to budgetary and management approval)

- Macawber optimisation
- Replace 400 watt mercury high bay light fittings with 200 watt Induction fittings
  (a) Old engineering workshop
  (b) Incinerator room
  (c) Waste baler finishing
  (d) Warehouse 306
  (e) Loading bay
  (f) Autefa baler area
  (g) 2900 baler area
  (h) "C" HSD area
- Replace 1000 watt tungsten halogen flood lights with 400 watt Induction fittings (container lights)
- Review possibility of using Accuramics in boiler
- Review requirement for B-line cooling tower
- Review air controls on 2900 baler
- Repair air leaks
- Investigate the fitting of auto-stops to granulators and granulator fans
- Establish if there are auto-stop controls on the flake & chip roots blowers.

The feasibility of each of these projects will be examined in Quarter 1 2009. These combined projects should yield savings of 685000kWh.

2010 (Potential projects identified in Q4 2010 to be carried out in 2011 subject to budgetary and management approval)

- Introduce controls on factory lighting system
- Macawber optimisation
- Determine feasibility of installing gas central heating in Phase III offices, the lab. & technical area
- Install gas heating in Phase III office block, the lab & technical area
- Installation of variable speed drive on Lesni scrubber
- Replacement of air operated diaphragm pump with electrically operated diaphragm pump.

2011 (Potential projects identified in Q4 2011 to be carried out in 2012 subject to budgetary and management approval)

- Introduce controls on factory lighting system
- Macawber optimisation
- Determine feasibility of installing alternative electrical heating in Phase III offices, the lab & technical area

2012 (Potential projects identified in Q4 2012 to be carried out in 2013 subject to budgetary and management approval)

- Implement purchasing policy for energy efficient motors.
- Review alternative to sludge blowers
- Review options to resize cooling tower pumps to suit their application
- Complete the installation of controls on factory lighting systems
- Review options for implementing CHP/gas turbine

2013 (Potential projects identified in Q4 2013 to be carried out in 2014)

- Re-sizing cooling tower pumps to suit their application.
- Review 2013 audit & identify suitable projects.

Phase 2

Examination of feasibility of 2009 projects

- Install controls on the Saxlund - feasible
- Introduce timers and heat sensors on the AmbiRads – feasibility under review
- Introduce variable speed drives (VSD) on Unit 0 recycle fan no. 1, 30T recycle fan no. 1, 38T recycle fan no. 1 – feasible
- Replace existing fan on the chip-dryers with a low pressure Roots blower (Unit 0, 30T & 38T) - feasible
- Introduce controls on the factory lighting systems - feasible
- Introduce power-management controls on office PCs – not feasible
- Install automatic switch on Heat Set Dryer B - feasible
- Use exhaust air from TIO_2 system to replace ambirad at chip filling area – not feasible
- Use hot air from compressor to heat Can-Upender area – not feasible
- Install thermostatic controls on office radiators – feasible

Examination of feasibility of 2010 projects

Feasible projects carried over from 2009 were implemented.

Examination of feasibility of 2011 projects

The feasibility of installing gas central heating in Phase III offices, the lab and the technical area was investigated. It was concluded that this project would not be feasible. The feasibility of installing alternative electrical heating in these areas will be investigated in 2012. Installation of variable speed drive on Lesni scrubber and replacement of air operated diaphragm pump with electrically operated diaphragm pump have been cancelled as they are not feasible at the present time.

Examination of feasibility of 2012 projects

- Introduce controls on factory lighting system - feasible
- Macawber optimisation - feasible
- Determine feasibility of installing alternative electrical heating in Phase III offices, the lab & technical area – not feasible

Examination of feasibility of 2013 projects

- Implement purchasing policy for energy efficient motors - feasible
- Review alternative to sludge blowers – not practical, other improvements required in WWTP
- Review options to resize cooling tower pumps to suit their application - feasible
- Complete the installation of controls on factory lighting systems - feasible
- Review options for implementing CHP/gas turbine – under review

Phase 3

Implementation of 2009 projects

- Install controls on the Saxlund – not completed
- Introduce timers and heat sensors on the AmbiRads – feasibility in question
- Introduce variable speed drives (VSD) on Unit 0 recycle fan no. 1, 30T recycle fan no. 1, 38T recycle fan no. 1 - completed
- Replace existing fan on the chip-dryers with a low pressure Roots blower (Unit 0, 30T & 38T) – project was in progress by end of 2009, due to be completed in 2010
- Introduce controls on the factory lighting systems – project was in progress by end of 2009, due to be completed in 2010
- Install automatic switch on Heat Set Dryer B - completed

- Install thermostatic controls on office radiators – project was in progress by end of 2009, due to be completed in 2010

Implementation of 2010 projects

- Macawber optimisation – project postponed
- Replace 400 watt mercury high bay light fittings with 200 watt Induction fittings – project postponed
  (i) Old engineering workshop
  (j) Incinerator room
  (k) Waste baler finishing
  (l) Warehouse 306
  (m) Loading bay
  (n) Autefa baler area
  (o) 2900 baler area
  (p) "C" HSD area
- Replace 1000 watt tungsten halogen flood lights with 400 watt Induction fittings (container lights) – project postponed
- Review possibility of using Accuramics in boiler – project postponed
- Review requirement for B-line cooling tower – project postponed
- Review air controls on 2900 baler – project postponed
- Repair air leaks – project postponed
- Investigate the fitting of auto-stops to granulators and granulator fans – project postponed
- Establish if there are auto-stop controls on the flake & chip roots blowers – project postponed

Projects carried over from 2009 and scheduled for completion in 2010

- Install controls on Saxlund – target complete.
- Replace existing fan on the chip-dryers with a low pressure Roots blower (Unit 0, 30T & 38T) – target complete.
- Introduce controls on the factory lighting systems – target complete. Sensor lights have been installed in warehouse 301, 302 & 307.
- Install thermostatic controls on office radiators – target not complete, due to be completed in 2011.

Projects carried over from 2010 and scheduled for completion in 2011

- Install thermostatic controls on office radiators – target not complete, some additional controls were installed in 2011, but some controls remain to be fitted. It is more difficult to fit the remaining controls. Feasibility will be investigated for the remaining locations in 2012. Target not complete.
- Investigate feasibility of gas central heating for Phase III Offices, the lab and the Technical area – on investigation this was not believed to be feasible, alternative electrical energy sources to be investigated in 2012. Target complete.

Implementation of 2012 projects

- Introduce controls on factory lighting system – Lighting controls have been introduced into the following areas, Autefa & 2900 baler areas, heat set dryers, warehouse 306 and c-line storage. The main and old workshop areas and the old incinerator room have yet to be completed.
- Macawber optimisation – Macawber optimisation project is complete, however testing of system and resultant savings are in progress.

Implementation of 2013 projects

- An independent energy audit was completed by DEVKI Energy Consultants.
- From a review of energy efficient motors and there application it has been established that they are not as robust as other motors and are significantly more expensive. They are not an option for most WIL applications.
- A proposal for the replacement of the Gould pump (Davenport cooling tower) & the Autefa cooling tower has been submitted to finance. Replacement of the Davenport will cost €6875 with a payback of just under two years. Energy consumption will be reduced from 15kW to 11kW. Replacement of the Autefa pump will have a similar cost with a payback of 1.2 years. Energy consumption will be reduced from 15.5kW to 9kW.
- New lighting in the new workshop, old workshop and incinerator room has been successfully installed. Energy savings in the region of 69,000kWh per annum have been achieved.
- A number of proposals and options were considered in 2013. No decision has been taken on most suitable option yet. This will be reviewed further when a report is received from DEVKI Energy Consultants.

Phase 4

Evaluation of 2009 projects

- Introduce timers and heat sensors on the AmbiRads – feasibility in question
- Introduce variable speed drives (VSD) on Unit 0 recycle fan no. 1, 30T recycle fan no. 1, 38T recycle fan no. 1 – 807 x 10^3 kWh savings (results in an annual saving of €79000)
- Install automatic switch on Heat Set Dryer B It is estimated that there are energy savings of approximately 8%
- Install thermostatic controls on office radiators – project was in progress by end of 2009, due to be completed in 2010

The overall target to get 685000kWh savings in 2009 was achieved by the introduction of the variable speed drives on Unit 0 recycle fan no. 1, 30T recycle fan no. 1, 38T recycle fan no. 1 alone.

Evaluation of projects completed in 2010

The savings gained from the implementation of the energy saving projects was almost 199,000kWh per annum. Refer to Table 1 below. In monetary terms this equates almost €15000 each year. Although the target of 219500 kWh on light saving projects set at the beginning of the year wasn't achieved, (due to lack of postponement of projects), the savings from each project were significant.

Table 1 Energy savings from 2010 energy projects

Project	Annual energy consumption before project (kWh)	Annual energy consumption after project (kWh)	Annual energy savings (kWh)
Lighting control warehouse 301	30344	4950	25394
Lighting control warehouse 302	30344	4950	25394
Lighting control warehouse 307	173010	135780	37230
Saxlund controls	46656	23136	23520
Installation of Roots blower on Unit 0 dryer	62985	38102	24883
Installation of Roots blower on 30T dryer	58320	24884	33436
Installation of Roots blower on 38T dryer	58320	29549	28771
Total	***459979***	***261351***	***198628***

Evaluation of projects completed in 2011

No additional energy savings were achieved in 2011 as the energy projects were postponed. The revised CEFR for energy saving projects will be submitted for approval by senior management and directors in 2012. Projects will be implemented subject to CEFR approval.

Evaluation of projects completed in 2012

62,000kWh were saved as a result of the introduction of new lighting

Evaluation of projects completed in 2013

- Energy consumption will be reduced from 15kW to 11kW when the Davenport cooling tower pump is replaced.
- Energy consumption will be reduced from 15.5kW to 9kW when the Autefa cooling tower pump is replaced.
- The lighting projected resulted in 69,000kWh energy savings.

5.2.6 Designation of responsibility

The Plant Engineer is responsible for the implementation of this project.

Project No 5.3. Optimisation of water usage

5.3.1 Relationship to Objectives and Targets

In line with the objective to optimise energy efficiency & resource usage.

5.3.2 Reason for undertaking project

Water is one of the main natural resources used on-site. There has been a recent shift to using well water in conjunction with river water. A water audit has the potential to identify new projects from which savings can be attained.

5.3.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

2013 targets

- Complete water audit/balance for the site
- Identify new projects for improved energy efficiency

Progress made in 2013

- Water usage is being monitored on a monthly basis. There is a meter on in-coming water from the river. There is also a meter measuring the portion of river water going into the factory. Water usage by the boiler can also be monitored. When there is sufficient data water consumption will be reviewed to determine if there are any suitable water saving projects.
- An independent energy audit was completed by DEVKI Energy Consultants in December 2013.

2014 targets

- Record water consumption on a monthly basis.
- Review energy audit and identify suitable energy saving projects.

Project No 6.2. Groundwater protection

6.2.1 Relationship to Objectives and Targets

In line with the objective to minimise the potential risk to groundwater from activities on site.

6.2.2 Reason for undertaking project

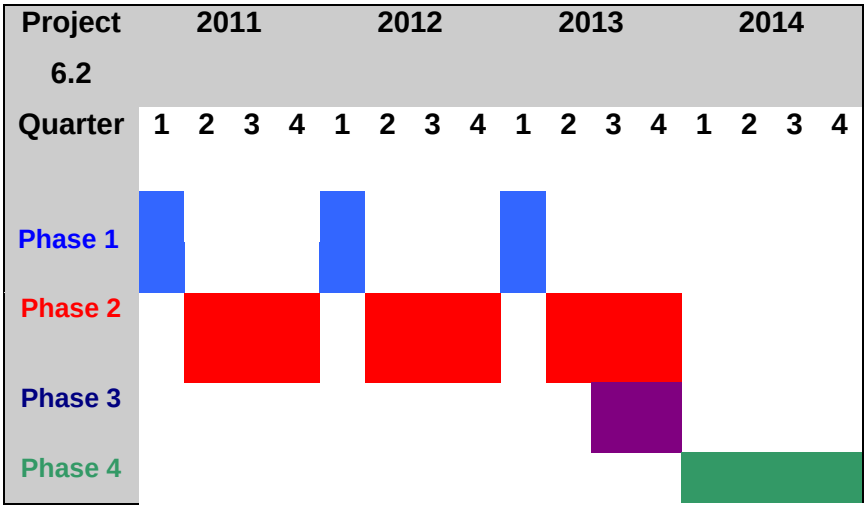
A number of required reburbishments were identified during the 2010 foul network survey. Some internal drains need to be examined and refurbished.

6.2.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

2011 specific targets: Complete priority refurbishments as out-lined in 2010 CCTV Inspection Report by McBreen Environmental Drain Services Ltd.
Inspect & refurbish internal foul floor drains.
Conduct manhole survey of foul drainage system.

6.2.4 Project summary



Phase 1

Identify required refurbishment works required on the foul drainage system based on 2010 CCTV Inspection Report. Include in annual objectives & targets program. Obtain quotations. *Q1 2011, 2012, 2013*

Phase 2

Complete refurbishments as identified during Phase 1 *Q2, 3 & 4 '11, '12 & '13*

Phase 3

Re-survey entire foul drainage network. Q2 & 3 2013

Phase 4

Assess 2013 CCTV report, prepare a schedule of works if necessary.

Obtain quotations. *Jan 2014-Dec 2014*

6.2.5 Project implementation

Phase 1

2011 targets

- Carry out selected drain/manhole repairs based on 2010 foul water network survey
- Clean selected storm drains
- Evaluate options to renovate floor drains in Take-up
- Evaluate options to renovate floor drains in Spinning FMA
- Install new drain between manhole M/235/S and road gully

Progress made in 2011

- Repair work on selected drains/manholes was priced at €33000. A CEFR (capital expenditure form) was compiled and is awaiting senior management and director approval
- Selected storm drain grates were cleaned in 2011. No further storm drain cleaning was required in 2011
- The floor drains in Take-Up were renovated by an external contractor during the plant summer shutdown
- Plans for the renovation of the floor drains in the Spinning FMA were scoped – this work will be completed in 2012 targets programme
- A new drain was installed between manhole M/235/S and the road gully

2012 targets

- Carry out selected drain/manhole repairs based on 2010 foul water network survey, subject to senior management and director approval. The drain network is due to be re-surveyed in 2013, therefore repair works should be completed in advance
- Evaluate options to renovate floor drains in Spinning FMA
- Clean selected storm drains
- Complete bund integrity testing on site bunds

Progress made on 2012 targets

- The following drains were repaired in 2012
    - M/129/F to DP/091/F
    - M/033/F to FD/002?F

  - M/042/F to M/068/F
  - M/143/F to M/144/F
  - M/130/F to M/131/F
  - M/114/F to M/113/F
  - M/141/F to DP/158/F
- The floor drains in SMFA were renovated
- Due to the employment of a groundsperson, it is no longer necessary to clean out storm drains on a scheduled basis.
- Bund integrity testing has been completed on 12000gallon tank bund, chemical store and AFM. Some minor repairs were required but all areas were subsequently certified.

2013 targets

- Survey the entire foul water network.

Progress made on 2013 targets

- Survey complete. All drains are in good repair. No further repairs required.
- Manhole survey was completed also.

2014 targets

- Review manhole survey, prepare a schedule of works & complete works as necessary.
- Review condition of FWRP & penstock valves. Prepare a schedule of works , as necessary.

6.2.6 Designation of responsibility

The Managing Director is responsible for the implementation of this project.

Project No 8.1. Alternative Energy Sources

8.1.1 Relationship to Objectives and Targets

In line with the objective to reduce factory dependence on commercial electricity.

8.1.2 Reason for undertaking project

At Wellman International Ltd. over 500kWh of commercial electricity is consumed per tonne of fibre produced. This equates to an annual usage of almost 40 x 10^6 kWh with a significant cost to the business.
A combined heat & power system (CHP) appears to be an attractive option as there is a significant requirement for steam and heat at the plant.
Due to the location of the factory the use of wind-energy as an alternative energy supply should be considered.

8.1.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

The overall aim of the project is to reduce the dependence on commercial electricity by 30% (starting from a baseline of 40 x 10^6 kWh per annum).

5.2.4 Project overview

Project 1.3	2010				2011				2012				2013				2014			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																				
Phase 2																				
Phase 3																				
Phase 4																				

Phase 1 **Jan 2010, 2011, 2012, 2013, 2014**

Set specific targets for the coming year. The targets should be based on recommendations from feasibility studies, legislation & initiatives on alternative energy supply etc.

Phase 2 **Dec 2010, 2011, 2012, 2013, 2014**

Conduct feasibility studies on alternative energy supplies

Prepare planned scope of works for feasible projects

Phase 3 **Dec 2011, 2012, 2013, 2014**

Install alternative energy supplies

Phase 4 **Dec 2011, 2012, 2013, 2014**

Evaluate projects

8.1.5 Project implementation

2010 targets

- Conduct feasibility study on the use of CHP
- Prepare planned scope of works for the installation of CHP plant
- Conduct feasibility study on the use of wind power

Progress made in 2010

- CHP study complete, however feasibility of project needs to be examined
- No further action until the feasibility of the CHP project is established
- Proposal for conducting feasibility study was submitted, terms not favourable, new proposal and 'letter of intent' to be submitted

2011 targets

- Complete feasibility study on the use of CHP. Although the study was completed in 2010, no final decision was taken on the feasibility. Final decision to be taken by senior management.
- Complete feasibility study on the use of wind power (provided that a favourable 'letter of intent' is submitted)

Progress made in 2011

- Feasibility study on CHP evaluated – currently further work on developing a CHP is not feasible
- Updated proposals re: the feasibility of installing one or more wind turbines on site by an external contractor is being reviewed.

2012 targets

- Complete feasibility study on wind power using an alternative business model.
- Re-examine the feasibility of installing CHP plant.

Progress made in 2012

- The use of wind energy is not feasible.
- From preliminary study, CHP seems to be feasible. Options are being explored.

2013 targets

- Review options for implementing CHP/gas turbine

Progress made in 2013

Both JV Tierney & Sisks supplied options for a CHP. JV Tierney recommended the installation of a 4MW CHP unit but it would only be feasible if there was a use for the low grade hot water produced. Sisk recommended a 4.3MW turbine but it was significantly more expensive the JV Tierney option.
Clarke Energy were approached regarding submitting an alternative proposal.
DEVKI Energy Consultants are going to review all proposals and suggest most favourable option.

2014 targets

- Review options for implementing CHP/gas turbine

8.1.6 Designation of responsibility

The Plant Engineer is responsible for the implementation of this project.

Project No 9.0. Environmental Communications

9.0.1 Relationship to Objectives and Targets

Objectives & targets set to ensure effective communication of policies & procedures, including ensuring adequate training.

9.0.2 Reason for undertaking project

It was identified during an internal audit that there was insufficient training on some environmental procedures. Currently there is a focus on communications within the plant.

9.0.3 Target

Specific targets will be set each year and will be managed through the objectives & targets programme

9.0.4 Project overview

Project 9.0	2011				2012				2013				2014				2015			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1																				
Phase 2																				
Phase 3																				

Phase 1 **Jan 2011, 2012, 2013, 2014, 2015**

Set specific targets for the coming year. The targets should be based on recommendations from internal audits, external audits, general reviews etc.

Phase 2 **Q2 & Q3 2011, 2012, 2013, 2014, 2015**

Complete targets as set out during Phase 1

Phase 3 **Dec 2011, 2012, 2013, 2014, 2015**

Evaluate projects

9.0.5 Project implementation

Phase 1

2011 targets

- Create a plan for environmental training
- Schedule & complete training
- Complete environmental page for the Intranet

Progress made in 2011

- Investigation of items for inclusion in the environmental training plan for employees commenced
- Finalisation of the environmental training plan and the scheduling of training to be included and an objective in 2012
- An environmental intranet page has been compiled to help the communication of environmental issues to employees

2012 targets

- Finalise a plan for environmental training
- Schedule and complete training
- Expand and update environmental Intranet page
- Review EPA AER templates, up-date procedures and forms in line with EPA requirement.
- Review and up-date laboratory procedures for aqueous monitoring in-line with EPA requirements.

Progress made in 2012

- Environmental training plan complete, scheduling and completion of the training is carried over to 2013.
- Environmental intranet is up-dated regularly.
- The AER templates were not required for the 2012 reporting year.
- Laboratory procedures are under review as part of the up-dates to the waste water treatment plant.

2013 targets

- Provide general environmental training to all personnel
- Review contractors handbook and DVD
- Environmental training for lab personnel
- Environmental training for MSC personnel
- Up-date procedures as required by P0236-02

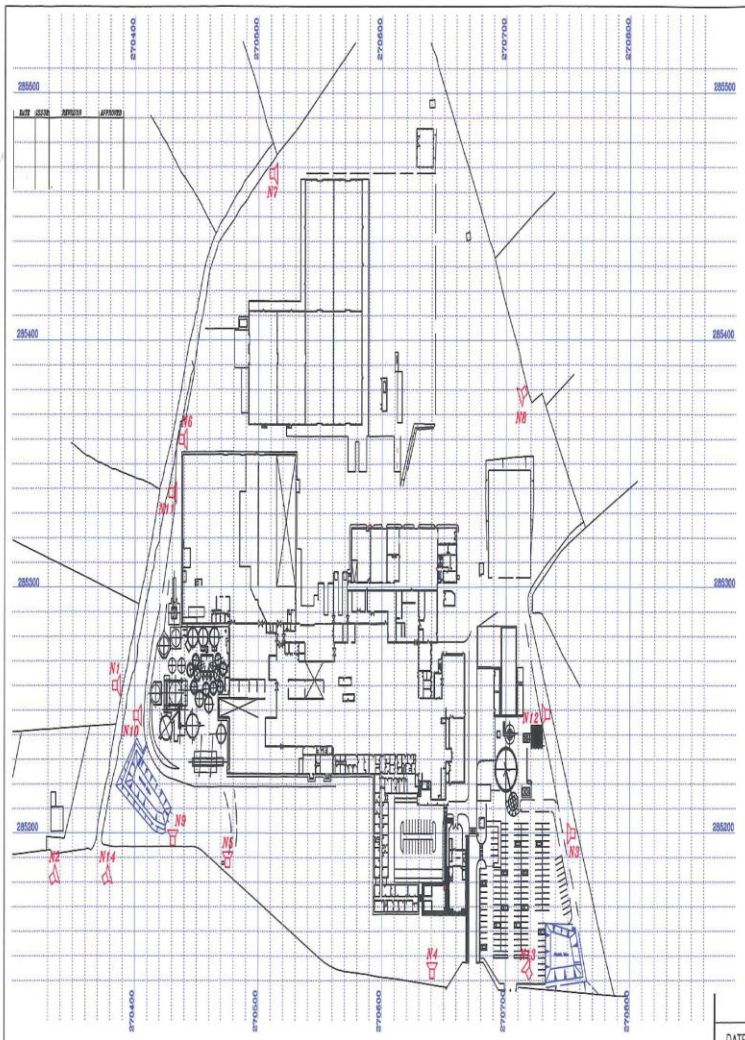
Progress made in 2013

- The general environmental training was scheduled as part of an overall quality training program. The program was not implemented therefore there was no forum for the provision of the general environmental training.
- The contractors' DVD was completely reviewed.
- Some of the lab training was completed.
- A reviewed IPPC for the site was issued in April, all procedural changes required by the new licence have now been completed.

9.0.6 Designation of responsibility

The HS & E manager is responsible for the implementation of this project.

Appendix IV



DATE	DRAWN	CHECKED	APPROVED	AMENDMENT	ZONE

NOTES

INDORAMA VENTURES

WELLMAN INTERNATIONAL LTD.

TITLE:

NOISE MONITORING POINTS

MATERIAL:	
SCALE:	SCALE:- 1=750
DESIGN:	
DRAWN:	DATE
CHECKED	DATE
APPROVED	DATE

DRAWING NUMBER	*EM 3 Rev 1*

Appendix V

Thomas Garland & Partners
Consulting Civil & Structural Engineers
Garland House 28-30 Rathmines Park Rathmines Dublin 6
Tel: 01 496 4322 Fax: 01 496 4725 Email: mail@tgp.ie
www.tgp.ie

Our Ref: BK/MMcN/W0527-Client-00

Date: 16th January 2013

Mr. Brian O'Reilly,
Plant Engineer,
Wellman International Ltd., (Indorama)
Mullagh,
Kells,
Co. Meath

Re: Wellman International
Testing of Bunds 2012

Dear Brian,

We refer to our report on our inspection on the 3 No. bunded areas dated 25th April 2012.

1. The automatic finish mixing area bund
2. The chemical store bund
3. The 12,000 gallon waste finish tank

We carried out further inspections on 2nd August 2012, 27th November 2012 and most recently on 14th January 2013.

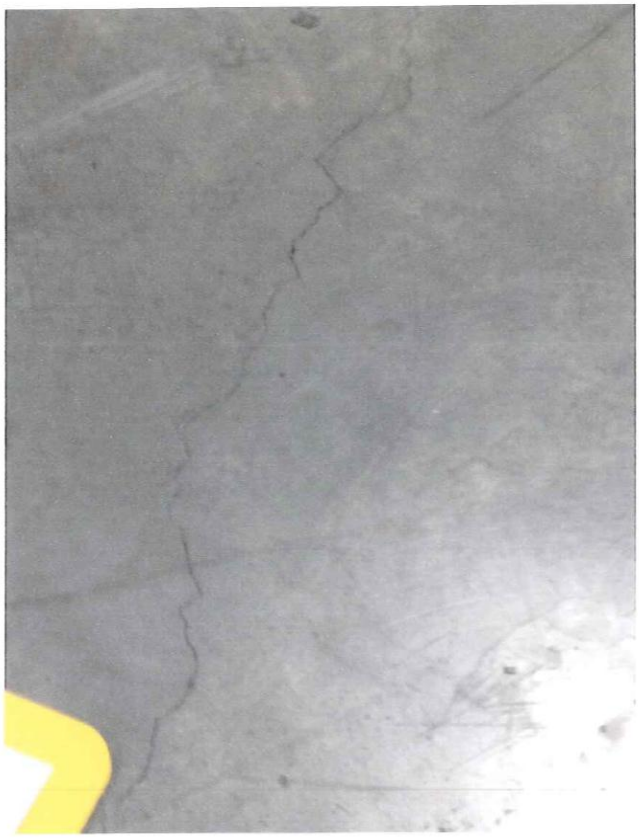
1. **Automatic Finish Mixing Area**
This area was inspected on 27th November 2012 and all the remedial works had been carried out.

We now consider this area to be integral.

2. **Chemical Store**
The defects noted in our April report were all repaired at our inspection of 27th November 2013 last.

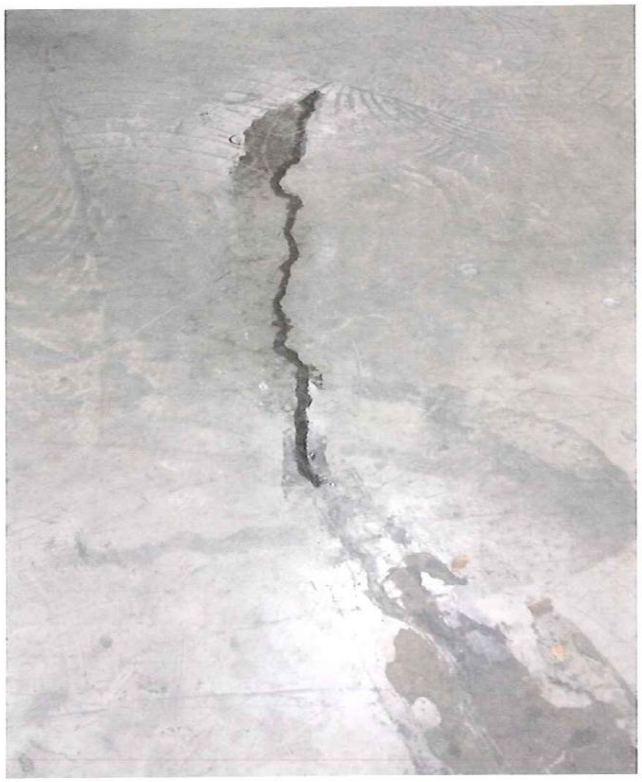
However a new crack had developed.

Thomas Garland & Partners
Consulting Civil & Structural Engineers



This crack was repaired by our inspection of 14th January 2013

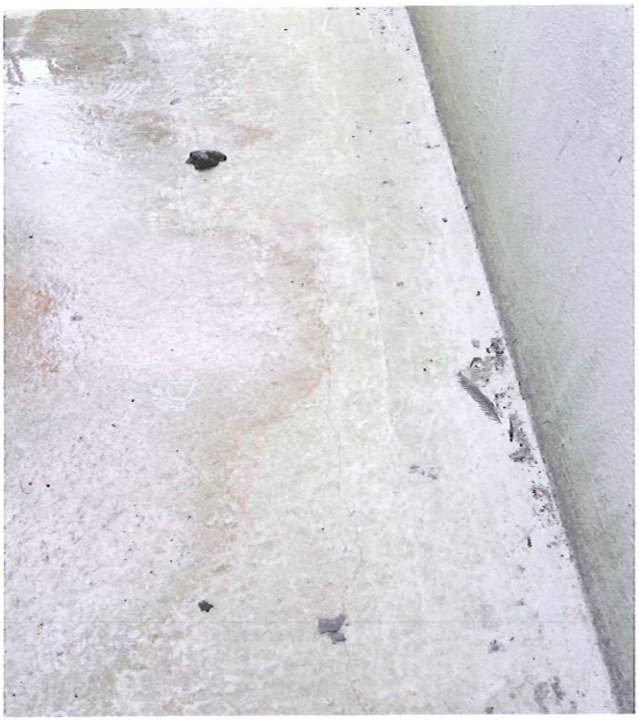
Thomas Garland & Partners
Consulting Civil & Structural Engineers



We now consider this area to be integral

Thomas Garland & Partners
Consulting Civil & Structural Engineers

3. **12,000 Gallon Waste Finish Tank**
There was additional cracking noted in our inspection of 2nd August 2012.



This cracking and the original hairline cracking were repaired by SCB Services and a full cleaning of the bund carried out for our inspection of 27th November 2012.

Thomas Garland & Partners
Consulting Civil & Structural Engineers

We now consider the area to be integral.