This Report has been cleared for submission to the Board by the Programme Manager P. Nolan
Signed: N. Kearney Date: 6/11/08

epa Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

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LICENSING & RESOURCE USE

INSPECTORS REPORT ON A LICENCE APPLICATION

To:	Directors
From:	Suzanne Wylde, Inspector **- LICENSING UNIT**
Date:	31st October 2008
RE:	Application for review of an IPPC Licence from Waterford Plating Company Limited, Northern Industrial Estate, Old Kilmeadan Road, Waterford (IPPC REG. NO. P0280-02)

Application Details	
Class of activity:	Class 12.3: The surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30m^3.
Section 90(1)(b) notice sent:	15th May 2007
Licence application received:	13th June 2008
Notices under Section 90(7) issued:	8th August 2008
Information under Section 90(7) received:	1st October 2008
Submissions received:	None to date
Site notice inspected:	10th July 2008
Site visits:	16th October 2008

Company

Waterford Plating Company Limited was granted an IPPC licence (P0280-01) in 1998 to carry out activities at the Northern Industrial Estate, Old Kilmeadan Road, Waterford. The company operates a surface treatment facility. The company was formed in 1991 and currently employs 16 permanent employees. The total area occupied by the company at present is 1,382m^2. The normal operating hours of the installation are Monday to Friday 0800 to 1630. Surface treatment is conducted throughout the daytime working period. Painting processes are dependent on the finishing, turn around of the surface treatment process and the type of paint required by the customer.

The activities conducted at Waterford Plating Ltd associated with surface treatment of metals include:

1) Electro-plating coatings;
2) Non-electroplating coatings;
3) Painting of components.

Reason for Licence Review

The company has requested a review of their licence P0280-01 for the following reasons:

1. A revision of the site boundary to allow for the extension of the boundary to include Unit 655 at the rear of the existing Units 605/606 and to exclude Unit 604 from the site area;
2. Relocation of the existing emission point A2-2 from the dry spray paint booth and the addition of a new emission point A2-3 for a wet/dry painting booth in Unit 655;
3. The relocation of the Emissions to Sewer monitoring reference point SE-1.

I wish to point out that these changes were carried out at the installation during the annual shut down period in Summer 2008.

Process Description

The main process at the facility involves the surface treatment of customer components, which can be aluminium, steel or zintec (electro-zinc coated steel) by placement on jigs and dipping into a series of specific baths, depending on the surface treatment required by the customer. The company also uses a mixture of paints to apply a paint coating to the finished product.

The coatings provided by the company are as follows:

- Phosphate Coatings
  This is the most useful of non-metallic coatings. It is a process of conversion on a metal surface to produce a thin adherent phosphate compound coating. The phosphate crystals formed on the surfaces of materials can be iron, zinc or manganese phosphates.

- Aluminium Chromating Coatings
  This is a process of chemical conversion where chromated coatings are formed by the reaction of water solutions of chromic acid or chromium salts. These coatings can be applied to aluminium, zinc, cadmium and magnesium.

- Cyanide Zinc Plating
  This process uses an electrical current to coat an electrically conductive object with a relatively thin layer of metal.

- Painting
  Solvent based paints are used in an enclosed wet painting booth. Powder paints are sprayed onto components in an open booth with air extraction installed. Wet and dry paint operations take place in an open booth served by a water scrubber and baffle.

Emissions

The principle source of air emissions from the installation are from the wet spray booth (A2-1), dry powder paint booth (A2-2) and the wet & dry paint booth (A2-3). Emissions include particulate matter, TA Luft II volatile organic compounds (e.g. xylene, toluene, ethylbenzene) and TA Luft III volatile organic compounds (e.g. n-butylacetate, dichloromethane, ethyl acetate).

Air dispersion modelling was carried out using AERMOD to predict the maximum ground level impact of the selected parameters due to the proposed new emission point. Two scenarios were modelled, an existing scenario and proposed scenario.

The main difference between the two scenarios is the latter accounts for higher stack heights. Both scenarios include the three emission points. The air dispersion model modelled suspended particulates from air emission points A2-2 and A2-3 and TA Luft II & III compounds from emission point A2-1 only. However, the application indicates that organic compounds will also be released from A2-3. The RD therefore does not permit organic solvent emissions from A2-3 until the licensee demonstrates that no impact will occur from the proposed solvent emissions from A2-3.

The emission rates used in the model were derived from measurements taken from the existing stacks. The operational time of the stacks was assumed to be continuous for the purposes of the model, to ensure that the resulting ground level concentrations of the emissions produced could be considered to represent worst-case scenario.

Table 1: Results from the AERMOD dispersion model for air emissions from the installation, showing predictions for the existing and proposed situations.

Parameter and averaging period	**Limit value ($\mu g/m^3$)**	**Predicted ground level concentrations for various emission scenarios**	
		Scenario No. 1 (Existing) ($\mu g/m^3$)	**Scenario No. 2 [Note 4] (Proposed) ($\mu g/m^3$)**
Suspended Particulates 98%ile of 24 hr average	250 [Note 1]	165	63
TA Luft II 99 %ile of 1 hr average	100 [Note 2]	231	37.7
TA Luft III 99%ile of 1 hr average	47 [Note 3]	347	29.3

Note 1: Irish Air Quality Standards Regulations (S.I. No. 244 of 1987).
Note 2: Danish C-value for toluene, which is the most stringent limit for TA Luft II compounds which are potentially present in the emissions from this installation.
Note 3: Danish C-value for butyl-acetate, which is the most stringent limit for TA Luft III compounds which are potentially present in the emissions from this installation.
Note 4: Stack height at emission point A2-1 raised from 6m above ground to 9m above ground level.

Table 1 displays the results of the dispersion model for the two scenarios. Suspended particulates were predicted to be well within the statutory limit of $250\mu g/m^3$, under both the existing and predicted scenarios. However, the Irish Air Quality Standards (AQS) Regulations (S.I. No. 244 of 1987) will be revoked on 31st December 2009. The Air Quality Standards Regulations (S.I. 271 of 2002) has in effect already replaced them. S.I. 271 of 2002 includes limits for PM_{10} particulate emissions, a parameter which the air dispersion model has neglected to address. The ambient air quality standard for PM_{10} as per the Air Quality Standards Regulations (S.I. 271 of 2002) is $50\mu g/m^3$ (daily average value).

In order to ensure compliance with the AQS for PM_{10}, *Schedule B.1: Emission Limits* of the RD sets a limit of $15mg/m^3$ for total particulates (and not the value of 20 mg/m^3 as included in the model). This limit ensures that in the worst case scenario of the particulate emissions from the activity being 100% PM_{10}, then the installation will be in compliance with the AQS for PM_{10} of $50\mu g/m^3$. Further to this Condition 6.17 of the RD requires the licensee to carry out PM_{10} monitoring and to submit a report of this monitoring within 3 months of the date of grant of the licence.

There are no national or EU limits for the TA Luft II and III compounds, therefore the Danish C-values were used as comparisons for the results of the dispersion model for these compounds. For both the TA Luft II & III compound groups the Danish C-

values were significantly exceeded in Scenario No. 1. However, these exceedances were based on a significant overestimation of the specific impact of this compound, by assuming that the composition of the TA Luft emission streams were 100% toluene and butyl-acetate, respectively (Notes 2 & 3 of Table 1). In addition to this the model assumed operational time of the stacks to be continuous.

While it is noted that the Danish C-values are significantly exceeded, another common approach used in assessment criteria for these parameters is the OEL/40 (the 8-hr Occupational Exposure Limit/40). For toluene the OEL is 188,000µg/m^3, therefore the OEL/40 is 4,700 µg/m^3. For butyl-acetate the OEL is 710,000 µg/m^3, therefore the OEL/40 is 17,750µg/m^3. For both scenarios shown in Table 1, the ground level concentrations are well below these figures.

Given that TA Luft organic emissions were only modelled from the wet paint booth (emission point A2-1), condition 6.16 of the RD restricts the use of organic solvent based paints for coating in the wet/dry paint booth (emission point A2-3) until such time as an air dispersion model is used to demonstrate that organic solvent emissions from both emission points A2-1 and A2-3 will not have a significant environmental impact.

The predicted ground level concentrations for Scenario No. 2 for all parameters modelled were well within the relevant limit values. Therefore, the emissions from the installation will not have a significant impact on the ambient air quality in the vicinity of the site. The results of the dispersion model for Scenario No. 2 predicted that in order to more effectively disperse the emissions, it will be necessary to increase the height of one of the stacks, that of the wet spray booth (A2-1) from 6m above ground level to 9m above ground level. The licensee has informed the Agency that they are in the process of finalising arrangements with a contractor to increase the stack height, with works to commence shortly. Waterford Plating Ltd has also informed the Agency that planning permission will not be required to carry out these improvement works. Condition 3.13 of the RD requires the licensee to raise the stack on the aforementioned emission point to 9m above ground level within 1 month of the date of grant of licence.

In addition to the modelling, sensitivity analysis was also carried out to evaluate the sensitivity of the model to varying input data. The analysis showed that variation in meteorological data does not have a significant impact on ground level concentrations.

The abatement in the spray booth consists of air extraction in conjunction with PROCART filters on the wet spray painting booth (A2-1) and the dry powder painting booth (A2-2). Paint particles are captured on the filters. The design of these filters enables air to flow continuously whilst inhibiting any type of paint or lacquer escaping. The filters are replaced monthly and treated as hazardous waste. An authorised waste contractor removes the filters off-site for disposal.

The abatement on the wet/dry paint booth (A2-3) is in the form of air extraction and a water scrubber with a baffle located on the stack. The baffle is routinely cleaned. Particulates and wet paint are scrubbed into the water. The resulting paint sludge is treated as hazardous waste. The sludge is transferred into intermediate bulk containers (IBC's) and removed off-site by an authorised contractor for disposal.

Emissions to Sewer

The installation has a small on-site waste water treatment plant that treats process water from the plating process. The treatment plant was upgraded in 2007. This upgrade related to the repositioning of the sand filters, to provide for better organisation of the waste water treatment plant. This review also takes account of the relocation of the emission to sewer point, as a result of the expansion of the installation to incorporate in Unit 655 into the site area.

The licensee has proposed the following changes to emissions to sewer for the review:

i) Propose reduction of emissions to sewer monitoring from monthly to quarterly. Chromium (VI), total chromium and cyanide would remain monitored on a monthly or bimonthly basis.
ii) Require the emission limits to be based on mass emission basis as opposed to ELVs.

The installation has demonstrated good records of compliance in relation to discharge to sewer emission limits in the past. Therefore monitoring frequencies in *Schedule C 3.2: Monitoring of Emissions to Sewer* in the attached RD have been set as quarterly apart from the monitoring of chromium (VI), total chromium and cyanide. In addition to this the licensee has requested that the pH range for emissions to sewer be changed to pH 6-10. Waterford Corporation have approved this change and it has been incorporated into the Schedule in the RD. The emission limits have not been changed to mass emission basis.

Emissions to Waters

The storm water from the site discharges into the Northern Industrial estate stormwater drain. This drain discharges into the River Suir in Waterford. Surface water at the facility comprises of roof run-off and surface run-off from hardstanding areas during rain events only. Routine weekly inspections of surface water and good environmental management are in place at Waterford Plating Company Ltd. Condition 3.8 of the RD requires that all storm water discharges pass through an oil interceptor and silt trap prior to discharge.

The licensee has requested that the requirement for quarterly COD monitoring from the surface water discharge point (SW1) be removed. However, the monitoring is a failsafe for ensuring the company is not causing any water pollution to the River Suir and therefore, the requirement remains in the RD.

Emissions to ground

There are no process emissions to ground from the installation.

Waste

There are no changes to the waste management practices of the site as a consequence of this review application.

Noise

Waterford Plating Company Ltd is located within an industrial estate and the operations are such that they generate low noise levels. All operations are enclosed within the Units.

Use of Resources

- Fuel – Natural gas is used at the installation. The gas is supplied by Bord Gáis and is used in the dryer for the drying process. The natural gas consumption in 2007 was 30,652m^3.
- Electricity – Electricity is used by Waterford Plating Company Ltd to heat process tanks, run dosing equipment and drying ovens. Electricity consumption in 2007 was 340 MWhrs, with an average of 452 MWhrs over the period between 1999 and 2007.
- Water – The water supply from Waterford Corporation municipal supply is mainly required for surface treatment vats, chemical solutions and rinsing vats. Water consumption has declined significantly since 1999 when it was at 10,881m^3/yr to 3,231m^3/yr in 2006.

With regard to reducing the climate impact of the installation under IPPC, the RD requires an energy efficiency audit and an assessment of resource use efficiency. The EMP objectives and targets include use of cleaner production (including production related carbon footprint).

There will be no significant increase in the usage of consumables or resources due to the transfer of activities from Unit 604 into Unit 655.

Compliance with EU Directives

IPPC Directive (91/61/EC)

This installation falls within the scope of Category 2.6 of Annex I of Council Directive 96/61/EC concerning integrated pollution prevention and control:

> *Installation for the surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30m^3.*

BAT is taken to be represented by the guidance given in the Draft BAT Guidance Note on Best Available Techniques for the Surface Treatment of Metals and Plastic Materials.

Restriction of the use of certain Hazardous Substances in Electrical and Electronic equipment (RoHS) Directive 2002/95/EC

The RoHS Directive restricts the placing on the market of electrical and electronic equipment containing lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PDBE). Waterford Plating ensures that all paint products used by the company on electrical and electronic equipment comply with the Directive.

Solvents Directive (1999/13/EC)

A total of 3,421 litres of solvent based paint & thinners was used by the installation in 2007. This is below the annual solvent consumption threshold of 5 tonnes. Therefore the processes carried out do not fall within the scope of the EU Council Directive 199/13/EC on the limitation of emission of volatile organic compounds.

Condition 6.15 of the RD requires the licensee to maintain a record of all solvent usage at the site and report this annually as part of the AER.

Best Available Techniques (BAT)

I have examined and assessed the application documentation and I am satisfied that the site, technologies and techniques specified in the application and as confirmed, modified or specified in the attached Recommended Determination comply with the requirements and principles of BAT. I consider the technologies and techniques as described in the application, in this report, and in the RD, to be the most effective in achieving a high general level of protection of the environment having regard - as may be relevant - to the way the facility is located, designed, built, managed, maintained, operated and decommissioned.

Environmental Impact Statement

No environmental impact statement was required for this installation.

Fit & Proper Person Assessment

It is my view, and having regard to the provisions of Section 84(5) of the EPA Acts and the Conditions of the RD, that the applicant can be deemed a Fit & Proper Person for the purpose of this Review.

Compliance Record:

Waterford Plating Company Ltd has a history of good compliance with the conditions of the IPPC licence P0280-01. I have consulted with the OEE during the course of the application assessment. The OEE is satisfied that the procedures in place at the factory for managing the installation are such that is not likely to cause environmental pollution.

Submissions

There have been no submissions on this licence application to date.

Recommended Determination (RD)

In preparing this report and the Recommended Determination I have consulted with Agency technical and sectoral advisor Dr Ian Marnane. The RD gives effect to the requirements of the EPA Act as amended.

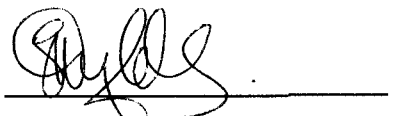
Charges

The annual charge for 2008 as calculated by the OEE is €10,418. The charge in the recommended decision is €11,648, as per Condition 12.1. This charge has incorporated a requirement for an audit of the installation, as the last audit of the installation was in 2003. Other than the audit, it is not expected that there will be any significant increase in enforcement requirements as a result of the review.

Recommendation

I recommend that a Proposed Determination be issued subject to the conditions and for the reasons as drafted in the RD.

Signed



Suzanne Wylde

Procedural Note

In the event that no objections are received to the Proposed Determination of the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Acts 1992 and 2003 as soon as may be after the expiration of the appropriate period.