# Industrial Emissions Licence – an EU Licence

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**Abstract**

The Rusal Aughinish Alumina (AAL) refinery is located on Aughinish Island, on the southern shore of the Shannon Estuary 33 kilometres west of Limerick city in the South West of Ireland. The plant, which commenced operation in 1983, has a current production capability of 1.99mt/yr. It sources bauxite predominantly from Guinea, Brazil and Guyana and uses the Bayer process to produce Alumina. The refinery functions with an accredited Safety Management System (ISRS), Environmental Management system (ISO14001), Quality Management System (ISO9001) and Energy Management system (ISO50001). The environmental management of the AAL operation is overseen by the Irish Environment Protection Agency (EPA) through the Industrial Emissions License (IEL), in accordance with the Industrial Emissions Directive. This Directive (2010/75/EU) of the European Parliament and the Council on industrial emissions entered into force in January 2011 and was transposed into Irish Legislation in 2013. This paper outlines the stringent requirements of the Industrial Emissions Directive on the operation of an Alumina refinery in Ireland.

**Keywords:** Alumina refinery, Industrial Emissions Directive, Industrial Emissions Licence.

## 1. Introduction

Rusal Aughinish Alumina Limited (AAL) refinery is located on Aughinish Island, on the Southern shore of the Shannon Estuary in the South West of Ireland with the nearest city being 33 kilometres away. The plant commenced operation in 1983 and through debottlenecking and optimisation has achieved a current production capability of 1.99Mt/yr. It sources bauxite predominantly from Guinea, Brazil and Guyana and uses the Bayer process to produce Alumina.

The refinery is located within the Shannon Estuary Region (Rural) zone, and has been designated as being of the highest category of air quality by the Environment Protection Agency's (EPA's) Air Quality Index for Health [1].

The refinery is surrounded by conservation areas designated by the European Union's Habitats Directive (92/43/EEC), which aims to protect species and habitats which are considered to be of European interest. Figure 1 illustrates the proximity of those areas designated as special areas for birds (denoted by red lines) and habitats (blue lines) [2].

Bauxite residue generated from the Bayer process is deposited in an engineered facility called the Bauxite Residue Disposal Area (BRDA). The BRDA is a Category A facility under the Extractive Waste Directive (2006/21/EC) due to its scale and location adjacent to a special area of conservation. This classification ensures that the design and operation of the BRDA must provide the highest level of environmental protection possible.

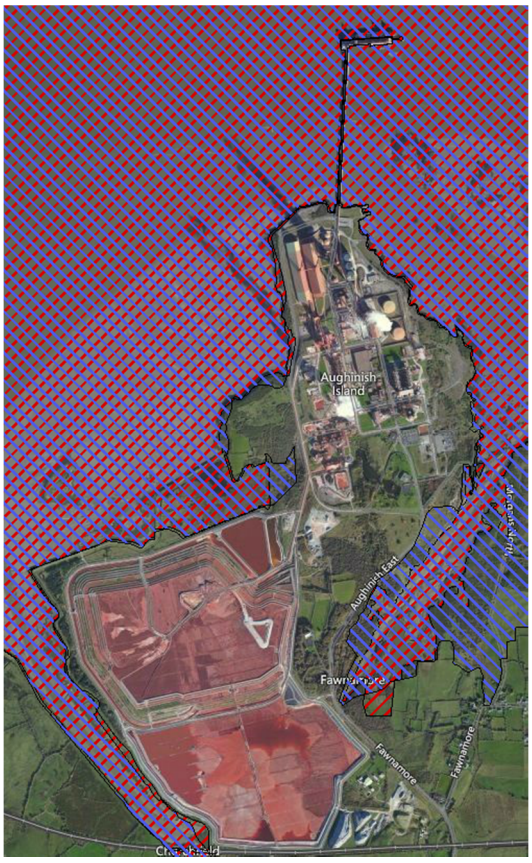


**Figure 1. Proximity of designated areas to AAL refinery and BRDA.**

The operation of the BRDA is one of the key enablers in the sustainability of AAL. The deposition method employed is dry stacking of washed, filtered mud which is pumped by positive displacement pumps to the BRDA at 58% solids. Partial neutralisation of the mud by atmospheric carbonation through mud farming produces a mud with pH < 11.5 which is non-hazardous and is suitable for remediation and revegetation. In addition the farming process increases the percent solids to 70 – 75 %. The BRDA has been designed and is operated to ensure the long-term stability of the residue.

The refinery operates compliantly under an Industrial Emissions Licence (IEL) issued and enforced by the Irish EPA. The ISO14001 environmental management system is a key tool to ensure compliance with the conditions in the IEL and to drive continuous improvement of the environmental performance of the plant and to safeguard sustainability through a lifecycle approach.

The refinery also operates under both a Dumping at Sea permit (issued and enforced by the EPA) and a Foreshore Licence (issued and enforced by the Environment Department) to allow dredging works at the port facility. In addition, the refinery operates in compliance with a Greenhouse Gas Emissions Permit which contains requirements that must be met in respect of emissions of carbon dioxide from approved emission sources. This Greenhouse Gas Emissions Permit places an obligation on the refinery to surrender allowances annually to the European Union Emissions Trading Scheme (EU-ETS) equal to the annual reportable emissions of carbon dioxide equivalent from the installation.

The refinery functions with an accredited Safety Management System (ISRS), Environmental Management system (ISO14001:2004), Quality Management System (ISO9001:2004) and

AAL have been licenced by the EPA since 1998, undergoing a number of licence revisions before issue of the IEL in 2014. This licence (P0035-06) has been recognised by the EPA as the most stringent licence in Ireland. The Industrial Emissions Directive has led to a number of significant changes for the refinery operations, including mandatory implementation of BAT and limited operation followed by decommissioning of HFO boilers.

It is the mission of the refinery to to improve continuously in the area of environment management. This is evidenced by the successful transition to energy generation from gas.

It is anticipated that there will be a greater emphasis on the circular economy in future legislation.

## 8. References

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