DEPARTMENT OF ECONOMIC AFFAIRS, ENVIRONMENT & TOURISM
CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS

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Hil Spencer
Business Unit Director
Coega Aluminium Smelter
Alcan Primary Metal Group
Alval
Cnr AIP
BP 7
38341
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France

AMENDMENT OF THE RECORD OF DECISION ATTACHED TO THE
AUTHORIZATION ISSUED IN TERMS OF SECTION 22 OF THE ENVIRONMENT
CONSERVATION ACT, ACT 73 OF 1989, FOR THE CONSTRUCTION OF A
PRIMARY ALUMINIUM SMELTER IN THE COEGA INDUSTRIAL DEVELOPMENT
ZONE

Refer to your letter dated 3 March 2006 requesting further amendments to the
approval and Amendment Notice #2 granted on 10 October 2005 in terms of
Condition 8.1.4 of the Record of Decision for a change in smelting technology from
AP60 to AP55.

1. Amendment of Record of Decision

You are hereby informed that the following sections of the Record of Decision issued
on 20 December 2002 are hereby further amended as contained in Amendment
Notice #3 attached as Annexure One to this letter.

Section 1: Description of Activity
Section 3: Contact Details of applicant
Section 6: Terms of Authorisation and more specifically the following conditions:
Condition 8.1.13
Condition 8.5.21
Condition 8.8.15
Condition 8.8.25
Condition 8.11.2
Condition 8.11.10
DEPARTMENT OF ECONOMIC AFFAIRS, ENVIRONMENT AND TOURISM

CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS

This letter and attached Amendment Notice #3 must be attached to the original Record of Decision issued on 20 December 2002, together with the Amendment Notice issued on 22 December 2003 and Amendment Notice #2 issued on 16 October 2005 and must be read in conjunction therewith.

2. Duration of Amendment Notice
   • Construction of the aluminum smelter using AP35 technology to commence within 30 months of the date of issue of this Amendment Notice.
   • Construction to be completed within 72 months of commencement.
   • Conditions relating to the operation of the project are valid for the lifetime of the project.

3. Notification of Interested and Affected Parties and the public

All registered Interested and Affected Parties to be informed that a further Amendment Notice to the Record of Decision has been issued. In addition the issuing of Amendment Notice #3 to be advertised in all the newspapers used in the public participation process. Such notification and advertisements to state at least the following:

• That a further amendment to the original Record of Decision has been issued to Alcan to provide for the inclusion of the upside case in the project description as assessed in the Final Technology Review (FTRR) as well as changes to certain conditions contained within Amendment Notice #2;
• That any appeals against the issuing of Amendment Notice #3 must be lodged with the MEC for Economic Affairs, Environment & Tourism at the address stipulated in Point 8 of this letter within 30 days of the date of issue of the Amendment Notice (stipulate the closing date for submission of appeals); and
• Where copies of Amendment Notice #3 as well as the Original Record of Decision dated 20 December 2002, the Amendment Notice issued on 22 December 2003 and Amendment Notice #2 can be viewed/obtained.

4. Key Factors considered in issuing Amendment Notice #3

• An Amendment Notice (Amendment Notice #2) was issued to Alcan on 10 October 2005 whereby authorisation was granted in terms of Condition 5.1.4 of the Record of Decision to change the smelting technology from AP59 to AP35. The Description of the Activity as included in Amendment Notice #2 however did not provide for the so-called upside case scenario (production of 720 000 tons of aluminium per annum) investigated and reported on in the Final Technology Review Report (FTRR). The air modeling reported on in the FTRR included both the baseline and upside case for comparative purposes. The impact ratings however were based on the upside case. The decision to grant authorisation to amend the Record of Decision was based on the impact ratings reported on in the FTRR and therefore the environmental impacts associated with the upside case. Inclusion of the upside case in the description of the activity will therefore...
not lead to any further impacts on the environment over and above those considered during the issuing of Amendment Notice #2.

- Changes to Condition 8.1.13 as contained within the original Record of Decision issued on 20 December 2002 relates to removal of any reference to a specific number of electrolytic cells per potline from the condition. The condition stipulates that an Environmental Management System must be in place before startup of the smelter and includes a definition of startup. Removal of any reference to a specific number of electrolytic cells per potline has no implications for the intent of this condition.

- The two proposed changes to the table contained within Condition 8.5.21 have been accepted. In this regard it must be borne in mind that the impact assessment ratings contained in the FTTR and on which the decision to issue Amendment Notice #2 was based, was done on the mass balance contained in Tables 4.6 and 4.7 of the FTTR and not on the values given for SO2 and CO2. This mass balance remains unchanged. Therefore it was deemed acceptable to change the relevant two values in the table contained in Condition 8.5.21.

In this regard it needs to clarified that the unit error for CO2 (expressed as kg/t of aluminium instead of t/t of aluminium) in the Table on Page 6-34 of the FTTR was the result of CO2 not being reported under its own heading. All other references to CO2 emissions contained in the FTTR are reported as t/t of aluminium.

The table in Condition 8.5.21 is also given as a minimum requirement and this Condition first and foremost requires that emissions from the smelter must adhere to any requirements/limits that may be set by the Air Quality Management Division of the Department of Environment Affairs & Tourism.

- Condition 8.6.3 has not been amended or deleted and is therefore still applicable. In this regard it is deemed to be Alcan’s responsibility to explore all possible options with regard to management of contaminated storm water that would emanate from the smelter site.

- The two changes proposed for the table contained in Condition 8.6.15 are in line with appropriate water quality guidelines in South Africa as well as within the guideline limits of the World Bank. Again it must be borne in mind that the table in Condition 8.6.15 is given as a minimum requirement for water to be released into the marine environment. Alcan will have to conform to any standards that might be set by the CDC for stormwater leaving the smelter site in order to meet any requirements in terms of any licence issued to CDC and/or NPA for release of stormwater into the marine environment. The relevant two values in the table contained in Condition 8.5.15 have therefore been changed.

- Changes to Condition 6.6.25 have been effected to indicate that the further study that needs to be undertaken in terms of this condition is not the responsibility of Alcan but that Alcan will have to participate in and contribute to such a study.

- The proposed change to Condition 8.11.2 is deemed acceptable and is reflected as such in Amendment Notice #3. In this regard the condition does not refer to any specific colour any more, but stipulates that any colour chosen must be
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CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS

rumt and in accordance with the CDC’s colour specifications for the IDZ. The
same objective will be achieved with the redeti Condition 8.11.2.

- The proposed amendment to Condition 8.11.10 relates to a clarification of the
  intent thereof and has been accepted as such.

- The public participation process followed as part of this further application for an
  amendment is deemed to have met the requirements of the EIA regulations.

5. Appeal

A written appeal against the decision to issue Amendment Notice 43 may be lodged,
in terms of Section 35(3) of the Environment Conservation Act, Act 73 of 1989, with
the MEC for Economic Affairs, Environment and Tourism within 30 days from date
of issue. The address for submission of appeals is:

Attention: The Chief Director: Environment Affairs
Department of Economic Affairs, Environment and Tourism
Private Bag X 0054
Bhisho
5605

Only appeals on environmental grounds can be considered. All appeals should be
accompanied by relevant supporting documentation.

NGUBESIZWE SOKUPA
CHIEF DIRECTOR: ENVIRONMENTAL AFFAIRS (ACTING)
DATE: 3/3/2016
ANNEXURE ONE

DEPARTMENT OF ECONOMIC AFFAIRS, ENVIRONMENT & TOURISM
CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS
Collegiate House, c/o Belmont Towers & Castle Hill, Central, Port Elizabeth
Private Bag X 5001, Grootbrak 6657

AMENDMENT NOTICE #3 TO RECORD OF DECISION
ECm1/1/48-02

1. Description of Activity
The project entails the construction and operation of a primary aluminium smelter comprising of two potlines. Each potline will comprise of approximately 360 cells located in two potrooms. Between 650,000 and 720,000 tons of aluminium metal will be produced annually using the alumina reduction electrolysis process.

The smelter will be operated using the existing AP35 smelting technology developed by Aluminium Pechiney. It will consist of three major process components namely:
- Two potlines with approximately 360 pots each (electrolytic cells);
- A carbon plant and rodding shop for the production of carbon anode blocks; and
- A casthouse for the casting of aluminium ingots.

Other facilities associated with the aluminium smelter include:
- An electrical substation on the site to provide power to the smelter;
- Facilities for materials handling and storage including storage silos for the storage of raw materials (alumina and petroleum coke);
- Loading and unloading facilities at the port; and
- A conveyor that will be used for the transport of alumina and petroleum coke from the harbour to the smelter.

The total area of the site that will be occupied by Alcan is 120ha. Of the 120ha, 40ha will consist of buildings and other hardened surfaces such as roads, parking and paved areas. The different components and their location in relation to each other within the smelter site are depicted in figure 1.
Figure 1: The different components of the smelter and their location in relation to each other

THE POTLINES

Each potline will consist of 2 elongated potrooms measuring approximately 113m x 26m parallel to each other. Each room will house up to 90 pots aligned sequentially in two groups of up to 60 pots, electrically connected to each other. The two potlines will in turn be located parallel to each other. Each potline will thus have a total of up to 90 pots. Each one of the pots represents a large electrolytic cell (based on pre-baked anode cell technology) lined with conducting carbon blocks and insulating bricks (these make up the cathodes). The pot is supported by a steel-reinforced structure that includes the anode system, cathode shell, a hooding system and an alumina supply hopper.

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CHIEF DIRECTORATE, ENVIRONMENT AFFAIRS

The cathode assembly is contained within a rigid shell containing carbon blocks and sealed steel bars that conduct the current. Insulation is provided by layers of refractory bricks. Carbon anodes are used to conduct electricity into the pots. Each pot has up to 40 anodes. The anode blocks are consumed during the smelting process.

An electric current (DC) is passed sequentially in series through the line of electrically connected pots. Inside the pot the alumina is automatically fed at several points on the axis of the pot and dissolves in a molten bath of sodium aluminium fluoride (cryolite). The direct current causes the alumina to separate into aluminium and oxygen through the process of electrolysis while the heat generated maintains the molten bath at approximately 950°C. The aluminium is tapped periodically by vacuum suction.

Two Gas Treatment Centres (GTC’s) are associated with each potline. These are positioned between the potrooms and receive emissions from the pots. The GTC’s are dry scrubbing units that have the primary role of recycling nearly all fluoride and dust captured from the pots. The emissions are treated in the GTC to extract the fluoride using alumina as a dry scrubbing agent. The fluorinated alumina is then recycled into the pots.

THE CARBON PLANT AND RODDING SHOP

The anodes used to conduct electricity into the smelting pots are gradually consumed during the smelting process and are replaced on a rotating schedule. Anodes are manufactured on site in a carbon plant by means of a three-stage process:

- Paste Plant – Green (unbaked) anodes are produced by crushing petroleum coke and recycled anode butter (the remainder of the mostly consumed anodes), mixing it with liquid pitch to form an anode paste and compacting the paste into anode blocks.
- Anode Baking Furnace – The anodes are baked at approximately 1000°C in an oil-fired furnace for several weeks in order to give them mechanical and conductivity properties.
- Rooding House – After baking, the anodes are attached to rods by means of cast iron in the rooding house and then transferred to the storage facility from where it will be transported to the potline when needed.

Associated with the paste plant is a Pitch Fume Treatment Centre (PFTC). This is a dry scrubbing unit that treats poly-aromatic hydrocarbon (PAH) containing tar and dust emissions from the paste plant. Particulate coke is used as the scrubbing agent and this enriched coke is recycled into the paste plant.

Associated with the baking furnaces is a Fume Treatment Centre (FTC) that extracts and recycles fluoride, PAH containing tar and dust emissions created by the anode baking process. The FTC is a dry scrubbing unit that utilizes
raw alumina as the scrubbing agent with the resultant fluorspar rich alumina being recycled into the pots. This process results in destruction of PAH.

THE CASTHOUSE

The molten aluminium is extracted from the pots by a vacuum and siphoned into large ladles. The ladles are transported to the casthouse by means of specialized vehicles. At the casthouse the aluminium metal is siphoned from the ladles into holding furnaces in preparation for casting. The aluminium is then cast into ingots and bundled for shipping.

MATERIALS HANDLING AND STORAGE

In the harbour fresh alumina and petroleum coke will be unloaded by vacuum onto an enclosed conveyor system. The material will be transported to the smelter via the closed conveyor system where the alumina will be stored in sealed dome silos and the petroleum coke in an A-frame shed. Aluminium fluoride and liquid pitch will be transported from the harbour to the smelter by road.

Dedicated port facillities will be established for vacuum unloading of alumina and petroleum coke. Liquid pitch will be unloaded at a dedicated unloading station and stored at the port prior to transfer to the smelter. A metal storage site will be established adjacent to the port for the interim storage of aluminium ingots prior to export loading.

ELECTRICITY SUPPLY

Electricity will be provided by means of 3 x 275 kV transmission lines (operated as 132 kV distribution lines) from the Grassridge substation to the smelter site. The option however exists to use 400kV transmission lines. A dedicated electrical substation will be built at the smelter where the current will be converted from AC to DC prior to it being used in the smelting process.

LISTED ACTIVITIES

Construction and operation of the smelter will involve a number of activities listed in terms of Section 21 of the Environment Conservation Act, Act 73 of 1988. Of these the primary activity associated with the operation of the smelter is activity number 6 as listed in Schedule One published in Government Notice R1/82 of 10 September 1987, being the conducting of processes that are scheduled processes under the Second Schedule of the Atmospheric Pollution Prevention Act (APPA), Act 45 of 1965.

The following processes that are scheduled under the Second Schedule of APPA will be conducted as part of the normal operation of the smelter.
The primary scheduled process that will be conducted is:
- Aluminium processes (processes 32 in the Second Schedule to APPA):
  Being processes in which (a) aluminium is produced from its oxide by means of an electrolytic furnace.

Associated scheduled processes listed in the Second Schedule to APPA that will be conducted are:
- Tex processes (process 16): Coal-tar pitch is heated to create binder for the carbon anode blocks in a process that attains temperatures of above 114°C. Pitch is also heated during transportation, handling, storage and transfer in order to keep it in a liquid state.
- Hydrofluoric acid processes (process 21) and Fluorine processes (process 24): The smelting process results in the production and release of gaseous and particulate fluoride compounds, including both salt and acid components.
- Iron and steel processes (process 30): Being processes (a) in which iron, iron ores, steel or ferro-alloys are produced or processed so as to give rise to noxious or offensive gasses; or (b) involving the cleaning of castings and handling of casting mould materials.
- Gas, coke and charcoal processes (process 34): Being processes in which (c) Coke is produced – the smelter requires the coking of coal tar pitch when green anodes are baked at above 1100°C.
  (d) Gases produced are subjected to purification processes.

Other activities listed in Government Notice R1182 of 5 September 1957 in terms of Section 21 of the Environment Conservation Act, Act 73 of 1989 that are associated with the construction and operation of the smelter are:
- The construction and operation of an electrical substation (listed as number 1(e));
- The transportation and storage of hazardous substances (listed as number 7(e));
- Construction of dams (listed as number 16); and
- The storage of waste on site at a waste transfer site (listed as number 8).

Hazardous substances that will be transported, stored and used on site include but are not limited to the following:
- Liquid pitch
- Heavy fuel oil (HFO)
- Diesel
- Petrol
2. Contact Details of Applicant

Name: Alcan Primary Metal Group – Coega Aluminium Smelter
Address: Aluval, Centre Alp, BP 7, 38341 VOREPPE Cedex, France
Telephone: +33 476 578565
Fax: +33 580 599069

South African Contact Details:

Contact Person: Mr. Lesley Mpanza
Address: P.O. Box 70571, The Bridge, Port Elizabeth, 6032
Telephone: 041 3928800
Fax: 041 3928808

8. Conditions of Authorisation

8.1 General conditions

Condition 8.1.13:
The EMS to be in place before start-up of the smelter and to be certified and accredited within a specified period subsequent to start-up, which period will be agreed upon with DEAE&T. For the purposes of this condition, start-up is defined as the period commencing with the first production of aluminium ingots in a single potline and ending when all the electrolytic cells of a single potline have been commissioned. Certification is to be retained by regular external audits.

8.5 Conditions pertaining to emissions to the atmosphere

Condition 8.5.21
Emissions from the smelter to adhere to any requirement or limits that may be set by the Air Quality Management division of the Department of Environment Affairs & Tourism. As a minimum however, the standards as set out below to be maintained in terms of the various constituent emissions by the smelter:
### Pollutant Emission standard

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emission standard (kg/t Al)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fluoride</td>
<td>0.6</td>
</tr>
<tr>
<td>Dust</td>
<td>1.0</td>
</tr>
<tr>
<td>PAH</td>
<td>0.02</td>
</tr>
<tr>
<td>Tar</td>
<td>0.04</td>
</tr>
<tr>
<td>Carbon tetrafluoride</td>
<td>0.1</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>25.6</td>
</tr>
</tbody>
</table>

### 8.6 Conditions pertaining to water use and liquid waste

**Condition 8.6.15**

As a minimum, storm water from the Coega IDZ can only be released into the marine environment (Port of Ngqura) if it conforms (95 percentile) to the standard as set out in the table below. In this regard storm water leaving the aluminium smelter site must conform to the standards to be set by the Coega Development Corporation in order to meet the water quality requirements at the point of release into the marine environment.

<table>
<thead>
<tr>
<th>Constituent name</th>
<th>Unit</th>
<th>Storm water conc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended solids (TSS)</td>
<td>Mg/l</td>
<td>16.58</td>
</tr>
<tr>
<td>F</td>
<td>Mg/l</td>
<td>21.3</td>
</tr>
<tr>
<td>AI</td>
<td>µg/l</td>
<td>50000.0</td>
</tr>
<tr>
<td>CN free</td>
<td>µg/l</td>
<td>10.0</td>
</tr>
<tr>
<td>As</td>
<td>µg/l</td>
<td>50.0</td>
</tr>
<tr>
<td>Be</td>
<td>µg/l</td>
<td>3.0</td>
</tr>
<tr>
<td>Cd</td>
<td>µg/l</td>
<td>2.6</td>
</tr>
<tr>
<td>Cr</td>
<td>µg/l</td>
<td>20.0</td>
</tr>
<tr>
<td>Cu</td>
<td>µg/l</td>
<td>39.0</td>
</tr>
<tr>
<td>Fe</td>
<td>µg/l</td>
<td>350.0</td>
</tr>
<tr>
<td>Hg</td>
<td>µg/l</td>
<td>1.0</td>
</tr>
<tr>
<td>Ni</td>
<td>µg/l</td>
<td>60.0</td>
</tr>
<tr>
<td>Constituent name</td>
<td>Unit</td>
<td>Storm water conc.</td>
</tr>
<tr>
<td>------------------</td>
<td>------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Pb</td>
<td>µg/l</td>
<td>5.0</td>
</tr>
<tr>
<td>Sb</td>
<td>µg/l</td>
<td>10.0</td>
</tr>
<tr>
<td>Se</td>
<td>µg/l</td>
<td>3.0</td>
</tr>
<tr>
<td>Sn</td>
<td>µg/l</td>
<td>4.0</td>
</tr>
<tr>
<td>Ti</td>
<td>µg/l</td>
<td>5.0</td>
</tr>
<tr>
<td>V</td>
<td>µg/l</td>
<td>3.0</td>
</tr>
<tr>
<td>Zn</td>
<td>µg/l</td>
<td>180.0</td>
</tr>
<tr>
<td>Total hydrocarbons</td>
<td>mg/l</td>
<td>2.5</td>
</tr>
<tr>
<td>Phenol</td>
<td>mg/l</td>
<td>0.02</td>
</tr>
<tr>
<td>PAHs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene</td>
<td>µg/l</td>
<td>1</td>
</tr>
<tr>
<td>Benzo(a)pyrene</td>
<td>µg/l</td>
<td>1</td>
</tr>
</tbody>
</table>

Condition 6.6.25

Acan shall participate and contribute to further specialist studies to be undertaken by an appropriate body, under the leadership of the CDC and/or NPA on the accumulative load effects and long-term impacts of contaminants in the port and port sediments. Such studies to be based on the anticipated activities and developments in the port and the IDZ and to be submitted to the Coega Environmental Liaison Committee for endorsement.

8.11 Conditions pertaining to visual aspects

Condition 8.11.2

The CDC guidelines with regard to attenuation of visual impact (choice of colours, type of paint etc) to be applied and appropriate architectural modelling and surface colour treatment of buildings to reduce visual impact of the smaller to be used. In this regard a muted color must be used for all building cladding and the use of reflective cladding must be avoided.
DEPARTMENT OF ECONOMIC AFFAIRS, ENVIRONMENT AND TOURISM
CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS

Condition 8.11.10
The design of the aluminium smelter to incorporate sealed dome silos for alumina storage as intended for the AP50 smelter and not cylindrical silos as originally proposed for the AP35 smelter.

A. STRUWIG
ASSISTANT DIRECTOR: EIM
DATE: 31 March 2016

LEON ELS
DEPUTY DIRECTOR: WESTERN REGION
DATE: 31 March 2016

NGUBESIZWE SOKUPA
CHIEF DIRECTOR: ENVIRONMENTAL AFFAIRS (ACTING)
DATE: 31 March 2016