CHADWICK
ENVIRONMENTAL

AMG CHROME LIMITED

Substantial Variation Application

Non-Technical Summary

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1. Introduction

1.1 Purpose of this Report

This Environmental Permit Variation Application (the Application) has been prepared by Chadwick Environmental on behalf of the operator AMG Chrome Limited (AMG). The application seeks to vary the Environmental Permit Ref. EPR/BK6866IW (the Permit). The facility is located at Fullerton Road, Rotherham, South Yorkshire, S60 1DL (the Site).

The purpose of the Application is to undertake a number of changes at the Site including the following:

1. Consolidate Permits EPR/BK6866IW and EPR/GP3639ZY.
2. Add the Base Prep Oven which is currently in operation but has not been included in the Permit.
3. Add the Turnings Oven which is currently in operation but has not been included in the Permit.
4. Add the Crushing Activities which are currently in operation but have not been included within the Permit.
5. Add two new Crushing Activities to the Permit, the crushing of slag produced by the firing process and the crushing of refractory pot lining which is currently sent off site for treatment.
6. Replace the existing De-starch oven and associated afterburner with two new de-starch ovens and after burners.
7. Add the Pilot Plant which is currently in operation but has not been included within the Permit.
8. Rearrange the plant layout. Note that there is no change to the Site Permit Boundary footprint as Permit EPR/GP3639ZY currently sits within the footprint of EPR/BK6866IW.

There will be no increase in the annual production capacity of the permitted activities.

1.2 Scope and Limitations

This report: has been prepared by Chadwick Environmental for AMG Chrome Ltd and may only be used and relied on by AMG Chrome Ltd for the purpose agreed between Chadwick Environmental and AMG Chrome Ltd as set out in section 1.1 of this report.

Chadwick Environmental otherwise disclaims responsibility to any person other than AMG Chrome Ltd arising in connection with this report. Chadwick Environmental also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by Chadwick Environmental in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. Chadwick Environmental has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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Chadwick Environmental has prepared this report on the basis of information provided by AMG Chrome Limited and others who provided information to Chadwick Environmental (including Government authorities), which Chadwick Environmental has not independently verified or checked beyond the agreed scope of work. Chadwick Environmental

does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Non-Technical Summary

2.1 Permit Application

This application for an Environmental Permit Variation is submitted to the Environment Agency by AMG Chrome Limited (AMG) under the requirements of the Environmental Permitting (England and Wales) Regulations as amended in 2016. As required by these regulations, this section constitutes the Non-Technical Summary which accompanies the submitted documentation that forms the application.

As part of the works that are currently ongoing at the Site, this variation is to undertake the following:

1. Consolidate all existing Permits currently on Site (Permit Numbers EPR/BK6866IW and EPR/GP3639ZY).

The Site currently operates under two separate permits. One Permit (EPR/BK6866IW) services the AMG Chrome activities while the second Permit (EPR/GP3639ZY) services the AMG Aluminium activities. AMG have now ceased to operate the Aluminium activities. However, as the Aluminium Permit was in the middle of the Chrome Permit Area, the Permit was not surrendered.

AMG now wish to expand the Chrome activities into what was previously the Aluminium Permit Area. This is to allow for additional equipment to be added to the Site (second crusher) and to allow for various items of plant to be moved to facilitate easier working conditions.

2. Add the existing Base Prep Oven to the Permit (currently in operation at the Site but not included in the directly associated activities).

The Base Prep Oven has been in operation for a number of years but was not previously included within the Permitted Activities but is an essential part of the process (see figure 1 within the Operating Techniques for the process diagram).

When an order is received from the customer for a chrome product, the bespoke “recipe” of raw materials is weighed out and mixed and dispensed into a metal frame. The mix is then compacted to ensure uniform thickness before being transferred to the base prep oven to remove moisture.

The Base Prep Oven is situated within the EXO building and has a dedicated stack. This discharge point is to be added to the Permit. Sampling of emissions from this discharge point have been undertaken in support of this application and are included within the Air Quality Modelling Report which has been provided in support of this application.

3. Add the existing Turnings Oven (currently in operation at the Site but not included in the directly associated activities).

The Turnings Oven has been in operation for a number of years but was not previously included within the Permitted Activities but is an essential part of the process (see figure 1 within the Operating Techniques for the process diagram).

During the machining process, chrome buttons are stripped during using a Vertical Turning Lathe to remove the outer coating and rough edges which creates ‘turnings’. The turnings are either collected and recycled back into the manufacturing process or can be sold as scrap metal.

Turnings which are to be returned back into the process are washed and degreased and allowed to drip dry over a drip trays before being placed into the Turnings Oven to evaporate any additional moisture.

The Turnings Oven is situated within Building 26 Machine cell building and emits through a dedicated discharge point which is to be added to the Permit. Sampling of emissions from this discharge point

have been undertaken in support of this application and are included within the Air Quality Modelling Report which has been provided in support of this application.

4. Add the existing Crushing Activities (currently in operation at the Site but not included in the directly associated activities).

The current Permit (EPR/BK6866IW) does not currently include any crushing activities. Crushing is a fundamental part of the process (see figure 1 of the Operating Techniques) and occurs after the button breaking process. AR4 of the Permit includes for breaking of materials but does not specifically mention crushing (it does include for breaking and grinding but not crushing).

Crushing serves to further reduce particle size depending on the desired end product and is undertaken using two different crushers as follows:

- If the crushed chrome buttons are to be utilised to produce briquettes, then the broken buttons undergo crushing within the central crushing building utilising a S75 crusher. This building is fitted with a Localised Exhaust Ventilation (LEV) System thereby air from the building is drawn into a bag filter to remove any dust before clean air is discharged from the vent.
- If the crushed buttons are not to be utilised to produce briquettes and are already suitable to be sent off Site, then they may be bagged ready for dispatch.
- Once crushed, the buttons enter the Hazemag building where they undergo further crushing using the hammermill, they are sent to the Allis Mill or the Pulpit Mills. They are milled to form a powder before being packaged for dispatch. Both the Allis Mill and the Pulpit Mill have dedicated LEV's (EXT013 and EXT130, EXT 077 and EXT 19 respectively) associated with the buildings which are fitted with bag filters to collect any dust before clean air is discharged from the vent.

As part of this application a Site wide assessment of air quality discharges from all process buildings which contain LEV's has been undertaken assess likely impacts on air quality from the LEV's. The results of LEV testing is included within the Air Quality Modelling Report.

5. Add two new Crushing Activities to the Permit to allow for the operation of a crusher which will crush slag produced in the firing process and to allow crushing of refractory pot lining which can then be reused in the process.

As part of the firing process, slag is produced which the site currently crushes and sells as a by-product as it meets the by-product specifications. This activity is undertaken to reduce waste production. The crushing takes place within the centre of the site and is undertaken via a mobile crusher which is brought onto site when enough slag has been bulked. The crusher is fitted with dust suppression (water misting) to prevent dust emissions.

The second crushing activity is to involve the crushing of the refractory pot lining from the waste pots which is produced on Site. The crusher will situated within Building 11 will be provided with dust suppression or dust extraction.

6. Replace the existing permitted de-starch oven and associated afterburner with two new de-starch ovens with associated afterburners.

The de-starch ovens are utilised to burn off Starch which has been added to the Chrome during the blending processes as a binder for the briquettes. The briquettes are heated in the de-starch ovens at a temperature of 425^{o}C with the subsequent gasses that are produced being abated within an attached afterburner, which burns off gases at temperatures exceeding 850^{o}C.

The current de-starch oven and associated afterburner is located the HPD Department Building and has a dedicated stack. This de-starch oven is to be decommissioned and replaced with one of two new larger de-starch ovens and associated afterburners and will emit out of the existing stack. The second de-starch oven and afterburner will be situated adjacent to the first unit. The second de-starch oven and afterburner will have a separate dedicated stack.

This will result in an additional discharge point being added to the Permit. One of the new de-starch ovens and afterburners has already been commissioned on Site to provide monitoring data for the new larger unit and emissions show that the larger unit is much more efficient with emissions being much reduced. An Air Quality Modelling Report and Human Health Risk Assessment have been produced and are provided as part of this application.

7. Add the Pilot Plant to the Permit (currently in operation at the Site but not included in the directly associated activities).

The Pilot Plant is a small stand-alone operation on Site and is utilised when the Site has orders for lower grade chrome. Lower grade chrome from the rest of the process is blended with chrome carbon fines/sweepings and Graphite and is melted in a crucible. This process has an LEV which discharges into a bag filter. This will result in an additional discharge point being added to the Permit. Sampling of the discharge point has been undertaken in preparation for this application and is included in the Air Quality Monitoring Report.

8. Change the Site Layout as a result of the consolidation.

A new Site Layout Plan has been provided with the application to reflect the changes on the Site. The main changes relate to the following:

- Removal of aluminium processes from the Site Layout Plan.
- Repositioning of the Base Prep Oven to a different part of the EXO building.
- Formalise Chrome Crushing activities which are currently being undertaken in an area of Site that is authorised for Aluminium processes.
- Include new discharge points for discharges to air, namely from the base prep oven, turnings oven, pilot plant, and one additional de-starch oven with associated afterburner.

2.2 Site Location and Features

The Site is located within a mixed land use area, comprising of residential, commercial and industrial properties, on Fullerton Road, Rotherham, South Yorkshire, S60 1DL. The Site is located 1.8km southwest of Rotherham, centred on National Grid Reference (NGR) SK 42259 91154, and is bordered to the east by the River Rother and to the west by a railway line. The Site is also located in close proximity to the dual carriage way of the A630 and several residential properties to the east, with a number of commercial and industrial properties and a golf course located to the west.

2.3 Content of the Application

This permit variation application is accompanied by all the relevant documentation, as required by the Environmental Permitting (England and Wales) Regulations as amended in 2016 and guided by the format stipulated in the Environment Agency guidance documents. In summary, this includes the following documents:

– Application Forms.
– Site Condition Report.
– Operating Techniques.
– Environmental Risk Assessment.
– Best Available Techniques Assessment.
– Air Quality Assessment / Air Quality Modelling
– Human Health Risk Assessment
– Revised Site Layout Plan.

2.3.1 Site Condition Report

The Site Condition Report has been updated and details the history of the Site, providing a summary of the existing and proposed changes to the activities on Site. As outlined in the Site Condition Report, there have not been any environmental incidences at the Site which could have had an impact on ground, groundwater or surface water, therefore no additional Site Investigation works are proposed as a result of this application.

Note that while the two permits are being consolidated, this will not result in the requirement for any additional land to be included in the Permit Area as the Aluminium Permit Activities sit within the wider footprint of the Chrome Permit Activities.

The site description and summary of historic land use contained within the Site Condition Report will be used when AMG wishes to surrender the Permit.

2.3.2 Operating Techniques

The Operating Techniques for the Site have been consolidated and updated and includes all previously approved operating techniques as well as those proposed for the inclusion of the Base Prep Oven and the Turnings Oven.

Note that the Site currently operates a De-starch Oven with an associated Afterburner as well as a Crushing Activity. The operational techniques and monitoring requirements previously approved for these activities have been reviewed as part of the commissioning process for these items of plant. The commissioning process has concluded that no additional operational techniques or abatement is required, therefore we have not proposed any additional operational techniques for these items of plant.

In summary, the Operating Techniques document consists of the following:

- Site Operations – there will be no changes to Site Operations or Operating Hours as a result of this application.
- Raw Materials – there will be no changes to raw materials as a result of this application.
- Emissions Controls – there are no changes to emission controls as a result of this application.
- Proposed Monitoring – the application will result in additional proposed monitoring. This is associated with the de-starch ovens, base prep oven, turnings oven and pilot plant given that these items of plant require additional discharge points.
- Incidents and Non-Conformance Procedures – incidents and non-conformance procedures have been reviewed and are considered sufficient to ensure ongoing minimal impact on the environment.
- Accident Management – all accident management procedures have been reviewed and updated accordingly. Further details on accident management can be found in the Environmental Risk Assessment.
- Emergency Procedures – emergency procedures have been reviewed and are considered sufficient to ensure that procedures are in place in the event of an emergency. Further details on emergency procedures can be found in the Environmental Risk Assessment.

2.3.3 Environmental Risk Assessment

The Environmental Risk Assessment document lays out and assesses the magnitude and probability of any potential linkages between the source of any environmental hazards, and the sensitive receptors in proximity to the Site. Where the potential for harm is flagged by the assessment, the document identifies management or engineering techniques that will abate or mitigate these impacts.

In summary, the Environmental Risk Assessment document consists of the following:

Relevant Receptors

The relevant receptors list has been reviewed, no updates to the list have been required as a result of this application.

Fugitive Emissions

Discharges to air from odour, dust and noise have been considered from the facility. All processes are undertaken within buildings with sealed drainage. The environmental risk assessment has been reviewed for existing activities and has been updated accordingly to include the additional activities being applied for within this application.

The process does not produce odour; therefore no odour controls are considered necessary.

Some level of dust is generated by the process (specifically related to the crushing activity), however all processes are undertaken within buildings which are fitted with extractor vents for health and safety purposes, where dust may be generated, buildings are fitted with bag filters to extract dust prior to discharge from the vents. As part of this application, the Best Available Techniques Assessment has been updated specifically to investigate likely discharges from the extractor vents. Extractor vents were sampled during normal operations and have been assessed as part of the air quality assessment.

Noise has been considered as part of this application. The crushing activity has the potential to create noise if not managed. All crushing activities take place within sealed buildings and are situated within the centre of the Site, as far from sensitive receptors as possible. The Site undertakes noise monitoring on the eastern edge of the Site (closest to the housing estates) and operating hours are strictly observed for the crushing activities to ensure that they do not negatively impact on sensitive receptors.

Point Source Emissions

There are a number of point source emissions to air from the Site and further discharge points have been proposed within this application. New discharge points include the De-starch Oven, Base Prep Oven, Turnings Oven and Pilot Plant.

An air quality assessment has been prepared and submitted as part of this application which considers the currently permitted discharge points, the new discharge points and discharges from the vents on the side of the buildings. In addition, a Human Health Risk Assessment has been prepared and submitted which assesses impacts from the operation of the De-starch Ovens and Afterburners.

There are no point source emissions to surface water courses from the Sites. Water from Site offices and welfare rooms is discharged to sewer under the Sites existing Trade Waste Discharge Consent.

There are no discharges to ground from the facility. All activities are undertaken within buildings with sealed drainage.

Accidents

The Site has an approved Accident Management Plan which has been reviewed as part of this application.

Fire is considered to be the largest risk to the Site given the firing activities that occur on Site and the presence of furnaces and ovens. The Site has an approved Fire Prevention Plan in place which has been signed off by the local Fire Service. The Fire Prevention Plan is audited on a yearly basis by an independent third party who determines if any additional controls are required.

All plant and equipment are subjected to daily and weekly inspections to check for defects, malfunctions, to prevent leaks and spills and to ensure optimal working conditions. A preventative maintenance programme is in place where any works required are identified. Works are then scheduled by the Health, Safety and Environment Department.

Liquid wastes are appropriately segregated and stored within IBC’s upon drip trays.

Hazardous wastes are kept undercover and are stored separately from non-hazardous wastes to prevent potential mixing and cross contamination. Hazardous Wastes are stored within the Sites Hazardous Waste cages which are locked at all times, while non-hazardous wastes are stored in skips which are located around the Site.

Diesel and fuel are kept within double skinned tanks within bunded areas capable of holding 110% of a single tank or 25% of the capacity of the group of tanks.

Emergency Procedures

Emergency procedures have been reviewed as part of this application. Emergency procedures include:

- Fire
- Extreme weather events such as snow, ice, extreme winds, high temperatures.
- Plant breakdown.
- Start-up and shut-down activities.
- Loss of containment.
- Unexpected discharges to air from processes.
- Unexpected discharges to ground or surface water from processes.
- Notifiable environmental emergencies

The emergency procedures are considered sufficient and no changes are required.

2.3.4 Best Available Techniques Assessment

The Best Available Techniques Assessment previously undertaken for the Site has been reviewed and updated in accordance with the changes requested in this variation. The assessment has been undertaken in accordance with the Best Available Techniques (BAT) Reference Document (BREF) for Non-Ferrous Metals (NFM) Industries and associated BAT Conclusions for the Non-Ferrous metals industries.

Specifically, the BAT has been reviewed for all existing activities and updated to include the operation of the Base Prep Oven, the Turnings Oven, Crushing activities, the Pilot Plant and the operation of two larger De-starch Ovens with associated Afterburners (which will replace the existing smaller De-starch Oven with associated Afterburner).

2.3.5 Air Quality Assessment

An air quality assessment has been undertaken for the Site as mentioned above and is included within the Application. The Air Quality Assessment specifically looks at the Site in a ‘holistic’ manner given the number of LEV’s and point source discharges and has been updated to include the new discharge points to be added to the Permit.

The assessment provides an overview of discharges from the Site and specifically the following:

- Discharges from vents which service process buildings.
- Discharges from currently permitted discharge points.
- Discharges from the Base Prep Oven.
- Discharges from the two new De-starch Ovens with associated Afterburners.
- Discharges from the Turnings Oven.
- Discharges from the Pilot Plant.

The Air Quality Assessment has concluded that with the exception of long-term Chromium, all discharges are acceptable. Background concentrations for Chromium (long-term) exceed the

Environmental Quality Standards, however, Chromium contributions from the facility are below the relevant long-term EQS.

2.3.6 Human Health Risk Assessment

A Human Health Risk Assessment has been forwarded in support of the Application for the installation and operation of the two new de-starch ovens. The Human Health Risk Assessment considered Dioxins, Dioxin-like PCB's and Furans from the operation of the new De-starch Ovens and associated Afterburners.

2.3.7 Site Layout Plan

A revised Site Layout Plan has been included within the application to support the consolidation of the two Site Permits into one operational Site. It should be noted that the activities previously undertaken within the Aluminium Permit have ceased, and therefore Chrome activities will now be undertaken within this area once the consolidated Permit has been issued. The amendments to the Site layout Plan will not result in any additional land being required for the Site.