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**Scheme For Monitoring Baseline Noise Levels
At Nearest Receptors to Comply with
Schedule 5 Response No.4**

**Kronospan Manufacturing Facility
Off Holyhead Road
Chirk
Wrexham**

for

Kronospan Ltd

Report No.: R20/0405/DRK

Report Date: 29th May 2020

Undertaken by:

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**Member of Institute of Acoustics
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**Report undertaken & checked by:
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A handwritten signature in black ink, appearing to read 'D R Kettlewell', is written over a light blue horizontal line.

Date: 29th May 2020

Scheme for Monitoring of Baseline Noise To Comply with NRW Schedule 5 Request

Ref: Background Noise Monitoring

Introduction

Kronospan Limited (Kronospan) have been operating a wood-based panels manufacturing facility, currently employing around 650 people, at their site in Chirk, North Wales (the Facility) since 1971.

The wood-based panels manufacturing process is currently operated in accordance with two Environmental Permits and is co-regulated by Natural Resources Wales (NRW) and the Local Authority - Wrexham County Borough Council (WCBC). Whilst it is unusual, dual regulation of the site has existed since 2003 as a result of a Direction originally issued by the Secretary of State for the Environment.

One Environmental Permit (EP) was granted by NRW (Ref: EPR/BW9999IG/V007) and regulates the manufacture of formaldehyde by catalytic oxidation of methanol, and the manufacture of urea-formaldehyde and melamine-urea-formaldehyde resins. Furthermore, this EP also includes two directly associated activities which are the Paper Impregnation process, and the site surface water discharge, and has recently been extended to include combustion processes fuelled by gas which were formerly regulated by WCBC

The other EP which was granted by WCBC regulates all the other activities associated with the wood-based panels manufacturing process. The manufacturing process includes the K7 and K8 biomass boilers which supply thermal power and steam/heat to support the manufacturing process.

Welsh Government decreed that from the 31 March 2018 a direction will allow NRW to accept an application for wood-based panel processes and allow WCBC to continue regulation until a single consolidated permit for the installation is issued by NRW. Therefore, an application, dated May 2018, was submitted to NRW to transition the regulation of those activities currently regulated by WCBC to NRW together with process changes resulting from investment in the site by Kronospan's owners. The EP application included an assessment of noise impacts associated with the operation of the Facility.

The application was Duly Made by NRW in July 2018, and a number of requests for additional information (referred to as Schedule 5 Requests) have been submitted to Kronospan by NRW to enable NRW to progress with the determination process. Some of the Schedule 5 Requests have requested additional information and clarifications on the approach to the noise assessment submitted with the EP application.

This report is provided in relation to the most recent Schedule 5 Request received from NRW, dated 5 February 2020.

Schedule 5 Request

NRW issued a Schedule 5 Request, dated 5 February 2020. Q4 of the Schedule 5 Request is as follows:

We have assessed Kronospan's 2016 "Baseline noise survey at nearest receptors", submitted on 5 June 2019, and consider that the 2016 survey data may not be representative of the background noise at the nearest sensitive receptors.

The reference time intervals for noise measurement in BS4142:2014 are: 1 hour during the day from 07:00 hrs to 23:00 hrs and 15 minutes at night from 23:00 hrs to 07:00 hrs. However, Kronospan's 2016 Baseline noise survey contains only 3 x 5-minute sequential measurements being taken at each receptor during the day and night. Also, the noise measurements were conducted during a single 24-hour period, specifically Thursday 8 to Friday 9 September 2016. As such the measurement time may be too short to be representative of typical background noise levels at sensitive receptors and to pick up variations in noise levels. Furthermore, the survey report did not provide any further information whether the measurements were representative of the noise level during the daytime and night-time.

In order to increase confidence in the representativeness of background noise measurements at the 9 sensitive receptors identified in the 2016 report (expressed as $L_{A90,T}$), please repeat the monitoring of $L_{A90,T}$ using the reference time intervals from BS4142:2014+A1:2019. Measurements can be contiguous or disaggregated but shall capture the range of background sound levels for the period being assessed, taking care to consider diurnal variation and variation during weekday and weekend periods.

The results of this measurement exercise shall be submitted in the form of a written monitoring report, including as a minimum the information detailed in Section 12 of BS4142:2014+A1:2019 pertaining to the background survey. This shall include the weather conditions at the time of monitoring, (e.g. wind speed and direction). The report shall also include the $L_{A90}(t \text{ min})$ measurements used to determine the final background values for day and night-time periods (including background values determined for different daytime / night-time periods where significant diurnal or weekday / weekend variation has been identified). Please also provide the single octave bands associated with the background measurement as this can provide information regarding the "character" of the sound and helps to inform whether the specific sound is likely to be incongruous.

Measurements in the absence of train deliveries during night-time periods shall be included in the final determination of the $L_{A90}(15 \text{ min})$.

Please also submit the electronic file of time series noise recording data for verification of the L_{A90} with the monitoring report. The report shall also include a statistical analysis histogram graph showing the range of background sound levels recorded and demonstrating which is the most representative background level and why (i.e. the background sound level occurring for most of the time as per section 8 of BS4142: 2014 + A1:2019).

Limitations due to Covid-19

Following consultation with NRW, and due to the recent issues with lockdown of the UK economy and reduced operational capacity of the Kronopan facility and restricted vehicle movements due to Covid-19, it has been agreed that the monitoring required by the Schedule 5 Request would not be representative of 'normal' operation and associated noise impacts from the Facility. Therefore, it has been agreed with NRW that a proposed programme for undertaking the necessary monitoring to satisfy the requirements of the Schedule 5 Request will be submitted to NRW for approval/comment. The programme of monitoring, if approved by NRW, will subsequently be undertaken when the Facility is in full operation and the background noise sources, which will have an effect on the impact of the Facility on local sensitive receptors, are representative of typical operation.

Monitoring Programme

1. Monitoring of ambient noise (i.e. LAeq) and background noise levels (LA90) would be measured over 15-minute contiguous periods during a weekday and weekend period (i.e. covering approximately 1 week) at established monitoring positions. The period of monitoring and duration of monitoring proposed is in accordance with BS4142:2014+A1:2019 to provide appropriate data and over a period of time that would provide a good representative of the baseline noise climate.
2. It is noted that the Schedule 5 Request from NRW states '...the reference time interval for noise measurement in BS4142:2014+A1:2019 are: 1 hour during the day from 07:00 hrs to 23:00hrs and 15 minutes at night from 23:00 hrs to 07:00 hrs'. Whilst BS4142 refers to a 15 minute assessment period for night-time and a 1 hour for daytime (ref. section 7.2 of the Standard) this relates specifically to the assessment of site specific noise and not background noise monitoring. Section 8.1.3 of BS4142 relates to background monitoring and refers to "*continuous measurements of not less than 15 min intervals, which can be contiguous or disaggregated*".
3. For the purposes of background monitoring programme, it is proposed that noise monitoring is undertaken over 15 minute periods. If equivalent data is required for one hour periods (i.e. day-time periods), the 15-minute readings can be converted to one-hour readings.

Monitoring Locations

4. Presented in Figure 1 are the proposed locations for the monitoring to be undertaken. These are considered to be indicative, and subject to appropriate access and security constraints. The monitoring locations are based on historical spot-roaming monitoring positions. In the event access cannot be secured on private land, equivalent, suitable monitoring points would be chosen that re considered to be representative of the receptor location (e.g. in proximity to receptor at similar distance from the Kronospan site but at a position facing the direction of the Kronospan site).
5. The proposed monitoring locations are as follows:

Position 1: Northeast around the Linden Avenue receptor area.
Position 2: Northeast of Site in proximity to Wern.
Position 3: Northeast of Kronospan in the residential area around West View.
Position 4: Southeast of the site entrance in proximity to residential housing at Maes-y-Waun.
Position 5: South easterly direction in the residential housing area around Shepherds Lane.
Position 6: In proximity to the front entrance of the Mondelez factory to the south of the Kronospan site at a suitable residential receptor.
Position 7: In proximity to the Canalwood Industrial Estate.
Position 8: In proximity to dwellings off the Llwyn-y-cil Road southwest of the development area.
Position 9: North west direction towards the Castle Gates on high ground.

Proposed Monitoring Conditions and Approach

6. Fixed position monitoring at established monitoring locations would be undertaken under suitable weather conditions in accordance with advice provided within BS4142:2014+A1:2019.
7. Monitoring will **not** be undertaken in the following weather conditions:
 - when wind speeds are likely to be greater than 3 metres/second; or
 - when rainfall is expected; or

- when temperatures are likely to be below zero degrees.
8. Data which includes periods of unsuitable weather conditions or periods when train movements to and from site occur would be removed from the data set for establishing the LA90 levels at the NSRs.
 9. Monitoring at all locations will be undertaken between 1.2m to 1.5m above ground level with microphone mounted on a tripod and fitted with wind ball (in accordance with BS4142:2014+A1:2019 section 6.2).
 10. During the monitoring period occasional subjective observations to be made of any local or distant noise sources at receptor positions or reference to audio recordings (where applicable) would be reviewed.
 11. Weather conditions would be monitored for the duration of the survey using a Davis weather station which would record wind direction, wind speed, any rainfall periods and temperature.
 12. Monitoring equipment to be precision noise analysers with Type 1 microphones suitable for monitoring LAeq, LA90 and LMax measurement indices. Additional monitoring of octave band frequency spectra required for assessment of noise character at key monitoring positions. Fast response setting required.
 13. The noise meters and microphone will be calibrated within 2 years of survey date and calibrator within 12 months of survey date. Microphones will be calibrated prior to and after each survey to check on calibration and any calibration drift recorded.
 14. Noise monitoring would be undertaken by an experienced noise consultant with appropriate qualifications and a Full Member of the IOA and/or ANC.

Reporting

15. Provision of baseline survey noise report would be provided detailing all measurements, site survey methodology, survey conditions, instrumentation, subjective observations and statistical analysis of baseline levels in accordance with BS4142:2014+A1:2019 at NSRs. The electronic file of time series noise recording data would be provided for verification of the LA90 within the noise report.
16. The baseline survey report will include calibration certificates for the instrumentation from a suitable test laboratory to demonstrate that its measurements are traceable to relevant national or international standards.

Figure 1: Noise Monitoring Location Areas Proposed for the Scheme

