
PROJECT REF: WSM-010917-NOISE MS

**Method Statement for Noise Monitoring
at the Thermal Treatment Facility
in Marsa**

Submitted to
Wasteserv Malta

by



12, Sir Arthur Borton Street,
Mosta, MST 1881,
MALTA

Tel: (+356) 2143 1900

Fax: (+356) 2142 4137

Mob: (+356) 7943 1900

Website: www.ecoserv.com.mt

Contributing expert:

Prof. Vincent M Buhagiar
Environmental Consultant

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Project Description:	Incinerator (Thermal Treatment) Facility in Marsa Wasteserv Malta (WSM)
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NOISE METHOD STATEMENT

Prelude

In compliance with IPPC permit clause 2.2.9, WSM have requested a Method Statement) for a Monitoring Strategy for Noise and Vibration. These are two environmental parameters not mutually exclusive. Although very often, noise may be stemming from a stand-alone source on its own, it may also be originating from vibrations. Nevertheless, monitoring of these two key parameters may still be carried out independently, one without the other. Very often, only noise levels are assessed, as these are the end result causing the nuisance, independent of their source of origin. Different equipment is used in both instances, attracting different monitoring time frames and professional fees. Although both are described herewith, a greater emphasis should be placed on noise monitoring, as specified in clause 2.2.9.3 – 2.2.9.8, in the said IPPC permit.

Clause 2.2.9.4 of the permit also specifies that '*noise monitoring is to be carried out annually, with effect from 2016*' to ensure that the noise levels emitted from the installation at all operational times shall not exceed the background noise level by 5dB (clause 2.2.9.3).

1.0 The Monitoring Strategy

1.1 Baseline Survey: Noise and Vibration Site Monitoring

From the onset it is being declared that WSM has already carried out a Baseline Study last year (2016); therefore, there is clearly no need to carry out another one. Locations for measuring background noise were effectively chosen, together with WSM site engineer, bearing in mind existing noise sources within the facility grounds, including background noise such as internal traffic or minor internal civil works among others.

Initially, site monitoring needs to be carried out in order to gather dynamic information on the current prevailing background noise levels, both in terms of their frequency and intensity. In order to map out a holistic picture, their variation required day and night monitoring as well as weekdays and weekend monitoring. This baseline survey has observed the guidelines as stipulated in BS4142: 2014.

With reference to Schedule 4 of the IPPC ^[1], in view of the request for such a method statement, the monitoring study shall contain the following components:

1. A description of all processes carried out on site and its related equipment and any supporting infrastructure;
2. A description of the surrounding areas comprising the identification of the types of activities be it commercial, residential or other, including roads and other amenities. Such activities shall be identified and be 'location-specific' taking into account their proximity with respect to the whole site.
3. Identification of the main sources of noise and vibration, including all processes on site, noise due to on-site transport, fixed plant, loose equipment, mechanical operations, and any allied activities;
4. Identification of the noise sensitive receptors closest to the site, after assessing the noise levels in the plant's perimeter and in the other noise sensitive locations (as per item 2 above); various monitoring points shall be identified with a location-specific code for ease of analysing the respective ambient noise exposure;
5. The Environmental Noise Survey itself shall include details of the standards used for measurements, equipment used, including calibration details, resultant measurement data, assessment methods and a 'complaints significance scale'. The latest standards and respective revisions are to be used, typically ISO1996 and industrial noise rating, namely BS4142:2014. The survey should include perimeter noise levels, as identified in the baseline noise survey of sensitive receptor locations, noise impact on site sensitive receipts as well as day and night background levels.
6. Actual noise monitoring should be carried out using a Type 1 instrument (the only one acceptable according to BS4142:2014). Impact assessment of noise events at noise sensitive receptor site should include an assessment according BS 4142:2014, ISO1996 and ISO9613 or any other relevant standard. A resume of actual data collected shall be submitted as an appendix to the final report.
7. Conclusions and Mitigation measures should include a summary report of findings from the noise monitoring survey. In order to reduce noise impacts resulting from the operations on site, any remedial action and mitigation measures to be implemented are to be highlighted as part of the report.

[1] Source:
Document IP 0004/07/B, IPPC Permit for IPPC Permit for Marsa Thermal Treatment Facility

1.2 Monitoring Programme

A comprehensive monitoring programme is being proposed herewith. This takes into account monitoring of those features considered to have a negative or an uncertain impact. In particular, regular monitoring of noise levels of the site and its surrounding environs, based on the outcome that emerged from the baseline study.

'Modus Operandi'

As a follow up to the Baseline Study, the programme proposes noise monitoring during the *principal two operational time phases of the Incineration Facility*, namely:

- (i) during full operation, typically on a 24x7 basis for a minimum period of four weeks (or until the incinerator needs a thorough clean-up);
- (ii) during stoppage, for cleaning and regular maintenance, lasting between one to two weeks (depending on the need for further maintenance).

Receptor Locations

Noise sampling is to be carried out at the same locations as carried out in the Baseline Studies. Details of such locations are given in the Baseline Study report and accompanying drawings. However a slight shift in location or additional receptors is not excluded, to ensure a proper noise mapping of the whole picture.

Noise Sampling

It is recommended that noise sample readings should be collected as stipulated in BS4142: 2014. Essentially this stipulates:

- (i) Daytime sampling of 15 mins;
- (ii) Night time sampling of 15 minutes.

Both samples have to be collected during (a) Weekdays, and (b) weekends.

Readings will be carried for both when the incinerator is ON (full operational) and when it is OFF (during stoppage/maintenance).

Day time sampling is defined by the standard as 07:00 – 23:00; and Night-time sampling is to be taken between 23:00 – 07:00.

The noise indices to be measured should be L_{Aeq} for noise sources, and L_{A90} for sensitive receptors, as stipulated in BS4142: 2014.

Such monitoring is to be carried out across ONE (1) sample week representing each of the FOUR (4) above scenarios, as outlined in Section 1 above. This data will collected and analysed at least once a year, or as the Authority/Regulator may deem necessary. The final deliverable will be a technical report, typically called the ENSR (Environmental Noise Survey Report); this will include all maps, drawings, diagrams, sketches and photographs. Its full contents are specified in the Terms of Reference (TOR) for executing such a monitoring programme, as detailed in Schedule 4 of the IPPC permit.

2.0 Assessment of Environmental Impacts and Potential Risks

2.1 Adverse Effects of Operational Works

Following the baseline monitoring exercise, the most significant impacts and risks posed by the proposed *operation and running of the facility*, (assuming all site clearance, demolition, construction and commissioning stages are complete), there is the need for an assessment of the environmental characteristics of the site and its surroundings, ideally monitored on an annual basis, as recommended in the IPPC permit. A descriptive and quantitative analysis (including magnitudes and timing) of the impacts of the proposals will need to be extracted and presented in summary a chart/table format.

2.2 Effects of Noise and Vibrations

This shall include an assessment of maximum noise and vibration levels generated, with variations during day and night and attenuation. The effects of noise and vibrations on the surrounding community arising during the operation of the proposed/ongoing facility shall be assessed. The impacts on the surrounding noise-sensitive uses (if any) shall be assessed in terms of magnitude, duration and type.

The assessment shall also consider road traffic associated with operations on site. As aforesaid, direct vibration measures may not be needed, as noise is the end result, however these may be requested to assess any damage caused by the source of the vibration (e.g. effects of pneumatic driven equipment on human beings, or on delicate static plant, the building structure or its enveloping fabric).

In view of the potential presence of certain acoustic features such as tonality, impulsivity and intermittency the inclusion of specific noise level plus any adjustment for the different noise characteristic features, the rating level, $L_{A,Tf}$ should be reported in accordance with BS 4142:2014, depending on the subjective assessment made while taking the readings.

Moreover, it is important to ensure that not just the measurement procedure but also the assessment methodology is in line with BS 4142:2014, in particular section 11. Thus, ensuring that the noise levels emitted from the installation at all operational times shall not exceed the background noise level by 5dB (clause 2.2.9.3).

[The background levels are to be taken from the baseline study report (Ecoserv Report Reference: 128-16_R2.)]

3.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring Programme

3.1 Mitigation Measures

The Technical report should include a description of the measures envisaged necessary to prevent, minimise and where possible offset any significant adverse effects on the environment during the *operational phase* of the project; Such measures could include technological equipment, alternative technological features, operational management

techniques, enhanced site planning and management, aesthetic measures, conservation measures, reduction of the magnitude of project and health and safety measures, among other emerging needs.

3.2 Residual Impacts

Any residual impacts, that is those impacts that cannot be mitigated or those remaining impacts following implementation of mitigation measures, shall also be described where evident, quantified and presented in tabular format as part of the final report.

4.0 Noise Measurement Instruments

4.1 Typical instruments that could be used (*only indicative*) (Potential selection from approved list w.r.t. BS 4142: 2014)

A description of all the instruments used to carry out this study possible is described below. Basically, this entails the following:

- the Precision Sound Level Meter, Type 2231
- the Graphics Printer, Type 2318
- the Interface Module, ZI 9101
- the tri-axial accelerometer, Type 4370
- the compactor, RC 40 Y Weber

The first one is further detailed as follows:

4.1.2 The Precision Sound Level Meter, Type 2231

It is a Type 1 precision instrument and is in accordance with IEC 651 regulations. It can perform a wide range of measurements and can be used with a variety of modules.



Figure 4.1 the Modular Precision Sound Level Meter, Type 2231 (indicative)

Its characteristics depend on the module chosen and loaded into it. This software is transferred to the meter and adapts it accordingly. It also provides an internal memory of 99 records and a back-up power, which prevents any loss in the software application even when equipment is switched off.

Each application has a particular front plate, which is mounted onto the sound level meter. The module to be used is fitted into the interface socket at the back of the meter.

5.0 Time frame (indicative only):

This could take (approximately) FOUR (4) hours per visit, assuming no delays due to any ongoing work operations on site, and that any further data needed is readily available.

Since the noise vectors (magnitude, direction & location) may vary radically across the site and its various operations throughout the existence of the project (assumed to be over a number of years), it is envisaged that monitoring will typically be needed across the *two phases* – each year, as per IPCC permit.

It is being assumed that a 'Baseline Study' was completed prior to the regular monitoring being proposed.

Finally, it is recommended that readings be carried out across ONE (1) sample week representing a combination of the four (4) scenarios, as per section 1. Intermediate reports may need be compiled based on the findings. These will feed in towards the completion of a final ESR (Environmental Survey Report), including all maps, drawings, diagrams, sketches and photographs.

Conclusion

Ultimately, any digression from this Method Statement or choice of receptor locations, is at the discretion of the operator of the Thermal Facility, namely WSM, however these should be discussed with the Consultant, and decided in tandem within the parameters specified in BS 4142:1997, or its ensuing updates.

A handwritten signature in black ink, appearing to read 'Vince Buhagiar', is centered on a light gray rectangular background.

Prof. Perit Vince Buhagiar
Environmental Consultant
29 September 2017 (updated 31 July 2019)