

ANNEX 12

CESSATION

RENEWAL OF IP 0004/07 (IPPC PERMIT FOR THE MARSA THERMAL TREATMENT FACILITY)

C2.9 Cessation

Describe any changes to the proposed measures upon definitive cessation of activities, to avoid any pollution risk and return the site of the installation to a satisfactory state (including relevant measures for the design and construction of the installation).

At the end of the plant life, a detailed plant decommissioning plan will be implemented to ensure that the site is returned to a satisfactory state for on-going use. An inventory of assets to be decommissioned will be produced followed by consideration of the need for risk assessments, site supervision/management, and consultation of Regulations. Disconnection of site services, whether partial or complete will be considered before dismantling work commences on-site. Equipment, where possible, will be decontaminated on-site, followed by inspection and if necessary further decontamination, once the equipment has been removed from position and before it has been removed from site. Dispatch of equipment from site whether as a saleable asset or as scrap, will be accompanied by a Certificate of Decontamination. All equipment containing chemicals will be drained and the chemical stored in appropriate containers and removed off-site to reduce the potential for spillage. Dismantling of equipment shall be subject to the same conditions and control of works as required by relevant Health and Safety legislation. The site will be left in a safe manner and adequate regular site inspections will be carried out until such time as responsibility for the site has been transferred to the new owners.

Any monitoring which may be required pursuant to Regulations 9(3) and 16(2) of the Industrial Emissions (IPPC) Regulations will be conducted.

ANNEX 13

**WATER SERVICES
CORPORATION**

Triq Qormi Luqa LQA 9043
Freephone: (+356) 8007 2222 Fax: (+356) 2244 3900
E-mail: customercare@wsc.com.mt Website: www.wsc.com.mt

Application for a Public Sewer Discharge Permit

SECTION A

I SAVIOUR M. ABELA (Full Name), I.D. Card number 237465(M)
residing at C/O WASTESERV MALTA LTD.
ERO CENTRE, TRIQ IL-LATMIOJA, MARSASKALA
telephone 23858000 fax _____ mobile _____
e-mail SAVIOUR.M.ABELA@WASTESERV.MALTA.COM
as representative of WASTESERV MALTA LTD.
am applying for a permit to discharge effluent into the public sewer, during the one year period
from

DD	MM	YY
----	----	----

 to

DD	MM	YY
----	----	----

Address of premises from which effluent will be discharged:

MARSA THERMAL TREATMENT FACILITY
TRIQ IL-BIGGERIJA, MARSA

The following is a brief outline of activities/processes envisaged to be carried out at the above premises during the above mentioned period:

KINDLY REFER TO SECTION 2 OF THE ATTACHED DOCUMENT

The substances that will be used at the above premises (not necessarily discharged in the effluent) during the said period are: KINDLY REFER TO SECTION 4 OF THE ATTACHED DOCUMENT

Substances	Kg

The proposed point of discharge is indicated in the attached site plan,
scale 1:2500, which is signed by Architect and Civil Engineer

ANNEX 1.

Perit Robert Grech
Executive Architect & Civil Engineer
WasteServ Malta Ltd.
name in BLOCK LETTERS

Declaration by Applicant (tick appropriate box)

☐ I declare that the effluent to be discharged from the above mentioned premises is exclusively domestic sewage i.e. effluent resulting exclusively from activities related to the habitation of humans, such as the use of toilets, wash hand basins, showers and kitchen facilities.

☐ I declare that the effluent to be discharged from the above mentioned premises is trade effluent having the same characteristics as approved in Public Sewer Discharge Permit No _____ covering the period from

DD	MM	YY
----	----	----

 to

DD	MM	YY
----	----	----

(If one of the above options are chosen, you may proceed to SECTION E)

☒ I declare that the effluent to be discharged from the above mentioned premises is, at least partly, trade effluent, as defined in the Environment Protection (Sewer Discharge Control) Regulations, 2002. For this reason, I am supplying the following information which, I understand, shall be treated as strictly confidential:

SECTION B to be filled in for the discharge of trade effluent, please tick appropriate box/boxes

Type of industrial activity/process envisaged to take place in above premises during the year

Activity I – Manufacturing and Processing

☐ Textiles & clothes

☐ Shoes

☐ Food

☐ Beer

☐ Wines & spirits

☐ Soft drinks

☐ Mineral water

☐ Paint & pigments

☐ Paper & cardboard

☐ Plastic & resin

☐ Tobacco

☐ Stone & marble

☐ Carpentry

☐ Soap & detergent

☐ Carpentry

☐ Glass & porcelain

☐ Electronic components

☐ Metal goods

☐ Batteries

☐ Leather

☐ Tiles

☐ Glue

☐ Explosives

☐ Rubber

☐ Lime

☐ Candles

☐ chemical(s) specify which

☐ Other specify which

Activity II – Servicing

- ☐ Electroplating ☐ Laundries ☐ Other *specify which*
- ☐ Motor vehicles ☐ Dry cleaning _____
- ☐ Photographic printing ☐ Shipbuilding _____

Activity III – Miscellaneous

- | | | |
|---|--|---|
| <input type="checkbox"/> Catering | <input checked="" type="checkbox"/> Waste processing | <input type="checkbox"/> Other <i>specify which</i> |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Petroleum | _____ |
| <input type="checkbox"/> Animal husbandry | <input type="checkbox"/> Power generation | _____ |
| <input type="checkbox"/> Hotel | <input type="checkbox"/> Hospital/clinic | _____ |
| <input type="checkbox"/> School | <input type="checkbox"/> Dyeing | _____ |
| <input type="checkbox"/> Water desalination | <input type="checkbox"/> Printing | _____ |
| <input type="checkbox"/> Aquaculture | | _____ |

SECTION C

VOLUME of effluent to be discharged during the year: 3650 m³

MAXIMUM FLOW per hour: 416 L

SECTION D

I declare that the effluent characteristics will be as follows: ANNEX 4 of ATTACHED DOCUMENT

NAME OF SUBSTANCE

(a) *

(b) **

This image shows a blank sheet of white paper with horizontal black ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

NAME OF SUBSTANCE

(a) *

(b) **

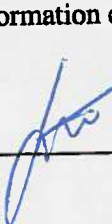
* (a) Maximum concentration in effluent, expressed in mg/L

** (b) Total amount of material to be discharged in sewerage system during year, expressed in Kg

SECTION E

I declare that the information contained above is true.

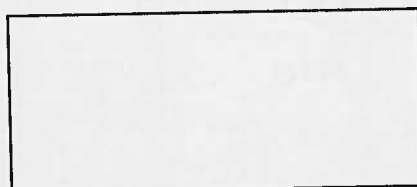
Signed



Date 08/03/2013

Name in Full

SAVIOUR M. ABELA



Official company/personal stamp of
industrial concern

€11.65 fee for the first application
or any subsequent application not being a renewal

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ANNEX 14

EMISSIONS TO AIR

RENEWAL OF IP 0004/07 (IPPC PERMIT FOR THE MARSA THERMAL TREATMENT FACILITY)

Action to be taken: Investigate the feasibility of plant improvements, such as a wet scrubber for acid gases abatement or a selective catalytic reduction system for NO_x abatement to be installed at the proper temperatures after the injection of activated carbon and sodium bicarbonate in the flue gas.

WasteServ's Reply:

The Thermal Treatment Facility is currently equipped with a Dry Flue Gas Scrubbing Unit. UREA is injected into the Second Combustion Chamber at a temperature between 850°C and 1000°C to reduce NO_x levels. When the flue gas is cooled down to 170°C following the Waste Heat Boiler and Economiser, Sodium Bicarbonate and Activated Carbon are injected simultaneously into the flue gas to reduce the acidic component gases such as SO₂ and HCl and to absorb heavy metals like mercury, dioxins and furans.

The system was originally designed to clean the flue gas using Ca(OH)₂ with the design parameters below:

- Maximum total fume flow rate: 14,700 Nm₃/hr at 180°C
- Total suction head: 550 mm H₂O
- Maximum concentration of pollutants at entrance
 - Particulates : 1000
 - HCl: 60
 - HF: 1.5
 - SO_x: 140
 - NO_x: 200
 - CO: 50

The bag house filter has a filtering surface of 475m².

During the upgrading of the Plant, the reagent was replaced to Sodium Bicarbonate and Activated Carbon. With an incineration waste mix of approximately 90% by weight of the waste incinerated being organic waste which is not hazardous while the remaining 10% being hazardous waste consisting of clinical waste and pharmaceutical waste or RDF the current scrubbing system can cope in achieving the IPPC emission thresholds.

With the introduction of the autoclave plant, all slaughtering waste will be diverted to the Autoclave Facility, resulting in the Incinerator being used to treat mainly RDF (shredded wood) and hazardous waste including pharmaceutical waste. The emissions produced from this new waste mix will vary from

the current mix whereby 90% is organic slaughtering waste. If the quantity of hazardous waste is to increase from the current quantities being treated, the current scrubbing system may not cope in maintaining the emissions below the IPPC limits. If the quantity of hazardous waste is to increase, then the scrubbing system may need to be upgraded.

WasteServ has the following options to consider:

1. Increase the size of the bag house filter and hence increase the dosing rate of sodium bicarbonate and activated carbon. The only possible way is to increase the height due to space limitations. Increasing the surface area will improve emissions cleaning. However, the more Sodium Bicarbonate is injected, the higher the quantity of hazardous waste produced (fly ash) which needs to be exported for disposal. Higher consumption of dosing chemicals will also be experienced.
2. The second option is to install a wet scrubbing system, consisting of an initial dust filter, following by two wet scrubbers for the HCl and SO₂ gases and a police filter prior to the chimney. This system is more effective and reliable as compared to the dry scrubber but requires a higher investment cost especially since it needs a waste water treatment plant to treat the effluents produced from the wet scrubbers. Another concern is space since it requires a footprint area of approximately 20m x 16m and a height of 16m. Having a wet scrubbing system will not increase the quantity of hazardous waste produced.

Considering the above, WasteServ shall be seeking technical expertise in this very specialized field to investigate further the available options as well as the investment costs, operational costs and space requirements as well as reliability (guarantee) of emissions within the permit thresholds that each option offers. Once the expert's report is available, a clear decision on the way forward can be pursued. This process, which is subject to the necessary public procurement procedures and approvals for tender publication, is envisaged to be concluded by the end of 2013.

Finally, external auditors shall also be engaged to examine the relationship between high emissions and the waste mixture being incinerated as well as a relationship with any other relevant operating conditions. The engagement of external auditors is also subject to public procurement procedures.

ANNEX 15



DEVELOPMENT BRIEF FOR THE MARSA THERMAL TREATMENT FACILITY

NOISE REPORT

Version I (April 2012)



Report Reference:

Adi Associates Environmental Consultants Ltd, 2011. Development Brief for the Marsa Thermal Treatment Facility, Noise Report. San Gwann, March 2012; v + 14pp + 2 Appendices.

**PLEASE CONSIDER YOUR ENVIRONMENTAL RESPONSIBILITIES BEFORE
COPYING THIS REPORT**

Quality Assurance

Development Brief Marsa Thermal Treatment Facility April 2012

Report for: **WasteServ Malta Ltd**

Revision Schedule

Rev	Date	Details	Written by:	Checked by:	Approved by:
00	March 2012	1st Draft	Rachel Xuereb Director	Krista Farrugia Consultant	Kevin Morris Director

File ref: G:\ADI\EIA Screening\Marsa Thermal Treatment Facility\Noise\Adi Associates MTTF noise report FINAL to client.doc



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CONTENTS

Introduction.....	1
Noise Monitoring.....	4
Competence of Surveyor	4
Area of Influence	4
Standards and Guidance	4
Equipment and Measurements	4
Noise Monitoring Locations	5
Methods for Assessing Noise Levels Arising from the Operation of the Scheme.....	6
Baseline Conditions: Noise.....	7
Noise measurements.....	7
Determining impact significance	11
Noise.....	11
Impact assessment: Noise	11
Potential impacts	11

FIGURES

Figure 1: Site Layout.....	3
Figure 2: Noise Sensitive Receptor	9
Figure 3: Noise sensitive receptors identified in the IPPC Application for the MTTF.....	10

TABLES

Table 1: BS 4142 Assessment Criteria	6
Table 2: Recorded sound levels at the sensitive receptor.....	7
Table 3: Summary of noise survey results from 2005	8
Table 4: Equivalent dB(A) levels.....	11
Table 5: Predicted noise level at the 3 sensitive receptors	14

APPENDICES

- Appendix 1: Noise specification for the shredder
- Appendix 2: Noise Method Statement

NOISE REPORT

INTRODUCTION

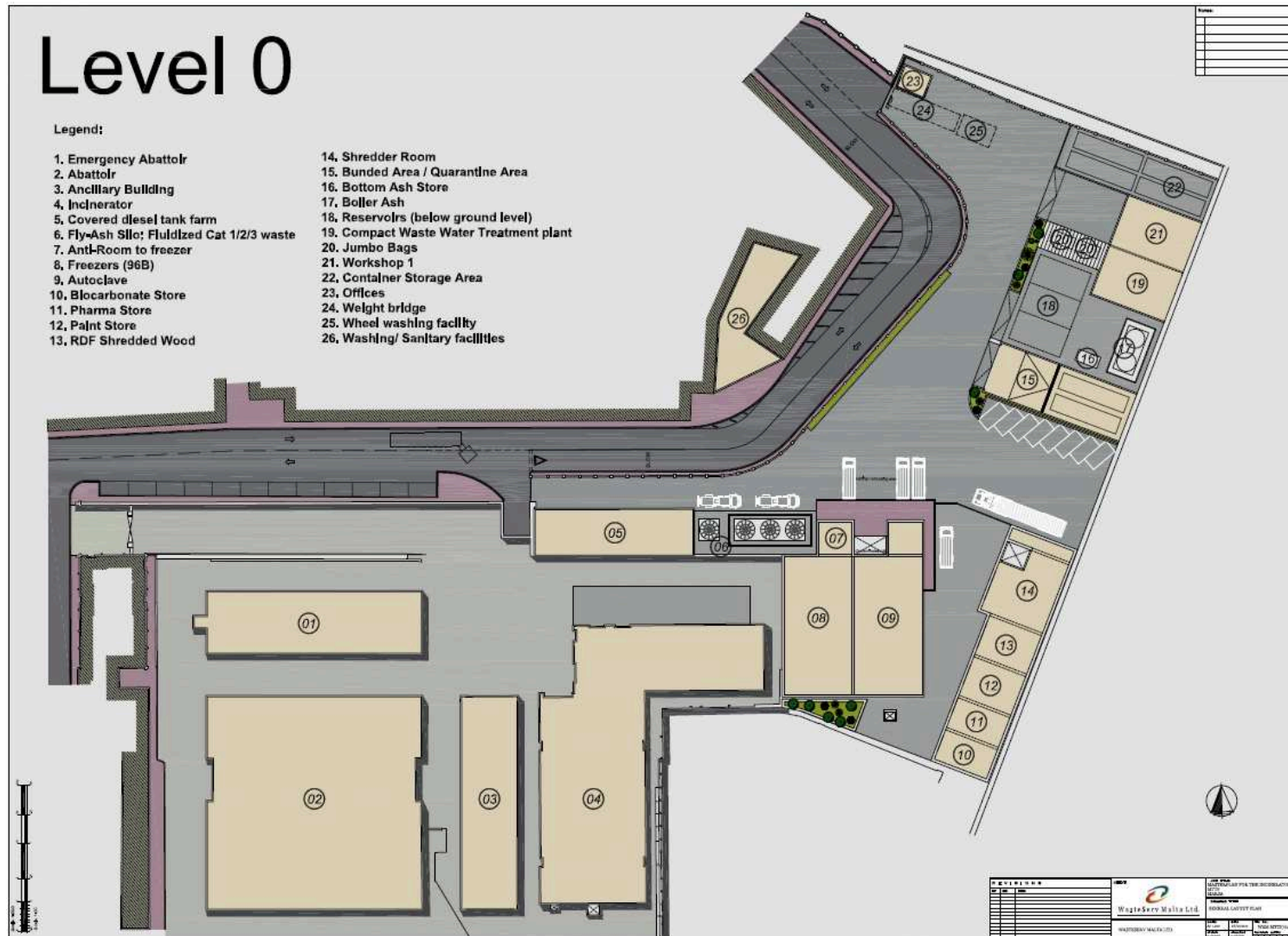
1. This Report provides information on the noise monitoring input to the Development Brief related to the extension of the Marsa Thermal Treatment Facility as requested by MEPA.
2. It concludes that the predicted background noise level at the noise sensitive receptor is not likely to increase by 5dB(A) as a result of the installation of the proposed plant at the MTTF.
3. This noise assessment stems from MEPA's request to WasteServ in a letter from MEPA dated 27th October 2011 (MEPA Ref: EPD/A/RD/11/432) Annex I, item 7 that states:

An assessment of whether noise emissions from the combined existing and new proposed activities (e.g. shredding of animal by-products) could cause the level of noise emitted from the installation to exceed the background noise level by 5dB needs to be submitted. Monitoring shall be carried out according to the latest revisions of ISO 1996 and the rating of industrial noise affecting residential areas shall be according to BS 4142. Monitoring shall be performed exclusively using a type 1 sound level meter.

4. The proposed development comprises the following elements, as described in the Development Brief:
 - Extension of the facility boundary to include the area currently occupied by a waste management facility;
 - Installation of plant to provide an alternative treatment for some of the waste streams currently treated by incineration;
 - Introduction of dedicated storage for clinical waste;
 - Installation of a wheel washing facility;
 - Consolidation of bin washing facilities;
 - Creation of a storage area for clean bins;
 - Establishment of a shredder area and storage area for shredded wood and Refuse Derived Fuel (RDF);
 - Establishment of a paint storage area;
 - Introduction of a fly ash silo;

- Establishment of a sodium bicarbonate storage area;
 - Establishment of a dedicate storage area for pharmaceutical waste;
 - Establishment of an area to be used for the cooling of bottom ash generated by the facility;
 - Establishment of a wastewater treatment plant; and the
 - Creation of organised parking facilities for employees and visitors.
5. The proposed layout is shown in **Figure I** below.
6. The principal source of noise is the shredder (building I4 on Figure I).

Figure I: Site Layout



NOISE MONITORING METHODOLOGY

Competence of Surveyor

7. The noise assessment has been carried out by Adi Associates.

Area of Influence

8. The Area of Influence is extends to the sensitive receptor as shown in **Figure 2**.

Standards and Guidance

9. Guidance on environmental noise in the context of planning is not available specific to the situation in Malta. However, in situations where standards are not available, the Authority generally makes reference to ISO standards and / or the equivalent guidance from the UK. In respect of noise, therefore, it is appropriate to refer to the ISO 1996 and to the British Standards. In the latter regard BS 4142¹, BS 5228², and the UK Department for Communities and Local Government (formerly Office of the Deputy Prime Minister) Planning Policy Guidance Note, PPG24, *Planning and Noise*³ are relevant. ISO 1996⁴ will be taken into account in accordance with Annex II of the Environmental Noise Directive (2002/49/EC).

Equipment and Measurements

10. The background noise level was established by undertaking daytime and night time surveys at one noise monitoring location. This location is shown on **Figure 2**.
11. A Type I Cirrus Sound Level Meter (Model no. CR: 811C) was used to take the baseline readings. L_{Aeq} , L_{max} , L_{A10} and L_{A90} .
 - L_{Aeq} is the 'A' weighted average or residual noise;
 - L_{max} and L_{A10} are used to assess traffic related noise; and
 - L_{A90} indicates the background noise (ambient).
12. Measurements and procedures were in accordance with BS 4142:1997.
13. Paragraphs 5.1 to 5.5 of BS 4142 give guidelines on measurement practice. These require calibration of the instrument and give guidelines in choosing measurement

¹ BS 4142:1997, *Method for rating industrial noise affecting mixed residential and industrial areas*, British Standards Institution.

² BS 5228: 2009, *Code of practice for noise and vibration control on construction and open sites*, British Standards Institution.

³ DCLG (UK), Planning Policy Guidance PPG 24, *Planning and Noise*, September 1994.

⁴ ISO 1996, *Acoustics - Description, measurement and assessment of environmental noise*, International Organisation for Standardization

locations as well as on taking precautions against interference with the measurements, particularly from inclement weather. These guidelines were used in order to undertake measurements.

Noise Monitoring Locations

14. Key to assessing the impacts of noise arising from the operation of the Scheme is the proximity of the noise-sensitive land uses and activities. The noise monitoring location is identified in **Figure 2**: the property off Triq il-Princep Bertu to the south of the Scheme. This monitoring location was identified in the EIA prepared for PA2201/01 wherein 4 sensitive receptors were identified (see **Figure 3**). This sensitive receptor is a residence; it is susceptible to day and night time noise. It is deemed the closest of the four sensitive receptors identified in the EIA that would be affected by the proposals described in the Development Brief. In the EIA, it was also the sensitive receptor that registered the lowest background noise levels without the operation of the plant.
15. It was agreed with MEPA that the worst case impact for the other noise sensitive locations (as identified in **Figure 3**) would also be assessed. It was also agreed that this would be done using the current baseline data at the sensitive receptor to validate the predicted sound levels described in the IPPC
16. Noise was measured continuously at the following times:
 - 6am to 11am;
 - 4pm to 7pm; and
 - 11pm to midnight.
17. In deciding on the monitoring periods, we were guided by the purpose of the assessment to determine whether the proposed plant would cause the background sound levels to increase by 5 db(A) or more. Given that we will be assuming that the sound emissions from the proposed plant are those emitted when all of the plant is operating at its daytime / night time *modus operandi* (day or night depending on whether the assessment being undertaken is the day or night impact) the sound will be constant. And given that we are assessing the worst case, we have selected monitoring periods when the background sound levels of the area around the MTTF are likely to be at the lowest and, therefore, the area (and sensitive receptors) are at the most sensitive, both in the day time and at night time. In this respect, the early morning and afternoon/evening period will cover the start up / shut down time of the noisy plant of the proposed facilities, and the 11pm to midnight period will cover the quiet time, well after the noisy plant of the proposed facility (the shredder) would have shut down.

Methods for Assessing Noise Levels Arising from the Operation of the Scheme

18. BS 4142:1997 provides a method for rating external noise levels from factories, industrial premises or fixed installations of an industrial nature, to determine the likelihood of complaints from occupants of nearby residential properties. The methods are also applicable to the assessment of noise impacts on nearby residential properties arising from uses such as those proposed in the Scheme.
19. The method is based on the difference between the background noise level without the source (expressed as the L_{A90} , the noise level exceeded for 90% of the time period of interest) and the noise level of the source at the receiver location (expressed as the L_{Aeq} , the equivalent continuous noise level, or energy average, over the period of interest). The noise level from the source (known as the specific noise level) can be weighted by 5 dB if it displays an identifiable character (such as tonality, impulsiveness, or intermittency). The background noise level is then subtracted from the rating level (the specific noise level plus any weighting for character) and the difference used to assess the likelihood of complaints, as shown in **Table 1** below.

Table 1: BS 4142 Assessment Criteria

Difference	Assessment	Significance
10 dB or higher	Complaints likely	Major
5 dB	Of marginal significance	Minor
Less than 5 dB	The lower the value the less likelihood of complaints	Not significant
- 10 dB below background	Positive indication that complaints are unlikely	Major (beneficial)

BASELINE CONDITIONS: NOISE

Noise measurements

20. The actual sound level measurements for each location and predominant noise sources are shown in **Table 2**. The parameters measured were: L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} . Although not shown in the table, $L_{Aeq,60}$ (sixty minutes) is used for daytime studies while $L_{Aeq,05}$ (five minutes) is used for night-time studies in accordance with BS4142:1997.
21. During measurement it was noted that traffic on Triq Princep Bertu was particularly high due to the fact that there were road works in the area and traffic was routed through this street. The measured noise was noted to be attributable to traffic noise, mainly.

Table 2: Recorded sound levels at the sensitive receptor

Time	L_{Aeq} dB(A)	L_{Amax} dB(A)	L_{A90} dB(A)	L_{A10} dB(A)
6:00-7:00	62	85	51	63
7:00-8:00	66	99	52	64
8:00-9:00	64	99	52	66
9:00-10:00	67	100	53	67
10:00-11:00	67	91	54	69
16:00-17:00	67	89	53	70
17:00-18:00	69	94	55	72
18:00-19:00	67	88	54	70
23:00-00:00	56	73	52	59

22. Noise measurements that were taken in 2005⁵ are reproduced in **Table 3**.

⁵ AIS Environmental and SLR Consulting, 2005, Environmental Planning Statement for an Incinerator at the Public Abattoir, Marsa. Final Draft pp 82 (accepted by MEPA).

Table 3: Summary of noise survey results from 2005

Location	Distance from Scheme	Period	L _{Aeq60}	L _{Amax}	L _{A10}	L _{A90}	Predominant noise source
Property on the corner of Triq Renfrew to the east of the Scheme	275 metres	26/02/2002 14:03 to 15:33	69.7	93.4	70.4	53.8	Traffic
		26/02/2002 23:42 to 23:57	51.7	63.2	52.7	50.5	Equipment from nearby winery and cold storage
Property off Triq il-Princep Bertu to the south of the Scheme	245 metres	26/02/2002 12:02 to 13:32	55.5	76.3	58.1	49.8	Traffic and fan from cold storage
		26/02/2002 23:16 to 23:31	54.4	75.9	50.8	45.7	Fan from cold storage
School on Xatt il-Mallijiet to the west of the Scheme*	170 metres	27/02/2002 08:58 to 10:28	63.0**	112.4	67.1	56.6	Traffic and school activities
Property on Triq it-Tigrija to the north west of the Scheme	470 metres	27/02/2002 10:38 to 12:38	64.9	90.7	66.6	58.9	Traffic
		27/02/2002 22:55 to 23:20	62.2	84.4	62.2	55.7	Traffic

Figure 2: Noise Sensitive Receptor

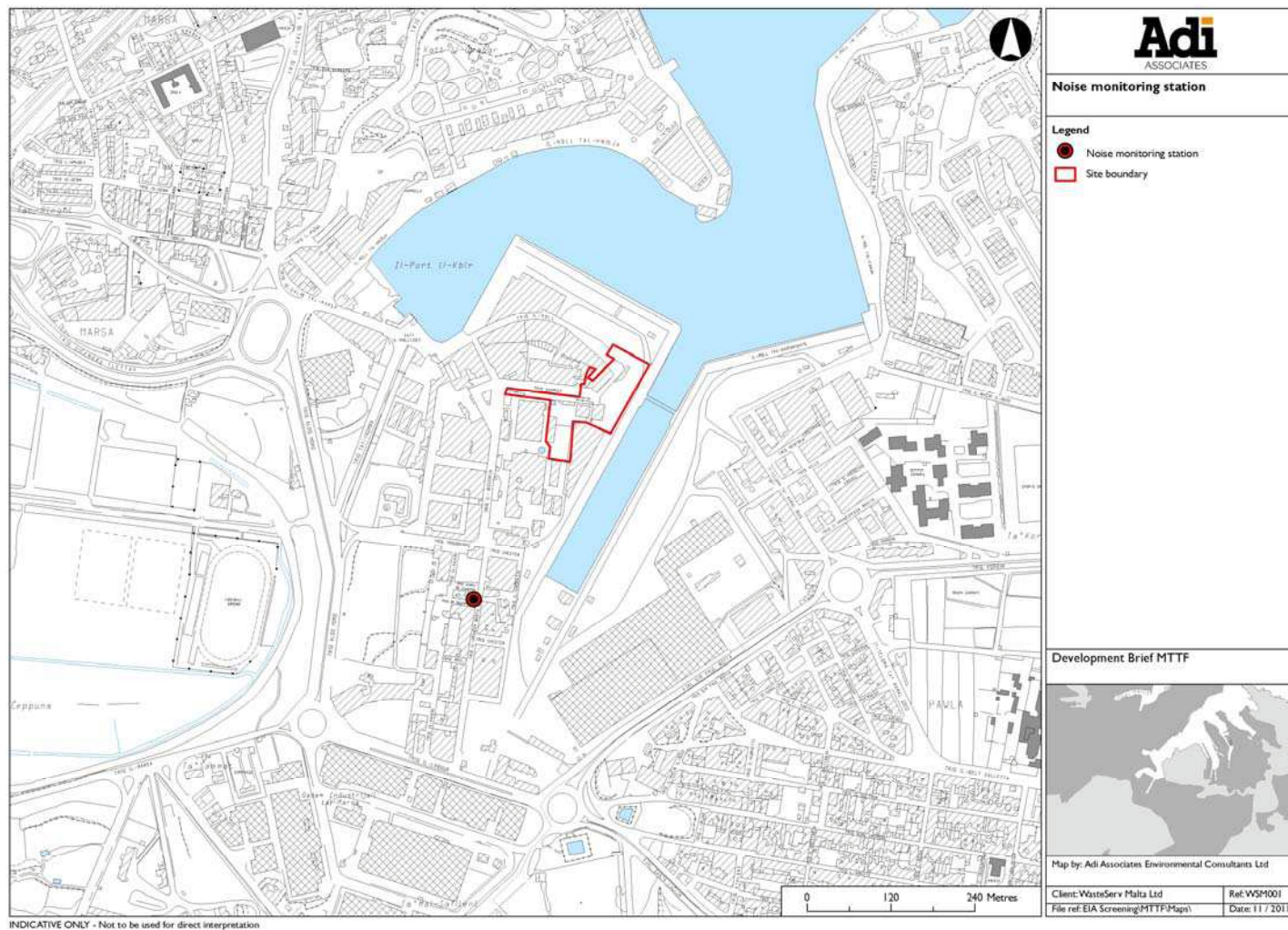
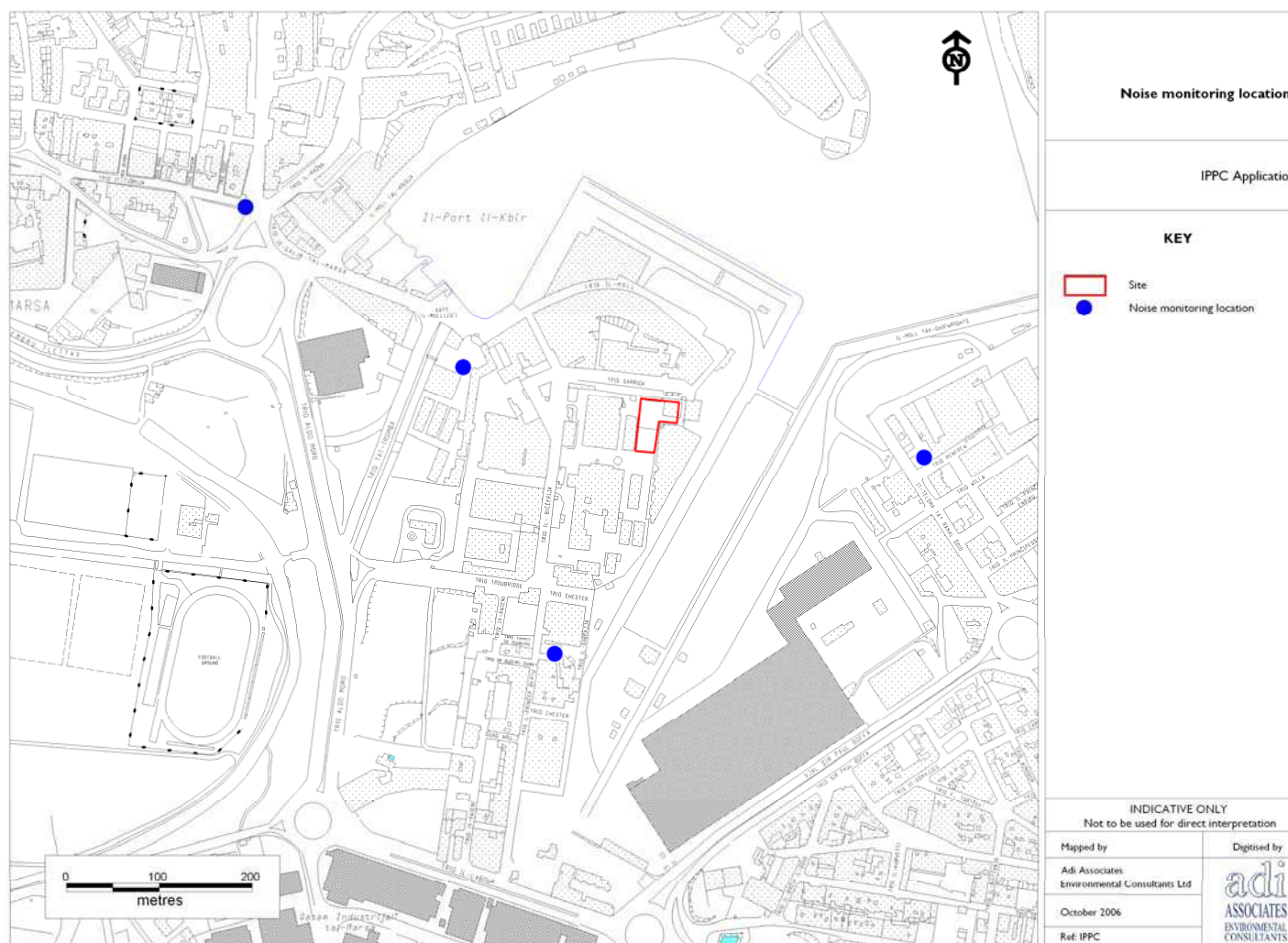


Figure 3: Noise sensitive receptors identified in the IPPC Application for the MTF



DETERMINING IMPACT SIGNIFICANCE

Noise

23. The following criteria have been used to assess the significance of impacts of the Scheme on the noise climate of the Area of Influence:
- **Not significant** (e.g. no material change in noise climate - a change of less than 3dB to the background noise levels);
 - **Minor significance** (e.g. a change between 3 and 10dB to the background noise levels - such a change would be noticeable but would not usually give rise to widespread complaints);
 - **Major significance** (e.g. a change of 10dB or higher to the background noise levels as predicted at the noise sensitive receptor - such a change is likely to adversely affect the sensitive noise receptors in the vicinity of the site, and give rise to widespread complaints).
24. **Table 4** provides an indication of the loudness of sound pressure levels measured in dB(A), in order to give an idea of typical noise levels.

Table 4: Equivalent dB(A) levels

Noise environment	Typical dB(A)
Library	30 to 35 dB(A)
Living room	40 to 45 dB(A)
Office	60 to 65 dB(A)
Heavy road traffic	75 to 80 dB(A)
Pneumatic drill	100 dB(A)

Source: Bruel & Kjaer chart

IMPACT ASSESSMENT: NOISE

Potential impacts

25. The potential impacts associated with the Scheme include noise disturbance during construction and operation at the sensitive receptors.
26. In order to determine the cumulative noise of all the plant proposed to be installed, the sound pressure levels of all the plant was provided by the suppliers of the equipment and supplemented by on site measurements.
27. In terms of significant noise sources of the proposed installation, the noisiest equipment is the shredder. From data provided by the suppliers of the equipment it is apparent that there will be no additional noise generated by the creation of a storage area for clean bins, the establishment of a paint storage area, the fly ash silo, the sodium bicarbonate storage area, the storage area for pharmaceutical waste, and the area to be used for the cooling of bottom ash generated by the facility. Only minimal noise will be generated from the wastewater treatment plant, the wheel

wash facility, the bin washing facility, and the storage area for clinical waste. The creation of an organised parking facility for employees and visitors will not produce additional noise as the installation is not expected to generate significant additional traffic movements.

28. The suppliers of the shredder provided noise information for it (see **Appendix I**). However, the noise level provided refers to when the proposed machine is not shredding any material. This is not considered sufficient for the purposes of the assessment. Consequently, to obtain the measurements of the sound levels that the proposed shredder would generate when shredding, the consultants measured the noise level of the existing shredder that is located within the main incinerator building, and which has performance characteristics similar to the proposed shredder. The noise level was also measured when the machine wasn't working. Five minute measurements were taken.
29. The noise generated when the existing shredder was operating was 78 dBA at a distance of 5.6 metres from the shredder. It was also noted that the type of noise was not constant especially when material was being shredded – a banging noise was evident. When the shredder was off, the noise level at 5.6m from the shredder was approximately 70 dBA. It was further noted that outside the shredding room, at a distance of about 15 metres, the noise could not be heard.
30. Using data from Appendix I, the worst case LA_{eq} at a distance of one metre from the shredder is 77 dBA. In order to take account of the impulse noise (i.e., the “banging” noise that is typical of the shredder when it is shredding material), BS4142:1997 section 8.2B recommends that 5dB are added to the sound pressure level. This gives the rating level at 1 metre from the shredder of 82dBA.
31. Since the shredder will be contained in a building, it is relevant to estimate the sound pressure level outside the building that would result from the shredder when it is operating. This is done by estimating the attenuation of the building. Assuming that the building is constructed using 10cm thick concrete blocks (as a worst case scenario), the sound level of the shredder at 1 metre from the façade of the sealed building is estimated to be 38dBA⁶.
32. However, it is likely that sound will escape from the building and it is possible that the shredder could be operated with the door open; meaning that the attenuation afforded by the building itself will not be fully effective. It is estimated that at the open door of the shredder building, some 2 metres from the shredder, the sound pressure level will be 76dBA. This is based on the logarithmic relationship for the transmission of sound ($L_p = L_w - 20 \log_{10} r - 8$)⁷, (with every doubling of distance the sound pressure level falls by 6 dB).

⁶ This is calculated using the Sound Transmission Class (STC) of a single layer of a 4 inch brick wall with no insulation. The STC of such a wall is 44 dBA (see <http://www.stcratings.com/masonry.html>). This means that this type of wall reduces the sound by 44 dBA.

⁷ Where L_p is the sound pressure level, L_w is the sound power level, and r is the distance.

33. Using this same logarithmic relationship of attenuation over distance to estimate the noise at the sensitive receptor, the estimated noise level attenuates from 76dB(A) at the open door of the shredder to 28dBA at the noise sensitive receptor.
34. The operation of the proposed shredder will not, therefore, cause the background sound level at the noise sensitive receptor to change.
35. WasteServ, the operators of the MTTF also confirmed that, as a result of the proposed additions to the facility as described in the Development Brief, additional traffic is likely to be in the order of 5 vehicles a day. Considering that the EIA was based on a traffic flow of 15-20 vehicles a day, the addition of another 5 vehicles is not expected to significantly affect the noise climate.
36. Taking account of the noise climate already pertaining at the MTTF, as a worst case wherein the current shredder operates with open doors, results in a combined (current plus proposed) MTTF sound emissions of 79dB(A). This sound level attenuates over distance to 31dB(A) at the noise sensitive receptor, which is significantly lower than the background noise level (L_{A90} 51 – 54dB(A) / 46 – 50dB(A) in 2012 and 2005 respectively).
37. As agreed with MEPA in the development of the Method Statement (Appendix 2), the changes to the background noise level identified at the noise sensitive receptor would be applied to the other three noise monitoring points identified in the IPPC. These sensitive receptors are shown in **Figure 3**. Our surveys at the noise sensitive receptor (2012) showed that the background noise levels increased by up to 5dB(A) between 2005 and 2012. This increase is attributed to an increase in traffic resulting from traffic diversions associated with nearby road works; it is not attributed to MTTF operations. Taking this into account and the fact that due to attenuation over distance noise from the MTTF would not affect sound levels at the noise sensitive receptor, there are no grounds to review the 2005 background sound levels at the IPPC noise monitoring points.
38. The Method Statement also indicated that we would take a view as to the impacts on the other three monitoring points described in the EIA for PA2201/01 (as reproduced also in the IPPC Application).
39. The distance-attenuated combined sound levels of the current and proposed plant at the three noise monitoring locations are shown in **Table 5**. In all cases the worst case sound levels resulting from the operation of the current MTTF and the proposed extensions thereto will not cause the background sound levels to increase.

Conclusion

40. Taking a worst case scenario described above, the operation of the current and the proposed plant at the MTTF is unlikely to cause the background noise level at the noise sensitive receptor to increase by 5dB(A).

Table 5: Predicted noise level at the 3 sensitive receptors

Location	Distance from Scheme	L_{A90} (as measured in 2005)	Predicted sound as a result of the MTTF as its proposed extension (dBA)
Property on the corner of Triq Renfrew to the east of the Scheme	275 metres	53.8	31
		50.5	
School on Xatt il-Mallijiet to the west of the Scheme	170 metres	56.6 (daytime only)	37
Property on Triq it-Tigrija to the north west of the Scheme	470 metres	58.9	31
		55.7	

Appendix I: Noise specification for the shredder

SANT'ANDREA⁺
NOVARA

Rilievo di rumorosità

La prova è stata eseguita in sala prove trituratori con macchina a vuoto: non è possibile una misurazione con materiali specifici in quanto, per tipologia di prova, si creano picchi di rumore difficilmente misurabili come livello sonoro equivalente.

La prova è stata eseguita secondo norma ISO EN 11202 (ex ISO 1202).

Le condizioni di prova sono le seguenti:

- rumore di fondo 55dBA
- fattore di riverbero non misurabile

La superficie di misura è stata scelta a forma di parallelepipedo con le facce distanti un metro dagli ingombri massimi della macchina.

Per la misurazione si è usato un fonometro BRÜEL & KJÆR tipo 2203 unitamente ad un analizzatore in bande di ottava tipo 1613 calibrati con pistonofono BRÜEL & KJÆR tipo 4220 a 124 dB su scala "Lin".

Il rilievo per banda di ottava e in dBA è stato eseguito su quattro punti.



ATTENZIONE

Si consiglia vivamente il personale operante di indossare le cuffie di protezione per evitare danni alla salute dovuti all'esposizione prolungata.

Il diagramma in allegato mostra l'analisi in frequenza.

Noise measurement

The measurement has been made in shredders testing room with machine operating without materials: a measurement with specific materials is impossible because the noise comes out discontinuously and therefore the Noise Equivalent Level has no sense.

Test has been made according to ISO EN 11202 (ex ISO 1202).

Test conditions are the following:

- ground noise 55dBA
- clutter factor not measurable

Testing surface has been chosen with a parallelepiped form with faces at one meter distance from machine overall dimensions.

Measurement has been taken with a phonometer BRÜEL & KJÆR type 2203 with a band analyzer type 1613 gauged with a pistonophone BRÜEL & KJÆR type 4220 at 124 dB on scale "Lin".

Band and dBA measurements have been taken on four points.

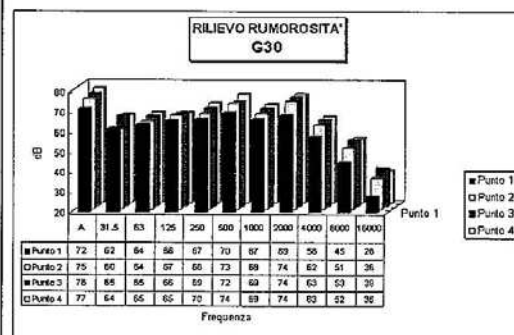


WARNING

Operating staff is advised to wear the protection headphone to avoid health damages due to extended exposition.

Enclosed diagram shows frequency analysis.

Figura 3 - Rilievo di rumorosità



Rumore di fondo = 55 dBA

Fattore di riverbero non misurabile.

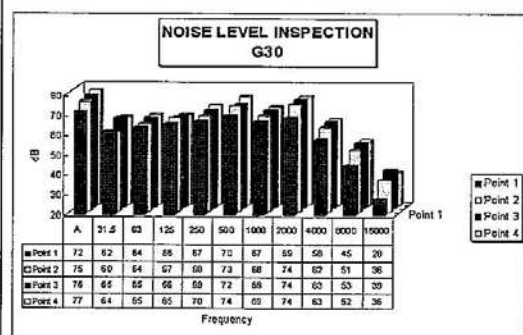
Rilievi eseguiti con:

FONOMETRO BRÜEL & KJÆR Tipo 2203

ANALIZZATORE B&K bande d'ottava Tipo 1613

I quattro punti di misura sono situati a un metro di distanza e a un metro d'altezza dalle quattro facce laterali della macchina.

Picture 3 - Noise level inspection



Ground noise = 55 dBA

Clutter factor not measurable.

Inspection made by:

PHONOMETER BRÜEL & KJÆR Type 2203

ANALYZER B&K octave band Type 1613

Measurement points are located at one meter from the side walls of machine and at one meter of height.

Appendix 2: Noise method statement



DEVELOPMENT BRIEF FOR THE MARSA THERMAL TREATMENT FACILITY

NOISE BASELINE METHOD STATEMENT

Version 1 (November 2011)



Report Reference:

Adi Associates Environmental Consultants Ltd, 2011. Development Brief for the Marsa Thermal Treatment Facility, Noise Method Statement. San Gwann, November 2011; v + 9pp.

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Quality Assurance

Development Brief
Marsa Thermal Treatment Facility
November 2011

Report for: **WasteServ Malta Ltd**

Revision Schedule

Rev	Date	Details	Written by:	Checked by:	Approved by:
00	Nov 2011	1st Draft	Rachel Xuereb Director	Krista Farrugia Consultant	Kevin Morris Director

File ref: G:\ADI\EIA Screening\Marsa Thermal Treatment Facility\Noise\Adi Associates MTF noise method statement.doc



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CONTENTS

INTRODUCTION.....	1
AREA OF INFLUENCE	2
NOISE MONITORING	4
Competence of Surveyor	4
Standards and guidance.....	4
Equipment and Measurements.....	4
Noise monitoring locations	5
Methods for Assessing Noise Levels Arising from the Operation of the Scheme.....	5
IDENTIFICATION OF POTENTIAL IMPACTS.....	6
PREDICTION OF IMPACTS.....	6
IMPACT SIGNIFICANCE	6
MITIGATION	7

FIGURES

Figure 1: Site Layout.....	3
Figure 2 Noise Sensitive Receptor	9

NOISE MANAGEMENT METHOD STATEMENT

INTRODUCTION

1. This method statement provides information on the noise monitoring as input to the Development Brief related to the extension of the Marsa Thermal Treatment Facility as requested by MEPA.
2. This noise assessment stems from MEPA's request to WasteServ in MEPA letter dated 27th October 2011 (MEPA Ref: EPD/A/RD/11/432) Annex I, item 7 that states:

An assessment of whether noise emissions from the combined existing and new proposed activities (e.g. shredding of animal by-products) could cause the level of noise emitted from the installation to exceed the background noise level by 5dB needs to be submitted. Monitoring shall be carried out according to the latest revisions of ISO 1996 and the rating of industrial noise affecting residential areas shall be according to BS 4142. Monitoring shall be performed exclusively using a type 1 sound level meter.

3. The proposed development comprises the following elements as described in the Development Brief:
 - Extension of the facility boundary to include the area currently occupied by a neighbouring waste management facility;
 - Installation of a rendering plant to provide alternative treatment for some of the waste streams currently treated by incineration;
 - Introduction of dedicated storage for clinical waste;
 - Installation of a wheel washing facility;
 - Consolidation of bin washing facilities;
 - Creation of a storage area for clean bins;
 - Establishment of a shredder area and storage area for shredded wood and Refuse Derived Fuel (RDF);
 - Establishment of a paints storage area;
 - Introduction of a fly ash silo;
 - Establishment of a sodium bicarbonate storage area;
 - Establishment of a dedicated storage area for pharmaceutical waste;
 - Establishment of an area to be used for the cooling of bottom ash generated by

the facility;

- Establishment of a wastewater treatment plant; and
- Creation of organised parking facilities for employees and visitors.

- 4 The proposed layout is shown in **Figure 1** below.
- 5 The largest source of noise is the shredder (building 14 on Figure 1).

AREA OF INFLUENCE

- 6 The Area of Influence will be determined following the noise monitoring survey by taking into account the maximum noise levels likely to arise from the construction and operation of the Scheme and the distance required for the levels to fade to 63dB(A)¹ or 5dB(A) above the background levels, whichever is the greater.

¹ PPG24 Annex 1 indicates that the free-field level at the boundary between NEC B and NEC C should be 63dB(A). NEC = Noise Exposure Category. NEC B is where noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure adequate protection against noise. NEC C is where planning permission should not normally be granted. 63dB(A) is equivalent to the noise level arising from conversational speech or in a business office.

Figure 1: Site Layout



NOISE MONITORING

Competence of Surveyor

7. The noise assessment will be carried out by Adi Associates in consultation with Mr John Demanuele, Grad. I.A.P., Building.

Standards and Guidance

8. Guidance on environmental noise in the context of planning is not available specific to the situation in Malta. However, in situations where standards are not available, the Authority generally makes reference to ISO standards and /or the equivalent guidance from the UK. In respect of noise, therefore, it is appropriate to refer to the ISO 1996 and to the British Standards. In the latter regard BS 4142², BS 5228³, and the UK Department for Communities and Local Government (formerly Office of the Deputy Prime Minister) Planning Policy Guidance Note, PPG24, *Planning and Noise*⁴ are relevant. ISO 1996⁵ will be followed in accordance with Annex II of the Environmental Noise Directive (2002/49/EC).

Equipment and Measurements

9. The background noise level will be established by undertaking daytime and night time surveys at 1 noise monitoring location. This location is shown on Figure 2
10. A Cirrus Sound Level Meter (Model no. CR: 811C) will be used to take the baseline readings. L_{Aeq} , L_{max} , L_{A10} and L_{A90} will be reported.
 - L_{Aeq} is the 'A' weighted average or residual noise;
 - L_{max} and L_{A10} are used to assess traffic related noise; and
 - L_{A90} indicates the background noise (ambient).
11. Measurements and procedures will be in accordance with BS 4142:1997.
12. Paragraphs 5.1 to 5.5 of BS 4142 give guidelines on measurement practice. These require calibration of the instrument and give guidelines in choosing measurement locations as well as on taking precautions against interference with the measurements, particularly from inclement weather.

² BS 4142:1997, *Method for rating industrial noise affecting mixed residential and industrial areas*, British Standards Institution.

³ BS 5228:2009, *Code of practice for noise and vibration control on construction and open sites*, British Standards Institution.

⁴ DCLG (UK), Planning Policy Guidance PPG 24, *Planning and Noise*, September 1994.

⁵ ISO 1996, *Acoustics - Description, measurement and assessment of environmental noise*, International Organisation for Standardization

Noise Monitoring Locations

- 13 Key to assessing the impacts of noise arising from the operation of the Scheme is the proximity of the noise-sensitive land uses and activities. The noise monitoring location is identified in **Figure 2**
- 14 It is proposed that noise is monitored at the following noise sensitive receptor: the property off Triq il-Princep Bertu to the south of the Scheme (See **Figure 3**). This monitoring location was taken from the EIA prepared for PA2201/01 wherein 4 sensitive receptors were chosen. This sensitive receptor is a resident, so it susceptible to day and night time noise. It is deemed the closest sensitive receptor that would be affected by the proposals described in the development Brief. In the EIA, it was also the sensitive receptor that registered the lowest background noise levels without the operation of the plant. We will also take a view as to the impacts on the other three monitoring points described in the EIA for PA2201/01 (as reproduced also in the IPPC Application).
- 15 Noise will be measured continuously at the following times:
 - 6am to 11am;
 - 4pm to 7pm; and
 - 11pm to midnight.

Methods for Assessing Noise Levels Arising from the Operation of the Scheme

- 16 BS 4142 provides a method for rating external noise levels from factories, industrial premises or fixed installations of an industrial nature, to determine the likelihood of complaints from occupants of nearby residential properties. The methods are also applicable to assessing the impacts of noise on nearby residential properties arising from uses such as those proposed in the Scheme.
17. The method is based on the difference between the background noise level without the source (expressed as the L_{Aeq} , the noise level exceeded for 90% of the time period of interest) and the noise level of the source at the receiver location (expressed as the L_{Aeq} , the equivalent continuous noise level, or energy average, over the period of interest). The noise level from the source (known as the specific noise level) can be weighted by 5dB if it displays an identifiable character (such as tonality, impulsiveness, or intermittency). The background noise level is then subtracted from the rating level (the specific noise level plus any weighting for character) and the difference used to assess the likelihood of complaints, as shown in **Table 1** below.

Table 1: BS 4142 Assessment Criteria

Difference	Assessment	Significance
10dB or higher	Complaints likely	Major
5dB	Of marginal significance	Minor

Less than 5dB	The lower the value the less likelihood of complaints	Not significant
- 10dB below background	Positive indication that complaints are unlikely	Major (beneficial)

- 18 If noise monitoring shows that the noise generated by the activities on site during a specific stage of construction are below the background noise levels at any of the monitoring points indicated, the monitoring will be discontinued for as long as there is no change in the construction work stage. Monitoring will be recommenced once a new stage is commenced.

IDENTIFICATION OF POTENTIAL IMPACTS

- 19 The sensitive noise receptor has been identified in order to site the noise monitoring location point. The potential impacts arising from the operation of the Scheme on this sensitive receptor is likely to include potential noise disturbance to local users in the vicinity of the Scheme.

PREDICTION OF IMPACTS

- 20 The potential impacts listed above will be examined and noise references established for the noise sensitive areas. These will provide a basis for comparison between the existing conditions and the conditions established when the Scheme as described in the Development Brief is operating.

IMPACT SIGNIFICANCE

21. This section will include for each potential impact the following information:
- Description of impact;
 - Policy importance of impact (Local, National, International);
 - Extent of effect ;
 - Duration of impact (temporary/permanent);
 - Adverse or beneficial impact;
 - Reversible/irreversible impact;
 - Sensitivity of receptor (residential dwelling, office, etc.);
 - Probability of impact occurring (certain, likely, uncertain, unlikely, remote); and
 - Scope for mitigation/enhancement (very good, good, none).

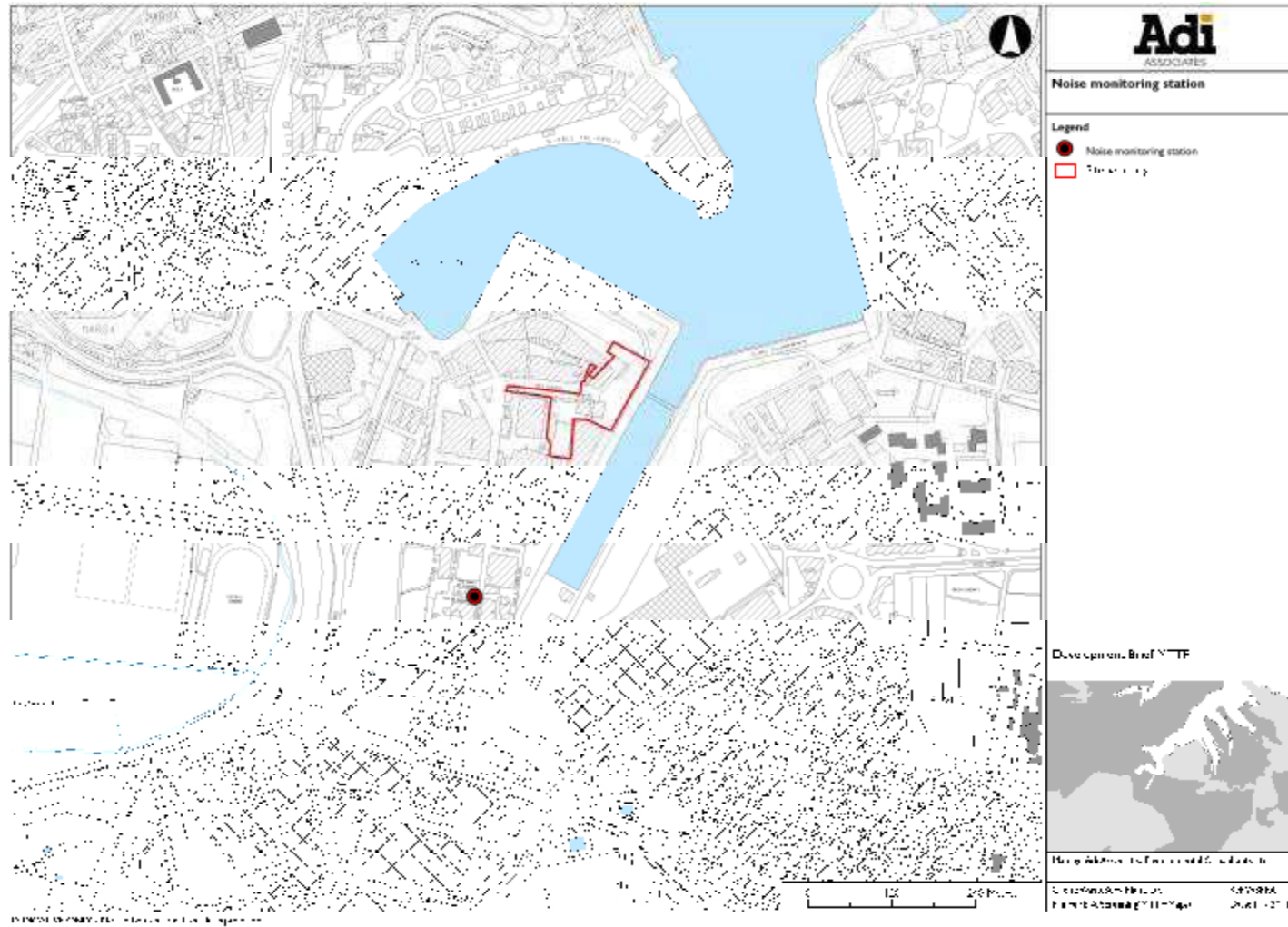
- 22 Based on the above criteria, a summary of the significance of the impact will be judged in terms of whether the impact is considered not significant, of minor significance, or of major significance.

MITIGATION

- 23 The scope for mitigation will be identified.

Adi Associates Environmental Consultants Ltd
November 2011.

Figure 2 Noise Sensitive Receptor



ANNEX 16