



# Study on the Noise Emissions from Marsa Thermal Treatment Facility

Fulfilling the requirements of contract

WSMQ 050/441/2021

## Noise Impact Assessment



Study on the Noise Emissions from Marsa Thermal  
Treatment Facility

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# 1 INTRODUCTION

A noise assessment is hereby presented in relation to the noise levels being emitted from Marsa Thermal Treatment Facility (hereafter referred to as TTF/the Site).

It is understood that the TTF Site is fully operational, and the assessments are required as part of periodic monitoring requirements stipulated in the IPPC permit (IP0004/07/B) of a hazardous and animal by product waste incinerator operated by WasteServ Malta Ltd.

The assessment is based on environmental noise surveys undertaken at locations within the Site boundaries and at locations representative of the identified receptors outside the Site boundary.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is necessarily technical in nature. To assist the reader, a glossary of terminology is provided in **Appendix A**.

## 2 THERMAL TREATMENT FACILITY

### 2.1 PLANT OPERATION OVERVIEW

#### 2.1.1 Overview

The TTF is considered an important national project on a national scale, especially since it involves the thermal incineration of animal waste, collected from the adjacent abattoir or private farms nationwide.

#### 2.1.2 The Incineration Process

WasteServ Thermal Treatment Facility (TTF) comprises of two waste management facilities: waste incineration and autoclaving.

Whilst the incineration process was originally intended for the destruction of animal by-products and clinical waste, the incinerator may accept a variety of waste types according to the IPPC permit in place for TTF. The process starts with the collection of waste contained in bins, which are then placed in the shredded waste marshalling area, lined up for incineration (assuming plant is in operation). The waste marshalling shed is well-enclosed by fast acting roller shutter doors to minimize stench from the decaying process. More so, since February 2023, air from the Marshalling Area, Shredder Room and Autoclave Plant Room is treated using an Ionizer.

If the plant is down due to the need to conduct necessary maintenance, the waste is stored in the freezers/reefers until the plant is back on – highly decomposable material waste, such as animal by-products, is given priority for storage in freezers/reefers.

When the incinerator is powered, and operating at normal operational conditions, the waste is brought out from marshalling shed (or freezer/reefer) and gradually inserted in the incinerator. This incineration process gives rise to flue gas emissions and ashes.

The autoclave process, which resumed operation in April 2023, involves shredding of carcasses and animal-by-products, and pumping the material into a pressure vessel for the autoclave process. The autoclaving process increases temperature and pressure to render the material. The resulting material is converted to bonemeal and tallow. The bonemeal constitutes of defatted/ rendered, dried animal matter that are ground to a powder. Tallow is the rendered fat of carcasses and animal-by-products.

The regenerative thermal oxidizer (RTO), which began its operation in parallel with the autoclave plant, processes air from those Autoclave processes which contribute to heavy odour (unloading of cooked products from the autoclave chamber and during the pressing process).

It is therefore understood that the below constitute the key noise sources associated with operations of the development:

- The incinerator
- The autoclave

- The support equipment within industrial shed (furnace, conveyor belt and motor system, ionisers, pumps, gas cooler and air compressors)
- The RTO (including blowers)
- The WasteWater Treatment Plant (including blowers)



## 2.2 SITE DESCRIPTION

The TTF is situated in a built-up industrialised area of Marsa, better known as Albert Town. Although there are no significant identified residential receptors in the immediate vicinity, potentially sensitive development in the surrounding was identified during the preliminary noise impact assessment submitted by Ecoserv on behalf of WasteServ during the permitting process (Source: Ecoserv Ltd. April 2017 - WSM Q52/2016 - Thermal Treatment Facility Noise Monitoring Study 3).

All receptors were confirmed as valid receptors during this assessment.

Although no residential areas are within close proximity of the incinerator plant facility, it was considered that operational noise levels could potentially affect a variety of neighbouring facilities and daytime users (typically non-resident workers).

Sixteen (16) receptor locations were identified, these 16 receptor locations were selected following approval by Wasteserv, after initially leaving it at the discretion of EcoServ during the permitting phase.

It was considered that these receptors include areas of influence and perhaps dominance over existing noise sources, as well as sensitive receptor spots such as offices, factories, warehouses, and other industrial activities in the vicinity. It has been proposed to replicate these identified receptor locations for this further assessment.

## 2.3 RECEPTORS

From the information provided, the previously identified receptor and measurement locations relevant to the Site are shown on Figure 1.

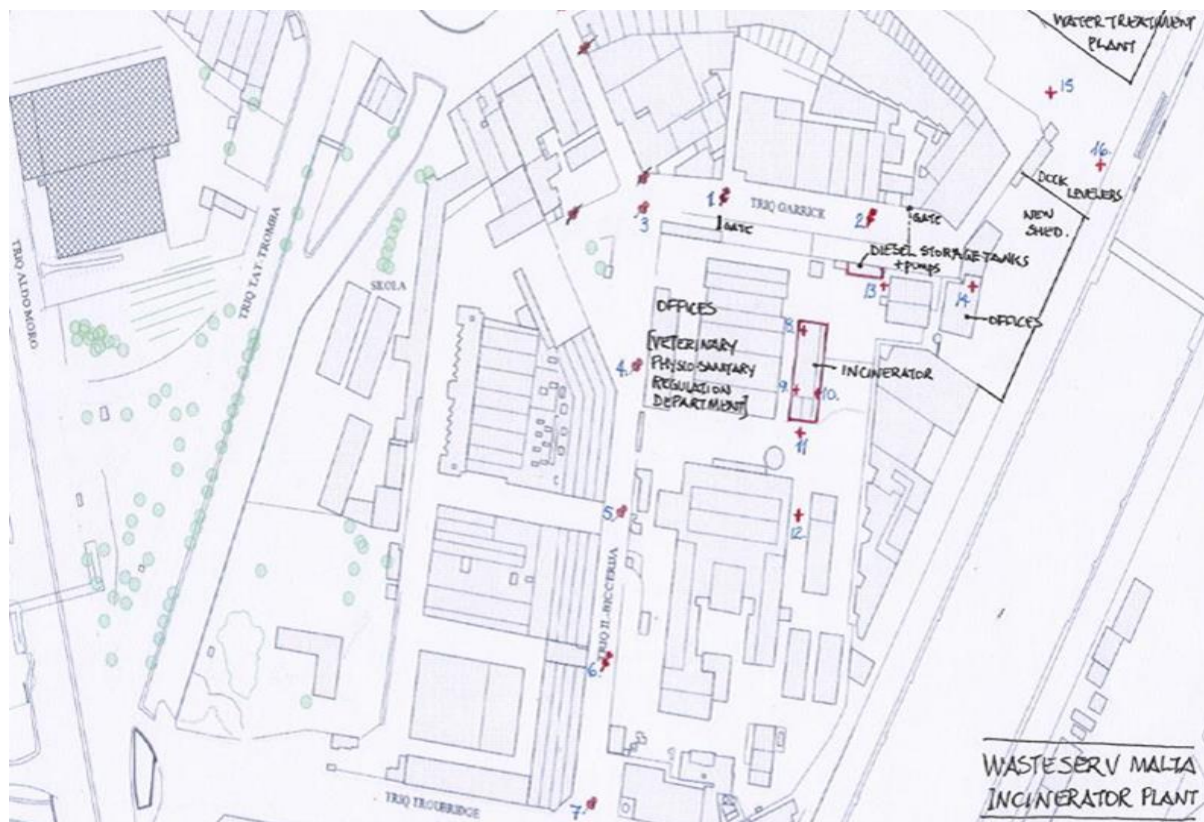


FIGURE 1: RECEPTOR LOCATIONS (FIGURE PROVIDED BY WASTESERV MALTA)

Measurement locations, and descriptions are further detailed in Table 1 below. It should be noted that measurement locations 8-16 are within the Site boundary of the TTF site and have therefore been captured for discussion purposes and are presented in **bold** in the same table.

TABLE 1: RECEPTOR AND NOISE MONITORING LOCATIONS

Measurement Location	Description of Receptor
1	Adjacent to slush ice factory
2	Opposite diesel storage facility
3	Opposite Main Gate to WSM Facility
4	Veterinary offices
5	Opposite abattoir arched stone gate
6	Opposite fish market gate
7	Crossroads intersection
8	<b>Inside shed, incinerator entry point</b>
9	<b>Inside shed, behind incinerator silos</b>
10	<b>Just outside shed, near access door</b>
11	<b>Close proximity (3m) to two large extractor fans.</b>
12	<b>Within site, but southernmost point (close to abattoir)</b>
13	<b>Just outside admin office block</b>
14	<b>Inside offices corridor</b>
15	<b>Near wastewater treatment facility</b>
16	<b>Warehouse shed, near dock levellers</b>

### 3 ASSESSMENT SCOPE AND METHODOLOGY

#### 3.1 SCOPE

It has been noted within the tender documentation that the prior noise survey assessment from 2017 produced by Ecoserv Ltd (Ref: WSM Q52.16 – Marsa Incinerator Noise Survey Report) discussed the dB  $L_{Aeq}$ , equivalent average noise levels with the incinerator in an operational, and non-operational condition.

The tender documentation for this re-assessment states the following in Section C Clause 2.1 (V):

*“Noise monitoring shall confirm whether the level of noise emitted from the installation at all operational times does not exceed the background noise level by 5dB.”*

Furthermore, the tender states:

*“Noise indices to be measured should be  $L_{Aeq}$  for noise sources, and  $L_{A90}$  for sensitive receptors (in line with BS4142:2014). It must be noted that the baseline noise readings were reported in  $L_{Aeq}$  [dBA] in the Noise Monitoring Survey report. The assessment methodology should also be in line with BS 4142:2014, section 11”*

It should be noted that BS4142:2014 was superseded by BS4142:2014+2019, however the core elements of Section 11 are not dissimilar and are reproduced above in Section 3.1 and primarily focus on the magnitude and significance of noise impact.

A summary of BS4142:2014+A1:2019 is provided below.

#### 3.2 BRITISH STANDARD 4142:2014+A1:2019 (BS4142)

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* (BS4142), is used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby noise-sensitive receptor locations within the context of the existing sound environment.

Where the specific sound contains tonality, impulsivity and/or other sound characteristics, penalties should be applied depending on the perceptibility. For tonality, a correction of either 0, 2, 4 or 6dB should be added and for impulsivity, a correction of either 0, 3, 6 or 9dB should be added. If the sound contains specific sound features which are neither tonal nor impulsive, a penalty of 3dB should be added. In addition, if the sound contains identifiable operational and non-operational periods, that are readily distinguishable against the existing sound environment, a further penalty of 3dB may be applied.

The assessment of impact contained in BS4142, is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the noise-sensitive receptor location. Consideration is then given to the context of the existing sound environment at the noise-sensitive receptor location to assess the potential impact.

Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142 states that the following should be considered:

- typically, the greater the difference, the greater the magnitude of the impact.
- a difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- a difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. It is an indication that the specific sound source has a low impact, depending on the context.

BS4142 notes that:

*“Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”*

Furthermore, it outlines guidance for the consideration of the context of the potential impact, including consideration of the existing residual sound levels, location and/or absolute sound levels. To account for the acoustic character of proposed sound sources, BS4142 provides the following with respect to the application of penalties to account for *“the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention”*.

**Tonality** – *“For sound ranging from not tonal to predominantly tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible and 6dB where it is highly perceptible;*

**Impulsivity** – *A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible;*

**Intermittency** – *When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied; and*

**Other Sound Characteristics** – *Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.”*

Finally, BS4142 outlines guidance for the consideration of the context of the potential impact, including consideration of the existing residual sound levels, location and/or absolute sound levels.

### 3.3 PROPOSED ASSESSMENT METHODOLOGY

Noting the guidelines described above, it is reasonable to consider the “noise change” with and without the development in operation at the identified receptor measurement locations as per the 2017 assessment produced by Ecoserv Ltd to maintain continuity between assessments.

In instances where noise changes remain lower than +5dB in the  $L_{Aeq, T}$  ambient noise level with and without the TTF in operation, no significant impacts are considered to have occurred. Where exceedances of this criterion occur, additional analysis and discussion is provided.

**Note:** BS4142 might be considered for assessment of residential, education and on occasion commercial office receptors. Generally, the immediate surround to the TTF in Marsa is industrial in nature. On this basis the sensitivity of said receptors would be considered lower and the above methodology is considered acceptable for assessing any change in noise generated by the TTF within the industrialised surround.

## 4 NOISE MONITORING SURVEY

### 4.1 INTRODUCTION

The surveying principles within this section have been agreed with the ERA and are in line with the assessment requirements outlined within BS4142. This report includes noise monitoring surveys undertaken in March and April of 2023.

### 4.2 MONITORING LOCATIONS

Attended noise monitoring was undertaken at 16 monitoring locations as described in Table 1.

### 4.3 EQUIPMENT

Sound pressure level measurements were carried out using the following equipment listed in Table 2, confirming to Class 1 acoustic accuracy for sound level meters and calibrators.

TABLE 2: SOUND MONITORING EQUIPMENT

Description	Serial No.
Svantek 977C Sound Level Meter	98030
Svantek SV12L Preamplifier	116661
MTG MK255 Microphone	20763

The sound level meter was calibrated before and after the measurements using the handheld acoustic calibrator, and no significant drift was observed. The calibration chain of equipment has been maintained as at least traceable to National Standards, no greater than one year for sound calibrators and two years for sound level meters.

#### 4.3.1 Weather Conditions

The weather conditions were monitored during all the noise surveys and included average wind speeds significantly below 5 m/s for the duration of the study. Therefore, the data is considered suitable for the assessment.

#### 4.3.2 Noise Indices Recorded

The following noise indices were recorded during each monitoring period at each survey location.

- $L_{Aeq,T}$  The A-weighted equivalent continuous noise level over the measurement time period.
- $L_{A90}$  The A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe background noise.
- $L_{Amax,f}$  The maximum A-weighted (fast) noise level during the measurement period.

- **L<sub>APeak</sub>** The peak instantaneous A-weighted (fast) noise level during the measurement period.

#### 4.4 SURVEY PROTOCOL

The measured noise levels were undertaken in the following eight scenarios as summarised in Table 3.

TABLE 3: SURVEY SCENARIOS

PERIOD	SCENARIO	DATE/TIME
Weekday Daytime	TTF On	2023/03/22
Weekday Daytime	TTF Off	2023/03/23
Weekday Night-time	TTF On	2023/03/17
Weekday Night-time	TTF Off	2023/03/21
Weekend Daytime	TTF On	2023/03/05
Weekend Daytime	TTF Off	2023/04/20
Weekend Night-time	TTF On	2023/03/03
Weekend Night-time	TTF Off	2023/03/24

The measurements each of the 8 scenarios detailed are summarised in **Appendix B** to this report to allow for a concise assessment. Full survey notes and commentary are available on request.

#### 4.5 SOUNDSCAPE

At the monitoring locations, detailed notes were made regarding all audible sources. This included operational noise from the Site, along with residual noise sources such as road traffic and other industrial sources.

The principal noise climate in the vicinity largely comprises industrial sources in the surround with occasional car and HGV movements both distant and in the nearfield.

#### 4.6 MEASUREMENT LOCATION OVERVIEW

Measurement locations 1-7 were outside the Site boundary and representative of the nearest receptors which were all commercial or industrial in nature.

Measurement locations 8 – 16 were within the Site boundary and captured noise associated with the TTF in the nearfield, as well as noise levels from general operations within the site boundary.

##### 4.6.1 Measurement Uncertainty

To reduce measurement uncertainty the following steps have been taken:

- The measurement locations were selected to be representative of the background noise level at the receptors, in the absence of noise from the Site by undertaking measurement in the absence of operations from the TTF as well as during its operation.



- In accordance with guidance, the sound level meter was mounted vertically on a tripod 1.2m above the ground.
- Noise measurements have been carried out over various time periods, throughout the daytime and evening.
- The noise measurements were undertaken during dry weather and with wind speeds of less than 5m/s.
- The results of each measurement period have been reported to the nearest 1dB.
- Noise measurements were made using a Class 1, integrating sound level meter.

## 5 ASSESSMENT AT RECEPTOR/MEASUREMENT LOCATIONS

The purpose of a BS4142 assessment procedure is to assess the significance of sound of an industrial in nature and/or commercial nature to sensitive occupied receptors such as residential dwellings or educational facilities.

The surround is predominantly commercial and industrial, offices will typically be uncopied at night and measurement locations are therefore not considered particularly noise sensitive at night.

Where noise change is negative this is a clear indicator that the TTF is not a significant contributor of noise at the measurement position, where the noise change is less than +5dB the impact on the surround because of operation of the TTF is not considered significant as per the requirements of the scope of works.

Where exceedances of the criterion are found these are discussed separately.

The tables below summarise the noise change assessment with the TTF both in and out of operation in the four key scenarios

- Weekday Daytime.
- Weekday Night-time
- Weekend Daytime; and
- Weekend Night-time

The results of the assessment are shown in Table 4 to Table 7 overleaf, where the change is noise level is greater than +5dB these results are shown in **bold**.

## 5.1 TIME PERIOD SPECIFIC IMPACT ASSESSMENT

TABLE 4: NOISE CHANGE ASSESSMENT-WEEKDAY DAYTIME

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, DB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING DB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL DB	DISCUSSION
<b>Daytime-Weekday</b>				
1	60	55	+5	Less than or equal to +5dB noise change.
2	65	63	+2	
3	67	65	+2	Car, HGV and other activity not related to Wasteserv, reported during the “TTF On” scenario expected to have influenced measurements and therefore the change in noise levels.
4	65	67	-2	TTF clearly not a significant contributor at receptor on the basis equivalent continuous noise levels are higher in its absence due to other sources in the surround.
5	64	65	-1	Less than or equal to +5dB noise change.
6	68	63	+5	
7	64	61	+3	Car movements reporting during the “TTF On” scenario expected to have influenced measurements and therefore the change in noise levels
8	77	72	+5	Less than or equal to +5dB noise change
9	82	82	0	
10	82	81	+1	
11	89	85	+4	
12	72	68	+4	
13	59	60	-1	TTF clearly not a significant contributor at receptor on the basis equivalent continuous noise levels are higher in its

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, DB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING DB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  DB	DISCUSSION
				absence due to other sources in the surround.
<b>14</b>	69(52)	58	-6	It was noted that pedestrian pass by at the meter location early in the measurement period significantly influenced the measured level, when this pedestrian pass by of the meter is omitted and the continuous operational noise source is considered in isolation, the L <sub>Aeq</sub> , during the "TTF On" scenario is calculated at 52dB L <sub>Aeq, T</sub> .
<b>15</b>	69	69	0	Less than 5dB noise change.
<b>16</b>	65	63	+2	It is noted that Position 15 is in proximity to the Waste Water treatment works which is noise generating.

**Note:** it should be recognised that locations 8-16 are within the TTF site boundary and under the management of WasteServ therefore noise control measures if required, relate to noise exposure in the workplace and operator health and safety.

It can be seen from Table 4 that at all the measurement locations during the weekday daytime period, the change in noise levels when the Site was operating compared to when it was not operating was equal or less than +5dB.

TABLE 5: NOISE CHANGE ASSESSMENT-WEEKDAY NIGHT-TIME

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL dB	DISCUSSION
<b>Night-time-Weekday</b>				
1	50	55	-5	Less than +5dB noise change.
2	60	66	-6	
3	43	52	-9	
4	51	52	-1	Background residual noise levels higher in absence of TTF, thus other sources dominant.
5	53	54	-1	Less than or equal to 5dB noise change.
6	58	51	<b>+7</b>	Background residual noise levels higher in absence of TTF, thus other sources dominant
7	44	54	-10	Car movements reporting during the “TTF On” scenario expected to have influenced measurements and therefore change in noise levels.
8	73	72	+1	Less than +5dB noise change.
9	77	71	<b>+6</b>	
10	74	69	<b>+5</b>	
11	66	57	<b>+9</b>	Less than or equal to 5dB noise change at locations 8, 10 and 12 to 16.
				With regards to locations 9 and 11 it should be considered that noise change >5dB within the site boundary is not necessarily indicative of the noise impact or noise change at receptors

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL dB	DISCUSSION
				outside the boundary, as significant difference in noise levels within the Site should not be an unusual expectation between the “TTF on” and “TTF off” assessment scenario.
<b>12</b>	65	67	-2	
<b>13</b>	50	56	-6	
<b>14</b>	44	49	-5	
<b>15</b>	62	68	-6	
<b>16</b>	56	65	-9	

**Note:** it should be recognised that locations 8-16 are within the TTF site boundary and under the management of WasteServ therefore noise control measures if required, relate to noise exposure in the workplace and operator health and safety.

It can be seen from Table 5 that at all the measurement locations, except for at Locations 7, 9 and 11, during the weekday night-time period there change in noise levels when the Site was operating compared to when it was not operating was equal or less than +5dB.

With regards to Locations 9 and 11 they are located within the Site boundary and commentary has been provided regarding the exceedances in the Table.

With regards to Location 7 this is outside the Site boundary there was a change in noise levels greater than +5dB when the Site was operational; however, it was noted that at this location during the operation of the Site that road traffic movements influenced the measured levels and therefore the change in noise levels. Consequently, it has been concluded that Site noise is not the cause of the change in noise levels at this location.

TABLE 6: NOISE CHANGE ASSESSMENT-WEEKEND DAYTIME

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, DB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING DB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL DB	DISCUSSION
<b>Daytime Weekend</b>				
1	58	54	+4	Equal or less than +5dB noise change. Car movements reporting during the “TTF On” scenario expected to have influenced measurements and therefore the change in noise levels
2	66	63	+3	
3	55	55	0	
4	60	58	+2	
5	65	61	+4	
6	60	60	0	
7	65	60	+5	
8	78	73	+5	It should be considered that noise change >5dB within the site boundary is not necessarily indicative of the noise impact or noise change at receptors outside the boundary, as significant difference in noise levels within the site should not be an unusual expectation between the “TTF on” and “TTF off” assessment scenario.
9	82	74	+8	
10	82	80	+2	
11	80	66	+14	
12	71	62	+9	
13	57	73	-16	
14	61	57	+4	
15	66	57	+9	
16	62	66	-4	

**Note:** it should be recognised that locations 8-16 are within the TTF site boundary and under the management of WasteServ therefore noise control measures if required, relate to noise exposure in the workplace and operator health and safety.

It can be seen from Table 6 that at all the measurement locations, except for at Locations 9, 11, 12 and 15, during the weekend night-time period the change in noise levels when the Site was operating compared to when it was not operating was equal or less than +5dB.

Locations 9, 11, 12 and 15 are within the Site boundary and commentary has been provided regarding the exceedances in the Table.

TABLE 7: NOISE CHANGE ASSESSMENT-WEEKEND NIGHT-TIME

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  dB	DISCUSSION
<b>Night-Weekend</b>				
1	67	56	<b>+11</b>	It is noted that during the daytime weekend period lower levels were measured with the TTF operating (58dB L <sub>eq, T</sub> ), as such this exceedance is clearly expected to be as a result of other noise sources. Mechanical services noise was noted, believed to be related to the Ice slush factory, as well as vehicle movements.
2	65	63	+2	Less than +5dB noise change.  Car movements reporting during the "TTF On" scenario expected to have influenced measurements and therefore the change in noise levels.
3	54	54	0	
4	55	55	0	
5	61	54	<b>+7</b>	Measured noise levels in "TTF on" scenario influenced by passing road traffic.  Car movements reported during the "TTF On" scenario expected to have influenced measurements and therefore the change in noise levels.
6	56	55	+1	Less than or equal to 5dB noise change. Note: Car movements reporting during the "TTF On" scenario



LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING, dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF NOT OPERATING dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  dB	DISCUSSION
				expected to have influenced measurements and therefore the change in noise levels.
7	66	51	<b>+15</b>	Measured noise levels with TTF operating influenced by passing road traffic.  Car movements reported during the “TTF On” scenario expected to have influenced measurements and therefore the change in noise levels.
8	81	64	<b>+17</b>	At locations 11, 12, 14, 15 and 16 noise change was seen to be less than or equal to 5dB noise change.
9	82	65	<b>+17</b>	
10	78	65	<b>+13</b>	
11	82	77	+5	With regard to locations 8, 9 10 and 13 It should be considered that noise change >5dB within the site boundary is not necessarily indicative of the noise impact or noise change at receptors outside the boundary, as significant difference in noise levels within the site should not be an unusual expectation between the “TTF on” and “TTF off” assessment scenario.
12	70	67	+3	
13	56	50	<b>+6</b>	
14	50	49	+1	
15	66	67	-1	
16	67	63	+4	

**Note:** it should be recognised that locations 8-16 are within the TTF site boundary and under the management of WasteServ therefore noise control measures if required, relate to noise exposure in the workplace and operator health and safety.

It can be seen from Table 7 that Locations 1, 5 and 7, which are outside the Site boundary there was a change in noise levels greater than +5dB when the Site was operational; however it was noted that at these locations during the operation of the Site that road traffic

movements influenced the measured levels and therefore the change in noise levels. Consequently, it has been concluded that Site noise is not the cause of the change in noise levels at these locations.

With regards to the Location within the Site boundary it can be seen that at Location 8, 9, 10 and 13 there was a greater than a +5dB change in noise levels when the Site was operating, and commentary has been provided regarding the exceedances in the Table.

## 5.2 SUMMARY 2023 IMPACT ASSESSMENT - OFF SITE LOCATIONS

The assessment of the off-site locations (Locations 1-7) has shown that in the vast majority of cases there was less than a +5dB change in the noise levels when the Site was operating compared to when it was not operating. It was also determined that where there was a change of +5dB or more, the cause of the exceedances was road traffic noise and not the Site itself.

However, a further assessment has been undertaken to consider the average noise change at measurement locations outside the Site boundary (Locations 1-7). This has been assessed by calculating the arithmetic average of the noise levels measured at Locations 1-7 whilst the Site was operating, and then comparing this figure to the arithmetic average of the noise levels measured at Locations 1-7 when the Site was not operating during each time period. This reproduces a similar assessment to the 2017 documentation provided by Ecoserv.

TABLE 8: ARITHMETIC AVERAGE NOISE CHANGE SUMMARY

LOCATION	ARITHMETIC AVERAGE AMBIENT SOUND LEVEL WITH TTF OPERATING, DB L <sub>AEQ</sub>	ARITHMETIC AVERAGE AMBIENT SOUND LEVEL WITH TTF NOT OPERATING DB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  DB	DISCUSSION
<b>Daytime-Weekday</b>				
1-7	65	64	+1	Less than 5dB average noise change.
<b>Night-time- Weekday</b>				
1-7	51	55	-4	Less than 5dB average noise change.
<b>Daytime-Weekend</b>				
1-7	63	61	+2	Less than 5dB average noise change.
<b>Night-time-Weekend</b>				
1-7	60	55	+5	5dB average noise change.

It can be seen from Table 5-5 that the arithmetic average changes in noise levels for locations 1-7 are equal or below +5dB.

It is also noted that at all locations outside the boundary, the Maltese upper limit for an industrialised area of 70dB L<sub>Aeq, T</sub> is not exceeded, as was found previously in the 2017 assessment.

### 5.3 NOISE IMPACT ASSESSMENT 2017 TO 2023 COMPARISON - ON SITE LOCATIONS

With reference to Table 4 to Table 7 it can be seen that in a number of cases the change in noise levels for the on-site locations (locations 8-16) was greater than +5dB. As mentioned prior in this report, this is not unexpected considering that the noise source in question is being turned off and then compared to the noise level it was operating at.

Further to the above, a comparison of the 2017 daytime and night-time measurements with the TTF in operation, against those captured in 2023 within the Site boundary (locations 8-16) has been made and is shown in Table 9 and Table 10. It should be noted that the measurements shown are for the weekday period only as no weekend data was included within the 2017 assessment.

TABLE 9: NOISE CHANGE ASSESSMENT-WEEKDAY DAYTIME 2023 TO 2017

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING 2023  dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING 2017  dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  dB	DISCUSSION
<b>Daytime-Weekday</b>				
<b>8</b>	77	79	-2	All 2023 source noise levels at key locations within Wasteserv boundary were found to be <b>not</b> significantly higher than source noise levels from 2017. With no more than 2dB noise change reported at position 13 (which is due to short term activity within the measurement period as detailed below).
<b>9</b>	82	82	0	
<b>10</b>	82	81	+1	
<b>11</b>	89	94	-5	
<b>12</b>	72	77	-5	
<b>13</b>	59	57	+2	Extraneous noise from people passing by the noise meter and a woodcutter were noted during the measurement at position 13, people passing by measurement position 14 was noted in both "TTF ON" scenarios from 2023 and 2017.
<b>14</b>	69	68	+1	
<b>15</b>	69	68	+1	
<b>16</b>	65	64	+1	

TABLE 10: NOISE CHANGE ASSESSMENT-WEEKDAY NIGHTTIME 2023 TO 2017

LOCATION	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING 2023  dB L <sub>AEQ</sub>	MEASURED AMBIENT SOUND LEVEL WITH TTF OPERATING 2017  dB L <sub>AEQ</sub>	ARITHMETIC DIFFERENCE LEVEL  dB	DISCUSSION
<b>Night-time-Weekday</b>				
<b>8</b>	73	79	-7	All 2023 source noise levels at key locations within Wasteserv boundary were found to be lower than from 2017, perhaps due to variation in intensity of site activities during the assessment period.
<b>9</b>	77	82	-5	
<b>10</b>	74	81	-7	
<b>11</b>	66	94	-28	
<b>12</b>	65	77	-12	
<b>13</b>	50	73	-23	
<b>14</b>	44	57	-13	
<b>15</b>	62	68	-7	
<b>16</b>	56	64	-8	

It is evident that within the Site boundary (locations 8-16) that operations are generally either below or within 2dB of those levels measured in 2017 which is considered within a reasonable tolerance. Where 2dB exceedance is noted at position 13, extraneous noise from people passing by, and a woodcutter are considered to have unduly influenced the source noise levels in the 2023 measurement at this position during the daytime. This indicates the intensity of noise impact has not changed significantly between 2017 and 2023.

This assessment is also strongly indicative that there is no significant change in the intensity of noise resulting from the Wasteserv TTF facility beyond the boundary also between 2017 and 2023.

## 5.4 DISCUSSION

It is noted in general terms that at locations outside the site boundary (locations 1-7) in most scenarios a noise change of <+5dB is experienced for each distinct position, where this is exceeded, this is deemed to be due to the external influence of other commercial or industrial activity and road traffic which was noted particularly during the daytime scenarios due to the variable surrounding noise climate and activity.

In many scenarios and measurements where significant off-site activity was not noted, the ambient noise level is indicated to be higher in the absence of the TTF in operation, thus strongly suggesting a low impact from operations of Wasteserv in the local context where other sources are more dominant in their influence on the surrounding soundscape.

In addition, when reviewed as an arithmetic average over locations 1-7 for the daytime scenario no noise change of more than 5dB was noted. Given the influence of extraneous activity unrelated to Wasteserv activities, this is still indicative of a noise change as a result of Wasteserv activities of less than 5dB.

Locations 8-16 are located within the Wasteserv site boundary, it is not really appropriate to assess noise impact to these locations with the same methodology given they are within the operational facility boundary.

However, as noted above, all source noise levels as a result of the Wasteserv TTF operations at locations 1-8 (as summarised in Table 9 and Table 10) when compared between the 2017 and 2023 scenario with the TTF in operation have not changed by more than +2dB (and in many cases are similar or lower). These results are not considered significant variation in context, and it is evident therefore that there has been no significant change in the intensity of operational noise as a result of the facility between 2017 and 2023.

Based on the findings of the individual location assessment and considering the average ambient noise level with and without the TTF in operation over measurement locations 1-7, it is considered that the facility does not substantially increase noise levels in the general vicinity of the site boundary on average by more than 5dB in any scenario.

It also should be noted that excluding the high noise levels (>70dBA) measured at the Locations 8, 9, 10, 11 and 12, which are located within the incinerator shed or close to noise generating processes, all the other measured noise levels at the remaining locations were acceptable for such a heavy industrial area in Marsa, as an upper limit of 70dB  $L_{Aeq}$  applies for industrial areas in Malta.

It is further noted that in terms of sensitivity, there are not believed to be substantially sensitive residential dwellings or educational facilities within the near vicinity of the site.

With regards to offices related to Wasteserv activities, prior mitigation remains that windows should remain closed, and mechanical ventilation afforded to protect occupants. The client has been advised separately regarding operator health and safety in noise terms.

## 5.5 IMPACT OF UNCERTAINTIES

Due to the nature of operations at the site, and variability in noise climate (which is predominantly industrial) in the surround, a reasonable and professional judgement has been made when undertaking the assessment, and while there could be a margin of uncertainty within the predictions, it is unlikely to change the overall findings of this assessment.

## 6 CONCLUSION

A noise impact assessment has been undertaken to consider the noise impact at the identified measurement locations from the prior permitting assessment undertaken by EcoServ.

In general terms outside the site boundary, it is not believed that noise levels associated with the TTF in operation increase ambient noise levels by more than +5dB.

It is noted that there are no residential receptors in the surround and furthermore that the influence of external or differing industrial and commercial noise sources has influenced measurements to some extent.

However, the variability of the noise climate including higher noise levels in the absence of the TTF in operation on some occasions is a further strong indicator of a low impact resulting from WasteServ operations.

## **APPENDIX A**

# Glossary of Terminology



The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

TABLE A-01  
SOUND LEVELS COMMONLY FOUND IN THE ENVIRONMENT

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

### Acoustic Terminology

**dB (decibel)** The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ( $2 \times 10^{-5}$  Pa).

**dB(A)** A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

**L<sub>Aeq</sub>** L<sub>Aeq</sub> is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

**L<sub>10</sub> & L<sub>90</sub>** If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L<sub>n</sub> indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L<sub>10</sub> is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L<sub>90</sub> is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L<sub>10</sub> index to describe traffic noise.

**L<sub>AFmax</sub>** This is the maximum A-weighted sound pressure level recorded over the period stated. L<sub>Amax</sub> is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L<sub>eq</sub>

noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

## **APPENDIX B**

# Full Survey Data

## APPENDIX B

## Survey Data

## WEEKDAY-DAYTIME-TTF ON

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
05/03/2023 11:11	00:15:00	7	108	87	53	65	55
05/03/2023 11:32	00:15:00	6	91	79	54	60	56
05/03/2023 11:51	00:15:00	5	101	87	54	65	56
05/03/2023 12:12	00:15:00	4	95	83	50	60	52
05/03/2023 12:30	00:15:00	3	84	70	50	55	52
05/03/2023 12:51	00:15:00	1	91	77	50	58	52
05/03/2023 13:13	00:15:00	2	89	74	63	66	64
05/03/2023 14:30	00:15:00	12	97	82	67	71	68
05/03/2023 15:01	00:15:00	11	110	97	73	80	74
05/03/2023 15:20	00:15:00	9	110	90	78	82	78
05/03/2023 15:40	00:15:00	10	109	95	73	82	75
05/03/2023 16:01	00:15:00	8	109	91	76	78	77

## WEEKDAY-DAYTIME-TTF OFF

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
23/03/2023 08:47	00:15:00	7	93	91	81	61	51
23/03/2023 09:06	00:15:00	6	95	93	85	63	51
23/03/2023 09:27	00:15:00	5	103	94	89	65	51
23/03/2023 09:43	00:15:00	4	118	96	91	67	50
23/03/2023 10:00	00:15:00	3	116	95	88	65	50
23/03/2023 10:16	00:15:00	1	88	85	74	55	51
23/03/2023 10:37	00:15:00	2	112	93	85	63	61
23/03/2023 11:00	00:15:00	15	115	99	91	69	66
23/03/2023 11:16	00:15:00	16	109	92	78	63	61
23/03/2023 11:34	00:15:00	14	94	88	81	58	49
23/03/2023 11:52	00:15:00	13	117	89	90	60	55
23/03/2023 12:50	00:15:00	8	99	102	86	72	71
23/03/2023 13:06	00:15:00	10	113	111	99	81	69
23/03/2023 13:23	00:15:00	11	117	115	103	85	74
23/03/2023 13:39	00:15:00	12	96	98	83	68	58

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
23/03/2023 08:47	00:15:00	9	111	111	94	82	76

## WEEKDAY-NIGHT-TIME-TTF ON

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
21/04/2023 23:22:52	15:00.0	7	78	66	44	40	78
21/04/2023 23:40:32	15:00.0	6	99	85	58	40	99
21/04/2023 23:58:11	15:00.0	5	901	77	5	45	91
22/04/2023 00:16:31	15:00.0	4	88	76	51	41	88
22/04/2023 00:34:39	15:00.0	3	85	68	43	42	85
22/04/2023 00:52:35	15:00.0	1	81	61	50	48	81
22/04/2023 01:11:23	15:00.0	2	82	64	60	58	82
22/04/2024 01:32:31	15:00.0	15	85	73	62	61	85
22/04/2023 01:48:23	15:00.0	16	83	61	56	54	83
22/04/2023 02:06:44	15:00.0	14	69	54	44	43	69
22/04/2023 2:24:37	15:00.0	13	78	62	50	50	78

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
22/04/2023 02:42:43	15:00.0	8	96	82	73	71	96
22/04/2023 02:59:03	15:00.0	9	106	93	77	74	106
22/04/2023 03:16:05	15:00.0	10	107	94	74	71	107
22/04/2023 03:32:50	15:00.0	11	94	81	66	65	94
22/04/2023 03:48:42	15:00.0	12	86	74	65	62	86

## WEEKDAY-NIGHT-TIME-TTF OFF

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
21/03/2023 23:09	00:15:00	7	100	84	80	54	48
21/03/2023 23:27	00:15:00	6	89	80	72	51	46
21/03/2023 23:45	00:15:00	5	92	84	76	54	49
22/03/2023 00:02	00:15:00	4	89	81	71	52	49
22/03/2023 00:20	00:15:00	3	77	81	67	52	50
22/03/2023 00:38	00:15:00	1	88	84	70	55	53
22/03/2023 00:57	00:15:00	2	82	96	69	66	65

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
22/03/2023 01:21	00:15:00	15	96	97	74	68	66
22/03/2023 01:37	00:15:00	16	88	94	70	65	62
22/03/2023 01:55	00:15:00	14	83	79	64	49	47
22/03/2023 02:13	00:15:00	13	92	86	73	56	55
22/03/2023 02:30	00:15:00	8	94	101	75	72	71
22/03/2023 02:46	00:15:00	9	89	101	72	71	70
22/03/2023 03:02	00:15:00	10	98	99	80	69	68
22/03/2023 03:18	00:15:00	11	94	87	73	57	55
22/03/2023 03:35	00:15:00	12	84	97	71	67	58

## WEEKEND-DAYTIME -TTF ON

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
05/03/2023 11:11	00:15:00	7	108	87	53	65	55
05/03/2023 11:32	00:15:00	6	91	79	54	60	56
05/03/2023 11:51	00:15:00	5	101	87	54	65	56
05/03/2023 12:12	00:15:00	4	95	83	50	60	52



START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
05/03/2023 12:30	00:15:00	3	84	70	50	55	52
05/03/2023 12:51	00:15:00	1	91	77	50	58	52
05/03/2023 13:13	00:15:00	2	89	74	63	66	64
05/03/2023 14:30	00:15:00	12	97	82	67	71	68
05/03/2023 15:01	00:15:00	11	110	97	73	80	74
05/03/2023 15:20	00:15:00	9	110	90	78	82	78
05/03/2023 15:40	00:15:00	10	109	95	73	82	75
05/03/2023 16:01	00:15:00	8	109	91	76	78	77
05/03/2023 16:21	00:15:00	13	82	65	54	57	55
05/03/2023 16:40	00:15:00	14	97	81	47	61	52
05/03/2023 17:12	00:15:00	15	95	73	57	66	65
05/03/2023 17:31	00:15:00	16	87	65	57	62	61

## WEEKEND-DAYTIME -TTF OFF

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
26/03/2023 10:07	00:15:00	7	108	87	53	65	55
26/03/2023 10:28	00:15:00	6	91	79	54	60	56
26/03/2023 10:47	00:15:00	5	101	87	54	65	56
26/03/2023 11:06	00:15:00	4	95	83	50	60	52
26/03/2023 11:33	00:15:00	3	84	70	50	55	52
26/03/2023 11:51	00:15:00	1	91	77	50	58	52
26/03/2023 12:11	00:15:00	2	89	74	63	66	64
26/03/2023 12:30	00:15:00	12	97	82	67	71	68
26/03/2023 13:41	00:15:00	11	110	97	73	80	74
26/03/2023 13:58	00:15:00	9	110	90	78	82	78
26/03/2023 14:18	00:15:00	10	109	95	73	82	75
26/03/2023 14:35	00:15:00	8	109	91	76	78	77
26/03/2023 14:55	00:15:00	13	82	65	54	57	55
26/03/2023 15:13	00:15:00	14	97	81	47	61	52
26/03/2023 15:30	00:15:00	15	95	73	57	66	65

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
26/03/2023 15:52	00:15:00	16	87	65	57	62	61

## WEEKEND NIGHT-TIME -TTF ON

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
03/03/2023 23:28	00:15:00	12	98	83	67	70	67
03/03/2023 23:53	00:15:00	11	112	99	73	82	76
04/03/2023 00:20	00:15:00	9	106	91	78	82	79
04/03/2023 00:45	00:15:00	8	117	105	76	81	77
04/03/2023 01:07	00:15:00	10	114	101	76	78	76
04/03/2023 01:30	00:15:00	13	80	65	55	56	55
04/03/2023 01:55	00:15:00	14	76	60	48	50	48
04/03/2023 02:17	00:15:00	15	78	67	66	66	65
04/03/2023 02:20	00:15:00	16	80	69	65	67	65
04/03/2023 02:40	00:15:00	2	90	67	60	65	63
04/03/2023 03:17	00:15:00	1	82	71	62	67	65
04/03/2023 04:20	00:15:00	3	80	69	50	54	52

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
04/03/2023 04:40	00:15:00	4	81	69	51	55	52
04/03/2023 05:00	00:15:00	5	96	84	51	61	52
04/03/2023 05:19	00:15:00	6	85	73	51	56	52
04/03/2023 05:46	00:15:00	7	104	94	50	66	52

## WEEKEND NIGHT-TIME -TTF OFF

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
24/03/2023 22:50	00:15:00	12	97	84	56.5	67	58
24/03/2023 23:08	00:15:00	11	108	95	61.5	77	63
24/03/2023 23:27	00:15:00	9	96	82	57.5	65	58
24/03/2023 23:47	00:15:00	10	95	82	57.9	65	58
25/03/2023 00:06	00:15:00	8	90	76	61	64	61
25/03/2023 00:30	00:15:00	13	87	66	46	50	47
25/03/2023 00:52	00:15:00	14	87	65	44.8	49	46
25/03/2023 01:16	00:15:00	15	81	70	66.1	67	66
25/03/2023 01:34	00:15:00	16	91	66	61.4	63	62

START DATE AND TIME	DURATION	RECEPTOR LOCATION	L <sub>APEAK</sub> DB	L <sub>AFMAX</sub> DB	L <sub>AFMIN</sub> DB	L <sub>AEQ</sub> DB	L <sub>A90</sub> DB
25/03/2023 02:00	00:15:00	3	86	73	47.3	54	49
25/03/2023 02:19	00:15:00	1	81	68	51.8	56	53
25/03/2023 02:43	00:15:00	2	79	65	60.4	63	61
25/03/2023 03:06	00:15:00	4	91	79	43.9	55	46
25/03/2023 03:25	00:15:00	5	92	79	44.5	54	47
25/03/2023 03:44	00:15:00	6	90	78	45.9	55	48
25/03/2023 04:07	00:15:00	7	95	76	43.8	51	45