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Baldovie EfW CHP facility

Noise study for parallel operation with existing MEB facility

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1 Situation and task

MVV Environment Baldovie Ltd (MEB) is building Baldovie Energy from Waste CHP facility at Dundee, Scotland.

The new plant will replace an existing facility, operated by MEB. The new plant will be set up south of the existing facility.

The capacity of incinerated waste of the new MEB plant will be in the same range as that of the existing MEB facility.

For the first period after erecting Baldovie Energy from Waste CHP facility, a parallel operation of Baldovie Energy from Waste CHP facility and existing MEB facility has to rated in terms of noise.

In order to determine the sound immission of the existing and of the new MEB plant running parallelly, this noise study has been carried out in order to estimate the sound pressure levels received from the plant.

Noise propagation calculations have been carried out by means of a digital 3D-model of the plant and following standardized procedures according to DIN ISO 9613-2 [9].

The basics for this noise study originate from Müller-BBM Note. No. M132032/02 of 2016-10-28 [1] and from Müller-BBM Report. No. M139854/02 of 2019-08-05 [2].

2 References

- [1] Müller-BBM Memo No. M132032/02 of 2016-10-28: New Waste To Energy Plant of MVV in Dundee: Comparison of Sound Emission of existing MVV Waste Incineration Plant in Dundee and its resulting Sound Immission in the Neighbourhood, with first Forecast of expected Sound Emission and Noise Contribution to the Neighbourhood from planned MVV Plant.
- [2] Müller-BBM Report No. M139854/02 of 2019-08-05: Baldovie EfW CHP Facility, Noise Mitigation Strategy considering Noise Mitigation Measures in terms of Best Available Technology.
- [3] Environmental Noise Investigation CC 6090B/11 by c-cheC of 20th April 2011.
- [4] Environmental Noise Investigation CC 6987/13 by c-cheC of 13th November 2013.
- [5] Environmental Noise Investigation CC 7553/15 by c-cheC of 8th October 2015.
- [6] Measurement Results Job R01 by ARUP of 4th October 2016.
- [7] Sound measurements at MEB plant on 19th and 20th of October 2016.
- [8] Cadna/A, Version 2019 (32 Bit, 64 Bit), Datakustik GmbH.
- [9] ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors. Part 2: General method of calculation. Draft issued September 1997.
- [10] EN 12354-4: Building Acoustics. Estimation of acoustic performance of buildings from performance of elements. Part 4: Transmission of indoor sound to the outside; German version EN 12354-4:2000.
- [11] ISO 3746: Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Survey method using an enveloping measurement surface over a reflecting plane. 2010-12.
- [12] DIN 45687: Akustik – Software-Ergebnisse zur Berechnung der Geräuschimmission im Freien – Qualitätsanforderungen und Prüfbestimmungen. 2006-05.
- [13] ISO 1996-2 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels. 2007-03.
- [14] BS 4142:2014. Methods for rating and assessing industrial and commercial sound. October 2014.
- [15] Müller-BBM Letter M139854/03 of 2019-01-17: Baldovie EfW CHP facility – Expert opinion concerning tonality in waste treatment plants in general.
- [16] Information from Oliver Kautz, MVV Environment Baldovie Limited to Jochen Sperber, Müller-BBM GmbH, concerning the parallel operation of both facilities.

3 Calculation model – general remarks and calculation procedures

3.1 Characteristics of acoustic sound emission

A characteristic feature of a sound source is the spectrum of its sound power level L_W . The sound power level in dB indicates the sound power W emitted by a sound source on a logarithmic scale, related to $W_0 = 10^{-12}$ Watt:

$$L_W = 10 \log (W/W_0) \text{ dB.}$$

In practice, a frequency weighting of the levels is usually carried out according to the standardized A-weighting curve, so that the spectral sensitivity of the human ear is taken into account. This is marked by the letter A in the index:

$$L_{WA} \text{ in dB(A).}$$

L_{WA} is called A-weighted sound power level. Its spectrum is given in octave bandwidth in this report.

3.2 Characteristics of noise at the points-of-interest (POIs)

The noise at the POIs is described by the sound pressure level (or simply: sound level) L in dB, which indicates the sound pressure p caused by a sound source on a logarithmic scale, normalized by the reference pressure $p_0 = 2 \cdot 10^{-5}$ N/m²:

$$L = 20 \log (p/p_0) \text{ dB.}$$

When using the A-weighting curve:

$$L_A \text{ in dB(A).}$$

L_A is called A-weighted sound pressure level or A-weighted sound level.

3.3 Sound propagation effects – meteorology

The sound propagation conditions which determine the A-weighted sound pressure levels caused by a sound source at a specific POI can vary significantly depending on the meteorological situation – in particular wind direction and velocity as well as the stability of the atmosphere have a pronounced impact. As a result, the sound pressure levels received at POIs at greater distances can differ accordingly. Usually, the highest A-weighted sound levels are measured if the wind blows towards the measuring position from the direction of the plant.

This situation with moderate wind speeds also leads to the highest reproducibility of measurements, i. e. the smallest variance of measured sound pressure levels at the POIs. Thus, the average downwind A-weighted sound pressure level $L_A(DW)$ (average downwind level) can be determined by only a few measurements and is the suitable measuring quantity for determining the sound pressure levels caused by the plant at a POI. Such a situation is given when the wind direction deviates by 45° at most from the connecting line between sound source and measuring position.

The A-weighted sound pressure level $L_A(LT)$, which is energetically averaged over a longer period, i. e. over all occurring wind directions (long-term average level), is smaller than the average downwind level $L_A(DW)$:

$$L_A(LT) = L_A(DW) - C_{\text{met}}.$$

The meteorological correction C_{met} , which can be calculated according to [9], depends on the distance d between sound source and measuring position, on the height of the sound source and the receiver as well as on the local weather statistics for wind velocity and direction. The latter effects are accounted for by the factor C_o (see [9]). If local weather statistics are available, they can be used as a basis for the calculation of the values of C_o . If no weather statistics are at hand, the calculation is usually made with a constant value of $C_o = 2$, which is independent of direction.

As the actual sound pressure levels at the POIs on site are to be confirmed by measurements when the plant will be in operation, the downwind level $L_A(DW)$ has been used in the calculations performed in this study, i. e. the meteorological correction C_{met} has been set to zero. This is a conservative approach.

3.4 Calculation of the noise at the POIs

If the acoustic emission of a sound source or part of a plant is known, the noise caused at a distance d can be calculated. The calculation method used by the acoustic model in this report is described in DIN ISO 9613-2 [9]. Calculation was performed frequency-dependent in octave bandwidth. From the octave-band spectrum L_W of a sound power level of a sound source, the expected average sound pressure level in downwind direction $L_f(DW)$ at a distance d of the sound source and at the octave-band frequency f was calculated according to the following equation:

$$L_f(DW) = L_W + D_c - A_{\text{div}} - A_{\text{atm}} - A_{\text{gr}} - A_{\text{bar}} - A_{\text{misc}}$$

with

D_c	directivity correction,
A_{div}	attenuation due to geometrical divergence,
A_{atm}	attenuation due to atmospheric absorption (at 20 °C and 50 % relative humidity),
A_{gr}	attenuation due to the ground effect,
A_{bar}	attenuation due to a barrier,
A_{misc}	attenuation due to miscellaneous other effects.

Regarding the attenuation A_{gr} due to the ground effect, [9] offers two methods:

- General method: frequency-dependent calculation, taking into consideration the acoustic properties of the ground area in the vicinity of the sound source, in the vicinity of the POI and in between. This method can be applied for all types of noise and for nearly even ground.
- Alternative method: calculation not depending on the frequency. This method can be applied for any type of ground if only the A-weighted sound pressure level at the reception point is of interest, if the sound propagation is mainly via porous ground, and if the sound is no pure tone.

In the calculations for this study, non-spectral ground attenuation has been considered, as the acoustic properties of the ground material are not known. This is considered an accepted procedure for noise predictions in environments like power plants, where constant broadband noise is dominating.

4 Calculation model – model set-up

In the following sections, the most important model features are described in general terms and special aspects are pointed out. All details on the model set-up, such as source locations, emission spectra, obstacles present, etc., are given in the site and layout plans in Appendix A and the tables in Appendix B to this report.

Calculation of the sound pressure levels at the POIs is made by computational sound propagation calculation for industrial noise emissions according to the procedure in [9].

The used sound propagation calculation program [8] approximates curved elements by polygons and automatically. It splits up line and area sources into sub-units with dimensions that are small compared to the distances to the POIs so that they can be treated as point sources.

In the sound propagation calculations excess attenuation caused by

- distance,
- sound absorption in air,
- barrier effects (including diffraction around vertical edges) and
- ground attenuation

is taken into account.

Up to three reflections at the obstacles present in the model are considered.

In the calculations the following items are performed in particular:

- point, line and area sound sources,
- obstacles and noise barriers,
- POIs.

The locations of all sources and POIs are shown in the site and layout plans on pages 2 till 4 in Appendix A.

For obstacles and barriers, the edges where sound diffraction may take place as well as the vertical surfaces where sound waves are reflected are taken into account. A reflection loss of 1 dB is assumed, which is a conservative assumption for most technical surfaces.

The topography is assumed to be flat for the purpose of this calculation study. For the comparatively flat-angled gradients of the topography in the model, this is an acceptable approach.

4.1 Points-of-interest (POI) and noise limits

In the noise propagation calculation, the locations of representative POIs have been determined based upon the noise studies carried out in the past and confirmed by a on-site inspection in October 2016.

In this noise study, the reference time interval (1 hour during day, 15 minutes during night) and definition for daytime (7:00 h – 23:00 h) and night-time (23:00 h – 7:00 h) will be taken into account according to BS 4142 [14].

For determination of the rating levels the existing as well as of the new power plant are expected to be in full regular operation at maximum load. Also the traffic noise on site must be considered.

The heights of the POIs have been chosen 4 m above ground¹.

A graphical representation of the location of the POIs can be found in Appendix A. The locations match with locations A to G of former noise studies [6] and are named with the corresponding notations.

¹ According to ISO 1996-2, section 5.3.2 [13], the distance of the ears of an upright standing observer from the ground is represented at 1.5 m. According to BS 4142, section 6.2 [14], ambient sound level, residual sound level and background sound level are represented at 1.2 m to 1.5 m above the ground. 4 m shall represent usual bedroom location on first floor.

5 Noise emissions of the existing MEB facility

The data given within this chapter were measured during a measurement campaign from 19th to 20th of October in 2016 at DERL plant in Dundee. Measurements were performed by Dipl.-Ing. Jochen Sperber of Müller-BBM GmbH, Germany, using a class 1 sound investigator Brüel & Kjaer, Type 2260. Measurements were assisted by Mr. Michael Dutkowskij M.R.S.C. A.I.E.M.A od DERL, Dundee.

Detailed sound power levels of all noise sources considered can be found in the input data for the digital sound propagation model in Appendix B.

Most of the noise sources shown in the following chapters are in constant operation, except maintenance works or damages.

Gas Oil Tank Pumps are only in operation for working of start-up or supporting burners.

Hammer Mills and Colling Fans are working on demand, not constantly.

Wheel Loaders are normally not operated outside buildings.

Other unsteady noise sources, like flue ash loading, driving of waste lorries and similar, normally don't appear during night-time and were therefore not measured. These noise sources will not be taken into account in the sound propagation calculation described in the following chapters.

Stack openings after the flue gas treatment plant and after the odour abatement plant could not be measured and will therefore not been taken into account in the following considerations. Based on our experience, stack openings should (normally) not increase the overall sound power level of DERL in a relevant way.

5.1 Sound Power Levels for individual Noise Sources outside Rooms

The Sound Power Levels for individual Noise Sources outside Rooms have been measured in dependence to the procedures described in EN ISO 3746. The following sound power levels were measured:

Table 1. A-weighted sound power levels L_{WA} .

Noise Source	Part of Noise Source	L_{WA} [dB(A)]	Characteristics
Gas Oil Tank Pumps	Pumps and Motors Gas Oil Tank Pumps	110	Gas Oil Tank Pumps in Operation
Cooling Tower	Air Outlet West	104	Normal Operation High-frequent Noise caused by probably Gearbox
Cooling Tower	Air Outlet East	99	Normal Operation
Cooling Tower	Air Intake South	95	Normal Operation High-frequent Noise caused by probably Gearbox
Cooling Tower	Air Intake North	90	Normal Operation
Cooling Tower Motor	Motor West	91	Normal Operation High-frequent Noise caused by probably Gearbox
Cooling Tower Motor	Motor East	86	Normal Operation
Flue Gas Treatment Plant	Whole Plant, including 2 Flue Gas Fans and 2 FGR Fans	101	Normal Operation
Flue Gas Fan 2 and FGR Fan 2	Fan Casings and Motors	99	Normal Operation
Flue Gas Fan 1 and FGR Fan 1	Fan Casings and Motors	97	Normal Operation
Cooling Fan for Hammer Mills	Air Intake Cooling Fan 1	98	Hammer Mill 1 and Cooling Fan 1 in Operation
Cooling Fan for Hammer Mills	Casing and Motor Cooling Fan 1	97	Hammer Mill 1 and Cooling Fan 1 in Operation
Odour Abatement Plant, RDF Fans	Casing and Motor RDF Fans 1 and 2	99	RDF Fans 1 and 2 in Operation
Odour Abatement Plant, OAP Fan	Casing and Motor OAP Fan 1	93	OAP Fan 1 in Operation
Compressor Room	Air Intake through open Door	87	3 Compressors in Operation
Boiler House Air Intake	Air Intake northern Façade	80	Normal Operation
Wheel Loader	Driving Outside	90	No Working outside

Noise Source	Part of Noise Source	LWA [dB(A)]	Characteristics
HGV	HGV waste delivery	85	Maximum 4 HGV per hour, only daytime (7:00 h – 23:00 h)
	HGV Combustion Bed Ash Pick-up	78	Maximum 2 HGV per hour, only daytime (7:00 h – 23:00 h)
	HGV Bottom ash pick-up	82	Maximum 1 HGV per hour, only daytime (7:00 h – 23:00 h)
	HGV flue gas treatment delivery	81	Maximum 1 Tanker Lorry per hour, only daytime (7:00 h – 23:00 h)
	HGV flue gas treatment pick-up	81	Maximum 1 Tanker Lorry per hour, only daytime (7:00 h – 23:00 h)
Staff Cars	Parking lot south-eastern corner of site	87	28 Parking positions, only daytime (7:00 h – 23:00 h)
	Parking lot north-western corner of site	79	8 Parking positions, only daytime (7:00 h – 23:00 h)

Noise sources not taken into account in this study are considered to be irrelevant for the overall acoustic situation of the existing MEB facility and the noise levels at the POIs.

5.2 Sound Pressure Levels inside Rooms

The sound pressure levels inside the different rooms have been measured by averaging by time and space inside each building. The measurement durations were chosen in such way that energy equivalent levels were constant with oscillations below 1.0 dB. The following sound pressure levels were measured:

Table 2. A-weighted, time and spatial averaged sound pressure levels L_{pA} inside the rooms of the buildings.

Room / Building	Averaged Part of Room / Building	L_{pA} [dB(A)]	Characteristics
Waste Reception Hall	Part with Vehicle Movements	73	2 Wheel Loaders working, 1 Hammer mill in Operation
Waste Reception Hall	Part with Vehicle Movements	77	1 Wheel Loaders working, 1 Forklift working, 1 HGZ unloading
Compressor Room	Whole room	86	3 Compressors in Operation, Door open
Boiler House 1 and 2	Level 6	76	2 Boilers in Operation
Boiler House 1 and 2	Level 4	75	2 Boilers in Operation
Boiler House 1 and 2	Level 3	75	2 Boilers in Operation
Boiler House 1 and 2	Level 2	79	2 Boilers in Operation
Boiler House 1 and 2	Level 1	80	2 Boilers in Operation
Boiler House 1 and 2	Level 0	81	2 Boilers in Operation
Turbine Hall	Whole Room	80	Turbine in Operation
Condenser	Part below Turbine Hall	83	Turbine in Operation
Lube Oil Cooler Turbine	Room next to Turbine Hall	87	Turbine in Operation
Switch Gear Building Flue Gas Treatment Plant	Whole Room	66	Flue Gas Treatment Plant in Operation
Switch Gear Building Plant	Whole Room	73	Plant in normal Operation
Shredded Refuse Derived Fuel Store	Part of Gangways	62	Waste Transport in Operation, Hammer Mills not in Operation
Control Room	Whole Room	53	Level without Conversation of Staff, Plant in normal Operation

The room levels shown above respectively the sound emission over the enveloping façade and roof elements will not be included in the sound propagation model because of its relatively small sound emission, caused by good transmission losses of the buildings, in comparison to the more noisy noise sources set up outside.

6 Noise emissions of the new MEB plant

The noise emission data have been determined based upon data given by the customer or, where no data has been available yet, based upon previously measured data and the Müller-BBM's experience in similar projects (e. g. MVVs waste to energy plant in Plymouth, MEBs plant in Dundee).

Detailed sound power levels of all noise sources considered can be found in the input data for the digital sound propagation model in Appendix B.

6.1 Considered operating conditions

All noise sources of the new MEB plant considered in this study are assumed to operate in steady, full-load operation at maximum load. Equipment that is only active in emergency situations (e. g. smoke extraction fans, bunker ventilation, emergency blow-off valves, fire pumps, emergency diesel engine) is not considered in the study in general. Noise sources like fire pumps or emergency diesel engine which can be in test operation during the plant is operated in a normal way will be considered separately in the sound propagation modelling.

When considering not normal operation, the start-up will most likely be the noisiest operation, compared to other abnormal operation like shutdown. For this, start-up will be modelled as the probable worst case scenario.

6.2 Sound sources radiating into the open

The main noise sources contributing relevantly to the acoustic situation at the plant's perimeter that are placed in the open are listed in the following Table 3. The respective A-weighted sound power level L_{WA} is given.

Table 3. Relevant noise sources radiating into the open of the new MEB plant considered in the acoustic study with their respective A-weighted sound power level L_{WA} (given in full dB) at maximum load.

Group	Component/ comment	A-weighted sound power level L_{WA} in dB(A)	Remarks
Boiler house	Ventilation openings facades	92	Weather louvres, additional noise protection devices not necessary
	Ventilation openings roof	93	Weather louvres, additional noise protection devices not necessary
	Auxiliary transformer	75	Level of housing, 2 transformers
	Start-up-silencer valve opening (steam vent)	95	Specification value for supplier in start-up operation ²
	Inverter heat pump, Multi-split unit 1	88	On roof
	Inverter heat pump, Multi-split unit 2	88	On roof
	Inverter heat pump, Multi-split unit 3	76	On roof
	Inverter heat pump, Multi-split unit 4	76	On roof
	Air supply unit	61	On roof
Turbine house (including compressors)	Ventilation openings	96	Weather louvres, additional noise protection devices not necessary
	Turbine exhaust pipe outside	91	At normal operation
		98	At bypass operation ³
	Recoolers	98	Maximum allowable value, based on state of the art, for available space at place of installation
	ACC	96	Maximum allowable value, based on state of the art, for available space at place of installation
Tipping hall and storage area	Ventilation openings facades	92/82	Daytime/night-time
	Door opening	92	Normally only open at daytime (7:00 h – 23:00 h), when HGVs or wheel loader are passing
	Bunker ventilation, 2 fans, each	96 ⁴	With silencers on discharge side, to fulfil a sound pressure level of 85 dB(A) at 1 m distance for maintenance workers

² Will not be considered in normal operation of plant.

³ Will not be considered in normal operation of plant.

⁴ Only operated when plant is shut down. Will not be considered in normal operation of plant or in startup.

Group	Component/ comment	A-weighted sound power level L_{WA} in dB(A)	Remarks
Flue gas cleaning	Ventilation openings filter	94	
	Ventilation openings ID-fan	86	
	Flue gas treatment equipment outside	95	Conveyors, fans, pumps, pipes, loading units outside buildings
	Flue gas duct to filter	90	Outside buildings
	Flue gas duct filter to ID fan	90	Outside buildings
	Flue gas duct ID fan to stack	85	Outside buildings
Vehicles ⁵	Wheel loader	95	Average value driving outside buildings, only daytime (7:00 h – 23:00 h)
	HGV waste delivery	101	Maximum 24 HGV per hour, only daytime (7:00 h – 23:00 h)
	HGV Slag Pick-up	77	Maximum 2 HGV per hour ⁶ , only daytime (7:00 h – 23:00 h)
	HGV ash pick-up	77	Maximum 2 HGV per hour ⁷ , only daytime (7:00 h – 23:00 h)
	HGV flue gas treatment delivery	75	Maximum 1 HGV per hour, only daytime (7:00 h – 23:00 h)
Other equipment	Fire pumps	108 ⁸	Only in case of emergency Tests only in daytime
	Emergency diesel engine	105 ¹³	Only in case of emergency Tests only in daytime
	Stack outlet	90	
	Condensate polishing plant	90	Set-up on MEB area
	Ventilation administration building	85	

⁵ Only short-term driving outside buildings for each HGV

⁶ In BS 4142 the reference time interval during the day is 1 h. Therefore, the calculation is made assuming the total number of HGV movements which may occur per day take place in the reference time interval. The value shown does not mean that this number of vehicle movements will occur continuously throughout the assessment period.

⁷ In BS 4142 the reference time interval during the day is 1 h. Therefore, the calculation is made assuming the total number of HGV movements which may occur per day take place in the reference time interval. The value shown does not mean that this number of vehicle movements will occur continuously throughout the assessment period.

⁸ Will not be considered in normal operation of plant.

Noise sources not taken into account in this study are considered to be irrelevant for the overall acoustic situation of the new MEB plant and the noise levels at the POIs.

6.3 Buildings

6.3.1 Indoor noise levels

Most of the noisy equipment is mounted inside closed buildings. Doors will only be opened for transit of vehicles and staff.

Based upon the layout, the engineering data and the building geometries, the following mean indoor sound pressure levels inside the buildings have been determined.

Table 4. Average indoor sound pressure levels, A-weighted, rounded to full dB.

Building	Operating condition	A-weighted mean sound pressure level in dB(A)
Boiler house	Normal operation, maximum load	85
Turbine house	Normal operation, maximum load, including compressors	90
Tipping hall	Daytime, maximum load	85
Tipping hall	Night-time, maximum load	75
Fuel bunker	Normal operation, maximum load	65
Ash bunker	Normal operation, maximum load	73
Filter house penthouse	Normal operation, maximum load	90
Filter house filters	Normal operation, maximum load	63
ID fan	Normal operation, maximum load	83

Please note that the given indoor levels represent average sound pressure levels. Local levels, especially close to machinery and noise-reflecting surfaces, may vary.

6.3.2 Sound emitted via façade elements of the buildings

The indoor sound pressure level that exists in normal operation at maximum load inside the buildings will be transferred in parts to the outside of the buildings. This is caused by the façade elements, such as walls, roof and openings like doors and gates, which lead to sound emission.

The allocation of the building structure elements for each single building element can be taken from the documents cited in chapter 2.

Following the standardized procedure of DIN EN 12354-4 [10], the expected noise emission levels of the façade elements have been determined based on the indoor levels (see section 6.3.1) and the assumed sound transmission losses R'_w or sound insertion losses D_e of these elements.

As no certificates of the actual spectral sound transmission losses of the actual materials and assemblies planned have been available for the calculation in the basic engineering phase, the following values have been assumed:

Table 5. Assumed sound transmission losses of façade elements of the buildings.

Component	Spectral sound transmission loss									$R'_{w/l}$ D_e
	31.5	63	125	250	500	1k	2k	4k	8k	
Roller shutter door	15	19	23	22	26	34	31	25	20	30
20 cm concrete	37	43	45	47	53	62	66	65	65	58
50 cm concrete	45	50	53	55	61	70	74	77	77	66
Heat outlets in roof	4	5	6	7	9	10	12	15	15	11
Ventilation outlet roof	0	0	1	1	2	3	4	5	5	4
Ventilation inlet facades	0	1	3	4	4	6	6	7	7	6
Ventilation inlet facades with silencers, 0.5 m length	0	0	2	4	9	21	21	12	10	15
Kingspan Longspan KS1000 LS, insulated wall panels (outer sheet 0,63 mm steel, PIR core, inner sheer 0,63 mm steel)	(10)	(15)	20	21	25	25	30	38	(40)	25
Tata steel roof deck D200	(12)	(18)	24	31	44	43	61	87	(90)	42

This results in the following A-weighted sound power levels.

Table 6. Relevant noise sources of the buildings considered in the acoustic study with their respective A-weighted sound power level L_{WA} at maximum load.

Building	Component/facade element	A-weighted sound power level L_{WA} in dB(A)
Boiler house	Walls	87
	Roof	67
	Doors	67
	Overall	87
Turbine house	Walls	89
	Roof	80
	Doors	73
	Overall	90
Tipping hall	Walls	76
Night-time	Roof including heat openings	84
	Doors	56
	Overall	85
Tipping hall	Walls	87
	Roof including heat openings	96
	Overall	97
Fuel bunker	Walls	32
	Roof	36
	Overall	37
Ash bunker	Doors	60
	Overall	60
Flue gas treatment	Walls	87
	Roof	72
	Overall	87
ID fan	Walls	71
	Roof	58
	Overall	71

It is assumed that no other openings exist that contribute relevantly to the overall noise emissions of the buildings. Especially larger holes and openings on the façade elements, e. g. additional ventilation openings or openings for piping, are to be avoided as they significantly reduce the effective transmission loss of the façade elements.

Doors are to be kept shut at all times when not in use for transit reasons. To provide a worst case scenario, main door of the tipping hall is assumed to be fully open during daytime delivery periods in the model.

7 Results of the sound propagation calculations

7.1 General information

The expected A-weighted sound pressure levels with the projected plant have been calculated at representative POIs. The POIs have been chosen based on the former noise investigations to represent the locations with the highest sound pressure levels to be expected from both plants.

According to the investigation, tonality, impulsivity or other sound characteristics will not be present neither for daytime nor for night-time operation⁹. The calculated sound pressure levels therefore represent the rating levels.

7.2 Normal operation at maximum load for both plants

The results for night-time are listed in the following Table 7. They are compared to the measured range of background sound levels (90 percentage values) of the Arup measurements [6].

Table 7. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **night-time for normal operation at maximum load of both plants**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, night-time, in dB(A)	
	<i>L₉₀</i> range (Arup measurements)	Rating level New MEB plant + Existing MEB facility (Operation 2)
Location A	37 – 39	38
Location B	37 – 40	41
Location C	44 – 45	41
Location D	44 – 45	44
Location E	39 – 41	37
Location F	38 – 40	40
Location G	34 – 40	41

The sound pressure levels of the new MEB plant and of the existing plant will exceed the measured background sound levels caused amongst others by the existing MEB facility by a maximum of 1 dB.

⁹ See separate expert opinion [15].

The results for daytime are listed in the following Table 8. They are compared to the measured range of background sound levels (90 percentage values) of the measurements.

Table 8. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **daytime for normal operation at maximum load**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, daytime, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant + Existing MEB facility (Operation 2)
Location A	49 – 56	38
Location B	43 – 51	41
Location C	51 – 61	41
Location D	50 – 57	44
Location E	41 – 53	37
Location F	39 – 47	41
Location G	43 – 55	42

The sound pressure levels of the new MEB plant for normal operation at maximum load at daytime will not exceed the measured background sound levels caused amongst others by the existing MEB facility. They will be within or below the range of actual background sound levels.

7.3 Start-up operation and shutdown operation at maximum load

For the calculation results shown in this chapter, it is assumed that start-up or shutdown will only be present for one plant, while the other plant will be operated in normal operation. Because of missing information in detail concerning these operations of existing MEB facility, start-up and shutdown will be assumed for the new MEB plant.

Start-up operation and shutdown operation will require additional noise sources. The involved equipment/noise sources will be the same for both operations, but the sequence of a shutdown operation is the opposite of a start-up operation.

Additional noise sources, which contribute a relevant amount of noise to receptor points, are the Start-up-valve silencer opening (with $L_{WA} = 95$ dB(A)) as well as the Turbine exhaust pipe outside at Bypass operation. Both noise sources will be taken into account, additionally to chapter 7.2 noise sources.

The results for night-time are listed in the following Table 9. They are compared to the measured range of background sound levels (90 percentage values) of the Arup measurements [6].

Table 9. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **night-time for start-up operation at maximum load of the new MEB plant**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, night-time, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant start-up + Existing MEB facility (Operation 2)
Location A	37 – 39	38
Location B	37 – 40	41
Location C	44 – 45	42
Location D	44 – 45	44
Location E	39 – 41	37
Location F	38 – 40	41
Location G	34 – 40	41

The sound pressure levels of the new MEB plant for start-up operation at maximum load and of the existing MEB facility for normal operation will exceed the measured background sound levels caused amongst others by the existing MEB facility by a maximum of 1 dB.

The results for daytime are listed in the following Table 10. They are compared to the measured range of background sound levels (90 percentage values) of the measurements.

Table 10. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **daytime for start-up operation at maximum load of the new MEB plant**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, daytime, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant start-up + Existing MEB facility (Operation 2)
Location A	49 – 56	38
Location B	43 – 51	42
Location C	51 – 61	42
Location D	50 – 57	44
Location E	41 – 53	38
Location F	39 – 47	42
Location G	43 – 55	42

The sound pressure levels of the new MEB plant for start-up operation at maximum load and of the existing MEB facility for normal operation at daytime will not exceed the measured background sound levels caused amongst others by the existing MEB facility. They will be within or below the range of actual background sound levels.

7.4 Bunker ventilation at shutdown of plant

For this operation of state, shutdown of the new MEB plant is assumed. Only bunker ventilation fans operation will be examined in this scenario. Nevertheless, deliveries of waste may continue during shutdown (only during daytime), cranes could be operating in the waste bunker (noise contribution neglectable because of massive building structure and closed doors during night-time) and Admin building HVAC equipment operating, too (noise contribution neglectable).

For the existing MEB facility, normal operation is assumed.

The results for night-time are listed in the following Table 11. They are compared to the measured range of background sound levels (90 percentage values) of the Arup measurements [6].

Table 11. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **night-time for bunker ventilation at shutdown of the new MEB plant**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, night-time, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant in shutdown + Existing MEB facility (Operation 2)
Location A	37 – 39	38
Location B	37 – 40	41
Location C	44 – 45	39
Location D	44 – 45	43
Location E	39 – 41	36
Location F	38 – 40	38
Location G	34 – 40	41

The sound pressure levels of the new MEB plant for shutdown operation at no load and of the existing MEB facility in normal operation at night-time will exceed the measured background sound levels caused amongst others by the existing MEB facility by a maximum of 1 dB.

7.5 Test of emergency equipment at maximum load

Additional noise sources, which contribute a relevant amount of noise to receptor points for tests of emergency equipment, are the fire pumps as well as the emergency diesel engine. Both noise sources of the new MEB plant will be taken into account, additionally to chapter 7.2 noise sources. Tests will only be conducted during daytime.

For the existing MEB facility, normal operation is assumed.

The results for daytime are listed in the following Table 12 and Table 13. The calculation results are compared to the measured range of background sound levels (90 percentage values) of the Arup measurements [6].

Table 12. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **daytime for test of emergency equipment – emergency diesel engine - at maximum load**, compared to measurements representing the background noise.

POI	A-weighted sound pressure level, daytime, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant with emergency diesel engine + Existing MEB facility (Operation 2)
Location A	49 – 56	41
Location B	43 – 51	44
Location C	51 – 61	44
Location D	50 – 57	47
Location E	41 – 53	41
Location F	39 – 47	47
Location G	43 – 55	45

Table 13. Expected A-weighted sound pressure levels at chosen POIs in the vicinity of the plant in dB(A) during **daytime for test of emergency equipment – fire pumps - at maximum load**, compared to measurements representing the existing MEB facility and background noise.

POI	A-weighted sound pressure level, daytime, in dB(A)	
	L_{90} range (Arup measurements)	Rating level New MEB plant with fire pumps + Existing MEB facility (Operation 2)
Location A	49 – 56	41
Location B	43 – 51	44
Location C	51 – 61	44
Location D	50 – 57	47
Location E	41 – 53	40
Location F	39 – 47	44
Location G	43 – 55	44

The sound pressure levels of the new MEB plant for test operations of emergency equipment at maximum load and of the existing MEB facility in normal operation at daytime will not exceed the measured background sound levels caused amongst others by the existing MEB facility at any identified locations. They will be within or below the range of actual background sound levels.

8 Conclusion and quality of the analysis

When subtracting the measured background sound level from the rating level of both MEB plants, according to British Standard BS 4142:2014, clause 11 [14], neither a difference of + 10 dB nor a difference of + 5 dB is likely, see Table 7 to Table 13 within this report.

Therefore, the parallel operation of the new MEB plant and of the existing MEB facility will not have any adverse impact or a significant adverse impact on the energy-equivalent noise levels at the receptor points near the plant.

Additional noise mitigation measures will not be necessary.

The noise immission given in Appendix B furthermore shows that the contribution of any single device is not disproportionately high. The plant does not produce a continuous, steady whine or subjective mild or prominent tone, according to our experience [15].

The quality of the noise analysis of the Baldovie EfW CHP Plant relies on the input data, i. e. noise emissions (sound power levels), geometry of the plant and equipment, projected sound transmission losses of façade elements, operating times etc., as well as the parameter settings of the sound propagation calculations. No safety margins for emission data have been taken into account.

In this analysis, conservative methods have been used, such as no noise reduction by meteorology, the assumption of a fully diffused sound field within buildings, 24 h steady-state full-load operation of all units at the same time.

All sound propagation calculations have been conducted according to DIN EN ISO 9613-2 [9] with the software Cadna/A [8], which is declared conform with DIN 45687 [12].



Dipl.-Ing. Jochen Sperber

Project manager

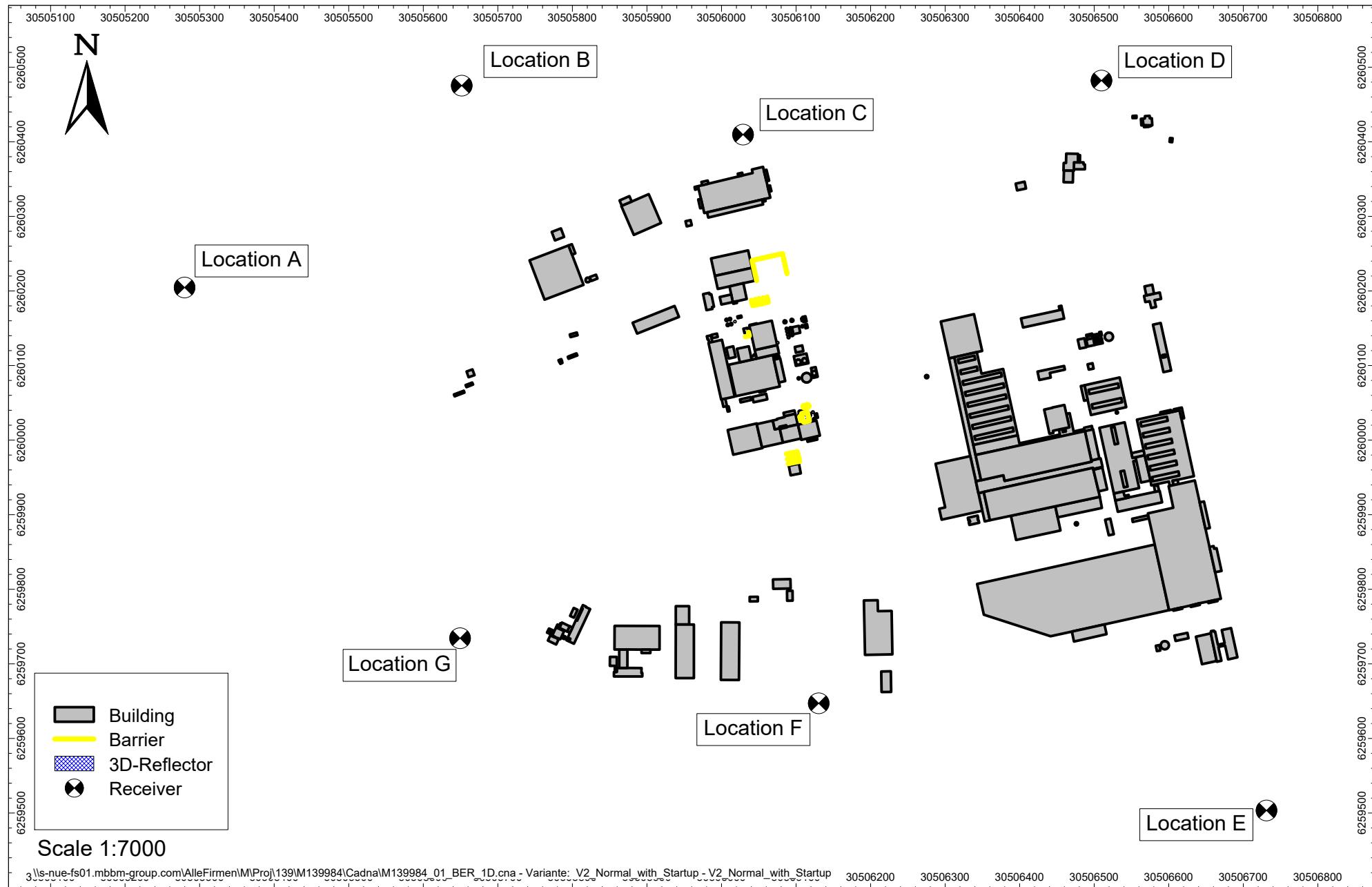
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Durch die DAkkS Deutsche Akkreditierungsstelle GmbH
nach DIN EN ISO/IEC 17025 akkreditiertes Prüflaboratorium.
Die Akkreditierung gilt für die in der Urkunde aufgeführten Prüfverfahren.

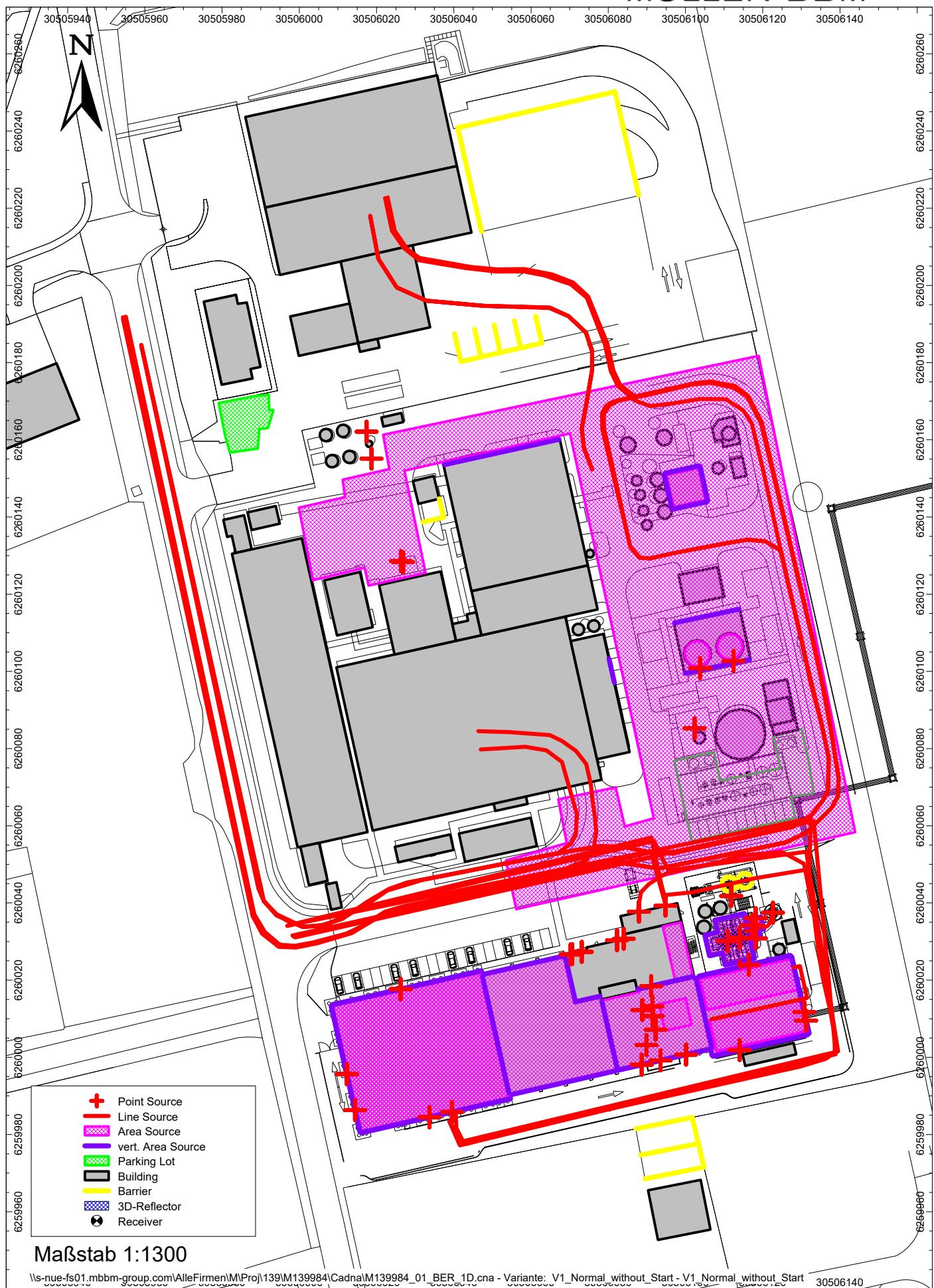
Appendix A

Site and layout plans



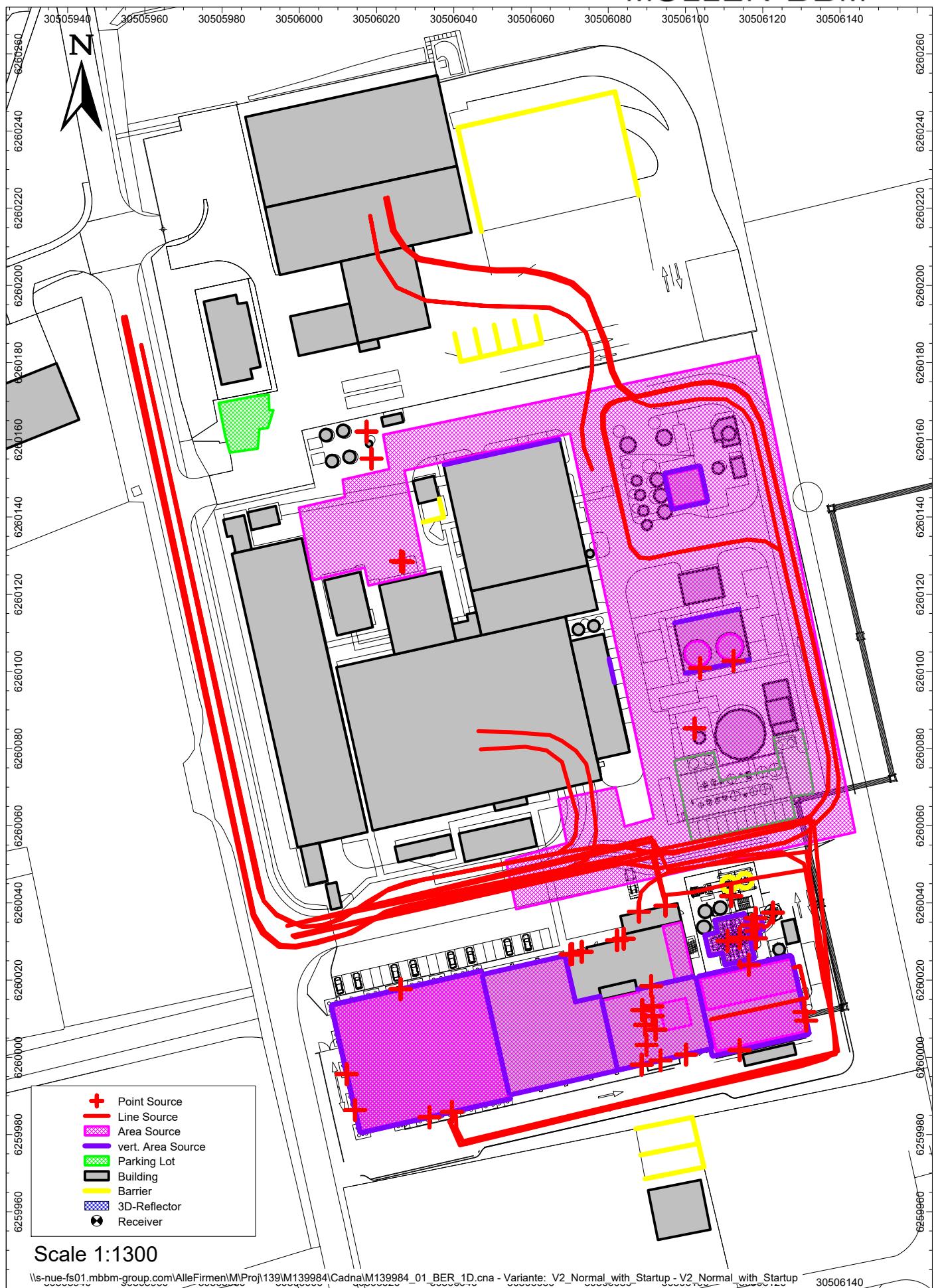
New Waste To Energy Plant of MVV in Dundee
Figure 01: Layout plan of the relevant POI

M139984/01 SPR
2019-11-15



New Waste To Energy Plant of MVV in Dundee

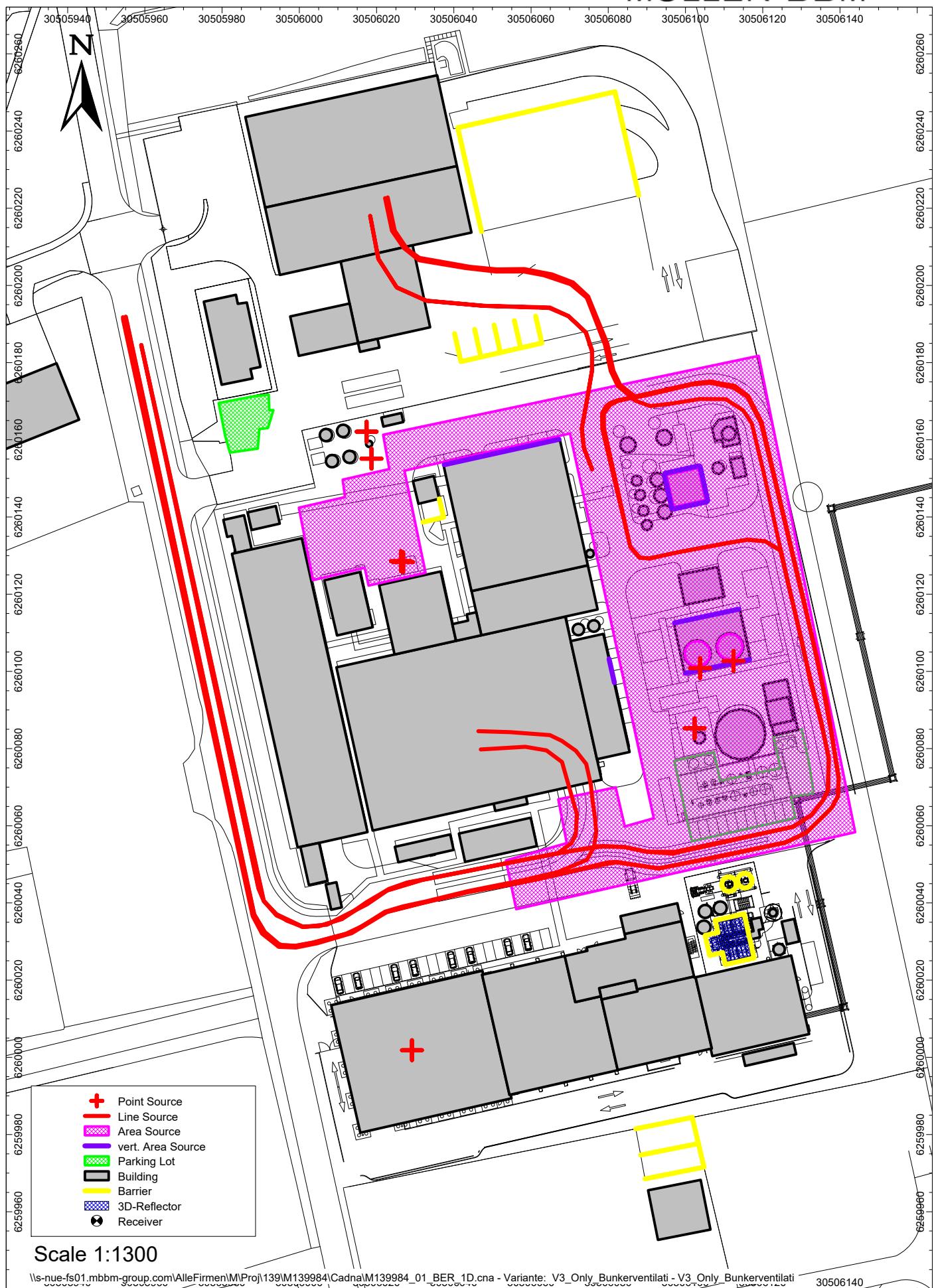
Figure 02: Layout plan of the relevant sound sources - V1 Normail without start



New Waste To Energy Plant of MVV in Dundee

Figure 03: Layout plan of the relevant sound sources - V2 Normal with Startup

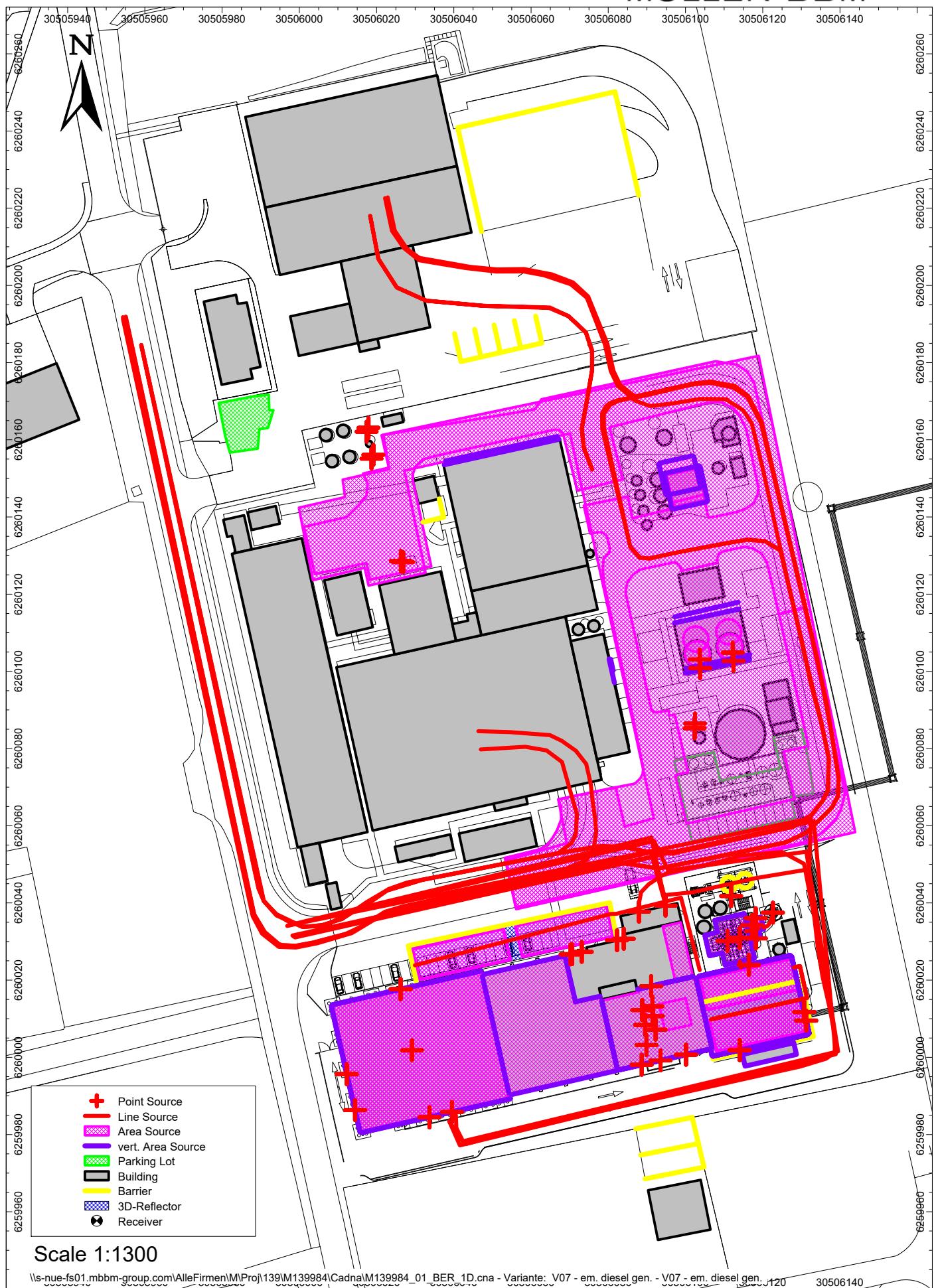
M139984/01 SPR
2019-11-15



New Waste To Energy Plant of MVV in Dundee

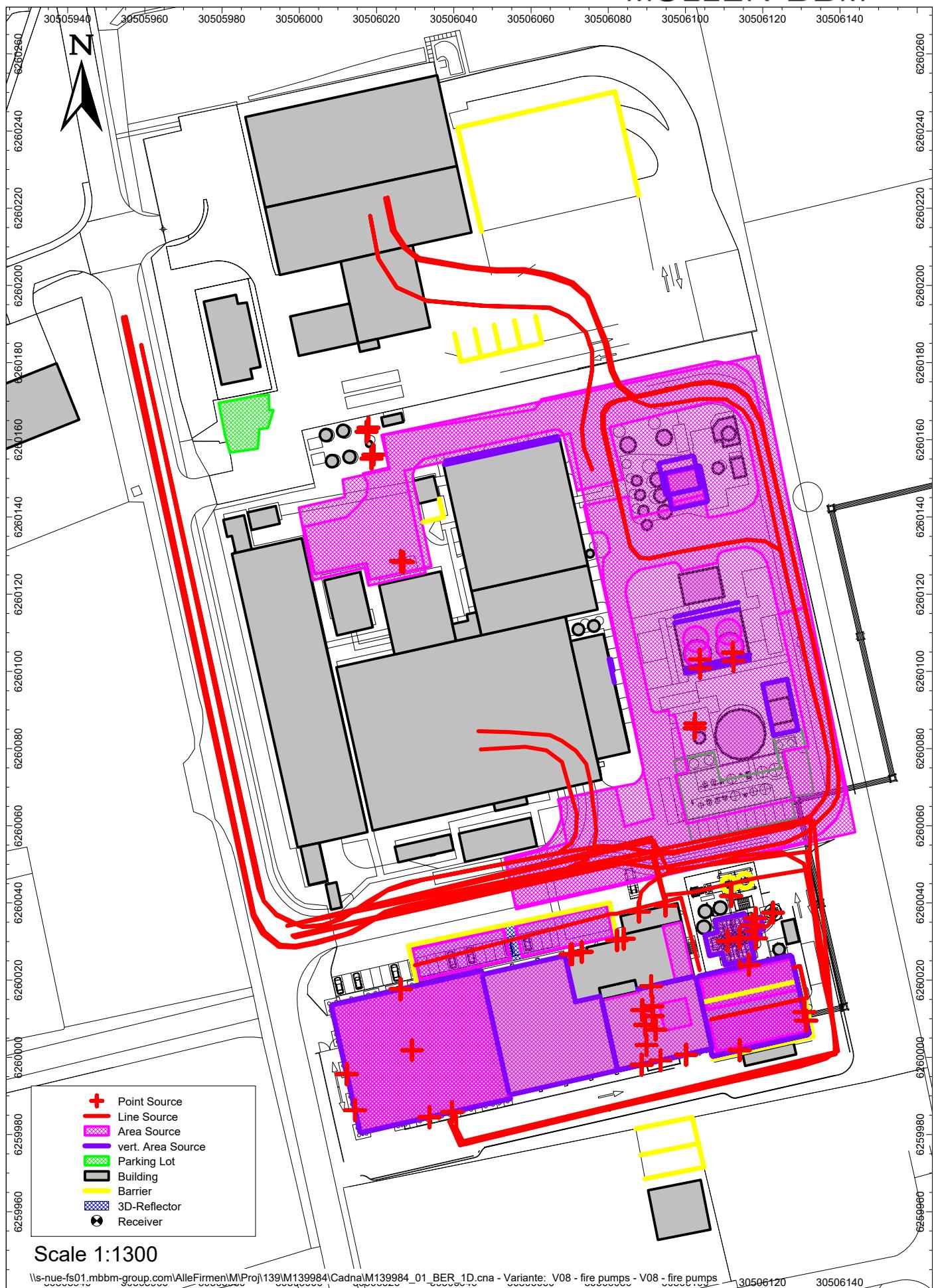
Figure 04: Layout plan of the relevant sound sources - V3 Only Bunkerventilati

M139984/01 SPR
2019-11-15



New Waste To Energy Plant of MVV in Dundee

Figure 05: Layout plan of the relevant sound sources - V4 em. diesel generator



New Waste To Energy Plant of MVV in Dundee

Figure 06: Layout plan of the relevant sound sources - V5 fire pumps

Appendix B

Calculation model parameters and input data

Projekt (M139984_01_BER_1D.cna)**Variant: (V1_Normal_without_Start - Neubau)**

Name of the project : M139984
 Client : MVV Environment Baldovie Limited
 Responsible engineers : Dipl.-Ing. Jochen Sperber
 Date of calculation : 2019-11-14
 Cadna/A : Version 2019 MR 1 (64 Bit)

Berechnungsprotokoll

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	2000.00
Min. Dist Src to Rcvr. Qu-Imm	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Regr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
Addition for rest period only for	Spa Area
	Residential Area
DGM	
Standard Height (m)	28.50
Model of Terrain	Triangulation
Reflecion	
max. Order of Reflecion	3
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.50
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	Off
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (°C)	10
rel. Feuchte (%)	70
Wind Speed for Dir. (m/s)	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03 (2014))	
Aircraft (???)	
Strictly acc. to AzB	

Vertikal surface sound sources

Name	M.	ID	Result Lw,			Result Lw,"			Lw / Li		Correction			Sound Reduction		Attenuation		Operating Time			K0	Freq.
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night		
			(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))		dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)	
Façade N Air supply		I0203000200!	83,6	83,6	83,6	64,9	64,9	64,9	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	
Façade S Air supply		I0203000200!	83,6	83,6	83,6	62,7	62,7	62,7	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00	open	960,00	0,00	60,00	3,0	
TIPPING HALL - Façade north / day		I020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	544,39		960,00	0,00	0,00	3,0	
TIPPING HALL - Façade north / night		I020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	544,35		0,00	0,00	60,00	3,0	
TIPPING HALL - Façade south / day		I020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	545,75		960,00	0,00	0,00	3,0	
TIPPING HALL - Façade south / night		I020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	545,77		0,00	0,00	60,00	3,0	
TIPPING HALL - Façade west / day		I020300050002!	81,3	81,3	81,3	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	459,54		960,00	0,00	0,00	3,0	
TIPPING HALL - Façade west / night		I020300050102!	70,6	70,6	70,6	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	459,61		0,00	0,00	60,00	3,0	
FUEL BUNKER - Façade West		I0203000402!	22,0	22,0	22,0	-4,6	-4,6	-4,6	Li	Waste_Bunker_Li	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	455,77		960,00	0,00	60,00	3,0	
FUEL BUNKER - Façade South		I0203000402!	27,5	27,5	27,5	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	846,51		960,00	0,00	60,00	3,0	
FUEL BUNKER - Façade North		I0203000402!	26,3	26,3	26,3	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	640,92		960,00	0,00	60,00	3,0	
FUEL BUNKER - Façade East		I0203000402!	18,8	18,8	18,8	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	114,32		960,00	0,00	60,00	3,0	
BOILER HOUSE - Façade East		I0203000202!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80		960,00	0,00	60,00	3,0	
BOILER HOUSE - Façade South		I0203000202!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79		960,00	0,00	60,00	3,0	
BOILER HOUSE - Façade West		I0203000202!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76		960,00	0,00	60,00	3,0	
BOILER HOUSE - Façade		I0203000202!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Façade North		I0203000302!	83,7	83,7	83,7	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	243,76		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Façade East		I0203000302!	82,9	82,9	82,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	205,25		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Façade South		I0203000302!	83,9	83,9	83,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	253,85		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Façade West		I0203000302!	71,9	71,9	71,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	15,97		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Supply air North		I0203000300!	89,1	89,1	89,1	65,1	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Supply air East		I0203000300!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	
MACHINE HOUSE - Supply air South		I0203000300!	89,1	89,1	89,1	65,0	65,0	65,0	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	
FUEL BUNKER - Façade North		I0203000402!	21,2	21,2	21,2	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	197,55		960,00	0,00	60,00	3,0	
Facade Filter Penthouse		I02030008!	86,1	86,1	86,1	57,6	57,6	57,6	Li	Filter_House_Li2	90,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	
Facade Filter		I02030008!	62,6	62,6	62,6	34,1	34,1	34,1	Li	Filter_House_Filter_Li2	0,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	
Facade ID-Fan		I02030008!	70,1	70,1	70,1	51,0	51,0	51,0	Li	ID_fan_House_Li2	0,0	0,0	0,0	0,0	Longspan	79,90		960,00	0,00	60,00	3,0	
Flue Gas Treatment Plant		I0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	
Flue Gas Treatment Plant		I0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	
Flue Gas Treatment Plant		I0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	
Flue Gas Treatment Plant		I0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	
Cooling tower, air intake south		I010100012	95,1	95,1	95,1	79,7	79,7	79,7	Lw	vFQ_002	0,0	0,0	0,0	0,0							3,0	
Cooling tower, air intake north		I010100013	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003	0,0	0,0	0,0	0,0							3,0	
Boiler house, air intake north		I0101000124	79,6	79,6	79,6	60,0	60,0	60,0	Lw	vFQ_024	0,0	0,0	0,0	0,0							3,0	
Compressor room, open door		I0101000142	87,3	87,3	87,3	76,3	76,3	76,3	Lw	vFQ_042	0,0	0,0	0,0	0,0							3,0	

Immissions - V1 Normal without Start

Immission points- Noise rating level

Name	M.	ID	Level Lr		Limit. Value		Land Use		Height		Coordinates		
			Day+Rz (dBA)	Night (dBA)	Day+Rz (dBA)	Night (dBA)	Type	Auto	Noise Type	(m)	(m)	(m)	Y
Location A	I0401!		38,3	38,0	0,0	0,0	x	Gesamt	4,00	r	30505279,80	6260204,57	32,50
Location B	I0401!		41,3	41,1	0,0	0,0	x	Gesamt	4,00	r	30505651,62	6260475,28	32,50
Location C	I0401!		41,0	40,9	0,0	0,0	x	Gesamt	4,00	r	30506028,88	6260409,70	32,50
Location D	I0401!		43,6	43,5	0,0	0,0	x	Gesamt	4,00	r	30506509,70	6260482,19	32,50
Location E	I0401!		37,2	36,7	0,0	0,0	x	Gesamt	4,00	r	30506731,11	6259503,36	32,50
Location F	I0401!		41,4	39,9	0,0	0,0	x	Gesamt	4,00	r	30506130,44	6259647,01	32,50
Location G	I0401!		41,7	40,9	0,0	0,0	x	Gesamt	4,00	r	30505649,28	6259734,33	32,50

Immission spectrum daytime and night time

Name	M.	ID	Type	Level Spectrum dB(A)									
				31,5	63	125	250	500	1000	2000	4000	8000	
Location A	I0401!		Day+Rz	12,2	19,2	22,7	29,2	35,0	32,4	28,3	3,0	-75,2	
			Night	11,3	18,8	22,2	28,4	34,8	32,1	28,2	2,8	-75,3	
Location B	I0401!		Day+Rz	14,9	21,9	25,5	33,5	36,5	36,6	32,0	11,3	-44,9	
			Night	14,3	21,6	25,1	33,2	36,3	36,4	31,9	11,2	-45,0	
Location C	I0401!		Day+Rz	18,8	26,1	28,8	32,8	36,9	34,6	32,0	16,7	-19,5	
			Night	18,5	26,0	28,7	32,6	36,9	34,5	32,0	16,7	-19,5	
Location D	I0401!		Day+Rz	16,2	24,7	28,1	33,5	39,5	38,0	36,3	17,3	-37,5	
			Night	16,0	24,6	28,0	33,2	39,4	37,9	36,2	17,3	-37,5	
Location E	I0401!		Day+Rz	12,9	21,1	24,0	29,1	33,9	30,7	24,9	0,8	-74,5	
			Night	12,5	21,0	23,7	28,3	33,6	30,1	24,6	0,5	-74,6	
Location F	I0401!		Day+Rz	19,7	27,2	28,9	35,0	36,7	35,0	31,3	18,2	-18,2	
			Night	19,2	27,0	28,2	33,5	35,3	33,0	29,7	17,1	-18,4	
Location G	I0401!		Day+Rz	14,8	22,9	26,1	32,4	38,6	35,5	32,2	13,1	-40,5	
			Night	13,1	22,4	25,1	30,4	38,1	34,4	31,7	12,3	-41,6	

FUEL BUNKER - Roof	I020300401!	-35,5	-35,5	-33,8	-33,8	-31,3	-31,3	-35,5	-35,5	-38,2	-38,2	-29,3	-29,3	-30,3	-30,3	
TIPPING HALL - Roof / day	I020300050001!	14,5		15,9		11,2		10,4		10,3		20,1		19,6		
Outgoing air KH	I020300200!	17,8	17,8	20,8	20,8	25,4	25,4	19,7	19,7	18,2	18,2	26,1	26,1	22,9	22,9	
Roof ID-Fan	I0203008!	-29,4	-29,4	-17,8	-17,8	-11,6	-11,6	-13,5	-13,5	-18,9	-18,9	-16,2	-16,2	-28,1	-28,1	
MACHINE HOUSE - Roof	I020300301!	-8,2	-8,2	-3,1	-3,1	-0,5	-0,5	4,6	4,6	-3,5	-3,5	5,7	5,7	-1,1	-1,1	
TIPPING HALL - Roof / night	I020300050101!			3,9		5,3		1,4		-0,2		-0,3		9,5	9,0	
TIPPING HALL - RWA / day	I020300050001!	22,7		24,1		18,5		18,5		18,5		28,4		27,9		
TIPPING HALL - RWA / night	I020300050101!		12,0		13,5		8,6		7,9		7,8		17,8		17,2	
Roof filter	I0203008!	-1,6	-1,6	0,8	0,8	0,3	0,3	1,6	1,6	0,6	0,6	5,9	5,9	-7,5	-7,5	
Luko south intake side	I0203001!	-1,0	-1,0	15,6	15,6	18,9	18,9	20,9	20,9	15,8	15,8	25,1	25,1	18,6	18,6	
Luko north intake side	I0203001!	12,1	12,1	16,9	16,9	19,4	19,4	20,3	20,3	16,6	16,6	24,6	24,6	5,6	5,6	
Luko south discharge side	I0203001!	6,9	6,9	17,9	17,9	23,9	23,9	22,1	22,1	17,6	17,6	26,3	26,3	20,0	20,0	
Luko north discharge side	I0203001!	14,9	14,9	19,4	19,4	24,2	24,2	20,9	20,9	18,4	18,4	25,8	25,8	9,3	9,3	
Cooler	I02030!	23,7	23,7	29,2	29,2	33,6	33,6	26,2	26,2	21,9	21,9	15,3	15,3	12,2	12,2	
Flue gas treatment plant, top	I01010001!35	9,9	9,9	12,6	12,6	25,8	25,8	29,1	29,1	25,0	25,0	20,0	20,0	16,1	16,1	
Cooling tower, air outlet west	I01010001!7-9	32,6	32,6	29,2	29,2	34,1	34,1	35,5	35,5	30,5	30,5	32,0	32,0	37,1	37,1	
Cooling tower, air outlet east	I01010001!4-6	26,0	26,0	26,9	26,9	31,6	31,6	30,9	30,9	24,7	24,7	24,8	24,8	30,6	30,6	
Wheel loader outside	I01010000!12-13	13,2	13,2	15,6	15,6	17,6	17,6	21,0	21,0	13,7	13,7	13,3	13,3	14,3	14,3	
Facade N Air supply	I020300200!	9,1	9,1	15,2	15,2	19,8	19,8	15,2	15,2	-5,7	-5,7	1,5	1,5	-2,4	-2,4	
Facade S Air supply	I020300200!	-7,7	-7,7	-5,4	-5,4	-0,7	-0,7	-4,6	-4,6	11,9	11,9	20,7	20,7	17,6	17,6	
TIPPING HALL - Facade north / day	I020300050002!	13,1		14,5		9,1		14,3		6,0		10,7		6,1		
TIPPING HALL - Facade north / night	I020300050102!			2,5		4,0		-1,2		3,8		-5,2		-0,4		
TIPPING HALL - Facade south / day	I020300050002!	0,6		-0,4		-0,1		-4,3		12,1		20,9		18,4		
TIPPING HALL - Facade south / night	I020300050102!			-9,6		-10,8		-10,6		-15,1		1,5		10,3		
TIPPING HALL - Facade west / day	I020300050002!	12,5		14,9		-0,3		-3,3		-2,9		11,2		17,9		
TIPPING HALL - Facade west / night	I020300050102!			1,9		4,2		-10,8		-13,6		-13,0		0,8		
FUEL BUNKER - Facade West	I020300402!															
FUEL BUNKER - Facade South	I020300402!															
FUEL BUNKER - Facade North	I020300402!															
FUEL BUNKER - Facade East	I020300402!															
BOILER HOUSE - Facade East	I020300202!	-5,8	-5,8	-0,6	-0,6	16,9	16,9	12,7	12,7	10,3	10,3	11,7	11,7	-1,4	-1,4	
BOILER HOUSE - Facade South	I020300202!	-3,3	-3,3	-1,8	-1,8	2,2	2,2	1,4	1,4	12,8	12,8	21,9	21,9	18,0	18,0	
BOILER HOUSE - Facade West	I020300202!	2,8	2,8	5,7	5,7	4,7	4,7	-6,9	-6,9	-7,9	-7,9	12,1	12,1	8,1	8,1	
BOILER HOUSE - Facade	I020300202!	5,5	5,5	10,1	10,1	14,6	14,6	10,6	10,6	-6,3	-6,3	-1,0	-1,0	-3,4	-3,4	
MACHINE HOUSE - Facade North	I020300302!	-1,3	-1,3	4,0	4,0	12,1	12,1	15,6	15,6	2,5	2,5	9,2	9,2	-0,5	-0,5	
MACHINE HOUSE - Facade East	I020300302!	-3,7	-3,7	0,3	0,3	8,6	8,6	16,8	16,8	14,1	14,1	15,3	15,3	4,6	4,6	
MACHINE HOUSE - Facade South	I020300302!	-4,4	-4,4	-0,6	-0,6	4,6	4,6	8,0	8,0	14,4	14,4	22,7	22,7	18,8	18,8	
MACHINE HOUSE - Facade West	I020300302!	-15,7	-15,7	-14,3	-14,3	-9,6	-9,6	-7,2	-7,2	-10,2	-10,2	13,4	13,4	9,6	9,6	
MACHINE HOUSE - Supply air North	I020300300!	0,9	0,9	6,6	6,6	15,0	15,0	19,1	19,1	5,5	5,5	11,5	11,5	2,8	2,8	
MACHINE HOUSE - Supply air East	I020300300!	-0,6	-0,6	3,2	3,2	12,1	12,1	21,4	21,4	18,5	18,5	19,0	19,0	7,8	7,8	
MACHINE HOUSE - Supply air South	I020300300!	-1,6	-1,6	1,9	1,9	7,2	7,2	10,1	10,1	17,9	17,9	26,5	26,5	22,5	22,5	
FUEL BUNKER - Facade North	I020300402!															
Facade Filter Penthouse	I0203008!	8,6	8,6	13,8	13,8	17,6	17,6	17,1	17,1	12,8	12,8	19,8	19,8	7,0	7,0	
Facade Filter	I0203008!	-12,5	-12,5	-8,2	-8,2	-4,2	-4,2	-5,2	-5,2	-9,8	-9,8	-2,4	-2,4	-14,3	-14,3	
Facade ID-Fan	I0203008!	-12,4	-12,4	-4,8	-4,8	0,1	0,1	1,2	1,2	-7,8	-7,8	-4,9	-4,9	-12,4	-12,4	
Flue Gas Treatment Plant	I01010001!14-17	10,5	10,5	13,6	13,6	24,1	24,1	31,7	31,7	16,6	16,6	12,8	12,8	16,4	16,4	
Flue Gas Treatment Plant	I01010001!14-17	5,7	5,7	9,4	9,4	21,4	21,4	22,6	22,6	25,6	25,6	17,6	17,6	14,7	14,7	
Flue Gas Treatment Plant	I01010001!14-17	7,1	7,1	9,4	9,4	26,1	26,1	18,3	18,3	9,3	9,3	11,5	11,5	11,1	11,1	
Flue Gas Treatment Plant	I01010001!14-17	5,9	5,9	10,2	10,2	22,9	22,9	28,3	28,3	24,3	24,3	13,8	13,8	10,9	10,9	
Cooling tower, air intake south	I01010001!2	10,7	10,7	16,2	16,2	12,8	12,8	18,8	18,8	9,7	9,7	10,2	10,2	12,2	12,2	
Cooling tower, air intake north	I01010001!3	2,3	2,3	3,5	3,5	12,9	12,9	22,7	22,7	-3,6	-3,6	3,5	3,5	4,2	4,2	
Boiler house, air intake north	I01010001!24	7,3	7,3	4,1	4,1	10,8	10,8	13,4	13,4	0,3	0,3	-1,2	-1,2	6,3	6,3	
Compressor room, open door	I01010001!42	5,7	5,7	3,3	3,3	16,7	16,7	19,8	19,8	14,4	14,4	5,7	5,7	2,8	2,8	
Parking area 1	I00!		10,1		8,6		9,2		16,9		13,8		11,3		11,4	
Parking area 2	I00!		6,0		12,5		-0,6		5,3		-5,6		-6,0		10,0	

surface sound sources

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			KO	Freq.	Direct.
			Day (dB(A))	Evening (dB(A))	Night (dB(A))	Day (dB(A))	Evening (dB(A))	Night (dB(A))	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m ²)		Day (min)	Special (min)	Night (min)			
Facade N Air supply		!0203000200!	83,6	83,6	83,6	64,9	64,9	64,9	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)	
Facade S Air supply		!0203000200!	83,6	83,6	83,6	62,7	62,7	62,7	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00	open	960,00	0,00	60,00	3,0	(none)	
TIPPING HALL - Facade north / day		!020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	544,39		960,00	0,00	0,00	3,0	(none)	
TIPPING HALL - Facade north / night		!020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	544,35		0,00	0,00	60,00	3,0	(none)	
TIPPING HALL - Facade south / day		!020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	545,75		960,00	0,00	0,00	3,0	(none)	
TIPPING HALL - Facade south / night		!020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	545,77		0,00	0,00	60,00	3,0	(none)	
TIPPING HALL - Facade west / day		!020300050002!	81,3	81,3	81,3	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	459,54		960,00	0,00	0,00	3,0	(none)	
TIPPING HALL - Facade west / night		!020300050102!	70,6	70,6	70,6	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	459,61		0,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade West		!0203000402!	22,0	22,0	22,0	-4,6	-4,6	-4,6	Li	Waste_Bunker_Li	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	455,77		960,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade South		!0203000402!	27,5	27,5	27,5	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	846,51		960,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade North		!0203000402!	26,3	26,3	26,3	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	640,92		960,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade East		!0203000402!	18,8	18,8	18,8	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	114,32		960,00	0,00	60,00	3,0	(none)	
BOILER HOUSE - Facade East		!0203000202!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80		960,00	0,00	60,00	3,0	(none)	
BOILER HOUSE - Facade South		!0203000202!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79		960,00	0,00	60,00	3,0	(none)	
BOILER HOUSE - Facade West		!0203000202!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76		960,00	0,00	60,00	3,0	(none)	
BOILER HOUSE - Facade		!0203000202!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Facade North		!0203000302!	83,7	83,7	83,7	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	243,76		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Facade East		!0203000302!	82,9	82,9	82,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	205,25		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Facade South		!0203000302!	83,9	83,9	83,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	253,85		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Facade West		!0203000302!	71,9	71,9	71,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	15,97		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Supply air North		!0203000300!	89,1	89,1	89,1	65,2	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Supply air East		!0203000300!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)	
MACHINE HOUSE - Supply air South		!0203000300!	89,1	89,1	89,1	65,0	65,0	65,0	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade North		!0203000402!	21,2	21,2	21,2	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	197,55		960,00	0,00	60,00	3,0	(none)	
Facade Filter Penthouse		!02030008!	86,1	86,1	86,1	57,6	57,6	57,6	Li	Filter_House_Li2	90,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	(none)	
Facade Filter		!02030008!	62,6	62,6	62,6	34,1	34,1	34,1	Li	Filter_House_Filter_Li2	0,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	(none)	
Facade ID-Fan		!02030008!	70,1	70,1	70,1	51,0	51,0	51,0	Li	ID_fan_House_Li2	0,0	0,0	0,0	0,0	Longspan	79,90		960,00	0,00	60,00	3,0	(none)	
Flue Gas Treatment Plant		!0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	(none)	
Flue Gas Treatment Plant		!0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	(none)	
Flue Gas Treatment Plant		!0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	(none)	
Flue Gas Treatment Plant		!0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0							3,0	(none)	
Cooling tower, air intake south		!010100012	95,1	95,1	95,1	79,7	79,7	79,7	Lw	vFQ_002	0,0	0,0	0,0	0,0							3,0	(none)	
Cooling tower, air intake north		!010100013	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003	0,0	0,0	0,0	0,0							3,0	(none)	
Boiler house, air intake north		!0101000124	79,6	79,6	79,6	60,0	60,0	60,0	Lw	vFQ_024	0,0	0,0	0,0	0,0							3,0	(none)	
Compressor room, open door		!0101000142	87,3	87,3	87,3	76,3	76,3	76,3	Lw	vFQ_042	0,0	0,0	0,0	0,0							3,0	(none)	

Immissions - V2 Normal with Startup

Immission points- Noise rating level

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height (m)	Coordinates		
			Day+Rz (dBA)	Night (dBA)	Day+Rz (dBA)	Night (dBA)	Type	Auto	Noise Type		X (m)	Y (m)	Z (m)
Location A	I0401!		38,4	38,1	0,0	0,0	x	Gesamt	4,00	r	30505279,80	6260204,57	32,50
Location B	I0401!		41,5	41,3	0,0	0,0	x	Gesamt	4,00	r	30505651,62	6260475,28	32,50
Location C	I0401!		41,5	41,5	0,0	0,0	x	Gesamt	4,00	r	30506028,88	6260409,70	32,50
Location D	I0401!		43,7	43,6	0,0	0,0	x	Gesamt	4,00	r	30506509,70	6260482,19	32,50
Location E	I0401!		37,5	37,0	0,0	0,0	x	Gesamt	4,00	r	30506731,11	6259503,36	32,50
Location F	I0401!		42,2	41,0	0,0	0,0	x	Gesamt	4,00	r	30506130,44	6259647,01	32,50
Location G	I0401!		41,9	41,1	0,0	0,0	x	Gesamt	4,00	r	30505649,28	6259734,33	32,50

Immission spectrum daytime and night time

Name	M.	ID	Type	Level Spectrum dB(A)									
				31,5	63	125	250	500	1000	2000	4000	8000	
Location A	I0401!		Day+Rz	12,2	19,2	22,8	29,2	35,1	32,7	28,4	3,0	-75,2	
			Night	11,3	18,8	22,3	28,5	34,9	32,4	28,3	2,9	-75,3	
Location B	I0401!		Day+Rz	14,9	21,9	25,5	33,6	36,7	36,9	32,2	11,4	-44,9	
			Night	14,3	21,6	25,1	33,2	36,4	36,8	32,1	11,2	-45,0	
Location C	I0401!		Day+Rz	18,8	26,1	28,9	32,9	37,3	35,9	32,6	17,1	-19,5	
			Night	18,5	26,0	28,8	32,7	37,2	35,8	32,5	17,1	-19,5	
Location D	I0401!		Day+Rz	16,2	24,7	28,2	33,6	39,6	38,3	36,4	17,4	-37,5	
			Night	16,0	24,6	28,1	33,3	39,5	38,2	36,3	17,3	-37,5	
Location E	I0401!		Day+Rz	12,9	21,1	24,0	29,2	34,1	31,4	25,3	1,0	-74,4	
			Night	12,5	21,0	23,8	28,4	33,8	31,0	25,0	0,7	-74,4	
Location F	I0401!		Day+Rz	19,7	27,2	29,0	35,2	37,2	36,8	32,3	18,7	-18,0	
			Night	19,2	27,0	28,4	33,7	36,0	35,6	31,1	17,7	-18,3	
Location G	I0401!		Day+Rz	14,8	23,0	26,1	32,4	38,7	35,8	32,4	13,3	-40,4	
			Night	13,1	22,4	25,2	30,5	38,2	34,9	31,9	12,5	-41,4	

Lorries Waste Delivery (24/h)	I02030100!	14,1	15,2	13,3	19,4	17,1	25,6	23,1
BOILER HOUSE - Roof	I0203000201!	-5,5	-5,5	-3,1	-3,1	1,3	-5,3	-1,0
FUEL BUNKER - Roof	I020300401!	-35,5	-35,5	-33,8	-33,8	-31,3	-38,2	-30,3
TIPPING HALL - Roof / day	I02030050001!	14,5	15,9	11,2	10,4	10,3	20,1	19,6
Outgoing air KH	I020300220!	17,8	17,8	20,8	20,8	25,4	26,1	22,9
Roof ID-Fan	I0203008!	-29,4	-29,4	-17,8	-17,8	-11,6	-16,2	-28,1
MACHINE HOUSE - Roof	I020300301!	-8,2	-8,2	-3,1	-3,1	-0,5	4,6	-1,1
TIPPING HALL - Roof / night	I02030050101!	3,9	5,3	1,4	-0,2	-0,3	9,5	9,0
TIPPING HALL - RWA / day	I02030050001!	22,7	24,1	18,5	18,5	18,5	28,4	27,9
TIPPING HALL - RWA / night	I02030050101!	12,0	13,5	8,6	7,9	7,8	17,8	17,2
Roof filter	I0203008!	-1,6	-1,6	0,8	0,8	0,3	0,6	-7,5
Luko south intake side	I0203001!	-1,0	-1,0	15,6	15,6	18,9	15,8	18,6
Luko north intake side	I0203001!	12,1	12,1	16,9	16,9	19,4	16,6	5,6
Luko south discharge side	I0203001!	6,9	6,9	17,9	17,9	23,9	26,3	20,0
Luko north discharge side	I0203001!	14,9	14,9	19,4	19,4	24,2	25,8	9,3
Cooler	I020300!	23,7	23,7	29,2	29,2	33,6	21,9	12,2
Flue gas treatment plant, top	I01010001!35	9,9	9,9	12,6	12,6	25,8	20,0	16,1
Cooling tower, air outlet west	I01010001!7-9	32,6	32,6	29,2	29,2	34,1	30,5	37,1
Cooling tower, air outlet east	I01010001!4-6	26,0	26,0	26,9	26,9	31,6	24,7	30,6
Wheel loader outside	I01010001!2-13	13,2	13,2	15,6	15,6	17,6	13,7	14,3
Facade N Air supply	I020300220!	9,1	9,1	15,2	15,2	19,8	15,2	-2,4
Facade S Air supply	I020300220!	-7,7	-7,7	-5,4	-5,4	-0,7	-4,6	20,7
TIPPING HALL - Facade north / day	I02030050002!	13,1	14,5	9,1	14,3	6,0	10,7	6,1
TIPPING HALL - Facade north / night	I02030050102!	2,5	4,0	-1,2	3,8	-5,2	-0,4	-4,2
TIPPING HALL - Facade south / day	I02030050002!	0,6	-0,4	-0,1	-4,3	12,1	20,9	18,4
TIPPING HALL - Facade south / night	I02030050102!	-9,6	-10,8	-10,6	-15,1	1,5	10,3	7,7
TIPPING HALL - Facade west / day	I02030050002!	12,5	14,9	-0,3	-3,3	-2,9	11,2	17,9
TIPPING HALL - Facade west / night	I02030050102!	1,9	4,2	-10,8	-13,6	-13,0	0,8	7,3
FUEL BUNKER - Facade West	I020300402!							
FUEL BUNKER - Facade South	I020300402!							
FUEL BUNKER - Facade North	I020300402!							
FUEL BUNKER - Facade East	I020300402!							
BOILER HOUSE - Facade East	I020300220!	-5,8	-5,8	-0,6	-0,6	16,9	10,3	-1,4
BOILER HOUSE - Facade South	I020300220!	-3,3	-3,3	-1,8	-1,8	2,2	12,8	18,0
BOILER HOUSE - Facade West	I020300220!	2,8	2,8	5,7	5,7	4,7	12,1	8,1
Boiler House - Facade	I020300220!	5,5	5,5	10,1	10,1	14,6	-6,3	-3,4
MACHINE HOUSE - Facade North	I020300302!	-1,3	-1,3	4,0	4,0	12,1	9,2	-0,5
MACHINE HOUSE - Facade East	I020300302!	-3,7	-3,7	0,3	0,3	8,6	15,3	4,6
MACHINE HOUSE - Facade South	I020300302!	-4,4	-4,4	-0,6	-0,6	4,6	22,7	18,8
MACHINE HOUSE - Facade West	I020300302!	-15,7	-15,7	-14,3	-14,3	-9,6	-7,2	9,6
MACHINE HOUSE - Supply air North	I020300300!	0,9	0,9	6,6	6,6	15,0	19,1	2,8
MACHINE HOUSE - Supply air East	I020300300!	-0,6	-0,6	3,2	3,2	12,1	18,5	7,8
MACHINE HOUSE - Supply air South	I020300300!	-1,6	-1,6	1,9	1,9	7,2	19,0	19,0
FUEL BUNKER - Facade North	I020300402!							
Facade Filter Penthouse	I0203008!	8,6	8,6	13,8	13,8	17,6	19,8	7,0
Facade Filter	I0203008!	-12,5	-12,5	-8,2	-8,2	-4,2	-2,4	-14,3
Facade ID-Fan	I0203008!	-12,4	-12,4	-4,8	-4,8	0,1	-4,9	-12,4
Flue Gas Treatment Plant	I01010001!14-17	10,5	10,5	13,6	13,6	24,1	16,6	16,4
Flue Gas Treatment Plant	I01010001!14-17	5,7	5,7	9,4	9,4	21,4	22,6	14,7
Flue Gas Treatment Plant	I01010001!14-17	7,1	7,1	9,4	9,4	26,1	18,3	11,1
Flue Gas Treatment Plant	I01010001!14-17	5,9	5,9	10,2	10,2	22,9	24,3	10,9
Cooling tower, air intake south	I01010001!2	10,7	10,7	16,2	16,2	12,8	9,7	12,2
Cooling tower, air intake north	I01010001!3	2,3	2,3	3,5	3,5	12,9	-3,6	4,2
Boiler house, air intake north	I01010001!24	7,3	7,3	4,1	4,1	10,8	0,3	6,3
Compressor room, open door	I01010001!42	5,7	5,7	3,3	3,3	16,7	14,4	2,8
Parking area 1	I00!	10,1	8,6	9,2	9,2	16,9	11,3	11,4
Parking area 2	I00!	6,0	12,5	-0,6	5,3	-5,6	-6,0	10,0

Emission spectrum - V3 Only Bunkerventilati

Sound power

Name	ID	Type	Octave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Cooling tower, air intake south	vFQ_002	Lw	A	56,9	65,9	70,4	74,2	85,6	87,3	89,4	89,9	86,3	95,1	99,9	Messung Dundee 10.2016
Cooling tower, air intake north	vFQ_003	Lw	A	55,9	64,5	70,2	74,1	83,7	81,6	83,1	83,2	79,3	89,6	98,0	Messung Dundee 10.2016
Cooling tower, air outlet east	FQ_004_bis_006	Lw	A	73,6	83,0	87,0	89,2	93,3	93,1	93,6	86,8	80,3	99,4	115,0	Messung Dundee 10.2016
Cooling tower, air outlet west	FQ_007_bis_009	Lw	A	75,1	85,4	87,4	88,6	102,7	94,0	96,3	86,9	79,9	104,4	117,0	Messung Dundee 10.2016
Cooling tower, motor east	PQ_010	Lw	A	52,2	58,8	65,9	76,0	76,5	83,1	77,2	70,4	60,9	85,5	94,1	Messung Dundee 10.2016
Cooling tower, motor west	PQ_011	Lw	A	52,2	62,0	64,1	72,1	78,4	89,7	84,6	70,6	64,5	91,2	95,6	Messung Dundee 10.2016
Wheel loader outside	FQ_012_und_013	Lw	A	40,0	50,0	61,5	84,6	84,0	84,7	81,2	75,5	63,5	90,0	95,1	Messung Dundee 10.2016
Flue gas treatment plant, sides	vFQ_014_bis_017	Lw	A	63,9	74,7	81,1	86,2	92,0	89,6	88,1	86,6	79,1	96,3	106,7	Messung Dundee 10.2016
Hammermills, cooling fan inlet	PQ_020	Lw	A	56,4	67,1	78,0	91,5	90,3	92,0	91,9	81,8	71,7	97,7	103,8	Messung Dundee 10.2016
Hammermills, cooling fan casing and motor	PQ_021	Lw	A	54,8	67,0	73,9	87,5	93,2	90,9	89,2	81,3	69,3	96,9	102,1	Messung Dundee 10.2016
Boiler house, air intake north	vFQ_024	Lw	A	46,8	59,5	67,1	74,2	74,0	72,6	69,4	66,9	60,8	79,6	91,0	Messung Dundee 10.2016
Odour abatement plant, OAP Fan	PQ_025	Lw	A	54,6	67,0	74,2	78,1	82,5	84,1	84,0	90,1	69,6	92,6	98,9	Messung Dundee 10.2016
Odour abatement plant, RDF Fans	PQ_026	Lw	A	62,4	77,9	84,2	90,1	93,0	93,6	90,8	84,7	79,2	98,6	108,2	Messung Dundee 10.2016
Flue gas treatment plant, top	FQ_035	Lw	A	65,6	77,1	81,8	88,7	94,0	92,3	91,6	90,4	85,2	99,0	108,7	Messung Dundee 10.2016
Gas oil tank pumps	PQ_040_und_041	Lw	A	63,0	71,1	76,7	79,9	101,1	103,9	106,3	99,9	92,0	109,6	110,8	Messung Dundee 10.2016
Compressor room, open door	vFQ_042	Lw	A	40,2	54,9	60,4	77,5	81,2	82,5	80,5	76,6	71,4	87,3	91,0	Messung Dundee 10.2016
Lorrie Driving	Lorrie	Lw	A	28,0	43,0	48,0	52,0	55,0	58,0	57,0	52,0	37,0	62,7	72,9	M88323
Flue Gas Treatment Plant	FGT_plant	Lw	A	67,8	79,0	84,4	90,6	96,1	94,1	93,2	91,9	86,1	100,9	110,8	Messung Dundee

Sound transmission loss

Name	ID	Octave Spectrum (dB)											Source
		31.5	63	125	250	500	1000	2000	4000	8000	Rw		
Silencer 1 1 10	SD_AB_1_1_10	0,0	0,0	3,0	8,0	16,0	35,0	35,0	20,0	10,0	20	M88323_Prima, SD AB 1/1/10	

Immissions - V3 Only Bunkerventilati

Immission points- Noise rating level

Name	M.	ID	Level Lr		Limit. Value		Land Use		Height		Coordinates			
			Day+Rz (dBA)	Night (dBA)	Day+Rz (dBA)	Night (dBA)	Type	Auto	Noise Type	(m)	(m)	(m)	Y	Z
Location A	I0401!		38,1	38,1	0,0	0,0	x		Gesamt	4,00	r	30505279,80	6260204,57	32,50
Location B	I0401!		40,7	40,6	0,0	0,0	x		Gesamt	4,00	r	30505651,62	6260475,28	32,50
Location C	I0401!		39,0	38,9	0,0	0,0	x		Gesamt	4,00	r	30506028,88	6260409,70	32,50
Location D	I0401!		42,9	42,9	0,0	0,0	x		Gesamt	4,00	r	30506509,70	6260482,19	32,50
Location E	I0401!		35,6	35,5	0,0	0,0	x		Gesamt	4,00	r	30506731,11	6259503,36	32,50
Location F	I0401!		37,6	37,6	0,0	0,0	x		Gesamt	4,00	r	30506130,44	6259647,01	32,50
Location G	I0401!		41,2	41,2	0,0	0,0	x		Gesamt	4,00	r	30505649,28	6259734,33	32,50

Odour abatement plant, RDF Fans	I01010001!26	98,6	98,6	98,6	Lw	PQ_026		0,0	0,0	0,0					0,0	(none)	1,00	r	30506018,68	6260155,11	29,50
Odour abatement plant, OAP Fan	I01010001!25	92,6	92,6	92,6	Lw	PQ_025		0,0	0,0	0,0					3,0	(none)	1,00	r	30506017,43	6260162,11	29,50
Hammermills, cooling fan inlet	I01010000!20	97,7	97,7	97,7	Lw	PQ_020		0,0	0,0	0,0					3,0	(none)	2,00	r	30506026,30	6260128,55	30,50
Hammermills, cooling fan casing and motor	I01010000!21	96,9	96,9	96,9	Lw	PQ_021		0,0	0,0	0,0					3,0	(none)	1,00	r	30506026,87	6260128,32	29,50
Gas oil tank pumps	I01010000!40-41	109,6	109,6	109,6	Lw	PQ_040_und_041		0,0	0,0	0,0					0,0	(none)	1,00	r	30506102,35	6260085,25	29,50
Cooling tower, motor east	I01010001!10	85,5	85,5	85,5	Lw	PQ_010		0,0	0,0	0,0					3,0	(none)	1,00	g	30506112,43	6260102,69	37,50
Cooling tower, motor west	I01010001!11	91,2	91,2	91,2	Lw	PQ_011		0,0	0,0	0,0					3,0	(none)	1,00	g	30506103,79	6260100,84	37,50

Line sources

Name	M.	ID	Result Lw.			Result Lw.'			Lw / Li		Correction			Sound Reduction	Attenuation	Operating Time			K0	Freq.	Direct.	Weight. PunktSourcen		
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m²)	Day (min)	Special (min)	Night (min)	(dB)	(Hz)	Anzahl Day	Anzahl Evening	Anzahl Night
Exhaust pipe lines (normal)	I0203000303!	91,0	91,0	91,0	73,9	73,9	73,9	Lw	Abdampfleitung	91,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Pipe to stack	I02030008!	85,0	85,0	85,0	79,3	79,3	79,3	Lw	Rauchgasleitung_2	85,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Pipe boiler house to filter	I02030008!	90,0	90,0	90,0	88,0	88,0	88,0	Lw	Rauchgasleitung_2	90,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Lorries resource flue gas cleaning (1/h)	I020301!	75,4	75,4	87,4	50,7	50,7	62,7	Lw'	Lorrie	-12,0	-12,0	0,0				960,00	0,00	0,00	0,0		(none)			
Pipe filter to ID fan	I02030008!	90,0	90,0	90,0	78,5	78,5	78,5	Lw	Rauchgasleitung_2	90,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Lorries Ash (2/h)	I02030101!	77,2	77,2	86,2	53,7	53,7	62,7	Lw'	Lorrie	-9,0	-9,0	0,0				960,00	0,00	0,00	0,0		(none)			
Wheel Loader	I020301!	95,0	95,0	95,0	71,8	71,8	71,8	Lw	FQ_012 und 013	95,0	0,0	0,0	0,0			960,00	0,00	0,00	0,0		(none)			
Exhaust pipe lines (bypass)	I020001!	98,0	98,0	98,0	80,9	80,9	80,9	Lw	Abdampfleitung	98,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Exhaust pipe lines (normal)	I020000!	91,0	91,0	91,0	70,8	70,8	70,8	Lw	Abdampfleitung	91,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Exhaust pipe lines (added at bypass)	I02030000!	97,0	97,0	97,0	79,9	79,9	79,9	Lw	Abdampfleitung	97,0	0,0	0,0	0,0			960,00	0,00	60,00	0,0		(none)			
Waste Delivery 4 Lkws - to	I00!	81,1	87,1	87,1	56,7	62,7	62,7	Lw'	Lorrie	-6,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Waste Delivery 4 Lkws - back	I00!	81,6	87,6	87,6	56,7	62,7	62,7	Lw'	Lorrie	-6,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Combustion Bed Ash - 2 Lkw - to	I00!	74,0	83,0	83,0	53,7	62,7	62,7	Lw'	Lorrie	-9,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Combustion Bed Ash - 2 Lkw - back	I00!	74,0	83,0	83,0	53,7	62,7	62,7	Lw'	Lorrie	-9,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Bottom Ash - 1 Lkw - to	I00!	77,9	89,9	89,9	50,7	62,7	62,7	Lw'	Lorrie	-12,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Bottom Ash - 1 Lkw - back	I00!	78,1	90,1	90,1	50,7	62,7	62,7	Lw'	Lorrie	-12,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
FGT Chemicals - 1 Tanker Lorry - to and back	I00!	80,3	92,3	92,3	50,7	62,7	62,7	Lw'	Lorrie	-12,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
FGT Residues - 1 Tanker Lorry - to and back	I00!	80,3	92,3	92,3	50,7	62,7	62,7	Lw'	Lorrie	-12,0	0,0	0,0				960,00	0,00	0,00	0,0		(none)			
Lorries Waste Delivery (24/h)	I02030100!	92,2	92,2	90,5	64,4	64,4	62,7	Lw'	Lorrie	1,7	1,7	0,0				960,00	0,00	0,00	0,0		(none)			

Surface sound sources

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li			Correction		Sound Reduction			Attenuation	Operating Time			K0	Freq.	Direct.	Weight. PunktSourcen										
																									Anzahl									
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	(m²)	Day	Special	Night	(min)	(min)	(min)	(dB)	(Hz)	Day	Evening	Night						
Flue gas treatment plant, top	I020201135		99,0	99,0	99,0	80,7	80,7	80,7	Lw	FQ_035	0,0	0,0	0,0										0,0		(none)									
Cooling tower, air outlet west	I02020117-9	104,4	104,4	104,4	89,2	89,2	89,2	Lw	FQ_007_bis_009		0,0	0,0	0,0										0,0		(none)									
Cooling tower, air outlet east	I02020114-6	99,4	99,4	99,4	84,1	84,1	84,1	Lw	FQ_004_bis_006		0,0	0,0	0,0										0,0		(none)									
Wheel loader outside	I020200112-13	90,0	90,0	90,0	53,2	53,2	53,2	Lw	FQ_012_und_013		0,0	0,0	0,0										0,0		(none)									
BOILER HOUSE - Roof	I0203000201!	66,5	66,5	66,5	39,9	39,9	39,9	Li	Boil_House_Li_ober2	85,0	0,0	0,0	0,0	Tata_Steel	453,24	960,00	0,00	60,00	0,0															
FUEL BUNKER - Roof	I0203000401!	35,3	35,3	35,3	6,2	6,2	6,2	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_20_cm_Stahlbet	803,68	960,00	0,00	60,00	0,0															
TIPPING HALL - Roof / day	I020300050001!	85,0	85,0	85,0	53,8	53,8	53,8	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	1080,00	960,00	0,00	60,00	0,0															
Outgoing air KH	I0203000200!	92,7	92,7	92,7	75,8	75,8	75,8	Li	Boil_House_Li_ober2	85,0	0,0	0,0	0,0	Windleitfl.Luefter	50,00	open	960,00	0,00	60,00	0,0														
Roof ID-Fan	I02030008!	56,7	56,7	56,7	47,5	47,5	47,5	Li	ID_fan_House_Li2	0,0	0,0	0,0	0,0	Roof	8,45	960,00	0,00	60,00	0,0															
MACHINE HOUSE - Roof	I0203000301!	78,8	78,8	78,8	51,5	51,5	51,5	Li	Turb_House		0,0	0,0	0,0	Tata_Steel	530,01	960,00	0,00	60,00	0,0															
TIPPING HALL - Roof / night	I020300050101!	74,3	74,3	74,3	43,1	43,1	43,1	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	1080,00	0,00	0,00	60,00	0,0															
TIPPING HALL - RWA / day	I020300050001!	93,5	93,5	93,5	62,3	62,3	62,3	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	RWA	240,00	960,00	0,00	60,00	0,0															
TIPPING HALL - RWA / night	I020300050101!	83,0	83,0	83,0	51,8	51,8	51,8	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	RWA	240,00	0,00	0,00	60,00	0,0															
Roof filter	I02030008!	70,8	70,8	70,8	50,9	50,9	50,9	Li	Filter_House_Li2	90,0	-3,0	-3,0	-3,0	Roof	97,00	960,00	0,00	60,00	0,0															
Luko south intake side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko north intake side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko south discharge side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko north discharge side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Cooler	I020300!	98,0	98,0	98,0	79,7	79,7	79,7	Lw	Cooler	98,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko south intake side	I02000103!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko north intake side	I02000103!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko south discharge side	I02000103!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko north discharge side	I02000103!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko south intake side	I02000003!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Luko north intake side	I02000003!	90,0	90,0	90,0	67,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0										960,00	0,00	60,00	0,0		(none)						
Fuel Gas Treatment plant, top	I01010001!35	99,0	99,0	99,0	80,5	80,5	80,5	Lw	FQ_035		0,0	0,0	0,0											0,0		(none)								
Cooling tower, air outlet west	I01010001!7-9	104,4	104,4	104,4	89,2	89,2	89,2	Lw	FQ_007_bis_009		0,0	0,0	0,0											0,0		(none)								
Cooling tower, air outlet east	I01010001!4-6	99,4	99,4	99,4	84,1	84,1	84,1	Lw	FQ_004_bis_006		0,0	0,0	0,0											0,0		(none)								
Wheel loader outside	I01010000!12-13	90,0	90,0	90,0	50,8	50,8	50,8	Lw	FQ_012_und_013		0,0	0,0	0,0											0,0		(none)								

Vertikal surface sound sources

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li			Correction		Sound Reduction			Attenuation	Operating Time			K0	Freq.	Direct.	Weight. PunktSourcen					
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	(m²)	Day	Special	Night	(min)	(min)	(min)	(dB)	(Hz)	Day	Evening	Night	
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,2	75,2	75,2	Lw	vFQ_014_bis_017		0,0	0,0	0,0											3,0		(none)			
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,2	75,2	75,2	Lw	vFQ_014_bis_017		0,0	0,0	0,0											3,0		(none)			
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,5	75,5	75,5	Lw	vFQ_014_bis_017		0,0	0,0	0,0											3,0		(none)			
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,5	75,5	75,5	Lw	vFQ_014_bis_017		0,0	0,0	0,0											3,0		(none)			
Cooling tower, air intake south	I02020112	95,1	95,1	95,1	79,8	79,8	79,8	Lw	vFQ_002		0,0	0,0	0,0											3,0		(none)			
Cooling tower, air intake north	I02020113	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003		0,0	0,0	0,0											3,0		(none)			
Boiler house, air intake north	I02020124	79,6	79,6	79,6	60,1	60,1	60,1	Lw	vFQ_024		0,0	0,0	0,0											3,0		(none)			
Compressor room, open door	I02020142	87,3	87,3	87,3	77,8	77,8	77,8	Lw	vFQ_042		0,0	0,0	0,0											3,0		(none)			
Facade N Air supply	I0203000200!	83,6	83,6	83,6	64,9	64,9	64,9	Li	Boil_House_Li2	85,0	0,0	0,0	0,0																

BOILER HOUSE - Facade East	!0203000202!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade South	!0203000202!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade West	!0203000202!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade	!0203000202!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade North	!0203000302!	83,7	83,7	83,7	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	243,76	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade East	!0203000302!	82,9	82,9	82,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	205,25	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade South	!0203000302!	83,9	83,9	83,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	253,85	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade West	!0203000302!	71,9	71,9	71,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	15,97	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air North	!0203000300!	89,1	89,1	89,1	65,2	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air East	!0203000300!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air South	!0203000300!	89,1	89,1	89,1	65,0	65,0	65,0	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
FUEL BUNKER - Facade North	!0203000402!	21,2	21,2	21,2	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	197,55	960,00	0,00	60,00	3,0	(none)
Facade Filter Penthouse	!02030008!	86,1	86,1	86,1	57,6	57,6	57,6	Li	Filter_House_Li2	90,0	0,0	0,0	0,0	Longspan	708,60	960,00	0,00	60,00	3,0	(none)
Facade Filter	!02030008!	62,6	62,6	62,6	34,1	34,1	34,1	Li	Filter_House_Filter_Li2	0,0	0,0	0,0	0,0	Longspan	708,60	960,00	0,00	60,00	3,0	(none)
Facade ID-Fan	!02030008!	70,1	70,1	70,1	51,0	51,0	51,0	Li	ID_fan_House_Li2	0,0	0,0	0,0	0,0	Longspan	79,90	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade East	!02000102!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade South	!02000102!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade West	!02000102!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade	!02000102!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air North	!02000101!	89,1	89,1	89,1	65,2	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air East	!02000101!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air South	!02000101!	89,1	89,1	89,1	65,0	65,0	65,0	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade North	!02000100!	83,7	83,7	83,7	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	243,76	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade East	!02000100!	82,9	82,9	82,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	205,25	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade South	!02000100!	83,9	83,9	83,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	253,85	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade West	!02000100!	71,9	71,9	71,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	15,97	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade North	!02000000!	75,4	75,4	75,4	51,5	51,5	51,5	Li	Turb_House	0,0	0,0	0,0	0,0	Tata_Steel	243,76	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade East	!02000000!	74,7	74,7	74,7	51,5	51,5	51,5	Li	Turb_House	0,0	0,0	0,0	0,0	Tata_Steel	205,25	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade South	!02000000!	75,6	75,6	75,6	51,5	51,5	51,5	Li	Turb_House	0,0	0,0	0,0	0,0	Tata_Steel	253,85	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Facade West	!02000000!	63,6	63,6	63,6	51,5	51,5	51,5	Li	Turb_House	0,0	0,0	0,0	0,0	Tata_Steel	15,97	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air North	!02000001!	86,3	86,3	86,3	62,5	62,5	62,5	Li	Turb_House	0,0	0,0	0,0	0,0	SD_AB_1_1_5	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air East	!02000001!	86,3	86,3	86,3	63,2	63,2	63,2	Li	Turb_House	0,0	0,0	0,0	0,0	SD_AB_1_1_5	10,00	960,00	0,00	60,00	3,0	(none)
MACHINE HOUSE - Supply air South	!02000001!	86,3	86,3	86,3	62,3	62,3	62,3	Li	Turb_House	0,0	0,0	0,0	0,0	SD_AB_1_1_5	10,00	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade East	!02000002!	67,1	67,1	67,1	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	504,80	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade South	!02000002!	69,7	69,7	69,7	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	923,79	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade West	!02000002!	59,7	59,7	59,7	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	91,76	960,00	0,00	60,00	3,0	(none)
BOILER HOUSE - Facade	!02000002!	64,1	64,1	64,1	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	256,85	960,00	0,00	60,00	3,0	(none)
Flue Gas Treatment Plant	!0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0						3,0	(none)
Flue Gas Treatment Plant	!0101000114-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0						3,0	(none)
Flue Gas Treatment Plant	!0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0						3,0	(none)
Flue Gas Treatment Plant	!0101000114-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0	0,0						3,0	(none)
Cooling tower, air intake south	!010100012	95,1	95,1	95,1	79,7	79,7	79,7	Lw	vFQ_002	0,0	0,0	0,0	0,0						3,0	(none)
Cooling tower, air intake north	!010100013	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003	0,0	0,0	0,0	0,0						3,0	(none)
Boiler house, air intake north	!0101000124	79,6	79,6	79,6	60,0	60,0	60,0	Lw	vFQ_024	0,0	0,0	0,0	0,0						3,0	(none)
Compressor room, open door	!0101000142	87,3	87,3	87,3	76,3	76,3	76,3	Lw	vFQ_042	0,0	0,0	0,0	0,0						3,0	(none)
Emergency diesel generator	!05!	103,7	103,7	103,7	83,7	83,7	83,7	Li	S_4006DAY3A	0,0	0,0	0,0	0,0	_2flueg_Stahltor	100,38	960,00	0,00	60,00	3,0	(none)

Emission spectrum - V4 Additional Measures

Sound power

Name	ID	Type	Octave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Cooling tower, air intake south	vFQ_002	Lw	A	56,9	65,9	70,4	74,2	85,6	87,3	89,4	89,9	86,3	95,1	99,9	Messung Dundee 10.2016
Cooling tower, air intake north	vFQ_003	Lw	A	55,9	64,5	70,2	74,1	83,7	81,6	83,1	83,2	79,3	89,6	98,0	Messung Dundee 10.2016
Cooling tower, air outlet east	FQ_004_bis_006	Lw	A	73,6	83,0	87,0	89,2	93,3	93,1	93,6	86,8	80,3	99,4	115,0	Messung Dundee 10.2016
Cooling tower, air outlet west	FQ_007_bis_009	Lw	A	75,1	85,4	87,4	88,6	102,7	94,0	96,3	86,9	79,9	104,4	117,0	Messung Dundee 10.2016
Cooling tower, motor east	PQ_010	Lw	A	52,2	58,8	65,9	76,0	76,5	83,1	77,2	70,4	60,9	85,5	94,1	Messung Dundee 10.2016
Cooling tower, motor west	PQ_011	Lw	A	52,2	62,0	64,1	72,1	78,4	89,7	84,6	70,6	64,5	91,2	95,6	Messung Dundee 10.2016
Wheel loader outside	FQ_012_und_013	Lw	A	40,0	50,0	61,5	84,6	84,0	84,7	81,2	75,5	63,5	90,0	95,1	Messung Dundee 10.2016
Flue gas treatment plant, sides	vFQ_014_bis_017	Lw	A	63,9	74,7	81,1	86,2	92,0	89,6	88,1	86,6	79,1	96,3	106,7	Messung Dundee 10.2016
Hammermills, cooling fan inlet	PQ_020	Lw	A	56,4	67,1	78,0	91,5	90,3	92,0	91,9	81,8	71,7	97,7	103,8	Messung Dundee 10.2016
Hammermills, cooling fan casing and motor	PQ_021	Lw	A	54,8	67,0	73,9	87,5	93,2	90,9	89,2	81,3	69,3	96,9	102,1	Messung Dundee 10.2016
Boiler house, air intake north	vFQ_024	Lw	A	46,8	59,5	67,1	74,2	74,0	72,6	69,4	66,9	60,8	79,6	91,0	Messung Dundee 10.2016
Odour abatement plant, OAP Fan	PQ_025	Lw	A	54,6	67,0	74,2	78,1	82,5	84,1	84,0	90,1	69,6	92,6	98,9	Messung Dundee 10.2016
Odour abatement plant, RDF Fans	PQ_026	Lw	A	62,4	77,9	84,2	90,1	93,0	93,6	90,8	84,7	79,2	98,6	108,2	Messung Dundee 10.2016
Flue gas treatment plant, top	FQ_035	Lw	A	65,6	77,1	81,8	88,7	94,0	92,3	91,6	90,4	85,2	99,0	108,7	Messung Dundee 10.2016
Gas oil tank pumps	PQ_040_und_041	Lw	A	63,0	71,1	76,7	79,9	101,1	103,9	106,3	99,9	92,0	109,6	110,8	Messung Dundee 10.2016
Compressor room, open door	vFQ_042	Lw	A	40,2	54,9	60,4	77,5	81,2	82,5	80,5	76,6	71,4	87,3	91,0	Messung Dundee 10.2016
Lorrie Driving	Lorrie	Lw	A	28,0	43,0	48,0	52,0	55,0	58,0	57,0	52,0	37,0	62,7	72,9	M88323
Condensers Intake	Cond_Intake	Lw	A	74,6	78,8	86,5	90,7	91,6	93,3	95,8	88,8	80,7	100,0	115,0	M88323
Condensers Exhaust	Cond_Exhaust	Lw	A	73,7	78,3	84,8	90,0	90,7	90,9	89,9	82,9	73,0	97,0	114,1	M88323
Cooler	Cooler	Lw	A	70,4	75,6	81,0	85,5	89,5	93,9	92,9	86,9	77,1	98,0	111,0	M88323
Stack Exhaust	Stack_Exhaust	Lw	A	78,8	82,8	92,3	102,8	105,7	99,3	95,5	83,5	84,5	108,5	120,2	M88323
Turbine House Li	Turb_House_Li2	Li	A	36,9	50,7	63,5	73,1	78,1	77,4	75,0	71,3	66,5	82,8	87,5	Messung Dundee
Turbine House Li	Turb_House_Li2	Li	A	37,0	47,9	61,7	64,6	71,2	73,8	72,2	74,3	68,1	79,6	83,9	Messung Dundee
Boiler_House Li	Boil_House_Li2	Li	A	36,0	50,0	60,7	69,6	74,3	75,9	75,6	72,6	63,3	81,2	85,2	Messung Dundee
Boiler_House Li	Boil_House_Li2	Li	A	35,0	47,2	55,6	61,1	65,6	72,2	69,7	66,6	59,6	75,7	80,4	Messung Dundee
ID_fan_House Li	ID_fan_House_Li2	Li	A	51,5	62,7	65,2	72,0	71,9	76,0	79,7	75,5	66,8	83,2	93,9	Messung Plymouth M105162
Filter House Penthaus Li	Filter_House_Li2	Li	A	41,8	48,3	48,2	52,6	62,2	62,2	62,8	63,2	57,2	69,1	82,4	Messung Plymouth M105162
Filter House Filter Li	Filter_House_Filter_Li2	Li	A	43,6	49,5	43,0	53,5	56,4	55,1	58,0	48,5	40,5	62,6	83,8	Messung Plymouth M105162
Waste Bunker Li	Waste_Bunker_Li	Li	A	40,8	47,8	55,8	65,8	70,8	73,8	72,8	64,8	59,8	78,0	83,8	M88323
Waste Bunker Li	Waste_Bunker_Li2	Li	A	22,0	39,4	48,8	52,6	56,2	55,5	55,7	53,6	48,3	62,3	70,5	Messung Dundee
Waste Tipping Crane Nighttime	Waste_Tipping_night2	Li	A	22,0	39,4	48,8	52,6	56,2	55,5	55,7	53,6	48,3	62,3	70,5	Messung Dundee
Waste Tipping Crane Daytime	Waste_Tipping_day2	Li	A	45,6	52,0	60,3	68,9	72,0	72,7	69,1	63,6	53,8	77,3	87,3	Messung Dundee
Exhaust pipe lines	Exhaust pipe lines	Lw	A	65,1	81,7	92,8	99,2	107,8	112,6	108,4	100,3	89,9	115,2	117,8	M88323
Main Transformer	Main Transformer	Lw	A	72,0	84,0	96,0	99,0	96,0	93,0	90,0	82,0	72,0	102,9	116,8	M88323
Rustash_Li_Nighttime	Rustash_Li_night	Li	A	46,1	51,4	60,7	63,1	63,0	64,8	68,0	66,2	60,9	73,0	86,9	M88323
Flue gas pipe	Flue_gas_pipe_2	Lw	A	60,7	67,3	66,4	70,6	69,3	61,8	52,6	45,5	32,8	75,1	101,1	Messung Plymouth M105162
Flue Gas Treatment Plant	FGT_plant	Lw	A	67,8	79,0	84,4	90,6	96,1	94,1	93,2	91,9	86,1	100,9	110,8	Messung Dundee
Multi Split Unit Cooler	Split_Unit	Lw	A	55,0	54,0	55,0	53,0	48,0	46,0	42,0	35,0	29,0	51,2	60,8	M112373
Turbine House	Turb_House	Li	A	50,0	72,0	74,0	84,0	80,0	82,0	83,0	84,0	79,0	90,3	100,5	M139854_Prognose
Container em. diesel gen.	S_4006DAY3A	Lw	A	82,2	98,2	94,2	99,2	101,2	99,2	98,2	95,2	88,2	107,0	126,4	Hersteller

Sound transmission loss

Name	ID	Octave Spectrum (dB)										Source
		31.5	63	125	250	500	1000	2000	4000	8000	Rw	
open	open	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1	M88323
2-winged steel gate	2flueg_stahl_gate	6,0	11,0	16,0	19,0	20,0	22,0	28,0	27,0	27,0	24	M88323_Prima M68004 6
Roller Shutter 2x1St/20MF,di.	roller_shutter	15,0	19,0	23,0	22,0	26,0	34,0	31,0	25,0	20,0	30	M88323_PRIMA, Rollt2x1St/20MF,di.
20 cm ferroconcrete platter	20_cm_Stahlbet	37,0	43,0	45,0	47,0	53,0	62,0	66,0	65,0	65,0	58	Prima 29
50 cm ferroconcrete platter	50_cm_Stahlbet	45,0	50,0	53,0	55,0	61,0	70,0	74,0	77,0	77,0	66	Prima 29
Weather louvres, non-absorbing (e.g. Colt o. glw.)	Windleitfl.Luefter	0,0	0,0	1,0	1,0	2,0	3,0	4,0	5,0	5,0	4	M88323_Prima M68004 28
Roof from StTr/140MF/Fol	Roof	11,0	17,0	21,0	21,5	26,7	43,3	56,9	64,5	54,0	32	M88323_Prima, StTr/140MF/Fol
Sound Absorber 1 1 5	SD_AB_1_1_5	0,0	0,0	2,0	4,0	9,0	21,0	21,0	12,0	10,0	15	M88323_Prima, SD AB 1/1/5
Sound Absorber 1 1 10	SD_AB_1_1_10	0,0	0,0	3,0	8,0	16,0	35,0	35,0	20,0	10,0	20	M88323_Prima, SD AB 1/1/10
Weather louvres	WS_Gitter	0,0	1,0	3,0	4,0	4,0	6,0	6,0	7,0	7,0	6	Prima 488
Single leaf dome light, e.g. from 3 mm acrylic glas	RWA	4,0	5,0	6,0	7,0	9,0	10,0	12,0	15,0	15,0	11	Prima 204
Longspan KS1000 LS	Longspan	10,0	15,0	20,0	21,0	25,0	25,0	30,0	38,0	40,0	27	M139854, Prognose
Tata Steel D200	Tata_Steel	12,0	18,0	23,5	31,3	43,7	43,2	61,0	86,5	90,0	42	M139854, Prognose

Immissions - V4 Additional Measures

Immission points- Noise rating level

Name	M.	ID	Level Lr		Limit. Value		Land Use		Height		Coordinates		
			Day+Rz (dBA)	Night (dBA)	Day+Rz (dBA)	Night (dBA)	Type	Auto	Noise Type	(m)	(m)	(m)	Y (m)
Location A	I0401!		40,7	40,5	0,0	0,0	x	Gesamt	4,00	r	30505279,80	6260204,57	32,50
Location B	I0401!		43,7	43,6	0,0	0,0	x	Gesamt	4,00	r	30505651,62	6260475,28	32,50
Location C	I0401!		44,2	44,2	0,0	0,0	x	Gesamt	4,00	r	30506028,88	6260409,70	32,50
Location D	I0401!		46,7	46,7	0,0	0,0	x	Gesamt	4,00	r	30506509,70	6260482,19	32,50
Location E	I0401!		41,0	40,8	0,0	0,0	x	Gesamt	4,00	r	30506731,11	6259503,36	32,50
Location F	I0401!		46,9	46,6	0,0	0,0	x	Gesamt	4,00	r	30506130,44	6259647,01	32,50
Location G	I0401!		45,4	45,0	0,0	0,0	x	Gesamt	4,00	r	30505649,28	6259734,33	32,50

Immission spectrum daytime and night time

Name	M.	ID	Level Spectrum dB(A)									
			Type	31,5	63	125	250	500	1000	2000	4000	8000
Location A	I0401!		Day+Rz	16,7	25,6	27,8	32,0	36,9	34,8	30,6	5,3	-69,8
			Night	16,4	25,5	27,6	31,6	36,8	34,6	30,6	5,2	-69,8
Location B	I0401!		Day+Rz	19,0	27,2	29,4	35,8	38,6	39,1	34,3	13,4	-42,1
			Night	18,8	27,1	29,2	35,6	38,5	39,0	34,2	13,3	-42,1
Location C	I0401!		Day+Rz	23,0	31,2	32,5	35,8	39,8	38,4	34,6	19,9	-14,4
			Night	22,9	31,2	32,4	35,7	39,8	38,4	34,6	19,9	-14,4
Location D	I0401!		Day+Rz	22,5	31,9	31,4	36,5	42,5	41,4	38,9	20,2	-34,1
			Night	22,5	31,9	31,3	36,3	42,5	41,3	38,9	20,2	-34,1
Location E	I0401!		Day+Rz	23,2	33,7	28,9	32,6	36,3	34,0	27,4	3,4	-71,6
			Night	23,2	33,7	28,8	32,2	36,1	33,8	27,3	3,2	-71,6
Location F	I0401!		Day+Rz	31,6	42,0	35,7	39,4	39,9	38,7	33,8	21,0	-13,1
			Night	31,6	42,0	35,6	38,9	39,3	37,9	33,0	20,4	-13,2
Location G	I0401!		Day+Rz	26,4	38,1	33,6	36,9	40,6	38,1	33,6	15,1	-30,4
			Night	26,3	38,1	33,4	36,4	40,2	37,6	33,3	14,6	-30,5

Partial level daytime and night time

Source Name	M.	ID	Teilpegel V07 - em. diesel gen.											
			Location A		Location B		Location C		Location D		Location E		Location F	
			Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night
Odour abatement plant, RDF Fans	I020201126		15,7	15,7	29,8	29,8	21,3	21,3	28,4	28,4	17,0	17,0	11,5	11,5
Odour abatement plant, OAP Fan	I020201125		12,7	12,7	19,5	19,5	11,6	11,6	18,7	18,7	7,3	7,3	1,8	1,8
Hammermills, cooling fan inlet	I020200120		25,7	25,7	31,9	31,9	24,0	24,0	25,6	25,6	5,8	5,8	16,0	16,0
Hammermills, cooling fan casing and motor	I020200121		24,9	24,9	31,1	31,1	21,7	21,7	25,0	25,0	3,7	3,7	13,5	13,5
Gas oil tank pumps	I020200140-41		31,9	31,9	33,1	33,1	27,6	27,6	38,8	38,8	26,8	26,8	21,1	21,1
Cooling tower, motor east	I020201110		14,2	14,2	16,3	16,3	22,3	22,3	19,4	19,4	13,9	13,9	8,3	8,3
Cooling tower, motor west	I020201111		21,1	21,1	20,6	20,6	15,2	15,2	24,5	24,5	18,9	18,9	16,0	16,0
Stack opening	I0203000A1		18,6	18,6	22,2	22,2	28,6	28,6	23,2	23,2	19,4	19,4	28,4	28,4
Gate	I0203000700!		-17,1	-17,1	-16,4	-16,4	-15,6	-15,6	-12,4	-12,4	-29,2	-29,2	-25,2	-23,3
Gate	I0203000700!		-16,4	-16,4	-16,3	-16,3	-11,9	-11,9	-11,7	-11,7	-30,3	-30,3	-24,9	-18,7
Gate	I0203000202!		-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	-0,0
Air supply	I020300050100!				7,1			-5,9		-9,5		-8,9		7,9
Outgoing air machine hall	I0203000300!		-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	2,9
Gate	I0203000302!		-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-12,8
Ventilation Penthouse Filter SE	I02030008!		15,2	15,2	16,6	16,6	7,7	7,7	17,4	17,4	15,8	15,8	22,4	0,8
Ventilation Penthouse Filter NW	I02030008!		14,7	14,7	16,7	16,7	9,5	9,5	19,7	19,7	15,8	15,8	22,4	0,9
Ventilation ID- House	I02030008!		-7,7	-7,7	8,7	8,7	10,7	10,7	13,1	13,1	9,4	9,4	6,1	-5,3
Outgoing air ID	I02030008!		-10,4	-10,4	1,2	1,2	4,3	4,3	10,7	10,7	-6,7	-6,7	0,2	-4,9
Gate ID- House	I02030008!		-14,3	-14,3	-1,7	-1,7	-0,7	-0,7	0,6	0,6	-13,5	-13,5	-5,1	-13,0
TIPPING HALL - Gate / night	I020300050100!		-29,7		-29,1		-28,1		-32,2		-15,0		-6,2	-9,1
TIPPING HALL - Gate / day	I020300050000!		5,0		6,6		8,1		3,4		21,1		30,5	27,4
Air supply	I020300050100!				7,0		9,9		3,5		8,5		0,8	-3,9
Transformer Auxiliary 2	I020300!		2,9	2,9	2,9	2,9	-0,7	-0,7	5,3	5,3	-15,2	-15,2	-7,8	-11,1
Transformer Auxiliary 1	I020300!		3,2	3,2	4,3	4,3	-0,8	-0,8	5,3	5,3	-15,1	-15,1	-7,8	-11,0
Air supply	I020300050100!				-5,8		-7,4		-6,2		6,0		15,5	12,5
Air supply	I020300050000!		4,1		2,6		4,0		-0,8		16,7		26,1	23,2
Air supply	I020300050000!		17,8		20,4		4,3		0,5		0,9		18,4	23,5
Air supply	I020300050000!		17,7		20,5		13,4		19,2		11,8		6,2	9,9
Flue Gas Treatment (outside)	I02030008!		21,9	21,9	23,4	23,4	21,5	21,5	28,1	28,1	23,7	23,7	12,7	25,6
EL_01_Air supply/outgoing air	I0203000200!		-4,6	-4,6	-2,4	-2,4	2,3	2,3	-1,9	-1,9	15,3	15,3	23,5	20,4
EL_02_Air supply/outgoing air	I0203000200!		-5,2	-5,2	15,0	15,0	19,7	19,7	11,7	11,7	-7,8	-7,8	0,6	-2,5
EL_03_Air supply/outgoing air	I0203000200!		-4,7	-4,7	-2,4	-2,4	2,3	2,3	-1,7	-1,7	15,4	15,4	24,6	20,3
EL_04_Air supply/outgoing air	I0203000300!		0,8	0,8	3,4	3,4	8,5	8,5	8,6	8,6	16,7	16,7	29,7	25,5
EL_05_Air supply/outgoing air	I0203000300!		-84,3	-84,3	-81,5	-81,5	-79,0	-79,0	-65,7	-65,7	-66,8	-66,8	-60,8	-83,7
EL_06_Air supply/outgoing air	I020300050000!		9,9	9,9	12,2	12,2	-4,0	-4,0	-9,0	-9,0	-5,6	-5,6	4,2	15,6
EL_07_Air supply/outgoing air	I02030006!		10,0	10,0	14,3	14,3	14,3	14,3	12,9	12,9	-10,4	-10,4	-2,6	-4,5
EL_08_Air supply/outgoing air	I02030006!		10,0	10,0	14,4	14,4	14,0	14,0	12,8	12,8	-8,1	-8,1	-2,5	-4,4
EL_09_Air supply/outgoing air	I02030006!		9,6	9,6	9,4	9,4	7,6	7,6	-2,4	-2,4	-10,8	-10,8	-0,9	-4,9
Startup Silencer Opening	I0203000!		21,2	21,2	24,1	24,1	28,3	28,3	23,5	23,5	21,3	21,3	29,3	26,1
Inverter Heat Pump, Multi Split Unit 1	I0203000201!		14,7	14,7	17,9	17,9	22,2	22,2	17,4	17,4	14,8	14,8	22,6	19,2
Inverter Heat Pump, Multi Split Unit 2	I0203000201!		14,7	14,7	17,3	17,3	21,6	21,6	17,2	17,2	15,2	15,2	22,9	19,2
Inverter Heat Pump, Multi Split Unit 3	I0203000201!		2,9	2,9	6,2	6,2	11,0	11,0	5,9	5,9	2,6	2,6	10,6	7,5
Inverter Heat Pump, Multi Split Unit 4	I0203000201!		2,9	2,9	6,2	6,2	11,1	11,1	6,0	6,0	2,6	2,6	10,6	7,2
Inverter Heat Pump, Multi Split Unit 4	I0203000201!		3,0	3,0	5,0	5,0	9,5	9,5	5,1	5,1	3,4	3,4	12,3	7,7
Bunker Ventilation Fans	I02011		30,1	30,1	30,2	30,2	29,4	29,4	20,8	20,8	26,8	26,8	35,2	35,0
Gate	I02000102!		-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	-0,0
Outgoing air machine hall	I02000101!		-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	2,9
EL_04_Air supply/outgoing air	I02000101!		0,8	0,8	3,4	3,4	8,5	8,5	8,6	8,6	16,7	16,7	29,7	25,5
EL_05_Air supply/outgoing air	I02000101!		-84,3	-84,3	-81,5	-81,5	-79,0	-79,0	-65,7	-65,7	-66,8	-66,8	-60,8	-83,7
Gate	I02000100!		-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-12,8
Gate	I02000000!		-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-12,8
Outgoing air machine hall	I02000001!		-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	2,9
EL_04_Air supply/outgoing air	I02000001!		-0,2	-0,2	2,2	2,2	7,4	7,4	8,3	8,3	15,8	15,8	27,9	24,0
EL_05_Air supply/outgoing air	I02000001!													
Gate	I02000002!		-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	-0,0
Odour abatement plant, RDF Fans	I01010001126		15,1	15,1	29,9	29,9	21,0	21,0	28,4	28,4	17,4	17,4	11,5	16,7
Odour abatement plant, OAP Fan	I01010001125		15,3	15,3	22,4	22,4	12,6	12,6	21,9	21,9	10,4	10,4	4,8	8,1
Hammermills, cooling fan inlet	I01010000120		28,7	28,7	34,9	34,9	27,0	27,0	28,6	28,6	8,8	8,8	19,0	19,3
Hammermills, cooling fan casing and motor	I01010000121		27,9	27,9	34,1	34,1	24,7	24,7	28,0	28,0	6,7	6,7	16,5	14,0
Gas oil tank pumps	I01010000140-41		31,9	31,9	33,2	33,2	26,7	26,7	39,2	39,2	26,9	26,9	21,1	34,4

Cooling tower, motor east	I01010001!10	4,5	4,5	14,7	14,7	6,6	6,6	14,7	14,7	13,9	13,9	5,6	5,6	18,1	18,1
Cooling tower, motor west	I01010001!11	19,4	19,4	20,4	20,4	10,4	10,4	8,6	8,6	15,8	15,8	13,4	13,4	21,9	21,9
Exhaust pipe lines (normal)	I0203000303!	12,1	12,1	20,2	20,2	25,7	25,7	23,4	23,4	19,9	19,9	26,2	26,2	20,6	20,6
Pipe to stack	I02030008!	-0,8	-0,8	11,9	11,9	14,4	14,4	14,9	14,9	10,8	10,8	11,8	11,8	-0,5	-0,5
Pipe boiler house to filter	I02030008!	6,5	6,5	10,1	10,1	11,0	11,0	15,3	15,3	20,2	20,2	26,1	26,1	5,8	5,8
Lorries resource flue gas cleaning (1/h)	I020301!	0,2		1,1		-1,4		3,4		-4,5		-2,3		4,8	
Pipe filter to ID fan	I02030008!	14,5	14,5	18,6	18,6	15,5	15,5	19,1	19,1	18,6	18,6	25,8	25,8	7,0	7,0
Lorries Ash (2/h)	I02030101!	2,6		3,7		1,0		4,3		-6,4		-3,2		7,3	
Wheel Loader	I020301!	13,6		15,1		16,7		23,6		22,2		30,4		26,9	
Exhaust pipe lines (bypass)	I020001!	19,1	19,1	27,2	27,2	32,7	32,7	30,4	30,4	26,9	26,9	33,2	33,2	27,6	27,6
Exhaust pipe lines (normal)	I020000!	16,6	16,6	19,8	19,8	24,0	24,0	21,9	21,9	13,5	13,5	24,2	24,2	23,7	23,7
Exhaust pipe lines (added at bypass)	I02030000!	18,1	18,1	26,2	26,2	31,7	31,7	29,4	29,4	25,9	25,9	32,2	32,2	26,6	26,6
Waste Delivery 4 Lkws - to	I00!	8,2		12,1		6,7		5,6		-3,8		7,6		13,0	
Waste Delivery 4 LKWs - back	I00!	8,8		12,6		7,9		6,3		-2,9		9,2		13,0	
Combustion Bed Ash - 2 Lkw - to	I00!	-6,0		-3,5		-0,3		4,3		-6,0		-11,3		-5,4	
Combustion Bed Ash - 2 Lkw - back	I00!	-6,0		-3,4		-0,3		4,3		-6,0		-11,3		-5,4	
Bottom Ash - 1 Lkw - to	I00!	3,0		6,4		5,3		6,6		-0,4		4,4		7,4	
Bottom Ash - 1 Lkw - back	I00!	3,5		6,8		6,2		6,8		-0,1		5,7		7,4	
FGT Chemicals - 1 Tanker Lorry - to and back	I00!	6,1		9,4		7,7		8,6		1,6		7,9		10,3	
FGT Residues - 1 Tanker Lorry - to and back	I00!	6,1		9,4		7,7		8,6		1,6		7,9		10,3	
Lorries Waste Delivery (24/h)	I02030100!	14,1		15,2		13,3		19,4		17,1		25,6		23,1	
Flue gas treatment plant, top	I02020135	8,9	8,9	13,1	13,1	24,8	24,8	30,3	30,3	24,6	24,6	18,8	18,8	16,0	16,0
Cooling tower, air outlet west	I0202017-9	27,5	27,5	24,6	24,6	30,2	30,2	34,8	34,8	19,7	19,7	20,9	20,9	30,5	30,5
Cooling tower, air outlet east	I0202014-6	21,0	21,0	17,8	17,8	27,5	27,5	29,8	29,8	20,1	20,1	14,9	14,9	21,8	21,8
Wheel loader outside	I02020012-13	14,8	14,8	16,9	16,9	17,7	17,7	20,5	20,5	13,8	13,8	14,5	14,5	15,7	15,7
BOILER HOUSE - Roof	I020300201!	-5,5	-5,5	-3,1	-3,1	1,3	1,3	-3,3	-3,3	-5,3	-5,3	2,2	2,2	-1,0	-1,0
FUEL BUNKER - Roof	I020300401!	-35,3	-35,3	-33,8	-33,8	-31,8	-31,8	-34,8	-34,8	-38,0	-38,0	-27,4	-27,4	-30,0	-30,0
TIPPING HALL - Roof / day	I020300050001!	14,5		15,9		11,2		10,3		10,3		20,1		19,6	
Outgoing air KH	I0203000200!	17,8	17,8	20,8	20,8	25,4	25,4	19,7	19,7	18,2	18,2	26,1	26,1	22,9	22,9
Roof ID-Fan	I02030008!	-29,4	-29,4	-17,8	-17,8	-11,6	-11,6	-13,5	-13,5	-18,9	-18,9	-16,2	-16,2	-28,3	-28,3
MACHINE HOUSE - Roof	I0203000301!	-8,2	-8,2	-3,1	-3,1	-0,5	-0,5	4,6	4,6	-3,5	-3,5	5,7	5,7	-1,1	-1,1
TIPPING HALL - Roof / night	I020300050101!			3,9		5,3		1,4		-0,2		9,5		9,0	
TIPPING HALL - RWA / day	I020300050001!	22,7		24,1		18,5		18,5		18,5		28,4		27,9	
TIPPING HALL - RWA / night	I020300050101!			12,0		13,5		8,6		7,9		17,8		17,2	
Roof filter	I02030008!	-1,7	-1,7	0,8	0,8	0,3	0,3	1,6	1,6	0,6	0,6	5,9	5,9	-8,5	-8,5
Luko south intake side	I02030001!	-2,8	-2,8	15,3	15,3	18,9	18,9	20,9	20,9	15,8	15,8	25,1	25,1	18,4	18,4
Luko north intake side	I02030001!	12,1	12,1	16,9	16,9	19,4	19,4	20,3	20,3	16,6	16,6	24,5	24,5	1,2	1,2
Luko south discharge side	I02030001!	12,0	12,0	17,7	17,7	22,3	22,3	21,0	21,0	18,3	18,3	22,4	22,4	19,0	19,0
Luko north discharge side	I02030001!	14,6	14,6	20,8	20,8	25,7	25,7	23,0	23,0	13,2	13,2	15,4	15,4	20,2	20,2
Cooler	I020300!	23,7	23,7	29,2	29,2	33,6	33,6	26,2	26,2	21,9	21,9	12,3	12,3	12,1	12,1
Luko south intake side	I02000103!	-2,8	-2,8	15,3	15,3	18,9	18,9	20,9	20,9	15,8	15,8	25,1	25,1	18,4	18,4
Luko north intake side	I02000103!	12,1	12,1	16,9	16,9	19,4	19,4	20,3	20,3	16,6	16,6	24,5	24,5	1,2	1,2
Luko south discharge side	I02000103!	12,0	12,0	17,7	17,7	22,3	22,3	21,0	21,0	18,3	18,3	22,4	22,4	19,0	19,0
Luko north discharge side	I02000103!	14,6	14,6	20,8	20,8	25,7	25,7	23,0	23,0	13,2	13,2	15,4	15,4	20,2	20,2
Luko south intake side	I02000003!	16,2	16,2	19,9	19,9	16,1	16,1	20,2	20,2	4,6	4,6	22,5	22,5	22,0	22,0
Luko north intake side	I02000003!	17,9	17,9	21,3	21,3	24,2	24,2	20,7	20,7	-1,4	-1,4	5,6	5,6	15,5	15,5
Luko south discharge side	I02000003!	13,3	13,3	13,0	13,0	13,9	13,9	20,1	20,1	15,6	15,6	26,5	26,5	23,9	23,9
Luko north discharge side	I02000003!	17,8	17,8	18,7	18,7	22,0	22,0	18,5	18,5	10,5	10,5	19,5	19,5	24,5	24,5
Flue gas treatment plant, top	I0101000135	9,9	9,9	12,6	12,6	25,8	25,8	29,1	29,1	25,0	25,0	19,9	19,9	16,1	16,1
Cooling tower, air outlet west	I010100017-9	32,6	32,6	29,2	29,2	34,1	34,1	35,5	35,5	30,5	30,5	31,7	31,7	37,1	37,1
Cooling tower, air outlet east	I010100014-6	26,0	26,0	26,9	26,9	31,6	31,6	30,9	30,9	24,7	24,7	21,8	21,8	30,6	30,6
Wheel loader outside	I010100012-13	13,2	13,2	15,6	15,6	17,6	17,6	21,0	21,0	13,7	13,7	13,2	13,2	14,2	14,2
Flue Gas Treatment Plant	I02020114-17	15,6	15,6	17,3	17,3	29,9	29,9	31,3	31,3	23,8	23,8	23,2	23,2	19,4	19,4
Flue Gas Treatment Plant	I02020114-17	11,9	11,9	14,3	14,3	29,1	29,1	27,2	27,2	24,0	24,0	23,5	23,5	17,2	17,2
Flue Gas Treatment Plant	I02020114-17	11,9	11,9	12,4	12,4	21,7	21,7	29,8	29,8	17,8	17,8	10,9	10,9	16,7	16,7
Flue Gas Treatment Plant	I02020114-17	15,2	15,2	17,7	17,7	31,5	31,5	30,0	30,0	24,4	24,4	23,2	23,2	20,7	20,7
Cooling tower, air intake south	I02020112	2,2	2,2	7,2	7,2	11,5	11,5	8,1	8,1	-0,2	-0,2	7,3	7,3	7,5	7,5
Cooling tower, air intake north	I02020113	4,0	4,0	5,8	5,8	15,6	15,6	24,8	24,8	5,4	5,4	3,7	3,7	6,3	6,3
Boiler house, air intake north	I020201124	10,2	10,2	8,6	8,6	13,5	13,5	15,4	15,4	2,9	2,9	0,4	0,4	8,8	8,8
Compressor room, open door	I020201142	5,7	5,7	3,5	3,5	17,1	17,1	19,9	19,9	12,5	12,5	5,7	5,7	2,6	2,6
Facade N Air supply	I020300200!	7,7	7,7	13,5	13,5	19,8	19,8	15,2	15,2	-6,7	-6,7	0,6	0,6	8,7	8,7
Facade S Air supply	I020300200!	-7,7	-7,7	-5,4	-5,4	-0,7	-0,7	-4,7	-4,7	11,9	11,9	20,7	20,7	17,6	17,6
TIPPING HALL - Facade north / day	I020300050002!	13,1		14,4		9,1		14,1		6,0		10,7		6,1	
TIPPING HALL - Facade north / night	I020300050102!			2,5		3,9		-1,2		3,5		-5,2		-0,4	
TIPPING HALL - Facade south / day	I020300050002!			0,5		-0,4		-0,1		-4,4		12,1		20,9	

TIPPING HALL - Facade south / night	I020300050102!		-9,6	-10,8	-10,6	-15,1	1,5	10,3	7,7
TIPPING HALL - Facade west / day	I020300050002!	12,5	14,9	-0,3	-3,3	-2,9	11,2	17,9	
TIPPING HALL - Facade west / night	I020300050102!	1,9	4,2	-10,8	-13,6	-13,0	0,8	7,3	
FUEL BUNKER - Facade West	I0203000402!								
FUEL BUNKER - Facade South	I0203000402!								
FUEL BUNKER - Facade North	I0203000402!								
FUEL BUNKER - Facade East	I0203000402!								
BOILER HOUSE - Facade East	I0203000202!	-4,2	-4,2	-0,5	-0,5	17,3	17,3	12,9	10,5
BOILER HOUSE - Facade South	I0203000202!	-3,3	-3,3	-2,0	-2,0	1,7	1,7	-1,2	-1,2
BOILER HOUSE - Facade West	I0203000202!	2,8	2,8	5,3	5,3	2,0	2,0	-4,6	-4,6
BOILER HOUSE - Facade	I0203000202!	4,9	4,9	8,8	8,8	14,6	14,6	10,6	10,6
MACHINE HOUSE - Facade North	I0203000302!	-1,3	-1,3	4,0	4,0	12,1	12,1	15,6	15,6
MACHINE HOUSE - Facade East	I0203000302!	-3,8	-3,8	0,3	0,3	8,2	8,2	16,8	16,8
MACHINE HOUSE - Facade South	I0203000302!	-5,2	-5,2	-0,6	-0,6	4,1	4,1	7,0	7,0
MACHINE HOUSE - Facade West	I0203000302!	-15,7	-15,7	-14,3	-14,3	-9,7	-9,7	-7,3	-7,3
MACHINE HOUSE - Supply air North	I0203000300!	0,9	0,9	6,6	6,6	15,0	15,0	19,1	19,1
MACHINE HOUSE - Supply air East	I0203000300!	-0,6	-0,6	3,2	3,2	11,7	11,7	21,4	21,4
MACHINE HOUSE - Supply air South	I0203000300!	-2,2	-2,2	1,9	1,9	6,8	6,8	9,0	9,0
FUEL BUNKER - Facade North	I0203000402!								
Facade Filter Penthouse	I02030008!	8,5	8,5	13,8	13,8	17,6	17,6	17,1	12,8
Facade Filter	I02030008!	-12,5	-12,5	-8,2	-8,2	-4,2	-4,2	-5,2	-9,8
Facade ID-Fan	I02030008!	-12,4	-12,4	-4,8	-4,8	0,1	0,1	1,2	-7,8
BOILER HOUSE - Facade East	I02000102!	-4,2	-4,2	-0,5	-0,5	17,3	17,3	12,9	10,5
BOILER HOUSE - Facade South	I02000102!	-3,3	-3,3	-2,0	-2,0	1,7	1,7	-1,2	-1,2
BOILER HOUSE - Facade West	I02000102!	2,8	2,8	5,3	5,3	2,0	2,0	-4,6	-4,6
BOILER HOUSE - Facade	I02000102!	4,9	4,9	8,8	8,8	14,6	14,6	10,6	10,6
MACHINE HOUSE - Supply air North	I02000101!	0,9	0,9	6,6	6,6	15,0	15,0	19,1	19,1
MACHINE HOUSE - Supply air East	I02000101!	-0,6	-0,6	3,2	3,2	11,7	11,7	21,4	21,4
MACHINE HOUSE - Supply air South	I02000101!	-2,2	-2,2	1,9	1,9	6,8	6,8	9,0	9,0
MACHINE HOUSE - Facade North	I02000100!	-1,3	-1,3	4,0	4,0	12,1	12,1	15,6	15,6
MACHINE HOUSE - Facade East	I02000100!	-3,8	-3,8	0,3	0,3	8,2	8,2	16,8	16,8
MACHINE HOUSE - Facade South	I02000100!	-5,2	-5,2	-0,6	-0,6	4,1	4,1	7,0	14,3
MACHINE HOUSE - Facade West	I02000100!	-15,7	-15,7	-14,3	-14,3	-9,7	-9,7	-7,3	-10,3
MACHINE HOUSE - Facade North	I02000000!	-5,8	-5,8	-1,1	-1,1	6,1	6,1	8,4	8,4
MACHINE HOUSE - Facade East	I02000000!	-8,8	-8,8	-4,4	-4,4	2,7	2,7	9,1	9,1
MACHINE HOUSE - Facade South	I02000000!	-11,5	-11,5	-5,8	-5,8	-1,3	-1,3	2,2	6,9
MACHINE HOUSE - Facade West	I02000000!	-21,3	-21,3	-20,4	-20,4	-15,7	-15,7	-12,1	22,7
MACHINE HOUSE - Supply air North	I02000001!	0,7	0,7	6,3	6,3	14,5	14,5	18,0	18,0
MACHINE HOUSE - Supply air East	I02000001!	-1,0	-1,0	3,1	3,1	11,4	11,4	19,9	19,9
MACHINE HOUSE - Supply air South	I02000001!	-3,1	-3,1	1,3	1,3	6,1	6,1	9,0	16,6
BOILER HOUSE - Facade East	I02000002!	-13,5	-13,5	-9,8	-9,8	5,4	5,4	1,3	-0,8
BOILER HOUSE - Facade South	I02000002!	-11,6	-11,6	-10,7	-10,7	-7,5	-7,5	-9,9	1,1
BOILER HOUSE - Facade West	I02000002!	-8,9	-8,9	-6,6	-6,6	-8,0	-8,0	-14,6	-14,6
BOILER HOUSE - Facade	I02000002!	-6,6	-6,6	-2,6	-2,6	2,2	2,2	-1,3	-1,3
Flue Gas Treatment Plant	I01010001!14-17	10,5	10,5	13,6	13,6	24,1	24,1	31,7	16,6
Flue Gas Treatment Plant	I01010001!14-17	5,7	5,7	9,4	9,4	21,4	21,4	22,6	25,6
Flue Gas Treatment Plant	I01010001!14-17	7,1	7,1	9,4	9,4	26,1	26,1	18,3	9,3
Cooling tower, air intake south	I01010001!12	10,7	10,7	16,2	16,2	12,8	12,8	18,8	9,7
Cooling tower, air intake north	I01010001!13	2,3	2,3	3,5	3,5	12,9	12,9	22,7	-3,6
Boiler house, air intake north	I01010001!124	7,3	7,3	4,1	4,1	10,8	10,8	13,4	0,3
Compressor room, open door	I01010001!142	5,7	5,7	3,3	3,3	16,7	16,7	19,8	14,4
Emergency diesel generator	I00!	18,4	18,4	21,9	21,9	26,8	26,8	31,0	34,9
Parking area 1	I00!	10,1		8,6		9,2		16,9	13,8
Parking area 2	I00!	6,0		12,5		-0,6		5,3	-5,6

Hammermills, cooling fan inlet	I01010000!20	97,7	97,7	97,7	Lw	PQ_020		0,0	0,0	0,0						3,0	(none)	2,00	r	30506026,30	6260128,55	30,50
Hammermills, cooling fan casing and motor	I01010000!21	96,9	96,9	96,9	Lw	PQ_021		0,0	0,0	0,0						3,0	(none)	1,00	r	30506026,87	6260128,32	29,50
Gas oil tank pumps	I01010000!40-41	109,6	109,6	109,6	Lw	PQ_040_und_041		0,0	0,0	0,0						0,0	(none)	1,00	r	30506102,35	6260085,25	29,50
Cooling tower, motor east	I01010001!10	85,5	85,5	85,5	Lw	PQ_010		0,0	0,0	0,0						3,0	(none)	1,00	g	30506112,43	6260102,69	37,50
Cooling tower, motor west	I01010001!11	91,2	91,2	91,2	Lw	PQ_011		0,0	0,0	0,0						3,0	(none)	1,00	g	30506103,79	6260100,84	37,50

LinienSourcen

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li			Correction			Sound Reduction		Attenuation			Operating Time		K0	Freq.	Direct.	Weight. PunktSourcen		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	(min)	(min)	(min)	(dB)	(Hz)	Day	Special	Night	Anzahl	Geschw.	
Exhaust pipe lines (normal)	I0203000303!	91,0	91,0	91,0	73,9	73,9	73,9	Lw	Abdampfleitung	91,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Pipe to stack	I02030008!	85,0	85,0	85,0	79,3	79,3	79,3	Lw	Rauchgasleitung_2	85,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Pipe boiler house to filter	I02030008!	90,0	90,0	90,0	88,0	88,0	88,0	Lw	Rauchgasleitung_2	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Lorries resource flue gas cleaning (1/h)	I020301!	75,4	75,4	87,4	50,7	50,7	62,7	Lw'	Lorrie		-12,0	-12,0	0,0				960,00	0,00	60,00	0,0		(none)					
Pipe filter to ID fan	I02030008!	90,0	90,0	90,0	78,5	78,5	78,5	Lw	Rauchgasleitung_2	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Lorries Ash (2/h)	I02030101!	77,2	77,2	86,2	53,7	53,7	62,7	Lw'	Lorrie		-9,0	-9,0	0,0				960,00	0,00	60,00	0,0		(none)					
Wheel Loader	I020301!	95,0	95,0	95,0	71,8	71,8	71,8	Lw	FQ_012_und_013	95,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Exhaust pipe lines (bypass)	I020000!	98,0	98,0	98,0	80,9	80,9	80,9	Lw	Abdampfleitung	98,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Exhaust pipe lines (normal)	I020000!	91,0	91,0	91,0	70,8	70,8	70,8	Lw	Abdampfleitung	91,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Exhaust pipe lines (added at bypass)	I02030000!	97,0	97,0	97,0	79,9	79,9	79,9	Lw	Abdampfleitung	97,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Waste Delivery 4 Lkws - to	I00!	81,1	87,1	87,1	56,7	62,7	62,7	Lw'	Lorrie		-6,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Waste Delivery 4 LKWs - back	I00!	81,6	87,6	87,6	56,7	62,7	62,7	Lw'	Lorrie		-6,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Combustion Bed Ash - 2 Lkw - to	I00!	74,0	83,0	83,0	53,7	62,7	62,7	Lw'	Lorrie		-9,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Combustion Bed Ash - 2 Lkw - back	I00!	74,0	83,0	83,0	53,7	62,7	62,7	Lw'	Lorrie		-9,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Bottom Ash - 1 Lkw - to	I00!	77,9	89,9	89,9	50,7	62,7	62,7	Lw'	Lorrie		-12,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Bottom Ash - 1 Lkw - back	I00!	78,1	90,1	90,1	50,7	62,7	62,7	Lw'	Lorrie		-12,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
FGT Chemicals - 1 Tanker Lorry - to and back	I00!	80,3	92,3	92,3	50,7	62,7	62,7	Lw'	Lorrie		-12,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
FGT Residues - 1 Tanker Lorry - to and back	I00!	80,3	92,3	92,3	50,7	62,7	62,7	Lw'	Lorrie		-12,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Lorries Waste Delivery (24/h)	I02030100!	92,2	92,2	90,5	64,4	64,4	62,7	Lw'	Lorrie		1,7	1,7	0,0				960,00	0,00	60,00	0,0		(none)					

AreanSourcen

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li			Correction			Sound Reduction		Attenuation			Operating Time		K0	Freq.	Direct.	Weight. PunktSourcen		
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	(min)	(min)	(min)	(dB)	(Hz)	Day	Special	Night	Anzahl	Geschw.	
Flue gas treatment plant, top	I020201!35	99,0	99,0	99,0	80,7	80,7	80,7	Lw	FQ_035		0,0	0,0	0,0											0,0	(none)		
Cooling tower, air outlet west	I020201!7-9	104,4	104,4	104,4	89,2	89,2	89,2	Lw	FQ_007_bis_009		0,0	0,0	0,0											0,0	(none)		
Cooling tower, air outlet east	I020201!4-6	99,4	99,4	99,4	84,1	84,1	84,1	Lw	FQ_004_bis_006		0,0	0,0	0,0											0,0	(none)		
Wheel loader outside	I020200!12-13	90,0	90,0	90,0	53,2	53,2	53,2	Lw	FQ_012_und_013		0,0	0,0	0,0											0,0	(none)		
BOILER HOUSE - Roof	I020300020!	66,5	66,5	66,5	39,9	39,9	39,9	Li	Boil_House_Li_obern2	85,0	0,0	0,0	0,0	Tata_Steel	453,24		960,00	0,00	60,00	0,0		(none)					
FUEL BUNKER - Roof	I020300040!	35,3	35,3	35,3	6,2	6,2	6,2	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	20_cm_Stahlbet	803,68		960,00	0,00	60,00	0,0		(none)					
TIPPING HALL - Roof / day	I020300050001!	85,0	85,0	85,0	53,8	53,8	53,8	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	1080,00		960,00	0,00	60,00	0,0		(none)					
Outgoing air KH	I0203000200!	92,7	92,7	92,7	75,8	75,8	75,8	Li	Boil_House_Li_obern2	85,0	0,0	0,0	0,0	Windleitfl.Luefter	50,00	open	960,00	0,00	60,00	0,0		(none)					
Roof ID-Fan	I02030008!	56,7	56,7	56,7	47,5	47,5	47,5	Li	ID_fan_House_Li2		0,0	0,0	0,0	Roof	8,45		960,00	0,00	60,00	0,0		(none)					
MACHINE HOUSE - Roof	I0203000301!	78,8	78,8	78,8	51,5	51,5	51,5	Li	Turb_House		0,0	0,0	0,0	Tata_Steel	530,01		960,00	0,00	60,00	0,0		(none)					
TIPPING HALL - Roof / night	I020300050101!	74,3	74,3	74,3	43,1	43,1	43,1	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	1080,00		0,00	0,00	60,00	0,0		(none)					
TIPPING HALL - RWA / day	I020300050001!	93,5	93,5	93,5	62,3	62,3	62,3	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	RWA	240,00		960,00	0,00	60,00	0,0		(none)					
TIPPING HALL - RWA / night	I020300050101!	83,0	83,0	83,0	51,8	51,8	51,8	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	RWA	240,00		0,00	0,00	60,00	0,0		(none)					
Roof filter	I02030008!	70,8	70,8	70,8	50,9	50,9	50,9	Li	Filter_House_Li2	90,0	-3,0	-3,0	-3,0	Roof	97,00		960,00	0,00	60,00	0,0		(none)					
Luko south intake side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Li	Cond_Intake	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Luko north intake side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Li	Cond_Intake	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0		(none)					
Luko south discharge side	I02030001!	90,0	90,0	90,0	67,0	67,0	67,0	Li	Cond_Exhaust	90,0	0,0	0,0	0,0														

Luko north discharge side	I020000103!	90,0	90,0	90,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0	(none)		
Luko south intake side	I020000003!	90,0	90,0	90,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0	(none)		
Luko north intake side	I020000003!	90,0	90,0	90,0	67,0	67,0	Lw	Cond_Intake	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0	(none)		
Luko south discharge side	I020000003!	90,0	90,0	90,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0	(none)		
Luko north discharge side	I020000003!	90,0	90,0	90,0	67,0	67,0	Lw	Cond_Exhaust	90,0	0,0	0,0	0,0				960,00	0,00	60,00	0,0	(none)		
Flue gas treatment plant, top	I01010001135	99,0	99,0	99,0	80,5	80,5	Lw	FQ_035	0,0	0,0	0,0	0,0							0,0	(none)		
Cooling tower, air outlet west	I010100017-9	104,4	104,4	104,4	89,2	89,2	Lw	FQ_007_bis_009	0,0	0,0	0,0	0,0							0,0	(none)		
Cooling tower, air outlet east	I0101000114-6	99,4	99,4	99,4	84,1	84,1	Lw	FQ_004_bis_006	0,0	0,0	0,0	0,0							0,0	(none)		
Wheel loader outside	I0101000012-13	90,0	90,0	90,0	50,8	50,8	Lw	FQ_012_und_013	0,0	0,0	0,0	0,0							0,0	(none)		

Vertikale ArealSourcen

Name	M.	ID	Result Lw.			Result Lw."			Lw / Li		Correction			Sound Reduction		Attenuation		Operating Time			K0	Freq.	Direct.
			Day (dBA)	Evening (dBA)	Night (dBA)	Day (dBA)	Evening (dBA)	Night (dBA)	Type	Value	norm. dB(A)	Day dB(A)	Evening dB(A)	Night dB(A)	R	Area (m ²)	(min)	(min)	(min)	(dB)	(Hz)		
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,2	75,2	75,2	Lw	vFQ_014_bis_017		0,0	0,0	0,0								3,0	(none)	
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,2	75,2	75,2	Lw	vFQ_014_bis_017		0,0	0,0	0,0								3,0	(none)	
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,5	75,5	75,5	Lw	vFQ_014_bis_017		0,0	0,0	0,0								3,0	(none)	
Flue Gas Treatment Plant	I020201114-17	96,3	96,3	96,3	75,5	75,5	75,5	Lw	vFQ_014_bis_017		0,0	0,0	0,0								3,0	(none)	
Cooling tower, air intake south	I02020112	95,1	95,1	95,1	79,8	79,8	79,8	Lw	vFQ_002		0,0	0,0	0,0								3,0	(none)	
Cooling tower, air intake north	I02020113	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003		0,0	0,0	0,0								3,0	(none)	
Boiler house, air intake north	I020201124	79,6	79,6	79,6	60,1	60,1	60,1	Lw	vFQ_024		0,0	0,0	0,0								3,0	(none)	
Compressor room, open door	I020201142	87,3	87,3	87,3	77,8	77,8	77,8	Lw	vFQ_042		0,0	0,0	0,0								3,0	(none)	
Facade N Air supply	I0203000200!	83,6	83,6	83,6	64,9	64,9	64,9	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)		
Facade S Air supply	I0203000200!	83,6	83,6	83,6	62,7	62,7	62,7	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	WS_Gitter	10,00 open		960,00	0,00	60,00	3,0	(none)		
TIPPING HALL - Facade north / day	I020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	544,39		960,00	0,00	0,00	3,0	(none)		
TIPPING HALL - Facade north / night	I020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	544,35			0,00	0,00	60,00	3,0	(none)	
TIPPING HALL - Facade south / day	I020300050002!	82,0	82,0	82,0	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	545,75		960,00	0,00	0,00	3,0	(none)		
TIPPING HALL - Facade south / night	I020300050102!	71,3	71,3	71,3	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	545,77			0,00	0,00	60,00	3,0	(none)	
TIPPING HALL - Facade west / day	I020300050002!	81,3	81,3	81,3	54,6	54,6	54,6	Li	Waste_Tipping_day2	85,0	0,0	0,0	0,0	Longspan	459,54		960,00	0,00	0,00	3,0	(none)		
TIPPING HALL - Facade west / night	I020300050102!	70,6	70,6	70,6	44,0	44,0	44,0	Li	Waste_Tipping_night2	75,0	0,0	0,0	0,0	Longspan	459,61			0,00	0,00	60,00	3,0	(none)	
FUEL BUNKER - Facade West	I0203000402!	22,0	22,0	22,0	-4,6	-4,6	-4,6	Li	Waste_Bunker_Li	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	455,77		960,00	0,00	60,00	3,0	(none)		
FUEL BUNKER - Facade South	I0203000402!	27,5	27,5	27,5	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	846,51		960,00	0,00	60,00	3,0	(none)		
FUEL BUNKER - Facade North	I0203000402!	26,3	26,3	26,3	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	640,92		960,00	0,00	60,00	3,0	(none)		
FUEL BUNKER - Facade East	I0203000402!	18,8	18,8	18,8	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	114,32		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade East	I0203000202!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade South	I0203000202!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade West	I0203000202!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade	I0203000202!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Facade North	I0203000302!	83,7	83,7	83,7	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	243,76		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Facade East	I0203000302!	82,9	82,9	82,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	205,25		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Facade South	I0203000302!	83,9	83,9	83,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	253,85		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Facade West	I0203000302!	71,9	71,9	71,9	59,8	59,8	59,8	Li	Turb_House	0,0	0,0	0,0	0,0	Longspan	15,97		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Supply air North	I0203000300!	89,1	89,1	89,1	65,2	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Supply air East	I0203000300!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Supply air South	I0203000300!	89,1	89,1	89,1	65,0	65,0	65,0	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)		
FUEL BUNKER - Facade North	I0203000402!	21,2	21,2	21,2	-1,8	-1,8	-1,8	Li	Waste_Bunker_Li2	65,0	0,0	0,0	0,0	_50_cm_Stahlbet	197,55		960,00	0,00	60,00	3,0	(none)		
Facade Filter Penthouse	I02030008!	86,1	86,1	86,1	57,6	57,6	57,6	Li	Filter_House_Li2	90,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	(none)		
Facade Filter	I02030008!	62,6	62,6	62,6	34,1	34,1	34,1	Li	Filter_House_Filter_Li2	0,0	0,0	0,0	0,0	Longspan	708,60		960,00	0,00	60,00	3,0	(none)		
Fassade ID-Fan	I02030008!	70,1	70,1	70,1	51,0	51,0	51,0	Li	ID_fan_House_Li2	0,0	0,0	0,0	0,0	Longspan	79,90		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade East	I02000102!	80,1	80,1	80,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	504,80		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade South	I02000102!	82,7	82,7	82,7	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	923,79		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade West	I02000102!	72,6	72,6	72,6	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	91,76		960,00	0,00	60,00	3,0	(none)		
BOILER HOUSE - Facade	I02000102!	77,1	77,1	77,1	53,0	53,0	53,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Longspan	256,85		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Supply air North	I02000101!	89,1	89,1	89,1	65,2	65,2	65,2	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter	10,00		960,00	0,00	60,00	3,0	(none)		
MACHINE HOUSE - Supply air East	I02000101!	89,1	89,1	89,1	65,9	65,9	65,9	Li	Turb_House	0,0	0,0	0,0	0,0	WS_Gitter									

MACHINE HOUSE - Facade West	!02000000!	63,6	63,6	63,6	51,5	51,5	51,5	Li	Turb_House		0,0	0,0	0,0	Tata_Steel	15,97		960,00	0,00	60,00	3,0		(none)			
MACHINE HOUSE - Supply air North	!02000001!	86,3	86,3	86,3	62,5	62,5	62,5	Li	Turb_House		0,0	0,0	0,0	SD_AB_1_1_5	10,00		960,00	0,00	60,00	3,0		(none)			
MACHINE HOUSE - Supply air East	!02000001!	86,3	86,3	86,3	63,2	63,2	63,2	Li	Turb_House		0,0	0,0	0,0	SD_AB_1_1_5	10,00		960,00	0,00	60,00	3,0		(none)			
MACHINE HOUSE - Supply air South	!02000001!	86,3	86,3	86,3	62,3	62,3	62,3	Li	Turb_House		0,0	0,0	0,0	SD_AB_1_1_5	10,00		960,00	0,00	60,00	3,0		(none)			
BOILER HOUSE - Facade East	!02000002!	67,1	67,1	67,1	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	504,80		960,00	0,00	60,00	3,0		(none)			
BOILER HOUSE - Facade South	!02000002!	69,7	69,7	69,7	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	923,79		960,00	0,00	60,00	3,0		(none)			
BOILER HOUSE - Facade West	!02000002!	59,7	59,7	59,7	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	91,76		960,00	0,00	60,00	3,0		(none)			
BOILER HOUSE - Facade	!02000002!	64,1	64,1	64,1	40,0	40,0	40,0	Li	Boil_House_Li2	85,0	0,0	0,0	0,0	Tata_Steel	256,85		960,00	0,00	60,00	3,0		(none)			
Flue Gas Treatment Plant	!01010001!14-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0								3,0		(none)			
Flue Gas Treatment Plant	!01010001!14-17	96,3	96,3	96,3	79,8	79,8	79,8	Lw	vFQ_014_bis_017	0,0	0,0	0,0								3,0		(none)			
Flue Gas Treatment Plant	!01010001!14-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0								3,0		(none)			
Flue Gas Treatment Plant	!01010001!14-17	96,3	96,3	96,3	79,7	79,7	79,7	Lw	vFQ_014_bis_017	0,0	0,0	0,0								3,0		(none)			
Cooling tower, air intake south	!01010001!2	95,1	95,1	95,1	79,7	79,7	79,7	Lw	vFQ_002	0,0	0,0	0,0								3,0		(none)			
Cooling tower, air intake north	!01010001!3	89,6	89,6	89,6	74,3	74,3	74,3	Lw	vFQ_003	0,0	0,0	0,0								3,0		(none)			
Boiler house, air intake north	!01010001!24	79,6	79,6	79,6	60,0	60,0	60,0	Lw	vFQ_024	0,0	0,0	0,0								3,0		(none)			
Compressor room, open door	!01010001!42	87,3	87,3	87,3	76,3	76,3	76,3	Lw	vFQ_042	0,0	0,0	0,0								3,0		(none)			
Fire Pumps	!06!	108,0	108,0	108,0	86,5	86,5	86,5	Lw	PQ_040_und_041	108,0	0,0	0,0	0,0							960,00	0,00	60,00	3,0		(none)

Emissionsspektrum

Schallleistung

Name	ID	Type	Weight.	31,5	63	125	250	500	1000	2000	4000	8000	A	lin	Source
Cooling tower, air intake south	vFQ_002	Lw	A	56,9	65,9	70,4	74,2	85,6	87,3	89,4	89,9	86,3	95,1	99,9	Messung Dundee 10.2016
Cooling tower, air intake north	vFQ_003	Lw	A	55,9	64,5	70,2	74,1	83,7	81,6	83,1	83,2	79,3	98,0		Messung Dundee 10.2016
Cooling tower, air outlet east	FQ_004_bis_006	Lw	A	73,6	83,0	87,0	89,2	93,3	93,1	93,6	86,8	80,3	99,4	115,0	Messung Dundee 10.2016
Cooling tower, air outlet west	FQ_007_bis_009	Lw	A	75,1	85,4	87,4	88,6	102,7	94,0	96,3	86,9	79,9	104,4	117,0	Messung Dundee 10.2016
Cooling tower, motor east	PQ_010	Lw	A	52,2	58,8	65,9	76,0	76,5	83,1	77,2	70,4	60,9	85,5	94,1	Messung Dundee 10.2016
Cooling tower, motor west	PQ_011	Lw	A	52,2	62,0	64,1	72,1	78,4	89,7	84,6	70,6	64,5	91,2	95,6	Messung Dundee 10.2016
Wheel loader outside	FQ_012_und_013	Lw	A	40,0	50,0	61,5	84,6	84,0	84,7	81,2	75,5	63,5	90,0	95,1	Messung Dundee 10.2016
Flue gas treatment plant, sides	vFQ_014_bis_017	Lw	A	63,9	74,7	81,1	86,2	92,0	89,6	88,1	86,6	79,1	96,3	106,7	Messung Dundee 10.2016
Hammermills, cooling fan inlet	PQ_020	Lw	A	56,4	67,1	78,0	91,5	90,3	92,0	91,9	81,8	71,7	97,7	103,8	Messung Dundee 10.2016
Hammermills, cooling fan casing and motor	PQ_021	Lw	A	54,8	67,0	73,9	87,5	93,2	90,9	89,2	81,3	69,3	96,9	102,1	Messung Dundee 10.2016
Boiler house, air intake north	vFQ_024	Lw	A	46,8	59,5	67,1	74,2	74,0	72,6	69,4	66,9	60,8	79,6	91,0	Messung Dundee 10.2016
Odour abatement plant, OAP Fan	PQ_025	Lw	A	54,6	67,0	74,2	78,1	82,5	84,1	84,0	90,1	69,6	92,6	98,9	Messung Dundee 10.2016
Odour abatement plant, RDF Fans	PQ_026	Lw	A	62,4	77,9	84,2	90,1	93,0	93,6	90,8	84,7	79,2	98,6	108,2	Messung Dundee 10.2016
Flue gas treatment plant, top	FQ_035	Lw	A	65,6	77,1	81,8	88,7	94,0	92,3	91,6	90,4	85,2	99,0	108,7	Messung Dundee 10.2016
Gas oil tank pumps	PQ_040_und_041	Lw	A	63,0	71,1	76,7	79,9	101,1	103,9	106,3	99,9	92,0	109,6	110,8	Messung Dundee 10.2016
Compressor room, open door	vFQ_042	Lw	A	40,2	54,9	60,4	77,5	81,2	82,5	80,5	76,6	71,4	87,3	91,0	Messung Dundee 10.2016
Lorrie Driving	Lorrie	Lw	A	28,0	43,0	48,0	52,0	55,0	58,0	57,0	52,0	37,0	62,7	72,9	M88323
Condensers Intake	Cond_Intake	Lw	A	74,6	78,8	86,5	90,7	91,6	93,3	95,8	88,8	80,7	100,0	115,0	M88323
Condensers Exhaust	Cond_Exhaust	Lw	A	73,7	78,3	84,8	90,0	90,7	90,9	89,9	82,9	73,0	97,0	114,1	M88323
Cooler	Cooler	Lw	A	70,4	75,6	81,0	85,5	89,5	93,9	92,9	86,9	77,1	98,0	111,0	M88323
Stack Exhaust	Stack_Exhaust	Lw	A	78,8	82,8	92,3	102,8	105,7	99,3	95,5	83,5	84,5	108,5	120,2	M88323
Turbine House Li	Turb_House_Li2	Li	A	36,9	50,7	63,5	73,1	78,1	77,4	75,0	71,3	66,5	82,8	87,5	Messung Dundee
Turbine House Li_ oben	Turb_House_Li_ oben2	Li	A	37,0	47,9	61,7	64,6	71,2	73,8	72,2	74,3	68,1	79,6	83,9	Messung Dundee
Boiler_House Li	Boil_House_Li2	Li	A	36,0	50,0	60,7	69,6	74,3	75,9	75,6	72,6	63,3	81,2	85,2	Messung Dundee
Boiler_House Li_ oben	Boil_House_Li_ oben2	Li	A	35,0	47,2	55,6	61,1	65,6	72,2	69,7	66,6	59,6	75,7	80,4	Messung Dundee
ID_fan_House Li	ID_fan_House_Li2	Li	A	51,5	62,7	65,2	72,0	71,9	76,0	79,7	75,5	66,8	83,2	93,9	Messung Plymouth M105162
Filter House Penthaus Li	Filter_House_Li2	Li	A	41,8	48,3	48,2	52,6	62,2	62,8	63,2	57,2	69,1	82,4		Messung Plymouth M105162
Filter House Filter Li	Filter_House_Filter_Li2	Li	A	43,6	49,5	43,0	53,5	56,4	55,1	58,0	48,5	40,5	62,6	83,8	Messung Plymouth M105162
Waste Bunker Li	Waste_Bunker_Li	Li	A	40,8	47,8	55,8	65,8	70,8	73,8	72,8	64,8	59,8	78,0	83,8	M88323
Waste Bunker Li	Waste_Bunker_Li2	Li	A	22,0	39,4	48,8	52,6	56,2	55,5	55,7	53,6	48,3	62,3	70,5	Messung Dundee
Waste Tipping Crane Nighttime	Waste_Tipping_night2	Li	A	22,0	39,4	48,8	52,6	56,2	55,5	55,7	53,6	48,3	62,3	70,5	Messung Dundee
Waste Tipping Crane Daytime	Waste_Tipping_day2	Li	A	45,6	52,0	60,3	68,9	72,0	72,7	69,1	63,6	53,8	77,3	87,3	Messung Dundee
Exhaust pipe lines	Exhaust pipe lines	Lw	A	65,1	81,7	92,8	99,2	107,8	112,6	108,4	100,3	89,9	115,2	117,8	M88323
Main Transformer	Main Transformer	Lw	A	72,0	84,0	96,0	99,0	96,0	93,0	90,0	82,0	72,0	102,9	116,8	M88323
Rustash_Li_Nighttime	Rustash_Li_night	Li	A	46,1	51,4	60,7	63,1	63,0	64,8	68,0	66,2	60,9	73,0	86,9	M88323
Flue gas pipe	Flue_gas_pipe_2	Lw	A	60,7	67,3	66,4	70,6	69,3	61,8	52,6	45,5	32,8	75,1	101,1	Messung Plymouth M105162
Flue Gas Treatment Plant	FGT_plant	Lw	A	67,8	79,0	84,4	90,6	96,1	94,1	93,2	91,9	86,1	100,9	110,8	Messung Dundee
Multi Split Unit Cooler	Split_Unit	Lw	A	55,0	54,0	55,0	53,0	48,0	46,0	42,0	35,0	29,0	51,2	60,8	M112373
Turbine House	Turb_House	Li	A	50,0	72,0	74,0	84,0	80,0	82,0	83,0	84,0	79,0	90,3	100,5	M139854, Prognose

Schalldämm-Maß

Name	ID	Octave Spectrum (dB)										Source
		31.5	63	125	250	500	1000	2000	4000	8000	Rw	
open	open	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1 M88323
2-winged steel gate	2flueg_steel_gate	6,0	11,0	16,0	19,0	20,0	22,0	28,0	27,0	27,0	24	M88323_Prima M68004 6
Roller Shutter 2x1St/20MF,di.	roller_shutter	15,0	19,0	23,0	22,0	26,0	34,0	31,0	25,0	20,0	30	M88323_PRIMA, Rollt2x1St/20MF,di.
20 cm ferroconcrete platter	20_cm_concrete	37,0	43,0	45,0	47,0	53,0	62,0	66,0	65,0	65,0	58	Prima 29
50 cm ferroconcrete platter	50_cm_concrete	45,0	50,0	53,0	55,0	61,0	70,0	74,0	77,0	77,0	66	Prima 29
Weather louvres, non-absorbing (e.g. Colt o. glw.)	Roof Ventilation	0,0	0,0	1,0	1,0	2,0	3,0	4,0	5,0	5,0	4	M88323_Prima M68004 28
Roof from StTr/140MF/Fol	Roof	11,0	17,0	21,0	21,5	26,7	43,3	56,9	64,5	54,0	32	M88323_Prima, StTr/140MF/Fol
Sound Absorber 1 1 5	SD_AB_1_1_5	0,0	0,0	2,0	4,0	9,0	21,0	21,0	12,0	10,0	15	M88323_Prima, SD AB 1/1/5
Sound Absorber 1 1 10	SD_AB_1_1_10	0,0	0,0	3,0	8,0	16,0	35,0	35,0	20,0	10,0	20	M88323_Prima, SD AB 1/1/10
Weather louvres	WS_Gitter	0,0	1,0	3,0	4,0	4,0	6,0	6,0	7,0	7,0	6	Prima 488
Single leaf dome light, e.g. from 3 mm acrylic glas	RWA	4,0	5,0	6,0	7,0	9,0	10,0	12,0	15,0	15,0	11	Prima 204
Longspan KS1000 LS	Longspan	10,0	15,0	20,0	21,0	25,0	25,0	30,0	38,0	40,0	27	M139854, Prognose
Tata Steel D200	Tata_Steel	12,0	18,0	23,5	31,3	43,7	43,2	61,0	86,5	90,0	42	M139854, Prognose

Immissionen**Immissionspunkte - Beurteilungspegel**

Name	M.	ID	Level Lr		Limit. Value		Land Use		Height		Coordinates		
			Day+Rz (dBA)	Night (dBA)	Day+Rz (dBA)	Night (dBA)	Type	Auto	Noise Type	(m)	(m)	(m)	(m)
Location A	I0401!		40,7	40,6	0,0	0,0	x	Gesamt	4,00	r	30505279,80	6260204,57	32,50
Location B	I0401!		43,7	43,6	0,0	0,0	x	Gesamt	4,00	r	30505651,62	6260475,28	32,50
Location C	I0401!		44,3	44,3	0,0	0,0	x	Gesamt	4,00	r	30506028,88	6260409,70	32,50
Location D	I0401!		47,1	47,1	0,0	0,0	x	Gesamt	4,00	r	30506509,70	6260482,19	32,50
Location E	I0401!		40,4	40,1	0,0	0,0	x	Gesamt	4,00	r	30506731,11	6259503,36	32,50
Location F	I0401!		44,4	43,7	0,0	0,0	x	Gesamt	4,00	r	30506130,44	6259647,01	32,50
Location G	I0401!		44,1	43,7	0,0	0,0	x	Gesamt	4,00	r	30505649,28	6259734,33	32,50

Immissionsspektrum Day und Night

Name	M.	ID	Type	Level Spectrum dB(A)									
				31.5	63	125	250	500	1000	2000	4000	8000	
Location A	I0401!		Day+Rz	15,7	25,0	27,8	32,0	36,9	35,0	30,8	5,4	-69,8	
			Night	15,3	24,9	27,6	31,6	36,8	34,8	30,8	5,3	-69,8	
Location B	I0401!		Day+Rz	17,5	26,2	29,4	35,8	38,7	39,2	34,4	13,5	-42,1	
			Night	17,2	26,1	29,2	35,6	38,5	39,1	34,4	13,4	-42,1	
Location C	I0401!		Day+Rz	21,6	29,9	32,4	35,8	39,9	38,6	34,9	20,2	-14,3	
			Night	21,4	29,8	32,4	35,7	39,9	38,6	34,9	20,2	-14,3	
Location D	I0401!		Day+Rz	18,3	27,6	31,2	36,4	42,9	42,1	39,9	21,1	-33,2	
			Night	18,1	27,6	31,1	36,3	42,8	42,0	39,9	21,1	-33,2	
Location E	I0401!		Day+Rz	15,2	24,8	27,5	31,9	36,5	34,9	29,4	4,6	-71,2	
			Night	15,0	24,7	27,4	31,5	36,3	34,7	29,3	4,5	-71,2	
Location F	I0401!		Day+Rz	21,8	31,4	33,3	38,0	38,9	38,4	34,0	20,8	-13,3	
			Night	21,5	31,3	33,1	37,3	38,1	37,6	33,2	20,2	-13,4	
Location G	I0401!		Day+Rz	19,2	29,6	32,2	36,0	40,2	38,0	33,7	15,0	-30,4	
			Night	18,7	29,5	32,0	35,3	39,9	37,5	33,4	14,5	-30,5	

Teilpegel Day und Night

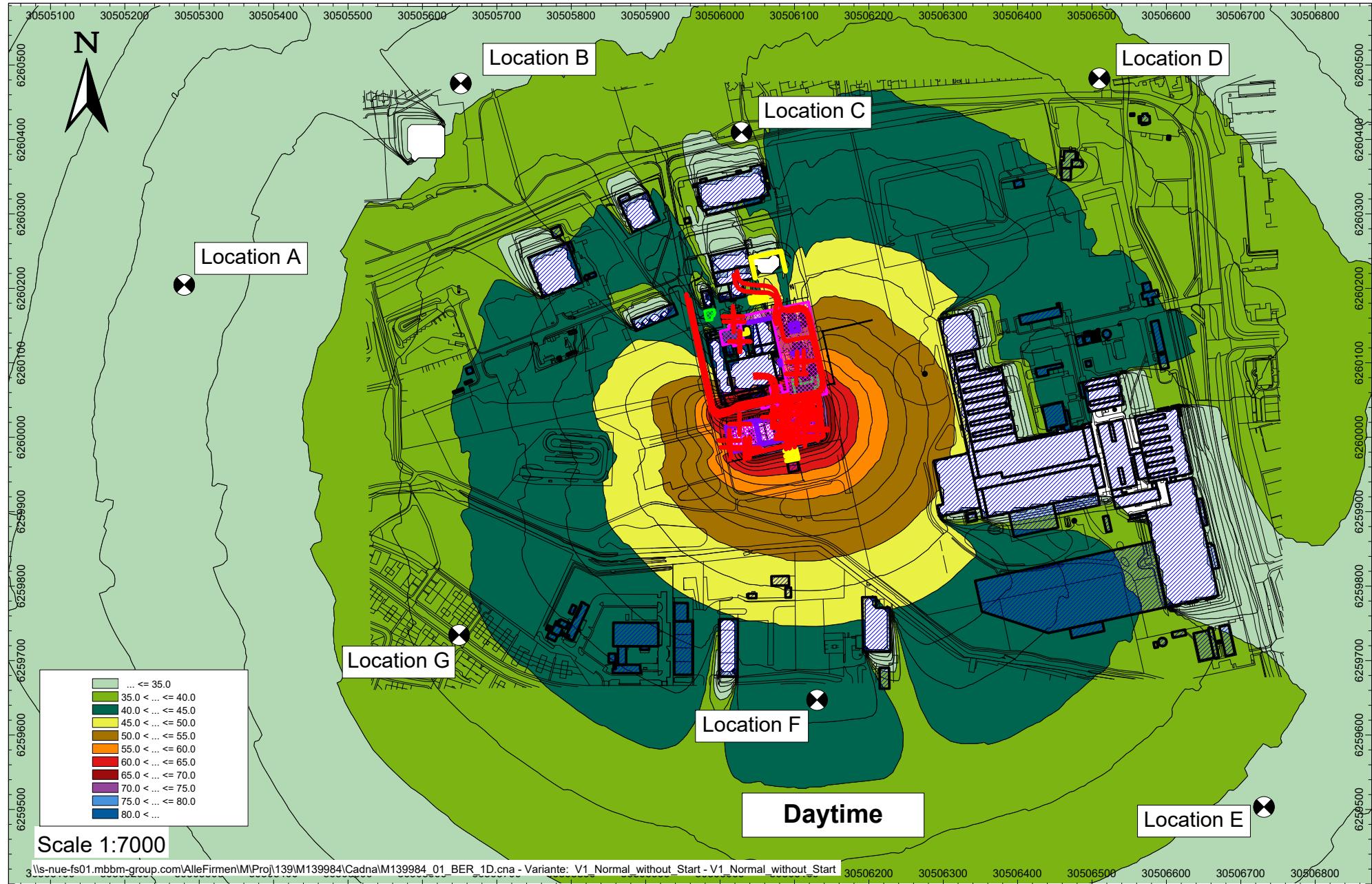
Source	Name	M.	ID	Teilpegel V08 - fire pumps													
				Location A		Location B		Location C		Location D		Location E		Location F			
				Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night	Day+Rz	Night		
	Odour abatement plant, RDF Fans		I020201!26	15,7	15,7	29,8	29,8	21,3	21,3	28,4	28,4	17,0	17,0	11,5	11,5	17,0	17,0
	Odour abatement plant, OAP Fan		I020201!25	12,7	12,7	19,5	19,5	11,6	11,6	18,7	18,7	7,3	7,3	1,8	1,8	4,7	4,7
	Hammermills, cooling fan inlet		I020200!20	25,7	25,7	31,9	31,9	24,0	24,0	25,6	25,6	5,8	5,8	16,0	16,0	16,3	16,3
	Hammermills, cooling fan casing and motor		I020200!21	24,9	24,9	31,1	31,1	21,7	21,7	25,0	25,0	3,7	3,7	13,5	13,5	11,0	11,0
	Gas oil tank pumps		I020200!40-41	31,9	31,9	33,1	33,1	27,6	27,6	38,8	38,8	26,8	26,8	21,1	21,1	31,9	31,9
	Cooling tower, motor east		I020201!10	14,2	14,2	16,3	16,3	22,3	22,3	19,4	19,4	13,9	13,9	8,3	8,3	20,2	20,2
	Cooling tower, motor west		I020201!11	21,1	21,1	20,6	20,6	15,2	15,2	24,5	24,5	18,9	18,9	16,0	16,0	27,1	27,1
	Stack opening		I0203000A!	18,6	18,6	22,2	22,2	28,6	28,6	23,2	23,2	19,4	19,4	28,4	28,4	23,8	23,8
	Gate		I0203000700!	-17,1	-17,1	-16,4	-16,4	-15,6	-15,6	-12,4	-12,4	-29,2	-29,2	-25,2	-25,2	-23,3	-23,3
	Gate		I0203000700!	-16,4	-16,4	-16,3	-16,3	-11,9	-11,9	-11,7	-11,7	-30,3	-30,3	-24,9	-24,9	-18,7	-18,7
	Gate		I0203000202!	-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	2,9	-0,0	-0,0
	Air supply		I020300050100!			7,1			5,9			9,5			7,9		12,8
	Outgoing air machine hall		I0203000300!	-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	8,5	2,9	2,9
	Gate		I0203000302!	-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-7,6	-12,8	-12,8
	Ventilation Penthouse Filter SE		I02030008!	15,2	15,2	16,6	16,6	7,7	7,7	17,4	17,4	15,8	15,8	22,4	22,4	0,8	0,8
	Ventilation Penthouse Filter NW		I02030008!	14,7	14,7	16,7	16,7	9,5	9,5	19,7	19,7	15,8	15,8	22,4	22,4	0,9	0,9
	Ventilation ID- House		I02030008!	-7,7	-7,7	8,7	8,7	10,7	10,7	13,1	13,1	9,4	9,4	6,1	6,1	-5,3	-5,3
	Outgoing air ID		I02030008!	-10,4	-10,4	1,2	1,2	4,3	4,3	10,7	10,7	-6,7	-6,7	0,2	0,2	-4,9	-4,9
	Gate ID- House		I02030008!	-14,3	-14,3	-1,7	-1,7	-0,7	-0,7	0,6	0,6	-13,5	-13,5	-5,1	-5,1	-13,0	-13,0
	TIPPING HALL - Gate / night		I020300050100!			-29,7		-29,1		-28,1		-32,2		-15,0		-6,2	-9,1
	TIPPING HALL - Gate / day		I020300050000!	5,0		6,6		8,1		3,4		21,1		30,5		27,4	
	Air supply		I020300050100!			7,0		9,9		3,5		8,5		0,8		-3,9	
	Transformer Auxiliary 2		I020300!	2,9	2,9	2,9	2,9	-0,7	-0,7	5,3	5,3	-15,2	-15,2	-7,8	-7,8	-11,1	-11,1
	Transformer Auxiliary 1		I020300!	3,2	3,2	4,3	4,3	-0,8	-0,8	5,3	5,3	-15,1	-15,1	-7,8	-7,8	-11,0	-11,0
	Air supply		I020300050100!			-5,8		-7,4		-6,2		-11,2		6,0		15,5	
	Air supply		I020300050000!	4,1		2,6		4,0		-0,8		16,7		26,1		23,2	
	Air supply		I020300050000!	17,8		20,4		4,3		0,5		0,9		18,4		23,5	
	Air supply		I020300050000!	17,7		20,5		13,4		19,2		11,8		6,2		9,9	
	Flue Gas Treatment (outside)		I02030008!	21,9	21,9	23,4	23,4	21,5	21,5	28,1	28,1	23,7	23,7	12,7	12,7	25,6	25,6
	EL_01_Air supply/outgoing air		I0203000200!	-4,6	-4,6	-2,4	-2,4	2,3	2,3	-1,9	-1,9	15,3	15,3	23,5	23,5	20,4	20,4
	EL_02_Air supply/outgoing air		I0203000200!	-5,2	-5,2	15,0	15,0	19,7	19,7	11,7	11,7	-7,8	-7,8	0,6	0,6	-2,5	-2,5
	EL_03_Air supply/outgoing air		I0203000200!	-4,7	-4,7	-2,4	-2,4	2,3	2,3	-1,7	-1,7	15,4	15,4	24,6	24,6	20,3	20,3
	EL_04_Air supply/outgoing air		I0203000300!	0,8	0,8	3,4	3,4	8,5	8,5	8,6	8,6	16,7	16,7	29,7	29,7	25,5	25,5
	EL_05_Air supply/outgoing air		I0203000300!	-84,3	-84,3	-81,5	-81,5	-79,0	-79,0	-65,7	-65,7	-66,8	-66,8	-60,8	-60,8	-83,7	-83,7
	EL_06_Air supply/outgoing air		I020300050000!	9,9	9,9	12,2	12,2	-4,0	-4,0	-9,0	-9,0	-5,6	-5,6	4,2	4,2	15,6	15,6
	EL_07_Air supply/outgoing air		I02030006!	10,0	10,0	14,3	14,3	14,3	14,3	12,9	12,9	-10,4	-10,4	-2,6	-2,6	-4,5	-4,5
	EL_08_Air supply/outgoing air		I02030006!	10,0	10,0	14,4	14,4	14,0	14,0	12,8	12,8	-8,1	-8,1	-2,5	-2,5	-4,4	-4,4
	EL_09_Air supply/outgoing air		I02030006!	9,6	9,6	9,4	9,4	7,6	7,6	-2,4	-2,4	-10,8	-10,8	-0,9	-0,9	-4,9	-4,9
	Startup Silencer Opening		I02030000!	21,2	21,2	24,1	24,1	28,3	28,3	23,5	23,5	21,3	21,3	29,3	29,3	26,1	26,1
	Inverter Heat Pump, Multi Split Unit 1		I0203000201!	14,7	14,7	17,9	17,9	22,2	22,2	17,4	17,4	14,8	14,8	22,6	22,6	19,2	19,2
	Inverter Heat Pump, Multi Split Unit 2		I0203000201!	14,7	14,7	17,3	17,3	21,6	21,6	17,2	17,2	15,2	15,2	22,9	22,9	19,2	19,2
	Inverter Heat Pump, Multi Split Unit 3		I0203000201!	2,9	2,9	6,2	6,2	11,0	11,0	5,9	5,9	2,6	2,6	10,6	10,6	7,5	7,5
	Inverter Heat Pump, Multi Split Unit 4		I0203000201!	2,9	2,9	6,2	6,2	11,1	11,1	6,0	6,0	2,6	2,6	10,6	10,6	7,2	7,2
	Inverter Heat Pump, Multi Split Unit 4		I0203000201!	3,0	3,0	5,0	5,0	9,5	9,5	5,1	5,1	3,4	3,4	12,3	12,3	7,7	7,7
	Bunker Ventilation Fans		I0201!	30,1	30,1	30,2	30,2	29,4	29,4	20,8	20,8	26,8	26,8	35,2	35,2	35,0	35,0
	Gate		I02000102!	-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	2,9	-0,0	-0,0
	Outgoing air machine hall		I02000101!	-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	8,5	2,9	2,9
	EL_04_Air supply/outgoing air		I02000101!	0,8	0,8	3,4	3,4	8,5	8,5	8,6	8,6	16,7	16,7	29,7	29,7	25,5	25,5
	EL_05_Air supply/outgoing air		I02000101!	-84,3	-84,3	-81,5	-81,5	-79,0	-79,0	-65,7	-65,7	-66,8	-66,8	-60,8	-60,8	-83,7	-83,7
	Gate		I02000100!	-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-7,6	-12,8	-12,8
	Gate		I02000000!	-18,8	-18,8	-15,8	-15,8	-11,1	-11,1	4,8	4,8	2,2	2,2	-7,6	-7,6	-12,8	-12,8
	Outgoing air machine hall		I02000001!	-5,8	-5,8	-0,8	-0,8	4,9	4,9	17,5	17,5	14,7	14,7	8,5	8,5	2,9	2,9
	EL_04_Air supply/outgoing air		I02000001!	-0,2	-0,2	2,2	2,2	7,4	7,4	8,3	8,3	15,8	15,8	27,9	27,9	24,0	24,0
	EL_05_Air supply/outgoing air		I02000001!														
	Gate		I02000002!	-24,7	-24,7	-22,6	-22,6	-18,0	-18,0	-21,5	-21,5	-4,7	-4,7	2,9	2,9	-0,0	-0,0
	Odour abatement plant, RDF Fans		I01010001!26	15,1	15,1	29,9	29,9	21,0	21,0	28,4	28,4	17,4	17,4	11,5	11,5	16,7	16,7
	Odour abatement plant, OAP Fan		I01010001!25	15,3	15,3	22,4	22,4	12,6	12,6	21,9	21,9	10,4	10,4	4,8	4,8	8,1	8,1
	Hammermills, cooling fan inlet		I01010000!20	28,7	28,7	34,9	34,9	27,0	27,0	28,6	28,6	8,8	8,8	19,0	19,0	19,3	19,3
	Hammermills, cooling fan casing and motor		I01010000!21	27,9	27,9	34,1	34,1	24,7	24,7	28,0	28,0	6,7	6,7	16,5	16,5	14,0	14,0
	Gas oil tank pumps		I01010000!40-41	31,9	31,9	33,2	33,2	26,7	26,7	39,2	39,2	26,9	26,9	21,1	21,1	34,4	34,4

Cooling tower, motor east	I01010001!10	4,5	4,5	14,7	14,7	6,6	6,6	14,7	14,7	13,9	13,9	5,6	5,6	18,1	18,1
Cooling tower, motor west	I01010001!11	19,4	19,4	20,4	20,4	10,4	10,4	8,6	8,6	15,8	15,8	13,4	13,4	21,9	21,9
Exhaust pipe lines (normal)	I0203000303!	12,1	12,1	20,2	20,2	25,7	25,7	23,4	23,4	19,9	19,9	26,2	26,2	20,6	20,6
Pipe to stack	I02030008!	-0,8	-0,8	11,9	11,9	14,4	14,4	14,9	14,9	10,8	10,8	11,8	11,8	-0,5	-0,5
Pipe boiler house to filter	I02030008!	6,5	6,5	10,1	10,1	11,0	11,0	15,3	15,3	20,2	20,2	26,1	26,1	5,8	5,8
Lorries resource flue gas cleaning (1/h)	I020301!	0,2		1,1		-1,4		3,4		-4,5		-2,3		4,8	
Pipe filter to ID fan	I02030008!	14,5	14,5	18,6	18,6	15,5	15,5	19,1	19,1	18,6	18,6	25,8	25,8	7,0	7,0
Lorries Ash (2/h)	I02030101!	2,6		3,7		1,0		4,3		-6,4		-3,2		7,3	
Wheel Loader	I020301!	13,6		15,1		16,7		23,6		22,2		30,4		26,9	
Exhaust pipe lines (bypass)	I020001!	19,1	19,1	27,2	27,2	32,7	32,7	30,4	30,4	26,9	26,9	33,2	33,2	27,6	27,6
Exhaust pipe lines (normal)	I020000!	16,6	16,6	19,8	19,8	24,0	24,0	21,9	21,9	13,5	13,5	24,2	24,2	23,7	23,7
Exhaust pipe lines (added at bypass)	I02030000!	18,1	18,1	26,2	26,2	31,7	31,7	29,4	29,4	25,9	25,9	32,2	32,2	26,6	26,6
Waste Delivery 4 Lkws - to	I00!	8,2		12,1		6,7		5,6		-3,8		7,6		13,0	
Waste Delivery 4 LKWs - back	I00!	8,8		12,6		7,9		6,3		-2,9		9,2		13,0	
Combustion Bed Ash - 2 Lkw - to	I00!	-6,0		-3,5		-0,3		4,3		-6,0		-11,3		-5,4	
Combustion Bed Ash - 2 Lkw - back	I00!	-6,0		-3,4		-0,3		4,3		-6,0		-11,3		-5,4	
Bottom Ash - 1 Lkw - to	I00!	3,0		6,4		5,3		6,6		-0,4		4,4		7,4	
Bottom Ash - 1 Lkw - back	I00!	3,5		6,8		6,2		6,8		-0,1		5,7		7,4	
FGT Chemicals - 1 Tanker Lorry - to and back	I00!	6,1		9,4		7,7		8,6		1,6		7,9		10,3	
FGT Residues - 1 Tanker Lorry - to and back	I00!	6,1		9,4		7,7		8,6		1,6		7,9		10,3	
Lorries Waste Delivery (24/h)	I02030100!	14,1		15,2		13,3		19,4		17,1		25,6		23,1	
Flue gas treatment plant, top	I02020135	8,9	8,9	13,1	13,1	24,8	24,8	30,3	30,3	24,6	24,6	18,8	18,8	16,0	16,0
Cooling tower, air outlet west	I0202017-9	27,5	27,5	24,6	24,6	30,2	30,2	34,8	34,8	19,7	19,7	20,9	20,9	30,5	30,5
Cooling tower, air outlet east	I0202014-6	21,0	21,0	17,8	17,8	27,5	27,5	29,8	29,8	20,1	20,1	14,9	14,9	21,8	21,8
Wheel loader outside	I02020012-13	14,8	14,8	16,9	16,9	17,7	17,7	20,5	20,5	13,8	13,8	14,5	14,5	15,7	15,7
BOILER HOUSE - Roof	I020300201!	-5,5	-5,5	-3,1	-3,1	1,3	1,3	-3,3	-3,3	-5,3	-5,3	2,2	2,2	-1,0	-1,0
FUEL BUNKER - Roof	I020300401!	-35,3	-35,3	-33,8	-33,8	-31,8	-31,8	-34,8	-34,8	-38,0	-38,0	-27,4	-27,4	-30,0	-30,0
TIPPING HALL - Roof / day	I02030050001!	14,5		15,9		11,2		10,3		10,3		20,1		19,6	
Outgoing air KH	I020300200!	17,8	17,8	20,8	20,8	25,4	25,4	19,7	19,7	18,2	18,2	26,1	26,1	22,9	22,9
Roof ID-Fan	I0203008!	-29,4	-29,4	-17,8	-17,8	-11,6	-11,6	-13,5	-13,5	-18,9	-18,9	-16,2	-16,2	-28,3	-28,3
MACHINE HOUSE - Roof	I020300301!	-8,2	-8,2	-3,1	-3,1	-0,5	-0,5	4,6	4,6	-3,5	-3,5	5,7	5,7	-1,1	-1,1
TIPPING HALL - Roof / night	I02030050101!			3,9		5,3		1,4		-0,2		9,5		9,0	
TIPPING HALL - RWA / day	I02030050001!	22,7		24,1		18,5		18,5		18,5		28,4		27,9	
TIPPING HALL - RWA / night	I02030050101!			12,0		13,5		8,6		7,9		7,8		17,8	
Roof filter	I0203008!	-1,7	-1,7	0,8	0,8	0,3	0,3	1,6	1,6	0,6	0,6	5,9	5,9	-8,5	-8,5
Luko south intake side	I0203001!	-2,8	-2,8	15,3	15,3	18,9	18,9	20,9	20,9	15,8	15,8	25,1	25,1	18,4	18,4
Luko north intake side	I0203001!	12,1	12,1	16,9	16,9	19,4	19,4	20,3	20,3	16,6	16,6	24,5	24,5	1,2	1,2
Luko south discharge side	I0203001!	12,0	12,0	17,7	17,7	22,3	22,3	21,0	21,0	18,3	18,3	22,4	22,4	19,0	19,0
Luko north discharge side	I0203001!	14,6	14,6	20,8	20,8	25,7	25,7	23,0	23,0	13,2	13,2	15,4	15,4	20,2	20,2
Cooler	I02030!	23,7	23,7	29,2	29,2	33,6	33,6	26,2	26,2	21,9	21,9	12,3	12,3	12,1	12,1
Luko south intake side	I02000103!	-2,8	-2,8	15,3	15,3	18,9	18,9	20,9	20,9	15,8	15,8	25,1	25,1	18,4	18,4
Luko north intake side	I02000103!	12,1	12,1	16,9	16,9	19,4	19,4	20,3	20,3	16,6	16,6	24,5	24,5	1,2	1,2
Luko south discharge side	I02000103!	12,0	12,0	17,7	17,7	22,3	22,3	21,0	21,0	18,3	18,3	22,4	22,4	19,0	19,0
Luko north discharge side	I02000103!	14,6	14,6	20,8	20,8	25,7	25,7	23,0	23,0	13,2	13,2	15,4	15,4	20,2	20,2
Luko south intake side	I0200003!	16,2	16,2	19,9	19,9	16,1	16,1	20,2	20,2	4,6	4,6	22,5	22,5	22,0	22,0
Luko north intake side	I0200003!	17,9	17,9	21,3	21,3	24,2	24,2	20,7	20,7	-1,4	-1,4	5,6	5,6	15,5	15,5
Luko south discharge side	I0200003!	13,3	13,3	13,0	13,0	13,9	13,9	20,1	20,1	15,6	15,6	26,5	26,5	23,9	23,9
Luko north discharge side	I0200003!	17,8	17,8	18,7	18,7	22,0	22,0	18,5	18,5	10,5	10,5	19,5	19,5	24,5	24,5
Flue gas treatment plant, top	I0101001135	9,9	9,9	12,6	12,6	25,8	25,8	29,1	29,1	25,0	25,0	19,9	19,9	16,1	16,1
Cooling tower, air outlet west	I010100117-9	32,6	32,6	29,2	29,2	34,1	34,1	35,5	35,5	30,5	30,5	31,7	31,7	37,1	37,1
Cooling tower, air outlet east	I010100114-6	26,0	26,0	26,9	26,9	31,6	31,6	30,9	30,9	24,7	24,7	21,8	21,8	30,6	30,6
Wheel loader outside	I010100012-13	13,2	13,2	15,6	15,6	17,6	17,6	21,0	21,0	13,7	13,7	13,2	13,2	14,2	14,2
Flue Gas Treatment Plant	I02020114-17	15,6	15,6	17,3	17,3	29,9	29,9	31,3	31,3	23,8	23,8	23,2	23,2	19,4	19,4
Flue Gas Treatment Plant	I02020114-17	11,9	11,9	14,3	14,3	29,1	29,1	27,2	27,2	24,0	24,0	23,5	23,5	17,2	17,2
Flue Gas Treatment Plant	I02020114-17	11,9	11,9	12,4	12,4	21,7	21,7	29,8	29,8	17,8	17,8	10,9	10,9	16,7	16,7
Flue Gas Treatment Plant	I02020114-17	15,2	15,2	17,7	17,7	31,5	31,5	30,0	30,0	24,4	24,4	23,2	23,2	20,7	20,7
Cooling tower, air intake south	I02020112	2,2	2,2	7,2	7,2	11,5	11,5	8,1	8,1	-0,2	-0,2	7,3	7,3	7,5	7,5
Cooling tower, air intake north	I02020113	4,0	4,0	5,8	5,8	15,6	15,6	24,8	24,8	5,4	5,4	3,7	3,7	6,3	6,3
Boiler house, air intake north	I020201124	10,2	10,2	8,6	8,6	13,5	13,5	15,4	15,4	2,9	2,9	0,4	0,4	8,8	8,8
Compressor room, open door	I020201142	5,7	5,7	3,5	3,5	17,1	17,1	19,9	19,9	12,5	12,5	5,7	5,7	2,6	2,6
Facade N Air supply	I020300200!	7,7	7,7	13,5	13,5	19,8	19,8	15,2	15,2	-6,7	-6,7	0,6	0,6	8,7	8,7
Facade S Air supply	I020300200!	-7,7	-7,7	-5,4	-5,4	-0,7	-0,7	-4,7	-4,7	11,9	11,9	20,7	20,7	17,6	17,6
TIPPING HALL - Facade north / day	I02030050002!	13,1		14,4		9,1		14,1		6,0		10,7		6,1	
TIPPING HALL - Facade north / night	I02030050102!			2,5		3,9		-1,2		3,5		-5,2		-0,4	
TIPPING HALL - Facade south / day	I02030050002!			0,5		-0,4		-0,1		-4,4		12,1		20,9	

TIPPING HALL - Facade south / night	I020300050102!		-9,6	-10,8	-10,6	-15,1	1,5	10,3	7,7
TIPPING HALL - Facade west / day	I020300050002!	12,5	14,9	-0,3	-3,3	-2,9	11,2	17,9	
TIPPING HALL - Facade west / night	I020300050102!	1,9	4,2	-10,8	-13,6	-13,0	0,8	7,3	
FUEL BUNKER - Facade West	I0203000402!								
FUEL BUNKER - Facade South	I0203000402!								
FUEL BUNKER - Facade North	I0203000402!								
FUEL BUNKER - Facade East	I0203000402!								
BOILER HOUSE - Facade East	I0203000202!	-4,2	-4,2	-0,5	-0,5	17,3	17,3	12,9	10,5
BOILER HOUSE - Facade South	I0203000202!	-3,3	-3,3	-2,0	-2,0	1,7	1,7	-1,2	-1,2
BOILER HOUSE - Facade West	I0203000202!	2,8	2,8	5,3	5,3	2,0	2,0	-4,6	-4,6
BOILER HOUSE - Facade	I0203000202!	4,9	4,9	8,8	8,8	14,6	14,6	10,6	10,6
MACHINE HOUSE - Facade North	I0203000302!	-1,3	-1,3	4,0	4,0	12,1	12,1	15,6	15,6
MACHINE HOUSE - Facade East	I0203000302!	-3,8	-3,8	0,3	0,3	8,2	8,2	16,8	16,8
MACHINE HOUSE - Facade South	I0203000302!	-5,2	-5,2	-0,6	-0,6	4,1	4,1	7,0	14,0
MACHINE HOUSE - Facade West	I0203000302!	-15,7	-15,7	-14,3	-14,3	-9,7	-9,7	-7,3	-7,3
MACHINE HOUSE - Supply air North	I0203000300!	0,9	0,9	6,6	6,6	15,0	15,0	19,1	19,1
MACHINE HOUSE - Supply air East	I0203000300!	-0,6	-0,6	3,2	3,2	11,7	11,7	21,4	21,4
MACHINE HOUSE - Supply air South	I0203000300!	-2,2	-2,2	1,9	1,9	6,8	6,8	9,0	9,0
FUEL BUNKER - Facade North	I0203000402!								
Facade Filter Penthouse	I02030008!	8,5	8,5	13,8	13,8	17,6	17,6	17,1	12,8
Facade Filter	I02030008!	-12,5	-12,5	-8,2	-8,2	-4,2	-4,2	-5,2	-9,8
Facade ID-Fan	I02030008!	-12,4	-12,4	-4,8	-4,8	0,1	0,1	1,2	-7,8
BOILER HOUSE - Facade East	I02000102!	-4,2	-4,2	-0,5	-0,5	17,3	17,3	12,9	10,5
BOILER HOUSE - Facade South	I02000102!	-3,3	-3,3	-2,0	-2,0	1,7	1,7	-1,2	-1,2
BOILER HOUSE - Facade West	I02000102!	2,8	2,8	5,3	5,3	2,0	2,0	-4,6	-4,6
BOILER HOUSE - Facade	I02000102!	4,9	4,9	8,8	8,8	14,6	14,6	10,6	10,6
MACHINE HOUSE - Supply air North	I02000101!	0,9	0,9	6,6	6,6	15,0	15,0	19,1	19,1
MACHINE HOUSE - Supply air East	I02000101!	-0,6	-0,6	3,2	3,2	11,7	11,7	21,4	21,4
MACHINE HOUSE - Supply air South	I02000101!	-2,2	-2,2	1,9	1,9	6,8	6,8	9,0	9,0
MACHINE HOUSE - Facade North	I02000100!	-1,3	-1,3	4,0	4,0	12,1	12,1	15,6	15,6
MACHINE HOUSE - Facade East	I02000100!	-3,8	-3,8	0,3	0,3	8,2	8,2	16,8	16,8
MACHINE HOUSE - Facade South	I02000100!	-5,2	-5,2	-0,6	-0,6	4,1	4,1	7,0	14,3
MACHINE HOUSE - Facade West	I02000100!	-15,7	-15,7	-14,3	-14,3	-9,7	-9,7	-7,3	-10,3
MACHINE HOUSE - Facade North	I02000000!	-5,8	-5,8	-1,1	-1,1	6,1	6,1	8,4	8,4
MACHINE HOUSE - Facade East	I02000000!	-8,8	-8,8	-4,4	-4,4	2,7	2,7	9,1	9,1
MACHINE HOUSE - Facade South	I02000000!	-11,5	-11,5	-5,8	-5,8	-1,3	-1,3	2,2	6,9
MACHINE HOUSE - Facade West	I02000000!	-21,3	-21,3	-20,4	-20,4	-15,7	-15,7	-12,1	22,7
MACHINE HOUSE - Supply air North	I02000001!	0,7	0,7	6,3	6,3	14,5	14,5	18,0	18,0
MACHINE HOUSE - Supply air East	I02000001!	-1,0	-1,0	3,1	3,1	11,4	11,4	19,9	19,9
MACHINE HOUSE - Supply air South	I02000001!	-3,1	-3,1	1,3	1,3	6,1	6,1	9,0	16,6
BOILER HOUSE - Facade East	I02000002!	-13,5	-13,5	-9,8	-9,8	5,4	5,4	1,3	-0,8
BOILER HOUSE - Facade South	I02000002!	-11,6	-11,6	-10,7	-10,7	-7,5	-7,5	-9,9	1,1
BOILER HOUSE - Facade West	I02000002!	-8,9	-8,9	-6,6	-6,6	-8,0	-8,0	-14,6	-14,6
BOILER HOUSE - Facade	I02000002!	-6,6	-6,6	-2,6	-2,6	2,2	2,2	-1,3	-1,3
Flue Gas Treatment Plant	I01010001!14-17	10,5	10,5	13,6	13,6	24,1	24,1	31,7	16,6
Flue Gas Treatment Plant	I01010001!14-17	5,7	5,7	9,4	9,4	21,4	21,4	22,6	25,6
Flue Gas Treatment Plant	I01010001!14-17	7,1	7,1	9,4	9,4	26,1	26,1	18,3	9,3
Cooling tower, air intake south	I01010001!2	10,7	10,7	16,2	16,2	12,8	12,8	18,8	9,7
Cooling tower, air intake north	I01010001!3	2,3	2,3	3,5	3,5	12,9	12,9	22,7	-3,6
Boiler house, air intake north	I01010001!24	7,3	7,3	4,1	4,1	10,8	10,8	13,4	0,3
Compressor room, open door	I01010001!42	5,7	5,7	3,3	3,3	16,7	16,7	19,8	14,4
Fire Pumps	I06!	23,3	23,3	25,7	25,7	29,3	29,3	37,8	37,8
Parking area 1	I00!	10,1		8,6		9,2		16,9	13,8
Parking area 2	I00!	6,0		12,5		-0,6		5,3	-5,6
								-6,0	10,0

Appendix C

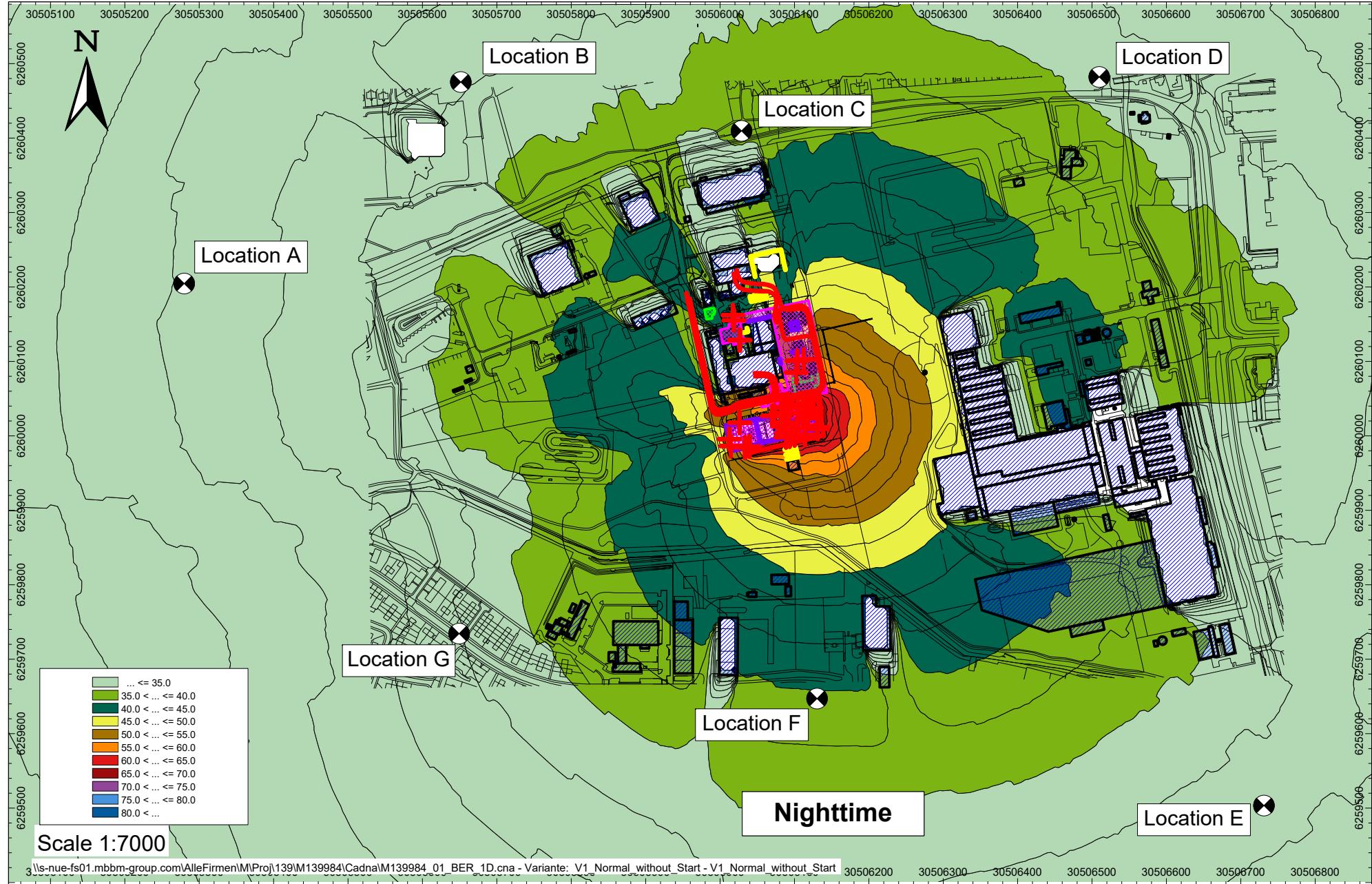
Noise contour plots



New Waste To Energy Plant of MVV in Dundee

Figure 01: Noise contour map - V1 Normal without start - Daytime

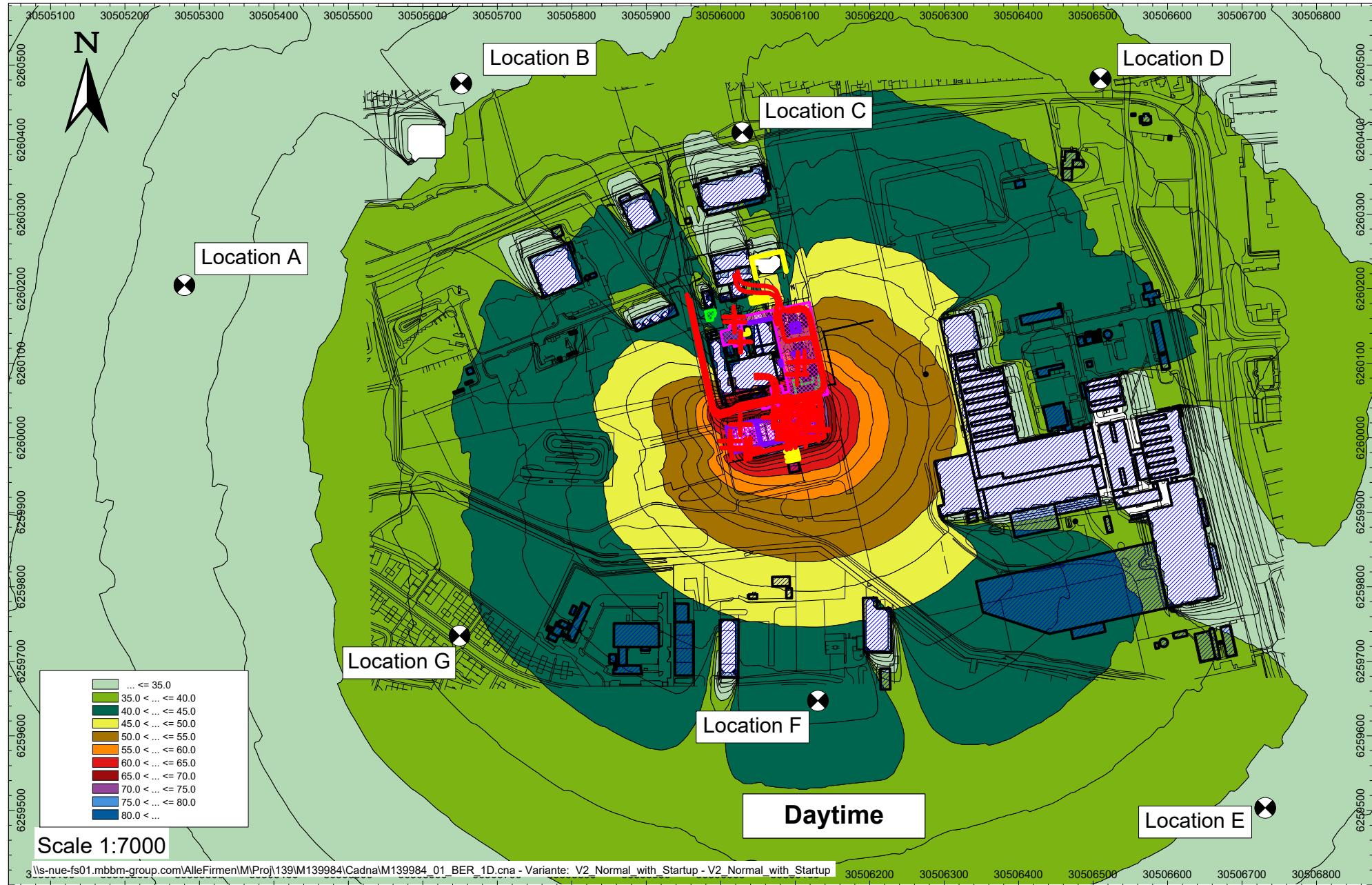
M139984/01 SPR
2019-11-15



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Figure 02: Noise contour map - V1 Normal without start - Nighttime

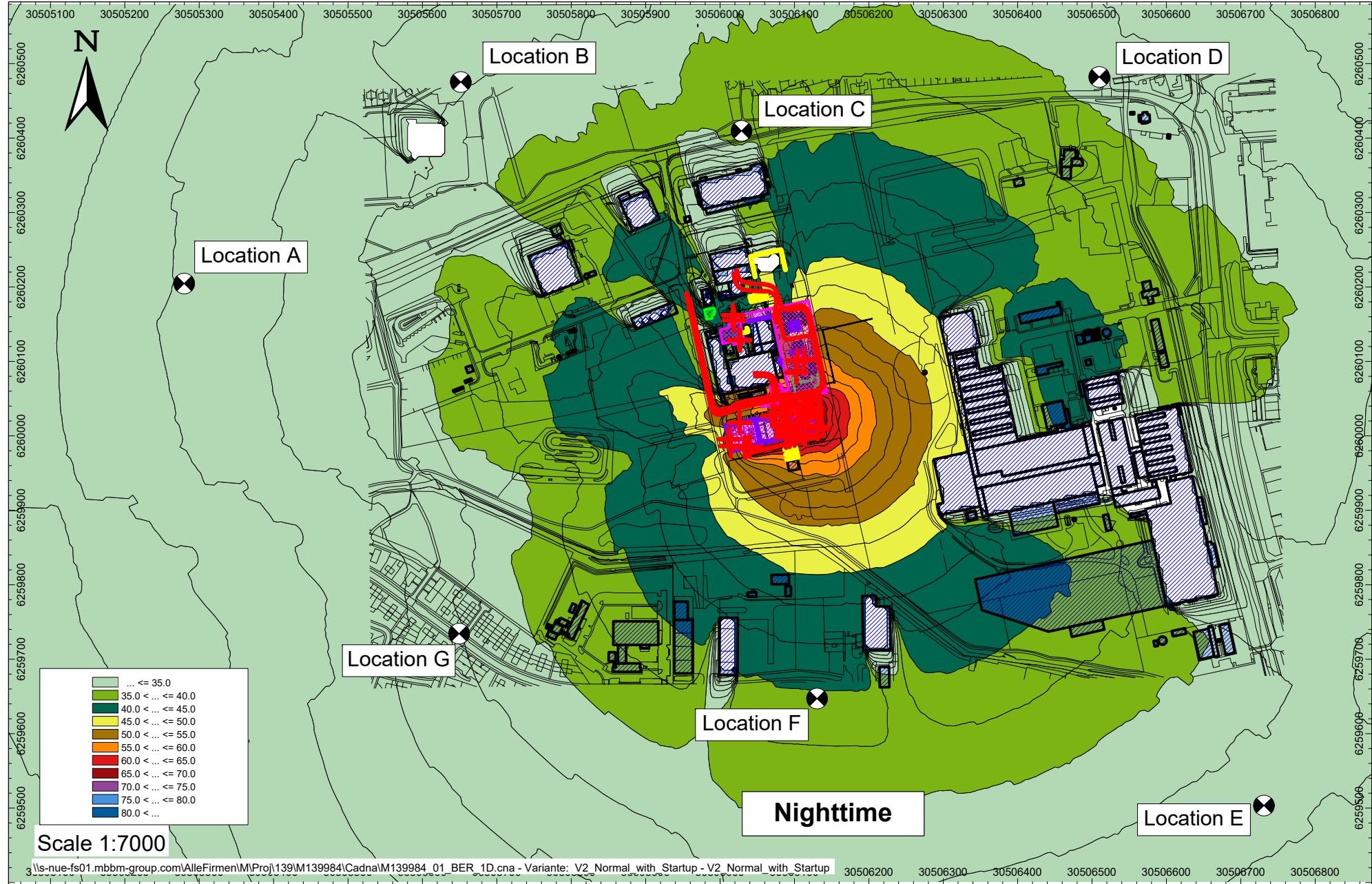
M139984/01 SPR
2019-11-15



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Figure 03: Noise contour map - V2 Normal with startup - Daytime

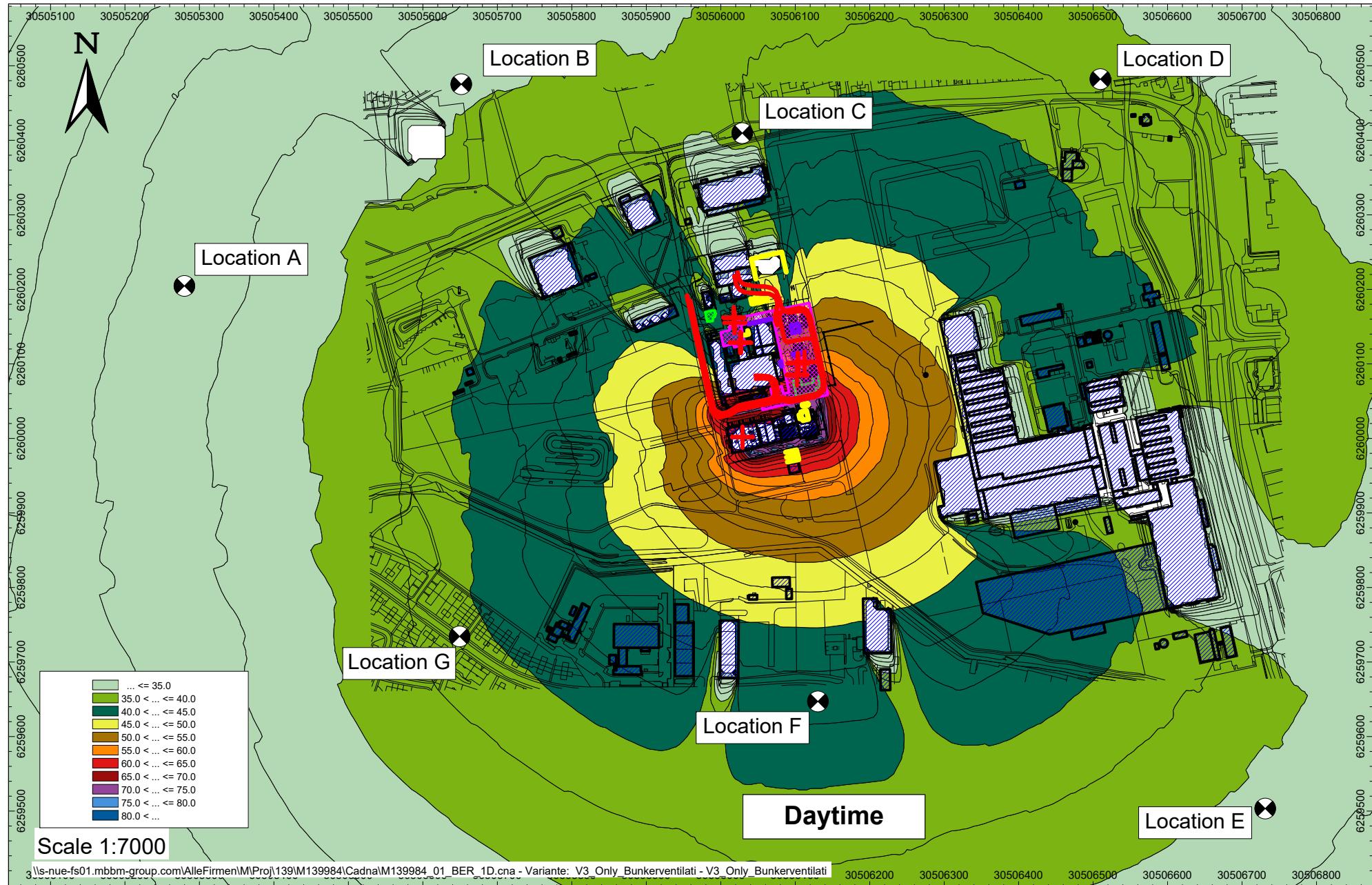
M139984/01 SPR
2019-11-15



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Figure 04: Noise contour map - V2 Normal with startup - Nighttime

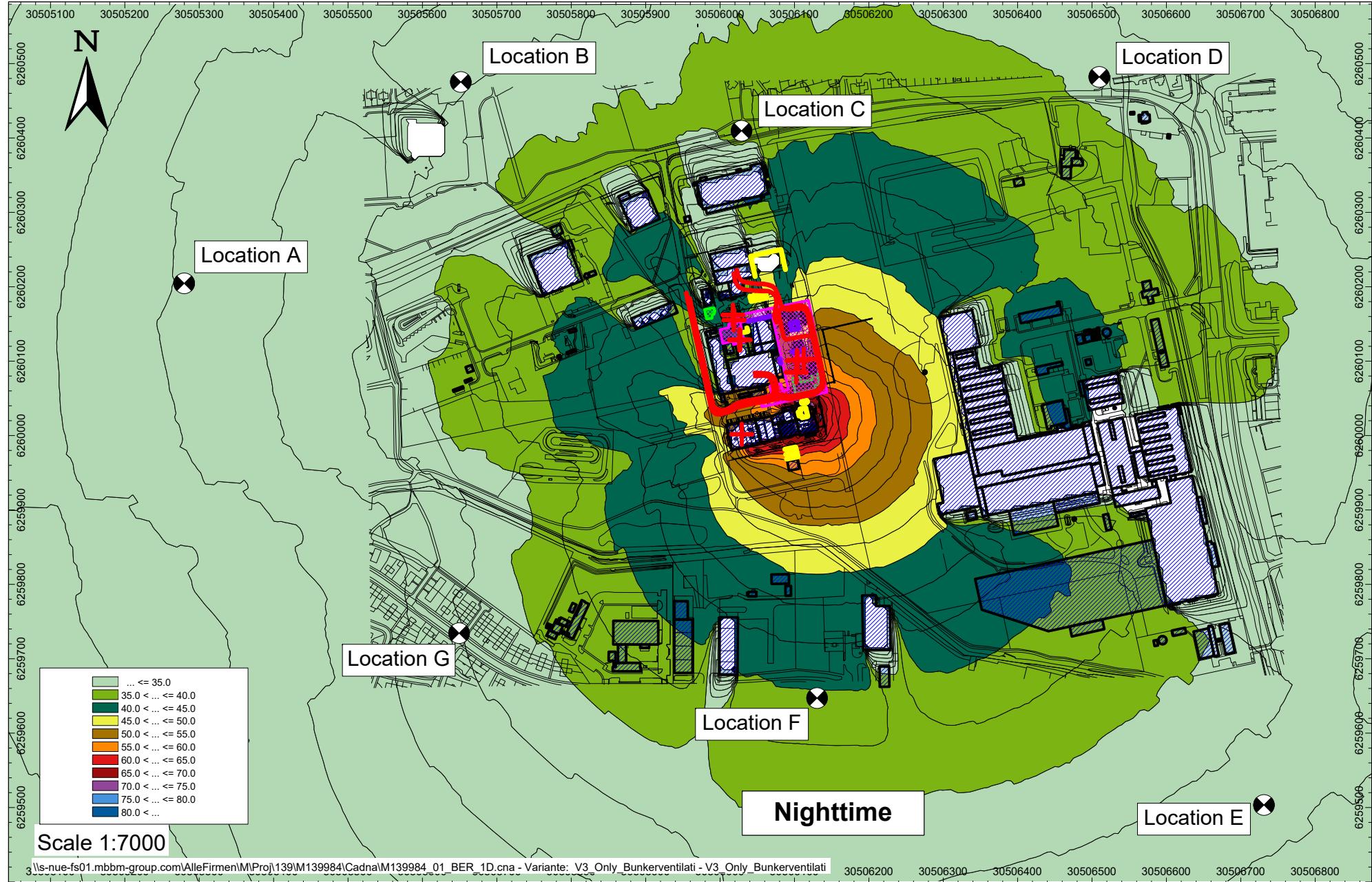
M139984/01 SPR
2019-11-15



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Figure 05: Noise contour map - V3 Only Bunkerventilati - Daytime

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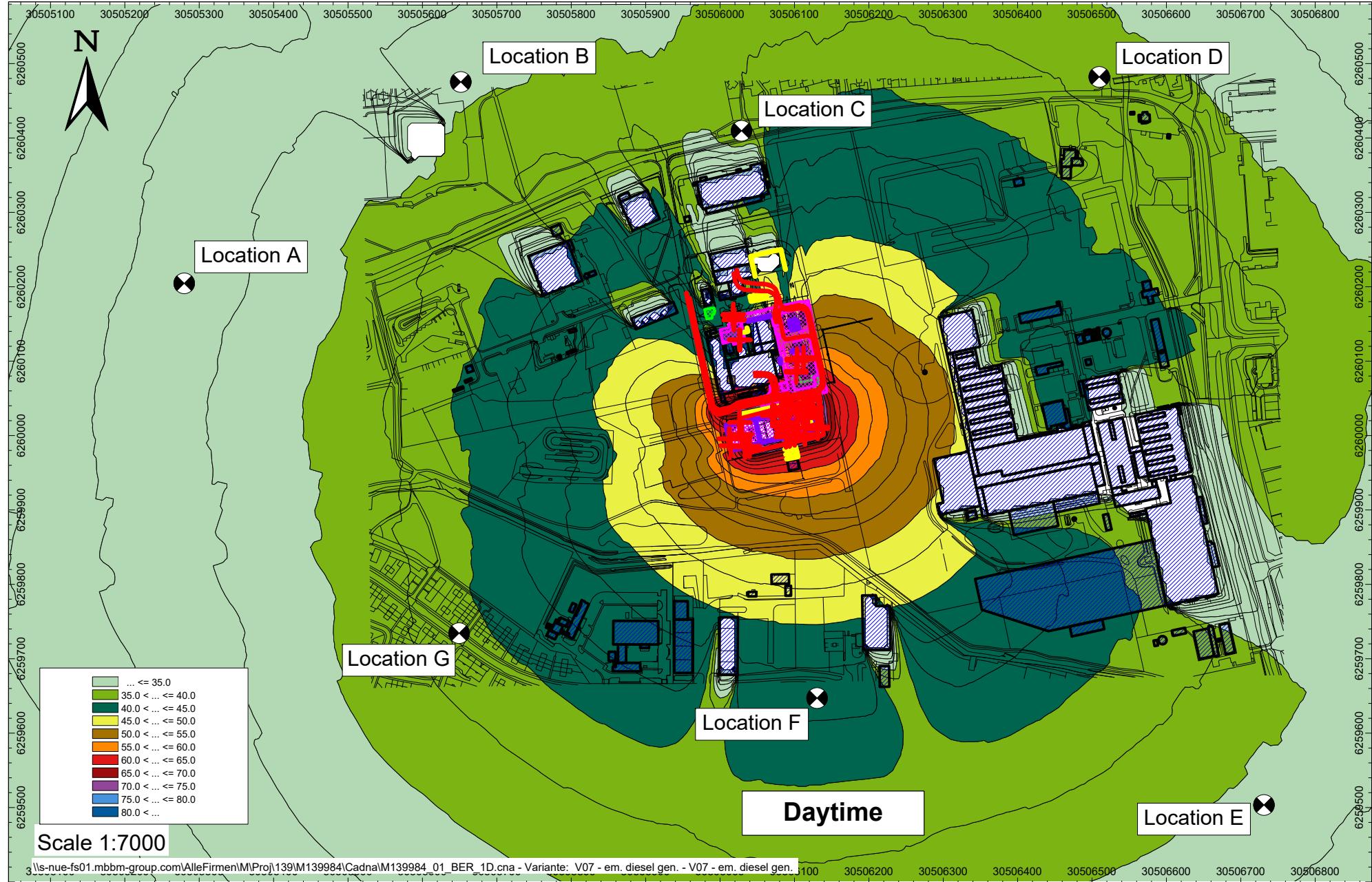


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Figure 06: Noise contour map - V3 Only Bunkerventilati - Nighttime

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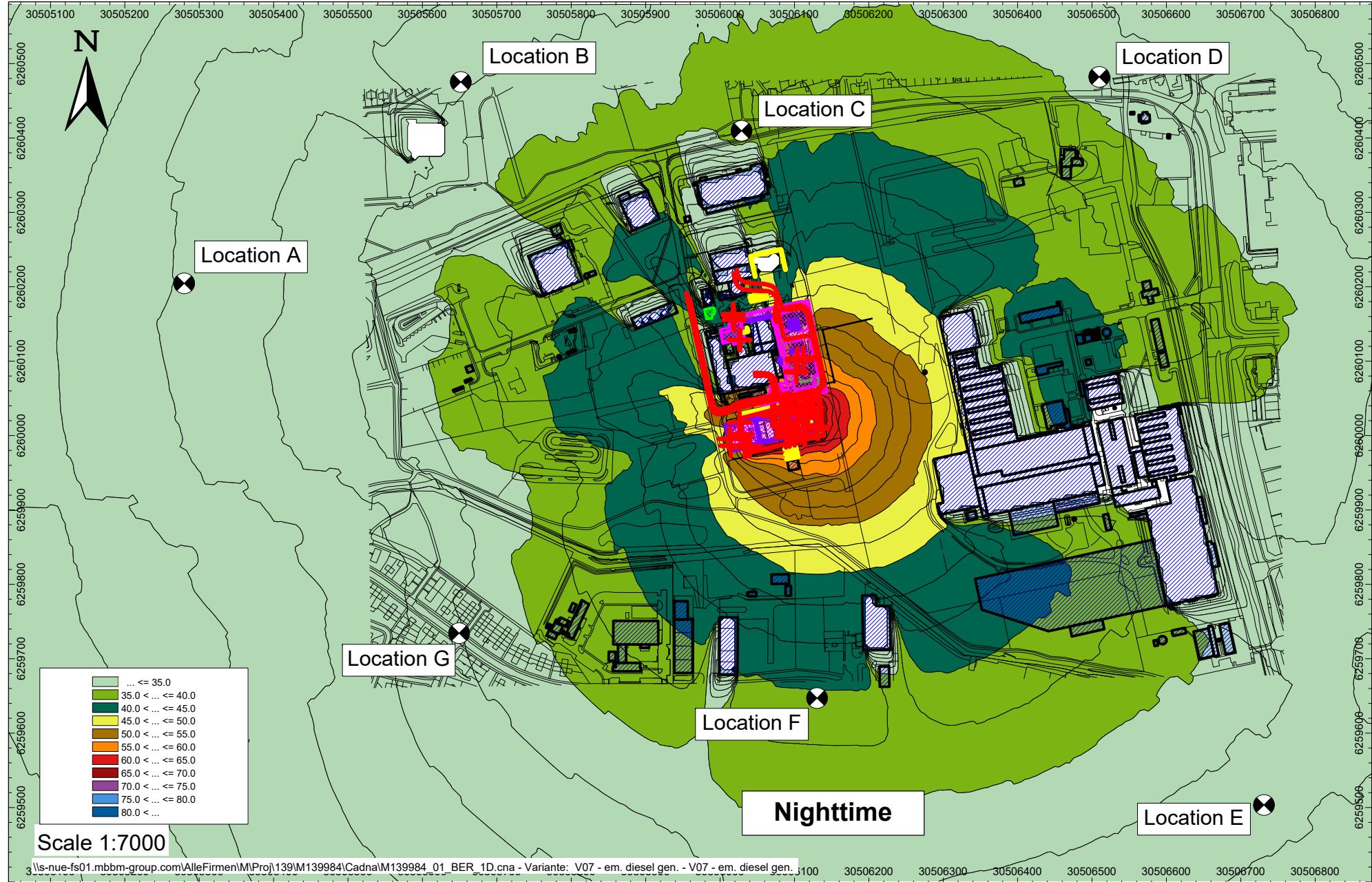
2019-11-15



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Figure 07: Noise contour map - V4 em. diesel generator - Daytime

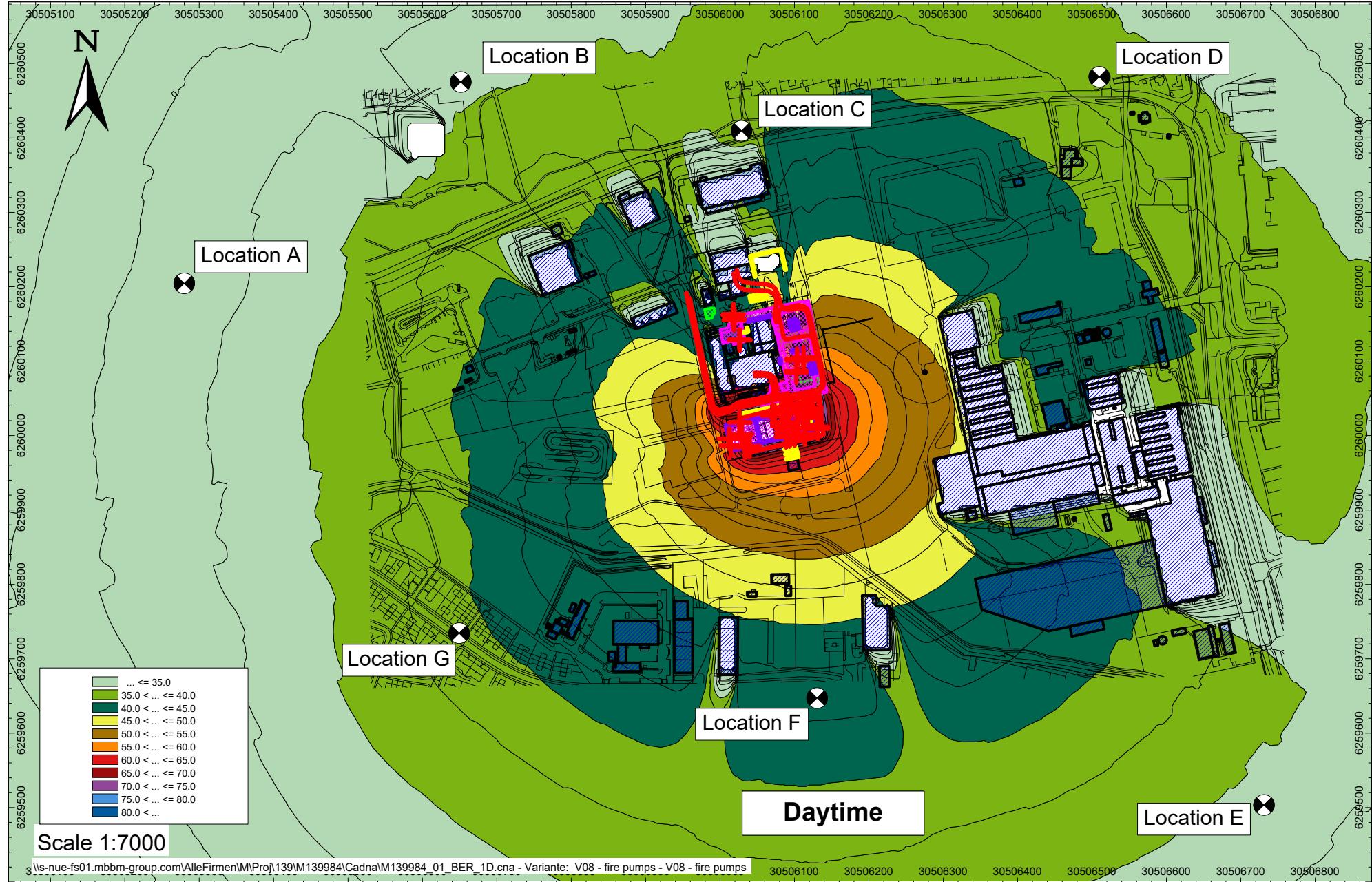
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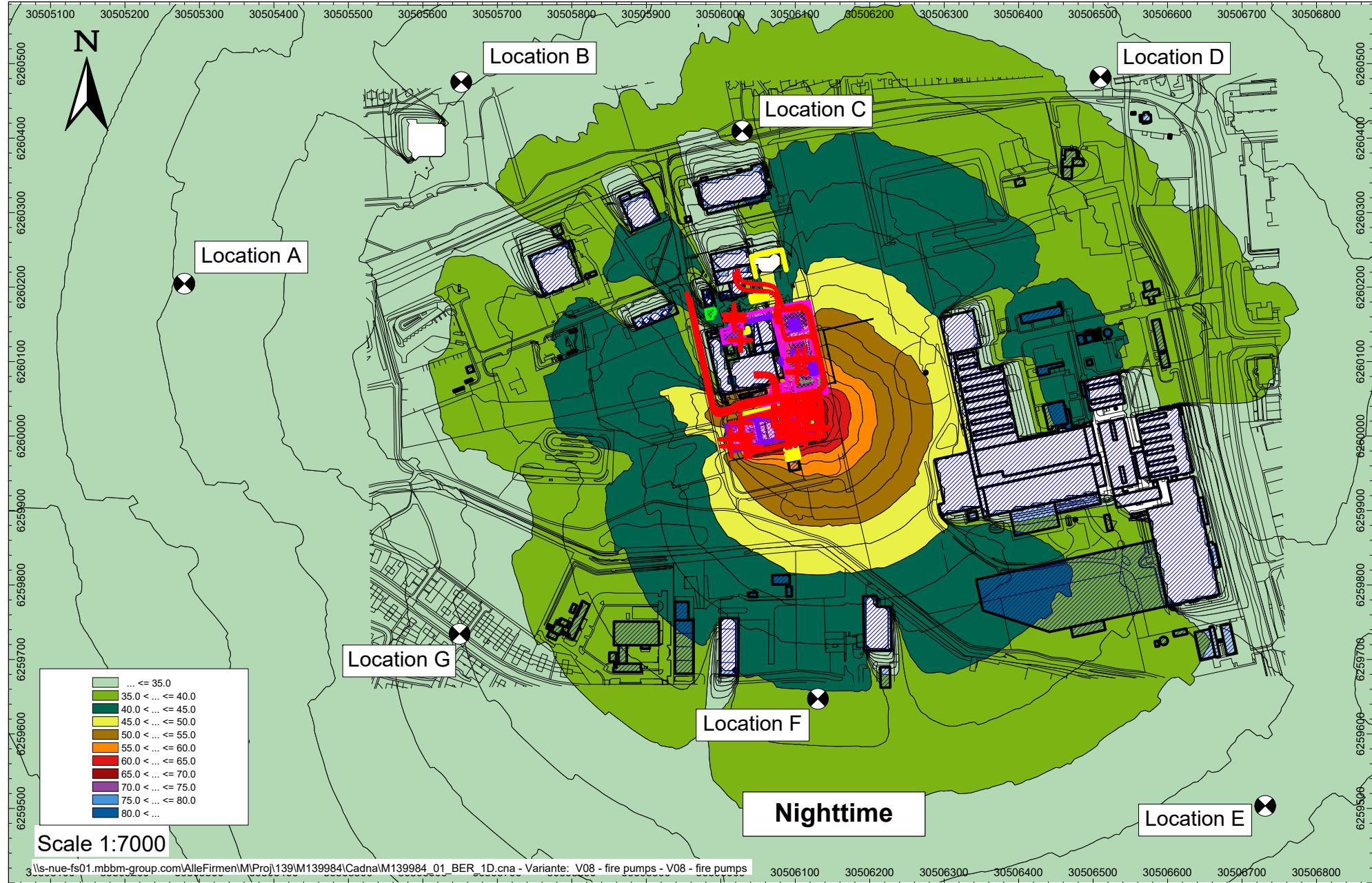
Figure 08: Noise contour map - V4 em. diesel generator - Nighttime

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Figure 09: Noise contour map - V5 fire pumps - Daytime

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Figure 10: Noise contour map - V5 fire pumps - Nighttime

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