Chullora Materials Recycling Facility

Environmental Impact Statement (SSD-10401)

Appendix N Noise and Vibration Impact Assessment

ACOUSTICS AND AIR

CHULLORA MATERIALS RECYCLING FACILITY

NOISE & VIBRATION IMPACT ASSESSMENT

REPORT NO. 19394
VERSION A

MAY 2020

PREPARED FOR

ARCADIS
LEVEL 16, 580 GEORGE STREET
SYDNEY NSW 2000

WILKINSON MURRAY

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GLOSSARY OF TERMS

Table 1-1 Key terms

Key terms	Definition
The Applicant	SUEZ Recycling & Recovery Pty Ltd
The Chullora RRP	The Chullora Resource Recovery Park (RRP) to be developed across three stages at 21 Muir Road, Chullora in Sydney.
The previous Chullora RRC	The previous Chullora Resource Recovery Centre was the waste management infrastructure comprising a putrescible waste transfer station, a materials recovery facility, a glass processing facility and supporting infrastructure that was operated by SUEZ on the site from 1997 to 2017 when it was subject to a fire and subsequently demolished.
The Proposal	The development and operation of the first phase of the Chullora RRP as a Materials Recycling Facility (MRF) to process co-mingled and source separated recyclable from municipal sources and dry commercial and industrial (C&I) waste; with a material processing capacity of up to 172,000 tonnes per annum (tpa).
The Proposal site	The area occupied by Stage 1 of the Chullora RRP located at 21 Muir Road.

Table 1-2 Glossary

Term	Definition
ABL	The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.
C&I	Commercial and industrial
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CoRTN	Calculation of Road Traffic Noise
Council	City of Canterbury-Bankstown Council
DA	Development Application
dB(A)	Decibels, A-weighted
DEC	NSW Department of Environment and Conservation (now Environment Protection Authority)
DECC	NSW Department of Environment and Climate Change (now Environment Protection Authority)
DECCW	NSW Department of Environment, Climate Change and Water (now Environment Protection Authority)
DP	Deposited Plan
DPIE	Department of Planning, Industry and Environment
e.g.	for example
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	Environment Protection Authority
EPL	Environmental Protection Licence
ha	hectares
Hz	hertz
i.e.	that is
ICNG	Interim Construction Noise Guideline

Term	Definition
km	kilometre
L_{Amax}	The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.
L_{A90}	The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.
L_{Aeq}	The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.
LGA	Local Government Area
m	metres
m2	square metres
MRF	Materials Recycling Facility
MSW	Municipal solid waste
NCA	Noise Catchment Area
NML	Noise management level
NPfI	Noise Policy for Industry
NSW	New South Wales
OEH	Office of Environment and Heritage
PPV	Peak particle velocity
RBL	The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.
rmg	Root mean quartic
RNP	Road Noise Policy
RRC	Resource Recovery Centre
RRP	Resource Recovery Park
SEARs	Secretary Environmental Assessment Requirements
SSD	State significant development
SUEZ	SUEZ Recycling & Recovery Pty Ltd
SWL	Sound power level
tpa	tonnes per annum
VDV	Vibration Dose Value

EXECUTIVE SUMMARY

SUEZ Recycling & Recovery Pty Ltd (SUEZ - the Applicant) are seeking to establish a state-of-the art Resource Recovery Park located at 21 Muir Road (Lot 2 DP1227526), Chullora in Sydney (the Chullora RRP). The Applicant are proposing to develop and operate the first phase of the Chullora RRP as a Materials Recycling Facility (MRF) (the Proposal) to process co-mingled and source separated recyclables from municipal sources and dry commercial and industrial (C&I) waste; with a material processing capacity of up to 172,000 tonnes per annum (tpa).

The Proposal would be considered State significant development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011.* Accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This Noise and Vibration Impact Assessment has been prepared by Wilkinson Murray to support the preparation of the EIS and assess the Proposal's impact on the acoustic amenity of nearby sensitive receivers.

Proposal overview

The Proposal would comprise the construction and operation of a MRF with a material handling capacity of up to 172,000 tpa. Waste streams that would be processed at the MRF would all comprise dry recyclables from municipal and C&I sources, including:

- Co-mingled material collected from municipal and C&I sources
- Source separated paper and cardboard
- Mixed plastics.

General operational activities are proposed to occur concurrently with the MRF within designated operational activities area, including truck parking, container storage and other ancillary activities as required.

Purpose of this assessment

This Noise and Vibration Impact Assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) as they related to noise and vibration, including:

- A quantitative assessment of potential demolition, construction, operational and transport noise and vibration impacts in accordance with relevant Environment Protection Authority guidelines
- Details and justification of the proposed noise mitigation and monitoring measures
- Specified times of operation for all phases of the development and for all noise producing activities.

Construction impacts

Noise impacts associated with the construction of the Proposal have been assessed in accordance with the *Interim Construction Noise Guideline* (ICNG). Receiver noise levels have been predicted for a range of anticipated construction activities. The predicted noise levels exceed the established noise management levels (NML) at receivers within NCA1 by up to 1 dBA during construction of the Proposal.

No vibration intensive plant is expected to be used during the construction of the Proposal. Therefore, vibration impacts are considered unlikely and have not been assessed further.

Operational impacts

Noise impacts associated with the operation of the Proposal have been assessed in accordance with the *Noise Policy for Industry* (NPfI). An assessment scenario has been developed to represent typical worst-case operational noise emissions. The predicted noise levels at sensitive receivers comply with the established project noise trigger levels during both calm and noise-enhancing meteorological conditions.

Mitigation measures

Noise levels generated during construction and operation of the Proposal are not predicted to exceed the established NML at identified residential receivers. Notwithstanding, a range of noise management measures have been identified for consideration for inclusion into the *Construction Environmental Management Plan* (CEMP) for the Proposal.

1 INTRODUCTION

SUEZ Recycling & Recovery Pty Ltd (SUEZ – the Applicant) are seeking to establish the state-of-the art Chullora Resource Recovery Park (Chullora RRP) located at 21 Muir Road (Lot 2 DP1227526), Chullora in Sydney (Figure 1-1). SUEZ are proposing to design build and operate the first phase of the Chullora RRP as a Materials Recycling Facility (MRF) (the Proposal) to process co-mingled recyclable municipal solid waste (MSW) and dry commercial and industrial (C&I) waste; with a material processing capacity of up to 172,000 tonnes per annum (tpa).

The Proposal would be considered state significant development (SSD) under Clause 23 (waste and resource management facilities) of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* being a recycling facility that handles more than 100,000 tonnes of waste per year. Accordingly, an Environmental Impact Statement (EIS) has been prepared to support the SSD Application for the Proposal. This Noise and Vibration Impact Assessment has been prepared by Wilkinson Murray Pty Limited to support the preparation of the EIS and assess the Proposal's impact on nearby sensitive receivers.

1.1 Proposal overview

The Proposal would comprise the construction and operation of a MRF with a material handling capacity of up to 172,000 tonnes per annum (tpa), comprising:

- Up to 115,000 tpa of co-mingled recyclables collected from municipal and C&I sources
- Up to 50,000 tpa of source separated paper and cardboard for baling
- Up to 7,000 tpa of external mixed plastics for secondary processing.

Once operational the Proposal would receive waste from locally generated sources as well as the greater Sydney area. The total input in any year would not exceed 172,000 tpa, with the exact throughput from each source varying subject to the market conditions in that year and different Councils' recycling collection regimes.

The Proposal would represent a critical piece of waste management infrastructure which would mitigate significant capacity constraints currently impacting the Sydney region. The Proposal would provide advanced recycling processes to build resilience within the current network of recycling facilities as well as promote the principles of a circular economy through implementation of a pull-through model that conceives of the sorting, reprocessing and specified end uses of processed materials as an integrated, closed loop solution.

The key construction components of the Proposal would include:

- Establishment of a hardstand area and internal road network
- Construction of the enclosed MRF shed
- Installation and commissioning of fixed plant and equipment
- Installation of ancillary infrastructure, including weighbridges, pedestrian overbridge, and fire systems
- Installation and connection of site service infrastructure (electrical, water, sewer, gas and telecommunication services
- Installation of signage.

- The key operational components of the Proposal would include:
- Operation of a MRF 24 hours per day, seven days per week (including processing and waste delivery and collection)
- Product storage.

The key components of the Proposal are shown in Figure 1-2

Figure 1-1 The Chullora RRP

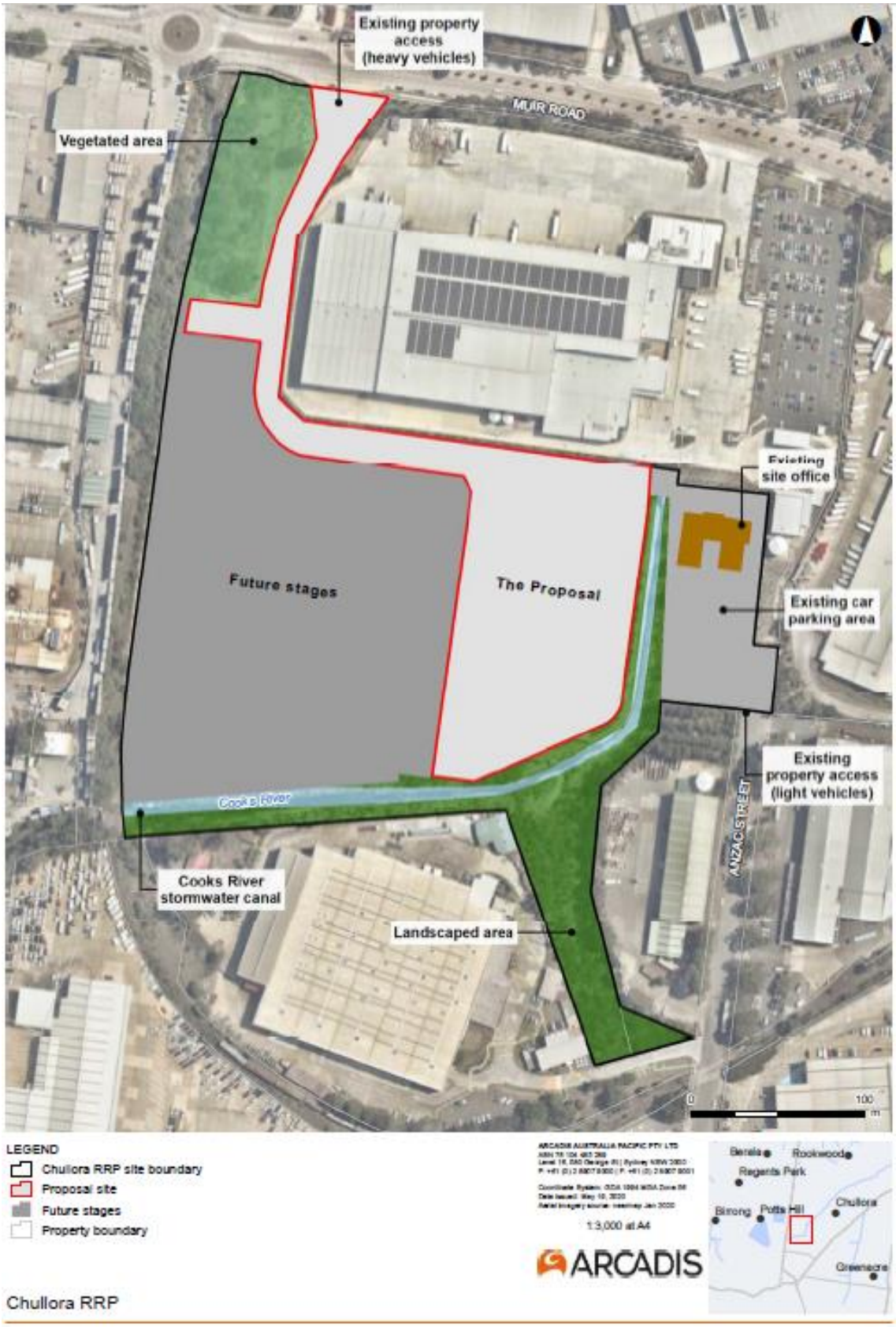
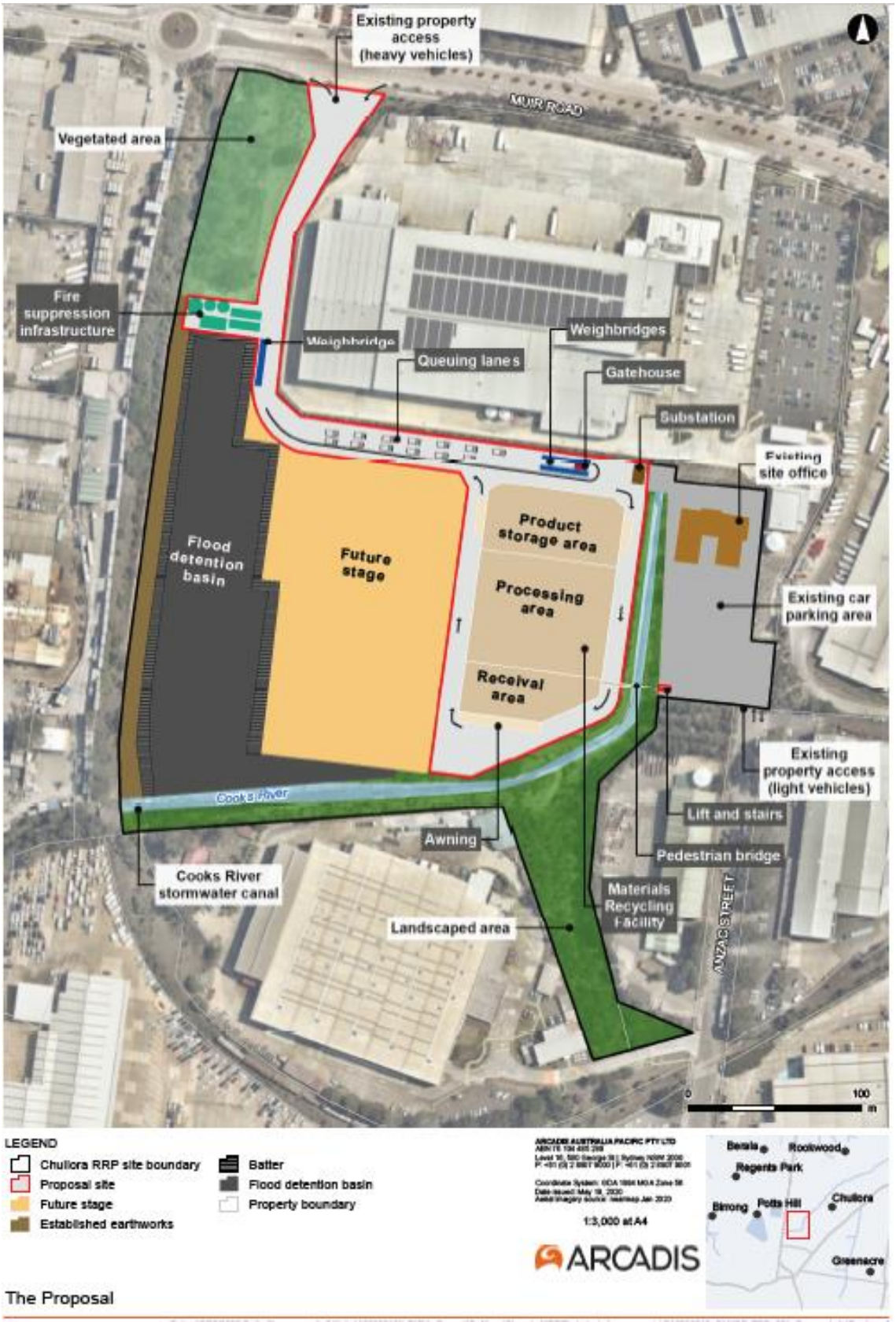


Figure 1-2 The Proposal



1.2 Site location

The Chullora RRP site boundary including the Proposal site, shown in Figure 1-2, comprises one parcel of land being 21 Muir Road, Chullora (Lot 2 in DP 1227526)). The Proposal site is located in the Canterbury-Bankstown Local Government Area (LGA) and is approximately 2.5 hectares (ha) in size and is located approximately 18 kilometres (km) west of Sydney Central Business District (CBD) and 10 km east of Parramatta CBD.

The Chullora site is bounded by Muir Road to the north, Anzac Street to the east and existing industrial development further east and to the south. A disused freight railway line forms the site's boundary to the west. The Proposal site forms the central portion of the Chullora RRP site.

The Chullora site is located within the Chullora Technology Park, and surrounded by a range of industrial developments including PFD Storage Warehouse, Tip Top Bakery, News Limited, Fairfax, Volkswagen Distribution Centre, Bluescope Steel and Veolia transfer station. Directly to the west of the Proposal site is a narrow strip of land owned by the State Railway Authority, which formed part of the former railway through this area. A number of other businesses are located further to the west, including a service station, fitness centre and a range of other industrial warehouse (refer to Figure 1-3).

The closest residential receivers are located approximately 455 m to the southwest and 600 m to the east of the site (refer to Figure 1-3).

The Chullora RRP site currently has two vehicular access points. The access point for heavy vehicles is via Muir Road, west of the roundabout at Muir Road / Dasea Street. A secondary access point for light vehicles is provided from Anzac Street. The Proposal site would utilise these existing access points. Primary access to the Proposal site from the north will remain via Muir Road from both directions, and egress is via left turn only. There are four major intersections along Muir Road including linkages to Rookwood Road (Metroad 6) and the Hume Highway:

- Two-lane roundabout at the intersection of Muir Road and Dasea Street
- Signalised intersection at Muir Road and Worth Street
- Signalised intersection at Muir Road and Rookwood Road
- Signalised intersection at Muir Road and Hume Highway.

Figure 1-3 Surrounding land uses and residential receivers

Nearby sensitive receivers to the Proposal site

1.3 Site history

In 1996 the Waste Recycling and Processing Service of NSW took ownership of the Chullora RRP site and neighbouring site to the north (now occupied by the PFD storage warehouse). WSN Environmental Solutions, a State-owned corporation, operated the site in 1997 until 2011 when they were acquired by SITA Australia Pty Ltd (now SUEZ). From this time SUEZ, operated the previous Chullora RRC site which included a Transfer Station, MRF, Garden Organics platform and glass processing shed. In 2016, Frasers Property acquired both the Chullora RRP site and the site to the north, leasing the previous Chullora RRC back to SUEZ for ongoing use as a waste facility.

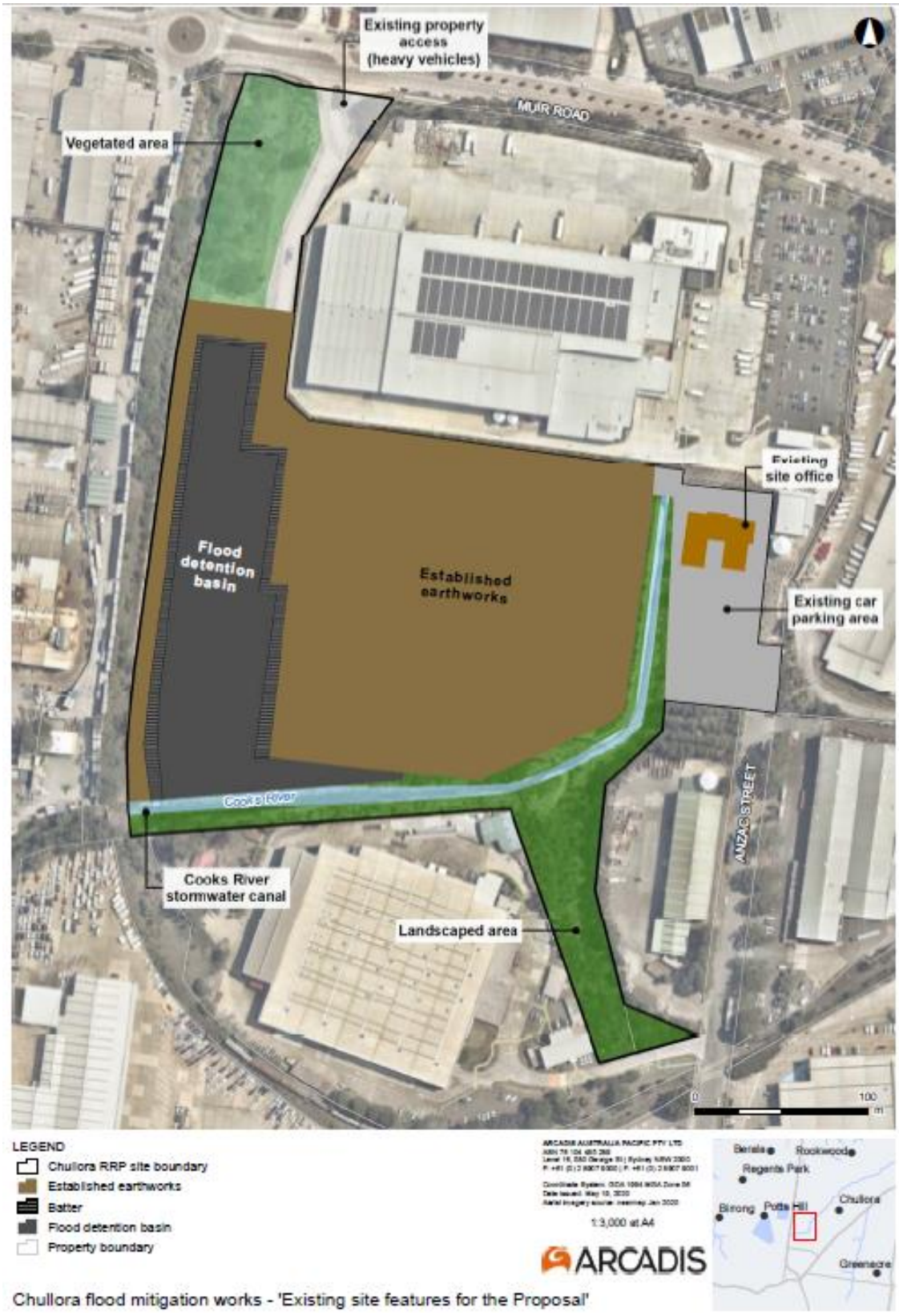
In 2017, the MRF component of the previous Chullora RRC, was subject to a fire and subsequently demolished, along with the former glass processing building and other waste infrastructure. At this time the site was subdivided with the northern portion developed as the PFD storage warehouse. Since demolition of the previous Chullora RRC, the Proposal site has been used for storage of residential waste bins, maintenance and parking of waste trucks, a heavy vehicle workshop, 5000 L diesel tank and wash bay to support truck maintenance activities.

In 12th May 2020 SUEZ lodged a development application (DA) (DA366/2020) with Council for the development of flood mitigation works across the Chullora RRP site (the flood mitigation works). The DA is seeking approval for early works and site establishment across the Chullora RRP site to provide flood immunity and stormwater infrastructure. The flood mitigation works include:

- Site clearance, including:
    - Demolition of temporary structures and general clean-up of the proposed site fill area and flood storage area
    - Removal of tress and other vegetation (within fill area and flood storage area)
    - Crushing of the existing concrete slab, temporary stockpiling of crushed material and reuse of it as a fill material
- Earthworks, including:
    - Cut and fill for the flood storage area
    - Construction of a flood detention basin and installation of stormwater infrastructure
    - Filling the area to the required level using existing crushed recycled concrete material and imported shale / sandstone material.

The commencement of the construction of the Proposal would occur following completion of the flood mitigation works. Figure 1-4 shows the flood mitigation works; depicting the features of the Chullora RRP site upon commencement of the construction of the Proposal.

Figure 1-4 Chullora RRP site – current conditions



Chullora flood mitigation works - 'Existing site features for the Proposal'

1.4 Purpose of this report

This Noise and Vibration Impact Assessment supports the EIS for the Proposal and has been prepared as part of an SSD Application for which approval is sought under Part 4, Division 4.7 of the EP&A Act.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD 10401) for the Proposal, issued by NSW Department of Planning, Industry and Environment (DPIE) in May 2020.

Table 1-1 provides a summary of the relevant SEARs which relate to noise and vibration, and where these have been addressed in this report.

Table 1-1 SEARs

SEARs	Where addressed
7. Noise and Vibration	
a quantitative assessment of construction, operational and transport noise and vibration impacts in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity of the site.	Section 4 Section 5 Section 6
details and justification of the proposed noise mitigation and monitoring measures	Section 7
specified times of operation for all phases of the development and for all noise producing activities	Section 1.1

Further to the above, the NSW Environmental Protection Authority (EPA) require further details on specific requirements relating to their authority. These requirements are discussed throughout the report as indicated in Table 1-2.

Table 1-2 Local and State authority requirements and relevant report sections

Noise and vibration	Where addressed
EPA	
Noise including potential impacts and mitigation measures.	Sections 4 through 7

2 ASSESSMENT APPROACH

This section outlines the noise and vibration policy framework, assessment approach, methodology and assessment boundary for the Proposal.

2.1 Sensitive receivers and background noise loggers

The land use immediately surrounding the Proposal site is industrial. The nearest residential receivers are located in the nearby suburbs of Yagoona, Greenacre, Lidcombe and Regents Park. Eighteen noise catchment areas (NCAs) and six industrial receivers have been identified for the Proposal based on the location of sensitive receivers, as summarised in Table 2-1 and shown on Figure 2-1, in proximity to the Proposal site.

The Mary Wade Correctional Centre (NCA17) has been included in the assessment, and as a conservative measure, has been assessed as a "residential" receiver.

Table 2-1 Sensitive receivers

ID	Description
NCA1	Residential – Yagoona, South of Boardman Street
NCA2	Residential – Yagoona, South of Brunker Road
NCA3	Residential – Yagoona, South of MacMillan Street
NCA4	Residential – Yagoona, South of Lloyd Avenue
NCA5	Residential – Yagoona, East of Rookwood Road
NCA6	Residential – Yagoona, South of Hume Highway
NCA7	Residential – Greenacre, South of Boronia Road
NCA8	Residential – Greenacre, North of Boronia Road
NCA9	Residential – Greenacre, South of Rawson Road
NCA10	Residential – Greenacre, North of Rawson Road
NCA11	Residential – Greenacre, North of Northcote Road
NCA12	Residential – Greenacre, South of Tennyson Road
NCA13	Residential – Greenacre, North of Tennyson Road
NCA14	Residential – Greenacre, South of Como Road
NCA15	Residential – Greenacre, North of Como Road
NCA16	Residential – Regents Park, South of Amy Street
NCA17	Mary Wade Correctional Centre
NCA18	Residential – Lidcombe, South of Main Avenue
I1	Industrial – 15 Muir Road, Chullora
I2	Industrial – 9 Muir Road, Chullora
I3	Industrial – 68 Anzac Street, Chullora
I4	Industrial – 75 Anzac Street, Chullora
I5	Industrial – 73 Anzac Street, Chullora
I6	Industrial – 153 Rookwood Road, Yagoona

Unattended noise monitoring was conducted between 27 November and 5 December 2019 to determine the existing ambient noise levels at the most potentially affected residential receivers in the area surrounding the Proposal.

The monitoring was undertaken at two locations: 14 Graf Avenue, Yagoona (L1) and 17 Lewis Street, Regents Park (L2). Monitoring location L1 is considered representative of residential

receivers in catchment areas NCA1 through NCA15, which are in the vicinity of industrial land uses and major roads. Monitoring location L2 is considered representative of receivers in catchment areas NCA16 through NCA18, which are located further away from industrial land uses and major roads.

The monitoring locations are summarised in Table 2-2 and shown in Figure 2-1.

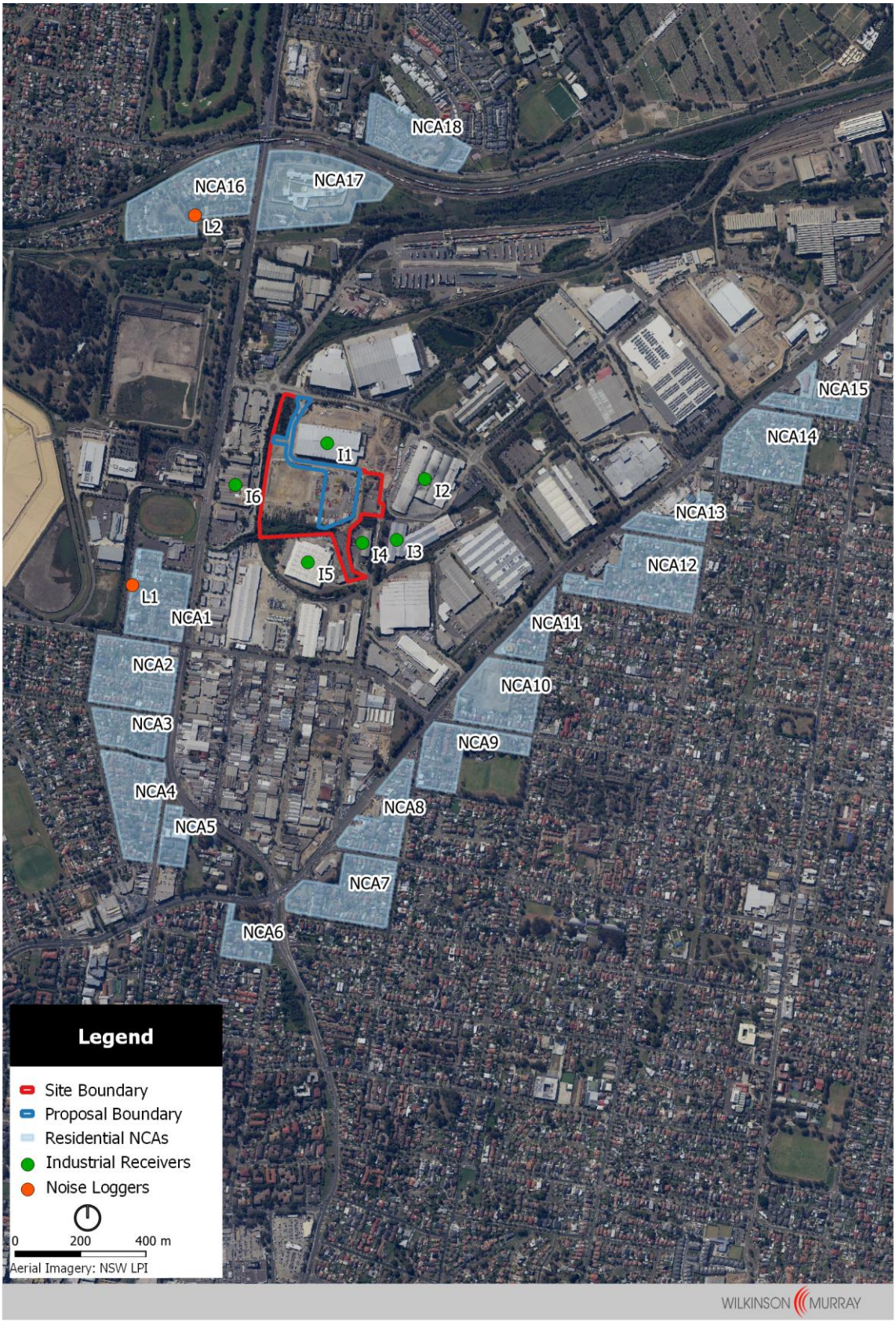
Table 2-2 Unattended noise monitoring locations

Location	Address	Receivers represented
L1	14 Graf Avenue, Yagoona	NCA1 – NCA15
L2	17 Lewis Street, Regents Park	NCA16 – NCA18

The noise monitoring equipment used for these measurements consisted of an environmental noise logger set to A-weighted, fast response. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration was checked before and after the survey and no significant drift was noted.

From the background noise levels (L_{A90}) the Rating Background Levels (RBLs) were determined using the methodology recommended in the NSW *Noise Policy for Industry* (NPfI).

Figure 2-1 Unattended noise monitoring locations



2.2 Construction noise assessment methodology

2.2.1 Construction noise management levels

The *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) recommends noise management levels (NML) to reduce the likelihood of noise impacts arising from construction activities. The ICNG NML for residential receivers are shown in Table 2-3.

Table 2-3 Construction NMLs at residences

Time of day	Management level $L_{Aeq,15min}$ (dBA)	How to apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or Public Holidays	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq,(15min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.
Outside recommended standard hours	Noise affected RBL + 5 dBA	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2.

The ICNG recommends an NML of 75 dBA for industrial land uses. It is expected that all construction activities would be conducted within standard construction hours. The construction NML for receivers near the Proposal site are presented in Table 2-4.

Table 2-4 Project-specific construction NML

Receiver	Acceptable $L_{Aeq,15min}$ noise level (Standard daytime construction hours)	Highly affected noise level (dBA)
NCA1 – NCA15	48	75
NCA16 – NCA18	49	75
I1 – I6	75	

2.2.2 Construction noise modelling

Site-related noise emissions were modelled with the "CadnaA" noise prediction software using the CONCAWE noise prediction algorithms. Factors that have been addressed in the noise model are:

- Equipment sound level emissions and location
- Screening effects from barriers
- Receiver locations
- Ground topography
- Noise attenuation due to geometric spreading
- Ground absorption
- Atmospheric absorption.

Noise predictions have been made based on the likely worst-case impacts taking into consideration the anticipated construction activities. This has been made based on Wilkinson Murray's previous experience with similar scale construction projects.

2.3 Construction vibration assessment methodology

When assessing vibration there are two components that require consideration:

- Human exposure to vibration
- The potential for building damage from vibration.

Construction work is generally considered an intermittent source of vibration.

2.3.1 Human exposure to vibration

The DEC's *Assessing Vibration: A Technical Guideline* (2006) provides guidance for assessing human exposure to vibration. The publication is based on British Standard BS6472:1992. Intermittent vibration is best assessed by the Vibration Dose Value (VDV) which is based on the *weighted* root mean quartic (rmq) acceleration. However, for simplicity of assessment and monitoring, a peak particle velocity (PPV) goal is preferred.

Table 2-5 sets out PPV values for continuous and impulsive vibration as specified by *Assessing Vibration: A Technical Guideline* (2006). The impulsive vibration goals are shown in brackets.

Table 2-5 Human comfort vibration goals – PPV (mm/s)

Place	Day (7.00am-10.00pm)	
	Preferred	Maximum
Residences	0.28 (8.6)	0.56 (17.0)
Offices	0.56 (18.0)	1.1 (36.0)
Workshops	1.1 (18.0)	2.2 (36.0)

Note: Impulsive goals are shown in brackets – These are most relevant to activities that create up to 3 distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading.

2.3.2 Building damage from vibration

There are currently no Australian Standards or guidelines to provide guidance on assessing the potential for building damage from vibration. It is common practice to derive goal levels from international standards such as British Standard BS7385:1993

The recommended limits (guide values from BS7385) for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented in Table 2-6.

Table 2-6 Transient vibration guide values - minimal risk of cosmetic damage

Type of building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4 Hz and above	N/A
Unreinforced or light framed structures Residential or light commercial type buildings	15mm/s at 4 Hz increasing to 20mm/s at 15 Hz	20mm/s at 15 Hz increasing to 50mm/s at 40 Hz and above

For general construction vibration, the dominant frequency of vibration is typically in the range 31.5 – 100 Hz. Because the dominant frequency of vibration cannot be determined with certainty, conservative goals of 20 mm/s for residential buildings and 50 mm/s for commercial and industrial buildings have been adopted.

No vibration intensive plant is expected to be used during the construction of the Proposal. Therefore, vibration impacts are considered unlikely and have not been assessed further.

2.4 Operational noise assessment

2.4.1 Operational noise trigger levels

The *Noise Policy for Industry* (NPfI) (EPA, 2017) provides a framework for assessing environmental noise impacts from industrial premises and industrial development proposals in New South Wales (NSW).

The NPfI recommends the development of project noise trigger levels, which provide a benchmark for assessing a proposal or site. The project noise trigger levels should not be interpreted as mandatory noise criteria but, rather, as noise levels that, if exceeded, would indicate a potential noise impact on the community.

The project noise trigger level is the lower value of the project intrusiveness noise level and the project amenity noise level; each explained further below. The project intrusiveness noise level assesses the likelihood of noise being intrusive above the ambient noise level and is applied to residential receivers only. The project amenity noise level ensures the total industrial noise from all sources in the area does not rise above a maximum acceptable level.

2.4.1.1 Project intrusiveness noise levels

The intrusiveness noise level is the noise level five decibels dBA above the background noise level for each time period (daytime, evening or night time) of interest at a residential receiver. The background noise level is derived from the measured L_{A90} noise levels.

The NPfI stipulates that project intrusiveness noise levels should not be set below 40 dBA during the daytime and 35 dBA in the evening and night time. Additionally, the NPfI recommends that the project intrusiveness noise level for the evening is set at no greater than that for the daytime, and that the project intrusiveness level for night time is set at no greater than that for the evening and daytime.

Intrusiveness noise levels for the project are calculated from the RBLs in Section 2.1 of this report and are presented in Table 2-7.

Table 2-7 Project intrusiveness noise levels

Receiver	Time of day [a]	RBL	Project intrusiveness noise level ($L_{Aeq,15min}$)
NCA1 – NCA15	Day	38	43
	Evening	40	43
	Night	35	40
NCA16 – NCA18	Day	39	44
	Evening	41	44
	Night	37	42

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.

2.4.1.2 Project amenity noise levels

Project amenity noise levels seek to protect against cumulative noise impacts from industry and maintain amenity for particular land uses. The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive developments within an area.

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial noise and do not include transportation noise (when on public transport corridors), noise from motor sport, construction noise, community noise, blasting, shooting ranges, occupational workplace noise, wind farms, or amplified music/patron noise.

The recommended amenity noise level represents the objective for total industrial noise at a receiver location. The project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To prevent increases in industrial noise due to the cumulative effect of several developments, the project amenity noise level for each new source of industrial noise is set at five dBA below the recommended amenity noise level.

The following exceptions apply to determining project amenity noise levels:

- For high-traffic areas the amenity criterion for industrial noise becomes the $L_{Aeq,period(traffic)}$ minus 15 dBA
- In proposed developments in major industrial clusters
- If the resulting project amenity noise level is 10 dB or more lower than the existing industrial noise level, the project amenity noise level can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time
- Where cumulative industrial noise is not a consideration because no other industries are present in, or likely to be introduced into the area, the relevant amenity noise level is assigned as the project amenity noise level for the development.

Amenity noise levels are not used directly as regulatory limits. They are used in combination with the project intrusiveness noise level to assess the potential impact of noise, assess mitigation options and determine achievable noise requirements.

The project amenity noise levels for the Proposal have been based on the recommended amenity noise levels presented in Table 2-8.

Table 2-8 Recommended amenity noise levels

Receiver	Noise amenity area	Time of day [a]	Recommended amenity noise level (dBA $L_{Aeq,period}$)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	See column 4	See column 4	5 dBA above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day.
School classroom-internal	All	Noisiest 1-hour period when in use	35
Hospital ward internal external	All	Noisiest 1-hour	35
	All	Noisiest 1-hour	50
Place of worship-internal	All	When in use	40
Area specifically reserved for passive recreation (e.g. national park)	All	When in use	50
Active recreation area (e.g. school playground, golf course)	All	When in use	55
Commercial premises	All	When in use	65

Receiver	Noise amenity area	Time of day [a]	Recommended amenity noise level (dBA $L_{Aeq,period}$)
Industrial premises	All	When in use	70
Industrial interface (applicable only to residential noise amenity areas)	All	All	Add 5 dB(A) to recommended noise amenity area

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.

Recommended amenity noise levels presented in Table 2-8 represent the objective for total industrial noise at a receiver location. In the case of a single new noise source being proposed, the project amenity noise level represents the objective for noise from a single industrial development at the receiver location. This is calculated as the recommended amenity noise level minus 5 dBA.

Due to different averaging periods for the $L_{Aeq,15min}$ and $L_{Aeq,period}$ noise descriptors, i.e 15 minutes compared with 11, four or nine hours, the values of project intrusiveness and amenity noise levels cannot be compared directly when identifying noise trigger levels i.e.; the most stringent values of each category. In order to make a comparison between descriptors, the NPfI assumes that the $L_{Aeq,15min}$ equivalent of an $L_{Aeq,period}$ noise level is equal to the $L_{Aeq,15min}$ level plus 3dB.

Project amenity noise levels for sensitive receivers near the Proposal are presented in Table 2-9.

Table 2-9 Project amenity noise levels

Receiver	Noise amenity area	Time of day [a]	Recommended amenity noise level ($L_{Aeq,period}$)	Project amenity noise level ($L_{Aeq,15min}$ dBA)
NCA1 – NCA18	Urban	Day	60	58
		Evening	50	48
		Night	45	43
I1 – I6	Industrial	When in use	70	68

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.

2.4.1.3 Project noise trigger levels

Table 2-10 shows the project noise levels for sensitive receivers, with the project noise trigger levels shown in bold.

Table 2-10 Project noise trigger levels

Receiver	Time of Day [a]	Project intrusiveness noise levels ($L_{Aeq,15min}$ dBA)	Project amenity noise levels ($L_{Aeq,15min}$ dBA)
NCA1 – NCA15	Day	**43**	58
	Evening	**43**	48
	Night	**40**	43
NCA16 – NCA18	Day	**44**	58
	Evening	**44**	48
	Night	**42**	43
I1 – I6	When in Use	n/a	**68**

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.

2.4.1.4 Maximum noise trigger levels

Noise sources at night occurring over a short duration have the potential to cause sleep disturbance despite complying with project noise trigger levels. The Proposal is intended to operate on a 24-hour basis. Therefore, maximum noise level events need to be considered for potential sleep disturbance.

The NPfI recommends that, where the night time L_{Amax} receiver noise levels from a development exceeds 52 dBA or the RBL plus 15 dBA, whichever is the greater, then a more detailed assessment of potential sleep disturbance impacts is warranted. Table 2-11 presents the maximum noise trigger levels for the receivers identified in this assessment.

Table 2-11 Maximum noise trigger levels

Receiver	RBL (dBA)	RBL + 15 dBA	Maximum noise trigger level (dBA)
NCA1 – NCA15	35	50	52
NCA16 – NCA18	37	52	52

Additionally, in instances where night time $L_{Aeq,15min}$ noise levels exceed 40 dBA or the prevailing RBL plus 5 dBA, whichever is the greater, then a detailed assessment of potential sleep disturbance impacts is warranted.

2.4.2 Operational noise modelling

2.4.2.1 Computer noise model

Operational noise emissions associated with the Proposal were modelled using the CadnaA acoustic noise prediction software and the CONCAWE noise prediction algorithm. The CONCAWE noise propagation model is used around the world and is widely accepted as an appropriate model for predicting noise over significant distances. Factors addressed in the noise modelling are:

- Equipment noise level emissions and locations
- Shielding from ground topography and structures
- Noise attenuation due to geometric spreading
- Ground absorption
- Atmospheric absorption
- Noise enhancing meteorology.

2.4.2.2 Ground absorption

A ground absorption factor of 0.80 has been applied to the entire model. This global ground absorption value conservatively represents the mix of hard ground (absorption = 0) and soft ground (absorption = 1) on and around the Proposal site.

2.4.2.3 Meteorological effects

Certain meteorological conditions may increase noise levels by focusing soundwave propagation paths at a single point. Refraction of sound waves will occur during temperature inversions (where temperature increases with height above ground level) which can vary from hour to hour. Adverse meteorological conditions are to be considered where relevant for an industrial activity.

The NPfI stipulates default parameters to account for noise enhancing weather conditions and have been adopted in this assessment, as follows:

- Three m/s source-to-receiver wind during the daytime and evening
- F-class temperature inversion during the night time.

A two m/s source-to-receiver wind, identified in the NPfI as a default noise enhancing parameter to model the effects of drainage winds during F-class temperature inversions has not been included in the model since nearby sensitive receivers are located at higher elevations than the Proposal site.

Predicted noise levels associated with both calm meteorological conditions and noise enhancing meteorological conditions are presented in this assessment.

2.5 Road noise assessment

2.5.1 Road noise criteria

The *NSW Road Noise Policy* (RNP) (DECCW, 2011) sets out criteria for assessment of noise from traffic on public roads. The RNP sets out noise assessment criteria for "freeways", "arterial", "sub-arterial" and "local roads".

In accordance with the RNP, both Rookwood Road and the Hume Highway are considered arterial roads. The RNP impact assessment criteria for residential land uses impacted by additional traffic on arterial roads are presented in Table 2-12

Table 2-12 RNP impact assessment criteria

Road	Category	Assessment criteria – dBA	
		Day [a]	Night [a]
Rookwood Road Hume Highway	arterial	$L_{Aeq,\ 15\ hour}$ 60 (external)	$L_{Aeq,\ 9\ hour}$ 55 (external)

a. Day = 7:00am – 10:00pm; night = 10:00pm – 7:00am

With regard to the permissible increase in road traffic noise from a land use development the *RNP* states:

> "*For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.*"

2.5.2 Road noise modelling

Noise levels were calculated using procedures based on the *CoRTN (Calculation of Road Traffic Noise)* (UK Department of Transport, 1988) prediction algorithms. The standard prediction procedures were modified as follows:

- L_{Aeq} values were calculated from the L_{A10} values predicted by the *CoRTN* algorithms using the well-validated approximation $L_{Aeq,1hour} = L_{A10,1hr} - 3$ (NSW RTA, 2001). It is worth noting the predicted $L_{Aeq,1hr}$ is equivalent to the $L_{Aeq,period}$ as required by the noise criteria since the input is the "average" traffic flow per hour over the given daytime and night time periods.
- Noise source heights were set at 0.5m for cars, 1.5m for heavy vehicle engines and 3.6m for heavy vehicle exhausts, representative of typical values for Australian vehicles (*Road Traffic Noise: Interim Traffic Noise Policy*, 1992).
- Noise from a heavy vehicle exhaust is 8 dBA lower than the (steady continuous) noise from the engine.

The calculations have been implemented in CandaA 2019, using the "CoRTN Australia" model option, and are based upon the following assumptions:

- Vehicle speeds are 70 km/h along both Rookwood Road and the Hume Highway
- The facades of the most potentially affected receivers are 14 metres from the road
- A +2.5 dBA correction has been applied for façade reflections
- Road surfaces - +0 dB Asphalt.

3 EXISTING ENVIRONMENT

3.1 Current site conditions

As discussed in Section 1.3, the Chullora RRP site was previously operated as the Chullora RRC. The Proposal site retains buildings and infrastructure associated with the previous Chullora RRC as well as broader SUEZ operations. There are currently no waste management activities occurring on the Proposal site. However, the Proposal site is used for the following activities:

- General SUEZ administration activities
- Storage of red, yellow and green lid putrescible waste bins and shipping containers
- Waste collection truck parking
- Truck maintenance activities
- Storage of plant and equipment
- Truck refuelling area and wash bay.

These activities have largely been carried out in the Proposal area that is proposed to be occupied by the MRF. Existing infrastructure in this portion of the site would be removed as a separate scope of works and is not the subject of the EIS. The western portion of the Proposal site is currently largely vacant and unused.

An existing site and administrative office, and associated light vehicle parking, currently operates in the north-eastern portion of the Proposal site. The built form and the operation of the existing site office would not be altered as a result of this Proposal.

3.2 Approved operations

As discussed in Section 1.3, the site operated as the previous Chullora RRC until 2017. The previous Chullora RRC hosted a range of waste infrastructure over time including:

- A putrescible waste transfer station and green waste platform (DA 897/1994) with approval to process up to 66,000 tpa of putrescible waste
- A materials recovery facility (DA 287/1996) with approval to recycle up to 100,000 tpa of recyclable material
- A Glass processing facility (DA 973/2002)
- Supporting infrastructure, including workshops, offices, weighbridges, a leachate pond, a small vehicle drop off area, and a trade waste area.

Each of the above approvals remain active for the Proposal site (a review of which/if approvals are to be surrendered will be carried out at a later date). The current approved operational activities for the above operations are:

- 2am-5pm weekdays
- 8am-5pm on weekends and public holidays except for Good Friday and Christmas Day.

The previous Chullora RRC holds Environmental Protection Licence (EPL) 5893 which authorises a number of scheduled activities including, composting, recovery of general waste, and waste storage. The existing EPL could either be updated via a variation application or a new one sought for the Proposal.

3.3 Existing ambient noise levels

As noted in Section 2.1, the land uses immediately surrounding the Proposal site are industrial. The nearest residential receivers are located in the nearby suburbs of Yagoona, Greenacre, Lidcombe and Regents Park.

Background noise monitoring was carried out at two locations to determine the background noise levels represented at nearby sensitive receivers. The existing ambient noise levels are presented in Table 3-1. Daily plots of the noise logger data are presented in Appendix A.

Table 3-1 Existing Ambient Noise Levels

Monitoring location	Represented receivers	Time of day [a]	Noise levels (dBA)	
			RBL [b]	L_{Aeq}
L1	NCA1 – NCA15	Day	38	58
		Evening	40	52
		Night	35	49
L2	NCA16 – NCA18	Day	39	58
		Evening	41	55
		Night	37	48

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.
b. RBL adjusted to minimum recommended values per NPfI. Unadjusted values in brackets.

4 CONSTRUCTION NOISE AND VIBRATION IMPACT ASSESSMENT

The following section presents an assessment of potential noise impacts associated with the construction of the Proposal.

4.1 Construction plant, activities and sound power levels

The main activities and noisiest plant items to be used for construction are listed in Table 4-1. The table also provides typical sound power levels of the equipment, based on measurements previously conducted by Wilkinson Murray, and the resultant total sound power for each construction activity.

Table 4-1 Sound power levels (SWL) for construction plant

Equipment	Equipment SWL (dBA)	Stage 1: Establishment of hardstand	Stage 2: Construction of MRF	Stage 3: Construction of ancillary facilities and
Cherrypickers	105	✓	✓	
Mobile crane	113	✓		✓
Forklift	100	✓	✓	✓
Generators	103	✓	✓	✓
Hand-held tools	98	✓	✓	✓
Concrete agitators	109	✓		
Concrete saw	118	✓		
	Overall Activity SWL (dBA)	**120**	**108**	**114**

The activity sound power is considered to represent the typical worst-case level in a given 15-minute period. It is important to note that this sound power level is unlikely to be sustained at such a level for the duration of the activity. As a result, many 15-minute periods will be at lower levels.

4.2 Predicted construction noise levels

The predicted $L_{Aeq,15min}$ construction noise levels at sensitive receivers are presented in Table 4-2.

Table 4-2 Predicted $L_{Aeq,15min}$ construction noise levels

Receiver	Predicted noise level (dBA)			NML	Exceedance
	Stage 1	Stage 2	Stage 3		
NCA1	49	38	43	48	**1 dBA**
NCA2	41	29	35	48	-
NCA3	43	31	36	48	-
NCA4	41	29	35	48	-
NCA5	39	27	33	48	-
NCA6	32	20	25	48	-
NCA7	33	22	27	48	-
NCA8	37	25	30	48	-
NCA9	41	30	35	48	-
NCA10	37	25	31	48	-
NCA11	36	24	30	48	-
NCA12	36	24	30	48	-
NCA13	32	20	26	48	-
NCA14	24	12	18	48	-
NCA15	23	11	16	48	-
NCA16	34	22	27	49	-
NCA17	40	28	34	49	-
NCA18	38	27	32	49	-
I1	70	58	64	75	-
I2	63	51	57	75	-
I3	62	51	56	75	-
I4	69	58	63	75	-
I5	68	56	62	75	-
I6	69	57	63	75	-

The results in Table 4-2 indicate the potential for construction noise levels to exceed the NML at receivers within NCA1 during Stage 1 works by up to 1 dBA. The predicted construction noise levels comply with the NML at all other receivers. No exceedances of the 75 dBA highly affected level are predicted.

5 OPERATIONAL NOISE IMPACT ASSESSMENT

The following section presents an assessment of potential noise impacts associated with the operation of the Proposal.

5.1 Operational noise sources

The major operational noise sources associated with the Proposal are the various material handling and processing activities occurring within the MRF building, as well trucks delivering materials to the Proposal site and collecting finished products.

Internal noise levels in different areas within the MRF building would be dictated by the activities occurring within those spaces. For assessment purposes, a range of likely internal reverberant noise levels have been established to represent the different activities within the MRF building and assess a worst-case scenario, with activities occurring in all areas simultaneously. These internal noise levels have been developed based on Wilkinson Murray's experience with similar facilities and through consultation with SUEZ and are summarised in Table 5-1.

Table 5-1 Internal noise levels

Building area	Internal noise level (dBA)
Receival area	75
Processing area	85
Product storage area	75

Source sound power levels for road trucks have been taken from previous measurements of similar equipment conducted by Wilkinson Murray on similar sites. Trucks are modelled with a continuous sound power level of 103 dBA and are assumed to travel at 10 km/hr within the Proposal site.

A single assessment scenario has been developed to represent typical worst-case noise impacts associated with the Proposal. This scenario involves 24/7 operation of the MRF with all roller doors open, along with peak truck movements, equalling 8 trucks per hour.

5.2 Predicted $L_{Aeq,15min}$ noise levels due to the Proposal

The predicted $L_{Aeq,15min}$ noise levels at sensitive receivers associated with the Proposal are presented in Table 5-2. Predicted noise levels are presented for both calm and noise enhancing (NE) meteorological conditions.

Table 5-2 Predicted $L_{Aeq,15min}$ operational noise levels

Receiver	Predicted $L_{Aeq,\ 15min}$ noise level (dBA)				Project noise trigger level ($L_{Aeq,15min}$ dBA)			Complies?
	Day/Evening [a]		Day [a]		Day [a]	Evening [a]	Night [a]	
	Calm [b]	NE [c]	Calm [b]	NE [c]				
NCA1	34	39	34	38	43	43	40	Yes
NCA2	28	34	28	33	43	43	40	Yes
NCA3	28	33	28	32	43	43	40	Yes
NCA4	26	31	26	31	43	43	40	Yes
NCA5	25	30	25	30	43	43	40	Yes
NCA6	<20	23	<20	23	43	43	40	Yes
NCA7	20	25	20	25	43	43	40	Yes
NCA8	23	29	23	28	43	43	40	Yes
NCA9	28	33	28	32	43	43	40	Yes
NCA10	24	29	24	28	43	43	40	Yes
NCA11	24	29	24	28	43	43	40	Yes
NCA12	24	29	24	28	43	43	40	Yes
NCA13	<20	24	<20	23	43	43	40	Yes
NCA14	<20	<20	<20	<20	43	43	40	Yes
NCA15	<20	<20	<20	<20	43	43	40	Yes
NCA16	21	26	21	26	44	44	42	Yes
NCA17	28	33	28	32	44	44	42	Yes
NCA18	25	30	25	30	44	44	42	Yes
I1	61	61	61	61	68	68	68	Yes
I2	53	55	53	54	68	68	68	Yes
I3	52	54	52	54	68	68	68	Yes
I4	59	59	59	59	68	68	68	Yes
I5	54	55	54	55	68	68	68	Yes
I6	45	49	45	48	68	68	68	Yes

a. Day = 7:00 am – 6:00 pm; Evening = 6:00 pm – 10:00 pm; Night = 10:00 pm – 7:00 am.
b. D-class stability, no wind.
c. 3 m/s source to receiver wind during day & evening; F-class stability during night.

Review of Table 5-2 indicates that the predicted operational noise levels comply with the established project noise trigger levels at all nearby receivers at during all assessment periods.

The predicted night time $L_{Aeq,15min}$ noise levels are below 40 dBA at all residential receivers. Therefore, night time $L_{Aeq,15min}$ noise levels are unlikely to cause sleep disturbance impacts.

The internal noise levels assumed for assessment purposes, as detailed in Table 5-1, will be adopted in the detailed design specification of the Proposal.

5.3 Sleep disturbance assessment

Pneumatic parking brakes on trucks are considered the most likely potential source of maximum noise levels during site operations. Based on measurements previously conducted by Wilkinson Murray, the L_{Amax} sound power level of pneumatic parking brakes is typically up to 122 dB(A).

The predicted L_{Amax} noise levels at sensitive receivers due to the operation of truck parking brakes on the site are presented in Table 5-3.

Table 5-3 Predicted L_{Amax} noise levels

Receiver	Predicted level		Maximum noise trigger level	Complies?
	Calm [a]	NE [b]		
NCA1	45	48	52	Yes
NCA2	40	43	52	Yes
NCA3	39	43	52	Yes
NCA4	37	40	52	Yes
NCA5	37	40	52	Yes
NCA6	29	33	52	Yes
NCA7	32	35	52	Yes
NCA8	36	39	52	Yes
NCA9	39	42	52	Yes
NCA10	35	38	52	Yes
NCA11	32	36	52	Yes
NCA12	33	37	52	Yes
NCA13	28	32	52	Yes
NCA14	18	22	52	Yes
NCA15	16	20	52	Yes
NCA16	30	33	52	Yes
NCA17	41	44	52	Yes
NCA18	37	41	52	Yes

a. D-class stability
b. F-class stability

Table 5-3 indicates that the predicted L_{Amax} operational noise levels comply with the maximum noise trigger level at all receivers.

Further, as shown in Table 5-2, the predicted night time $L_{Aeq,15min}$ operational noise levels are below 40 dBA at all residential receivers. Therefore, night time $L_{Aeq,15min}$ noise levels are unlikely to cause sleep disturbance impacts.

6 ROAD NOISE IMPACT ASSESSMENT

The following section assesses potential road noise impacts on sensitive receivers due to traffic generated by the Proposal.

The Proposal would generate more traffic movements during operations than during construction. Therefore, this road noise assessment considers the operational phase of the Proposal.

The Proposal would generate additional traffic near residential receivers on Rookwood Road and the Hume Highway.

6.1 Traffic volume and percent heavy vehicles

6.1.1 Existing traffic flows

Existing traffic flows along Rookwood Road and the Hume Highway were determined by a traffic count survey conducted between 4 December and 11 December 2019 at the following locations:

- Rookwood Road, between Muir Road and the Hume Highway
- The Hume Highway, Stacey Street and Coronation Parade.

The existing traffic flows, as measured during the survey, are summarised in Table 6-1.

Table 6-1 Existing traffic flows

Road	Day (7:00am – 10:00pm)		Night (10:00pm – 7:00am)	
	Volume	% Heavy vehicles	Volume	% Heavy vehicles
Rookwood Road	41,108	18%	9,008	19%
Hume Highway	45,034	17%	11,761	18%

6.1.2 Traffic generated by the Proposal

During a busy day, the Proposal would generate up to 264 heavy vehicle movements, with 170 of these movements occurring during the daytime period.

For assessment purposes to assess a worst case scenario, it is conservatively assumed that 100 per cent of the heavy vehicle traffic generated by the Proposal travels along both Rookwood Road and the Hume Highway.

Table 6-2 summarises the existing ("no build") and future ("build") traffic volumes and percent heavy vehicles ("mix") along Rookwood Road and the Hume Highway.

Table 6-2 Traffic volume and mix

Road	Time [a]	Existing (no build)		Future (build)	
		Volume	Mix	Volume	Mix
Rookwood Road	Day	41,108	18.4%	41,278	18.7%
	Night	9,008	18.6%	9,102	19.4%
Hume Highway	Day	45,034	16.8%	45,204	17.1%
	Night	11,761	18.2%	11,855	18.8%

a. Day = 7:00am – 10:00pm; night = 10:00pm – 7:00am

6.2 Predicted road noise levels

Using the data in Table 6-2, road noise levels at the most potentially affected receivers along Rookwood Road and the Hume Highway have been predicted for the "no build" and "build" scenarios.

The predicted road noise levels under the "No-Build" and "Build" scenarios are shown in Table 6-3.

Table 6-3 Predicted $L_{Aeq,period}$ road noise levels

Road	No Build		Build		RNP criteria		Difference	
	Day [a]	Night [a]	Day [a]	Night [a]	Day [a]	Night [a]	Day [a]	Night [a]
Rookwood Road	72.2	67.9	72.3	68.0	60	55	0.1	0.1
Hume Highway	73.0	69.6	73.1	69.7	60	55	0.1`	0.1

a. Day = 7:00am – 10:00pm; night = 10:00pm – 7:00am

Review of Table 6-3 indicates that the predicted $L_{Aeq,period}$ road noise levels at the façade of the most potentially affected receivers along Rookwood Road and the Hume Highway exceed the RNP impact assessment criteria for both the no-build and build scenarios. The predicted increases in road noise levels at the most potentially affected receivers are well below 2 dB. Therefore, in accordance with the RNP, no mitigation of road noise impacts associated with the Proposal is warranted.

7 MITIGATION MEASURES

7.1 Construction noise mitigation

As outlined in Section 4, , there is potential for noise levels associated with the construction of the Proposal to exceed the established NML. Therefore, all reasonable and feasible measures will be applied to manage noise levels down to the NML. These measures will be documented in a CEMP and will include:

- Identification of nearby residences and other sensitive land uses
- Description of approved hours of work
- Description and identification of construction activities, including work areas, equipment and duration
- Description of what work practices (generic and specific) will be applied to minimise noise and vibration
- Consider the selection of plant and processes with reduced noise emissions
- A complaint handling process;
- Induction and training will be provided to relevant staff and sub- contractors outlining their responsibilities with regard to noise
- Procedures for approval of any works undertaken outside of the following hours:
    - Standard hours of 7:00 am to 6:00 pm Monday to Friday, and 8:00am to 1:00 pm Saturday.

Examples of typical construction noise mitigation measures are provided in Table 7-1, along with the likely reduction in noise levels. Where reasonable and feasible, these measures should be employed during the construction of the Proposal.

Table 7-1 Indicative construction noise mitigation measures

Mitigation measure	Anticipated noise reduction, dBA
Administrative controls	
Operate during approved hours	N/A
Undertake regular noise monitoring to determine the impact of operating plant on sensitive receivers	N/A
Appropriate training of onsite staff	N/A
Undertake community consultation and respond to complaints in accordance with established project procedures	N/A
Turning off machinery when not in use	0-5
Respite periods for pile drivers and rock breakers	N/A
Engineering controls	
Portable temporary screens	5-10
Screen or enclosure for stationary equipment	10-15
Maximising the offset distance between noisy plant items and sensitive receivers	3-6
Avoiding using noisy plant simultaneously and / or close together, adjacent to sensitive receivers	2-3
Orienting equipment away from sensitive receivers	3-5
Carrying out loading and unloading away from sensitive receivers	3-5

Mitigation measure	Anticipated noise reduction, dBA
Using dampened tips on rock breakers	3-6
Using noise source controls, such as the use of residential class mufflers, to reduce noise from all plant and equipment including bulldozers, cranes, graders, excavators and trucks	5-10
Selecting site access points and roads as far as reasonably practicable away from sensitive receivers	3-6
Using spotters, closed circuit television monitors, "smart" reversing alarms, or "squawker" type reversing alarms in place of traditional reversing alarms	2-5
Employ non noise-generating structures such as site offices, storage sheds, stockpiles and tanks as noise barriers	5-10

7.2 Operation noise mitigation

No operational noise exceedances were identified as a part of this assessment. Notwithstanding, the Proposal will avoid unnecessary generation of noise wherever possible with measures for consideration outlined within the site Operational Environmental Management Plan (OEMP).

8 CONCLUSION

Wilkinson Murray has been commissioned to prepare a Noise and Vibration Impact Assessment to support the preparation of a State Significant Development (SSD) Environmental Impact Statement (EIS) under Part 4, Division 4.7 of the of the *Environmental Planning and Assessment Act 1979* (EP&A Act) the development of a Material Recycling Facility (MRF) (the Proposal) at the Chullora Resource Recovery Park (Chullora RRP).

Noise and vibration impacts associated with the construction and operation of the Proposal have been assessed in accordance with the following NSW Government guidelines and policies:

- *Interim Construction Noise Guideline*
- *Noise Policy for Industry*
- *NSW Road Noise Policy*.

The predicted construction noise levels exceed the established NML by up to 1 dBA at the most potentially affected residential receivers. A range of measures to mitigate construction noise impacts have been identified.

The predicted operational and road noise impacts associated with the Proposal comply with the established criteria at all sensitive receivers.

9 REFERENCES

DEC (2006) *Assessing Vibration: a technical guideline*, Department of Environment and Conservation (NSW), February 2006.

DECC (2009) *Interim Construction Noise Guideline*, Department of Environment and Climate Change NSW, July 2009.

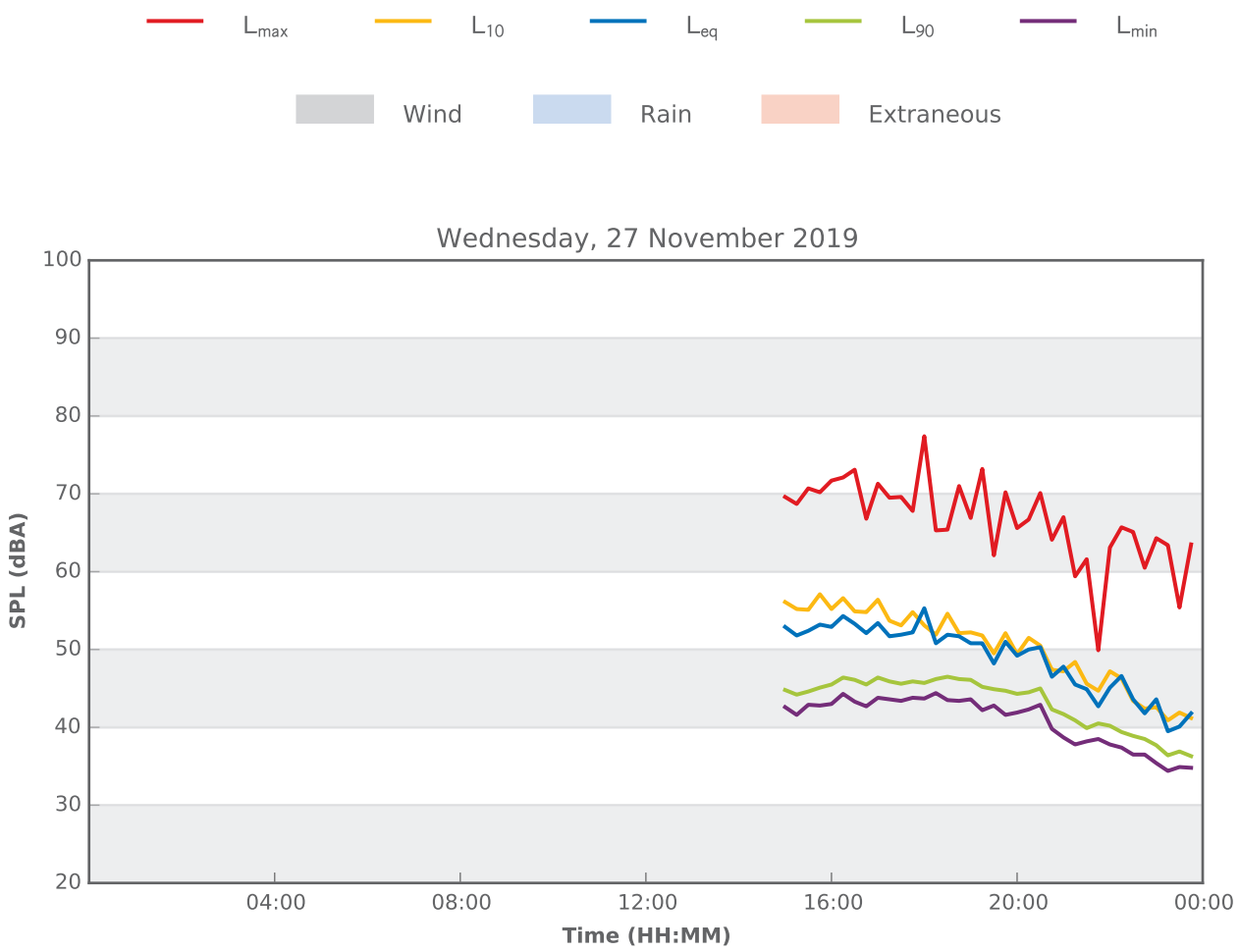
DECCW (2011) *NSW Road Noise Policy*, Department of Environment, Climate Change and Water NSW, March 2011.

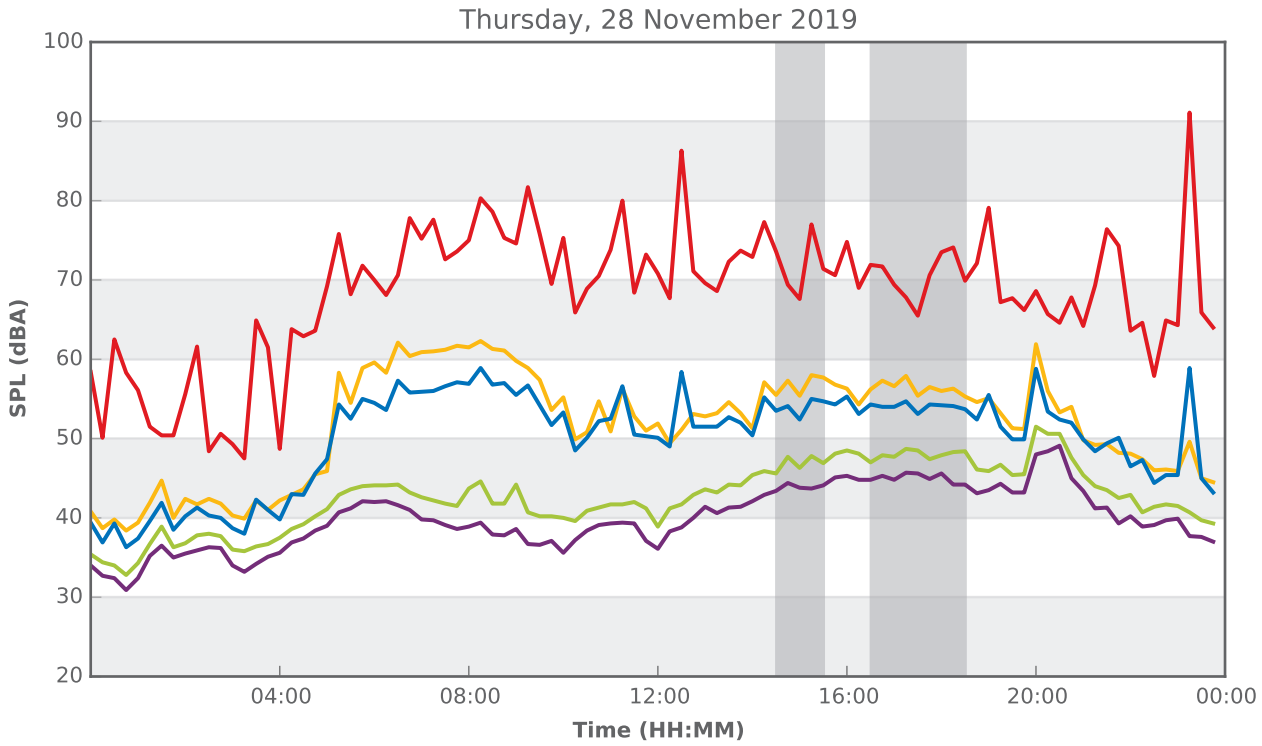
EPA (2017) *Noise Policy for Industry*, Environment Protection Authority, October 2017.

APPENDIX A

NOISE MEASUREMENT RESULTS

14 Graf Avenue, Yagoona NSW





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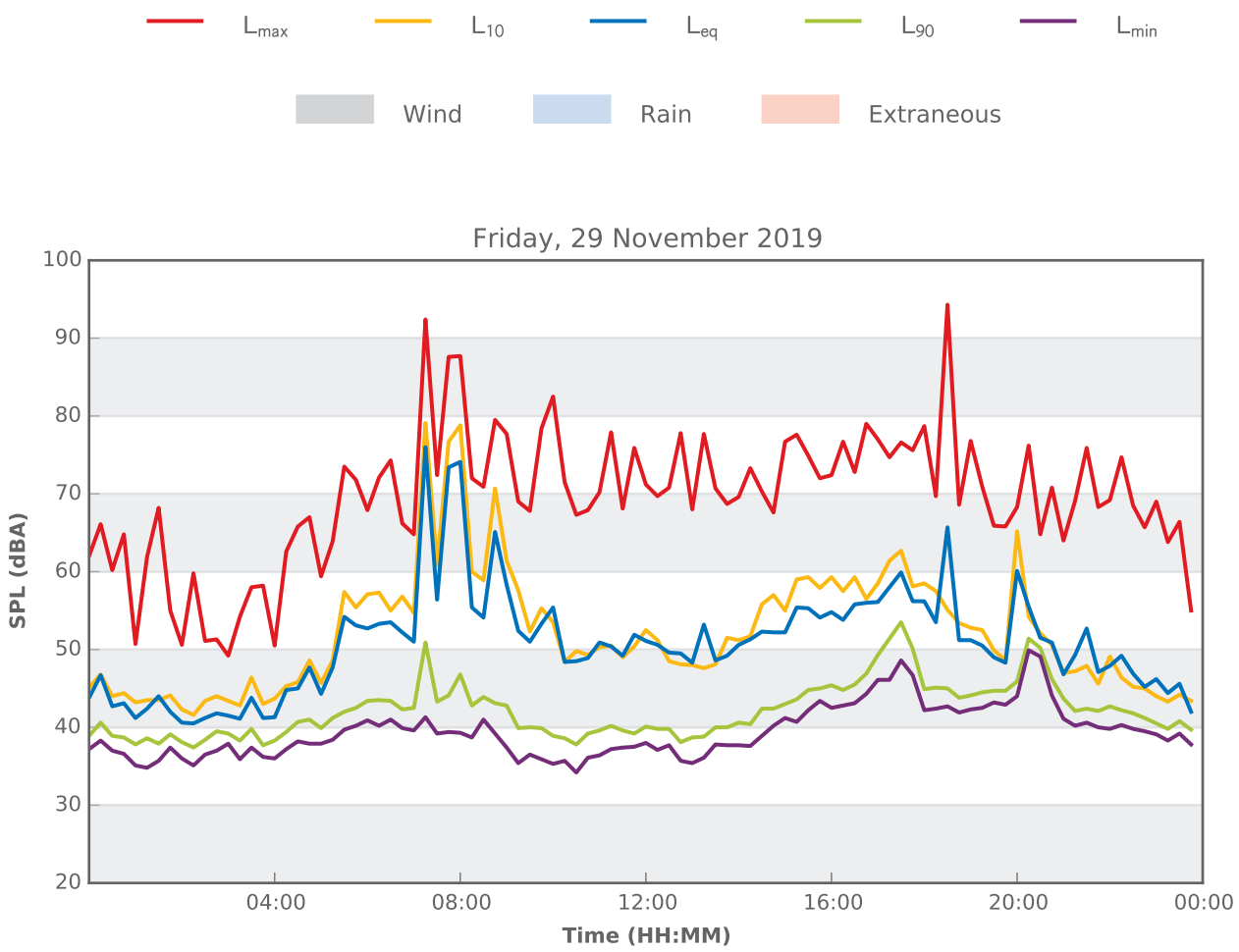

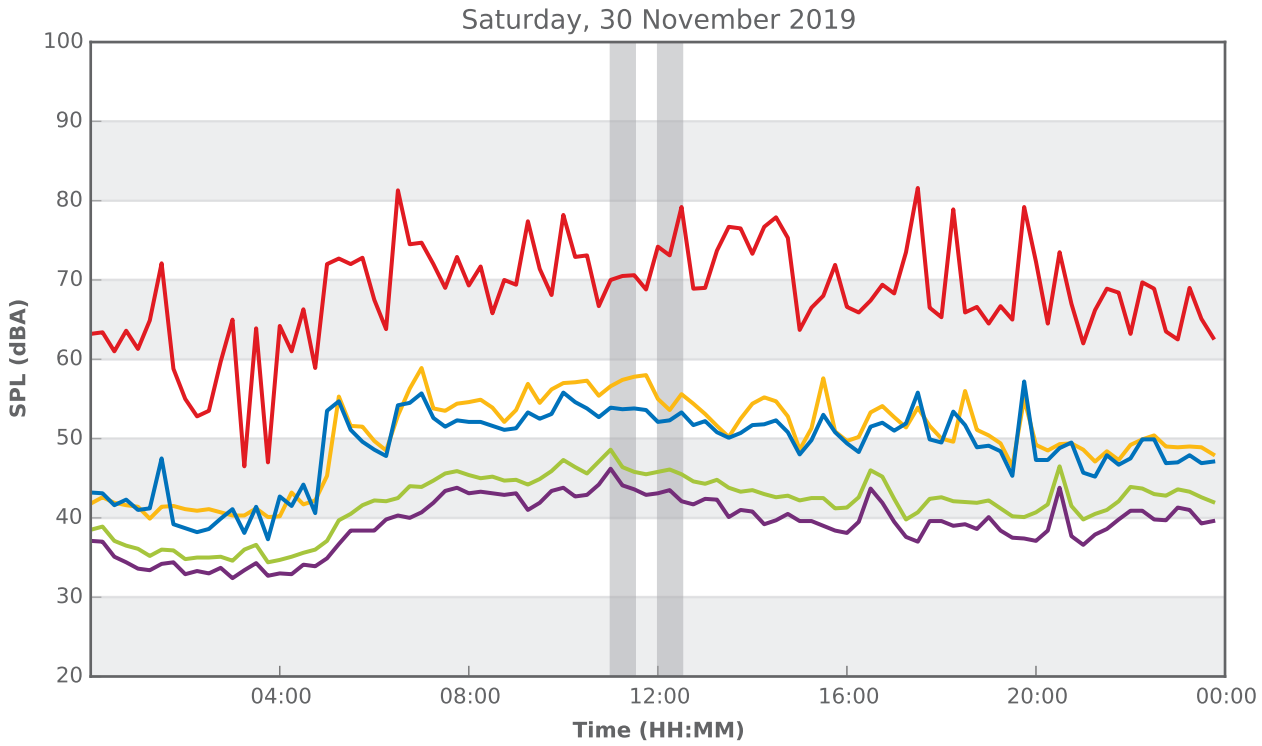

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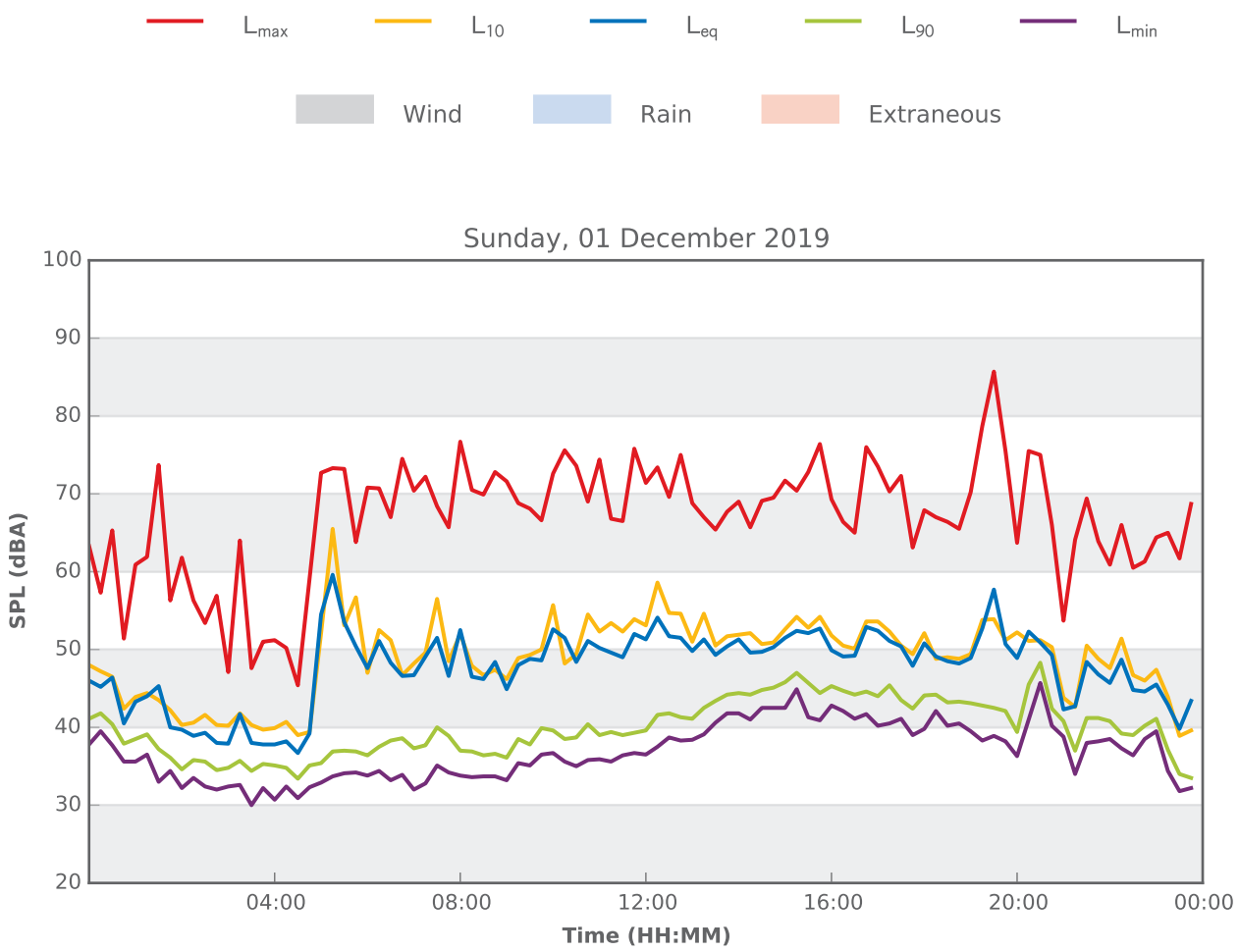

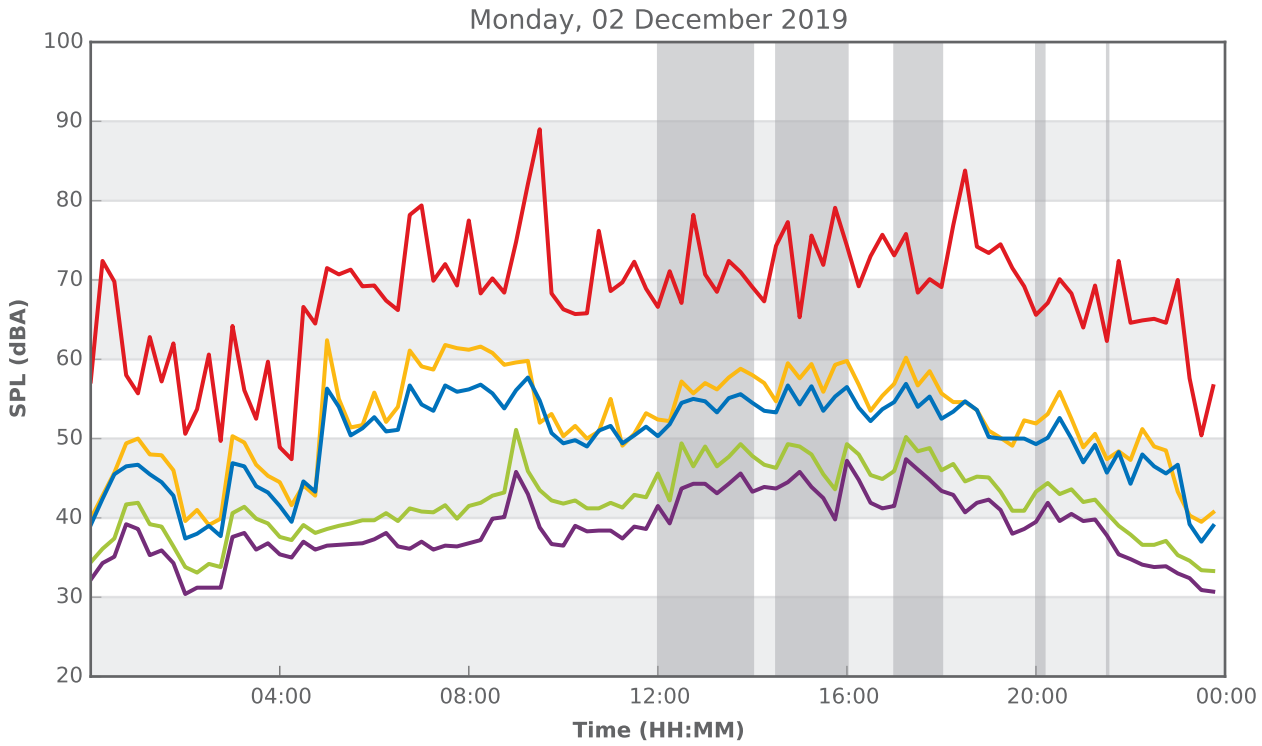

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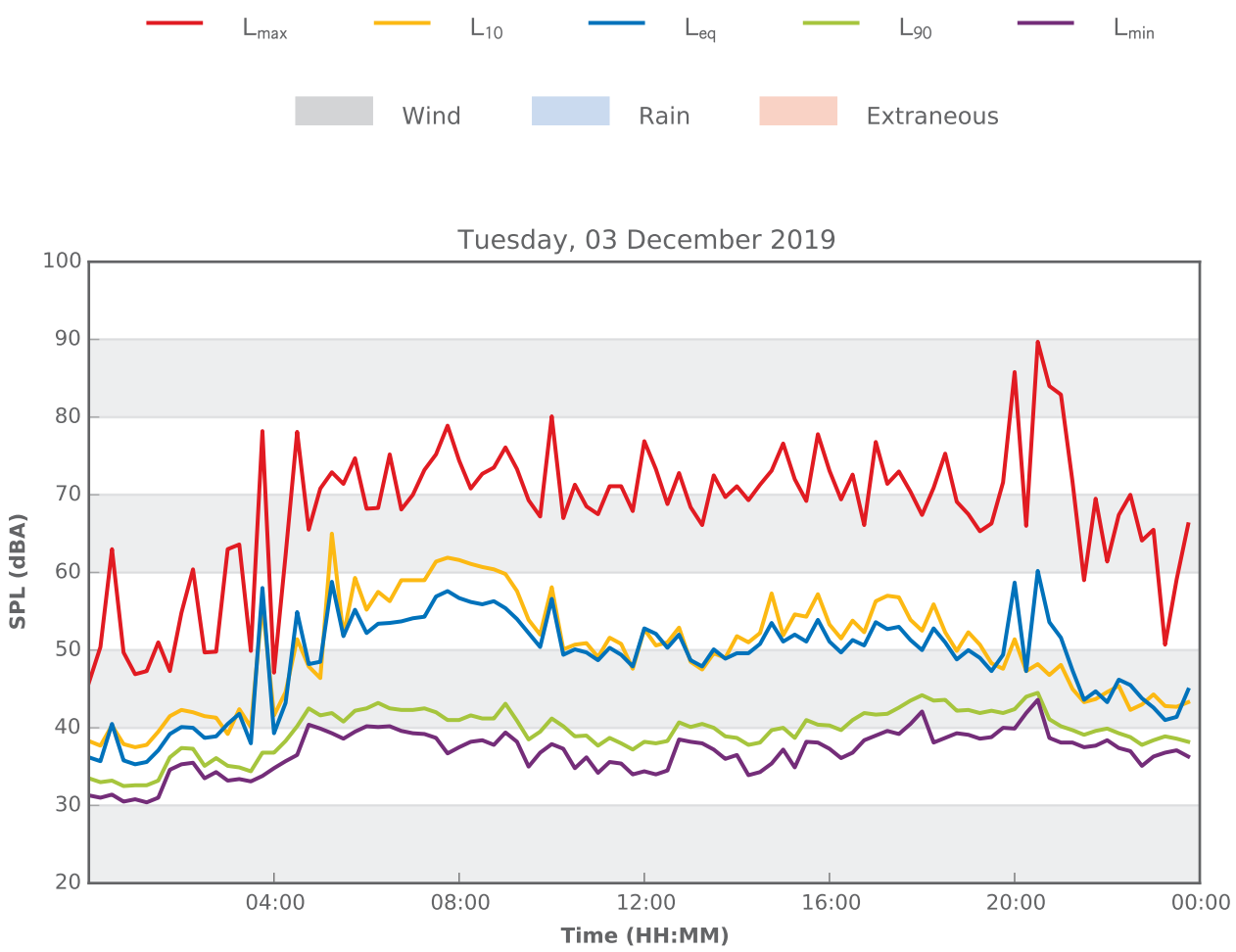

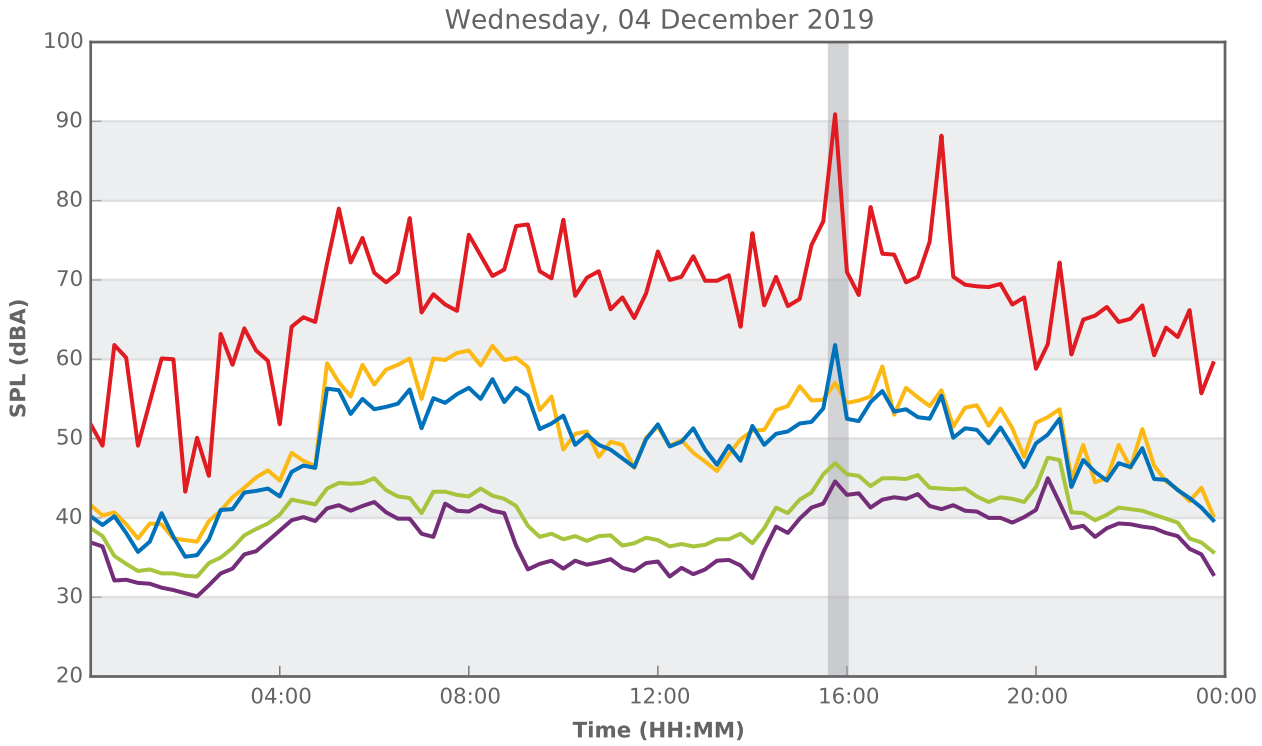

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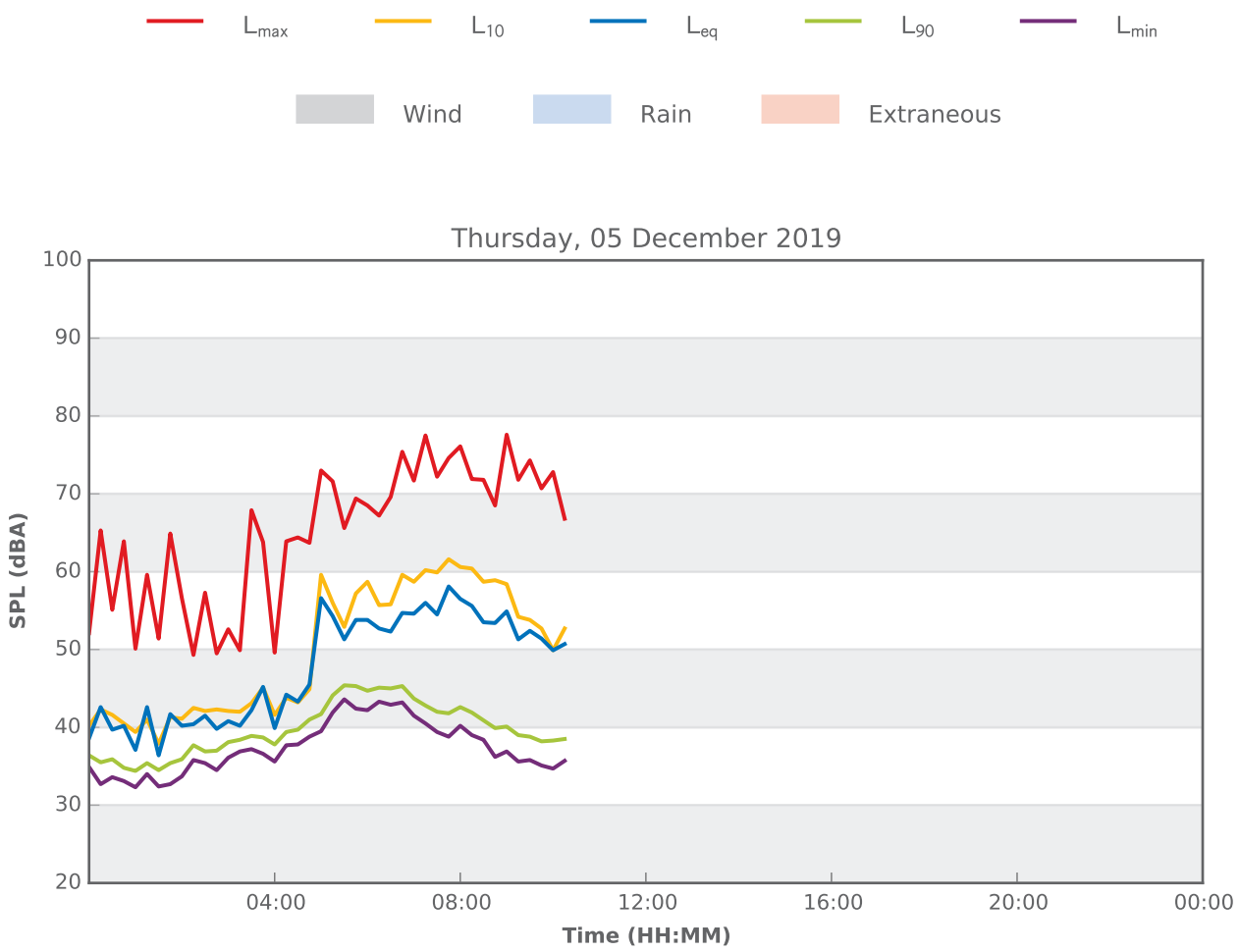

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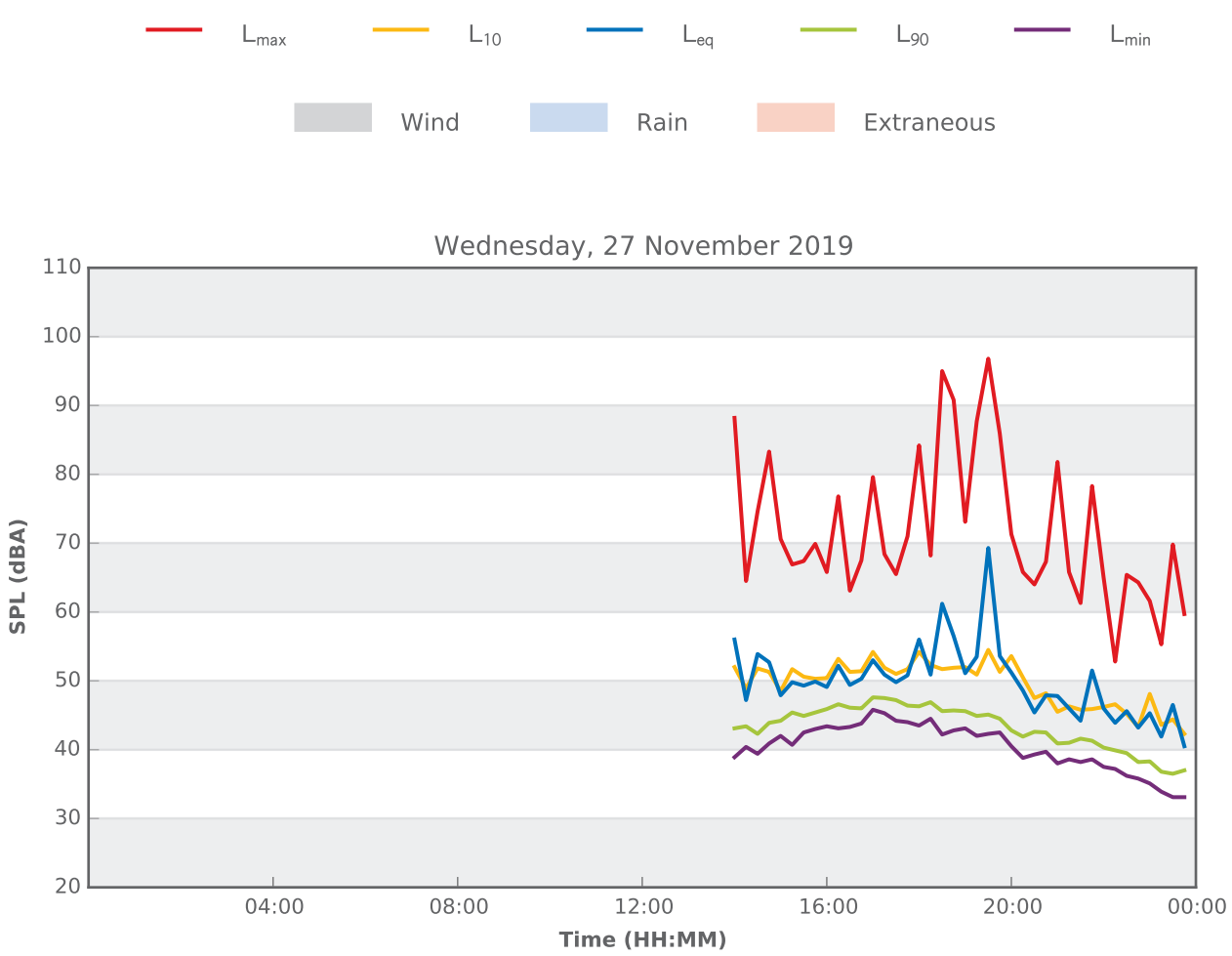

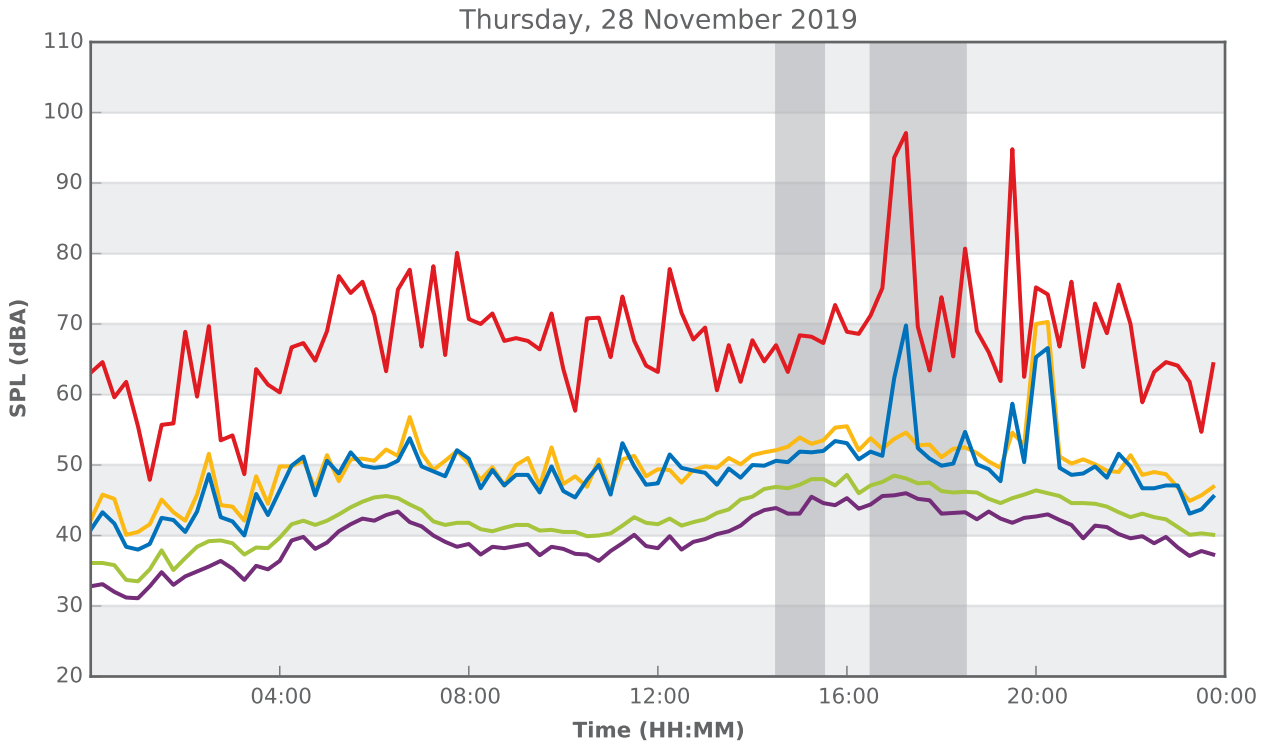

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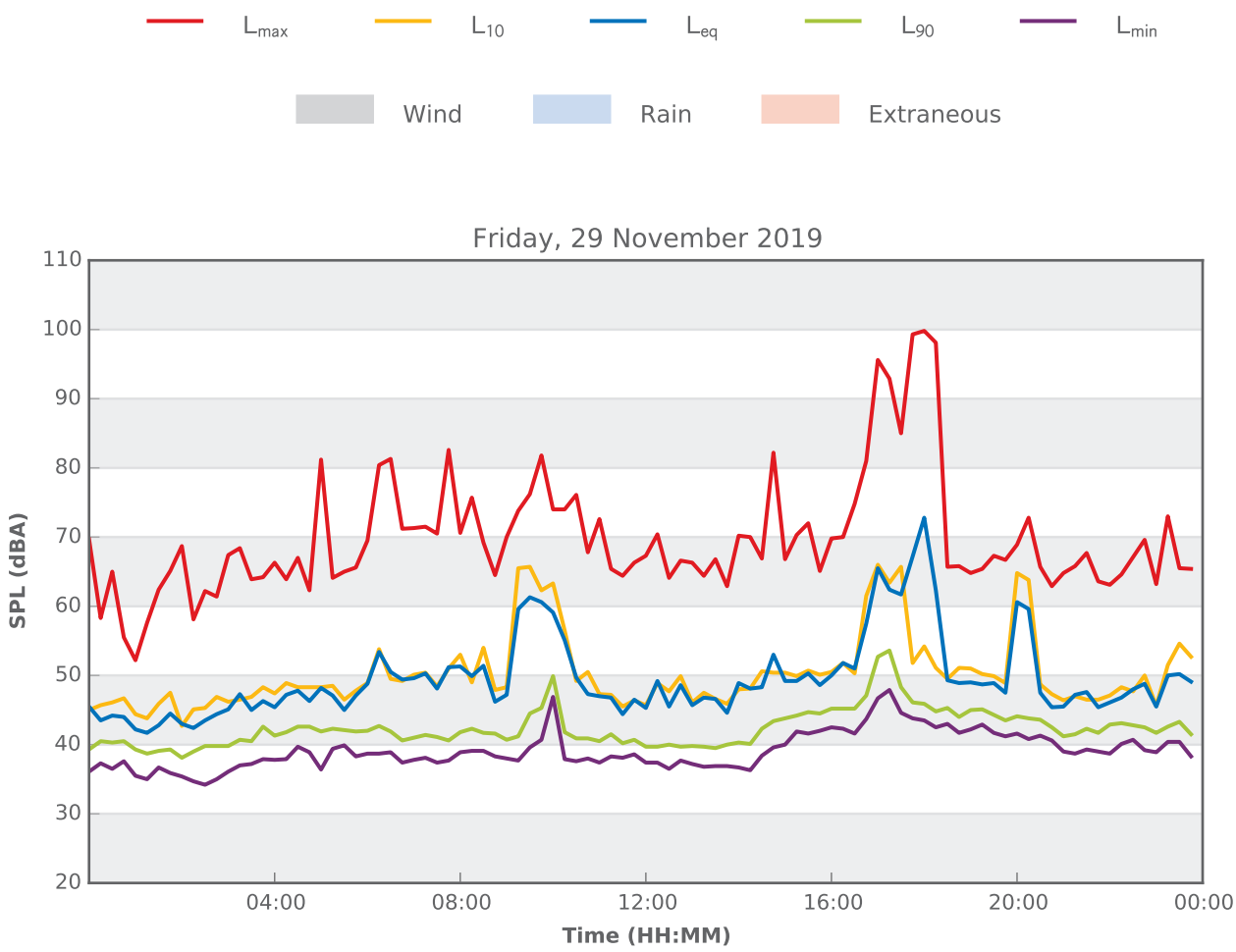

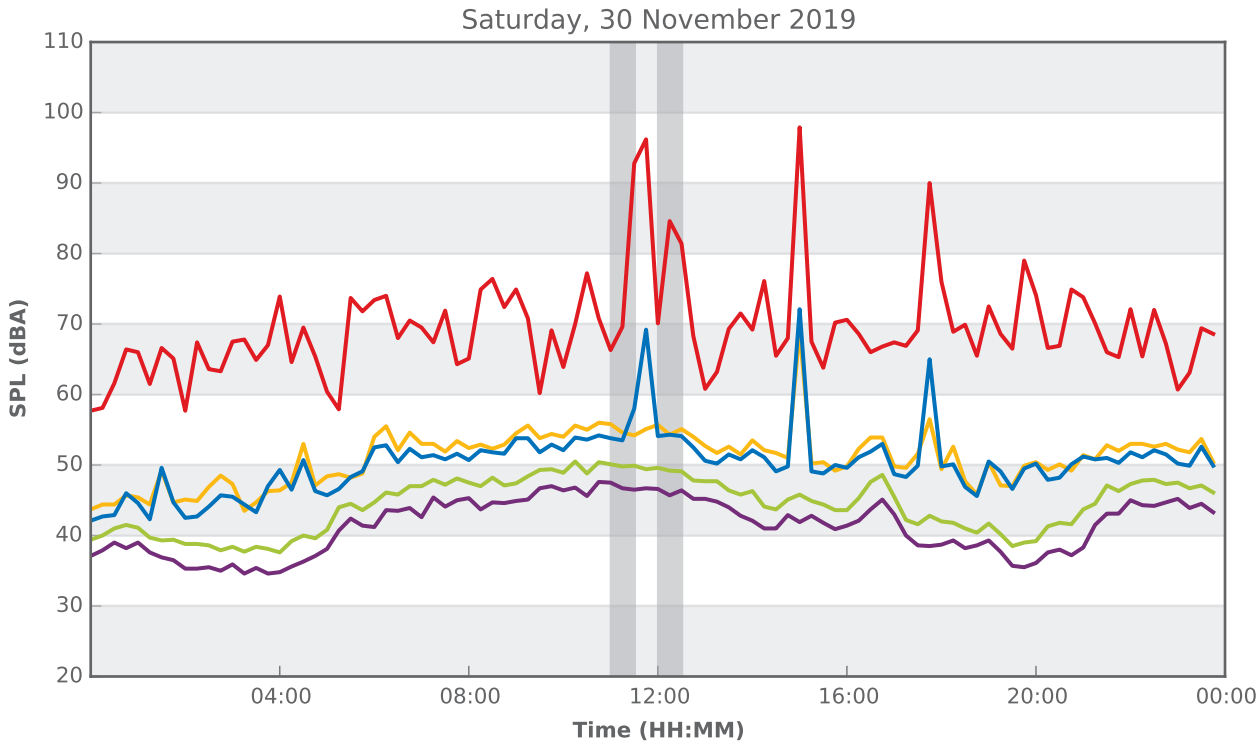

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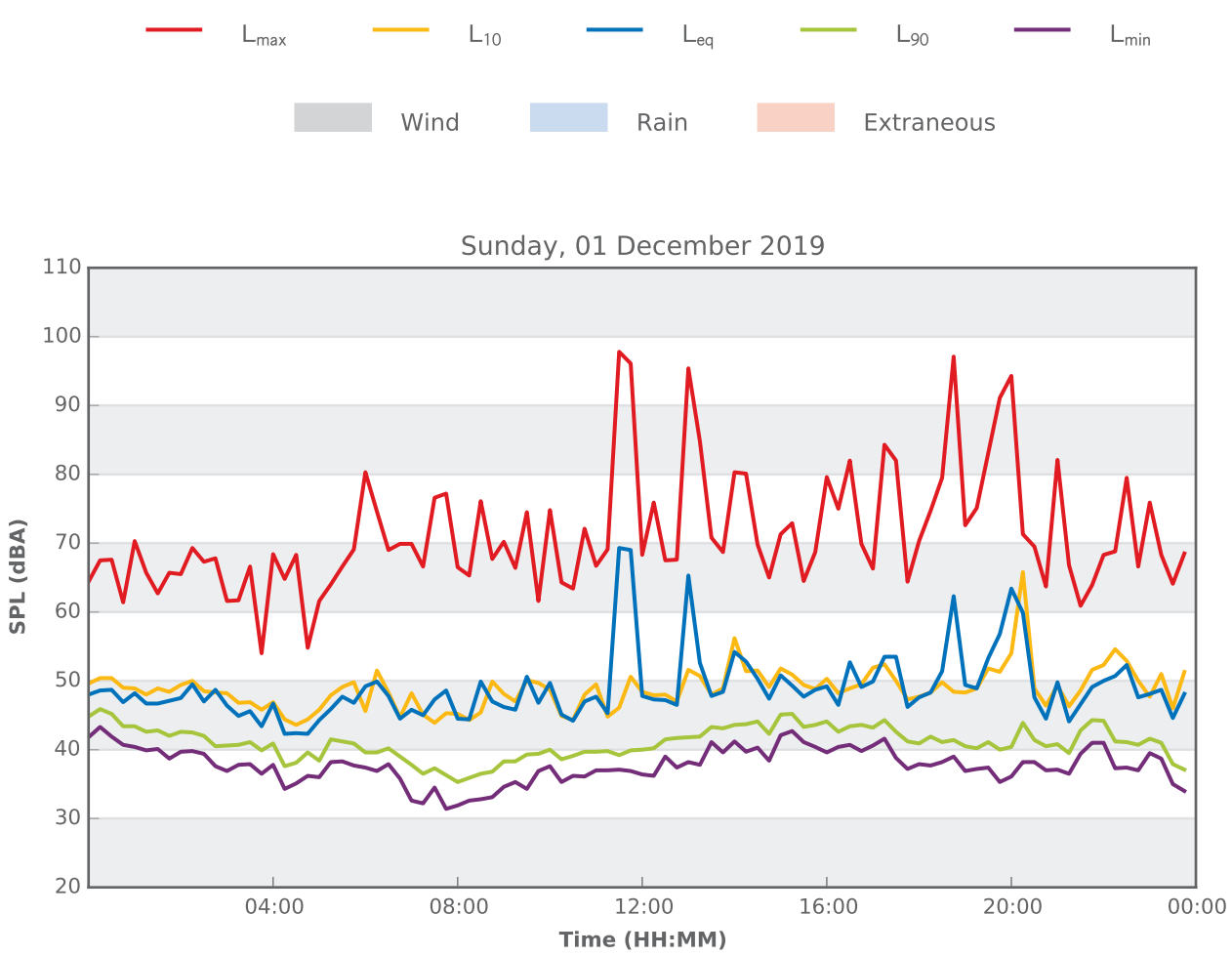

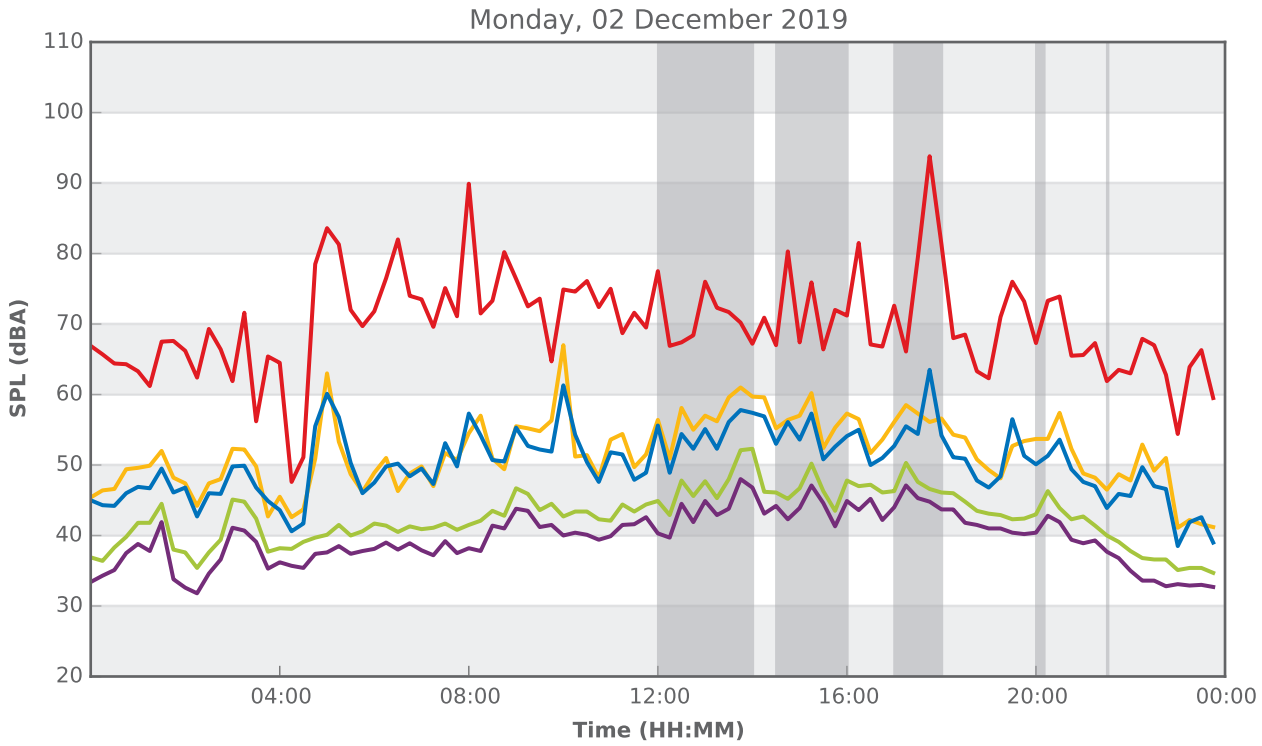

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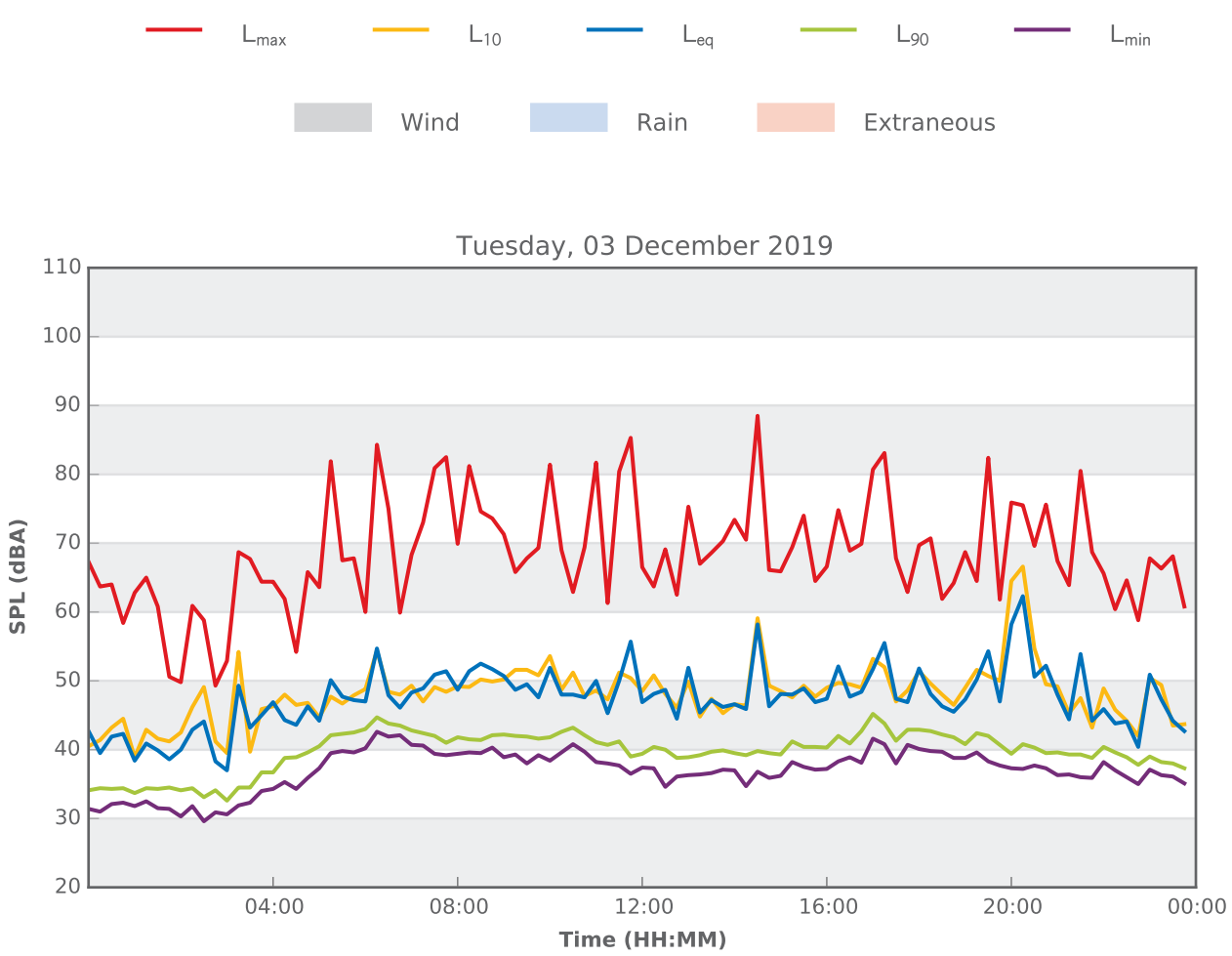

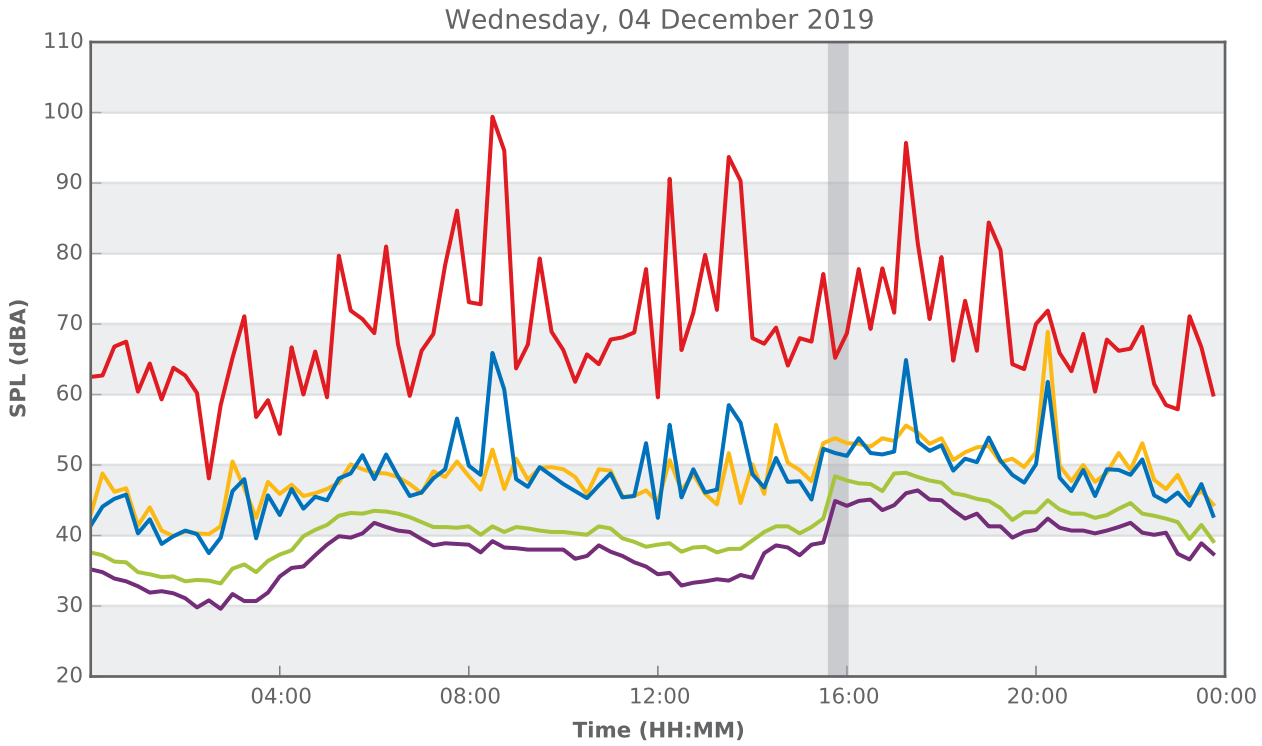

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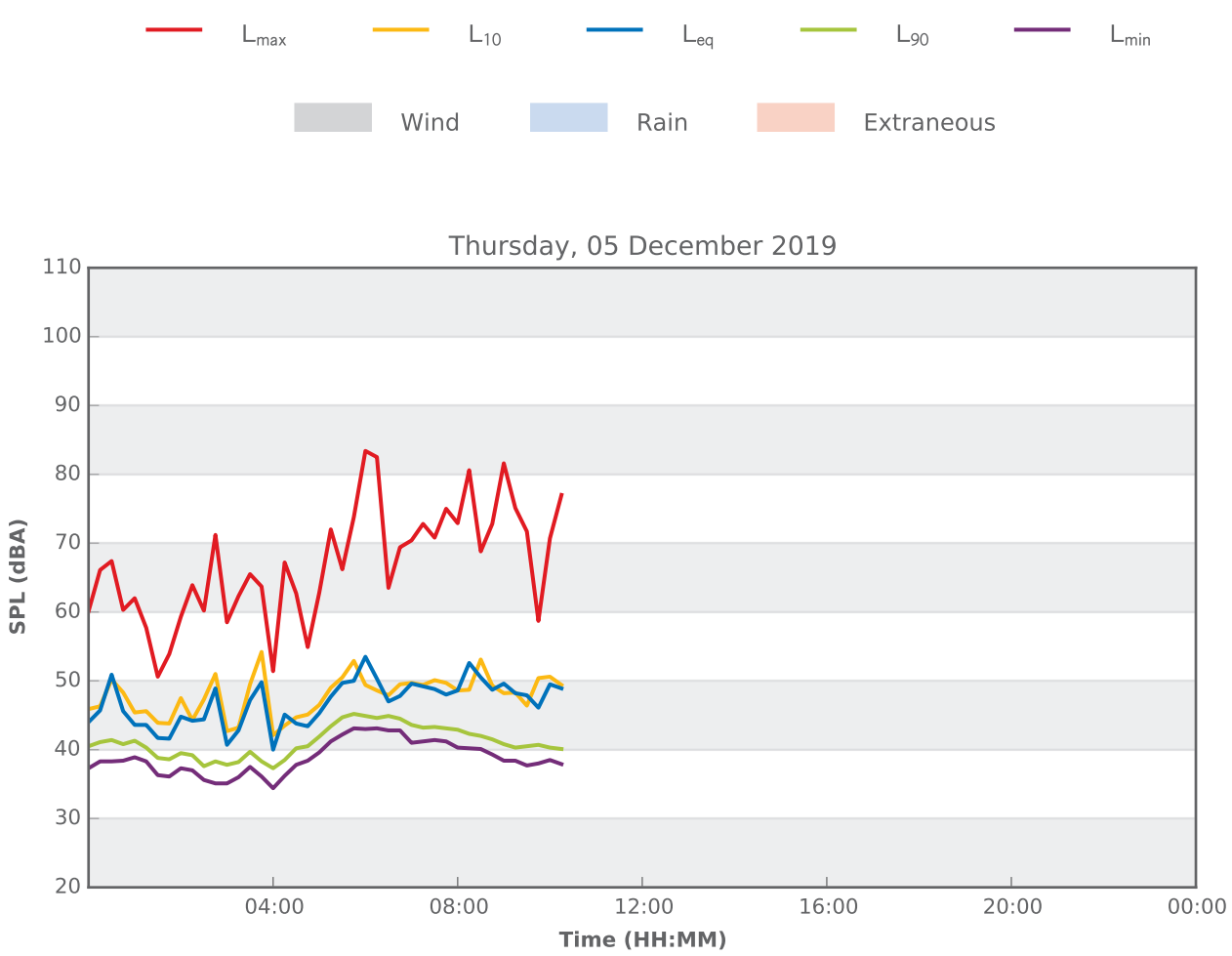

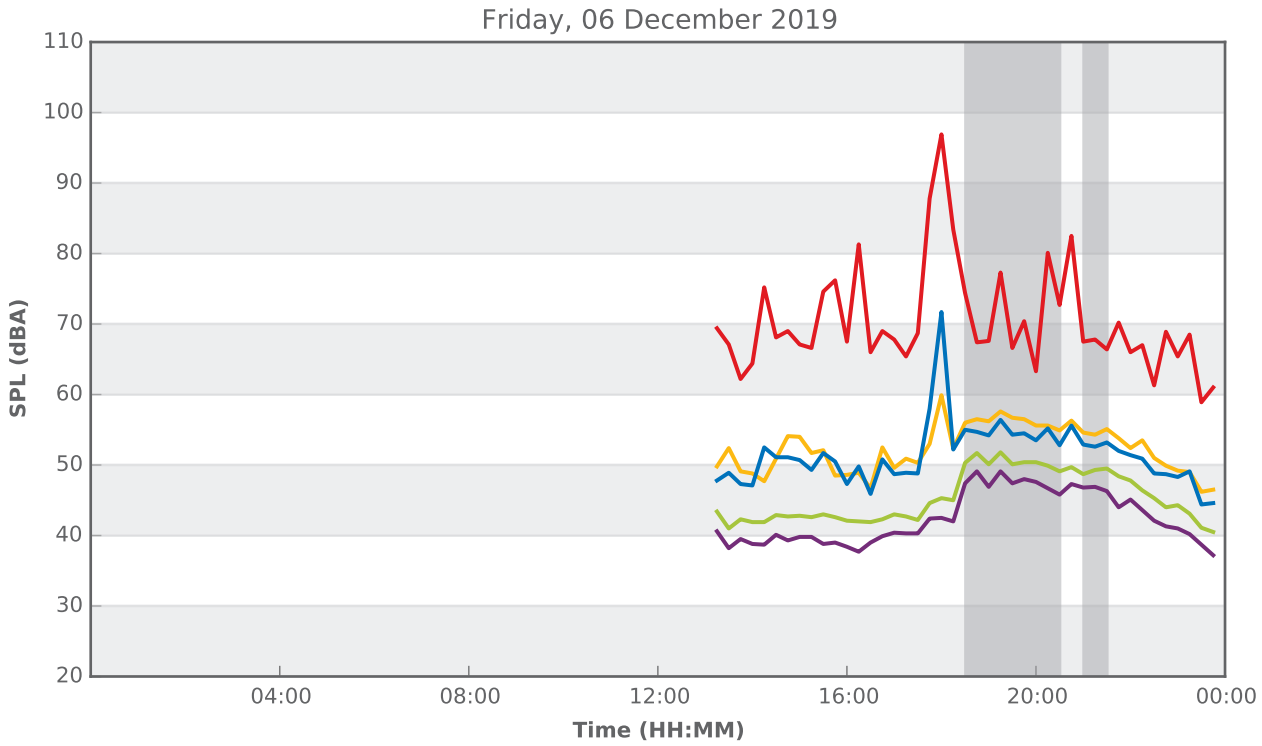

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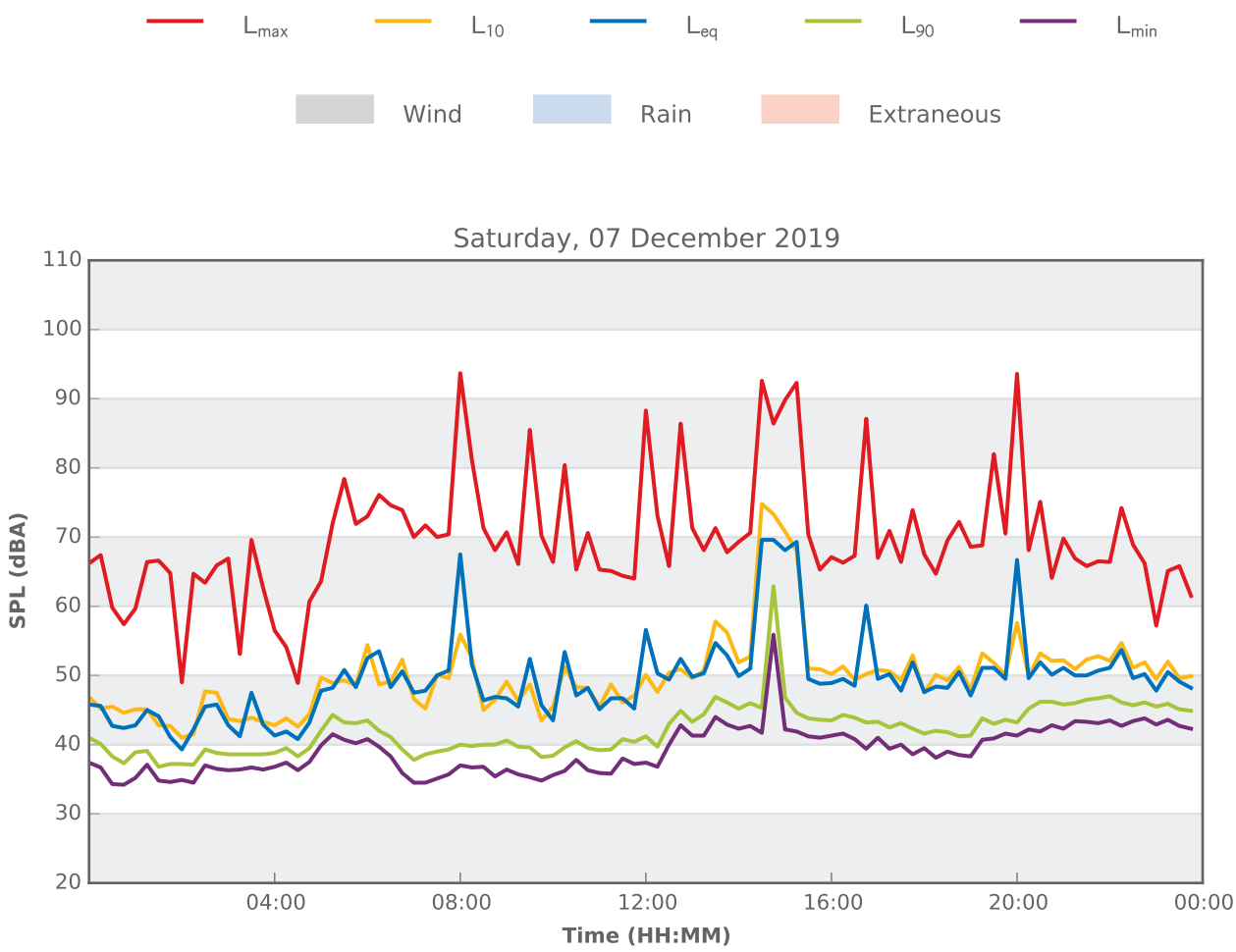

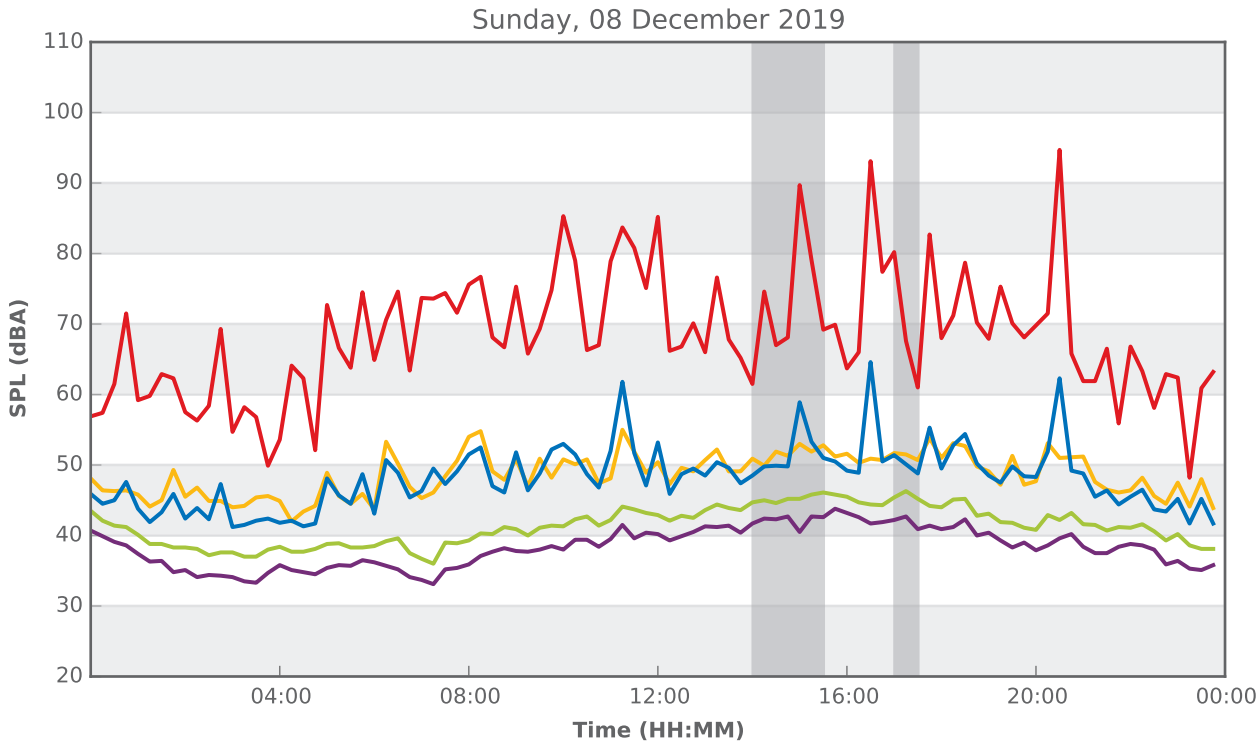

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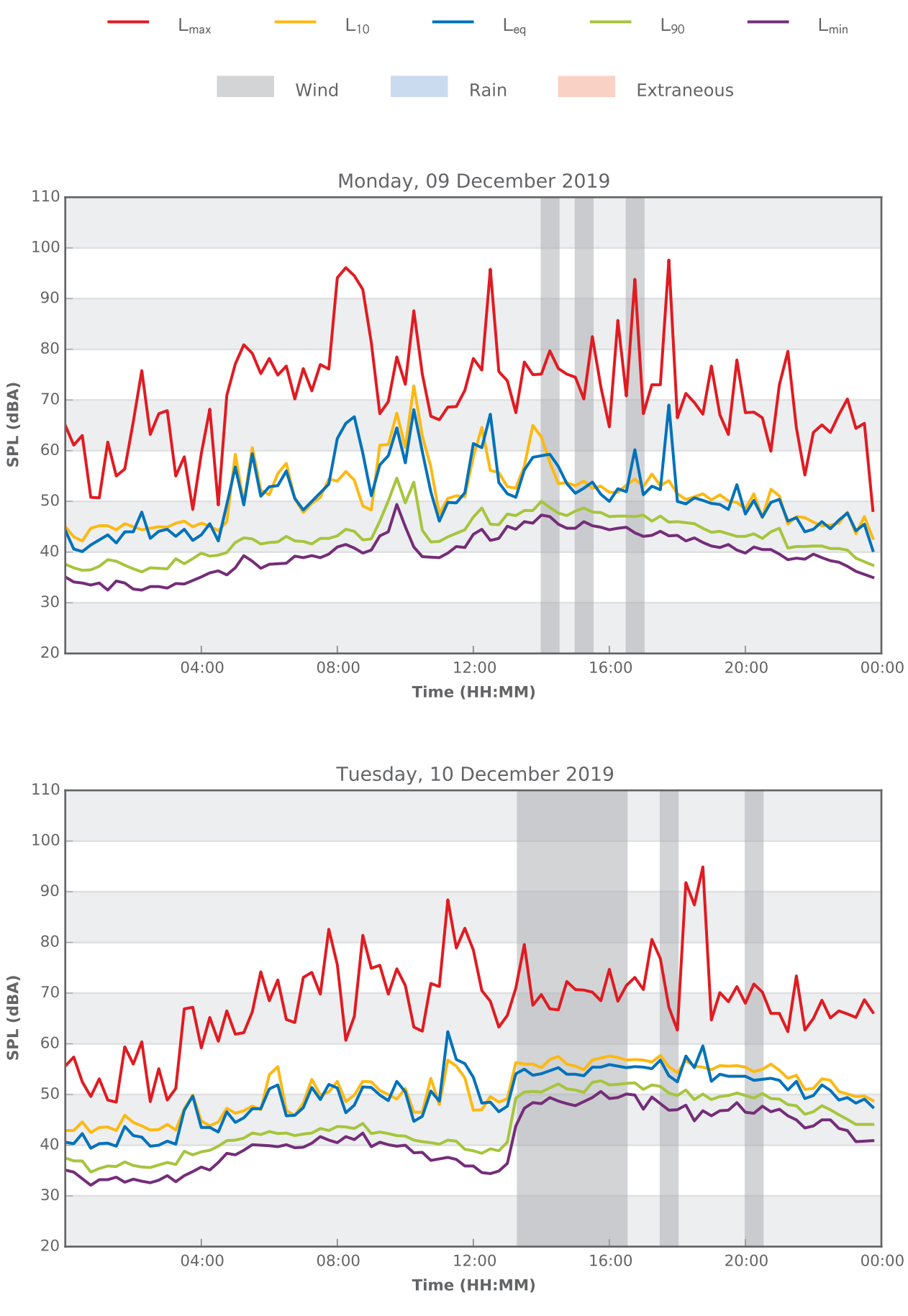

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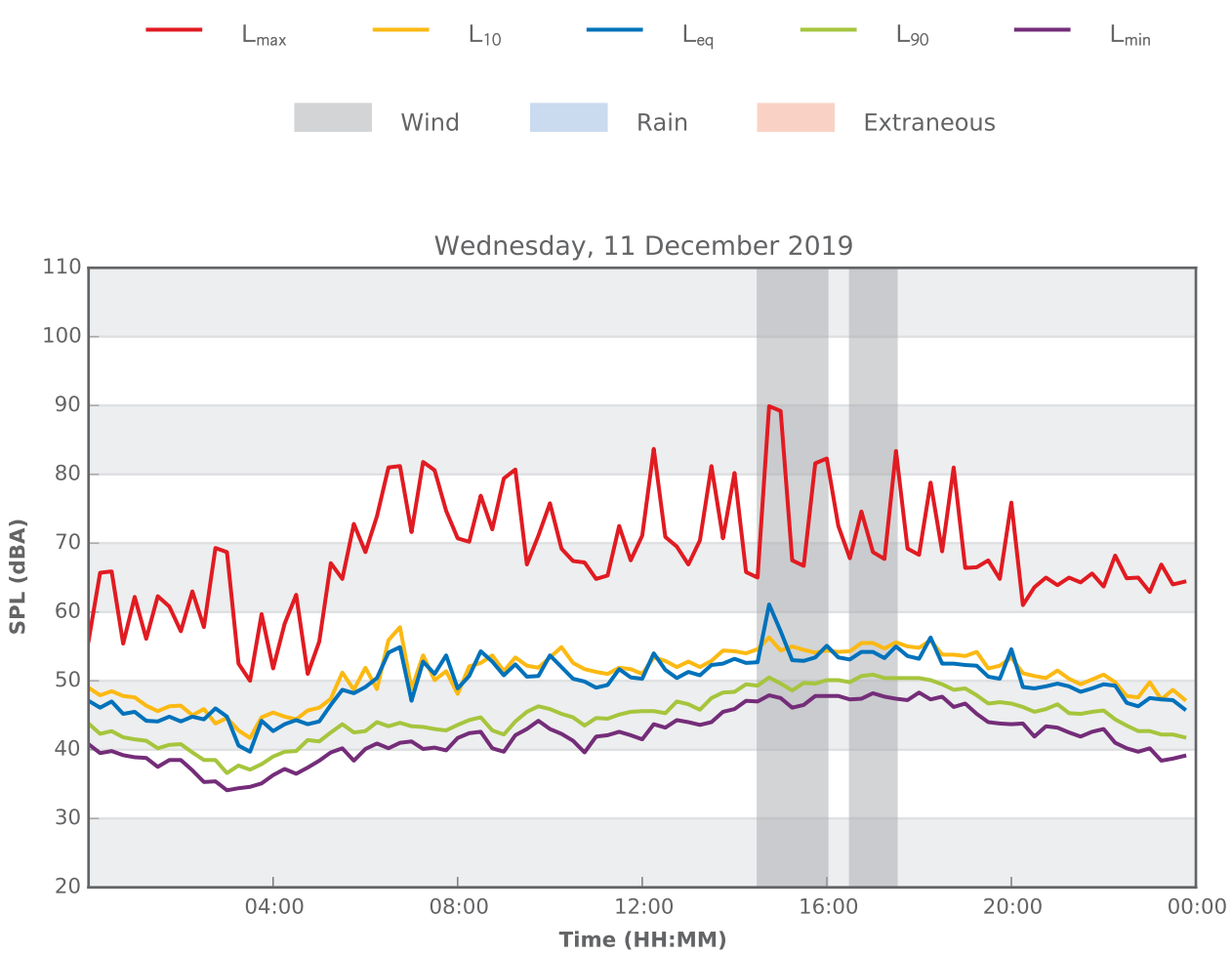

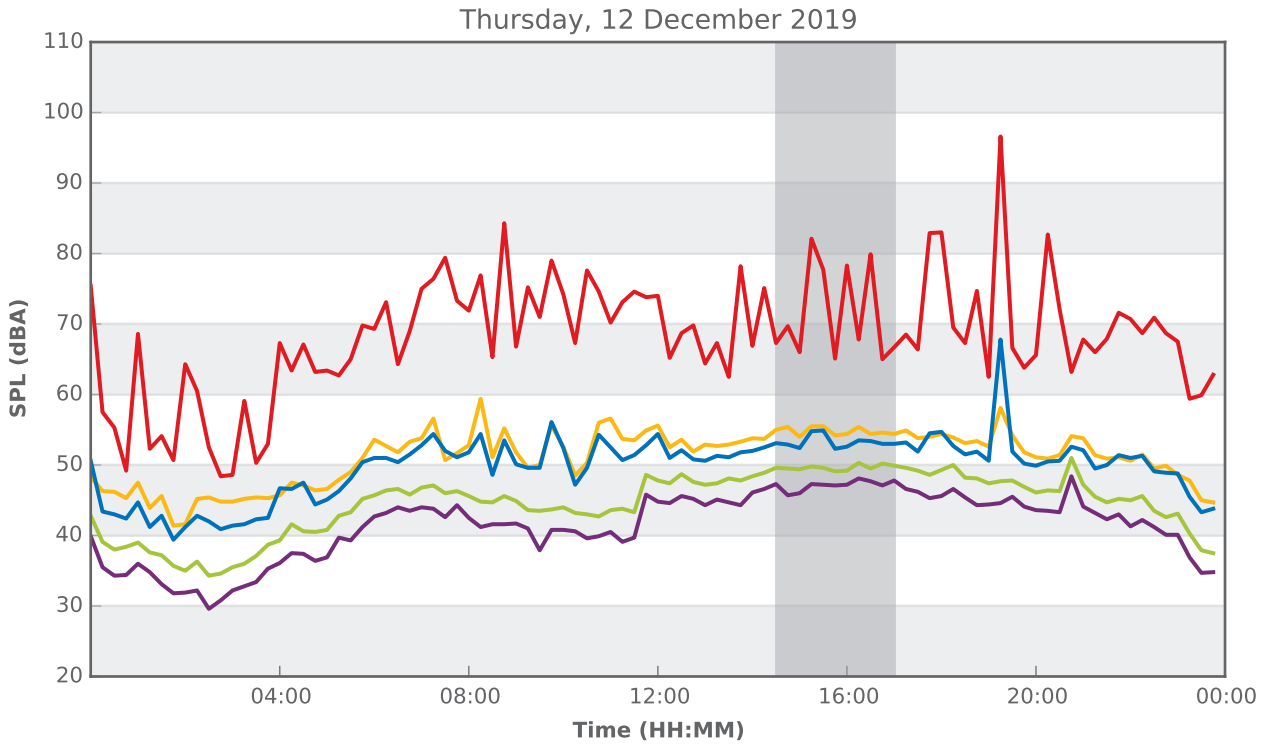

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