E.2.2 Noise Impact Assessment

Edited by Epic Environmental on 18/08/2023

NOISE IMPACT ASSESSMENT

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT

6200 CUNNINGHAM HIGHWAY

KALBAR

Prepared for:

Kalfresh Pty Ltd

Prepared by:

MWA Environmental

8 April 2020

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

MWA Environmental has been engaged by Kalfresh Pty Ltd ("**Kalfresh**") to prepare a Noise Impact Assessment for the proposed Scenic Rim Agricultural Industrial Precinct ("**SRAIP**") at Kalbar in Queensland.

The SRAIP was declared a 'coordinated project requiring an impact assessment report', by the Coordinator-General under Part 4, section 26(1)(b) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) on 31 May 2019.

The report addresses the potential impact of noise emissions from the SRAIP on sensitive land uses in support of the Impact Assessment Report.

The assessment has given regard to the Coordinator General's '*Scope of work for a draft impact assessment report - Scenic Rim Agricultural Industrial Precinct project*' (19 August 2019).

The assessment has been based upon ambient noise monitoring and detailed computer noise modelling.

1.2 SITE DESCRIPTION

The subject land has a nominal street address of 6200 Cunningham Highway, Kalbar and comprises the following real property descriptions:

- Lot 1 on RP216694
- Lot 2 on SP192221
- Lot 3 on SP192221
- Lot 4 on SP192221
- Lot 2 on RP20974
- Lot 2 on RP44024

The site is located within the Scenic Rim Regional Council area and is located approximately 46 km by road southwest of Ipswich and 13 km by road west of Boonah.

The location of the subject land and surrounding land uses is shown on **Figure 1**.

The subject site is currently utilised for agricultural industry (Kalfresh facility), composting and agricultural activities.

1.3 PROPOSED DEVELOPMENT

The project seeks approval for the following aspects of development:

Planning Act 2016

- Preliminary Approval (including a variation request) for Material Change of Use to override the Planning Scheme to establish the Industry Zone (SRAIP Precinct) and Rural Zone (SRAIP Precinct) to allow for a range of uses including:
  - SRAIP rural industrial activities
  - SRAIP infrastructure activities
  - SRAIP support activities
- Development Permit for Reconfiguring a Lot
- Development Permit for Material Change of Use for Renewable energy facility (Digester), High Impact Industry (Composter) and Utility Installation (Sewerage Treatment Plant)
- Development Permit for Material Change of Use for ERA53a – Organic material processing (by composting the organic material), ERA 53b – Organic material processing (by anaerobic digestion), ERA 63(1b) – Sewerage treatment
- Development Permit for Operational Works for Earthworks
- Preliminary Approval for Operational Work for Constructing or raising waterway barrier works
- Preliminary Approval for Operational Work for Native vegetation clearing

Environmental Protection Act 1994

- Environmental authority for environmentally relevant activities (ERAs):
  - ERA 53a – Organic material processing (by composting the organic material)
  - ERA 53b – Organic material processing (by anaerobic digestion)
  - ERA 63(1b) – Sewerage treatment

Water Act 2000

- ~~Riverine protection permit to excavate or place fill in a watercourse~~
- Water allocation / licence

The SRAIP will provide a formal hub for agricultural industry and associated supporting uses. Key elements of the SRAIP project are:

- Establishment of an industrial precinct for subdivision into allotments supporting a range of agriculture focussed industry uses, infrastructures facilities and supporting uses
- An anaerobic digester and biogas power plant
- A composting facility
- A small scale (approximately 200 equivalent person) on-site sewage treatment plant with an associated 2 hectare effluent irrigation area – no potential for off-site nuisance impacts from this small scale plant

The proposed development seeks development approval for the following Environmentally Relevant Activities:

- ERA 53(a) – Organic material processing more than 200t of organic material in a year – by composting the organic material
- ERA 53(b) – Organic material processing more than 200t of organic material in a year – by anaerobic digestion
- ERA 63(1)(b)(i) – Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1,500 equivalent persons – where treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme.

Detailed descriptions of the proposed environmentally relevant activities are provided in the following Precise Environmental reports:

Appendix F

Proposed Environmentally Relevant Activity 53(a) – organic material processing by composting – Proposed Scenic Rim Agricultural Industrial Precinct – 6200-6206 Cunningham Highway, Kalbar, Queensland (Precise Environmental, April 2020)

Appendix G

Proposed Environmentally Relevant Activity 53(b) – organic material processing by anaerobic digestion – Proposed Scenic Rim Agricultural Industrial Precinct – 6200-6206 Cunningham Highway, Kalbar, Queensland (Precise Environmental, April 2020)

Appendix G

Onsite Wastewater Management Report – 6200-6206 Cunningham Highway, Kalbar, Queensland (Precise Environmental, April 2020)

This assessment has been issued on the basis of the following plans:

- Overall Concept Layout Industry Allotment (RPS Group Plan 142489-06J, 5 March 2020) (refer **Attachment 1**)
- Proposed Composter Layout (RPS Group Plan 142489-08 Rev B, 19 February 2020) (refer **Attachment 2**)
- Kalfresh Bioenergy Facility Site Layout (Aquatec Maxcon Pty Ltd Drawing No. 21876A-012 Rev A, 5 March 2020) (refer **Attachment 3**)

1.4 SURROUNDING LAND USES

An aerial photograph of the subject site and surrounding land uses is included as **Figure 2**.

Surrounding land uses comprise:

To the north:	Rural zoning, cattle grazing and two isolated residential dwellings on properties also utilised for industrial purposes.
To the east:	Rural zoning, agricultural uses, Cunningham Highway and residential dwellings along the Cunningham Highway (to northeast) and Muller Road.
To the south:	Rural zoning, Zanow's Quarry, agricultural uses with isolated residential dwellings.
To the west:	Kangaroo Mountain with Rural zoning, cattle grazing and isolated residential dwellings beyond that are setback more than 1,500 metres from the subject land.

Selected surrounding residential dwellings are marked on **Figure 3** and labelled as R1 to R14 for the purpose of this assessment. The representative residential dwellings labelled are the nearest residential dwellings that are located within 1,500 metres of the subject land.

It is noted that the receptor identified as R12 is a dwelling on land utilised for industrial purposes (fertiliser supply).

All residential dwellings identified within 1,500 metres of the subject land are setback less than 1,000 metres from the Cunningham Highway aside from R1 and R10 (refer **Figure 3**).

The setback distances from each of the nominated residential dwellings to the subject land and the proposed emission sources are summarised in **Table 1**.

Table 1: Residential Setback Distances from Boundary of Subject Land and Nearest SRAIP Uses

Sensitive Receptor	Setback Distances from Subject Land (metres)	Setback Distances from Nearest SRAIP Use (metres)
R1	1120	1120
R2	620	715
R3	625	640
R4	610	620
R5	607	614
R6	625	625
R7	685	685
R8	690	690
R9	745	745
R10	1430	1430
R11	520	520
R12	95	320
R13	370	455
R14	1260	1500

1.5 SCOPE OF ASSESSMENT

Key noise emissions considered in the assessment are:

- Biogas cogeneration ("CHP") units
- Biogas plant flare (operation for CHP breakdown and scheduled testing purposes)
- Product and material handling (e.g. forklifts, front end loaders)
- Heavy vehicles i.e. truck deliveries and product dispatch trucks
- Fruit and vegetable processing and similar industrial activities (indoor)
- Mechanical plant including cold storage facilities

2.0 NOISE IMPACT ASSESSMENT

2.1 AMBIENT NOISE LEVELS

The subject land is located in a rural locality adjacent a major transport route with existing industrial and extractive industry uses. Ambient noise levels are primarily affected by the Cunningham Highway, with low ambient background noise levels at locations well setback from the Cunningham Highway.

Noise dataloggers were installed at two locations at the locality to characterise the ambient noise environment representative of the nearest sensitive receptor locations. All residential dwellings identified within 1,500 metres of the subject land are setback less than 1,000 metres from the Cunningham Highway aside from R1 and R10 (refer **Figure 3**).

The free-field noise monitoring locations to the north and south of the subject land are described as follows:

Noise Datalogger 1 (North): Horan Road (2.4 km from Highway)
Applied to dwellings more than 1km from the Highway

Noise Datalogger 2 (South): Subject Land (700m from Highway)
Applied to dwellings within 1km of the Highway

The noise datalogger locations are shown on **Figure 4**.

Statistical noise levels were recorded at Datalogger Location 1 (Horan Road) over the period 19 to 25 October 2018. **Table 2** below provides the minimum, maximum and average statistical noise levels recorded at Datalogger Location 1.

Table 2: Recorded Range of Ambient Noise Levels – dB(A)
19 to 25 October 2018 – 15-Minute Samples
Datalogger Location 1 (Horan Road)

PARAMETER	PERIOD	RECORDED NOISE LEVELS – dB(A)		
		MINIMUM	MAXIMUM	AVERAGE
L_1	Daytime (7am-6pm)	39	79	52
	Evening (6pm-10pm)	35	62	43
	Nighttime (10pm-7am)	30	69	46
L_{10}	Daytime (7am-6pm)	34	72	42
	Evening (6pm-10pm)	32	56	38
	Nighttime (10pm-7am)	26	66	39
L_{90}	Daytime (7am-6pm)	26	52	33
	Evening (6pm-10pm)	27	37	33
	Nighttime (10pm-7am)	23	41	30
L_{eq}	Daytime (7am-6pm)	33	67	42
	Evening (6pm-10pm)	31	54	37
	Nighttime (10pm-7am)	25	60	38

The key statistical noise level parameters recorded at Datalogger Location 1 (Horan Rd) from 19 to 25 October 2018 included:

Rating Background Level 7am to 6pm: 31 dB(A)

Rating Background Level 6pm to 10pm: 32 dB(A)

Rating Background Level 10pm to 7am: 26 dB(A)

Statistical noise levels were recorded at Datalogger Location 2 (Subject Land) over the period 19 to 25 October 2018. **Table 3** below provides the minimum, maximum and average statistical noise levels recorded at Datalogger Location 2

Table 3: Recorded Range of Ambient Noise Levels – dB(A)
19 to 25 October 2018 – 15-Minute Samples
Datalogger Location 2 (Subject Land)

PARAMETER	PERIOD	RECORDED NOISE LEVELS – dB(A)		
		MINIMUM	MAXIMUM	AVERAGE
L_1	Daytime (7am-6pm)	50	81	58
	Evening (6pm-10pm)	51	63	55
	Nighttime (10pm-7am)	43	74	56
L_{10}	Daytime (7am-6pm)	45	75	51
	Evening (6pm-10pm)	46	54	51
	Nighttime (10pm-7am)	38	58	50
L_{90}	Daytime (7am-6pm)	34	56	40
	Evening (6pm-10pm)	32	46	41
	Nighttime (10pm-7am)	28	48	36
L_{eq}	Daytime (7am-6pm)	42	70	49
	Evening (6pm-10pm)	44	51	48
	Nighttime (10pm-7am)	35	66	46

The key statistical noise level parameters recorded at Datalogger Location 2 (Subject Land) from 19 to 25 October 2018 included:

Rating Background Level 7am to 6pm: 38 dB(A)

Rating Background Level 6pm to 10pm: 39 dB(A)

Rating Background Level 10pm to 6am: 32 dB(A)

Weather conditions during the monitoring period were generally fine over the 19 to 25 October 2018 monitoring period. A large storm affected the region at approximately 6pm on 25 October 2018. Noise monitoring for the period of 6pm on 25 October until collection on 29 October has been removed from analysis.

The datalogger recorded noise levels are included as graphical traces of noise level versus time for the statistical noise level descriptors L_1, L_{10}, L_{90} and L_{eq} as **Attachment 4**.

2.2 RELEVANT NOISE CRITERIA

The following environmental objective for noise specified in Schedule 8, Part 3, Division 1 of the *Environmental Protection Regulation 2019* is as follows:

Environmental Objective

The activity will be operated in a way that protects the environmental values of the acoustic environment.

The environmental values for the acoustic environment as specified in the Part 6 of the *Environmental Protection (Noise) Policy 2019* include the following as relevant to sensitive receptors (dwellings) within 1,500 metres of the subject land:

6 Environmental values

The environmental values to be enhanced or protected under this policy are—

…

(b) the qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following—

(i) sleep;

(ii) study or learn;

(iii) be involved in recreation, including relaxation and conversation;

The *Environmental Protection (Noise) Policy 2019* specifies acoustic quality objectives in Schedule 1 that are stated to be prescribed for enhancing or protecting the environmental values at sensitive receptors. The relevant acoustic quality objectives for dwellings that, if reasonable in the circumstances, are applied for the protection of environmental values relating to health and wellbeing are as follows:

Sensitive receptor	Time of day	Acoustic quality objectives (measured at the receptor) *dB(A)*			Environmental value
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$	
dwelling (for outdoors)	daytime and evening	50	55	65	health and wellbeing
dwelling (for indoors)	daytime and evening	35	40	45	health and wellbeing
	night-time	30	35	40	health and wellbeing, in relation to the ability to sleep

Experience of MWA Environmental in the assessment of industry noise dictates that the L_{Aeq} acoustic quality objectives are more stringent than the L_{A1} and L_{A10} acoustic quality objectives i.e. L_{A10} noise emissions from industry are less than 5dB(A) above the L_{Aeq} noise emissions and the L_{A1} noise emissions are less than 10 dB(A) above the L_{Aeq} noise emissions. On this basis, this assessment has focussed on the more stringent L_{Aeq} acoustic quality objectives.

A noise reduction of 7 dB(A) is expected through a large open sliding glass door to a living area[1]. For the night period a sound transmission loss through an open window to a bedroom of 10 dB(A) may be expected[2].

The most stringent acoustic quality objectives **assessed external to residential dwellings** with open doors/windows are:

7am to 10pm

L_{Aeq} (1 hour): 42 dB(A) external (35 internal + 7 transmission loss)

10pm to 7am

L_{Aeq} (1 hour): 40 dB(A) external (30 internal + 10 transmission loss)

The 50 dB(A) $L_{Aeq,1hr}$ outdoor acoustic quality objective for the 7am to 10pm period is achieved at a dwelling if the adopted 42 dB(A) $L_{Aeq,1hr}$ external level is satisfied to achieve the relevant indoor acoustic quality objective with an open window.

Part 6 of the *Environmental Protection (Noise) Policy 2019* states the management intent for noise from an activity that may affect an environmental value, including minimisation of background noise creep.

Contemporary noise criteria schemes consider the intrusiveness of time-varying noise from an activity based upon the $L_{Aeq,adj,T}$ statistical noise parameter on a 'background plus excess' basis. The *Guideline - Noise control - Planning for noise control* (DEHP, 2015) applies a specific noise level criterion based upon an allowable 3 dB(A) $L_{Aeq,1hr}$ excess above the Rating Background Level.

[1] AS3671 states approximate 10 dB(A) noise reduction through a façade with 10% open area. Thus approximately 7 dB(A) noise reduction through a façade with 20% open area. A large 1200x1800 sliding window relates to approximately 10% open area. A large 2100x2300 sliding glass door represents approximately 20% open area. Thus, 7dB(A) noise reduction is conservatively adopted based upon a large sliding glass door in the affected façade. Openings larger than 20% open area are unlikely to be necessary for ventilation of living areas.

[2] AS3671 states approximate 10 dB(A) noise reduction through a façade with 10% open area. A large 1200x1800 sliding window relates to approximately 10% open area. Bedroom window openings larger than 10% open area are unlikely to be necessary for ventilation at night.

Table 4 below presents the various 'acoustic quality objective' and 'background plus excess' intrusiveness criteria for consideration of potential noise limits for the SRAIP.

Table 4: Relevant Noise Criteria Schemes – $L_{Aeq,adt,T}$ dB(A)

NOISE LIMIT SCHEME	OPERATING PERIOD	BASIS OF NOISE CRITERIA	$L_{Aeq,adj,T}$ CRITERIA - dB(A)
Acoustic Quality Objectives	7am to 6pm	Acoustic Quality Objective	42
	6pm to 10pm	Acoustic Quality Objective	42
	10pm to 7am	Acoustic Quality Objective	37
'Background plus excess' Residences within 1km of Highway	7am to 6pm	Background plus 3dB(A) with measured RBL of 38dB(A)	41
	6pm to 10pm	Background plus 3dB(A) with measured RBL of 39dB(A)	42
	10pm to 7am	Background plus 3dB(A) with measured RBL of 32dB(A)	35
'Background plus excess' Residences more than 1km from Highway	7am to 6pm	Background plus 3dB(A) with measured RBL of 35dB(A)	38
	6pm to 10pm	Background plus 3dB(A) with measured RBL of 32dB(A)	35
	10pm to 7am	Background plus 3dB(A) with measured RBL of 26dB(A)	29

The lower of the noise limits for each period as determined using the above schemes have been adopted for the purposes of this assessment.

As the SRAIP will operate during the night period (10pm to 7am) consideration has also been given to the potential for noise emissions to cause sleep awakenings within residential dwellings. *Guideline - Noise control - Planning for noise control* (DEHP, 2015) states:

> *"As a rule in planning for short-term or transient noise events, for good sleep over eight hours, the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately 45dBA maxLpA more than 10-15 times per night. The corresponding external noise level, assuming partially closed windows, is 52dBA maxLpA, measured in the free field."*

For the purposes of this assessment the sleep disturbance limit for the period 10pm to 7am has been imposed as 52dBA maxLpA, measured in the free field external to a dwelling.

The adopted noise criteria for the SRAIP are stated in **Table 5** below.

Table 5: Adopted Noise Criteria – dB(A)

PERIOD	ADOPTED NOISE CRITERIA		
	$L_{Aeq,1hr}$ - dB(A)		MaxLpA,T – dB(A)
	Residences within 1km of Highway (R2 to R9 and R11 to R14 shown on Figure 3)	Residences more than 1km from Highway R1 and R10 shown on Figure 3)	
7am to 6pm	41	38	Not Applicable
6pm to 10pm	41[3]	35	Not Applicable
10pm to 7am	35	29	52

[3] 41dB(A) adopted for the evening period based upon the lower day time RBL

2.3 NOISE MODELLING

2.3.1 NOISE MODELLING METHODOLOGY

To enable assessment of noise from the SRAIP a detailed noise model has been established using the SoundPLAN 8.1 software applying the ISO9613 standard. This model is an accepted regulatory model that allows input of site-specific terrain data and source noise data as sound power level spectra.

The noise modelling undertaken considered meteorological conditions as per the methodology of the ISO9613 standard, with a temperature of 10 degrees Celsius and 70% humidity, a temperature inversion and the following wind conditions as per the adverse meteorological assumptions of ISO9613:

> *Downwind propagation conditions for the method specified in this part of ISO 9613 are as specified in 5.4.3.3 of ISO 1996-2:1987, namely*
>
> - *Wind direction within an angle of $\pm$ 45^o of the direction connecting the centre of the dominant sound source and the centre of the specified receiver region, with the wind blowing from source to receiver, and*
>
> - *Wind speed between approximately 1m/s and 5m/s, measured at a height of 3m to 11m above the ground.*

As such, given the above adverse meteorological assumptions, it is considered that the results of the noise modelling represent the resultant noise levels of the SRAIP during typical worst-case noise propagation enhancing conditions.

The model was established over a 4.5 km x 3.5 km area centred on the subject land. The topography of the subject site and surrounding area was sourced from State of Queensland (Department of Natural Resources, Mines and Energy) 2018 LiDAR elevation data at 5 metre resolution.

Preliminary civil earthworks levels for the SRAIP as provided by Cardno have been integrated into the model.

2.3.2 MODELLED NOISE SOURCES

The noise modelling has represented the key noise sources associated with the SRAIP industrial subdivision (for indicative future uses), the anaerobic digester / biogas plant and the composting facility.

The assessment has been based upon a cumulative assessment of noise emissions from the SRAIP for the day, evening and night periods based upon the following operating scenarios:

7am to 6pm

- Peak traffic movements through the SRAIP
- Composting facility operations
- Anaerobic digester and biogas plant operations
- Indicative future agricultural industry uses on SRAIP lots

6pm to 10pm

- 50% of peak traffic movements through the SRAIP
- Composting facility operations with 50% of peak traffic
- Anaerobic digester and biogas plant operations
- Indicative future agricultural industry uses on SRAIP lots

10pm to 7am

- 50% of peak traffic movements through the SRAIP
- Composting facility operations with 50% of peak traffic and 50% activity rate for mobile plant
- Anaerobic digester and biogas plant operations
- Indicative future agricultural industry uses on SRAIP lots

The noise sources represented for the SRAIP industrial subdivision (indicative future uses), the anaerobic digester / biogas plant and the composting facility are outlined in the following sections.

2.3.2.1 SRAIP INDUSTRIAL SUBDIVISON

Key noise emissions from the SRAIP industrial subdivision are:

- Heavy vehicle movements on the SRAIP internal roadway
- Loading / material handling activities (e.g. forklifts) on the SRAIP industrial allotments
- Internal manufacturing / processing noise from future buildings on the SRAIP industrial allotments

Table 6 summarises the external noise sources modelled to represent noise emissions from heavy vehicles and external material handling activities associated with indicative future industrial uses at the SRAIP allotments.

Table 6: Summary of Modelled External Noise Sources for SRAIP Industrial Allotments

NOISE SOURCE	#	SOURCE TYPE	SOURCE HEIGHT (mAGL)	SOUND POWER LEVEL LAeq - dB(A)	COMMENT
SRAIP internal road	1	Line Source	2.5	78.5/metre[4]	Based upon peak 1 hour heavy vehicle trips of 140 advised by Cardno and average passby maxLpA SWL of 103dB(A) at 40km/h from MWA data
Forklifts at Industrial Allotments	26	Point Source	1.5	99[5]	Working Cycle $L_{Aeq,1hr}$ based upon MWA data from freight facility 2 modelled per indicative future facility

Table 7 summarises the industrial building noise sources modelled to represent indicative future industrial uses at the SRAIP allotments. Two indicative types of industrial facilities have been modelled for the purposes of this preliminary approval application, as follows:

Indicative Industry Building A: Fruit and vegetable packing and distribution use
Insulated steel sheet walls and roof
Four open doors (15m^2 each)

Indicative Industry Building B: Fruit and vegetable processing and cold storage use
Insulated 'cold room' panel walls and roof with steel sheeting external
Two open doors (15m^2 each)

[4] 50 percent of daytime peak hour heavy vehicle traffic applied for the 6pm to 7am period
[5] 50 percent of peak daytime activity rate applied for the 10pm to 7am period

Table 7: Summary of Modelled Indicative Future Industry Buildings for SRAIP Industrial Allotments

NOISE SOURCE	#	SOURCE TYPE	BUILDING HEIGHT (mAGL)	INDOOR SPL LEVEL LAeq - dB(A)	WALL / ROOF STL	DOOR STL
Indicative Future Industry A Building Source (packing and distribution)	6	Industrial Building Source	8	73.9[6]	Rw 30	Rw0
Indicative Future Industry B Building Source (cold storage distribution)	7	Industrial Building Source	8	78.0[7]	Rw 32	Rw0

Ultimately future industrial uses within the SRAIP will be assessed against the preliminary approval development code provisions to ensure that any noise mitigation measures required for the specific uses are implemented to achieve appropriate noise amenity criteria at sensitive land uses. The assessment provided in this report for the preliminary approval phase is intended to determine whether the types of uses anticipated for the SRAIP are able to be developed without resulting in unreasonable noise amenity impacts at sensitive receptors.

The model layout and the source locations are shown on the drawing included in **Attachment 5**.

2.3.2.2 ANAEROBIC DIGESTER / BIOGAS PLANT

Key noise emissions from the anaerobic digester / biogas plant on proposed Lot 11 are:

- Biogas cogeneration ("CHP") units (x2)
- Biogas plant flare (operation for CHP breakdown and scheduled testing purposes only)
- External silage handling (i.e. front end loader)

[6] Based upon measured indoor SPL at existing Kalfresh facility for vegetable sorting and packing activities with forklift handling

[7] Based upon measured indoor SPL at existing Kalfresh facility for vegetable washing and sorting with cold storage

Table 8 summarises the noise sources modelled to represent noise emissions from the anaerobic digester / biogas plant on proposed Lot 11.

Table 8: Summary of Modelled Noise Sources Anaerobic Digester / Biogas Plant

NOISE SOURCE	#	SOURCE TYPE	SOURCE HEIGHT (mAGL)	SOUND POWER LEVEL LAeq - dB(A)	COMMENT
Containerised CHP	2	Point Source	2.5	99.2	Based upon indicative containerised CHP source noise level data supplied by Aquatec Maxcon
Flare	1	Point Source	7	103	Based upon indicative enclosed ground level biogas plant flare source noise level data supplied by Aquatec Maxcon
Front-end loader managing external silage stockpiles	1	Area Source	2.5	99.6	Working Cycle $L_{Aeq,1hr}$ based upon MWA data from comparable facility

The source noise levels for the anaerobic digester / biogas plant CHP units and flare are based upon indicative source levels from comparable plants designed by Aquatec Maxcon. The specific sound power levels for the selected CHP and flare equipment will be assessed at the detailed design phase once the specific equipment has been selected.

The model layout and the source locations are shown on the drawing included in **Attachment 5**.

2.3.2.3 COMPOSTING FACILITY

Key noise emissions from the composting facility are:

- Heavy vehicle movements on the composting facility access road
- Raw material stockpiling, blending and formation of windrows using a front-end loader
- Windrow turning using a tractor PTO driven turner or a dedicated windrow turning machine[8]
- Finished product stockpiling and loading trucks for dispatch using a front-end loader

[8] For example Scarab 24FT 10' TUN

Table 9 summarises the noise sources modelled to represent noise emissions from the composting facility.

Table 9: Summary of Modelled Noise Sources for Composting Facility

NOISE SOURCE	#	SOURCE TYPE	SOURCE HEIGHT (mAGL)	SOUND POWER LEVEL LAeq - dB(A)	COMMENT
Compost access road 4 trips (two-way) per hour	1	Line Source	2.5	66/metre[9]	Based upon estimated 4 heavy vehicle trips per hour peak at a production rate of 50,000 tpa
Windrow turner	1	Point Source	2.5	109	Indicative for 190hp windrow turner
Front-end loader at product stockpiles	1	Area Source	2.5	99.6	Working cycle $L_{Aeq,1hr}$ based upon MWA data from comparable facility
Front-end loader at raw material area	1	Area Source	2.5	99.6	Working cycle $L_{Aeq,1hr}$ based upon MWA data from comparable facility

The model layout and the source locations are shown on the drawing included in **Attachment 5**.

2.3.3 NOISE MODELLING RESULTS

The predicted resultant noise levels at the representative receptor locations (refer **Figure 3**) are summarised in the following **Table 10** to **Table 12** for the individual uses and in **Table 13** for the overall cumulative noise, as follows:

Table 10: SRAIP Industrial Subdivision Only (indicative future uses)

Table 11: Anaerobic Digester / Biogas Plant Only

Table 12: Composting Facility Only

Table 13: Overall Cumulative Noise

The results of the SoundPLAN 8.1 modelling are presented as contours of predicted resultant noise levels on a cadastral base showing the locations of the surrounding sensitive receptors (refer **Figure 3**), as follows:

Attachment 6: SRAIP Industrial Subdivision Only (indicative uses)

Attachment 7: Anaerobic Digester / Biogas Plant Only

Attachment 8: Composting Facility Only

Attachment 9: Overall Cumulative Noise

[9] 50 percent of daytime peak hour traffic applied for the 6pm to 7am period

It is noted that other residential dwellings within the model domain and within 1,500 metres of the subject land , which are not summarised in **Table 10** to **Table 13**, are no more affected than the selected representative receptors.

Table 10: Summary of Model Results for Selected Representative Receptors –SRAIP Industrial Subdivision Only – dB(A)

Sensitive Receiver (refer Figure 3)	LAeq,1hr 7am to 6pm dB(A)		LAeq,1hr 6pm to 10pm dB(A)		LAeq,1hr 10pm to 7am dB(A)		MaxLpA 10pm to 7am dB(A)		Complies?
	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	
R1	24	38	23	35	21	29	23	52	Yes
R2	31	41	30	41	28	35	30	52	Yes
R3	32	41	32	41	30	35	31	52	Yes
R4	33	41	33	41	31	35	33	52	Yes
R5	33	41	33	41	31	35	33	52	Yes
R6	34	41	33	41	31	35	33	52	Yes
R7	33	41	32	41	30	35	32	52	Yes
R8	32	41	32	41	29	35	31	52	Yes
R9	34	41	33	41	31	35	33	52	Yes
R10	28	38	27	35	25	29	26	52	Yes
R11	37	41	36	41	34	35	36	52	Yes
R12	36	41	36	41	34	35	36	52	Yes
R13	32	41	31	41	29	35	31	52	Yes
R14	27	41	27	41	25	35	26	52	Yes

Table 11: Summary of Model Results for Selected Representative Receptors –Digester/Biogas Plant Only – dB(A)

Sensitive Receiver (refer Figure 3)	LAeq,1hr 7am to 6pm dB(A)		LAeq,1hr 6pm to 10pm dB(A)		LAeq,1hr 10pm to 7am dB(A)		MaxLpA 10pm to 7am dB(A)		Complies?
	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	
R1	20	38	19	35	19	29	26	52	Yes
R2	31	41	30	41	30	35	37	52	Yes
R3	28	41	26	41	27	35	35	52	Yes
R4	28	41	27	41	27	35	35	52	Yes
R5	28	41	27	41	27	35	35	52	Yes
R6	28	41	27	41	27	35	35	52	Yes
R7	28	41	26	41	26	35	35	52	Yes
R8	25	41	23	41	24	35	32	52	Yes
R9	24	41	22	41	23	35	31	52	Yes
R10	19	38	16	35	17	29	26	52	Yes
R11	26	41	24	41	24	35	33	52	Yes
R12	26	41	24	41	24	35	34	52	Yes
R13	23	41	21	41	21	35	29	52	Yes
R14	18	41	16	41	16	35	25	52	Yes

Table 12: Summary of Model Results for Selected Representative Receptors –Composting Facility Only – dB(A)

Sensitive Receiver (refer Figure 3)	LAeq,1hr 7am to 6pm dB(A)		LAeq,1hr 6pm to 10pm dB(A)		LAeq,1hr 10pm to 7am dB(A)		MaxLpA 10pm to 7am dB(A)		Complies?
	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	
R1	26	38	26	35	23	29	29	52	Yes
R2	28	41	28	41	25	35	31	52	Yes
R3	23	41	23	41	20	35	28	52	Yes
R4	23	41	23	41	20	35	28	52	Yes
R5	23	41	23	41	20	35	28	52	Yes
R6	23	41	23	41	20	35	28	52	Yes
R7	22	41	22	41	19	35	27	52	Yes
R8	22	41	21	41	19	35	24	52	Yes
R9	22	41	21	41	19	35	26	52	Yes
R10	21	38	21	35	18	29	24	52	Yes
R11	24	41	24	41	21	35	30	52	Yes
R12	28	41	27	41	25	35	40	52	Yes
R13	23	41	22	41	20	35	30	52	Yes
R14	18	41	18	41	15	35	23	52	Yes

Table 13: Summary of Model Results for Selected Representative Receptors –Overall Cumulative Noise – dB(A)

Sensitive Receiver (refer Figure 3)	LAeq,1hr 7am to 6pm dB(A)		LAeq,1hr 6pm to 10pm dB(A)		LAeq,1hr 10pm to 7am dB(A)		MaxLpA 10pm to 7am dB(A)		Complies?
	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	Predicted	Criterion	
R1	29	38	29	35	26	29	30	52	Yes
R2	35	41	34	41	33	35	37	52	Yes
R3	34	41	33	41	31	35	36	52	Yes
R4	35	41	34	41	32	35	37	52	Yes
R5	35	41	34	41	32	35	37	52	Yes
R6	35	41	34	41	32	35	37	52	Yes
R7	34	41	33	41	32	35	36	52	Yes
R8	33	41	33	41	31	35	34	52	Yes
R9	35	41	34	41	32	35	35	52	Yes
R10	29	38	28	35	26	29	29	52	Yes
R11	37	41	36	41	34	35	36	52	Yes
R12	37	41	37	41	35	35	41	52	Yes
R13	33	41	32	41	30	35	33	52	Yes
R14	28	41	28	41	26	35	28	52	Yes

2.3.4 NOISE ASSESSMENT OUTCOMES

On the basis of the noise impact assessment conducted, the proposed SRAIP industrial development, anaerobic digester / biogas plant and composting facility can comply with appropriate noise criteria at surrounding sensitive land uses.

It is noted that the assessment undertaken is based upon certain assumptions that warrant review through the detailed design phase and for future development applications, as follows:

- Indicative future industrial uses on the SRAIP – The industrial development application is a Variation Request (preliminary approval) only and further applications will be required for reconfiguration of lot and ultimately for specific uses on the industrial allotments, with more use specific noise assessment able to be undertaken at that time to ensure that appropriate noise control measures are implemented to achieve the relevant noise amenity criteria at sensitive receptors.
- Preliminary source noise level data for the anaerobic digester / biogas plant was supplied by the plant designer (Aquatec Maxcon) during the basic design phase of the plant. Further assessment of noise emissions from the anaerobic digester / biogas plant should be undertaken at the detailed design stage for the plant to ensure that appropriate noise control measures are implemented to achieve the relevant noise amenity criteria at sensitive receptors.

3.0 CONCLUSION

MWA Environmental has been engaged by Kalfresh Pty Ltd to prepare a Noise Impact Assessment for the proposed Scenic Rim Agricultural Industrial Precinct at Kalbar in Queensland

The SRAIP was declared a 'coordinated project requiring an impact assessment report', by the Coordinator-General under Part 4, section 26(1)(b) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) on 31 May 2019.

The report addresses the potential impact of noise emissions from the SRAIP on sensitive land uses in support of the Impact Assessment Report. The assessment has been based upon ambient noise monitoring and detailed computer noise modelling.

Noise assessment criteria for protection of the environmental values of the acoustic environment have been adopted with reference to the *Environmental Protection (Noise) Policy 2019* specifies acoustic quality objectives and contemporary noise criteria schemes that consider the intrusiveness of time-varying noise from an activity based upon the $L_{Aeq,adj,T}$ statistical noise parameter on a 'background plus excess' basis. As the SRAIP will operate during the night period (10pm to 7am) consideration has also been given to the potential for noise emissions to cause sleep awakenings within residential dwellings.

The assessment has predicted resultant noise levels from the following individual development components and the overall cumulative noise levels at fourteen representative residential dwellings located within 1,500 metres of the subject land:

- SRAIP Industrial Subdivision Only
- Anaerobic Digester / Biogas Plant Only
- Composting Facility Only

On the basis of the noise impact assessment conducted, the proposed SRAIP industrial development, anaerobic digester / biogas plant and composting facility can comply with appropriate noise criteria at surrounding sensitive land uses.

MWA Environmental
8 April 2020

FIGURES

LEGEND

SITE BOUNDARY

DRAWING REFERENCES

N

0 0.5 1km

CLIENT

KALFRESH PTY LTD

PROJECT

NOISE IMPACT ASSESSMENT

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT KALBAR QUEENSLAND

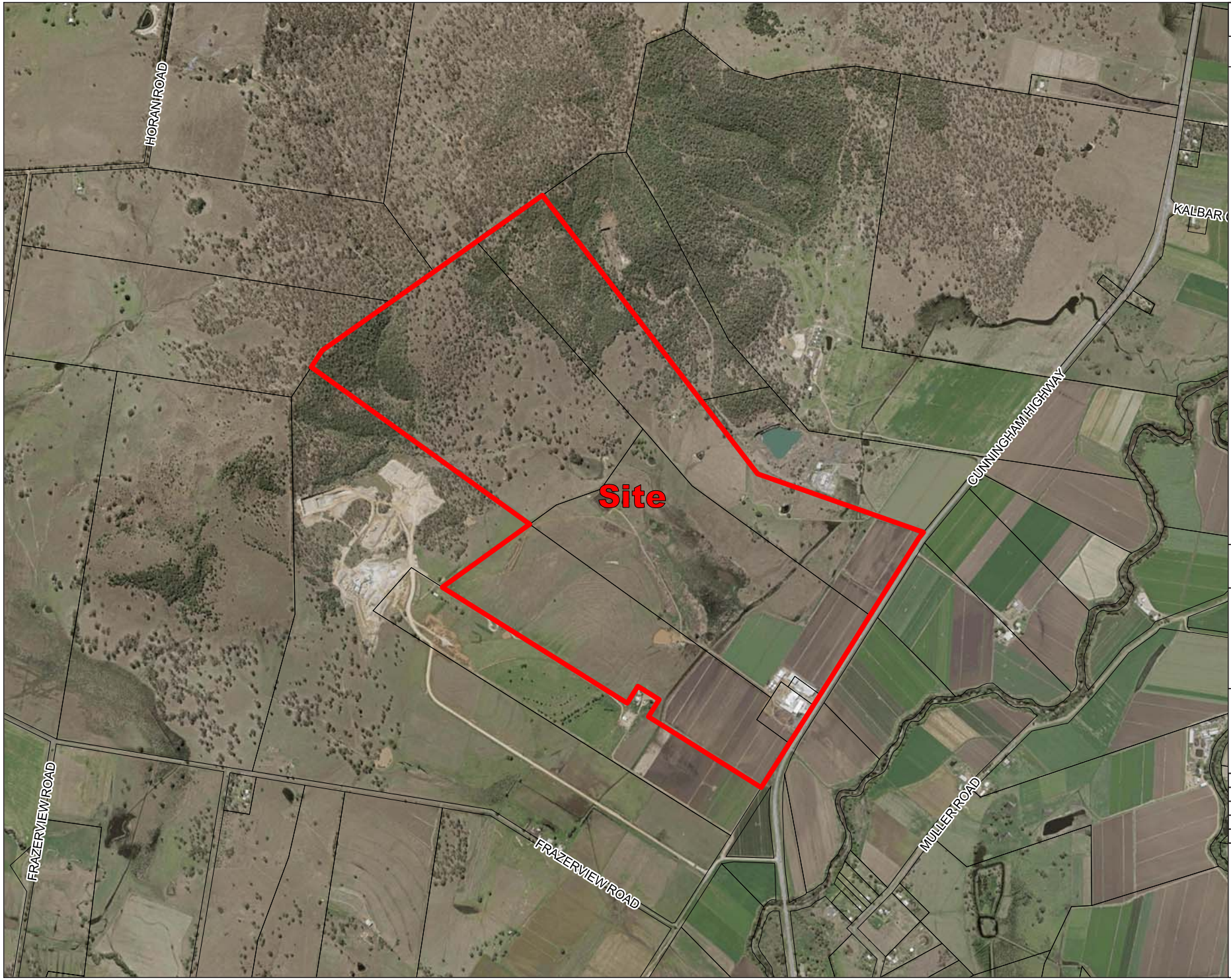
TITLE

SITE LOCATION AND SURROUNDING LAND USES

JOB	KALBAR	FIGURE 1
JOB NO.	19-143	
DATE	18/12/19	DWG NUMBER
SCALE	1:35000 (A4)	19-143-1
REV.		

mwa ENVIRONMENTAL

Max Winders & Associates Pty Ltd tas MWA Environmental
Level 15, 241 Adelaide St, Brisbane. GPO BOX 3137, Brisbane Qld 4001
P 07 3002 5500 F 07 3002 5588 E mail@mwaenviro.com.au
W www.mwaenviro.com.au
ABN 94 010 833 084



LEGEND

SITE BOUNDARY

DRAWING REFERENCE

N

0 200 400 600m

CLIENT

KALFRESH PTY LTD

PROJECT

NOISE IMPACT ASSESSMENT

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT KALBAR QUEENSLAND

TITLE

AERIAL PHOTOGRAPH

JOB	KALBAR	**FIGURE 2**
JOB NO.	19-143	
DATE	18/12/19	DWG NUMBER
SCALE	1:20000 (A4)	**19-143-2**
REV.		

mwa ENVIRONMENTAL

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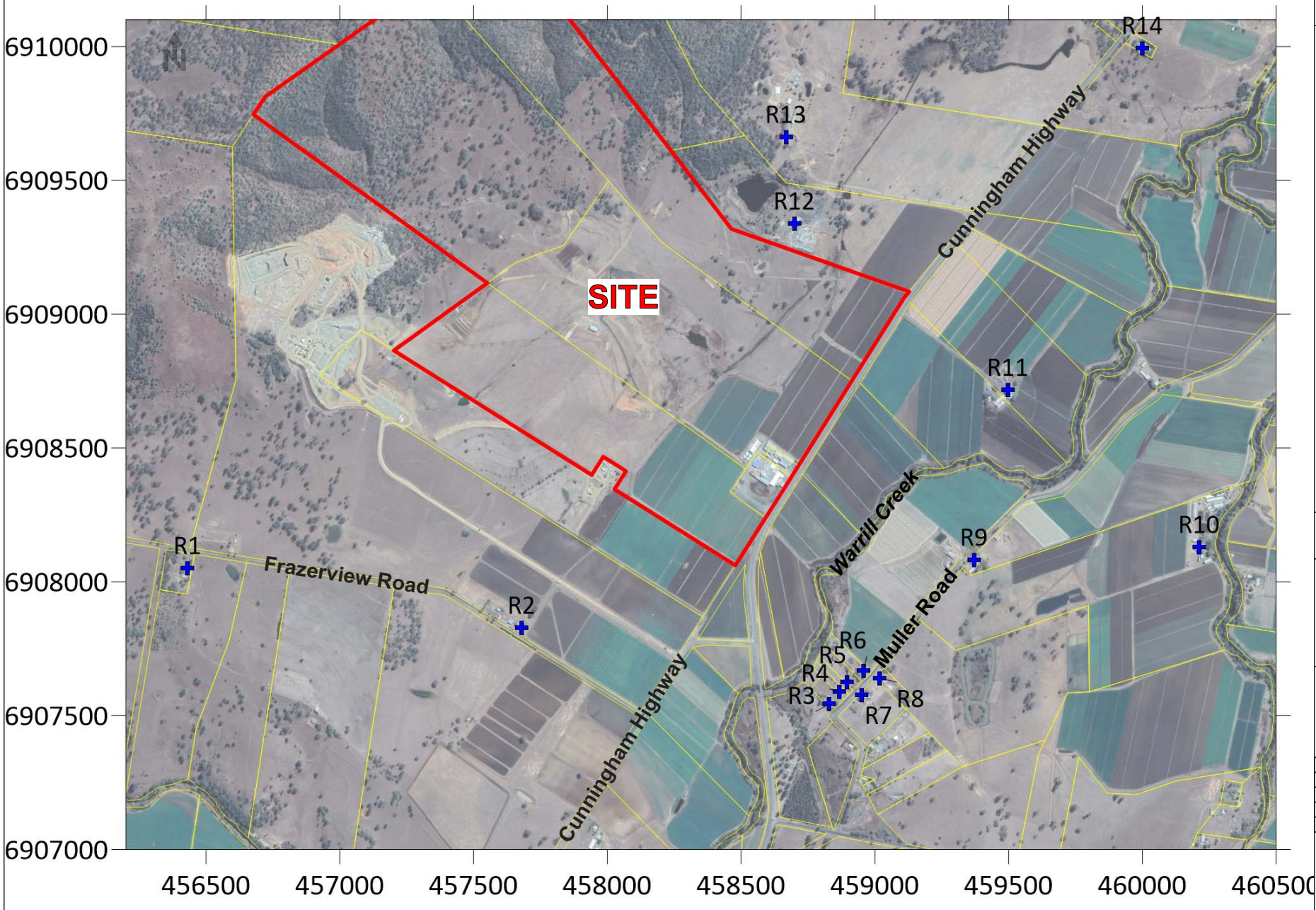
W www.mwaenviro.com.au
ABN 94 010 833 084



LEGEND

SITE BOUNDARY

+R14 SENSITIVE RECEPTOR LOCATIONS (R1-R14)

DRAWING REFERENCES

CLIENT

KALFRESH PTY LTD

PROJECT

NOISE IMPACT ASSESSMENT

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT KALBAR QUEENSLAND

TITLE

REPRESENTATIVE RECEPTOR LOCATIONS

JOB	KALBAR	FIGURE 3
JOB NO.	19-143	
DATE	18/12/19	DWG NUMBER
SCALE	1:20000 (A4)	19-143-3
REV.		

mwa ENVIRONMENTAL

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W www.mwaenviro.com.au
ABN 94 010 833 084

LEGEND

- SITE BOUNDARY
- 2 NOISE DATALOGGER LOCATIONS 1-2 (UNATTENDED)

DRAWING REFERENCES

0 0.5 1km

CLIENT
KALFRESH PTY LTD

PROJECT
NOISE IMPACT ASSESSMENT
SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT KALBAR QUEENSLAND

TITLE
NOISE MONITORING LOCATIONS

JOB	KALBAR	FIGURE 4
JOB NO.	19-143	
DATE	18/12/19	DWG NUMBER
SCALE	1:35000 (A4)	19-143-4
REV.		

Max Winders & Associates Pty Ltd tas MWA Environmental
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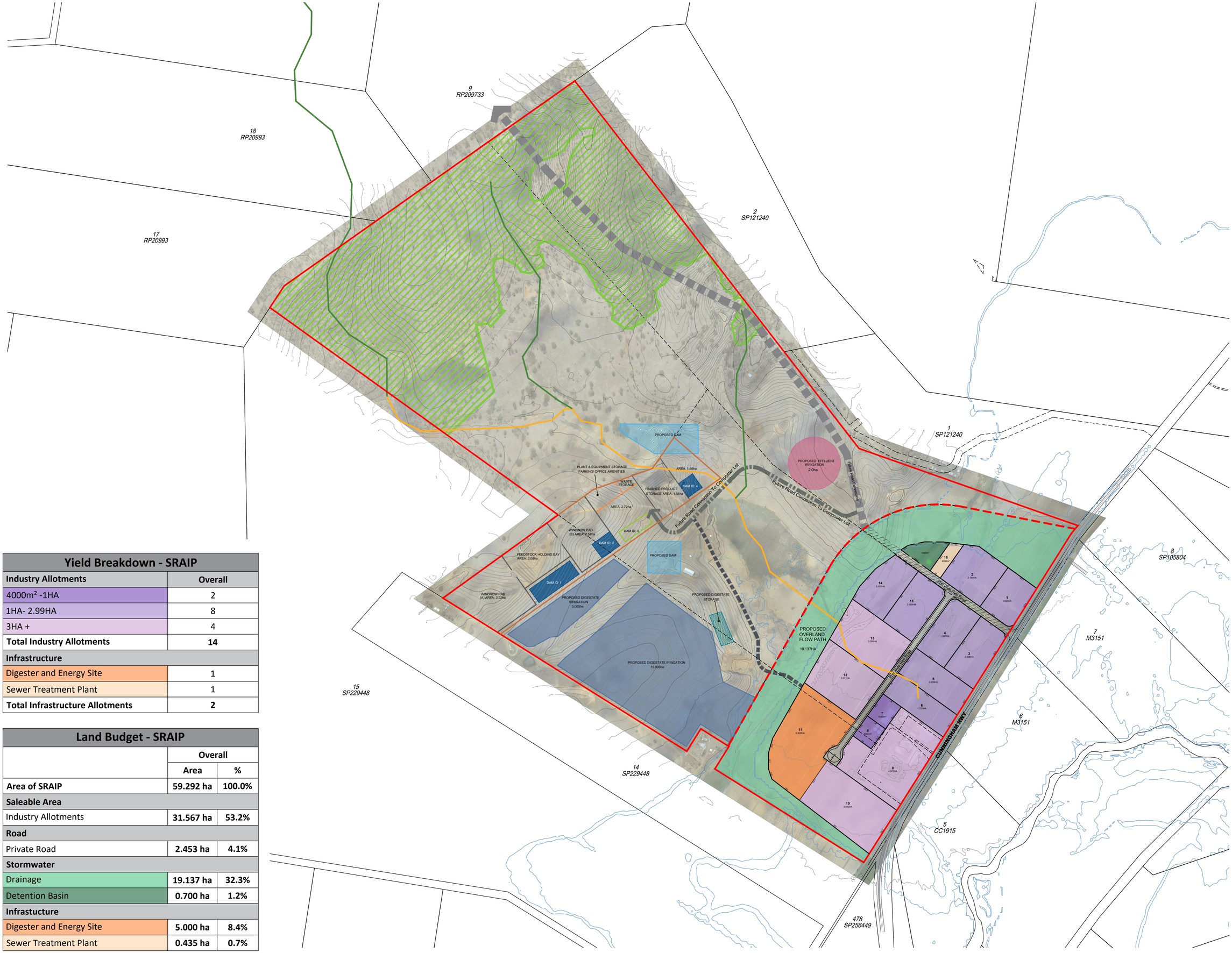
W www.mwaenviro.com.au
ABN 94 010 833 084

ATTACHMENT 1

Overall Concept Layout Industry Allotment
(RPS Group Plan 142489-06J, 5 March 2020)



Yield Breakdown - SRAIP	
Industry Allotments	**Overall**
4000m² -1HA	2
1HA- 2.99HA	8
3HA +	4
Total Industry Allotments	**14**
Infrastructure	
Digester and Energy Site	1
Sewer Treatment Plant	1
Total Infrastructure Allotments	**2**

Land Budget - SRAIP		
	Overall	
	Area	**%**
Area of SRAIP	**59.292 ha**	**100.0%**
Saleable Area		
Industry Allotments	**31.567 ha**	**53.2%**
Road		
Private Road	**2.453 ha**	**4.1%**
Stormwater		
Drainage	**19.137 ha**	**32.3%**
Detention Basin	**0.700 ha**	**1.2%**
Infrastucture		
Digester and Energy Site	**5.000 ha**	**8.4%**
Sewer Treatment Plant	**0.435 ha**	**0.7%**

0 25 50 75 100 150 1 : 5,000 @ A1

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT

6200 CUNNINGHAM HWY KALBAR CONCEPT OVERALL

PLAN REF: 142489-06L
DATE: 16 MARCH 2020
CLIENT: KALFRESH
DRAWN BY: LZ
CHECKED BY: PHE

Legend

- Site Boundary
- SRAIP Industrial Precinct
- 0.25m Contours
- Existing Boundaries
- Existing Easement
- Drainage
- Detention Basin
- Proposed Overland Flow Path
- Proposed Flow Path Q100
- Proposed Bio Basin
- Proposed Effluent Irrigation
- Proposed Digestate Irrigation
- Proposed Dam
- Proposed Digestate Storage
- Proposed Composting Area
- Lechate Pond
- Proposed Composter Lot Road Access
- Proposed Plant & Equipment
- Proposed Windrow & Finished Product
- Proposed Stormwater Basin
- Proposed Wagner Quarry Access - *(not part of the SRAIP proposal and subject to separate development approval)*
- Environmental Protection Area *(clearing within the Environmental Protection Area is subject to future Low Order Approval)*
- Low Order Queensland Waterway
- Medium Order Queensland Waterway
- Road Connection to Composter Area
- Access Easement for Wagners Road Alignment

Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: DCDB
Adjoining information: DCDB.
Contours: RPS Survey
Aerial photography: RPS Survey
Overland Flow Path: Aurecon

URBAN DESIGN
Level 4 HQ South
520 Wickham Street
PO Box 1559
Fortitude Valley QLD 4006
T +61 7 3539 9500
W rpsgroup.com

ATTACHMENT 2

Proposed Composter Layout
(RPS Group Plan 142489-08 Rev B, 19 February 2020)

DRAFT
For Discussion Only

PLANT & EQUIPMENT STORAGE
PARKING/ OFFICE AMENITIES

WASTE
STORAGE

AREA: 1.66ha

FINISHED PRODUCT
STORAGE AREA: 1.51ha

DAM ID: 4

Future Road Connection To Composter Lot

AREA: 2.72ha

COMPOSTER
AREA: 15.337HA

WINDROW PAD
(B) AREA: 2.57ha

DAM ID: 3

DAM ID: 2

FEEDSTOCK HOLDING BAY
AREA: 2.08ha

PROPOSED DAM

DAM ID: 1

WINDROW PAD
(A) AREA: 3.92ha

PROPOSED DIGESTATE
STORAGE

PROPOSED DIGESTATE IRRIGATION
18.000ha

0 10 20 30 40 60 1 : 2,000 @ A2

6200 CUNNINGHAM HWY KALBAR

PROPOSED COMPOSTER LAYOUT

PLAN REF:	**142489-08**
Rev No:	**B**
DATE:	19 FEBRUARY 2020
CLIENT:	KALFRESH
DRAWN BY:	LZ
CHECKED BY:	PHE/CH

Legend

- Site Boundary
- 0.25m Contours
- Existing Boundaries
- Proposed Flow Path
- Proposed Effluent Irrigation
- Proposed Digestate Irrigation
- Proposed Dam
- Proposed Digestate Storage
- Proposed Composting Lot
- Lechate Pond
- Propsoed Composter Lot Road Access
- Proposed Plant & Equipment
- Proposed Windrow & Finished Product
- Proposed Stormwater Basin

Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

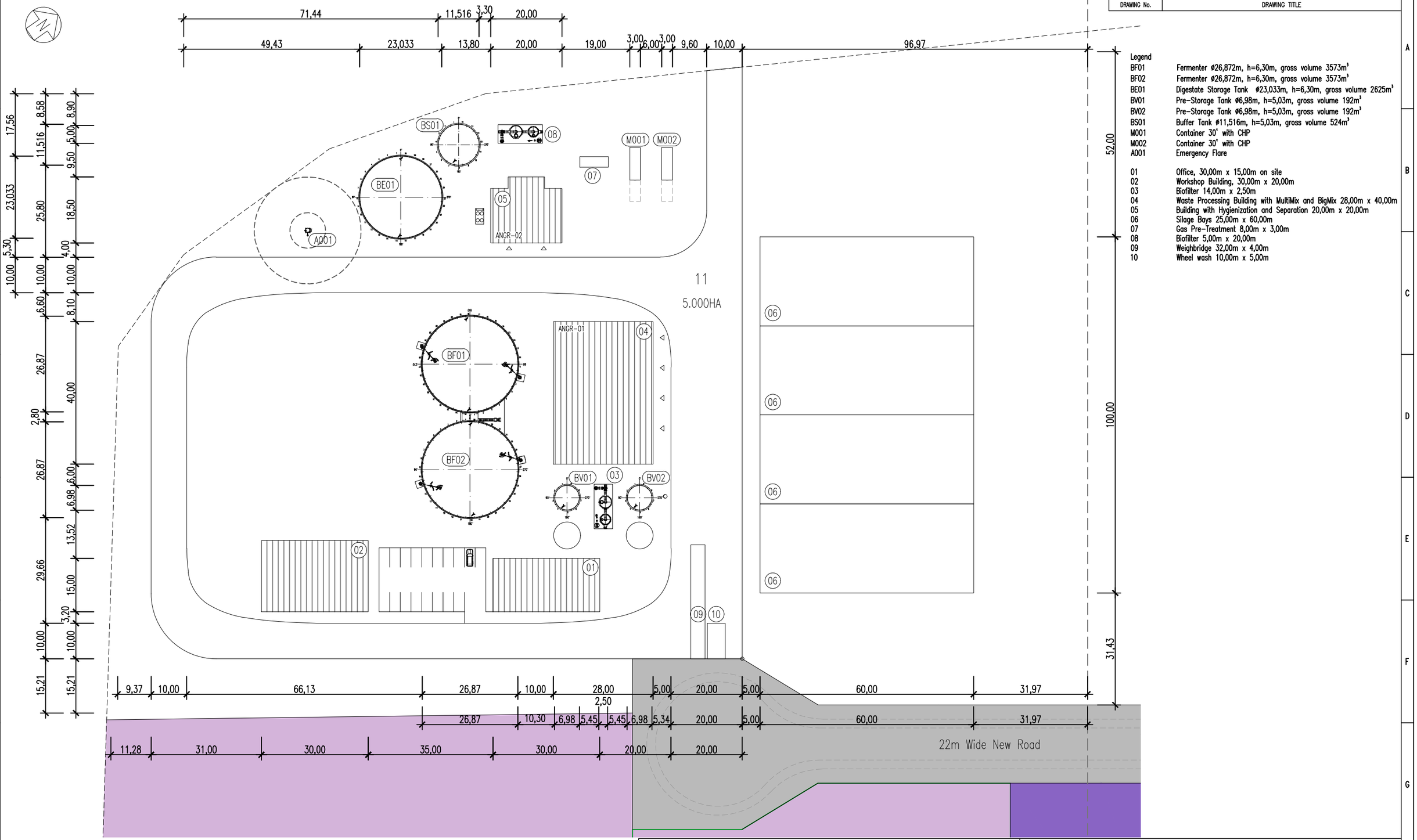
The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: DCDB
Adjoining information: DCDB.
Contours: RPS Survey
Aerial photography: RPS Survey
Overland Flow Path: Aurecon

URBAN DESIGN
Level 4 HQ South
520 Wickham Street
PO Box 1559
Fortitude Valley QLD 4006
T +61 7 3539 9500
W rpsgroup.com

ATTACHMENT 3

Kalfresh Bioenergy Facility Site Layout
(Aquatec Maxcon Pty Ltd Drawing No. 21876A-012 Rev A, 5 March 2020)



REFERENCE DRAWING LIST

DRAWING No.	DRAWING TITLE

Legend

BF01	Fermenter ø26,872m, h=6,30m, gross volume 3573m³
BF02	Fermenter ø26,872m, h=6,30m, gross volume 3573m³
BE01	Digestate Storage Tank ø23,033m, h=6,30m, gross volume 2625m³
BV01	Pre-Storage Tank ø6,98m, h=5,03m, gross volume 192m³
BV02	Pre-Storage Tank ø6,98m, h=5,03m, gross volume 192m³
BS01	Buffer Tank ø11,516m, h=5,03m, gross volume 524m³
M001	Container 30' with CHP
M002	Container 30' with CHP
A001	Emergency Flare
01	Office, 30,00m x 15,00m on site
02	Workshop Building, 30,00m x 20,00m
03	Biofilter 14,00m x 2,50m
04	Waste Processing Building with MultiMix and BigMix 28,00m x 40,00m
05	Building with Hygienization and Separation 20,00m x 20,00m
06	Silage Bays 25,00m x 60,00m
07	Gas Pre-Treatment 8,00m x 3,00m
08	Biofilter 5,00m x 20,00m
09	Weighbridge 32,00m x 4,00m
10	Wheel wash 10,00m x 5,00m

SITE LAYOUT – PLAN
SCALE 1:500

STATUS

FOR TENDER

AQUATEC MAXCON PTY. LTD.
WATER TREATMENT TECHNOLOGY AND EQUIPMENT
A.B.N. 45 002 250 482 P.O. BOX 455 IPSWICH QLD.4305
PH. (61) 7 3813 7100
FAX. (61) 7 3813 7199
EMAIL. enquiries@aquatecmaxcon.com.au

DIMENSIONS ARE IN MILLIMETRES U.N.O.
DO NOT SCALE THIS DRAWING
IF IN DOUBT ASK

DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH THE FOLLOWING STANDARDS – CURRENT EDITION

AS 1074	STEEL TUBES & TUBULAR FOR ORDINARY SERVICE	AS 1665	WELDING OF ALUMINIUM STRUCTURES	AS 4100	STEEL STRUCTURES AS 4041 CLASS 3 PRESSURE PIPE UNO.
AS 1100	TECHNICAL DRAWING	AS 1657	FIXED PLATFORMS, WALKWAYS, STAIRWAYS & LADDERS	AS 4130	POLYETHYLENE PIPE FOR PRESSURE PURPOSES
AS 1101	GRAPHIC SYMBOLS FOR GENERAL ENGINEERING	AS 1734	ALUMINIUM FLAT SHEET, COILED SHEET & PLATE	AS/NZS 4792	HOT-DIP GALVANISED COATINGS ON FERROUS ARTICLES
AS 1111	ISO METRIC COMMERCIAL NUTS & SCREWS	AS 1866	ALUMINIUM EXTRUDED ROD, BAR, SOLID & HOLLOW SHAPES	ASTM A53	SEAMLESS STEEL TUBES FOR PRESSURE PURPOSES
AS 1112	ISO METRIC HEXAGON NUTS	AS 2129	FLANGES FOR PIPES, VALVES & FITTINGS	API 5L	E.R.W. LINEPIPE FOR HIGH PRESSURE APPLICATIONS
AS 1163	STRUCTURAL STEEL HOLLOW SECTIONS	AS 2280	DUCTILE IRON PRESSURE PIPES & FITTINGS	ALL LEVELS ARE EXPRESSED IN METRES	
AS 1275	METRIC SCREW THREADS FOR FASTENERS	AS 2837	STAINLESS STEEL BARS & SEMI-FINISHED PRODUCTS	ALL SCREW THREADS TO BE COATED WITH NICKEL ANTI-SEIZE	
ASTM A240	STAINLESS STEEL PLATE, SHEET & STRIP	AS 3518	ABS PIPES & FITTINGS FOR PRESSURE APPLICATIONS	ALL ITEMS TO BE TAGGED IN ACCORDANCE WITH Q.A. PROCEDURES	
AS 1460	FITTINGS FOR USE WITH POLYETHYLENE PIPES	AS 1594	HOT-ROLLED PLATES, FLOORPLATES & SLABS	ALL WELDS TO BE 6mm CFW TO AS 1554 CAT C.P. UNO OR TO MATCH THINNEST PLATE SIZE	
AS 1477	PVC PIPES & FITTINGS FOR PRESSURE APPLICATIONS	AS 3679	STRUCTURAL STEEL AS 4041 FABRICATION OF PRESS. PIPE.	ALL FLANGES TO BE WELDED OFF CENTRE U.N.O.	
AS 1554	STRUCTURAL STEEL WELDING	AS 4087	METALLIC FLANGES FOR WATERWORKS PURPOSES	TRACEABILITY REQUIRED?	NO

DIMENSIONAL TOLERANCES (U.N.O)	
MACHINING	
UP TO 500mm	±0.25mm
ABOVE 500mm	±0.50mm
STRUCTURAL	
UP TO 150mm	±1.0mm
150mm TO 1000mm	±1.5mm
ABOVE 1000mm	±3.0mm
ANGULAR	±0.5°

REV.	REVISION DESCRIPTION	DATE	BY	APPROVED
A	FOR TENDER	05-03-20	A.P.D.	

SCALE	AS SHOWN
DRAWN	A.P.D.
DATE	05-03-20
CHECKED	
DATE	
APPROVED	
DATE	

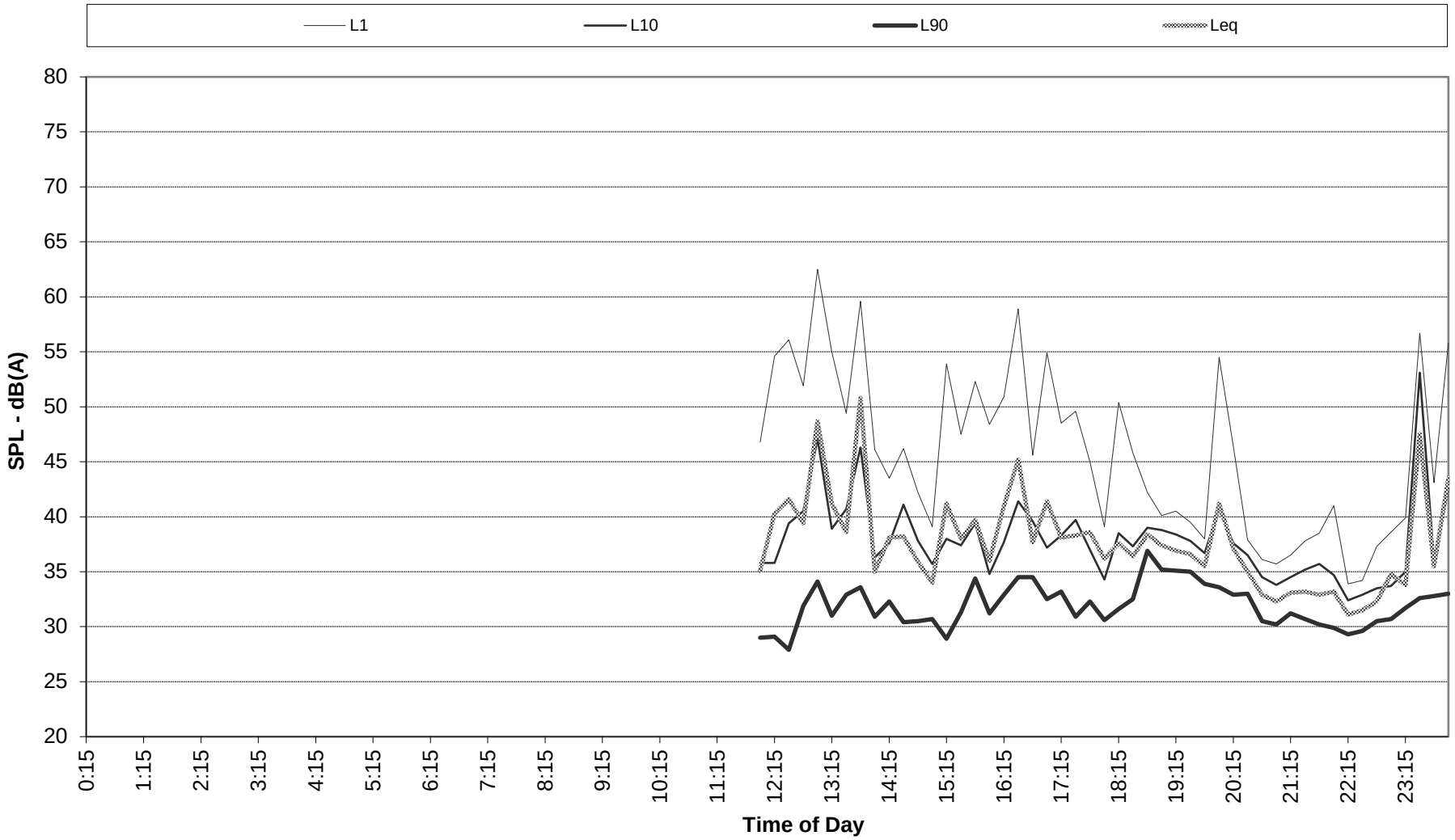
CLIENT: KALFRESH
PROJECT: KALFRESH BIOENERGY FACILITY
TITLE: SITE LAYOUT
CLIENT REFERENCE | SUPPLIED DRAWING NUMBER | A1 | DRAWING NUMBER: 21876A – 012 | REV.: A

LAST PLOTTED BY ARCHIE DOLLIENTE ON 05/03/20 AT 3:55 PM

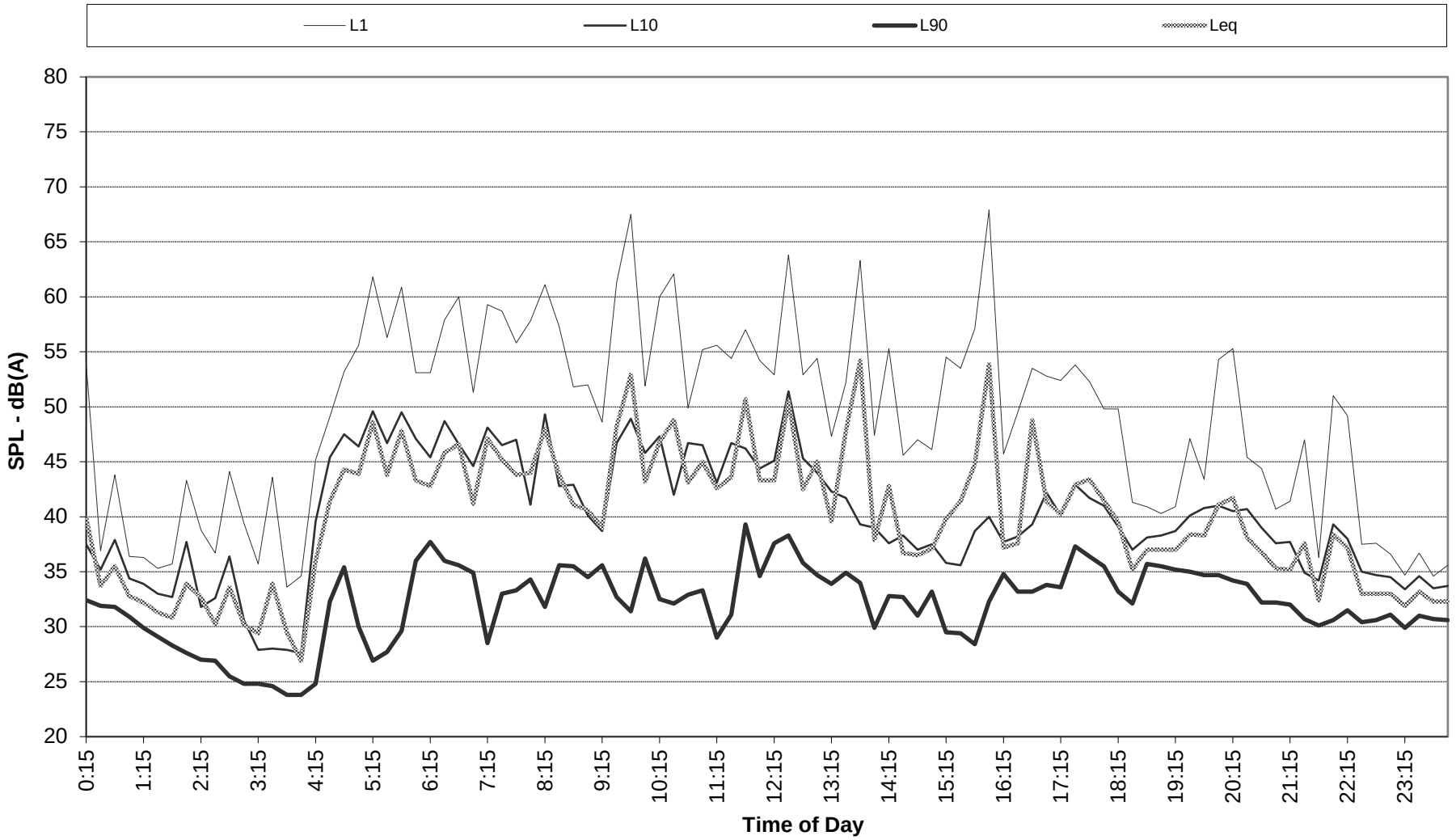
ATTACHMENT 4

Noise Datalogger Recorded Noise Levels

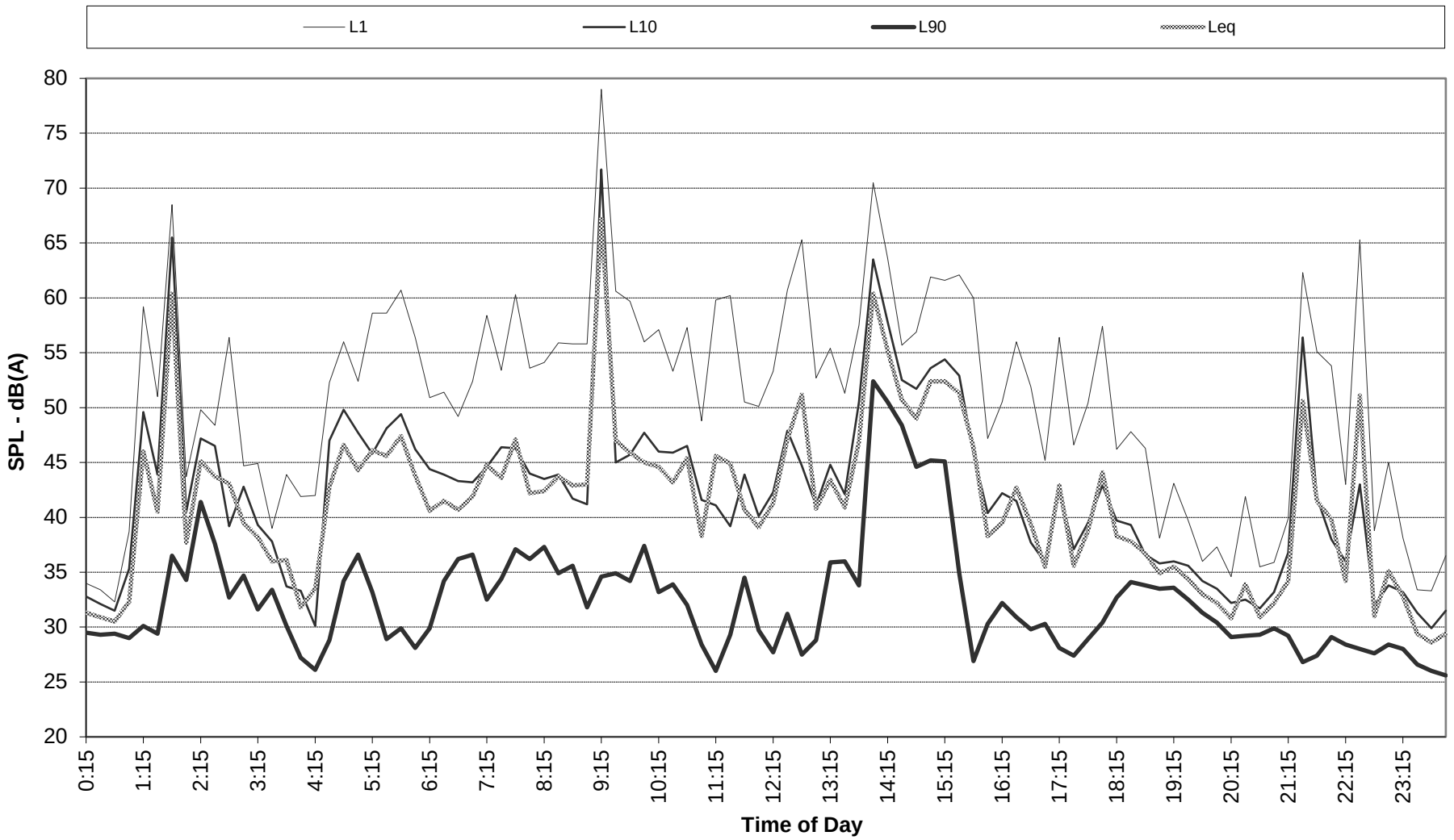
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 19-Oct-2018 - Friday



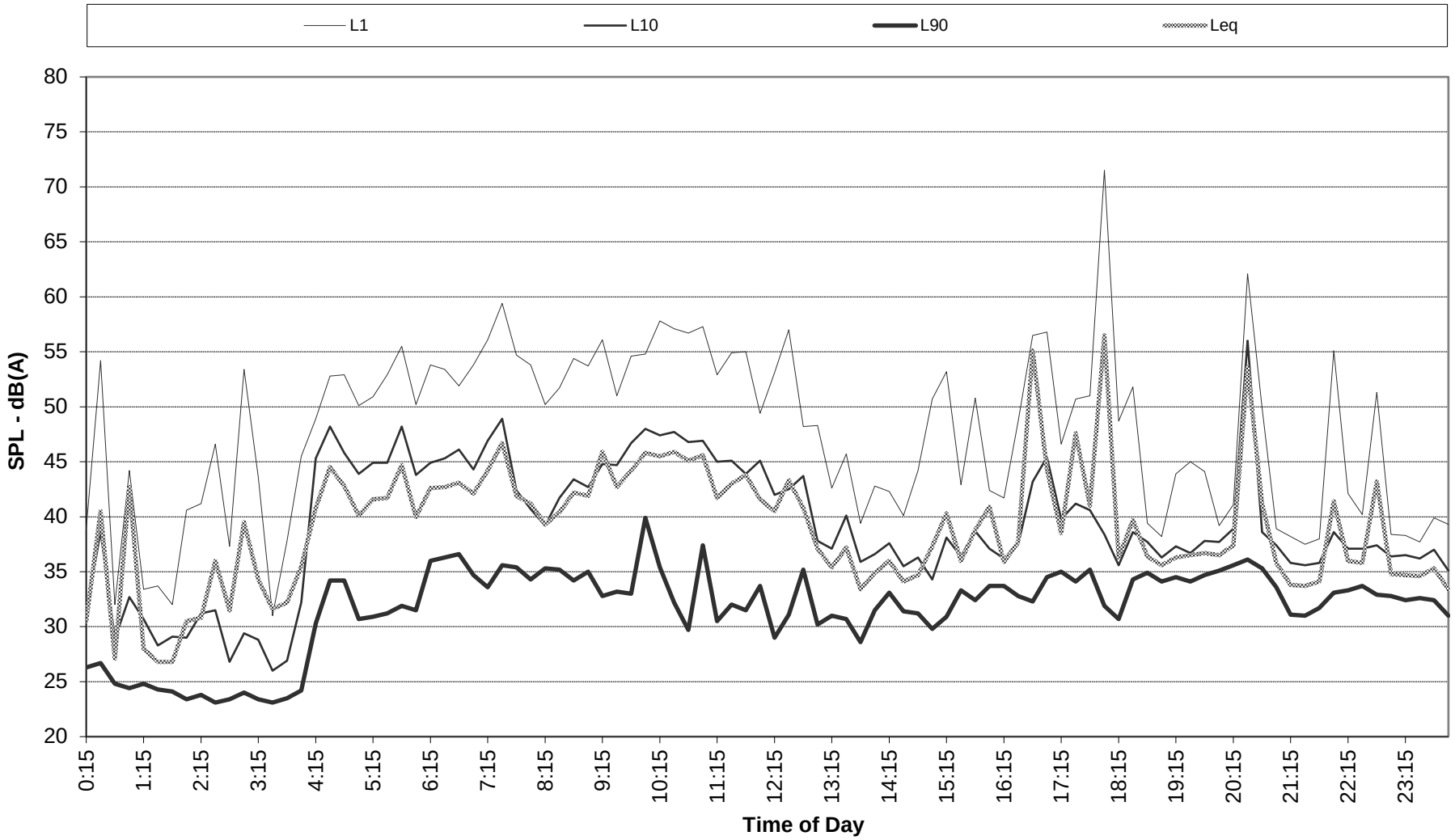
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 20-Oct-2018 - Saturday



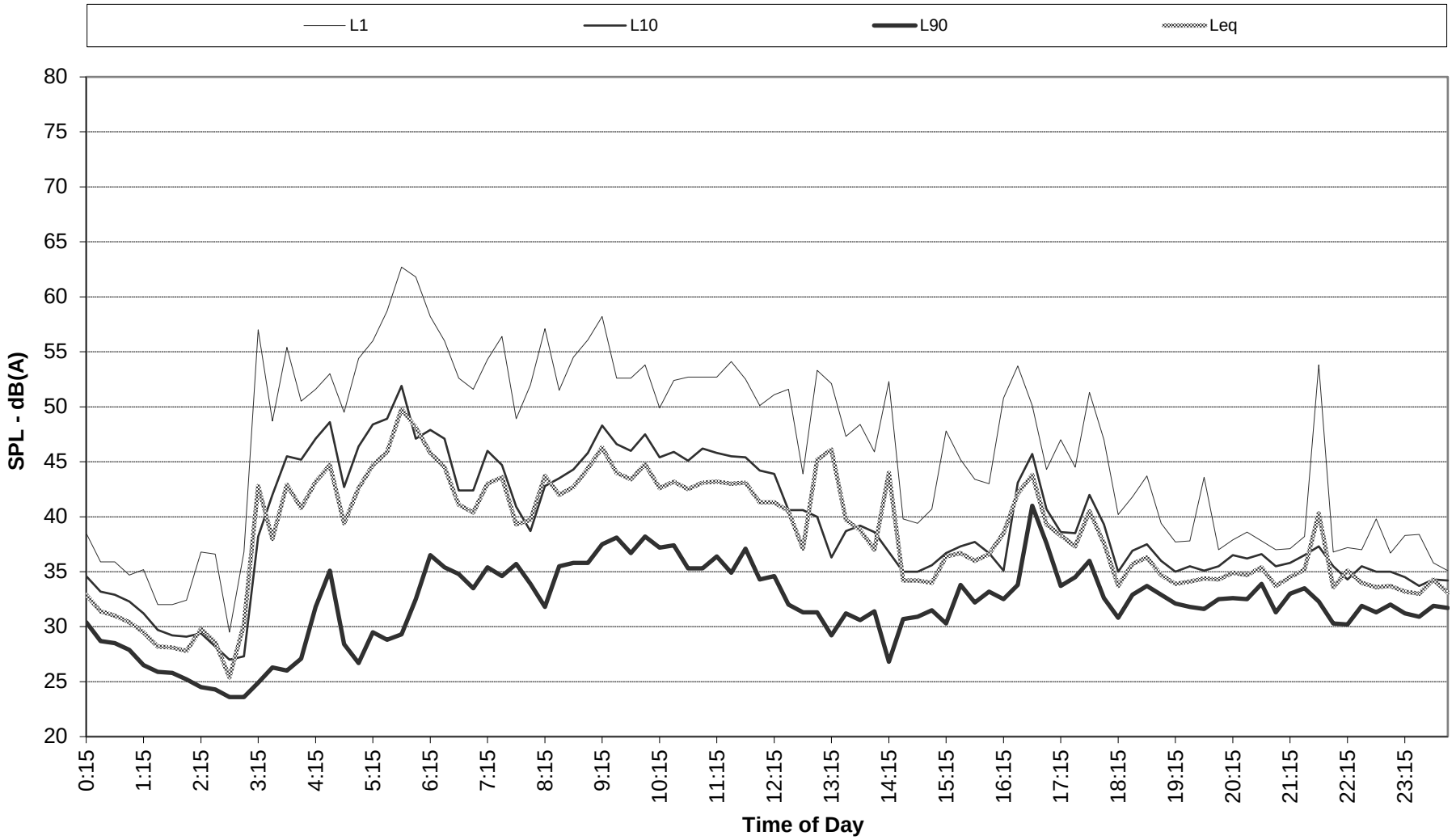
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 21-Oct-2018 - Sunday



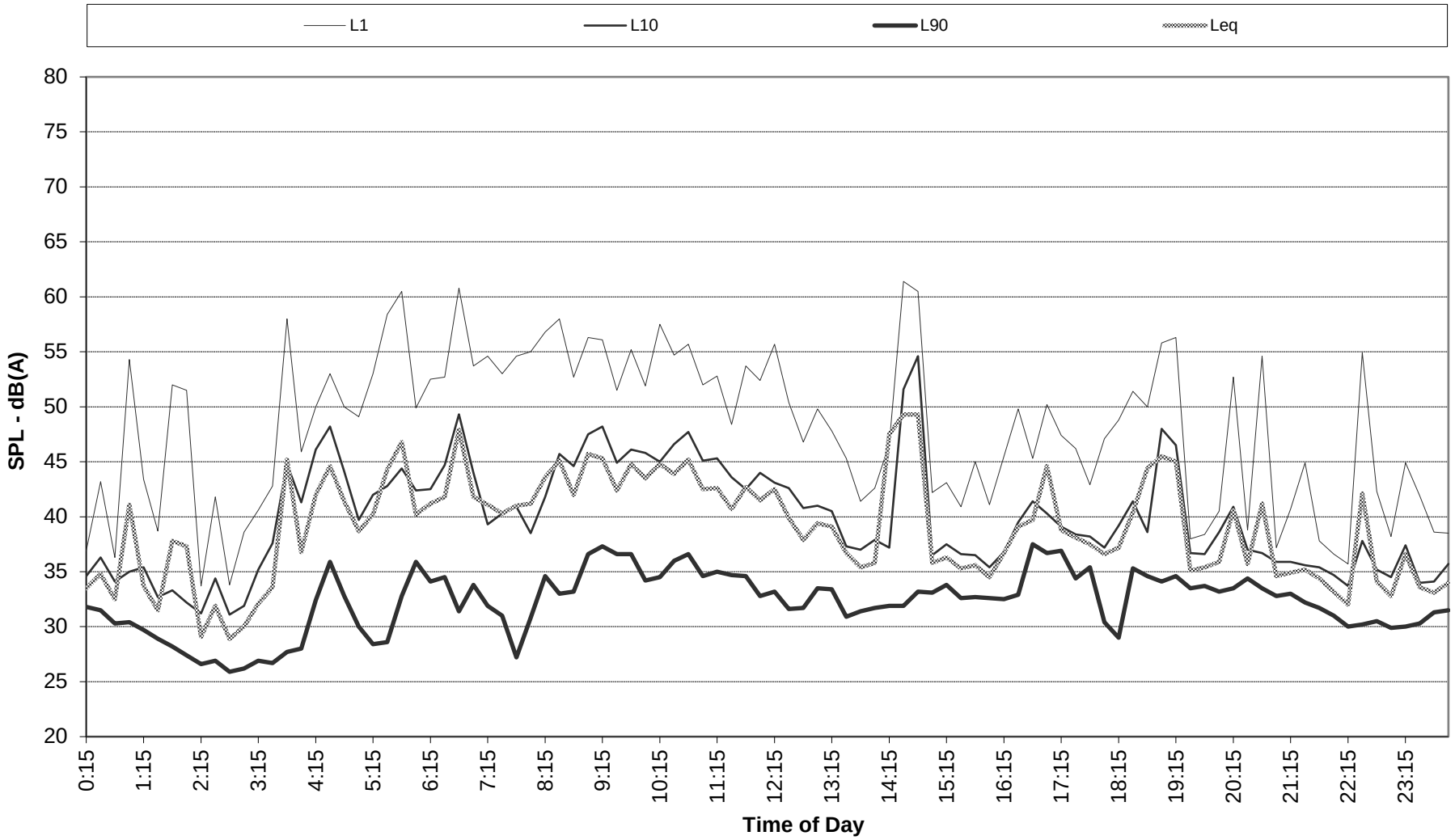
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 22-Oct-2018 - Monday



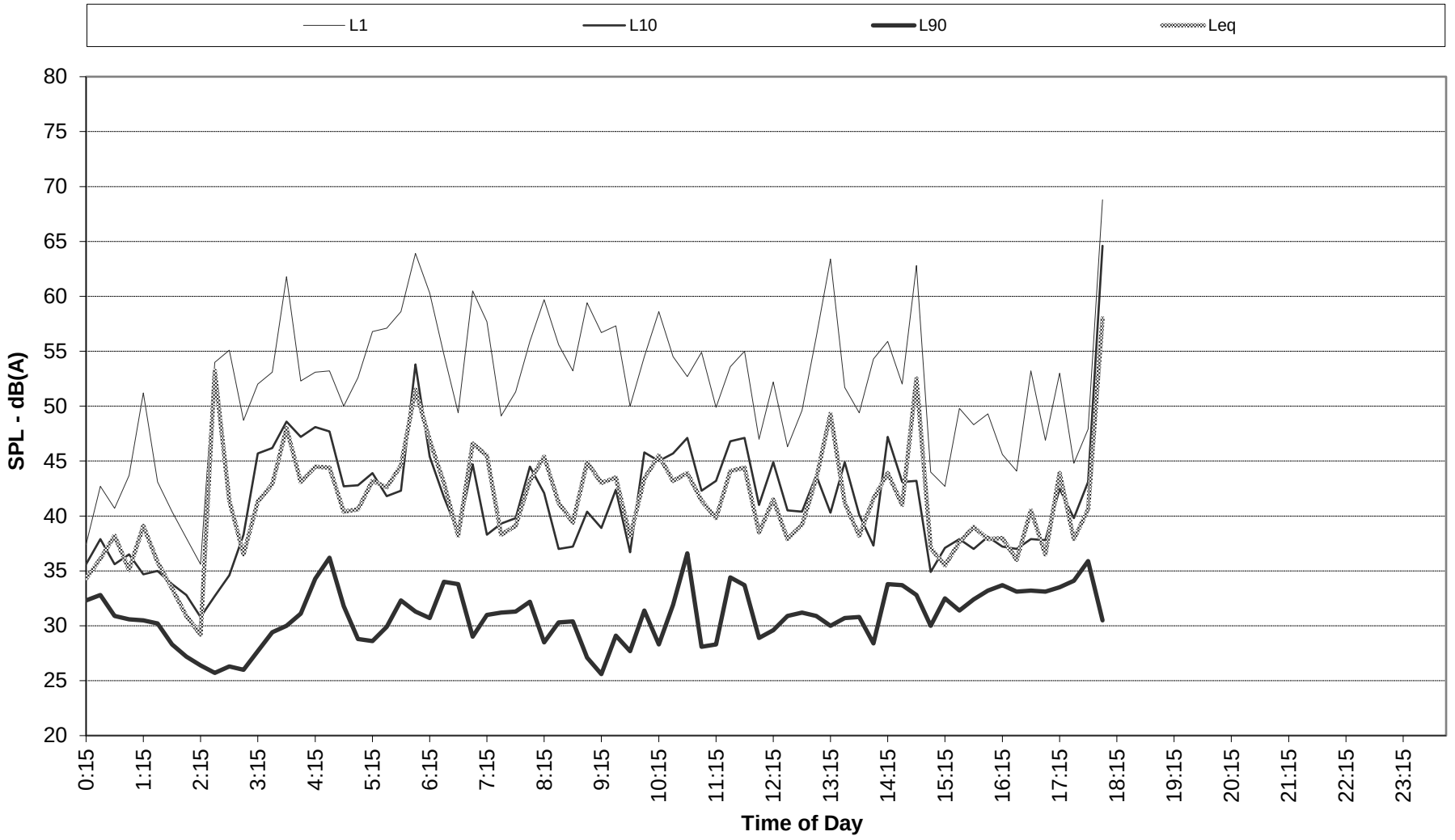
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 23-Oct-2018 - Tuesday



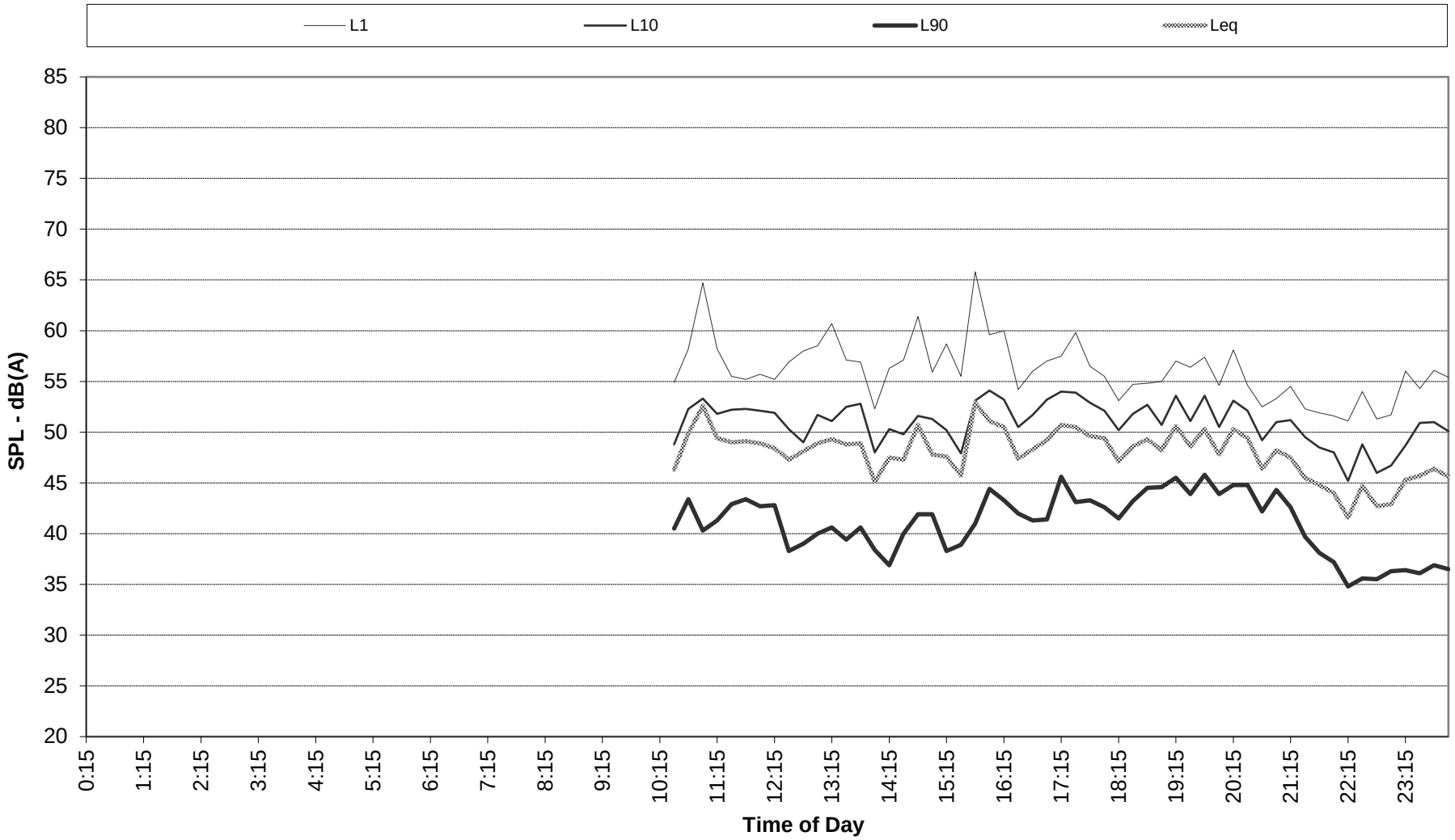
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 24-Oct-2018 - Wednesday



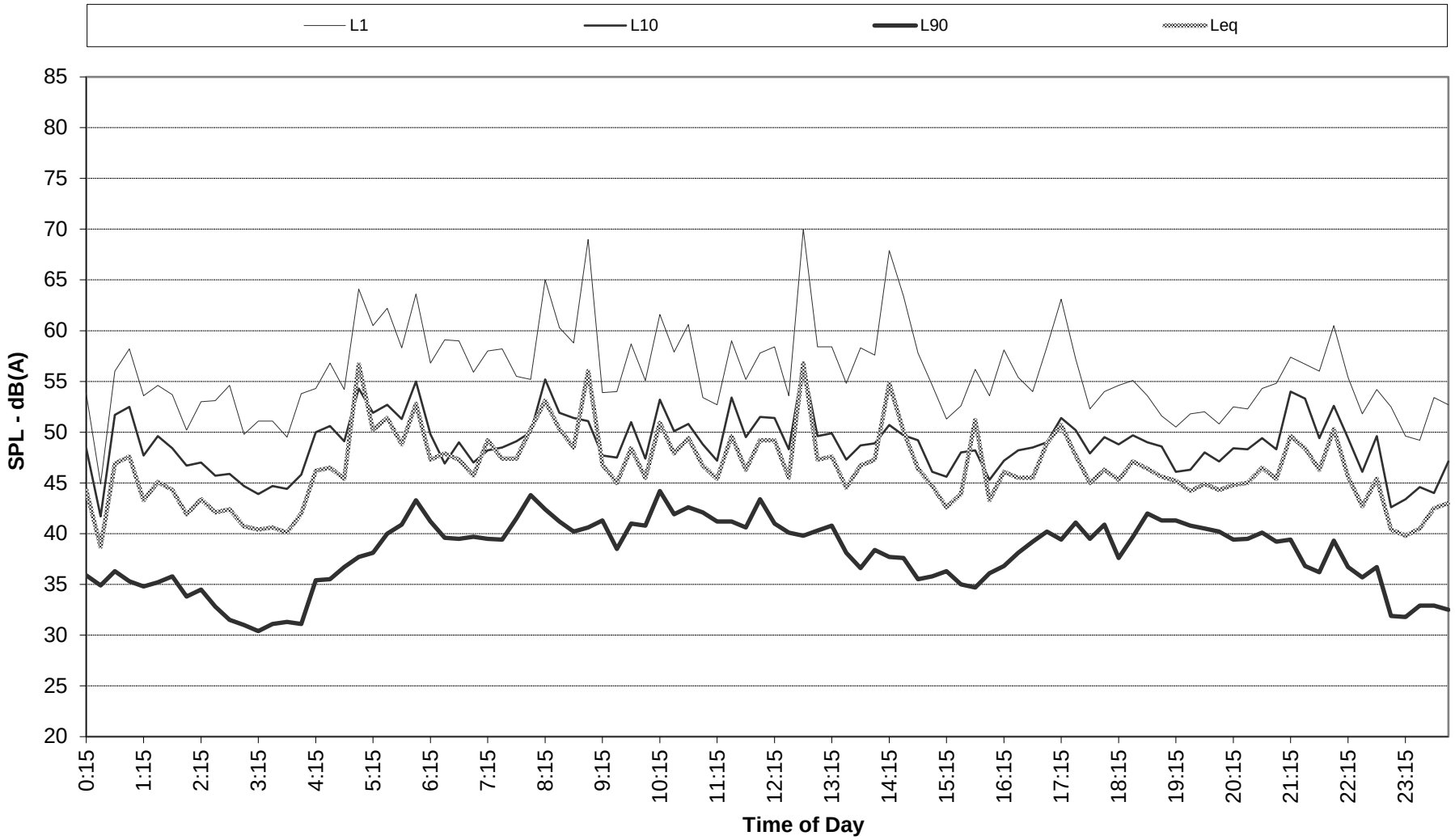
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 1 (North) - 25-Oct-2018 - Thursday



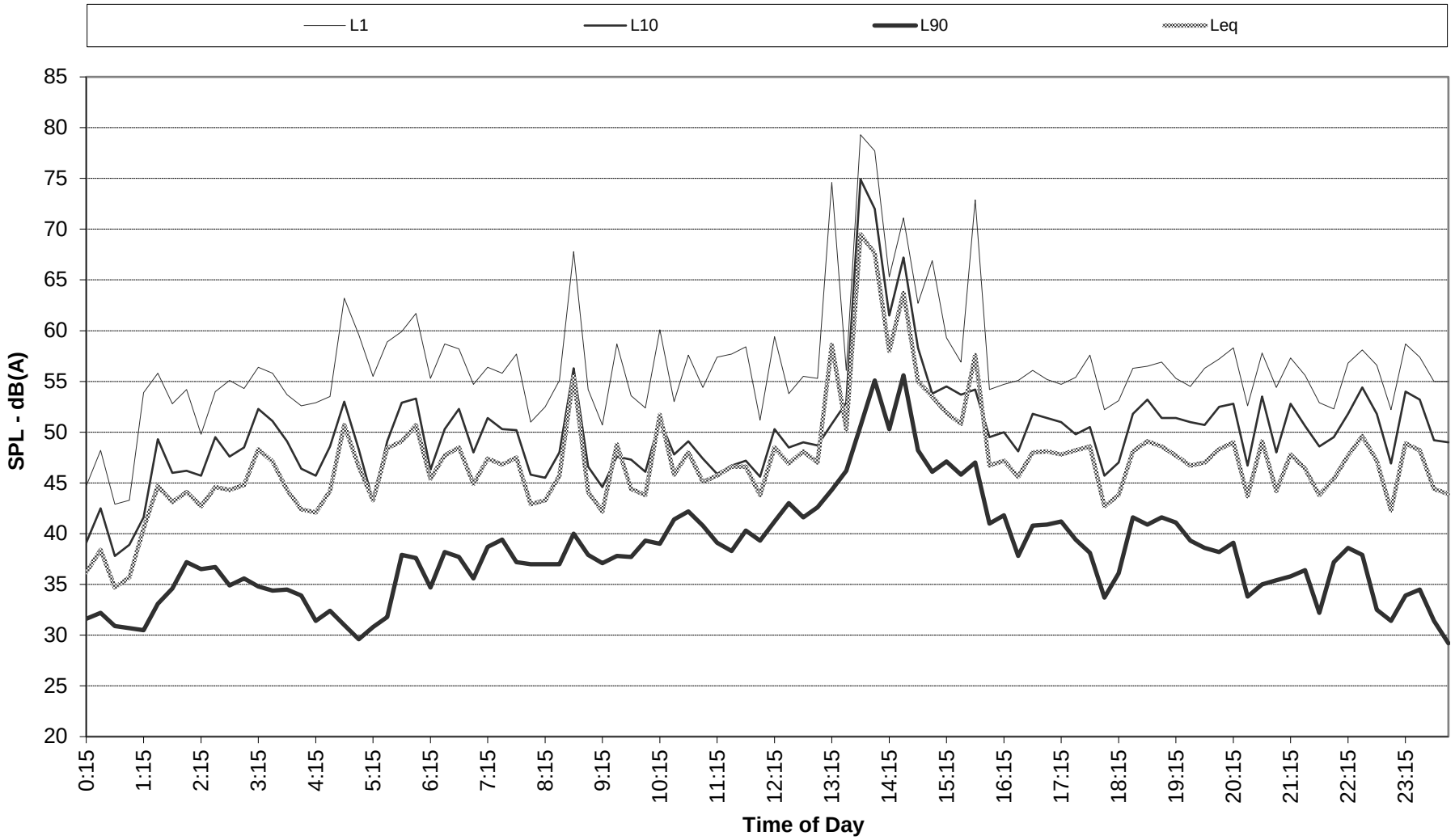
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 19-Oct-2018 - Friday



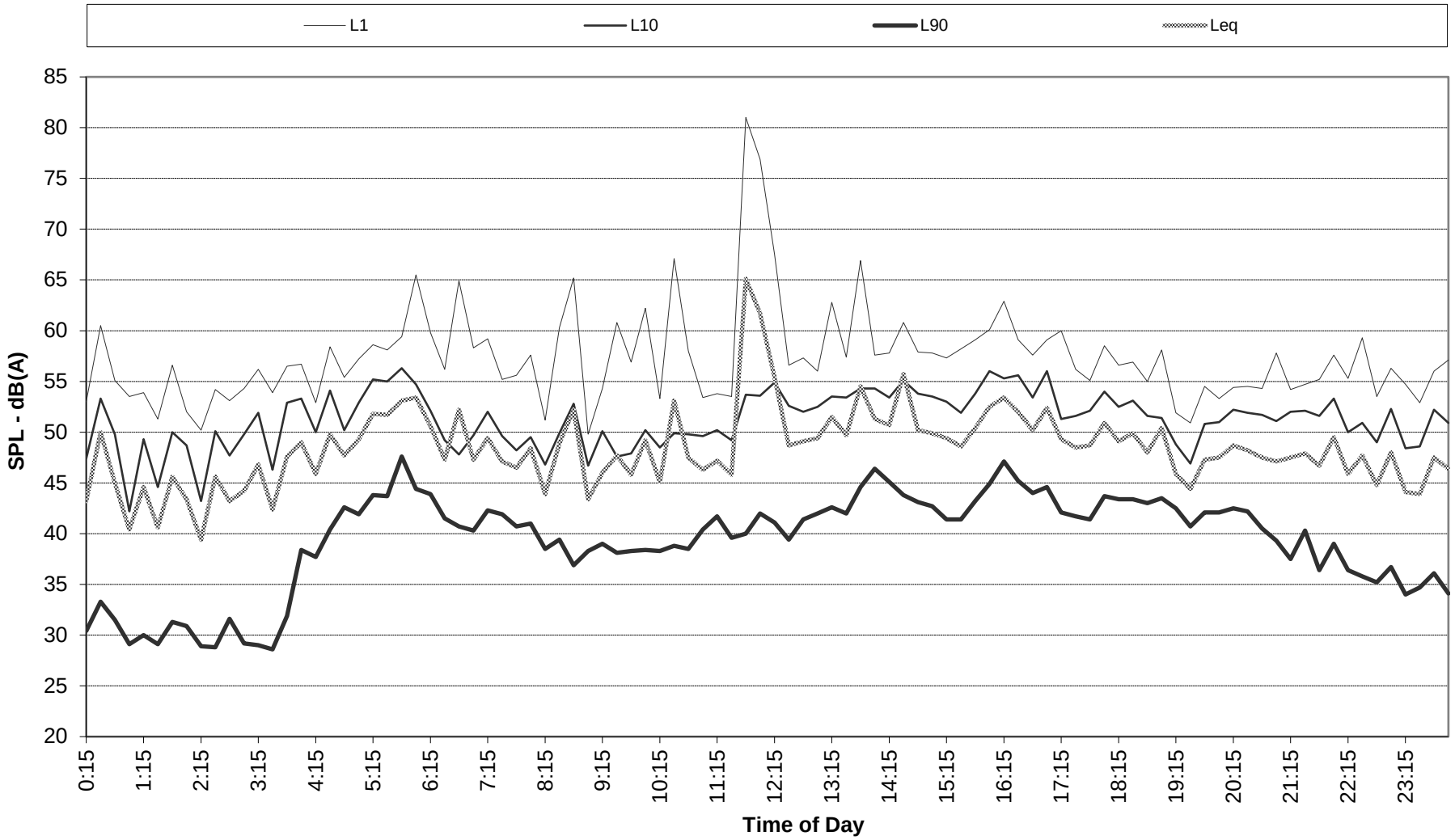
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 20-Oct-2018 - Saturday



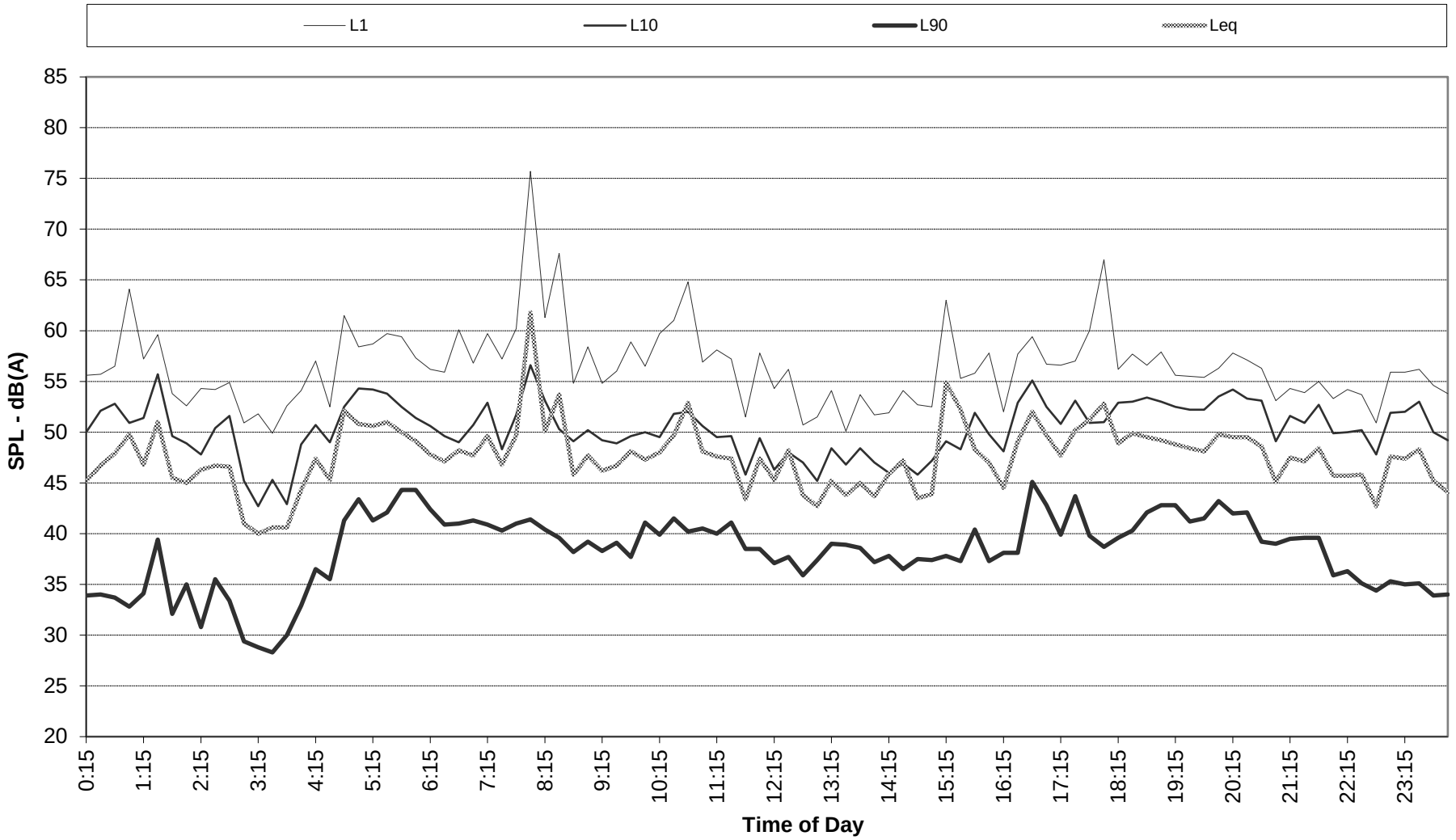
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 21-Oct-2018 - Sunday



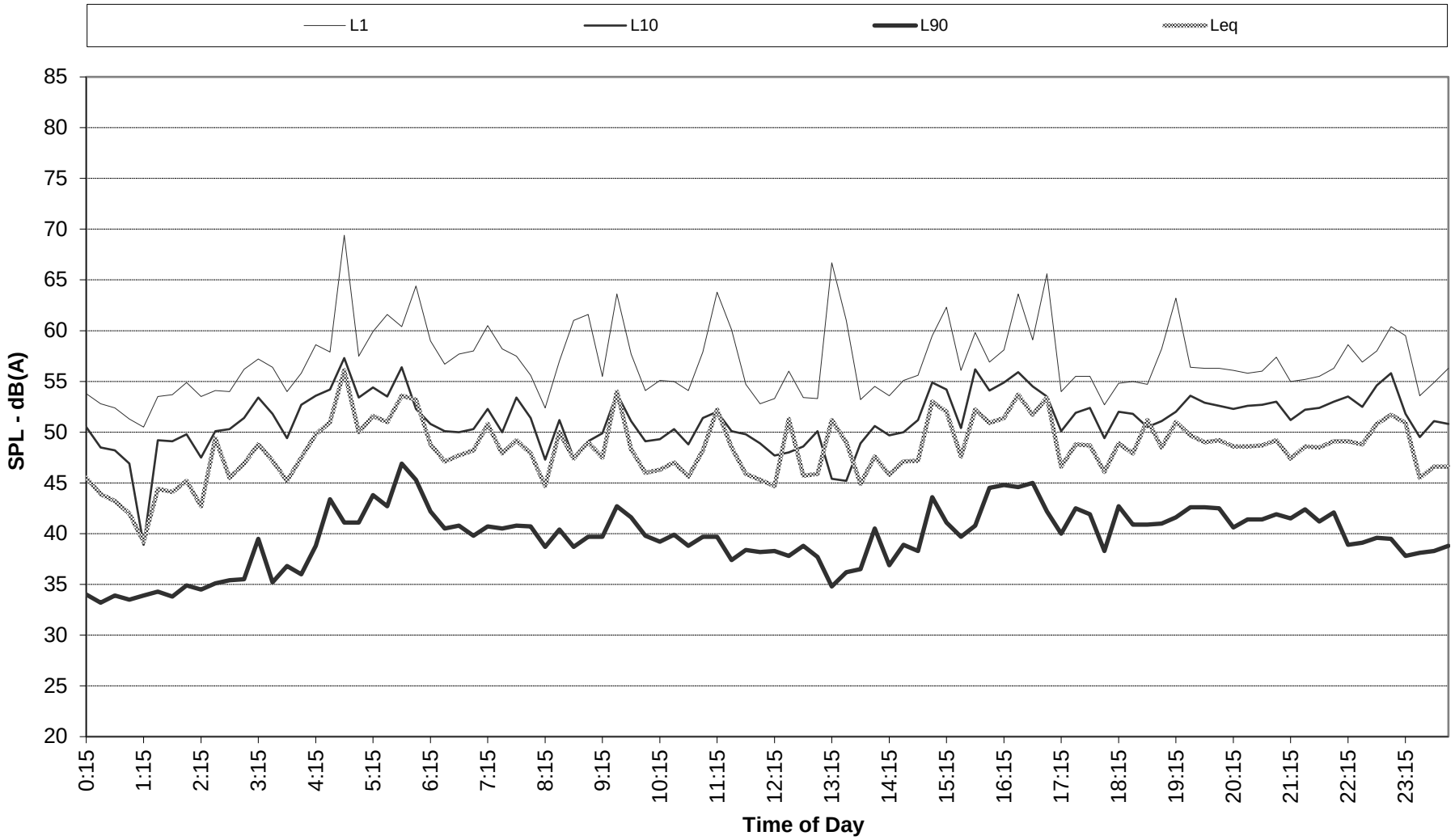
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 22-Oct-2018 - Monday



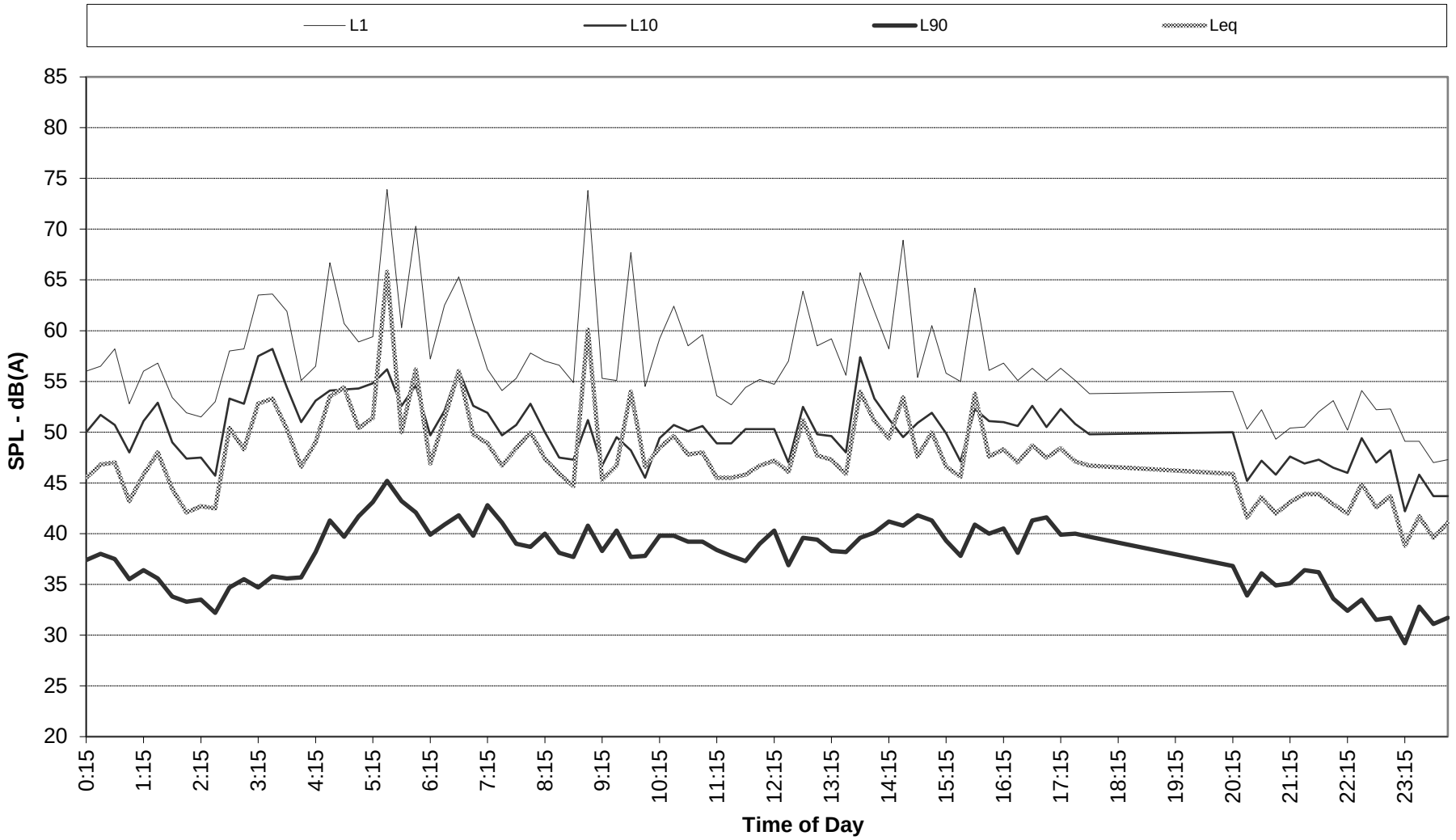
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 23-Oct-2018 - Tuesday



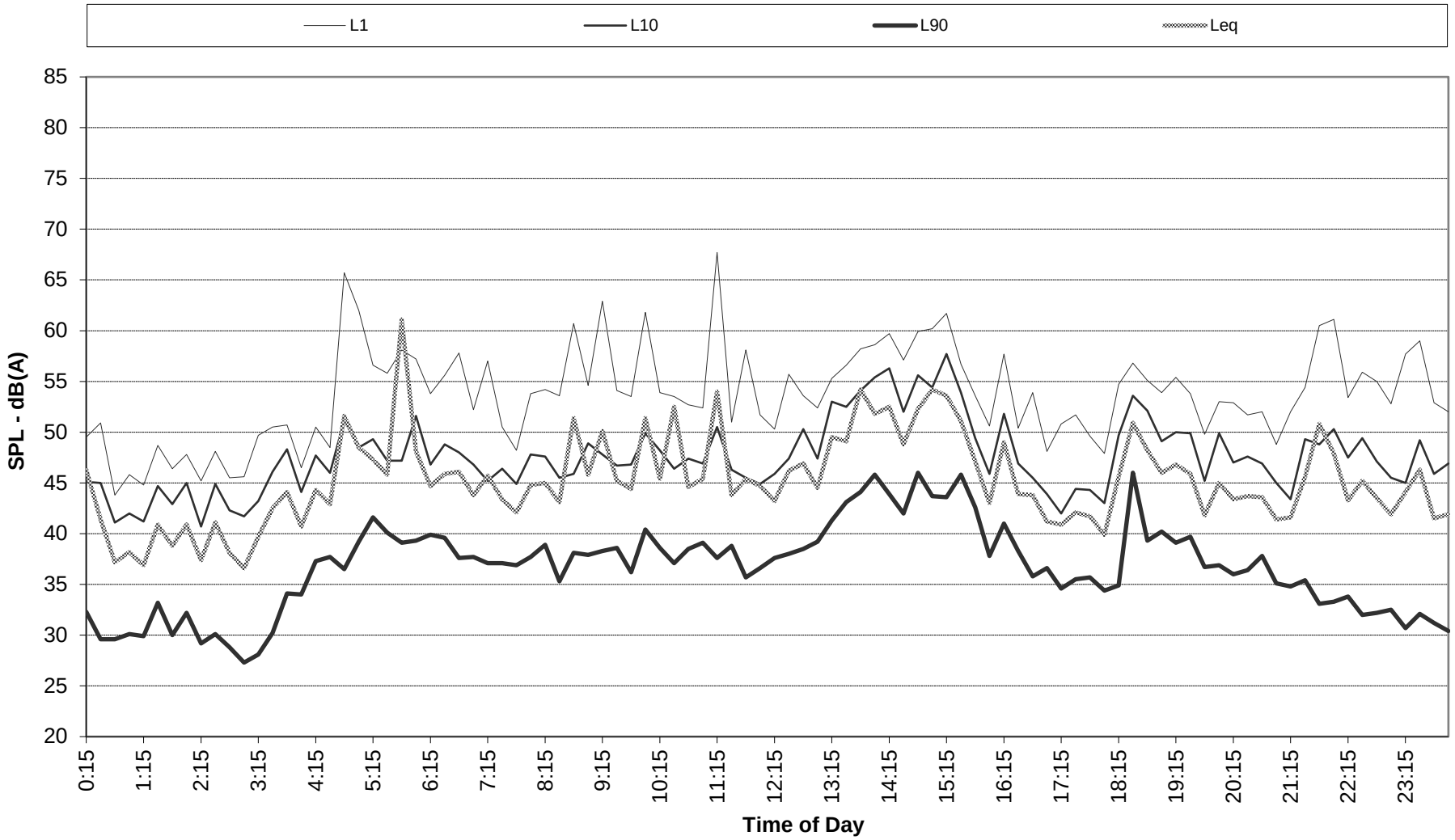
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 24-Oct-2018 - Wednesday



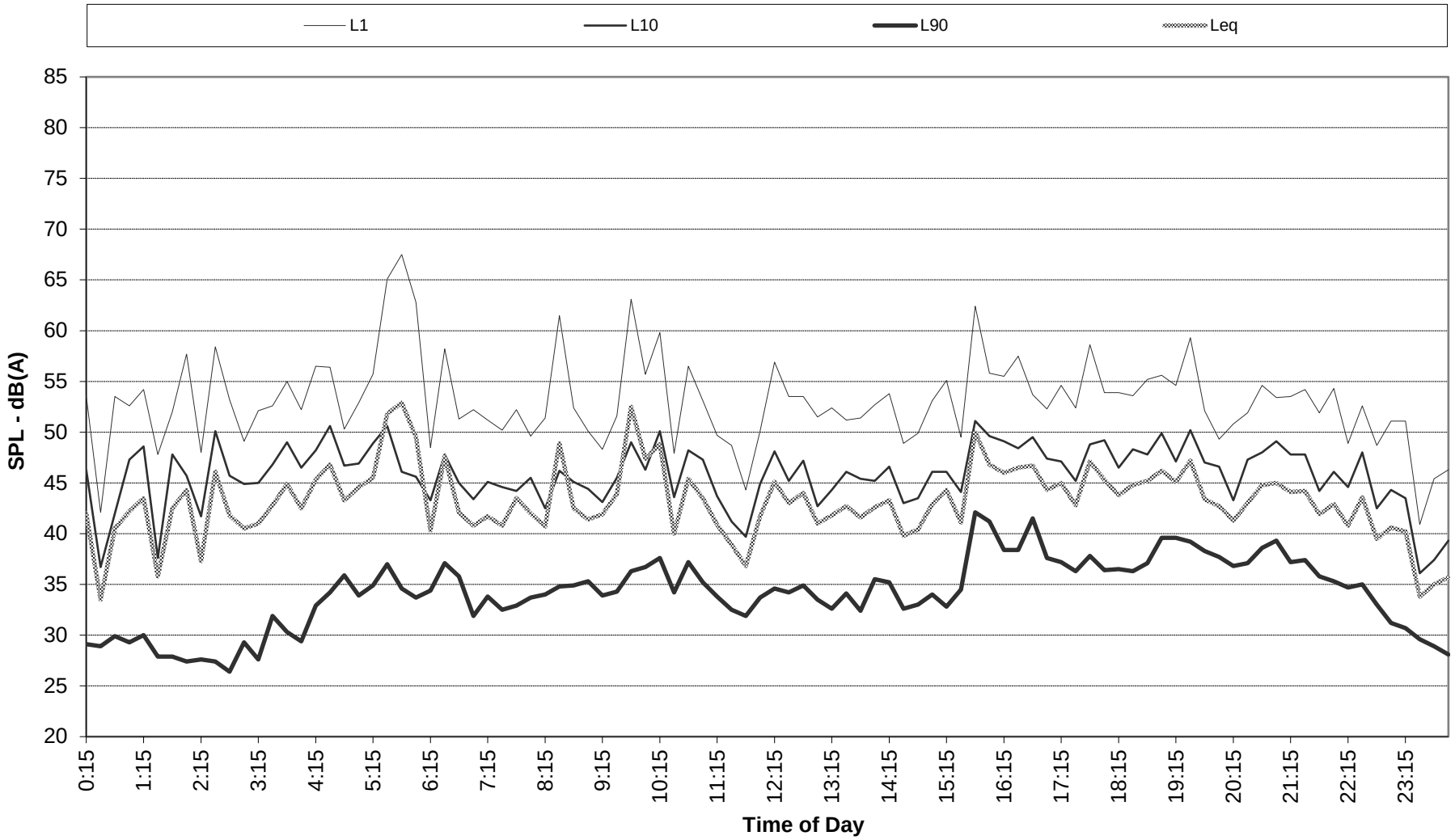
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 25-Oct-2018 - Thursday



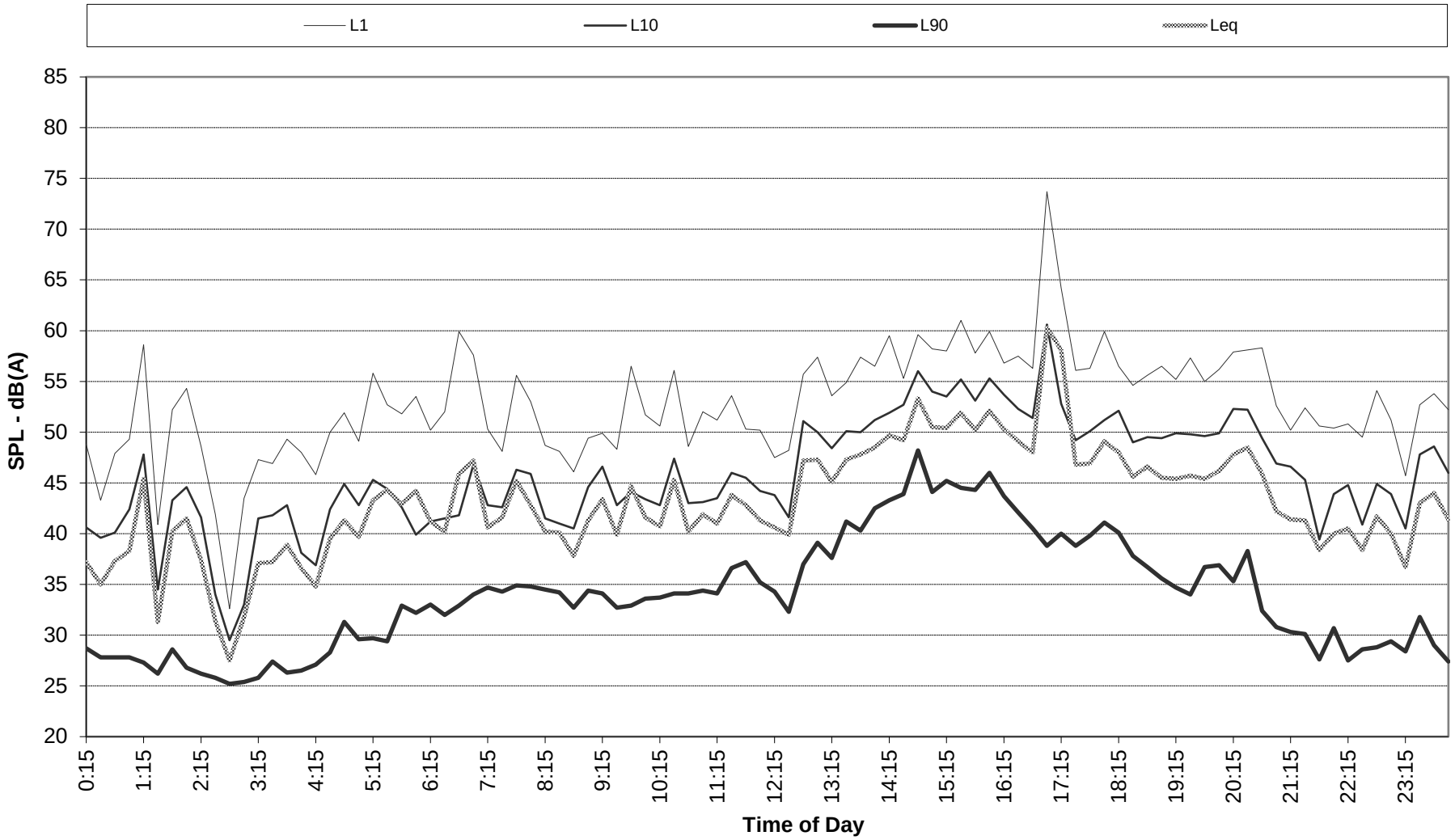
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 26-Oct-2018 - Friday



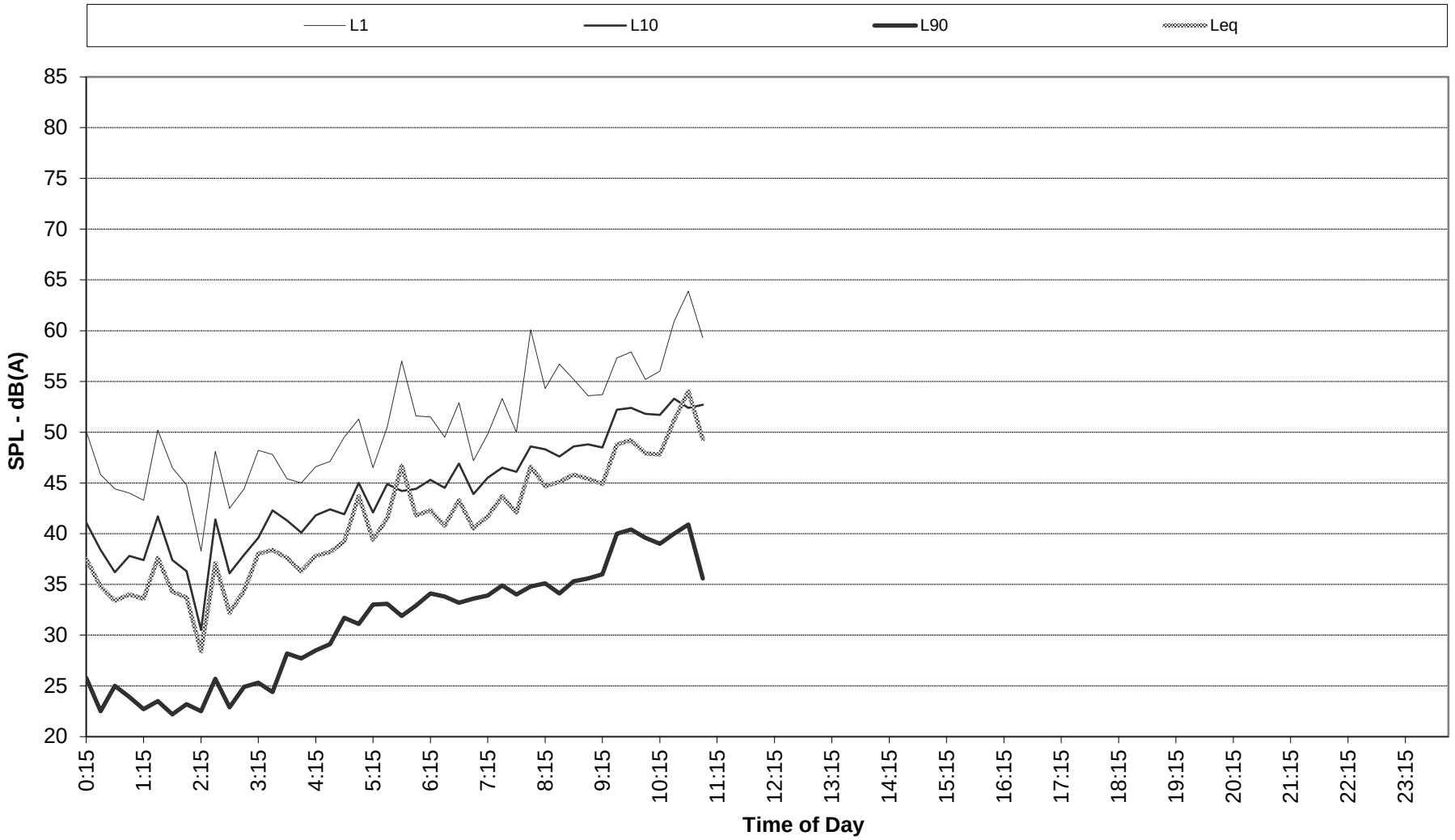
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 27-Oct-2018 - Saturday



Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 28-Oct-2018 - Sunday



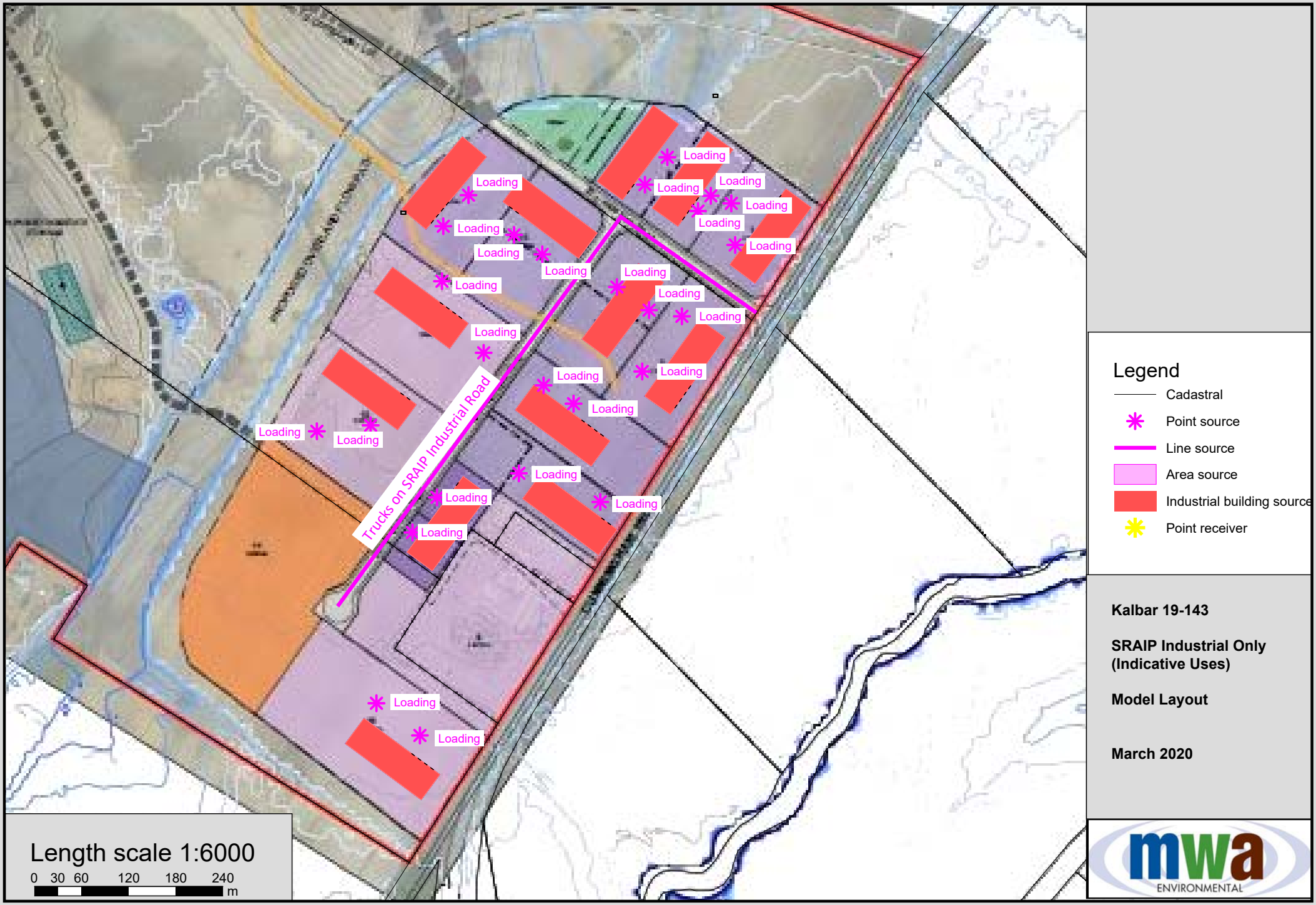
Recorded Statistical Noise Levels for Kalbar 19-143 - Location 2 (South) - 29-Oct-2018 - Monday

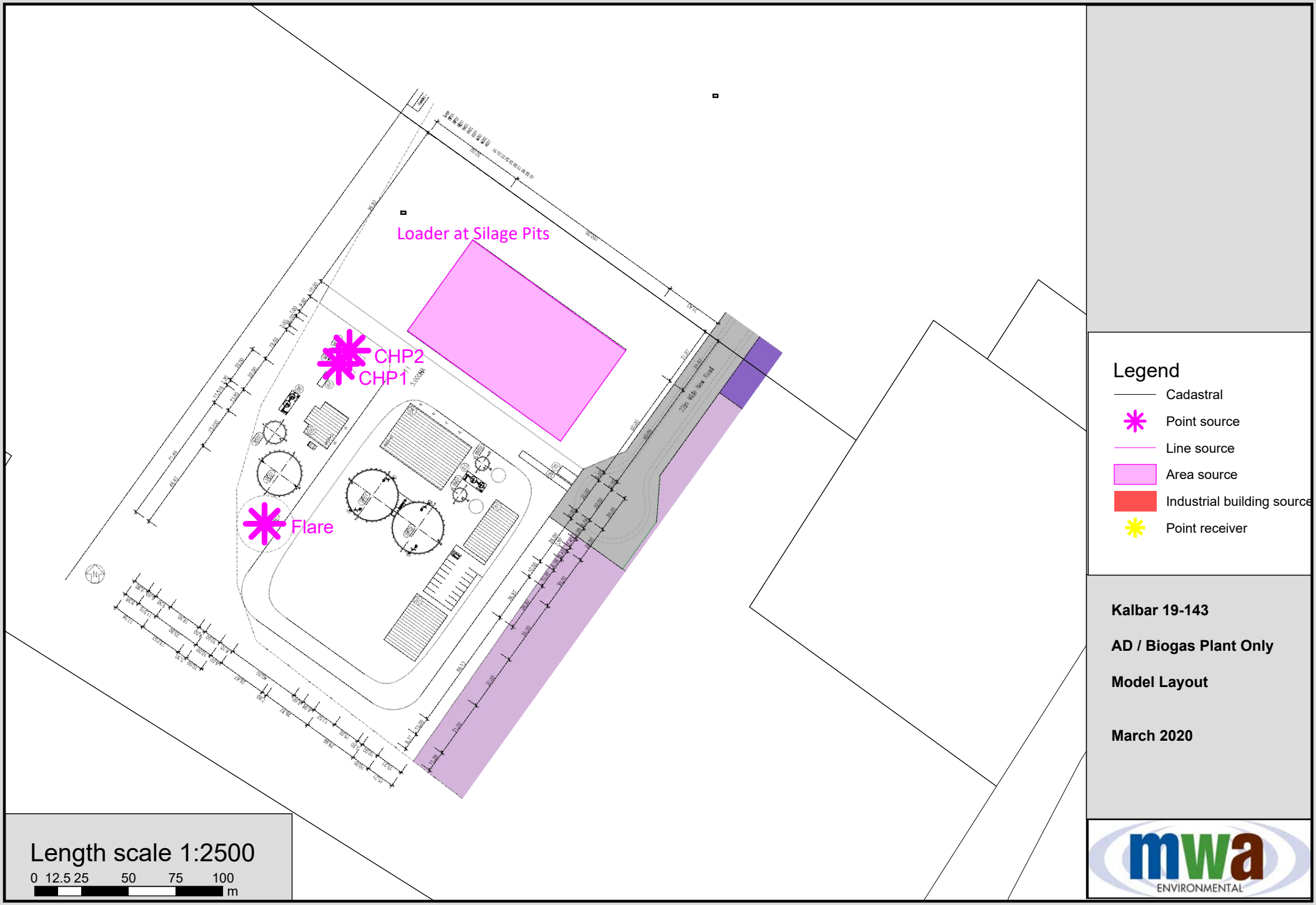


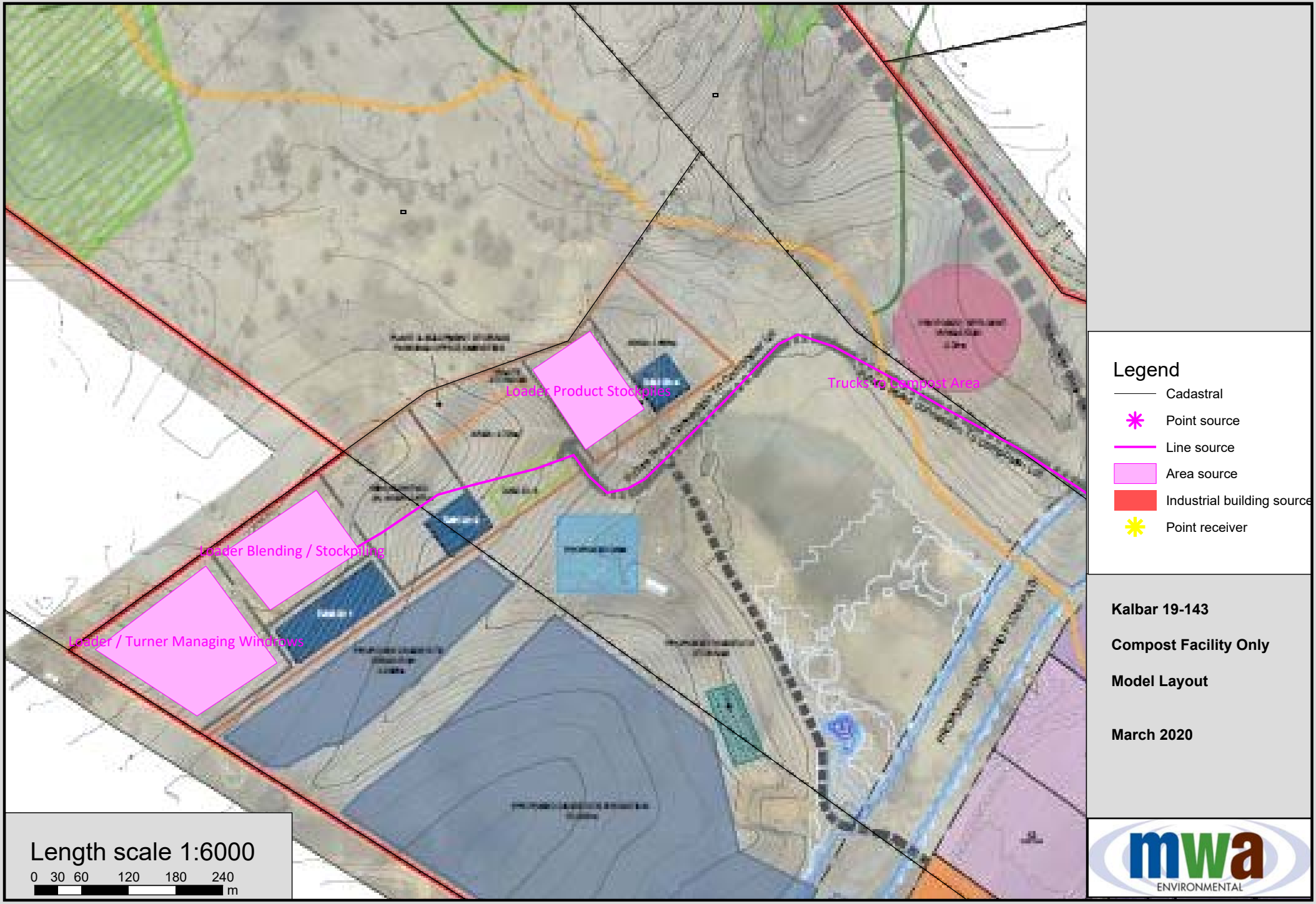
ATTACHMENT 5

SoundPLAN

Model Layout Plans

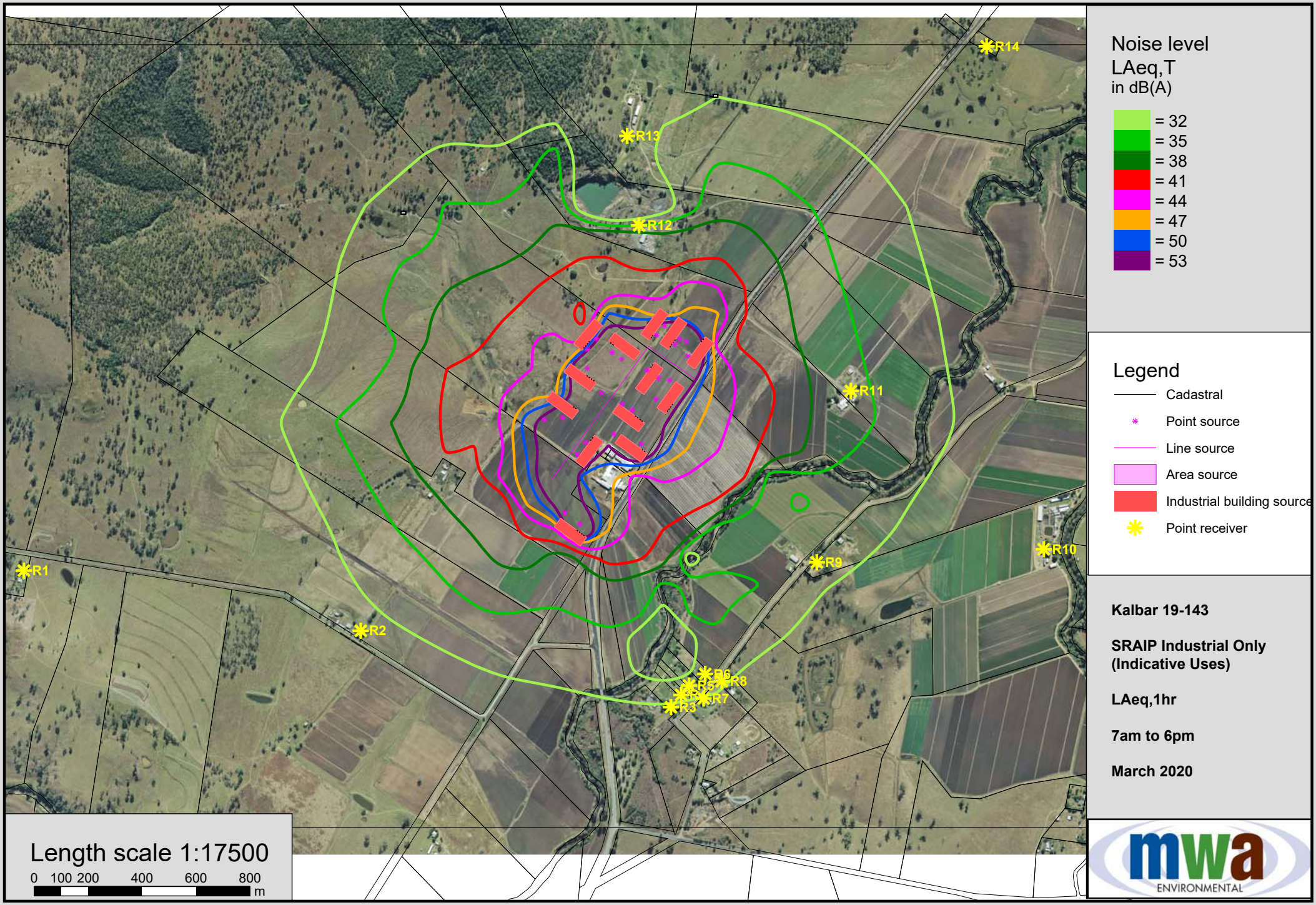

Loading
Trucks on SRAIP Industrial Road
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
Kalbar 19-143
SRAIP Industrial Only
(Indicative Uses)
Model Layout
March 2020
Length scale 1:6000
0 30 60 120 180 240
m
mwa
ENVIRONMENTAL

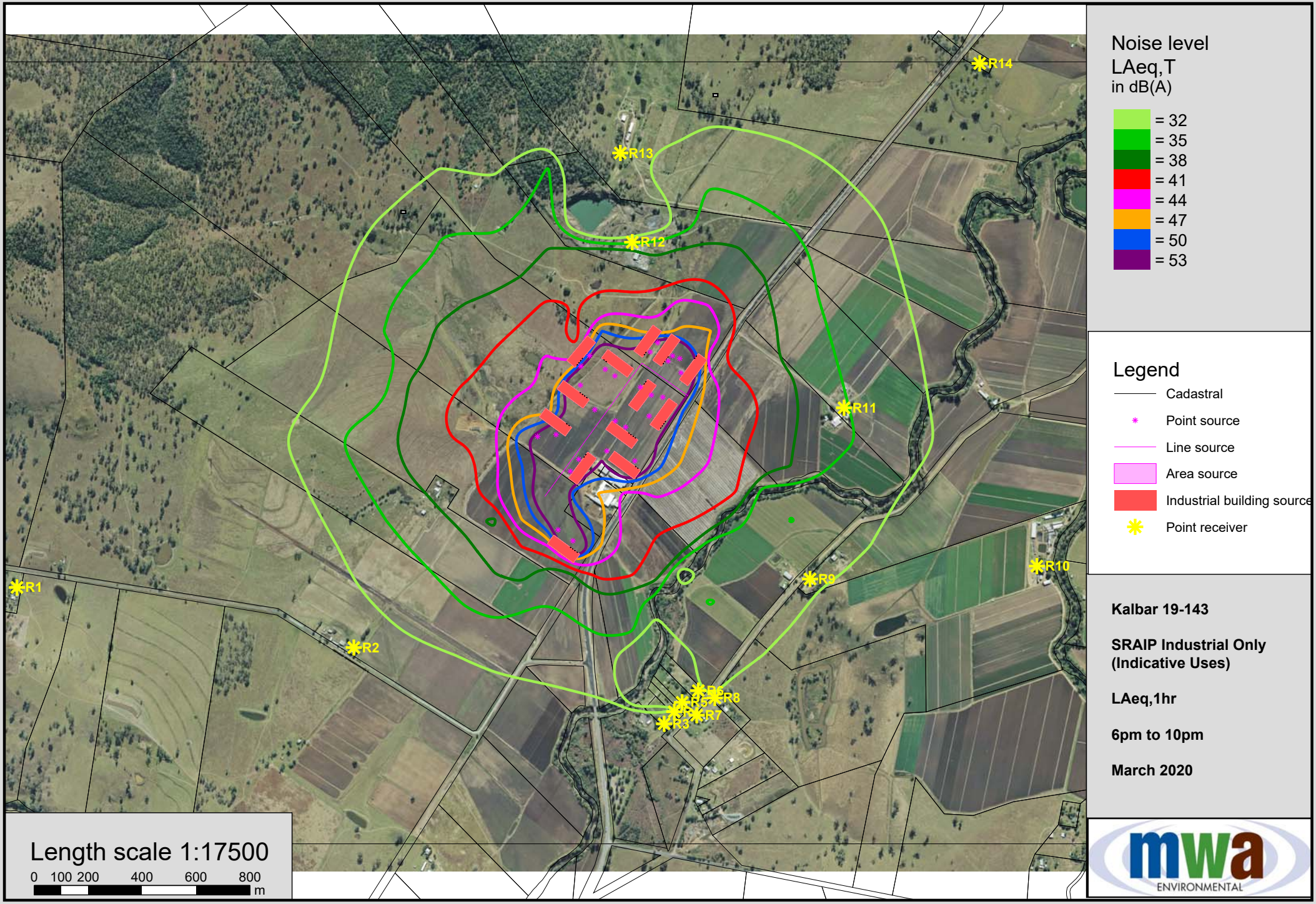

Loader at Silage Pits
CHP2
CHP1
Flare
Length scale 1:2500
0 12.5 25 50 75 100
m
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
Kalbar 19-143
AD / Biogas Plant Only
Model Layout
March 2020
mwa
ENVIRONMENTAL

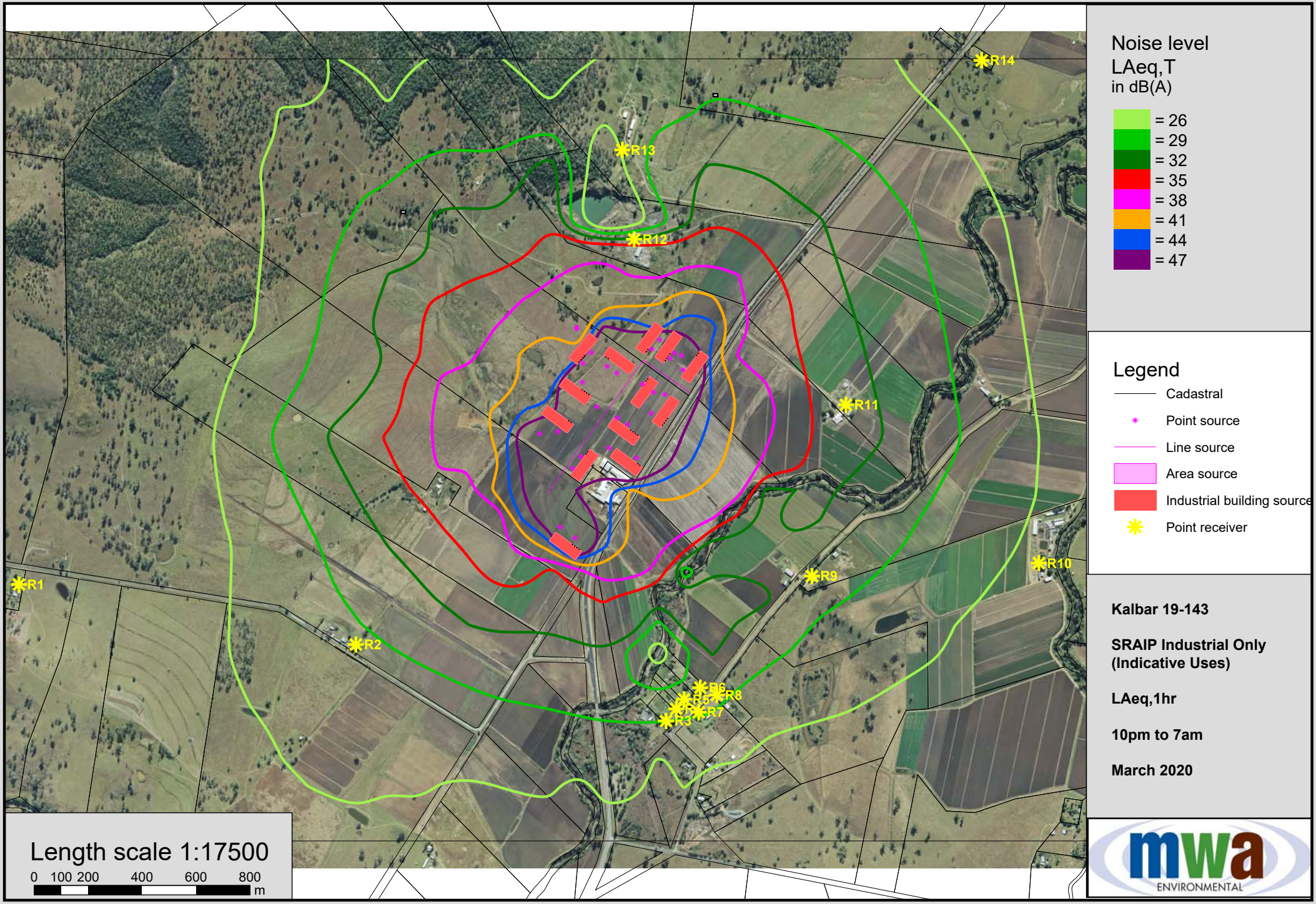

Loader Product Stockpiles
Trucks to Compost Area
Loader Blending / Stockpiling
Loader / Turner Managing Windrows
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
Kalbar 19-143
Compost Facility Only
Model Layout
March 2020
Length scale 1:6000
0 30 60 120 180 240
m
mwa
ENVIRONMENTAL

ATTACHMENT 6

Predicted Noise Levels
SRAIP Industrial Subdivision Only (indicative uses)


Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
SRAIP Industrial Only
(Indicative Uses)
LAeq,1hr
7am to 6pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

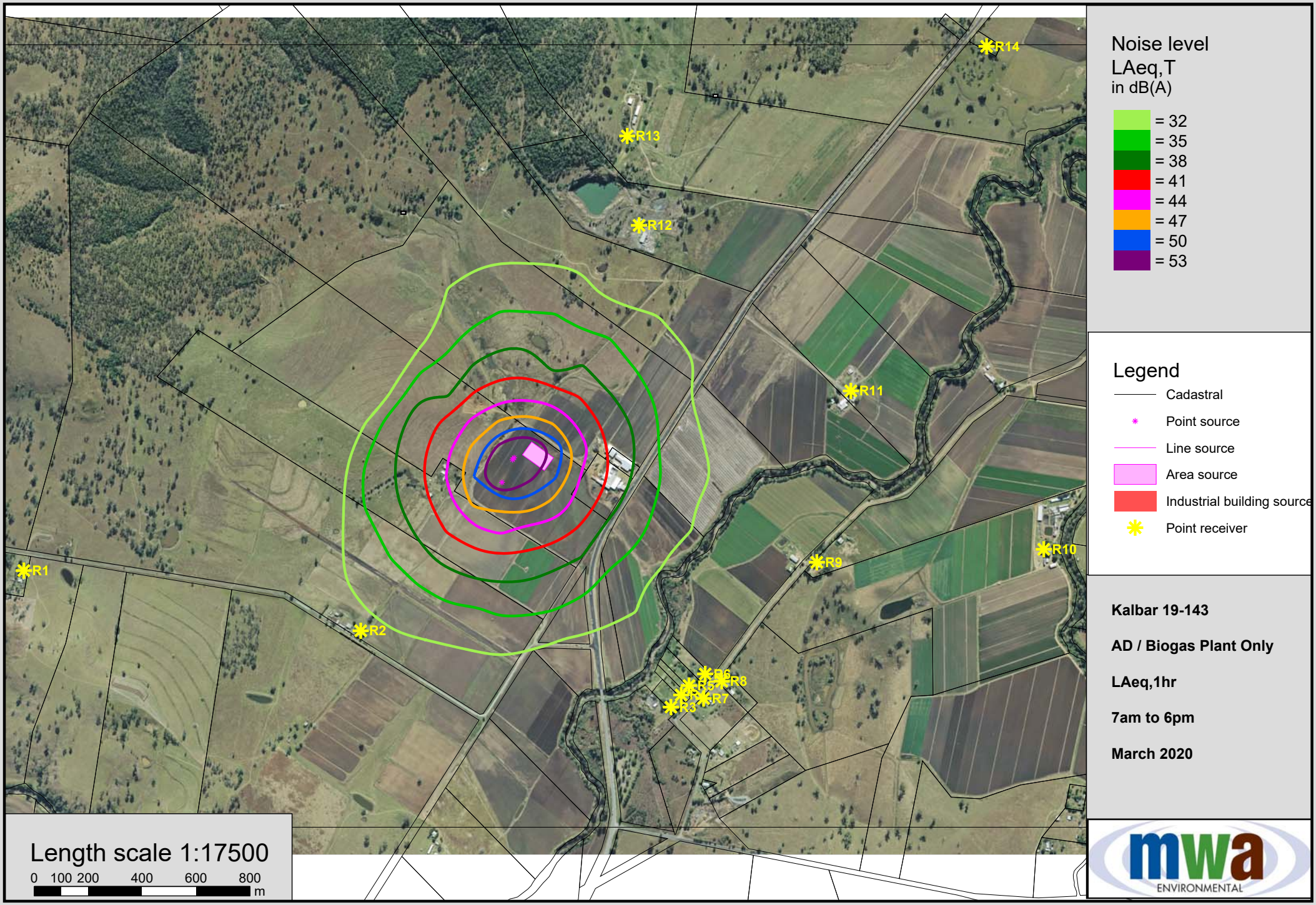

Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
SRAIP Industrial Only
(Indicative Uses)
LAeq,1hr
6pm to 10pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

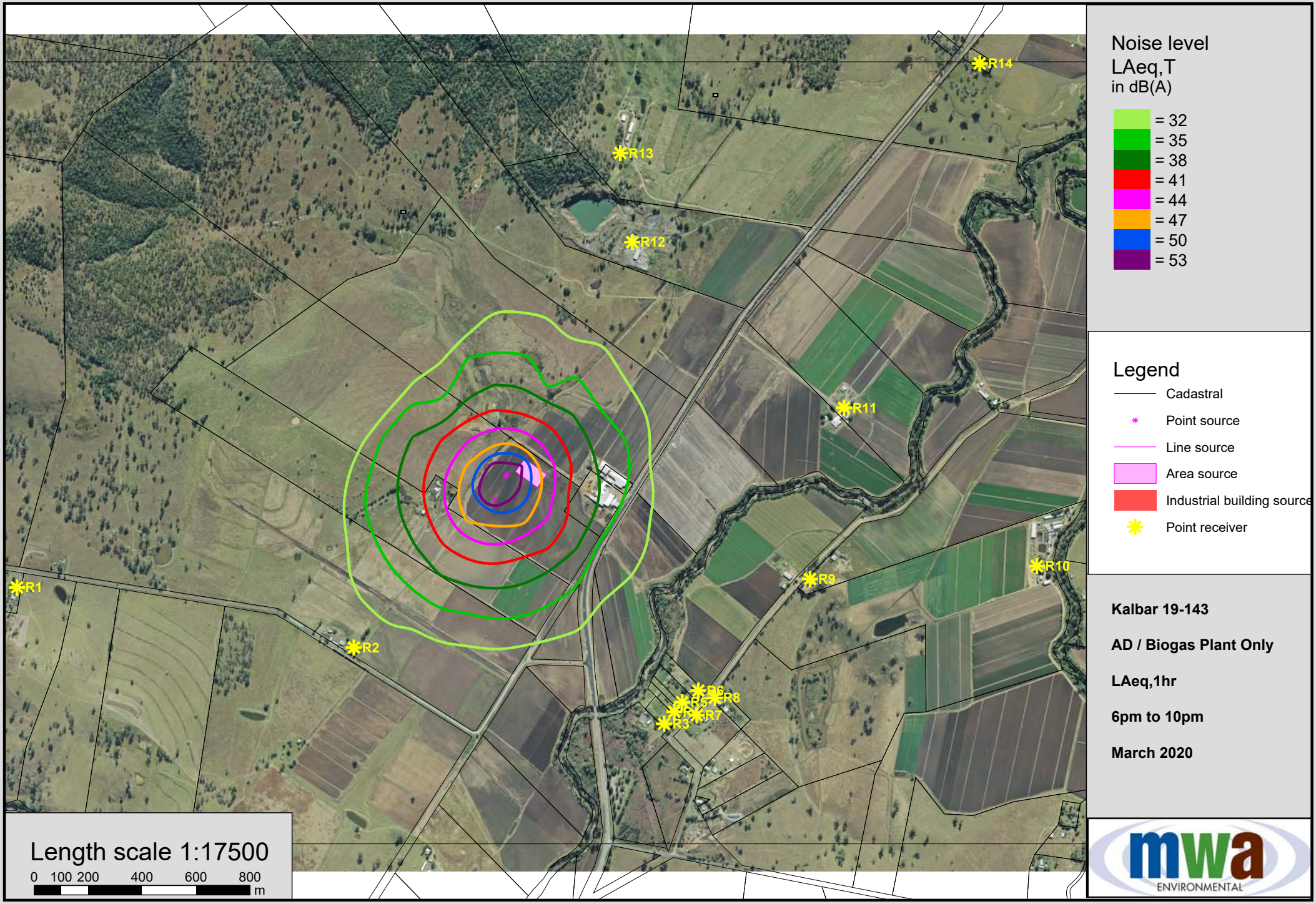

Noise level
LAeq,T
in dB(A)
= 26
= 29
= 32
= 35
= 38
= 41
= 44
= 47
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
SRAIP Industrial Only
(Indicative Uses)
LAeq,1hr
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

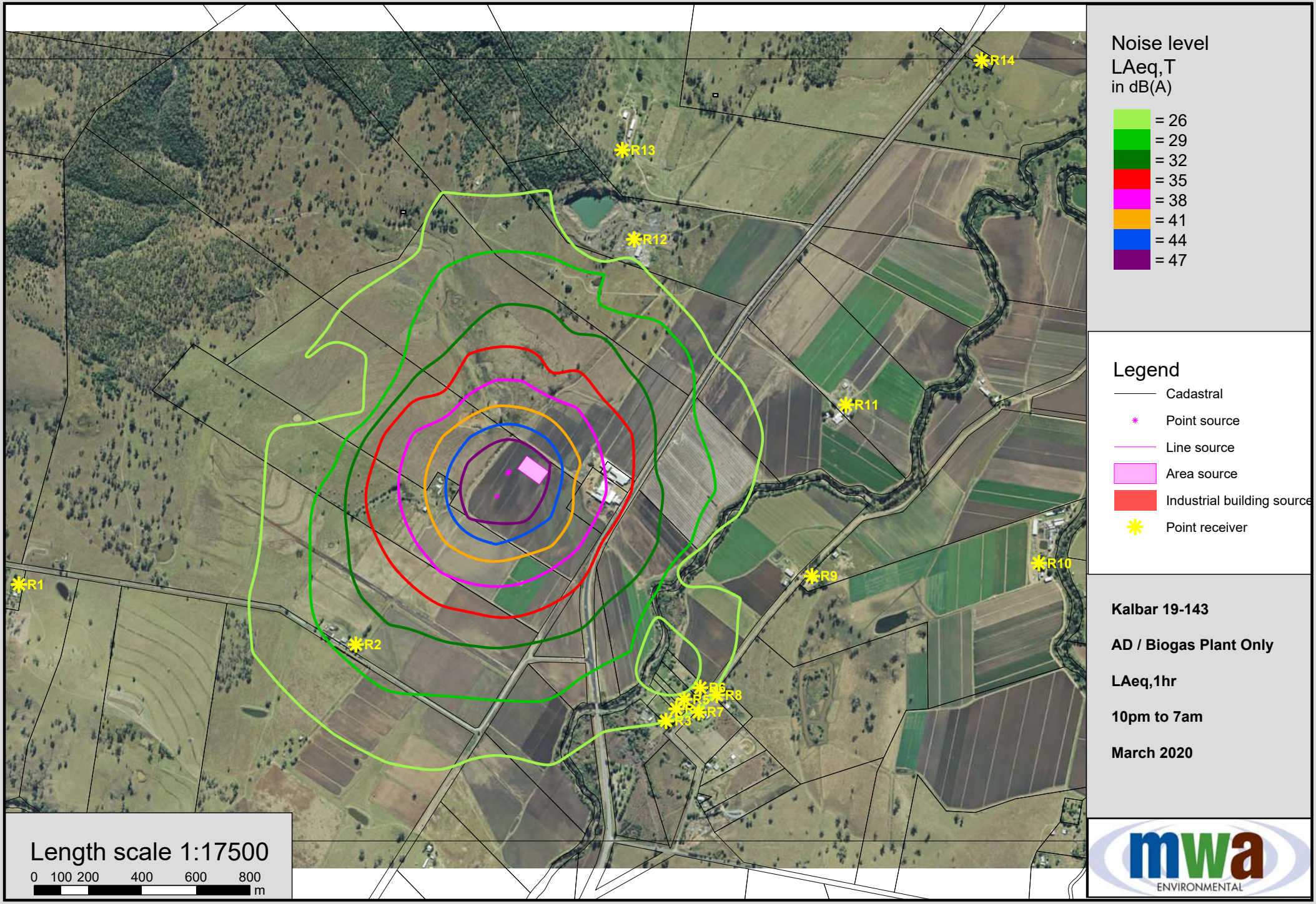

Noise level
MaxLpA,T
in dB(A)
= 43
= 46
= 49
= 52
= 55
= 58
= 61
= 64
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Length scale 1:17500
0 100 200 400 600 800
m
Kalbar 19-143
SRAIP Industrial Only
(Indicative Uses)
MaxLpA
10pm to 7am
March 2020
mwa
ENVIRONMENTAL

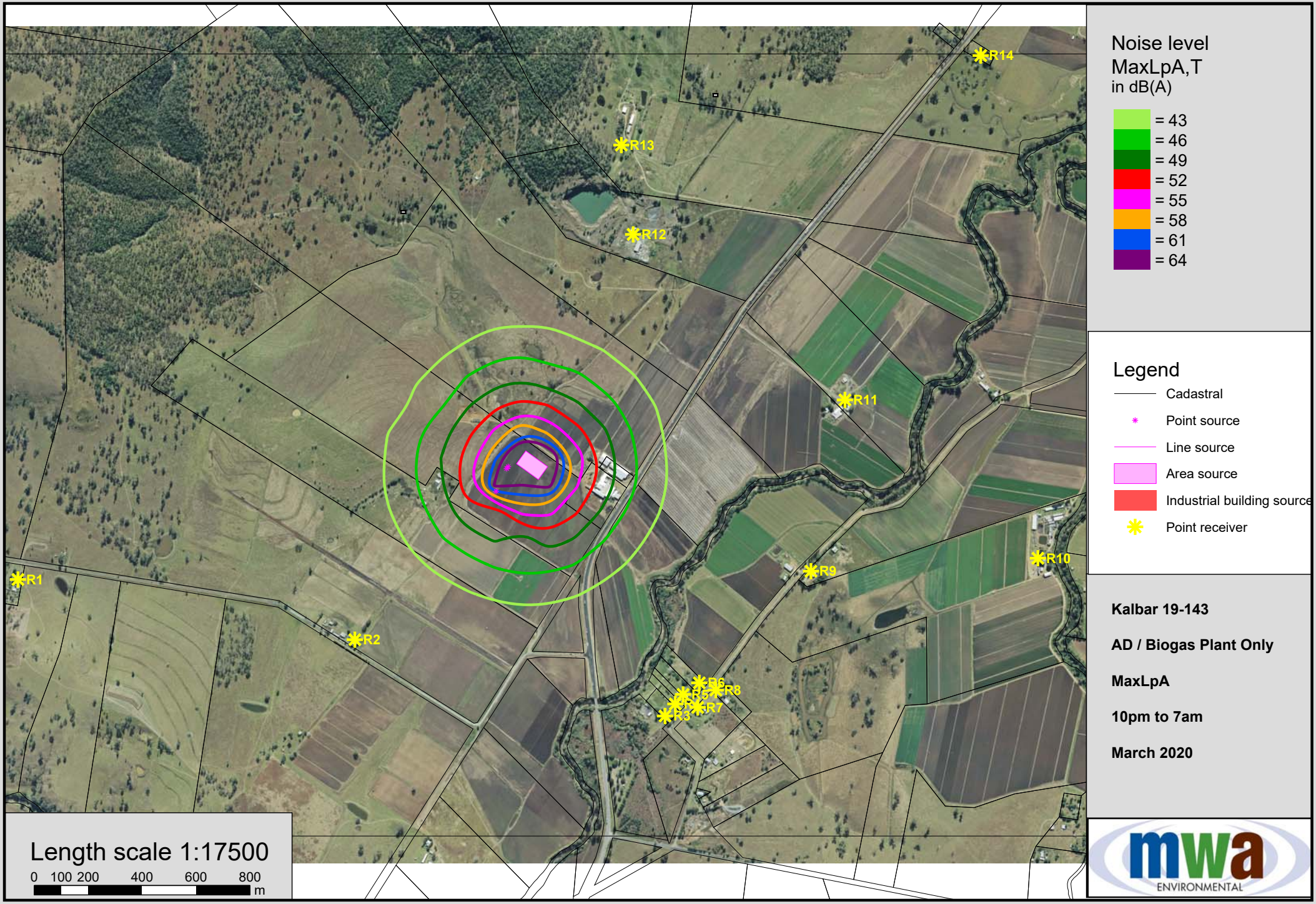
ATTACHMENT 7

Predicted Noise Levels
Anaerobic Digester / Biogas Plant Only


Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
AD / Biogas Plant Only
LAeq,1hr
7am to 6pm
March 2020
Length scale 1:17500
0 100 200 400 600 800 m
mwa
ENVIRONMENTAL

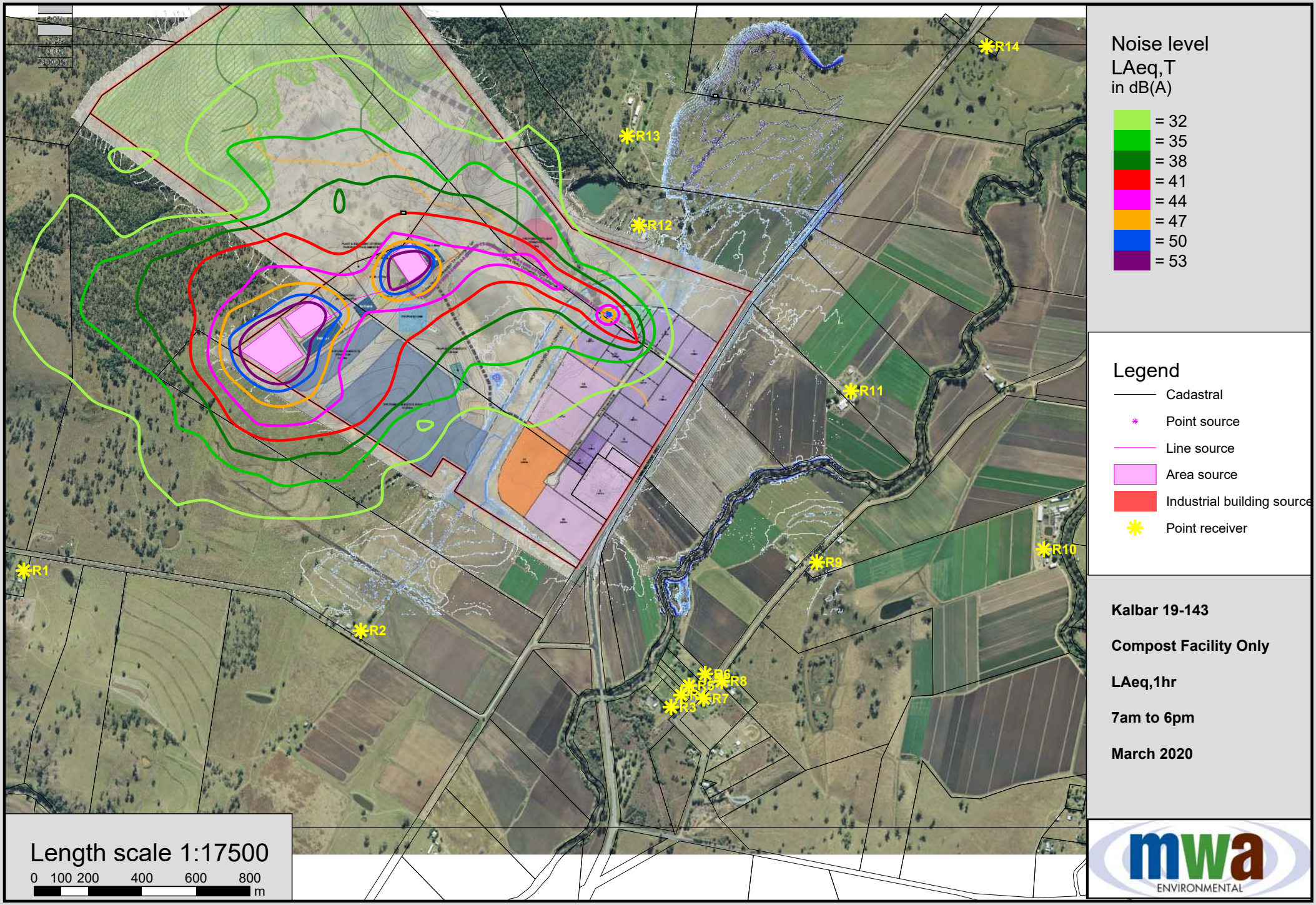

Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
AD / Biogas Plant Only
LAeq,1hr
6pm to 10pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

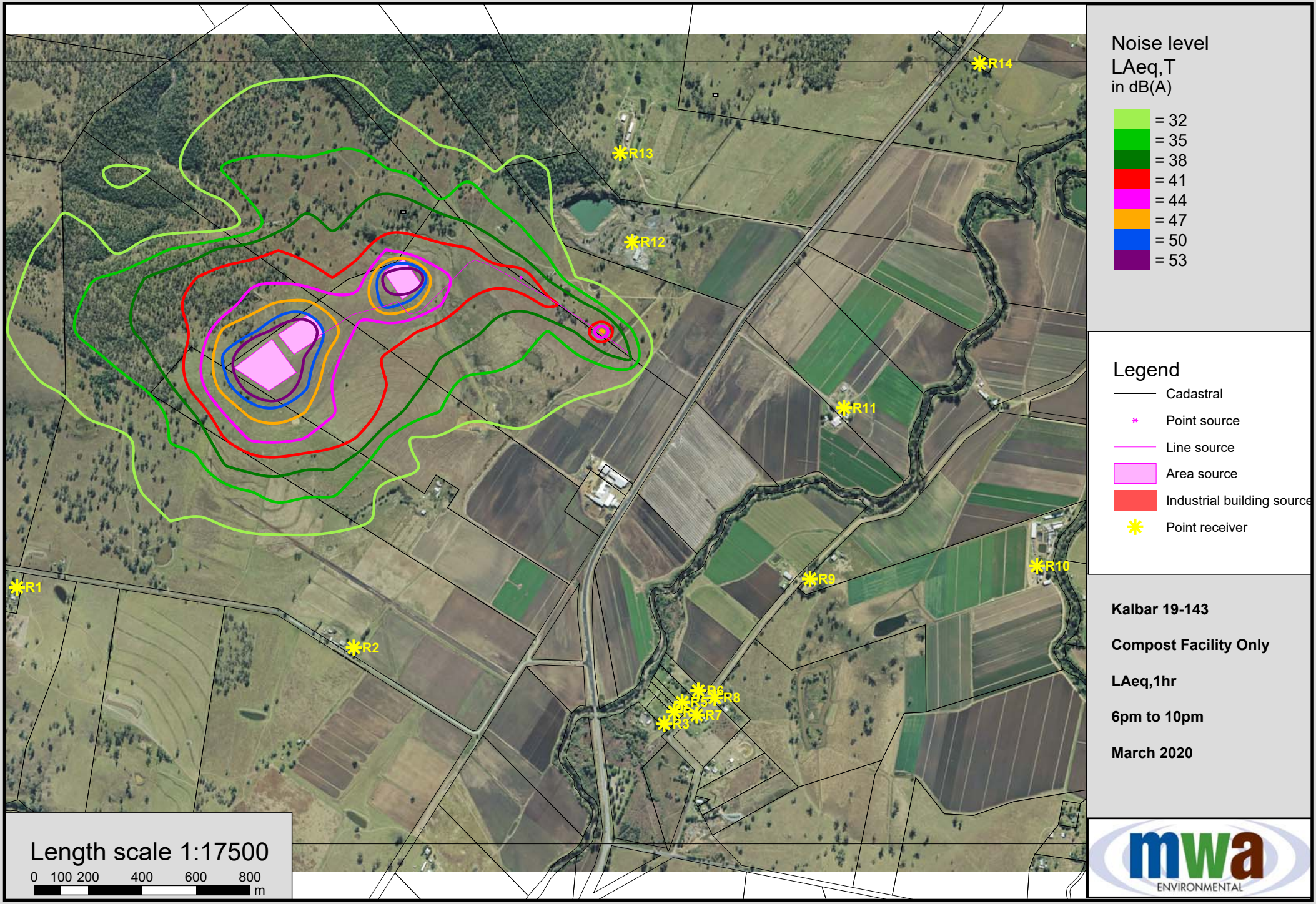

Noise level
LAeq,T
in dB(A)
= 26
= 29
= 32
= 35
= 38
= 41
= 44
= 47
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
AD / Biogas Plant Only
LAeq,1hr
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

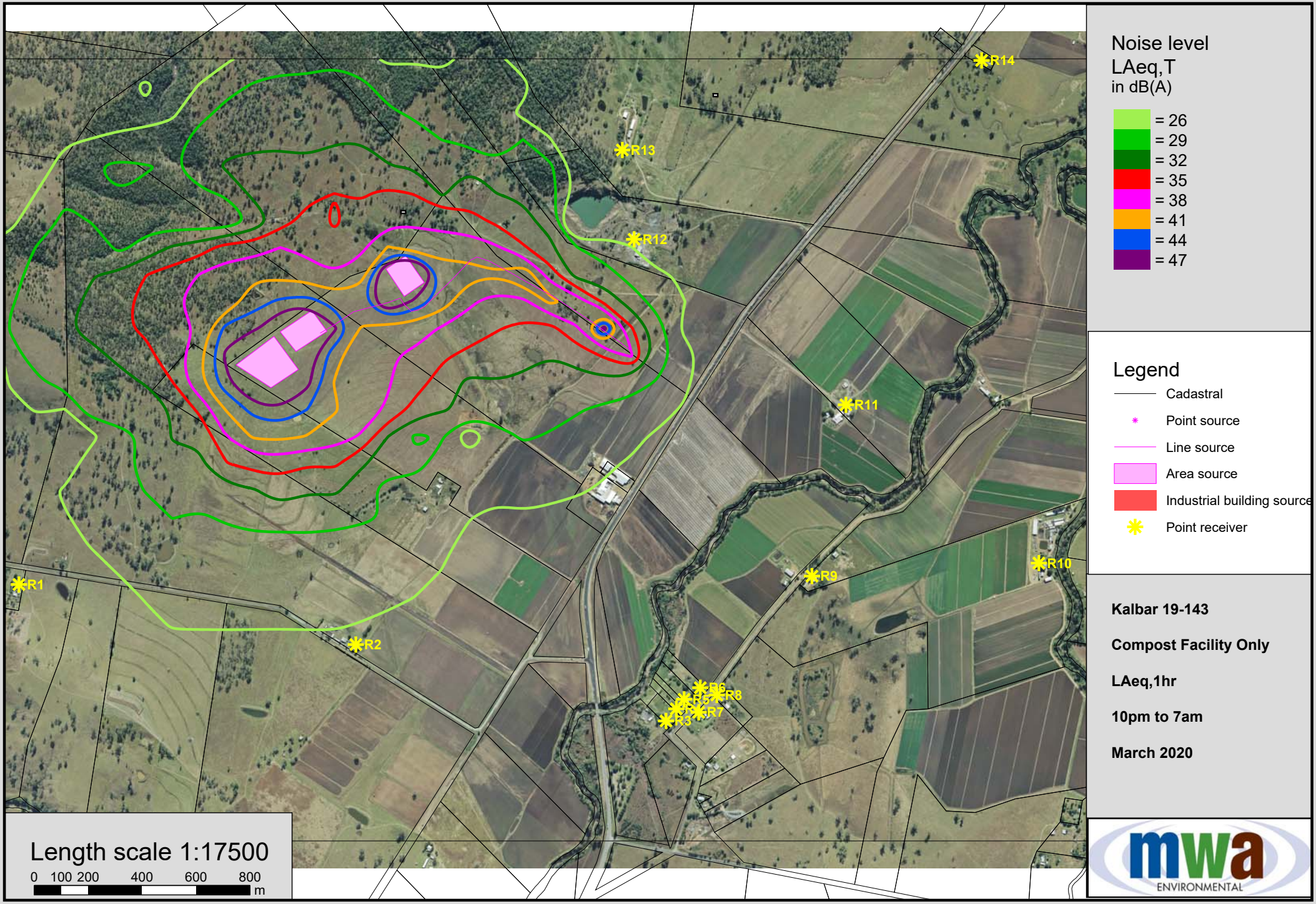

Noise level
MaxLpA,T
in dB(A)
= 43
= 46
= 49
= 52
= 55
= 58
= 61
= 64
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
AD / Biogas Plant Only
MaxLpA
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

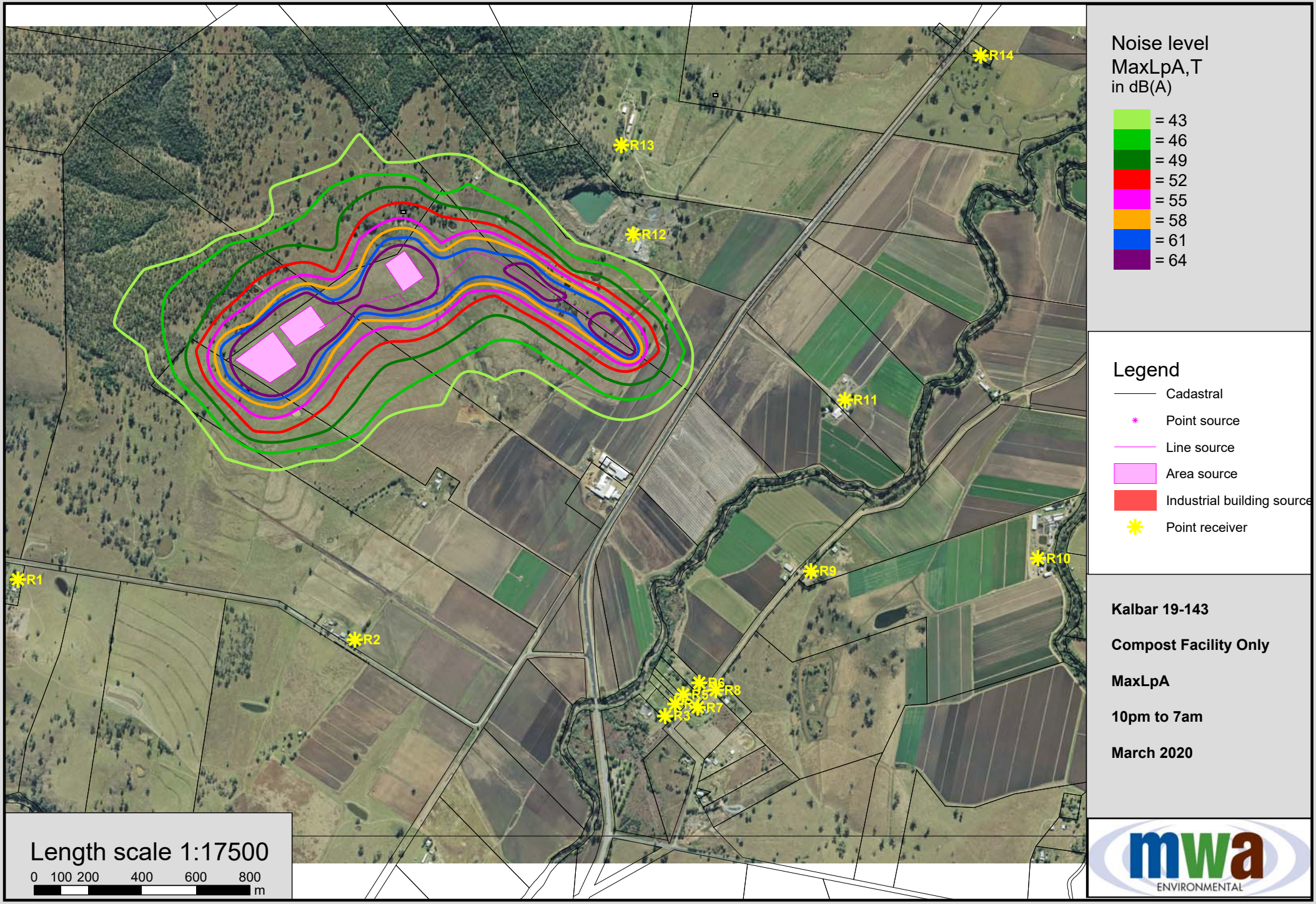
ATTACHMENT 8

Predicted Noise Levels
Composting Facility Only


Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Compost Facility Only
LAeq,1hr
7am to 6pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

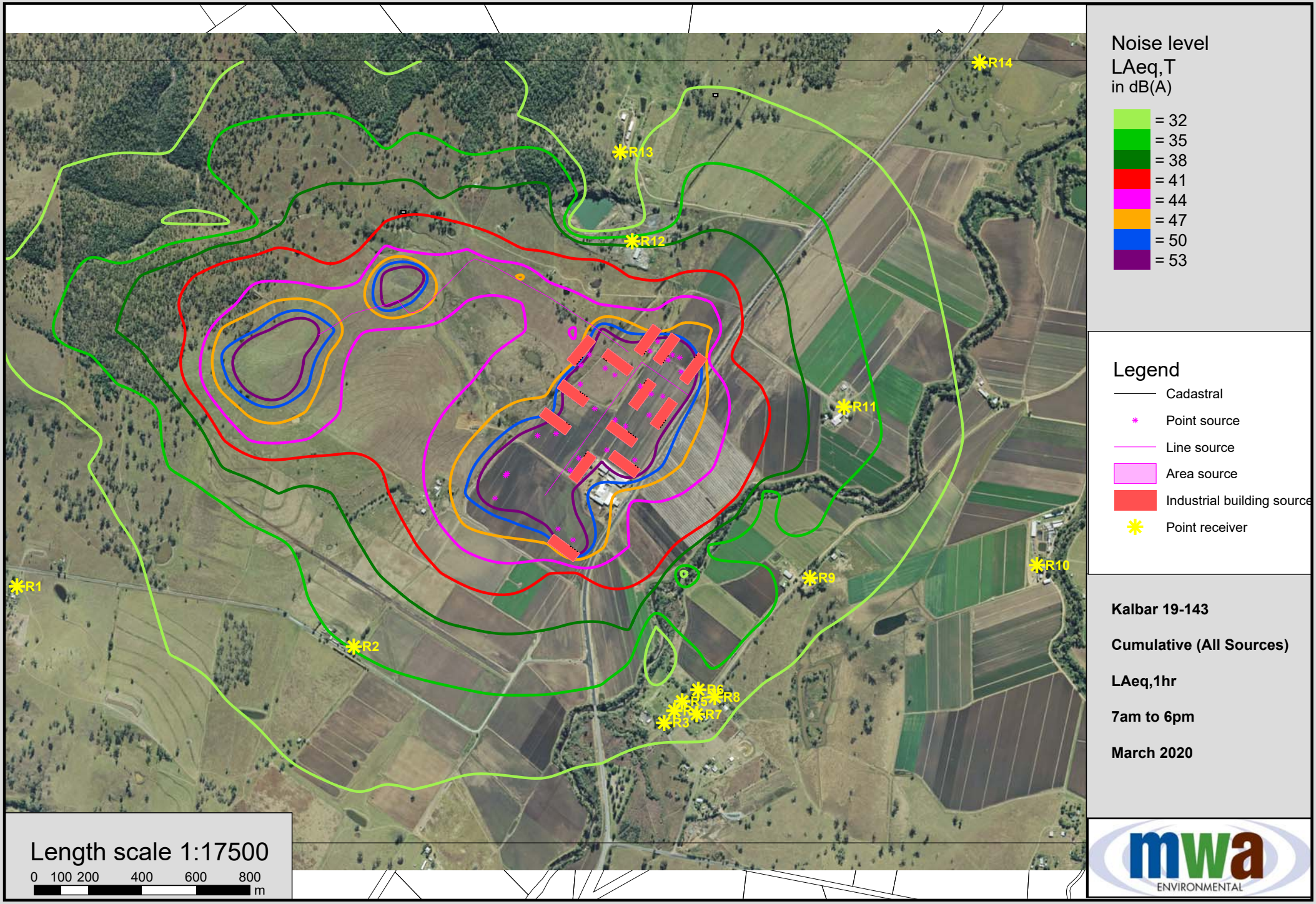

Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Compost Facility Only
LAeq,1hr
6pm to 10pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

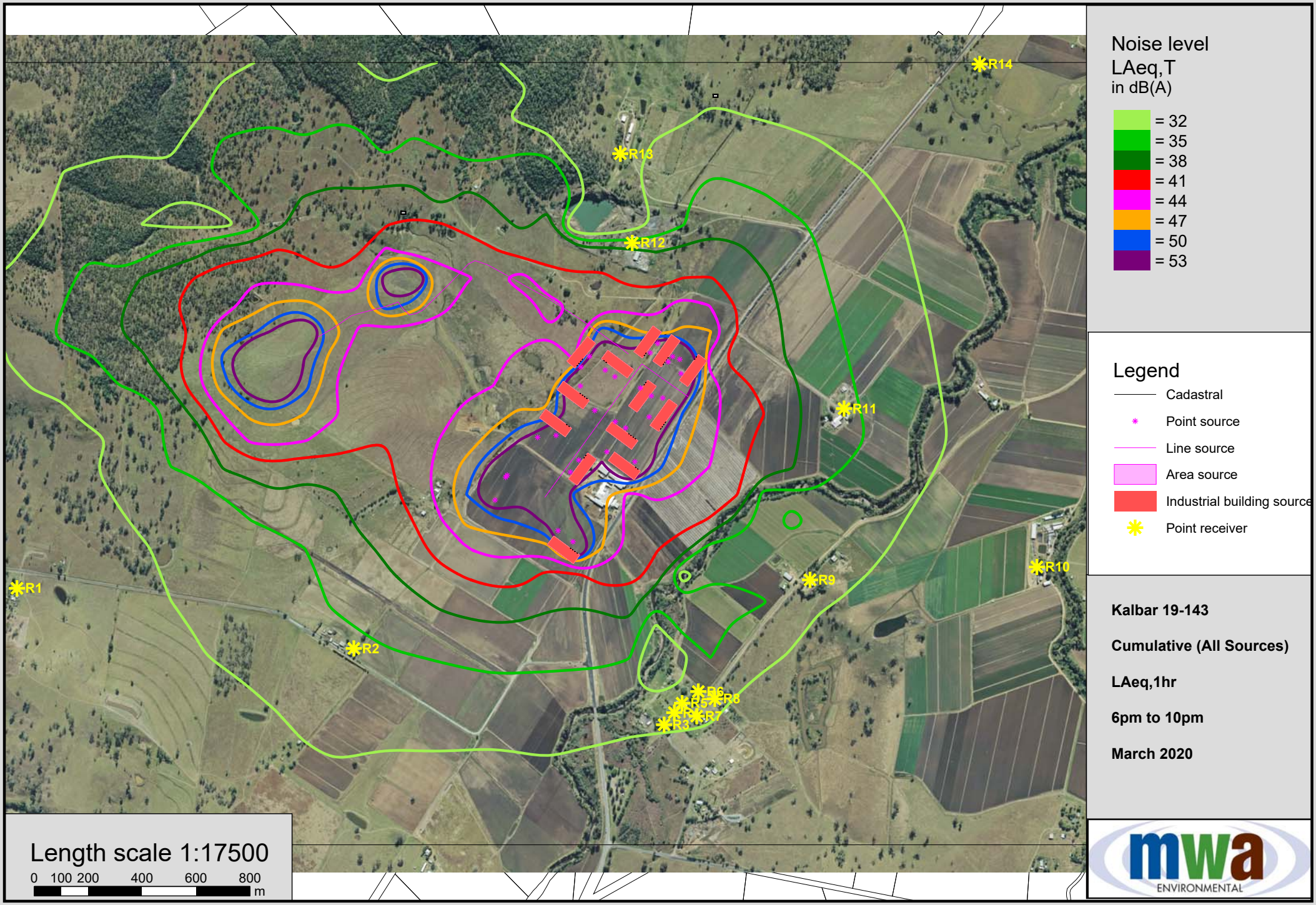

Noise level
LAeq,T
in dB(A)
= 26
= 29
= 32
= 35
= 38
= 41
= 44
= 47
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Compost Facility Only
LAeq,1hr
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL

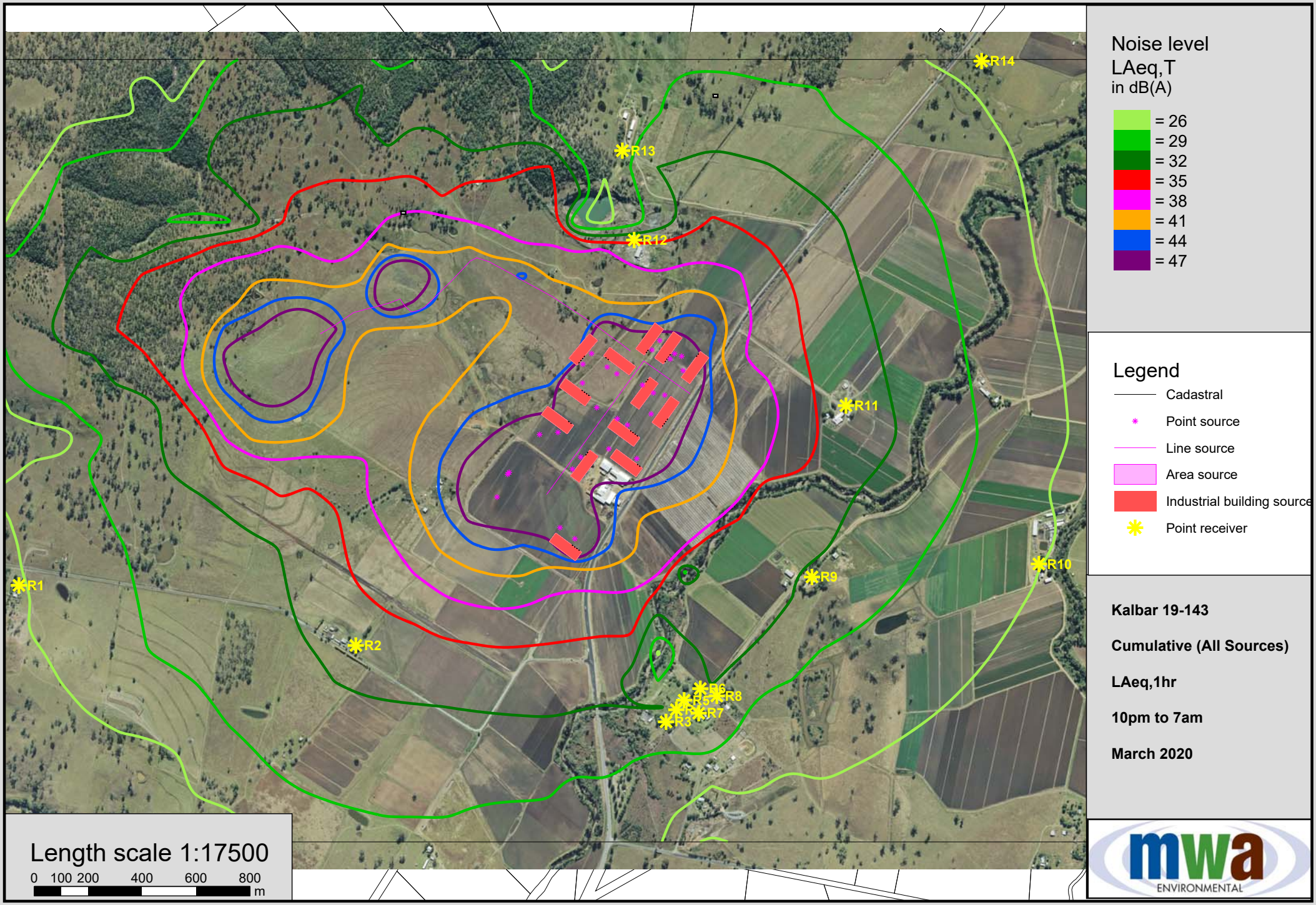

Noise level
MaxLpA,T
in dB(A)
= 43
= 46
= 49
= 52
= 55
= 58
= 61
= 64
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Compost Facility Only
MaxLpA
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800 m
mwa
ENVIRONMENTAL

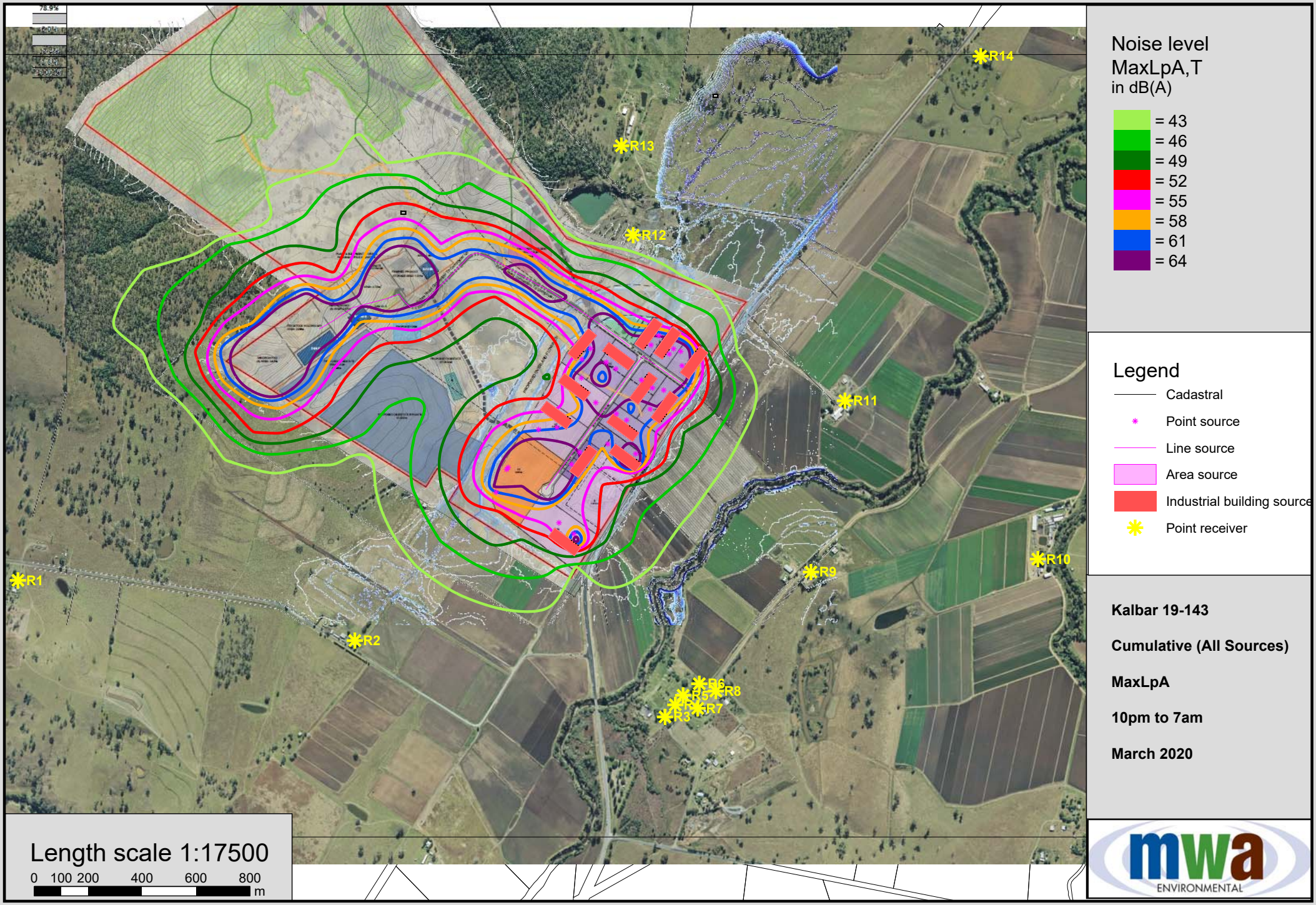
ATTACHMENT 9

Predicted Noise Levels
Overall Cumulative Noise


Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Cumulative (All Sources)
LAeq,1hr
7am to 6pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL


Noise level
LAeq,T
in dB(A)
= 32
= 35
= 38
= 41
= 44
= 47
= 50
= 53
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Cumulative (All Sources)
LAeq,1hr
6pm to 10pm
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL


Noise level
LAeq,T
in dB(A)
= 26
= 29
= 32
= 35
= 38
= 41
= 44
= 47
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Cumulative (All Sources)
LAeq,1hr
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800
m
mwa
ENVIRONMENTAL


Noise level
MaxLpA,T
in dB(A)
= 43
= 46
= 49
= 52
= 55
= 58
= 61
= 64
Legend
Cadastral
Point source
Line source
Area source
Industrial building source
Point receiver
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
Kalbar 19-143
Cumulative (All Sources)
MaxLpA
10pm to 7am
March 2020
Length scale 1:17500
0 100 200 400 600 800 m
mwa
ENVIRONMENTAL