



City of Albany
Albany Motorsport Park
Noise Assessment

September 2020

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Appendices

- Appendix A - Glossary of noise terminology
- Appendix B – Monitoring results
- Appendix C – Example Noise Management Plan

Glossary of acronyms and terms

4WD	Four wheel drive
ADR	Australian Design Rule
AMP	Albany Motorsport Park
AS	Australian Standard
ATV	All-terrain vehicle
BoM	Bureau of Meteorology
CadnaA	Computer Aided Noise Abatement software used for calculating predicted noise emissions
CAMS	Confederation of Australian Motor Sports
CEO	Chief Executive Officer
CONCAWE	Conservation of Clean Air and Water in Europe
DWER	Department of Water and Environmental Regulation
FIA	Fédération Internationalé de l'Automobile
FIM	Fédération Internationalé Motocyclisme
GHD	GHD Pty Ltd
GSMG	Great Southern Motorplex Group Inc.
IF	Influencing Factor
MA	Motorcycling Australia

Note: Refer to Appendix A for an explanation of the noise terminology used throughout this report.

1. Introduction

1.1 Project background

Participation in motorsports is a popular recreational activity for many Australians, including residents in Albany and the Great Southern region. By one estimate, motorsport is the fourth most watched sport in Australia, with over 150,000 participants across the country¹. Anecdotally, motorsport in Albany and the surrounding areas is already known to be popular, with several well organised clubs, a national-level venue for speedway, a state-level venue for go-karts and widely recognised events such as the Albany Classic, Show 'n Shine and Race Wars at Albany Airport. However, some motorsport disciplines lack suitable facilities in the region. In particular, the closure of Albany Motorcycle Club's facility at Roberts Road in 2011 has meant that motocross and enduro motorcycle riders currently lack a permanent formalised facility to pursue their sport in the lower Great Southern region.

By their nature, motorsports are very capital intensive, requiring significant investment in equipment and facilities by participants, clubs and supporting organisations such as local and state governments. Recently, an independent proposal has been advanced by the Great Southern Motorplex Group Inc. (GSMG) to develop a multi-use Albany Motorsport Park (AMP) near the Mirambeena timber processing precinct on Down Road. This proposal aims to:

- Promote and facilitate multiple motorsports on a club and state level in Albany and the Great Southern region.
- Provide a safe environment and venue for multiple motorsports clubs (and other compatible sports, such as cycling).
- Provide a venue to promote and facilitate commercial driver education and training.
- Provide a safe environment for companies to test and tune their vehicles.
- Promote Albany and the Great Southern region by attracting participants and tourists.
- Boost the regional economy through increased visitors, funding and sponsorship for events.



1.2 Project description

The concept design for the Albany Motorsport Park has been developed by the not-for-profit Great Southern Motorplex Group (GSMG) and Roberts Gardiner Architects. The GSMG has undertaken significant research into the requirements for track licensing by the Confederation of Australian Motor Sport (CAMS) and the specifications of:

- Fédération Internationalé de l'Automobile (FIA)
- Fédération Internationalé Motocyclisme (FIM)
- Motorcycling Australia (MA)

The proposed AMP will consist of:

1. Sealed, configurable multi-use track (3.5 km long × 12 m wide) for motor car racing, motorcycle racing, drifting, driver training and cycling:
 - Designed to comply with CAMS' *Track Operator's Safety Guide*^[2] and MA's *Track Guidelines*^[3].

¹ CAMS. (2014). *Economic contribution of the Australian motor sport industry*. Malvern East: Confederation of Australian Motor Sport.

² CAMS. (2012). *Track Operator's Safety Guide*. Malvern East: Confederation of Australian Motor Sports.

³ MA. (2011). *Track Guidelines*. South Melbourne: Motorcycling Australia.

– To be licensed by CAMS for FIA Grade 2 and FIM Grade B (i.e. up to second-tier international motor racing).

2. A motocross circuit designed and constructed in association with MA guidelines.
3. An off-road four wheel drive (4WD) and all-terrain vehicle (ATV) training area

At full development, the AMP will also include associated facilities, such as:

- Toilets
- Manager's office
- Medical / first aid station
- Meeting / briefing room
- Kitchen / canteen
- Storage / grounds maintenance workshop
- Vehicle scrutineers' workshop
- Control tower
- Spectators viewing areas
- Grassed spectators' picnic area with shade and BBQs
- Competitors parking
- Spectators parking

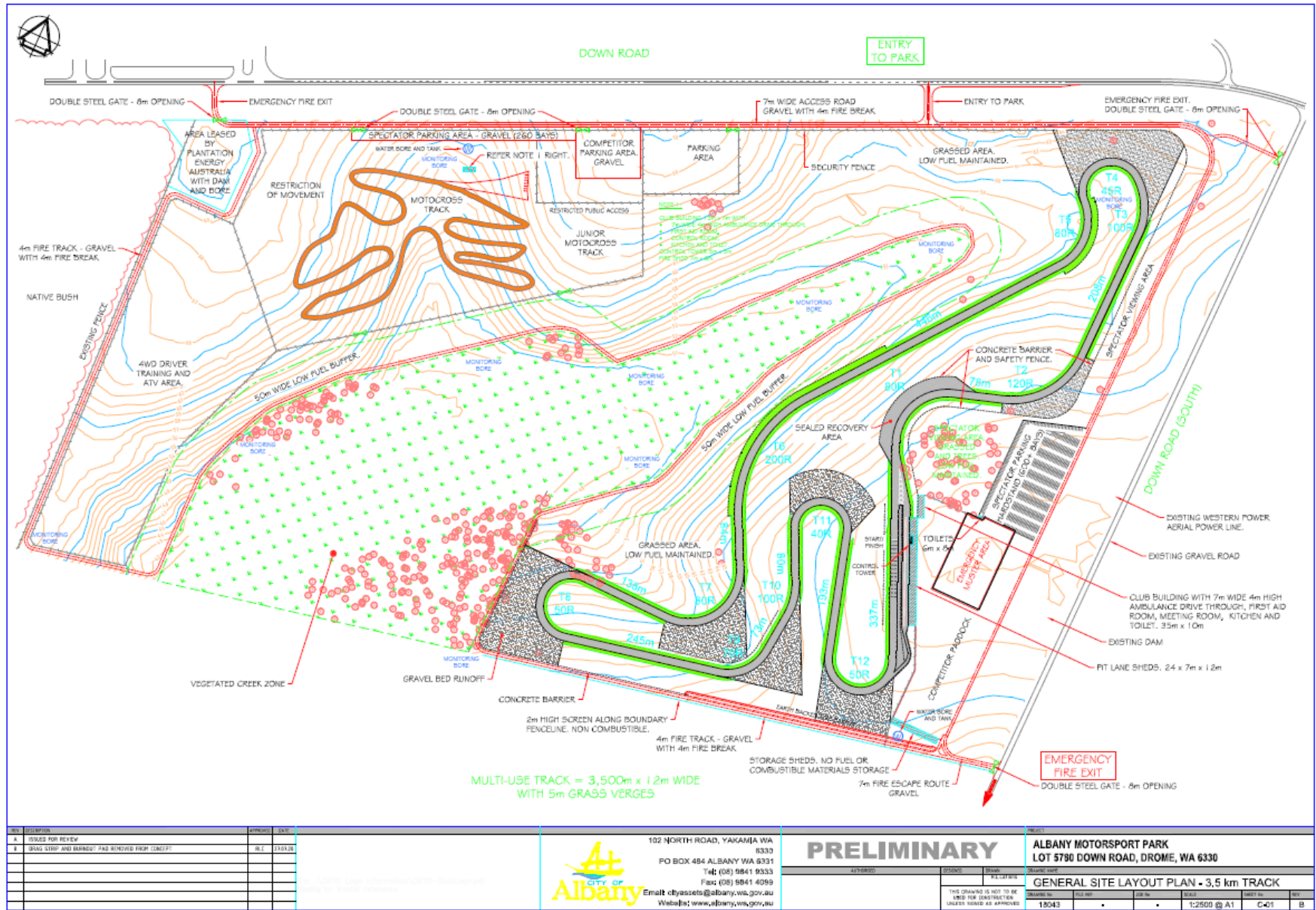


Figure 1-1 Albany Motorsport Park general site layout plan

1.3 Scope of work

GHD Pty Ltd (GHD) was commissioned by City of Albany to prepare planning approvals documentation for the proposed Albany Motorsport Park. As part of this commission, GHD was required to assess the potential acoustic impacts for the construction and operation of AMP.

This report assesses the potential noise and vibration impacts from construction and operation of AMP. The report's scope is to:

- Identify noise sensitive locations potentially impacted by the construction and operation of AMP.
- Describe the existing noise environment at noise sensitive locations potentially impacted by the construction and operation of AMP.
- Identify noise and vibration sources associated with construction and operation of AMP.
- Develop an environmental noise model to predict noise impacts from the operation of AMP using CadnaA noise modelling software, for a variety of proposed motorsport events.
- Assess the potential noise impacts on nearby noise sensitive receptors and compare the impacts with assigned noise levels.
- Identify opportunities for attenuation and management of noise impacts from AMP on noise sensitive areas should predicted noise impacts exceed the assigned noise levels.

1.4 Approach

The approach adopted by GHD for the assessment of noise impacts from the Albany Motorsport Park is summarised in the following points. Each point is described in detail in the subsequent sections of this report.

- Outline of AMP, including proposed events and anticipated operational noise sources (Section 2).
- Identification of the relevant noise criteria and guidelines applicable to AMP assessment (Section 3).
- Investigation of the existing noise environment, including identification of sensitive receptors, noise logging and assessment of noise monitoring to determine background and various time related noise levels (Section 4).
- Desktop assessment of construction noise and vibration (Section 5).
- Noise modelling for the assessment of predicted noise impacts during operation of AMP (Section 6).
- Recommend in-principle noise mitigation measures for construction and operational noise sources (Section 7).
- Conclusions drawn from the above assessment (Section 8, subject to the scope of works (Section 1.3) and Limitations (Section 1.5)).

1.5 Limitations

This report has been prepared by GHD for City of Albany and may only be used and relied on by City of Albany for the purpose agreed between GHD and the City of Albany as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than City of Albany arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD accepts no responsibility for the integrity of the software coding of the approved noise model (CadnaA) used.

GHD has prepared this report on the basis of information provided by City of Albany and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of insects and other noise sources) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Noise sources

2.1 Events and usage

Outlined in Table 2-1 is the expected usage of the Albany Motorsport Park, as conceptualised by the GSMG. For the purposes of sizing facilities and servicing infrastructure, a typical / frequent site attendance of 500 persons has been assumed (i.e. competitors, officials and spectators). This was determined through discussion with the GSMG on the nature and size of expected typical events.

Table 2-1 Indicative AMP event profile

Use	Level	Frequency	Duration	Entrants	Spectators
Driver training, schools, manufacturer testing		Week days	Day	50	0
Car test and tune day	Club	4 week days / month	Day	30	30
Car speed events	Club	1 weekend / month	Day	100	200 – 500
Car speed events	State	1 weekend / month	Day	100 – 200	200 – 1000
Car speed events	National	1 weekend / year	Day	200 – 300	2000 – 5000
Motorkhana	Club	1 day / month	Day	50	200
Supercars events	National	1 × 3 day weekend / year	Day	200 – 300	10,000 – 20,000
Bike test and tune day	Club	4 week days / month	Day	50	50
Bike speed events	Club	1 weekend / month	Day	100	200 – 500
Bike speed events – Champions Ride Day	State	1 weekend / month	Day	100	200 – 1000
Bike speed events	National	1 weekend / year	Day	200	1000 – 5000
Motocross events	Club	3 days / week training 4 single days / month	Day	100 – 200	200 – 400
Motocross events	State	1 weekend / month	Day	200 – 300	500 – 1000
Drifting day	Club	2 days / month	Day and evening	30	30
Drifting day	State	1 weekend / month	Day and evening	50	200 – 500

Duration of events:

- Typical day operation is 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.
- No events occurring on the multi-use track and motocross track at the same time.
- The 4WD training area and multi-use track are expected to be in operation year round, taking advantage of Albany's cooler summer climate.
- In addition to driver and 4WD training, it is expected there will be motorsports club training sessions on every weekday. No evening sessions will be scheduled.
- At full development, it is likely there will be a motorsport event almost every weekend of the year. The cost of lighting for the motocross track and multi-use track is too high to contemplate evening events.

2.2 Noise sources

Noise sources from Albany Motorsport Park will be primarily from vehicles competing and preparing for various motorsport events, spectators and the public address system. A summary of each major noise source is presented below, with detailed information on assessment of each noise source provided in Section 6.

- Noise levels at residences due to the operation of the public address (PA) system will depend strongly on the design of the system, including number of speakers, directionality and orientation. With appropriate design, noise from this source should be controllable to less than 40 dBA at residences, and would generally not be audible.
- Driver training, schools and manufacturer testing, to be held during the day on the multi-use track – Vehicles will be road registered and comply with Australia Design Rule (ADR) requirements for vehicle noise emissions.
- Multi-use track events, such as car test and tune days, car speed events, supercars events, bike test and tune days, bike speed events, motorkhana events and drifting days, to be held during the day only. Noise impacts assessed based on vehicles competing in such events meeting the maximum CAMS noise level requirement of 95 dBA at a distance of 30 m.
- Motocross events, to be held during the day only on the motocross track. Noise impacts assessed based on noise levels from senior class motocross bikes.
- 4WD and all-terrain vehicle (ATV) off road training, to be held during the day only. Noise levels based on road registered 4WD vehicles.

It is important to note that no events are proposed to occur during the evening period (7:00 pm to 10:00 pm) and night period (between 10:00 pm to 7:00 am Monday to Saturday and 9:00 am on Sunday and public holidays).

3. Noise criteria

Environmental noise is managed through the *Environmental Protection (Noise) Regulations 1997* (the Regulations). The Regulations specify maximum allowable external noise levels at noise sensitive, commercial and industrial premises.

3.1 Construction noise

The Regulations state that for construction work carried out between 7.00 am and 7.00 pm on any day which is not a Sunday or public holiday:

- Construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of Australian Standard (AS) 2436-2010 *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*.
- The equipment used for construction must be the quietest reasonably available.
- The Chief Executive Officer (CEO) (of the Department of Water and Environmental Regulation (DWER)) may request that a noise management plan be submitted for the construction work at any time and complied with during construction activities.

For construction work done outside these hours:

- The construction work must be carried out in accordance with control of environmental noise practices set out in Section 6 of AS 2436-2010.
- The equipment used for construction must be the quietest reasonably available.
- The contractor must advise all nearby sensitive receptors likely to receive noise levels which fail to comply with the assigned levels under Regulation 8 (Table 3-1) of the work to be done at least 24 hours before it commences.
- The contractor must show that it was reasonably necessary for the work to be done out of hours.
- The contractor must submit to the CEO a noise management plan at least seven days prior to the commencement of out of hours work and the plan must be approved by the CEO before work commences. The plan must include details of:
 - Reasons for the construction work needing to be completed out of hours.
 - Details of activities which are likely to result in noise emissions that lead to exceedance of assigned levels.
 - Predictions of the noise emissions on the site.
 - Details of measures used to control noise (including vibration) emissions.
 - Procedures to be adopted for monitoring noise (including vibration) emissions.
 - Complaint response procedures to be adopted.

3.2 Operational noise

The Regulations (Regulation 7) define prescribed standards for noise emissions as follows:

7. (1) Noise emitted from any premises or public place when received at other premises –

(a) Must not cause or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind

(b) Must be free of –

- (i) Tonality (e.g. whining or droning)
- (ii) Impulsiveness (e.g. sirens)
- (iii) Modulation (e.g. banging or thumping)

The assigned levels for noise sensitive premises (Regulation 8) are shown in Table 3-1.

Assigned noise levels (Table 3-1) are set differently for noise sensitive, commercial and industrial and utility premises. For noise sensitive premises an influencing factor (IF) is incorporated into the assigned noise levels. IF depends on land use zonings within circles of 100 m and 450 m radius from the noise receiver, including:

- Proportion of industrial land use zonings
- Proportion of commercial zonings
- Presence of major roads (more than 15,000 vehicles per day) or secondary (6,000 to 15,000 vehicles per day)

For this assessment, it has been assumed that IF will be zero (based on the absence of major and secondary roads). The resultant assigned levels used for this assessment of the AMP are shown in Table 3-3.

As motorsport events are scheduled to occur during the day period (refer Table 2-1), including Sundays after 9:00 am, the LA10 assigned level of 40 dBA day has been used in this assessment.

Table 3-1 Assigned noise levels (dBA)

Type of premise receiving noise	Time of day	Assigned level		
		LA 10	LA 1	LA Max
Noise sensitive ^[4]	7.00 am to 7.00 pm Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	9.00 am to 7.00 pm Sunday and public holidays (Sunday)	40 + IF	50 + IF	65 + IF
	7.00 pm to 10.00 pm all days (Evenings)	40 + IF	50 + IF	55 + IF
	10.00 pm on any day to 7.00 am Monday to Saturday and 9.00 am Sunday and public holidays (Night)	35 + IF	45 + IF	55 + IF
Noise sensitive ^[5]	All hours	60	75	80

IF = influencing factor

Tonality, impulsiveness and modulation are defined in Regulation 9. Noise is to be taken to be free of these characteristics if:

- a. The characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission.
- b. The noise emission complies with the standard after the adjustments of Table 3-2 are made to the noise emission as measured at the point of reception.

⁴ Highly sensitive areas include a building, or a part of a building, on the premises that is used for a noise sensitive purpose and any other part of the premises within 15 metres of that building or that part of the building.

⁵ Any area other than highly sensitive area.

Table 3-2 Adjustment for intrusive or dominant noise characteristics^[6]

Tonality ^[7]	Impulsiveness ^[7]	Modulation ^[7]
+5 dB	+5 dB	+5 dB

Table 3-3 Assigned noise levels (dBA) for AMP

Type of premise receiving noise	Time of day	Assigned level		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive	7.00 am to 7.00 pm Monday to Saturday (Day)	45	55	65
	9.00 am to 7.00 pm Sunday and public holidays (Sunday)	40	50	65
	7.00 pm to 10.00 pm all days (Evenings)	40	50	55
	10.00 pm on any day to 7.00 am Monday to Saturday and 9.00 am Sunday and public holidays (Night)	35	45	55

3.3 Noise sensitive receptors

A number of residential receptors were identified in proximity to the AMP, as listed in Table 3-4 and shown in Figure 3-1.

Table 3-4 Receptor locations

ID	Location (MGA 94)		Distance from nearest AMP boundary (m)	Worst case wind direction (°)
	Easting (m)	Northing (m)		
SR01	569713	6133385	1150	310
SR02	567355	6132573	1120	10
SR03	564483	6133265	1930	80
SR04	565029	6134675	1920	100

⁶ Adjustment applies where noise emission is not music.

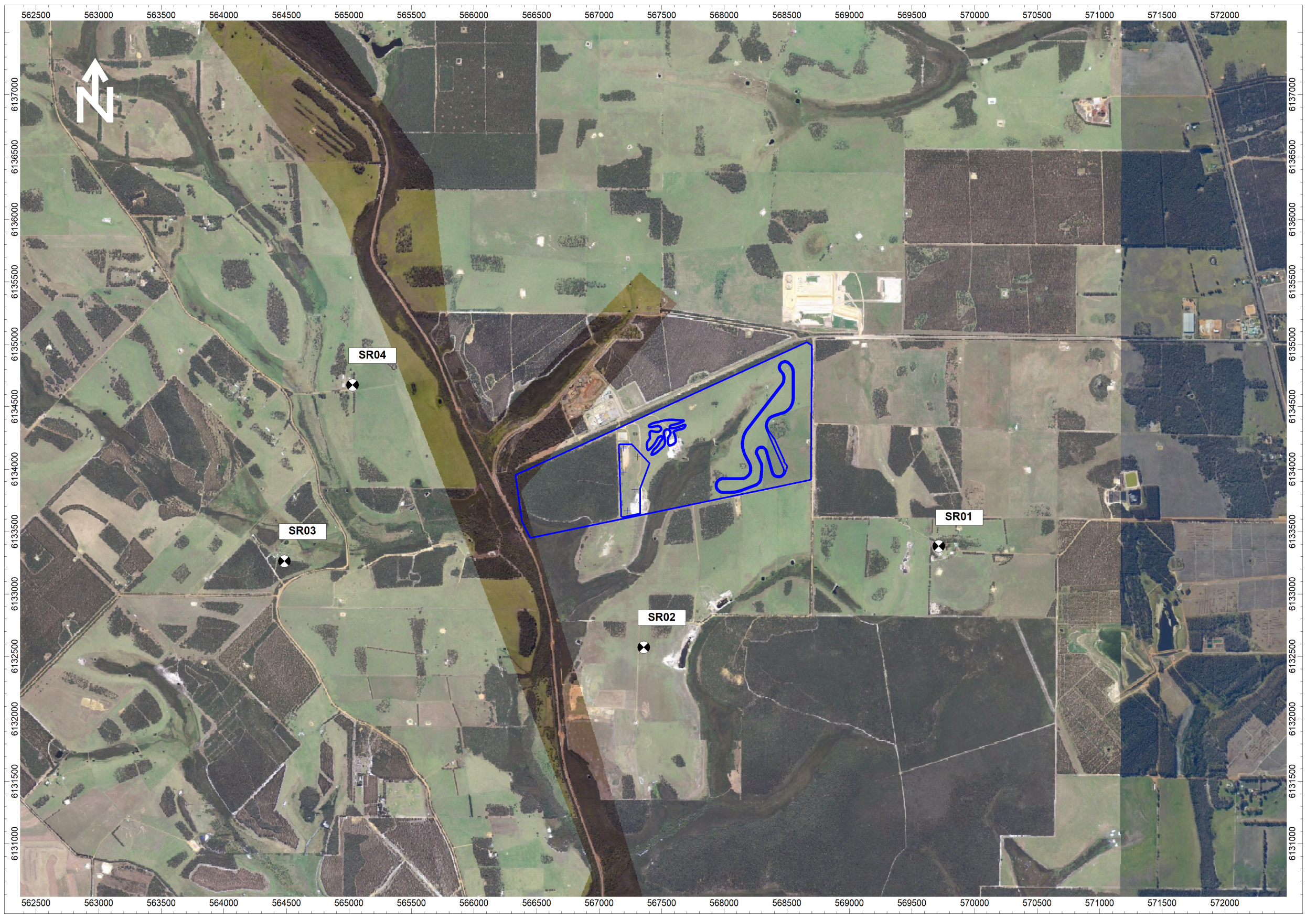
⁷ Adjustments are cumulative to a maximum of 15 dB.

PREDICTED NOISE LEVELS

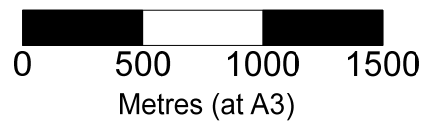


LEGEND

- Noise sensitive receptor
- Development area boundary



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 HORIZONTAL DATUM: Geocentric Datum of Australia (GDA)
 GRID: Map Gnd of Australia 1994, Zone 50

DATE 10.08.2020	FILE LOCATION N:\AU\Albany WA\Projects\61137331\Technical\Noise
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ALBANY MOTORSPORT PARK

NOISE SENSITIVE RECEPTOR LOCATIONS

FIGURE 3-1

Noise Assessment



4. Noise monitoring



4.1 Noise monitoring locations


Noise monitoring was used to measure existing noise levels experienced by receptors located within the project area. Unattended noise monitoring was undertaken at three sites within the vicinity of the proposed Albany Motorsport Park.

Monitoring locations were chosen so as to be located at existing residential locations which are considered will be most affected by the Project. The monitoring locations were also identified as being safe and secure for unattended equipment, minimising the risk of theft or vandalism. In each case, the loggers were located as close as possible to the most effected facade, and were located to not be influenced by pumps, air conditioner compressors etc.

A summary of relevant information such as site coordinates, distance to the nearest boundary of the site and a photo of noise logger setup is provided in Table 4-1. The three monitoring locations are shown in Figure 4-1.

Table 4-1 Noise monitoring location summary

Site ID	Address	Easting (m)	Northing (m)	Distance of logger to AMP (m)	Noise logger setup
Site A (SR 01)	35552 Albany Hwy, DROME WA 6330	569713	6133385	1150	
Site B (SR 02)	114 Down Rd South, DROME WA 6330	567355	6132573	1120	

Site ID	Address	Easting (m)	Northing (m)	Distance of logger to AMP (m)	Noise logger setup
Site C (SR 04)	727 Marbelup North Rd, MARBELUP WA 6330	565029	6134675	1920	

4.2 Unattended noise monitoring methodology

Unattended noise logging for Sites A, B, and C was conducted from 5 to 14 March 2019. The instruments were programmed to accumulate environmental noise data (L_{Aeq} , L_{Amin} and L_{Amax}) continuously over sampling periods of 15-minutes for the entire monitoring period. Details of the noise logger setup are as follows:

- Model – Svan 955
- Type – Type 1
- Time interval – 15 minutes
- Frequency weighting – A weighted

Prior to deployment and at monitoring completion, the loggers were calibrated with a sound pressure level of 94 dB at 1 kHz using a Larson Davis CAL200 sound level calibrator. The data collected by the loggers was downloaded and analysed and any invalid data removed.

All noise sampling activities were undertaken with consideration to the specifications outlined in *AS 1055-1997 - Description and Measurement of Environmental Noise*.

4.3 Noise monitoring results

Sampled noise levels for the monitoring period are provided graphically in Appendix B along with the corresponding meteorological conditions obtained from the nearest Bureau of Meteorology automatic weather station at Albany Airport, including precipitation and wind speed and direction for each site. Data excluded during filtering for sample periods of rainfall of > 0.2 mm and/or wind speed > 18 km/h at the noise logger have been highlighted in Appendix B.

Review of the noise monitoring data plots (Appendix B) demonstrates time periods where monitoring locations appear to be influenced by unknown noise, and hence required filtering to remove such anomalous results:

- Site B
 - Saturday 9 March 2019 23:00 to Sunday 10 March 07:15
 - Sunday 10 March 2019 14:00 to 16:00
- Site C
 - Monday 11 March 2019 10:30 to 10:45

– Tuesday 12 March 2019 12:00 to 17:00

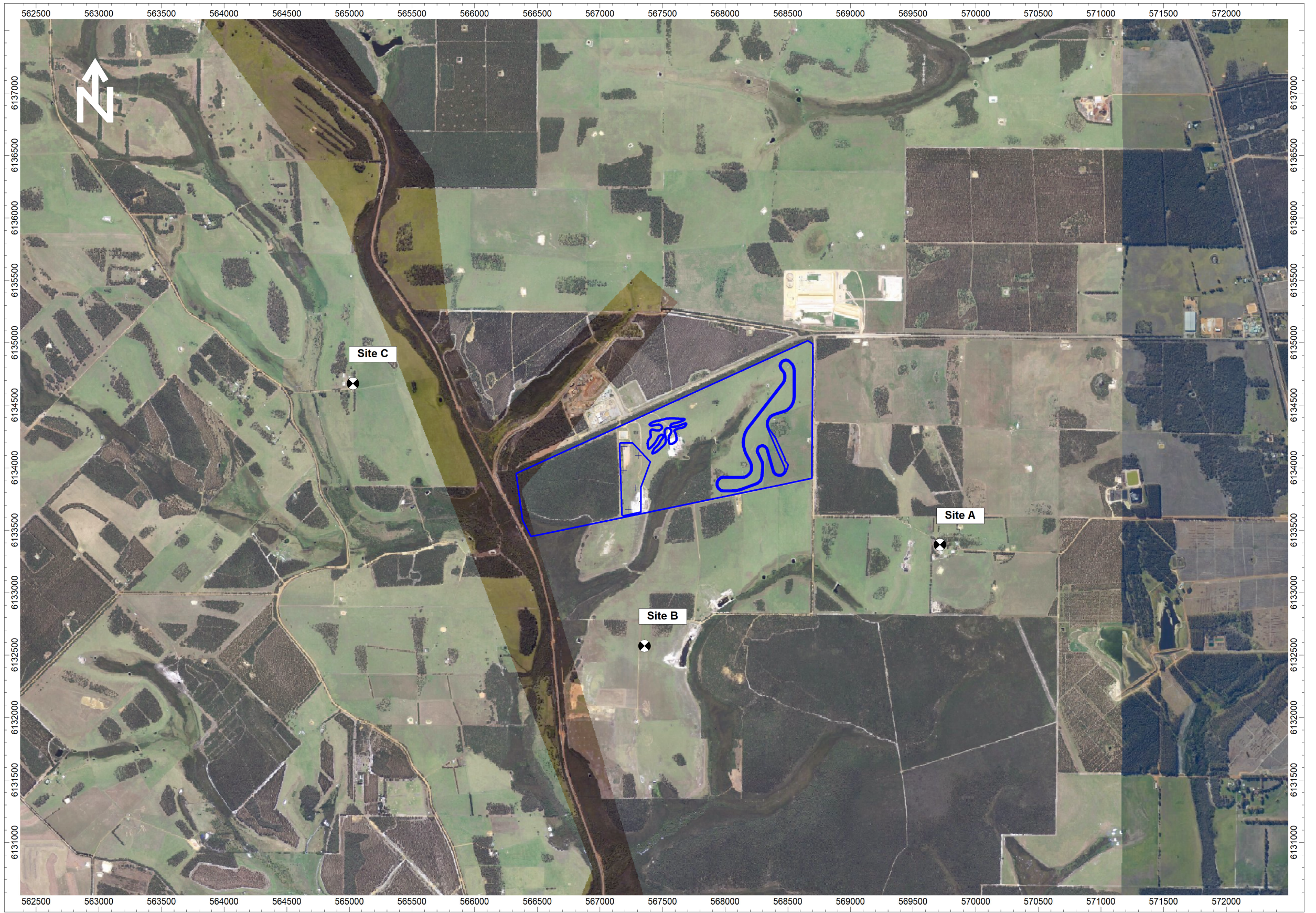
Daily noise monitoring results for each site are shown in Table 4-2, with entries significantly affected by meteorological conditions and anomalous results in the time periods above, removed.

PREDICTED NOISE LEVELS

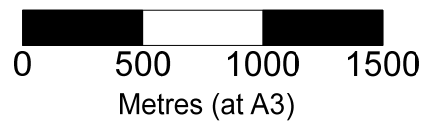


LEGEND

- Noise sensitive receptor
- Development area boundary



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 HORIZONTAL DATUM: Geocentric Datum of Australia (GDA)
 GRID: Map Grid of Australia 1994, Zone 50

DATE 10.08.2020	FILE LOCATION N:\AU\Albany WA\Projects\61137331\Technical\Noise
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ALBANY MOTORSPORT PARK

NOISE MONITORING LOCATIONS

FIGURE 4-1

Noise Assessment



Table 4-2 Daily L_{A90} noise levels, dBA

Site ID	Site A (SR01)			Site B (SR02)			Site C (SR04)		
Date	L _{A90} day	L _{A90} evening	L _{A90} night	L _{A90} day	L _{A90} evening	L _{A90} night	L _{A90} day	L _{A90} evening	L _{A90} night
Tuesday 5 March 2019	37.7	28.5	28.8	33.2	18.8	26.9	44.7	23.8	27.3
Wednesday 6 March 2019	39.8	31.8	27.2	32.4	25.9	20.0	42.2	30.9	22.2
Thursday 7 March 2019	32.5	27.2	28.8	28.8	17.1	19.1	36.3	23.0	28.6
Friday 8 March 2019	36.9	28.5	28.0	47.8	18.7	18.0	39.1	26.3	24.9
Saturday 9 March 2019	33.9	28.1	28.5	[8]	[8]	24.5	32.1	29.2	23.0
Sunday 10 March 2019	34.0	28.1	28.6	34.5	18.4	18.5	31.0	20.7	21.1
Monday 11 March 2019	33.9	27.4	29.5	40.5	15.1	23.4	32.7	24.5	28.9
Tuesday 12 March 2019	33.3	27.2	27.2	27.7	18.7	17.6	39.4	31.0	28.4
Wednesday 13 March 2019	32.0	-	-	25.7					
<i>Average</i>	<i>35.7</i>	<i>28.6</i>	<i>28.4</i>	<i>39.5</i>	<i>19.8</i>	<i>22.3</i>	<i>39.6</i>	<i>27.6</i>	<i>26.5</i>

L_{A90} values were not recorded during noise monitoring due to incorrect monitor setup. L_{Amin} values were recorded and have been adjusted to provide L_{A90} values. DWER have advised, based on a previous ambient measurements in a rural area, L_{Amin} values would be less than or equal to the L_{A90} levels and on average, the L_{A90} levels (15-minute duration) were less than 1 dB above the L_{Amin} for the logged period for night time and less than 3 dB above the L_{Amin} for the logged period for day time. These adjustments have been applied to the L_{Amin} values recorded.

⁸ Filtering to remove anomalous noise monitoring results in no valid data

Table 4-3 provides the rating background level (RBL) for each location. The RBL is defined as:

The overall single figure background level representing each assessment period (day/evening/night) over the whole monitoring period, defined as the median value of:

- *All the day assessment background levels over the monitoring period for the day (7.00 am to 7.00 pm).*
- *All the evening assessment background levels over the monitoring period for the evening (7.00 pm to 10.00 pm).*
- *All the night assessment background levels over the monitoring period for the night (10.00 pm to 7.00 am).*

Table 4-3 Overall L_{A90} noise levels, dBA

Site ID	L _{A90} day	L _{A90} evening	L _{A90} night
Site A (SR01)	33.9	28.1	28.6
Site B (SR02)	32.4	18.6	19.5
Site C (SR04)	37.7	25.4	26.1

Noise monitoring and observations indicate a noise environment for each location as follows:

- **Site A: 35552 Albany Hwy, DROME WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock (in the distance) and sounds of nature (birds, insects and wind in trees). The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.
- **Site B: 114 Down Rd South, DROME WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock and sounds of nature (birds, insects and wind in trees). Elevated noise levels during the day and night period are most likely due to vehicle traffic on farm roads, such as tractors and quad bikes, and livestock. The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.
- **Site C: 727 Marbelup North Rd, MARBELUP WA 6330** – A rural environment with the main sources of noise occasional vehicle traffic on farm roads, livestock and sounds of nature (birds, insects and wind in trees). Elevated noise levels during all periods is most likely due to vehicle traffic on farm roads, such as tractors and quad bikes, and livestock, which was located close to the noise logger location. The APEC wood chip mill was in operation during the noise monitoring but was not audible. The Plantation Energy pellet facility was not in operation during the noise monitoring.

Noise monitoring at sensitive receptors in the vicinity of the Albany Motorsport Park indicates there were no existing noise sources, operating at the time of the noise monitoring, which need to be considered as 'significantly contributing'. On this basis, the assessment has been completed for noise impacts from the Albany Motorsport Park in isolation.

5. Construction noise and vibration assessment

5.1 Construction noise

Construction noise impacts associated with the Albany Motorsport Park were estimated using the following distance attenuation relationship:

$$SPL = SWL - 20 \log(d) + 10 \log(Q) - 11$$

where: d = Distance between the source and receptor (m)
 Q = Directivity index (2 for a flat surface)
 SPL = Sound pressure level at the distance from the source (dB)
 SWL = Sound power level of the source (dB)

Typical noise levels produced by construction plant anticipated to be used on-site were sourced from *AS 2436 – 2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*.

Propagation calculations take into account sound intensity losses due to spherical spreading, with additional minor losses such as atmospheric absorption, directivity and ground absorption ignored in the calculations. As a result, predicted received noise levels are expected to slightly overstate actual received levels and thus provide a measure of conservatism.

Received noise produced by anticipated activities during the construction of the AMP are shown in Table 5-1 for a variety of distances, with no noise barriers or acoustic shielding in place and with each plant item operating at full power. The sound pressure levels shown are maximum levels produced when machinery is operated under full load.

The magnitude of off-site noise impact associated with construction will be dependent upon a number of factors:

- The intensity and location of construction activities
- The type of equipment used
- Existing local noise sources
- Intervening terrain
- The prevailing weather conditions

Construction machinery will move about the AMP site area, altering the directivity of the noise source with respect to individual receptors. During any given period the machinery items used in the AMP area will operate at maximum sound power levels for only brief times. At other times the machinery may produce lower sound levels while carrying out activities not requiring full power. It is unlikely that all construction equipment would be operating at their maximum sound power levels at any one time. Finally, certain types of construction machinery will be present in the AMP area for only brief periods during construction.

Table 5-1 Predicted plant activity noise levels (dBA)

Plant	Estimated SWL (dBA)	Estimated SPL (dBA) at distance (m)						
		50	250	500	750	1000	2000	3000
Backhoe	104	62	48	42	39	36	30	26
Backhoe (with auger)	106	64	50	44	41	38	32	28
Bulldozer	108	66	52	46	43	40	34	30
Compactor	113	71	57	51	48	45	39	35
Compressor (silenced)	101	59	45	39	36	33	27	23
Concrete agitator truck	109	67	53	47	44	41	35	31
Concrete pump truck	108	66	52	46	43	40	34	30
Concrete saw	117	75	61	55	52	49	43	39
Concrete vibratory screed	115	73	59	53	50	47	41	37
Crane (mobile)	104	62	48	42	39	36	30	26
Excavator	107	65	51	45	42	39	33	29
Front end loader	113	71	57	51	48	45	39	35
Generator (diesel)	104	57	43	37	34	31	25	21
Grader	110	68	54	48	45	42	36	32
Hand tools (electric)	102	60	46	40	37	34	28	24
Hand tools (pneumatic)	116	74	60	54	51	48	42	38
Jack hammers	121	79	65	59	56	53	47	43
Rock breaker	118	76	62	56	53	50	44	40
Roller (vibratory)	108	66	52	46	43	40	34	30
Scraper	116	74	60	54	51	48	42	38
Truck (>20 tonnes)	107	65	51	45	42	39	33	29
Truck (dump)	117	75	61	55	52	49	43	39
Truck (water cart)	107	65	51	45	42	39	33	29
Vehicle (commercial, 4WD)	106	64	50	44	41	38	32	28
Welder	105	63	49	43	40	37	31	27

The closest noise sensitive receptor to any potential noise source during construction of the plant is located approximately 1120 m from the AMP. From Table 5-1, noise levels exceeding the day L_{A10} assigned level of 45 dBA are not expected to impact on the closest noise sensitive receptors, with the exception of noisy equipment with a sound power level (SWL) higher than 115 dBA.

In line with the Regulations, construction will be carried out in accordance with control of environmental noise practices set out in Section 6 of Australian Standard (AS) 2436-2010 *Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites* and equipment used will be the quietest reasonably available (basis for numbers in Table 5-1).

5.2 Construction vibration

Vibration impacts discussed essentially focus on potential structural damage to properties in close proximity of the AMP area and/or potentially affected by construction activities. The separation distance between construction activities and the potentially most impacted sensitive receptors is 1120 m.

The nature and levels of vibration from the site will vary with the activities being carried out on site. Table 5-2 outlines typical vibration levels for different plant activities that may be generated on the site, sourced from the NSW Roads and Traffic Authority (RTA) *Environmental Noise Management Manual*^[9].

⁹ Roads and Traffic Authority (RTA), 2001. *Environmental Noise Management Manual*. Sydney, December 2001.

Table 5-2 Typical vibration levels for construction equipment

Plant item	Peak particle velocity at 10 m (mm/s)
Backhoe	1.0
Bulldozer	2.5-4.0
Compactor (7 tonne)	5.0-7.0
Front end loader	6.0-8.0
Jack hammer	0.5
Roller (15 tonne)	7.0-8.0

Construction activity may result in varying degrees of ground vibration depending on the equipment used and methods employed. Operation of construction equipment causes ground vibration which spreads through the ground and diminishes in strength with distance. Buildings founded on the soil in the vicinity of the construction site respond to these vibrations with varying outcomes.

From Table 5-2, equipment proposed for site preparation and construction of the AMP will generate low levels of vibration which are unlikely to result in any vibration risks to structures. The lower limit for vibrations resulting in building damage (5 mm/s) is normally not exceeded by general construction activities at distances greater than 20 m from the nearest sensitive receptor.

Given the distances involved between site works and the nearest receptors, vibrations affecting human comfort and building integrity are not expected to be an issue.

6. Operational noise assessment

6.1 Noise model objective

The objective of noise modelling is to determine the noise impact at the nearest noise sensitive receptors resulting from Albany Motorsport Park during events and practice, under both neutral and adverse weather conditions.

Noise modelling was undertaken using Computer Aided Noise Abatement (CadnaA) to predict the effects of noise generated by motorsport events.

6.2 Noise modelling software package

CadnaA, by Datakustik, is a computer program for the calculation, assessment and prognosis of noise exposure. CadnaA calculates environmental noise propagation according to the CONCAWE algorithm.

CONCAWE is a mathematical model developed to predict community noise levels from petrochemical and industrial plant for a range of meteorological conditions. A full description of the mathematical model is provided in the report prepared for the Conservation of Clean Air and Water in Europe (CONCAWE)^[10] The CONCAWE prediction method is widely used in a range of environmental scenarios for predicting noise impacts of industrial facilities.

CadnaA considers local characteristics, site sources and the location of the receptor areas to predicted noise levels. The method specified consists of octave band algorithms (with nominal mid band frequencies from 31.5 Hz to 8 kHz) for calculating the attenuation of sound. The algorithms used in this model account for the following physical features:

- Geometrical divergence,
- Atmospheric absorption,
- Ground effect,
- Reflection from surfaces, and
- Screening by obstacles.

In assessing meteorological conditions, the CONCAWE method has been applied instead of ISO 9613-2 weather correction. Modelling results are based on available information provided and should only be used as a guide for comparative purposes.

6.3 Noise model configuration

6.3.1 Proposed plant layout

The noise model developed for this assessment was based on the project layout of the AMP as provided (see Figure 1-1).

6.3.2 Topography and ground absorption effects

In line with the proposed location of the AMP, the site and surrounding ground topography was included in the modelled using 1 m ground contours.

Ground absorption was taken into account in the calculations. A general ground absorption coefficient of 0.7 was used throughout the model to represent the surrounding ground type

¹⁰ Manning, 1991. *CONCAWE Report No. 4/81 – The propagation of noise from petroleum and petrochemical complexes to neighbouring communities.*

mainly comprising of mixed vegetation and soil. A ground absorption coefficient of 0 was used for paved areas such as the multi-use track and associated hardstand areas.

6.3.3 Meteorological conditions

The meteorological conditions selected for the model can have a significant effect on the result. As such, EPA requires compliance with the assigned noise levels to be demonstrated for 98% of the time, during day and night periods, for the month of the year in which the worst case weather conditions prevail¹¹. EPA specifies the use of the meteorological conditions outlined in Table 6-1.

Table 6-1 Meteorological conditions for noise modelling

Meteorology	Calm	Worst case	
	Day and night	Day	Evening / Night
Wind speed	0 m/s	4 m/s	3 m/s
Stability	D-class	E-class	F-class
Temperature	20°C	20°C	15°C
Relative humidity	70%	50%	50%

As sensitive receptors are located in several directions from the AMP, assessment under worst case wind direction for each receptor has been undertaken.

6.3.4 Model output conversion

CadnaA calculates L_{Aeq} predicted noise levels at discrete sensitive receptors and across the modelling grid. Predicted noise levels are converted to L_{A10} predicted noise levels, for the purpose of assessing against the assigned noise levels, by applying a correction of +3 dBA to the predicted L_{Aeq} values.

6.4 Noise sources

A summary of expected motorsport events is provided in Section 2. Corresponding noise levels for various event types are outlined in Table 6-2. Sound power levels for the various vehicle types are provided in Table 6-3.

Table 6-2 Event type and vehicle sound power levels

Event type	Worst case sound power level	Operating time
Driving training, school and manufacturer testing	109 dBA	Day
Multi-use track events – Car and bike events	133 dBA	Day
Motocross events	133 dBA	Day
4WD off road training	109 dBA	Day

Table 6-3 Sound power levels (dBA)

Vehicle type	Sound power level (dBA)								dBA
	63	125	250	500	1000	2000	4000	8000	
Road registered car or motorbike	73	77	84	98	104	105	98	88	109
Multi-use track – CAMS approved vehicles	102	126	126	121	127	123	119	119	133

¹¹ EPA (Environmental Protection Authority), 2007. *Guidance for the Assessment of Environmental Factors – No. 8 - Environmental Noise – Draft*, Perth, May 2007.

Vehicle type	Sound power level (dBA)								
	63	125	250	500	1000	2000	4000	8000	dBA
Motocross bike (senior class)	100	116	127	112	122	129	125	116	133
4WD off road	73	77	84	98	104	105	98	88	109

6.4.1 Driving training school and manufacturer testing

Noise modelling has been conducted for driver training, driver school and manufacturer testing, with 20 cars or motorbikes operating simultaneously with noise sources spaced around the multi-use track.

Noise levels from road registered cars and motorbikes are assumed to comply with Australia Design Rule (ADR) requirements for vehicle noise emissions and have been assigned a sound power level of 109 dBA^[12].

The duration of noise generation from driver training, school and manufacturer testing is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels.

6.4.2 Multi-use track events – Car and bike events, including drifting and motorkhana events

Noise modelling has been conducted for multi-use track events for cars or motorbikes, with 20 cars or motorbikes operating simultaneously with noise sources spaced around the multi-use track.

Noise levels which meet CAMS requirements have been assumed, equating to a sound power level of 132.5 dBA.

The duration of noise generation these events is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels.

6.4.3 Motocross events

Noise modelling has been conducted for a Senior Open race event, with 16 motocross bikes operating simultaneously with noise sources spaced around the motocross track and modelled heights of either 0.5 m, 2.5 m and 5.0 m to represent course terrain and jumps.

Noise levels from senior class motocross bikes have been assumed as a sound power level of 132.7 dBA.

The duration of noise generation these events is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against LA₁₀ assigned levels. As noise from motocross bikes typically exhibits tonal characteristics where audible, a 5 dB penalty has been applied to motocross events during this assessment.

6.4.4 4WD off road training

Noise modelling has been conducted for 4WD off road driver training, with five 4WD vehicles operating simultaneously with noise sources spaced around the 4WD training area. Noise levels from road registered 4WD vehicles have been assumed as a sound power level of 109 dBA.

¹² ADR83/00 requirement of complying with 83 dBA at 7.5 m, equivalent to sound power level of 109 dBA.

The duration of noise generation from 4WD off road training is unlikely to be continuous, with an assumed duration of no longer than 30 minutes in any hour. Noise impacts from this source have been assessed against L_{A10} assigned levels.

6.5 Noise modelling results

The calculated noise levels at the nearest noise sensitive premises were assessed to determine if predicted noise emissions complied with the appropriate day L_{A10} assigned noise level.

There are four residences within close proximity to Albany Motorsport Park. For the purpose of this assessment, it has been assumed that if compliance is achieved at the nearest residences, compliance would be achieved further away.

6.5.1 Neutral meteorological conditions

Predicted day noise levels from various motorsport events under neutral meteorological conditions are presented in Table 6-4. Table 6-4 shows predicted exceedance of the day assigned noise level as red text.

Table 6-4 Predicted day L_{A10} noise levels – Neutral meteorological conditions, dBA

Event	Assigned noise level	SR01	SR02	SR03	SR04
Background noise level, L_{A90} ^[13]		32	26	31 ^[14]	31
Driver training school, manufacturer testing (DT)	40	27	21	10	16
Multi-use track events (MUT)	40	54	51	42	46
Motocross events (MX) ^[15]	40	49	57	40	46
4WD training (4WD)	40	15	28	14	17

From Table 6-4:

- Driver training school, manufacturer testing and 4WD training events are predicted to comply with the assigned levels and to not be audible over background noise levels at all sensitive receptors.
- Multi-use track events are predicted to exceed assigned levels and to be audible over background noise levels at all sensitive receptors for multi-use track events.
- Motocross events, inclusive of 5 dB penalty for tonality, are predicted to comply with assigned levels at SR03 and exceed assigned levels at SR01, SR02 and SR04. Noise levels are predicted to be audible over background noise levels at all sensitive receptors for motocross events.

Predicted day noise level contours for each single event type are presented in Figure 6-1 to Figure 6-4.

¹³ Background noise level conservatively taken as lowest measured background noise level during monitoring

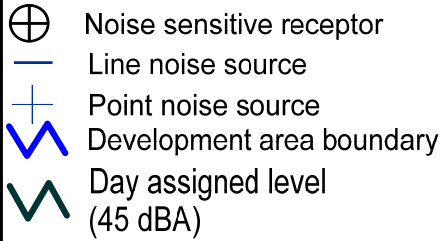
¹⁴ Noise monitoring not completed at SR03, background noise assumed to be same as SR04

¹⁵ Inclusive of 5 dB penalty for tonality

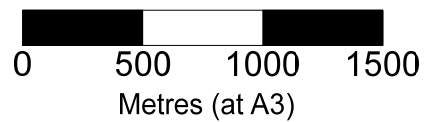
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
DRIVER TRAINING**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

FIGURE 6-1

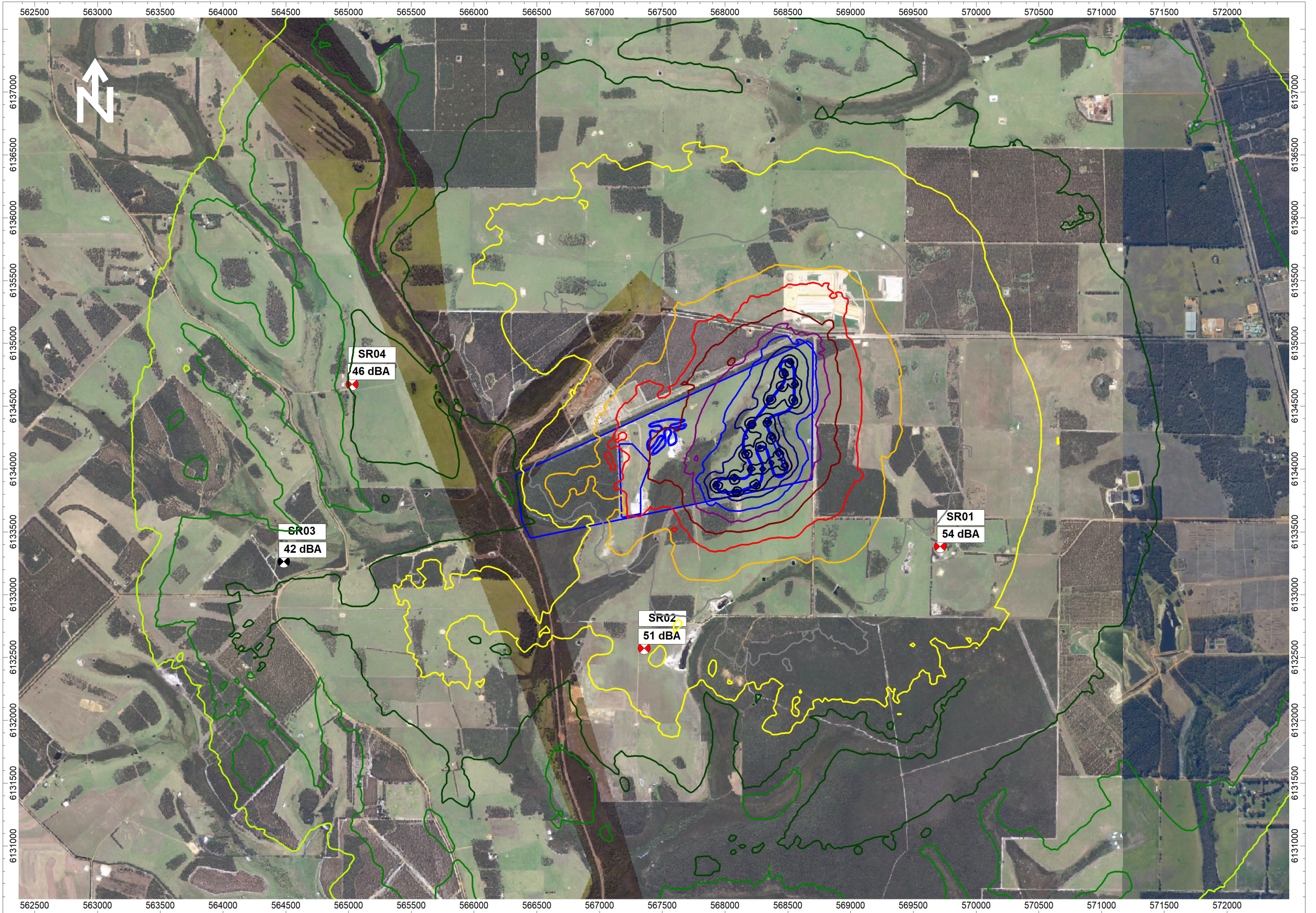
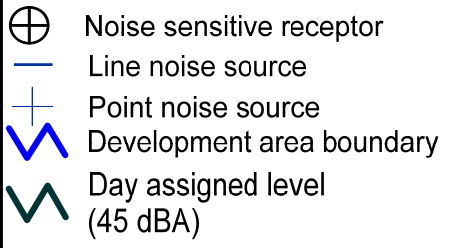


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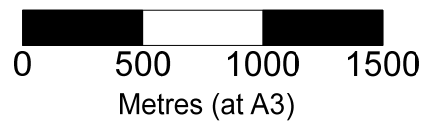
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

Noise Assessment

PREDICTED DAY NOISE LEVELS MULTI-USE TRACK EVENT

Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

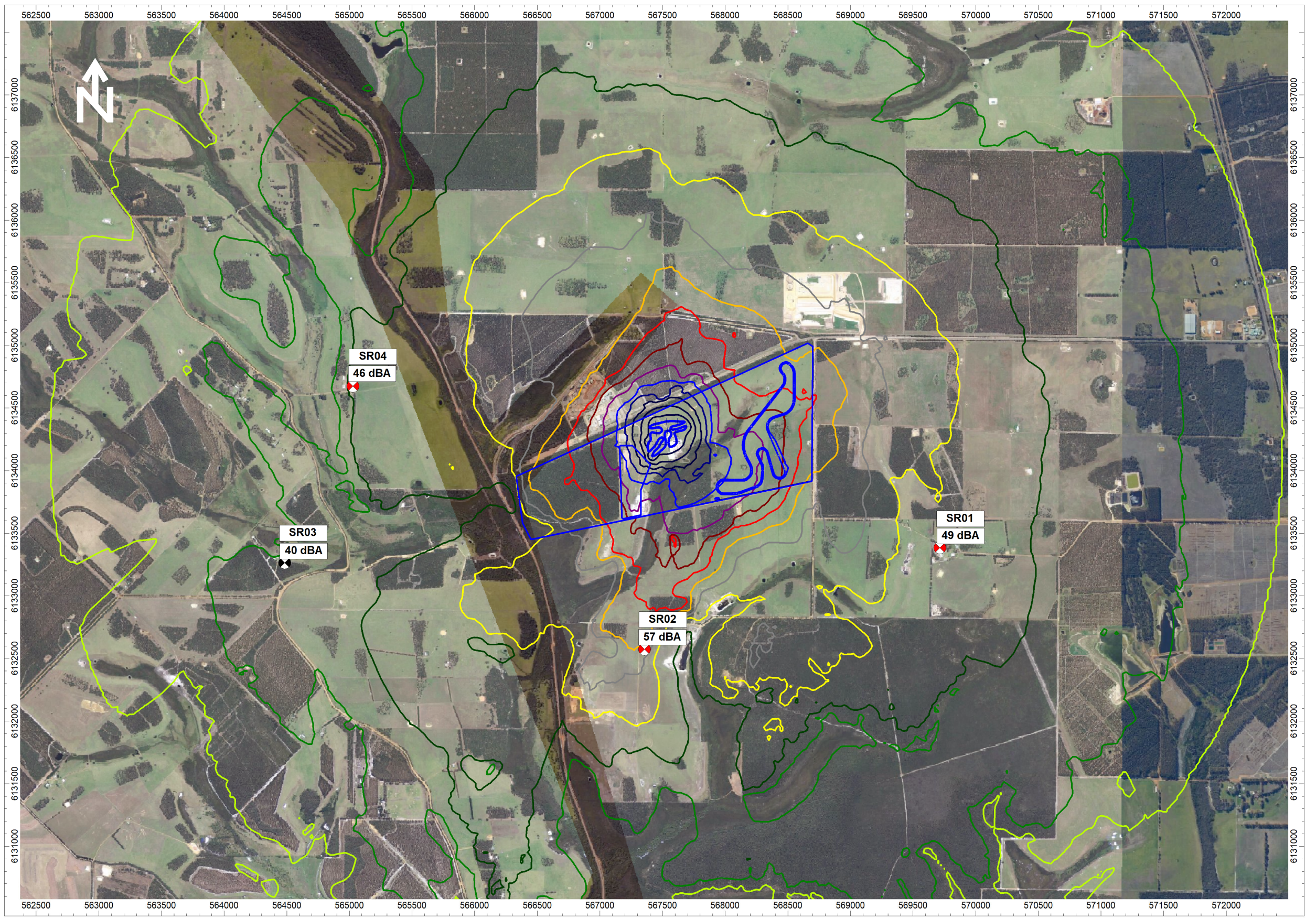
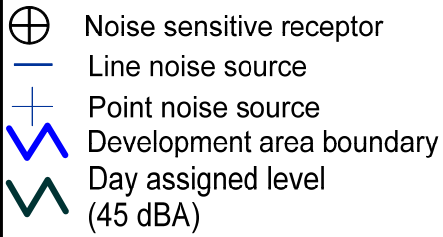
FIGURE 6-2



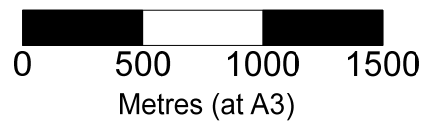
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
MOTOCROSS EVENT**

Noise Assessment

Noise contours: L_{A10}
Grid height: 1.4 m
Neutral meteorological conditions

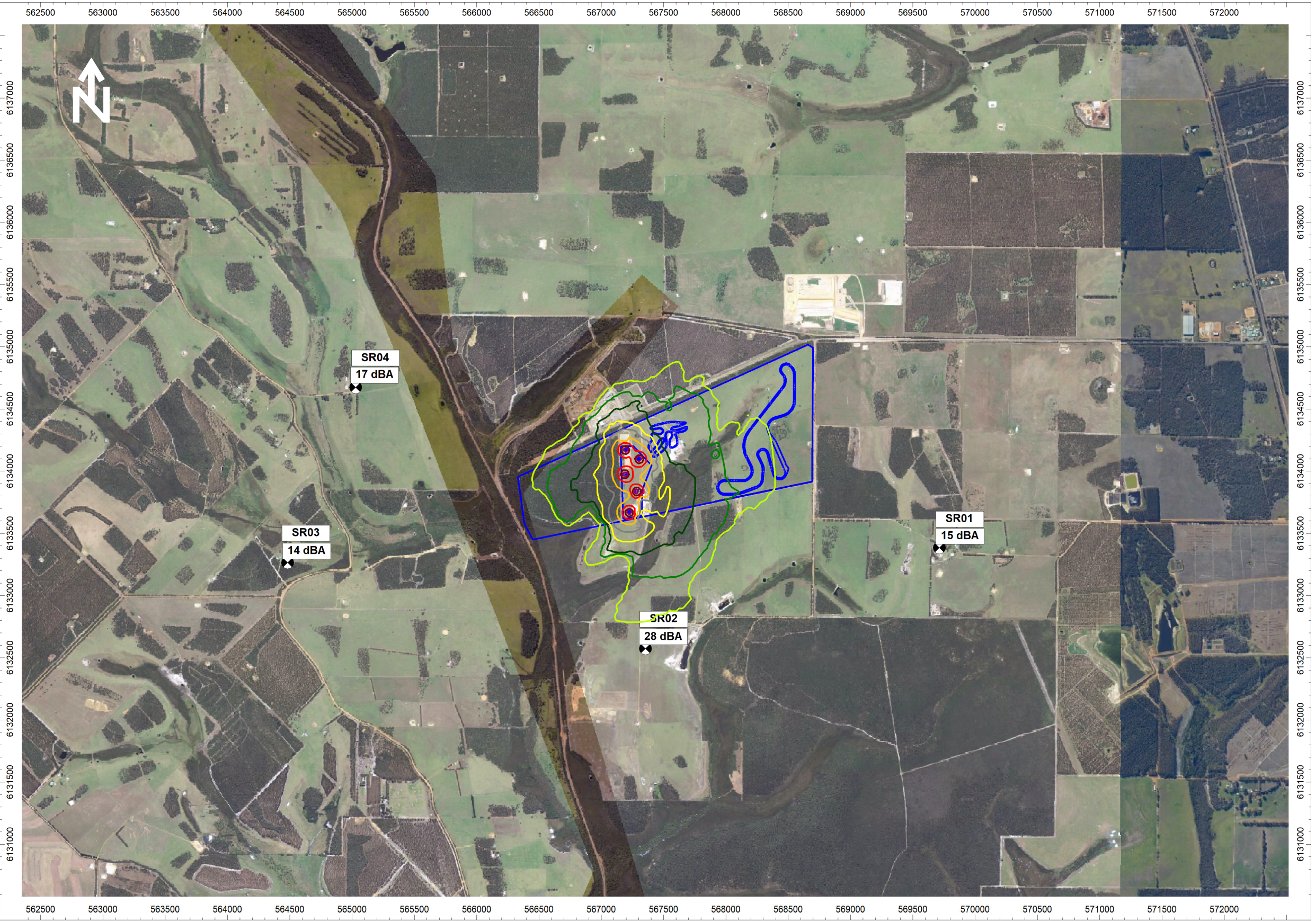
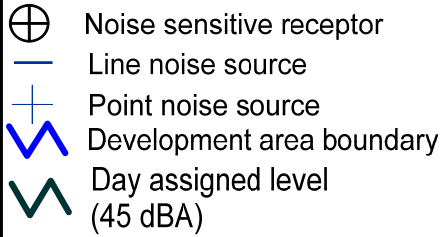
FIGURE 6-3



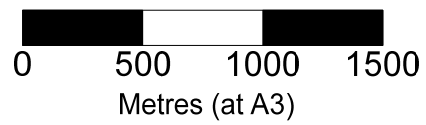
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

Noise Assessment

**PREDICTED DAY NOISE LEVELS
4WD TRAINING**

Noise contours: L_{A10}
 Grid height: 1.4 m
 Neutral meteorological conditions

FIGURE 6-4

6.5.2 Worst case meteorological conditions

Predicted day noise levels from various motorsport events under worst case meteorological conditions are presented in Table 6-5. Table 6-5 shows predicted exceedance of the day assigned noise level as red text.

Table 6-5 Predicted day L_{A10} noise levels – Worst case meteorological conditions, dBA

Event	Assigned noise level	SR01	SR02	SR03	SR04
Worst case wind direction (°)		310	10	80	100
Background noise level, L_{A90} ^[13]		32	26	31 ^[14]	31
Driver training, school, manufacturer testing (DT)	40	33	28	18	23
Multi-use track events (MUT)	40	59	56	47	51
Motocross events (MX) ^[15]	40	55	62	46	52
4WD training (4WD)	40	22	34	21	24

From Table 6-5:

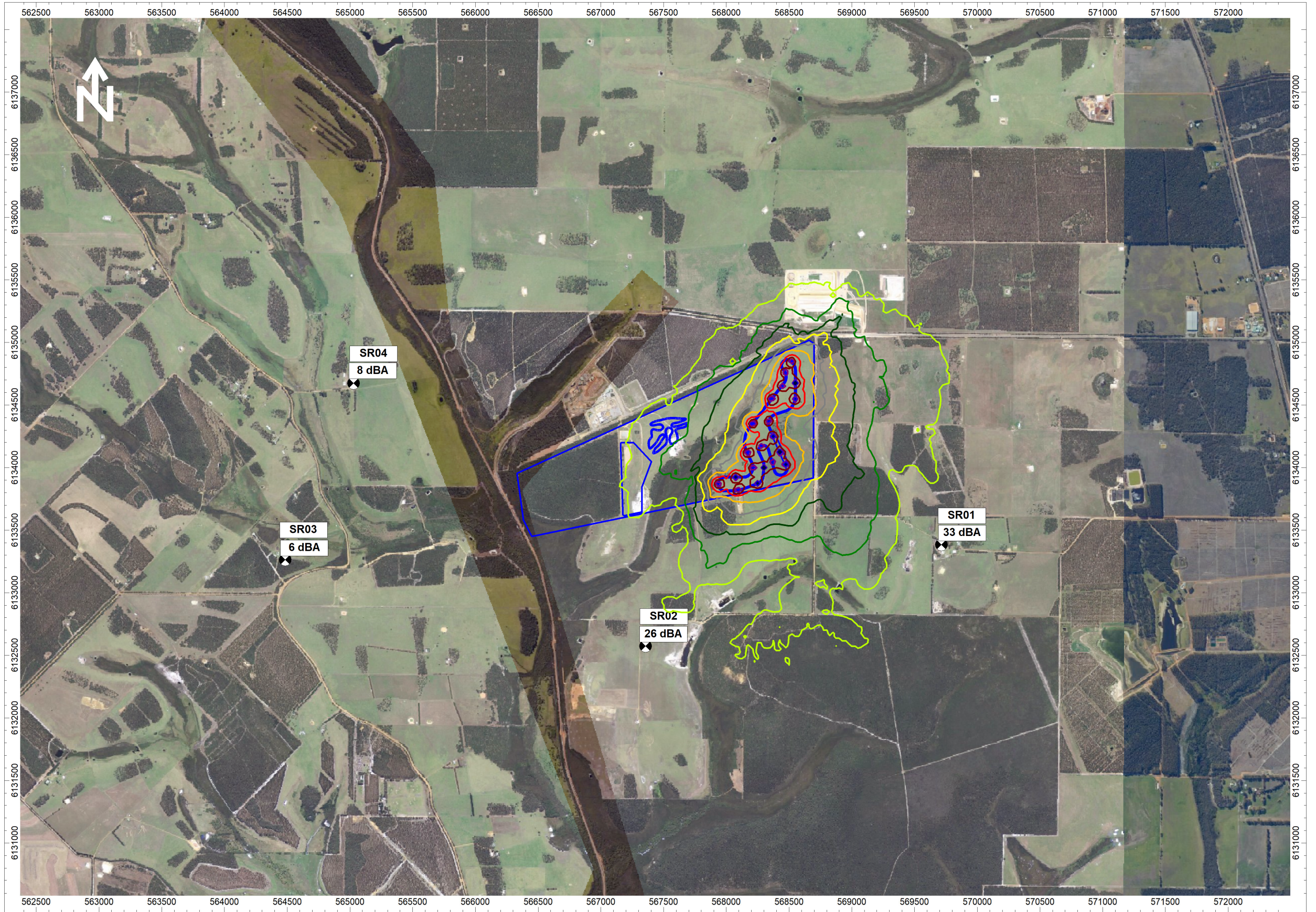
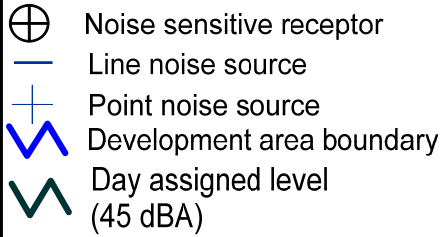
- Driver training school, manufacturer testing and 4WD training events are predicted to comply with the assigned levels and to not be audible over background noise levels at all sensitive receptors.
- Multi-use track events are predicted to exceed assigned levels and to be audible over background noise levels at all sensitive receptors.
- Motocross events are predicted exceed assigned levels and to be audible over background noise levels at all sensitive receptors.

Predicted day noise level contours for each event type are presented in Figure 6-5 to Figure 6-8. In each figure, worst case wind direction is presented for the most impacted receptor.

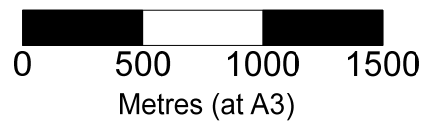
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

Noise Assessment

**PREDICTED DAY NOISE LEVELS
DRIVER TRAINING**

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 6-5

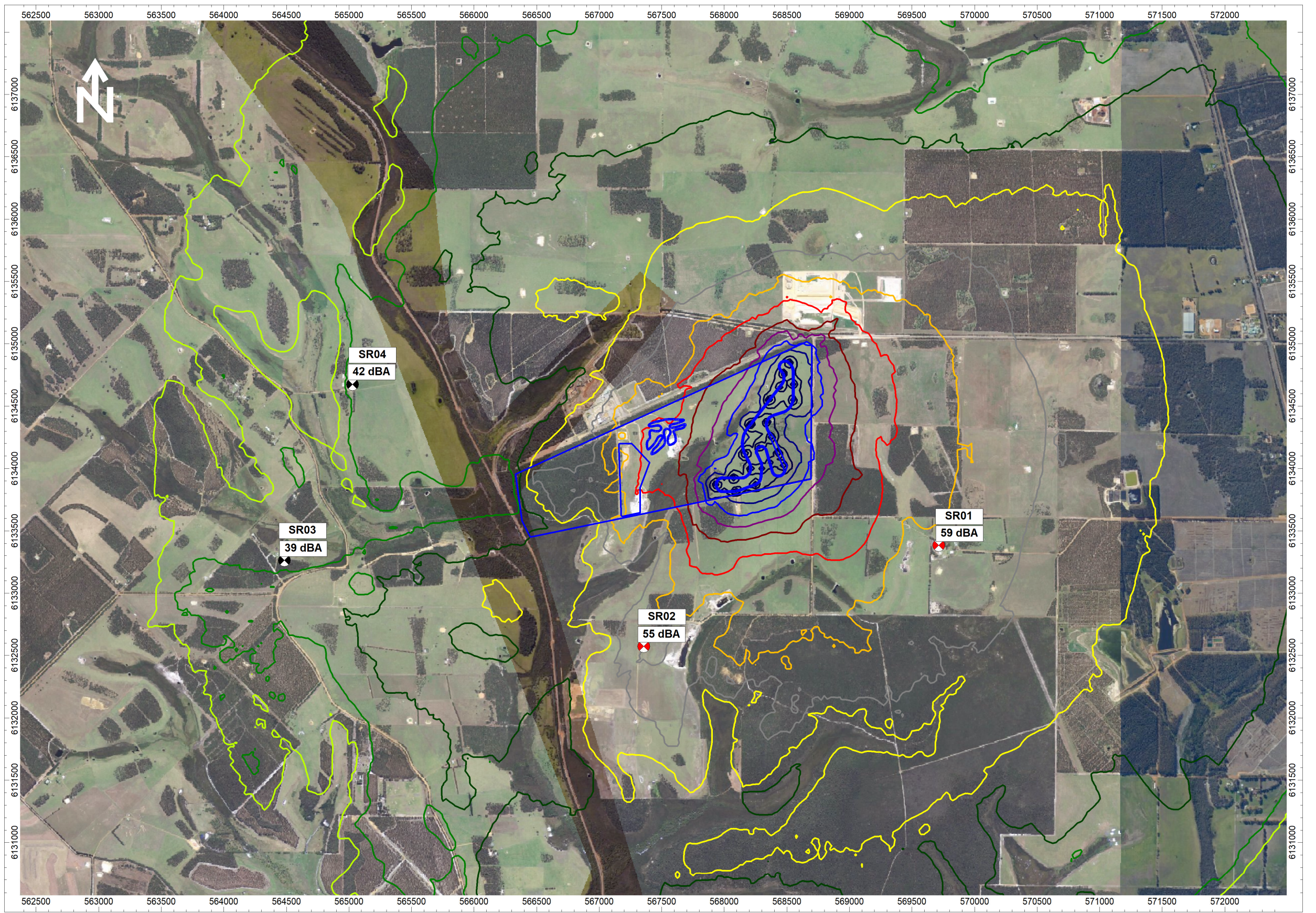
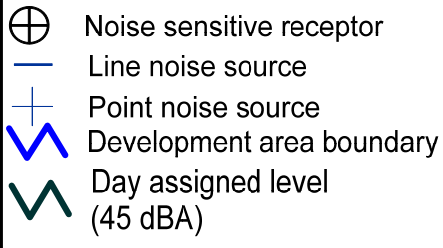


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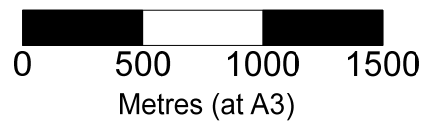
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

Noise Assessment

**PREDICTED DAY NOISE LEVELS
MULTI-USE TRACK EVENTS**

Noise contours: L_{A10}
Grid height: 1.4 m
Worst case meteorological conditions

FIGURE 6-6

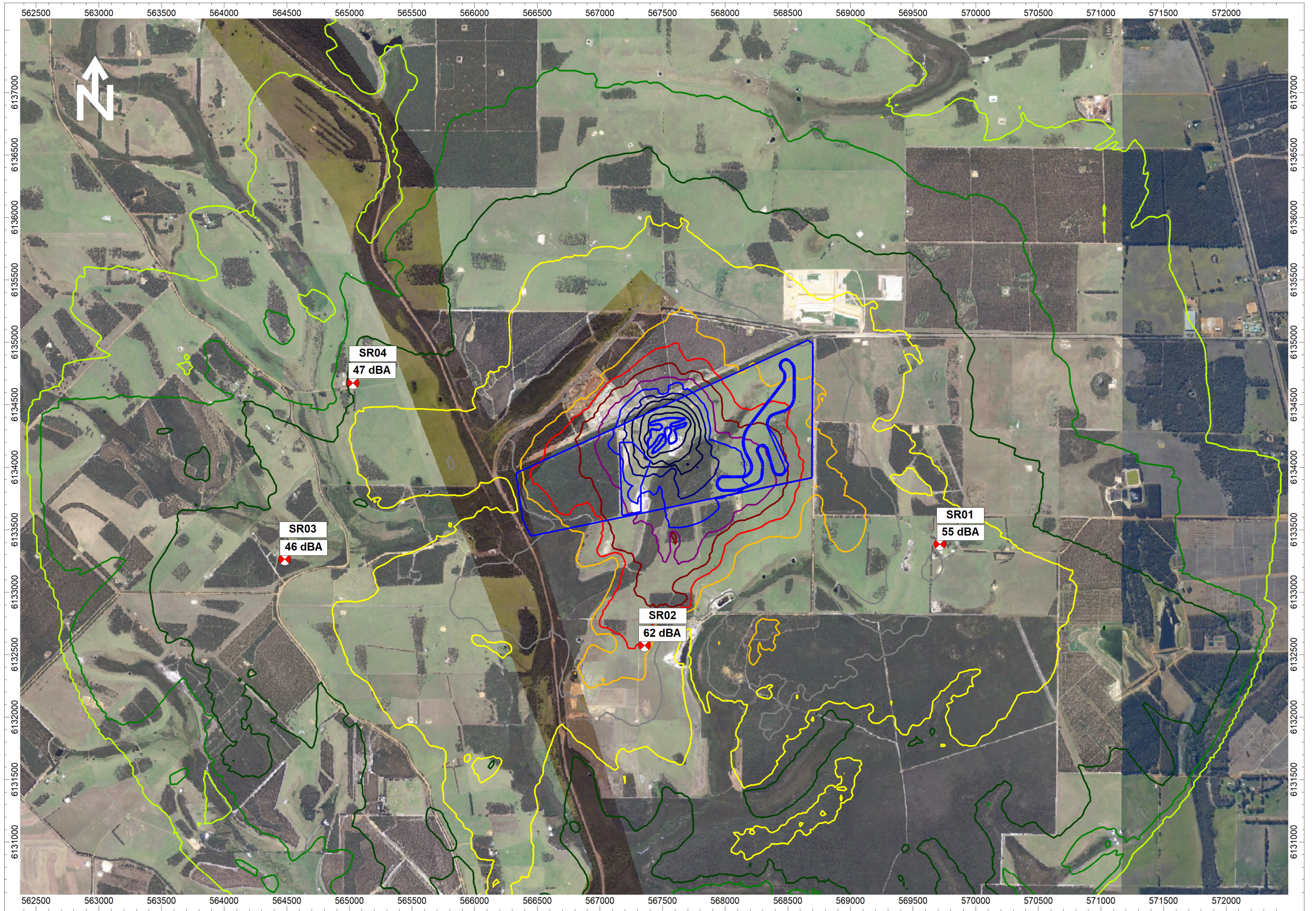
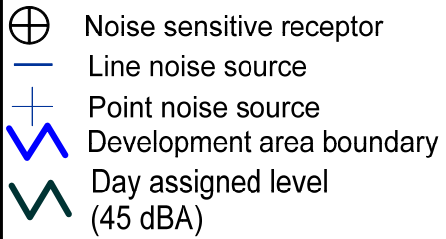


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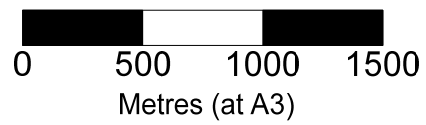
PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

Noise Assessment

**PREDICTED DAY NOISE LEVELS
MOTOCROSS EVENT**

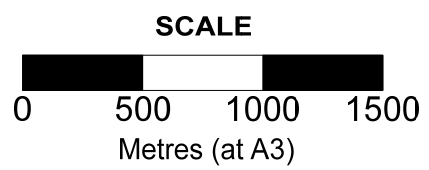
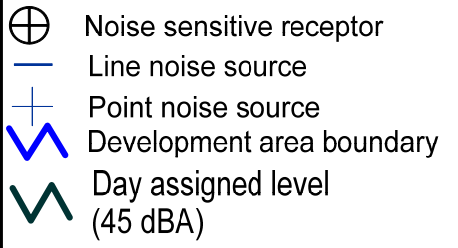
Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 6-7

PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK

**PREDICTED DAY NOISE LEVELS
4WD TRAINING**

Noise Assessment

Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 6-8



6.5.3 Summary and discussion

A summary of predicted noise levels assessed against assigned noise levels for both neutral and worst case meteorological conditions is presented in Table 6-6, with negative noise levels indicating compliance with assigned noise levels and positive indicating exceedance.

Table 6-6 Exceedance of assigned L_{A10} noise levels - Neutral/worst case meteorological conditions, dBA

Receptor	SR01	SR02	SR03	SR04
Driver training, school, manufacturer testing (DT)	-13/-7	-19/-12	-30/-22	-24/-17
Multi-use track events (MUT)	+14/+19	+11/+16	+2/+7	+6/+11
Motocross events (MX) ^[15]	+9/+15	+17/+22	0/+6	+6/+12
4WD training (4WD)	-25/-18	-12/-6	-26/-19	-23/-16

The results presented in Table 6-6 demonstrate that for multi-use track and motocross events, there are occasions when the predicted noise levels from Albany Motorsport Park exceed the assigned noise levels.

As events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive. As day time only events are scheduled, worst case conditions are only likely to occur due to wind direction, with no effect due to stability class (Table 6-1). Figure 6-9 presents the seasonal and annual day time wind roses for Albany for the period from 2001 to 2019.

Review of the wind roses provides an indication of how often worst case noise levels may occur at each receptor, with wind speeds up to 4 m/s (yellow and light green categories on the wind roses) representing worst case wind speed during the day period. The prevalence of worst case wind conditions at each sensitive receptor is as follows:

- SR01 – Worst case wind direction is a north-westerly, which is likely to occur approximately five percent of day time hours (between 7:00 am and 7:00 pm) (219 hours per year).
- SR02 – Worst case wind direction is a northerly, which is likely to occur approximately three percent of day time hours (132 hours per year).
- SR03 – Worst case wind direction is an easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).
- SR04 – Worst case wind direction is a south-easterly, which is likely to occur approximately two percent of day time hours (88 hours per year).

For each sensitive receptor, worst case wind conditions are most likely to occur during autumn and winter, rather than spring and summer. Events will conclude earlier in autumn and winter as it is darker earlier, and lighting is not available, therefore being less intrusive than events which potentially conclude later during spring and summer.

Comparison of predicted noise levels against monitored background noise levels is presented in Table 6-7, showing the emergence above background for neutral and worst case meteorological conditions.

Table 6-7 Emergence above background noise L_{A90} noise levels - Neutral/worst case meteorological conditions, dBA

Receptor	SR01	SR02	SR03	SR04
	32	26	31	30, 31
Driver training, school, manufacturer testing (DT)	-5/+1	-5/+2	-21/-13	-15/-8
Multi-use track events (MUT)	+22/+27	+25/+30	+11/+16	+15/+20
Motocross events (MX) ^[15]	+17/+23	+31/+36	+9/+15	+15/+18
4WD training (4WD)	-16/-10	+2/+8	-17/-10	-14/-7

Table 6-7 indicates that noise levels from multi-use track and motocross events are predicted to be clearly audible at all sensitive receptors.

Based on the above analysis of wind conditions, during the day time period for the majority of events, predicted noise levels are likely to be as per neutral conditions, rather than worst case conditions, typically up to 6 dB quieter than for worst case conditions.

Nevertheless, appropriate mitigation measures have been recommended in Section 7 in order to reduce the impact on existing and future sensitive receptors due to the motorsport facility.

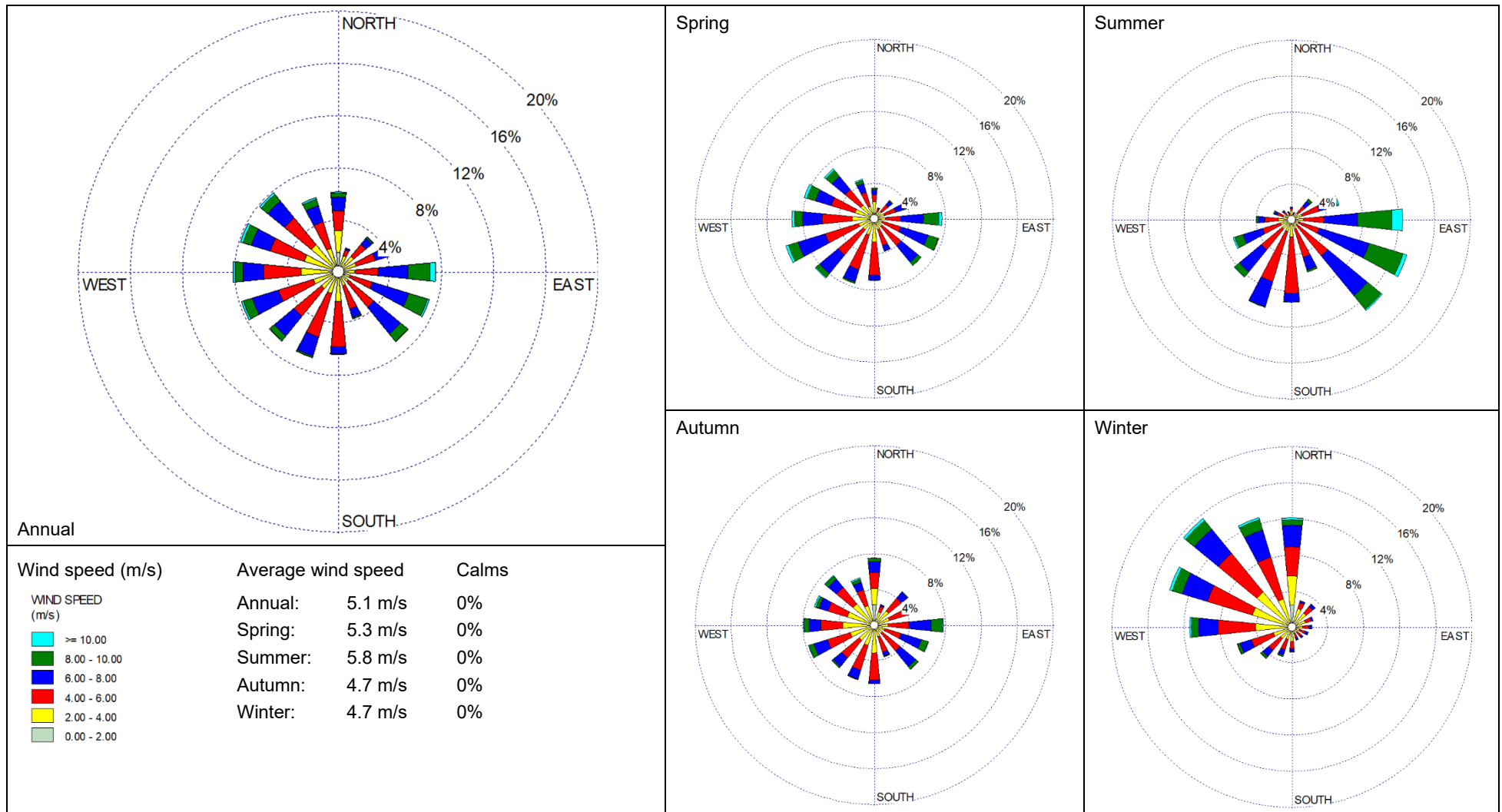


Figure 6-9 Annual and seasonal day time wind roses for observed meteorological data at Albany Airport

7. Managing noise impacts

The results presented in Section 6 for neutral and worst case meteorological conditions demonstrate that for some events, namely multi-use track and motocross events, there will be occasions when the predicted noise levels from Albany Motorsport Park exceed the day assigned noise levels at the nearest sensitive receptors.

As such, it is recommended that appropriate management and mitigation measures are implemented for the project.

7.1 Regulation – Approved noise management plan

The *Environmental Protection (Noise) Regulations 1997* set assigned (allowable) noise levels for various types of premises that receive noise from other premises. There are many activities that occur in the community that cannot, however, reasonably and practicably meet those assigned levels, but retain a degree of acceptance, either because of the temporary nature of the activity or the perceived community benefit.

In the case of a motor sport venue, good land use planning may be able to avoid noise problems in the first place – this may involve selection of a site for a new venue that is well away from sensitive receivers, or preventing encroachment by new residences into the noise-affected area around the venue.

Where a motor sport venue cannot practicably comply with the assigned noise levels, Division 3 of the Regulations allows the venue occupier to apply for a special approval. Under this approval the noise emissions from the venue are permitted to exceed the assigned levels in the Regulations provided the venue operates in accordance with an approved noise management plan (NMP) for the venue.

Regulation 16 of the *Environmental Protection (Noise) Regulations 1997* allows the Chief Executive Officer (CEO) of DWER (or delegated power such as local government CEO) to request preparation and submission of a NMP for a motor sport venue (that belongs to a recognised motor sports organisation^[16]).

Regulation 16 includes the following:

- CEO to approve or refuse the NMP, but before approving it must seek comment from the affected residents within a kilometre of the venue and other local governments likely to be affected.
- NMP must contain certain elements:
 - A map of the venue and area
 - Description of the types of races
 - Maximum number of race meetings and practice sessions and times of the day
 - Measures to control noise emissions
 - How the community is to be informed of the race meeting program
 - Who is responsible for implementing the NMP
 - Complaints response procedure
- The CEO is be able to require the noise certification of race vehicles (if appropriate for that venue).

¹⁶ *Guide to Management of Noise from Motor Sport Venues - Environmental Protection (Noise) Regulations 1997*, Department of Environment Regulation, 168 St Georges Terrace, Perth, Western Australia, July 2014.

- The CEO is able to charge fees to cover the cost of assessing the application and for noise monitoring and also to waive or reduce the fees payable.
- The CEO is able to amend or revoke the NMP, after consultation.

The status of the NMP would be that the normal assigned levels do not apply to the noise emissions as long as the venue operates as per the NMP. If the emissions were outside the NMP, for example a meeting went outside the nominated hours, the noise emissions have to comply with Regulation 7 and the normal enforcement measures under the *Environmental Protection Act 1986* would apply.

Whilst the introduction of a formal NMP may not reduce noise levels from Albany Motorsport Park, such measures will prevent noise impacts increasing due to increased number of events etc. without consultation with affected residents.

An example Noise Management Plan, prepared in line with requirements outlined in *Guide to Management of Noise from Motor Sport Venues*, has been provided in Appendix B.

7.2 Mitigation measures

As previously outlined, model predicted noise levels from operation of Albany Motorsport Park exceed assigned levels within the surrounding area.

As discussed above, introduction of a requirement for Albany Motorsport Park to operate according to a noise management plan provides a mechanism to prevent further increase of events without consulting residents, but may not reduce noise levels from proposed operations.

On-site mitigation measures to reduce noise levels at source from Albany Motorsport Park are limited and include:

- Scheduling of events and practice to minimise noise impacts on the existing residents. Future events scheduling at Albany Motorsport Park will take into consideration predicted noise impacts. Typical day operation is 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.
- Construction of a barrier(s) (earth bund, noise walls or similar) along the boundaries of the AMP venue (primarily southern and eastern boundaries) to reduce noise levels at local residents. Based on the distance between the facility and the nearby sensitive receptors, noise barriers are only likely to lead to slight reductions in noise levels, by up to 3-5 dBA, depending on location and height. In this regard, other mitigation measures have been outlined.

Further mitigation measures are able to be implemented at existing properties and during any future residential development in the area. Mitigation measures in place or available for consideration include:

- Provision of at property treatments to maintain suitable acoustic amenity at existing noise sensitive receptors in the vicinity of AMP. Such requirements for outdoor area screening and provision of insulation packages (see below) will be assessed by completion of at property inspections, in order to provide recommended acoustic treatments. In addition, as events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive.
- The existing Mirambeena Strategic Industrial Area buffer (Figure 7-1) in the vicinity to the proposed Albany Motorsport Park prevents the construction of any habitable dwellings on properties immediately adjacent, reducing the likelihood of sensitive receptors being developed in an area impacted by noise from motorsport activities in the future.

- Additional planning controls to establish a *Special Use* zone, with an associated *Special Control Area* to prevent further residential development, unless specific planning and building controls are implemented. Such planning controls would usually entail:
 - Reducing outdoor levels by implementing ‘quiet house’ design measures outlined in SPP 5.4¹⁷ relating to screening of outdoor areas with the residence itself (building orientation considerations) or screen walls. Refer to Section 7.2.1.
 - Reducing internal noise levels by implementing ‘deemed to comply packages’ outlined in SPP 5.4 relating to improving noise insulation of residences. Refer to Section 7.2.1.
 - Providing information to new residents within the development of the potential noise impacts from motorsport events (notifications on titles). Refer to Section 7.2.2.

7.2.1 Reducing outdoor and indoor noise levels through building design

Noise levels resulting from Albany Motorsport Park are predicted to exceed assigned noise levels at existing residences or new residential areas within the vicinity. Noise mitigation measures outlined in SPP 5.4 pertain to reducing transport noise resulting from major roads and railways. In determining the required level of mitigation to maintain outdoor and indoor amenity, assessment has been made against outdoor and indoor criteria established by SPP 5.4, outlined in Table 7-1. Assessment has been made against predicted L_{A10} noise levels, as L_{A10} noise levels are considered to most closely represent L_{Aeq} criteria specified in SPP 5.4.

This approach has been reviewed and agreed to by DWER Noise Branch during previous assessments for motorsport facilities.

Table 7-1 Outdoor and indoor noise criteria, dBA

Time of day	Outdoor noise criteria	Indoor noise criteria
Day (6:00 am to 10:00 pm)	55	40
Night (10:00 pm to 6:00 am)	50	35

Reducing outdoor noise levels by screening outdoor areas

Outdoor noise levels are reduced by 5-10 dBA by screening outdoor areas such that the building forms a barrier between the noise from motorsport events. Such screening is achieved by either:

- Locating outdoor living areas so as to maximise the screening effects of buildings and any barrier walls.
- Designing walls to screen part or all of the affected property.

To ensure an appropriately sized outdoor area is adequately screened may require designated building envelopes to be specified for each lot.

Evening and night time outdoor levels are not predicted to be affected as events conclude by 7:00 pm.

Reducing indoor noise levels by improving noise insulation of buildings

With regard to indoor noise levels, a typical residence would see indoor levels approximately 15 dBA lower than outdoor levels (a predicted outdoor level of 65 dBA will result in indoor noise level approximately 50 dBA).

¹⁷ Department of Planning, 2014, *Implementation Guidelines for State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning*, December 2014.

Indoor noise levels are reduced by increasing insulation to reduce noise levels within a residence. SPP 5.4 outlines two 'deemed to comply' packages for residential development, Package A and Package B, as outlined in Table 7-2. A reduction of approximately 5 dBA is typically achieved by implementing design Package A and approximately 10 dBA reduction for implementing design Package B.

Table 7-2 Package A and B noise insulation measures outlined in SPP 5.4

Area type	Orientation	Package A measures
Bedrooms	Facing venue	6 mm laminated glazing Casement or awning windows No external doors Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Closed eaves Mechanical ventilation/air conditioning
Living and work areas	Facing venue	6 mm laminated glazing Casement or awning windows 35 mm (minimum) solid core external doors with acoustic seals Sliding doors must be fitted with acoustic seals Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm glazing Closed eaves Mechanical ventilation/air conditioning
Area type	Orientation	Package B measures
Bedrooms	Facing venue	10 mm laminated glazing Casement or awning windows No external doors Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Casement or awning windows Closed eaves Mechanical ventilation/air conditioning
Living and work areas	Facing venue	10 mm laminated glazing Casement or awning windows 40 mm (minimum) solid core external doors with acoustic seals Sliding doors must be fitted with acoustic seals Closed eaves No vents to outside walls/eaves Mechanical ventilation/air conditioning
	Side on to venue	6 mm laminated glazing Casement or awning windows Closed eaves Mechanical ventilation/air conditioning

Noise levels under worst case meteorological conditions are predicted to exceed day assigned levels by up to 19 dBA at SR01, up to 22 dBA at SR02, up to 7 dBA at SR03 and up to 12 dBA at SR04.

Suitable screening of outdoor areas may be required at SR01, SR02 and SR04, in order to provide one outdoor area of suitable acoustic amenity.

Package A insulation measures may be required at SR01, SR02 and SR04, with Package B requirements at SR03.

Such requirements for outdoor area screening and provision of insulation packages will be assessed by completion of an at property inspection, in order to provide recommended acoustic treatments.

7.2.2 Special Control Area

A *Special Control Area* provides for a noise buffer to protect Albany Motorsport Park from incompatible residential encroachment, with development approval only provided when minimum house design treatments to mitigate noise are implemented.

The Local Planning Scheme could be amended to include a new *Special Control Area*, through rezoning the Albany Motorsport Park site from 'Priority Agriculture' to 'Special Use'. The new *Special Control Area* for Albany Motorsport Park would then be added to existing *Special Control Areas*, established in Part 5 of the Local Planning Scheme.

Further updates to the Scheme would be made to establish the purpose of the *Albany Motorsport Park Noise Special Control Area* and requirements of proposed residential development:

- a. Allow for the ongoing operations of the Albany Motorsport Park and require the operators to incorporate additional noise attenuation measures (e.g. earthen bunds, noise walls) to reduce noise egress into adjoining sensitive premises; including operating under an approved Noise Management Plan.
- b. Ensure that new noise sensitive developments within the *Special Control Area* incorporate design criteria in accordance with the *AS/NZS 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors*, to reduce noise impacts from the Albany Motorsport Park.
- c. No dwelling or other noise-sensitive development within the *Special Control Area* shall be approved until such time as Local Government is satisfied that the design complies with the Package A or B (as appropriate) house insulation measures specified in the Implementation Guidelines for State Planning Policy 5.4.
- d. The Local Government may grant approval for noise sensitive premises and impose conditions on the approval to require the applicant to incorporate design and construction methods/materials to reduce noise impacts into the dwelling.
- e. The Local Government shall request the Commission impose a condition on the approval for the creation of any new lots created as a result of subdivision within the *Albany Motorsport Park Noise Special Control Area* be required to have a memorial placed on the Certificate of Title stating that the land may be subject to temporary high noise levels from activities conducted at the Albany Motorsport Park.

Special Control Area extent

The extent of the Special Control Area has been guided by the completion of noise modelling for a typical event to be held at AMP, with a race meeting consisting of a multi-use track event considered a typical event.

Outdoor noise levels are reduced by 5-10 dBA by screening outdoor areas such that the building forms a barrier between noise from motorsport events.

Based on the daytime outdoor noise criterion outlined in Table 7-1 and the reduction of up to 10 dBA achieved through building screening:

- Development areas with predicted L_{A10} noise levels below 55 dBA will require no additional mitigation. Only notifications on the title advising of possible noise impacts from a nearby motorsport venue would be required.
- Development areas with predicted L_{A10} noise levels between 55 dBA and 65 dBA would require building screening (building envelopes) or fencing in order to meet an outdoor noise level of 55 dBA.
- Development areas predicted to exceed L_{A10} noise levels of 65 dBA will remain development free.

With regard to indoor noise levels, a typical residence would see indoor levels approximately 15 dBA lower than outdoor levels. Indoor noise levels are reduced by increasing insulation. SPP 5.4 outlines two 'deemed to comply' packages for residential development, Package A and Package B (refer to Table 7-2).

Based on daytime indoor noise criterion outlined in Table 7-1 and the reduction achieved by implementing design Package A (approximately 5 dBA) and Package B (approximately 10 dBA):

- Development areas with predicted daytime L_{A10} noise levels below 55 dBA will require no additional noise insulation. Only notifications on the title advising of possible noise impacts from a nearby motorsport venue would be required.
- Development areas with predicted daytime L_{A10} noise levels between 55 dBA and 60 dBA will require Package A noise insulation.
- Development areas with predicted daytime L_{A10} noise levels between 60 dBA and 65 dBA will require Package B noise insulation, in order to meet an internal noise level of 40 dBA.
- Development areas predicted to exceed L_{A10} noise levels of 65 dBA will remain development free.

Based on the above, the special control area would extend from the 65 dBA contour (red contour shown on Figure 7-1) to the 50 dBA (yellow) contour. From Figure 7-1, the northern quadrant from the western boundary to the eastern boundary of AMP is within the existing Mirambeena Strategic Industrial Area buffers.

Requirements to inform the special control area are as follows:

- Areas between the site boundary and the 65 dBA (red) contour would remain residence free. From Figure 7-1, the proposed residence free area only marginally extends beyond the existing Mirambeena Strategic Industrial Area buffers to the south-east of AMP.
- Areas between the 65 dBA (red) and 60 dBA (orange) contours would have conditions requiring Package B noise insulation and building screening (building envelopes) or fencing in order to meet outdoor noise levels.

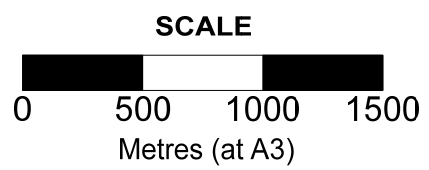
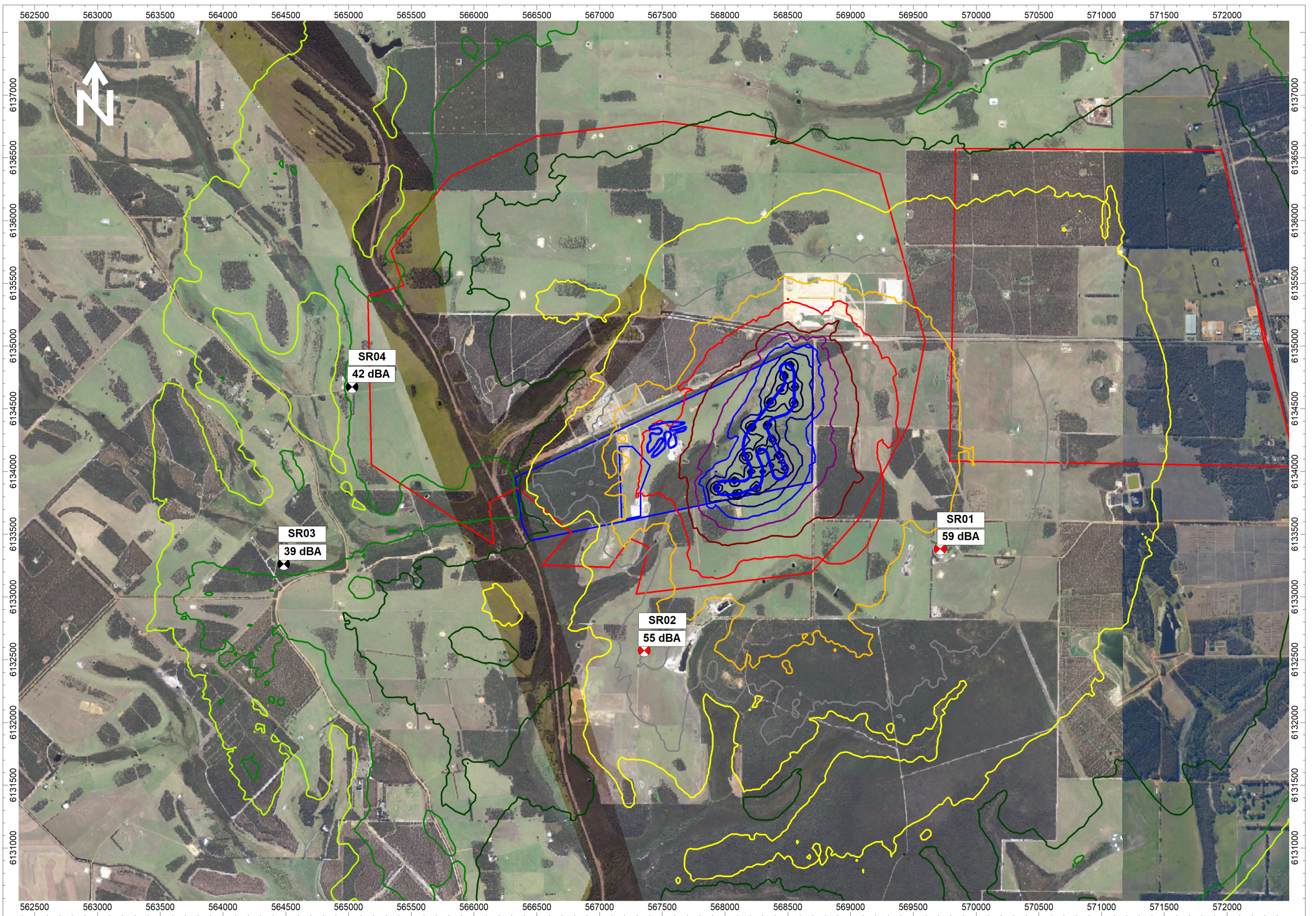
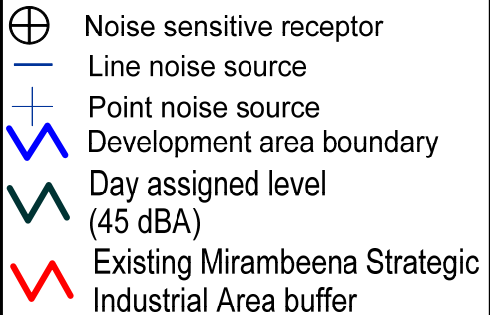
- Areas between the 60 dBA (orange) and 55 dBA (grey) contours would have conditions requiring Package A noise insulation and building screening (building envelopes) or fencing in order to meet outdoor noise levels.
- Areas between the 55 dBA (grey) and 50 dBA (yellow) contours would have no screening or insulation requirements, just a requirement for notifications on the title advising of possible noise impacts from a nearby motorsport venue.

In each case, closest cadastral boundaries should be used to define the Special Control Area, informed by the noise modelling results presented in Figure 7-1.

PREDICTED NOISE LEVELS



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ALBANY MOTORSPORT PARK
 Noise Assessment

PREDICTED DAY NOISE LEVELS MULTI-USE TRACK EVENT
 Noise contours: L_{A10}
 Grid height: 1.4 m
 Worst case meteorological conditions

FIGURE 7-1



8. Conclusions

The results presented in this assessment demonstrate that for some events, namely multi-use track and motocross events, there will be occasions when the predicted noise levels from Albany Motorsport Park exceed the assigned noise levels at the nearest sensitive receptors.

As such, it is recommended that appropriate management and mitigation measures are implemented for the project.

Noise from the Albany Motorsport Park is able to be reduced at source by including noise bunds or similar to screen noise from the closest existing sensitive receptors. Based on the distance between the facility and the nearby sensitive receptors, noise barriers are only likely to lead to slight reductions in noise levels, by up to 3-5 dBA, depending on location and height. In this regard, other mitigation measures have been outlined.

Provision of at property treatments to maintain suitable acoustic amenity at existing noise sensitive receptors in the vicinity of AMP. Such requirements for outdoor area screening and provision of insulation packages will be assessed by completion of at property inspections, in order to provide recommended acoustic treatments. In addition, as events are only planned during the day time period, predicted noise levels will not lead to sleep disturbance, and therefore will be less intrusive.

The existing industrial buffer in the vicinity to the proposed Albany Motorsport Park prevents the construction of any habitable dwellings, reducing the likelihood of sensitive receptors being developed in an area impacted by noise from motorsport activities in the future.

Additional planning controls to establish a *Special Use Zone* with an associated *Special Control Area* should be implemented to prevent further residential development, unless specific planning and building controls are implemented.

This assessment predicts exceedance of the assigned noise levels during certain event types is likely. As such consideration will be made to the preparation of a Noise Management Plan, prepared in line with requirements outlined in this report, as the project progresses.

Appendices

Appendix A - Glossary of noise terminology

Term	Definition
Ambient noise	Level of noise from all sources, including background noise from near and far and the source of interest
A-weighted	A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. A-weighted sound level is described as LA dB.
Background noise	Noise level from sources other than the source of concern.
dB	Decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.
Hz	Units for frequency are known as Hertz.
Impulsive noise	An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness is: "A variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax, slow}$ is more than 15 dB when determined for a single representative event".
L_{Aslow}	This is the noise level in decibels, obtained using A-weighting and S time weighting as specified in AS1259.1-1990. Unless assessing modulation, all measurements use the slow time weighting characteristic.
L_{Afast}	This is the noise level in decibels, obtained using A-weighting and F time weighting as specified in AS1259.1-1990. This is used when assessing the presence of modulation only.
L_{Apeak}	This is the maximum reading in decibels using A-weighting and P time weighting as specified in S1259.1-1990.
L_{Amax}	L_{Amax} level is the maximum A-weighted noise level during a particular measurement.
L_{A1}	L_{A1} level is the A-weighted noise level which is exceeded for 1% of the measurement period and is considered to represent the average of the maximum noise levels measured.
L_{A10}	L_{A10} level is the A-weighted noise level which is exceeded for 10% of the measurement period and is considered to represent the intrusive noise level.
L_{A90}	L_{A90} level is the A-weighted noise level which is exceeded for 90% of the measurement period and is considered to represent the background noise level.
L_{Aeq}	The equivalent steady state A-weighted sound level ('equal energy') in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the average noise level.
L_{Amax} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded at any time.
L_{A1} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded for more than 1% of the representative assessment period.
L_{A10} assigned level	Means an assigned level which, measured as a L_{Aslow} value, is not to be exceeded for more than 10% of the representative assessment period.
Linear	Sound levels measured without any weightings are referred to as 'linear' and the units are expressed as dB(lin).
L linear, peak	Maximum reading in decibels obtained using P-time-weighting characteristic as specified in AS 1259.1-1990.
Maximum design sound level	The level of noise above which most people occupying the space start to become dissatisfied with the level of noise.
Modulating noise	A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is: Is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} in any one-third octave band Is present for at least 10% of the representative assessment period Is regular, cyclic and audible

Term	Definition
One-third octave band	Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20,000 Hz inclusive.
Representative assessment period	Means a period of time not less than 15 minutes and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.
Reverberation time	Of an enclosure, for a sound of a given frequency or frequency band, the time that would be required for the reverberantly decaying sound pressure level in the enclosure to decrease by 60 decibels.
RMS	Root mean square level; used to represent the average level of a wave form such as vibration.
Satisfactory design sound level	The level of noise that has been found to be acceptable by most people for the environment in question and also to be not intrusive.
Sound pressure level (SPL)	The sound pressure level of a noise source is dependent upon its surroundings (influenced by distance, ground absorption, topography, meteorological conditions etc.) and is what the human ear actually hears. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.
Sound power level (SWL)	Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure levels at known distances. Noise modelling incorporates source sound power levels as part of the input data.
Specific noise	Relates to the component of the ambient noise that is of interest. This can be referred to as the noise of concern or the noise of interest
Tonal noise	A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is: The presence in the noise emission of tonal characteristics where the difference between - The A-weighted sound pressure level in any one-third octave band The arithmetic average of the A-weighted sound pressure levels in the two adjacent one-third octave bands is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{Aslow} levels. This is relatively common in most noise sources.

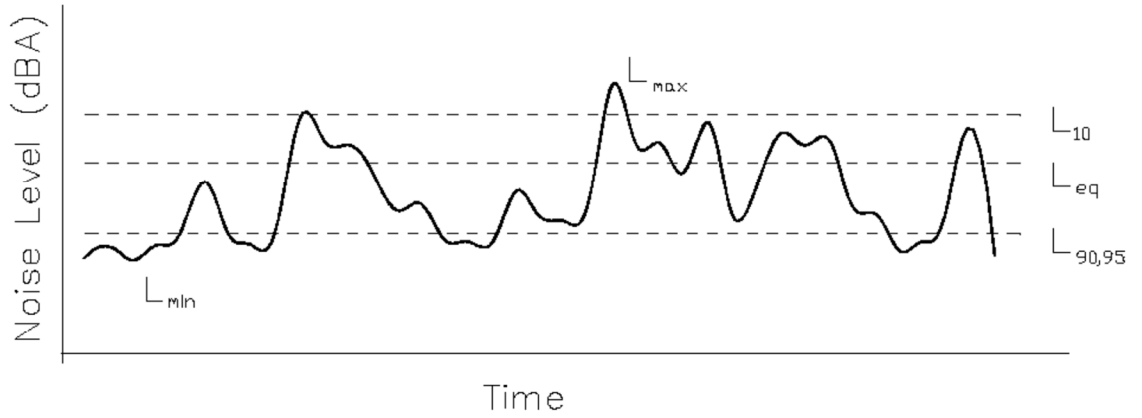
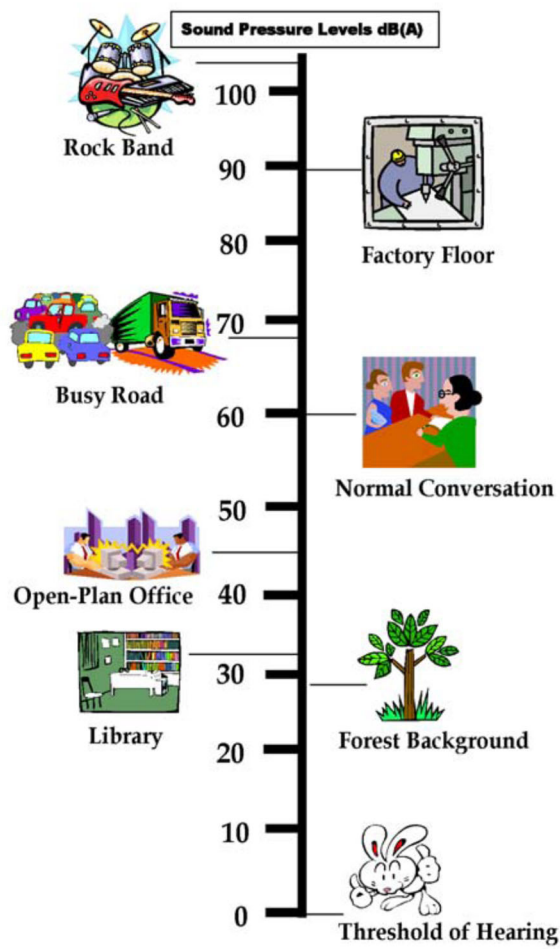


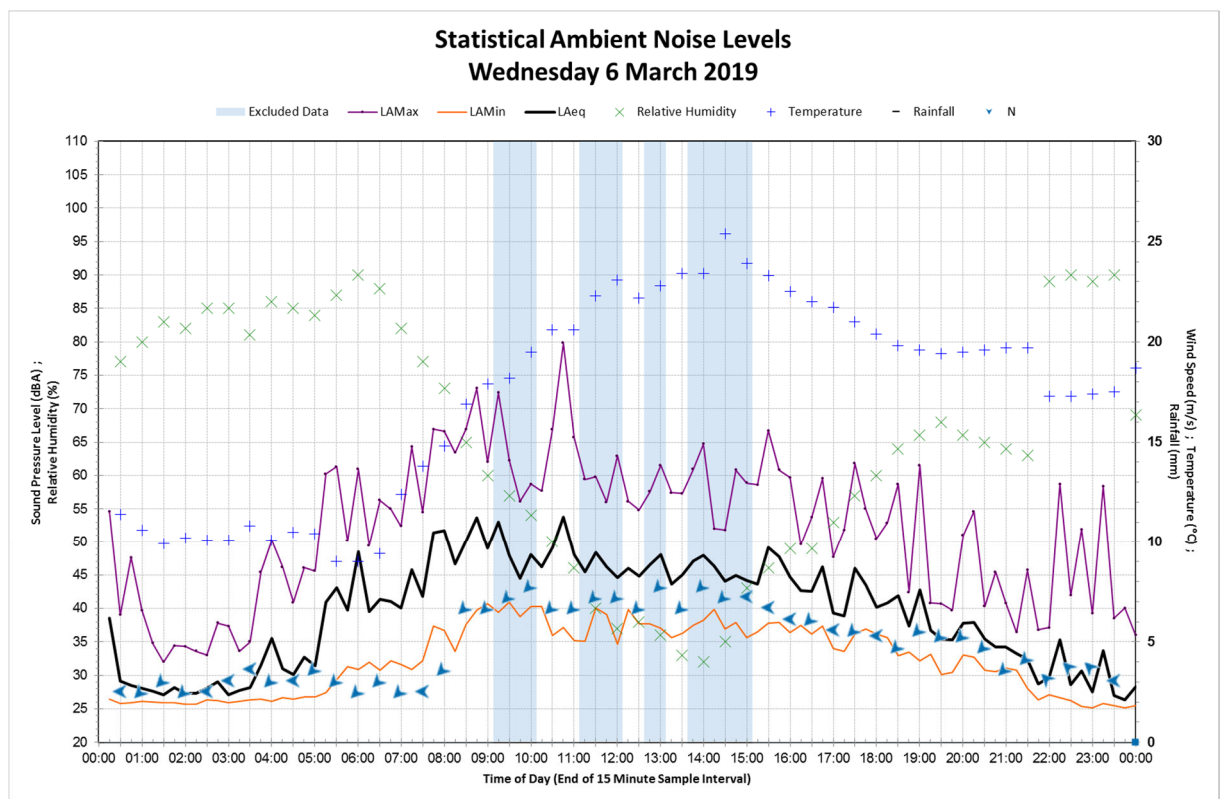
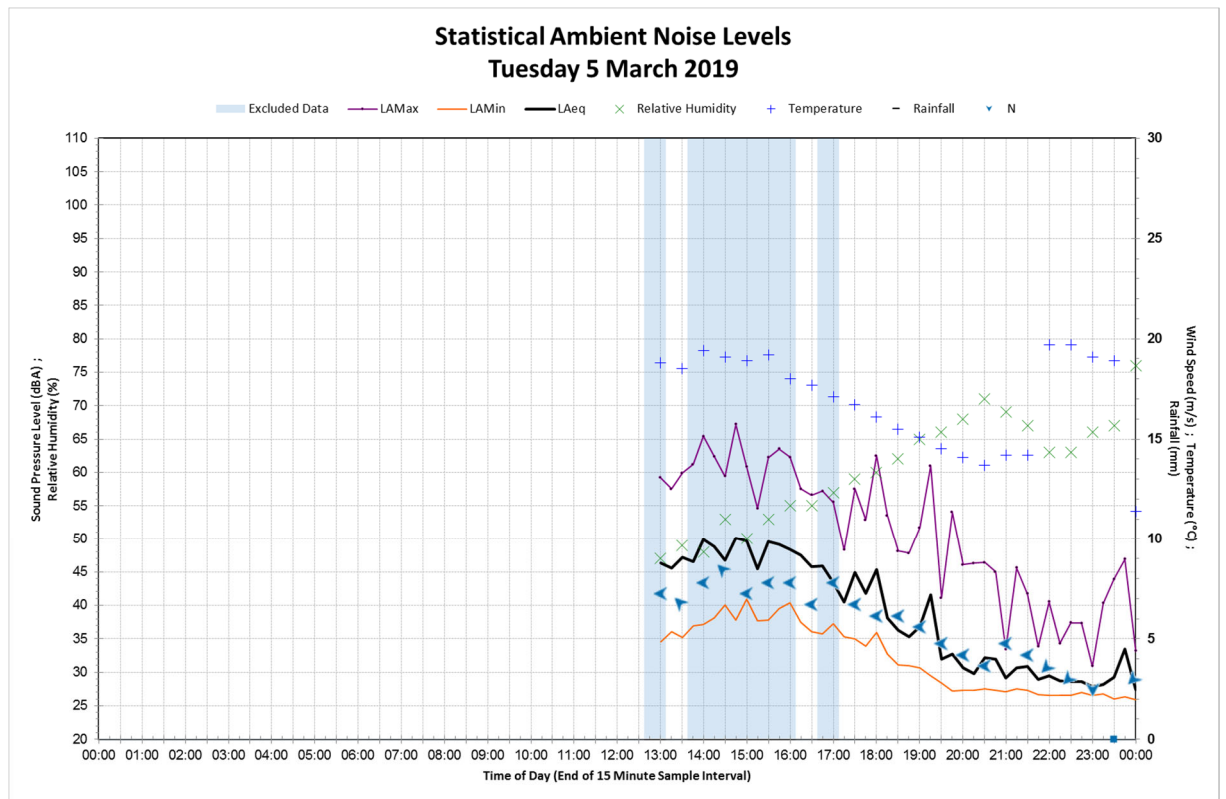
Chart of Noise Level Descriptors



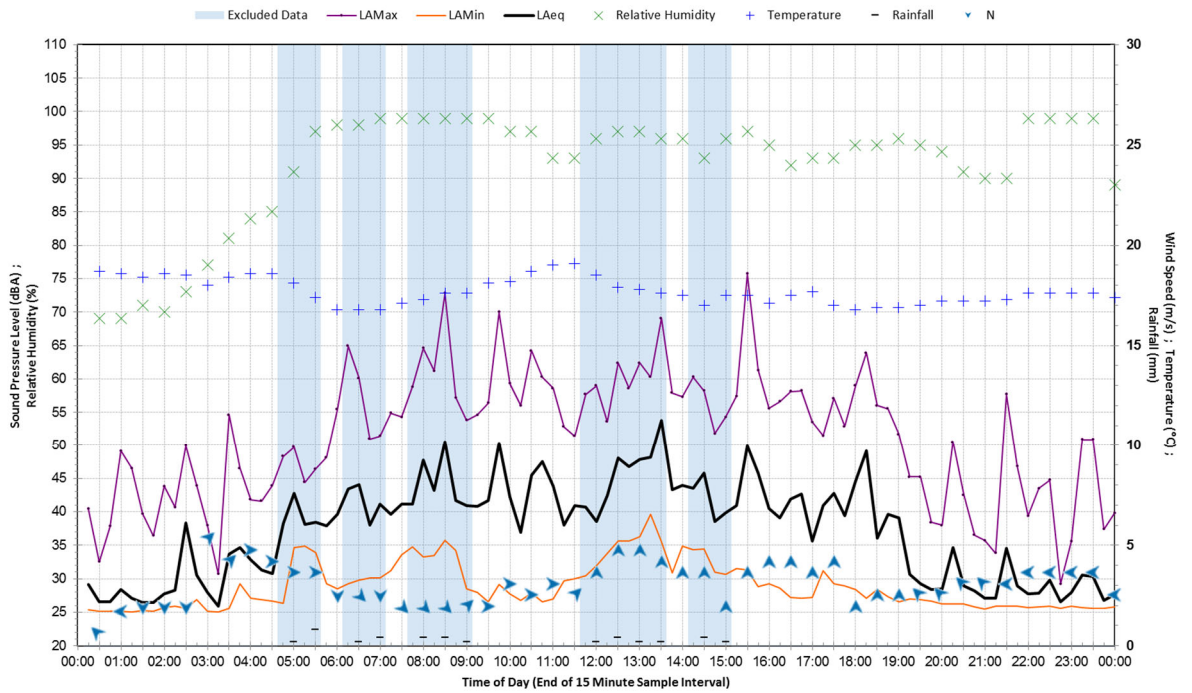
Typical Noise Levels

Appendix B – Monitoring results

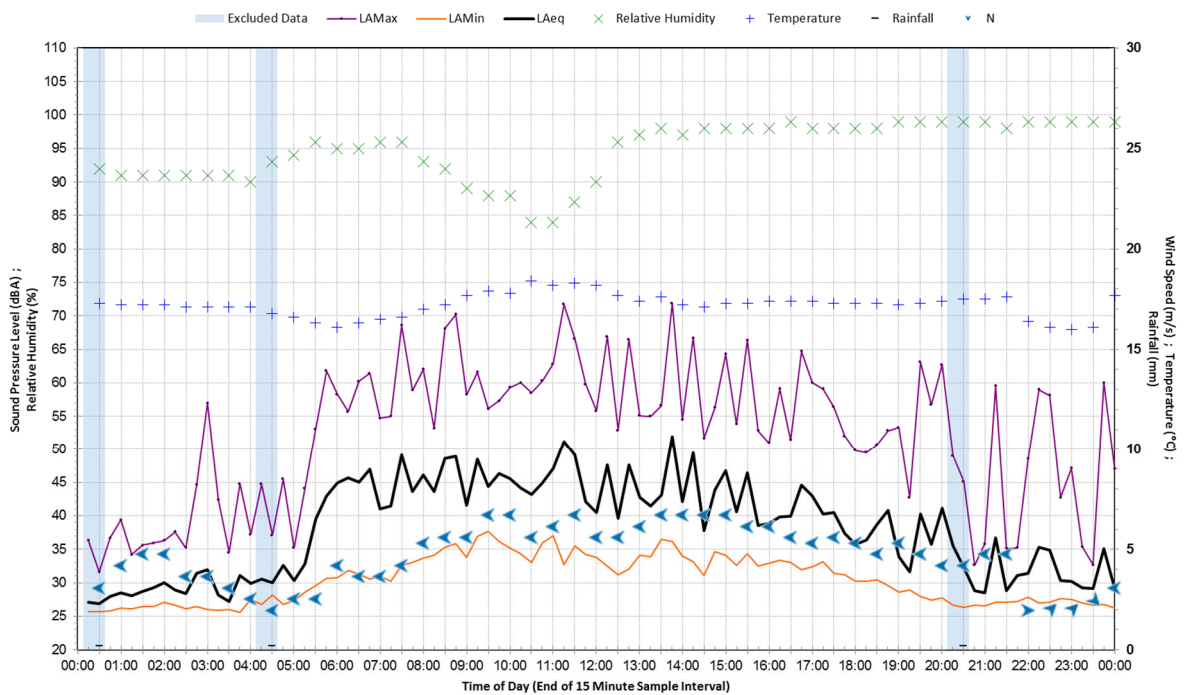
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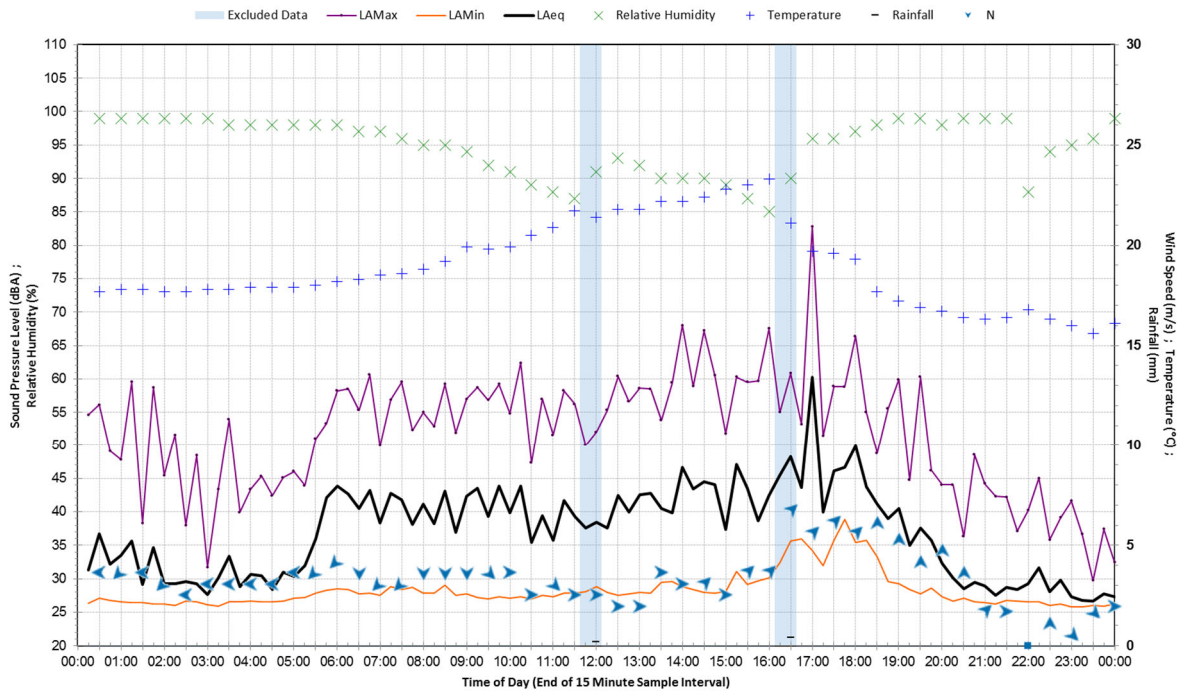
Statistical Ambient Noise Levels Thursday 7 March 2019



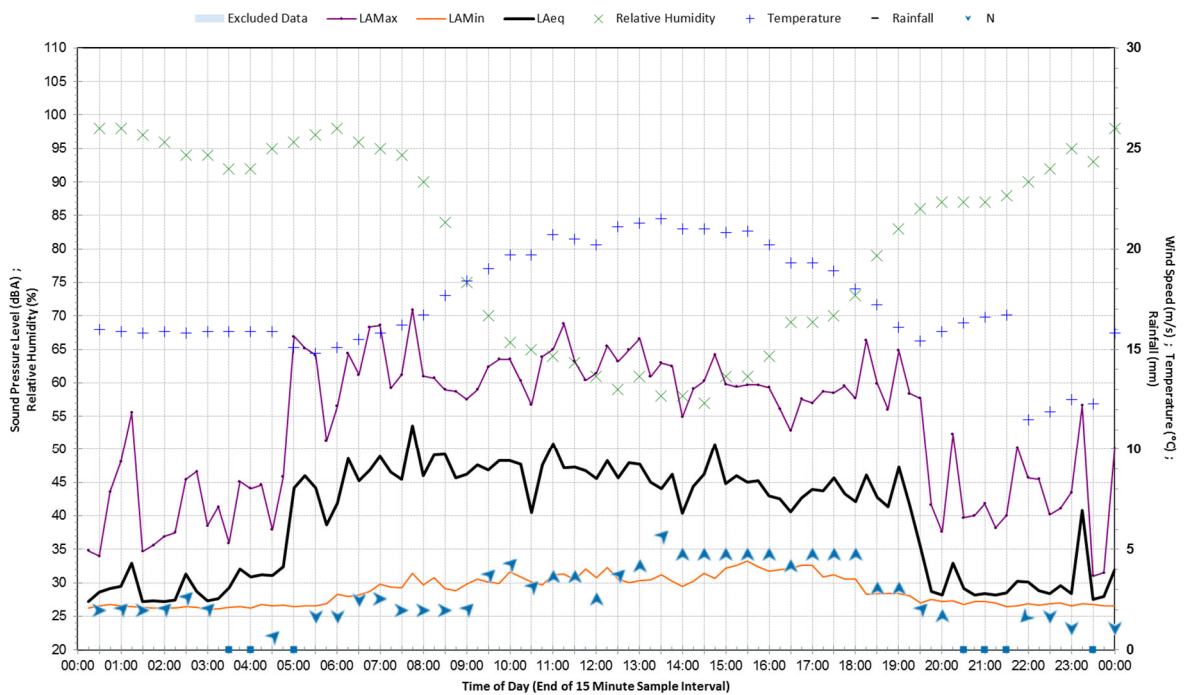
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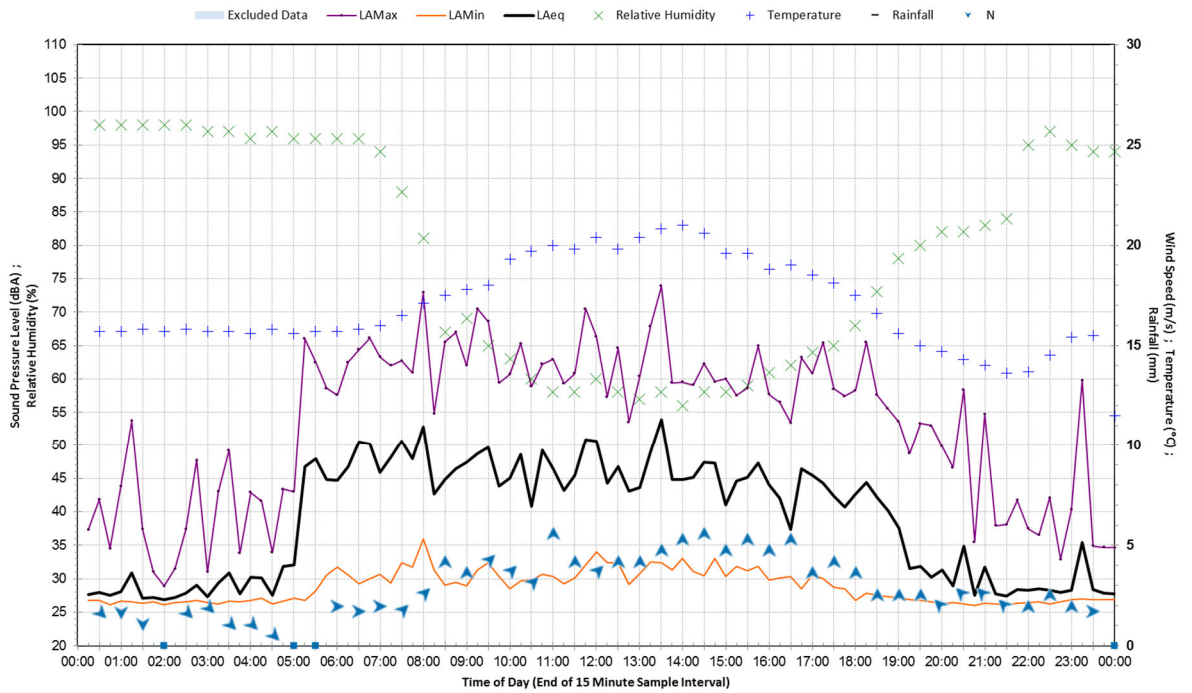
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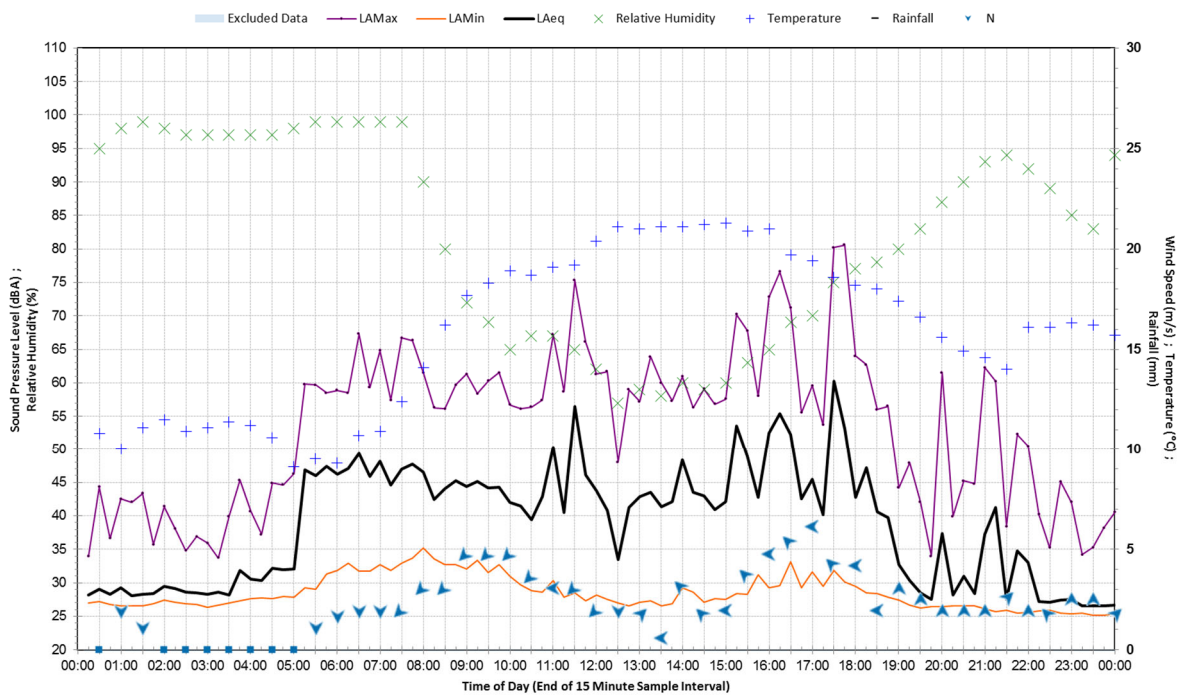
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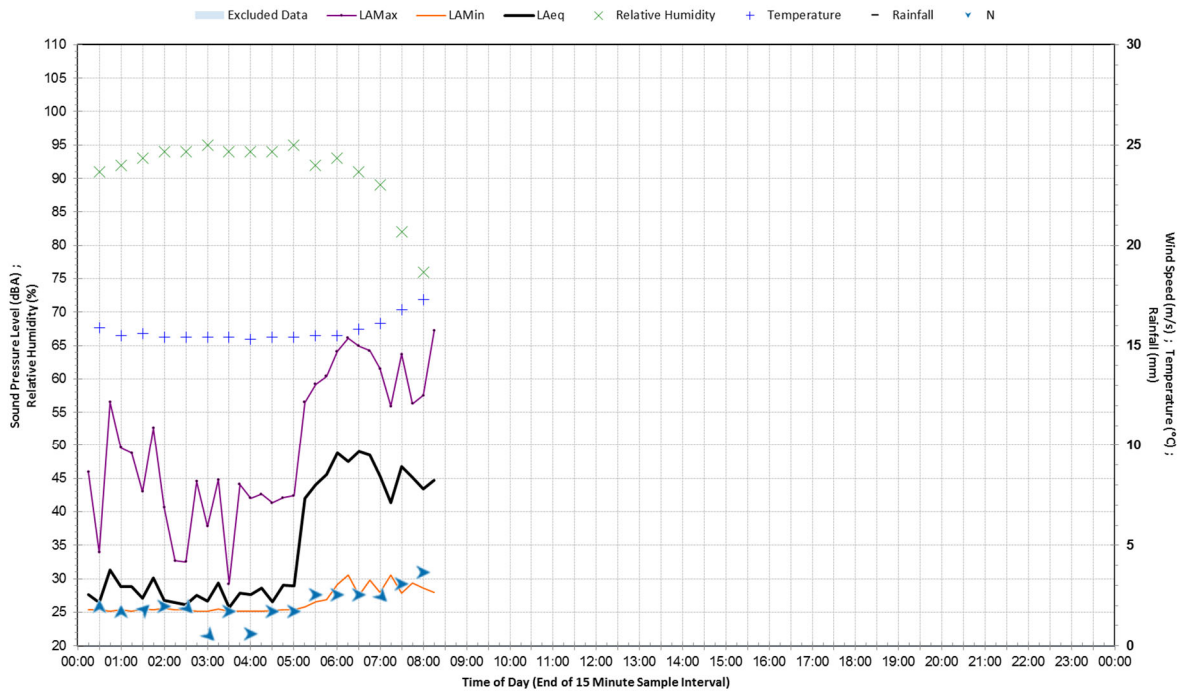
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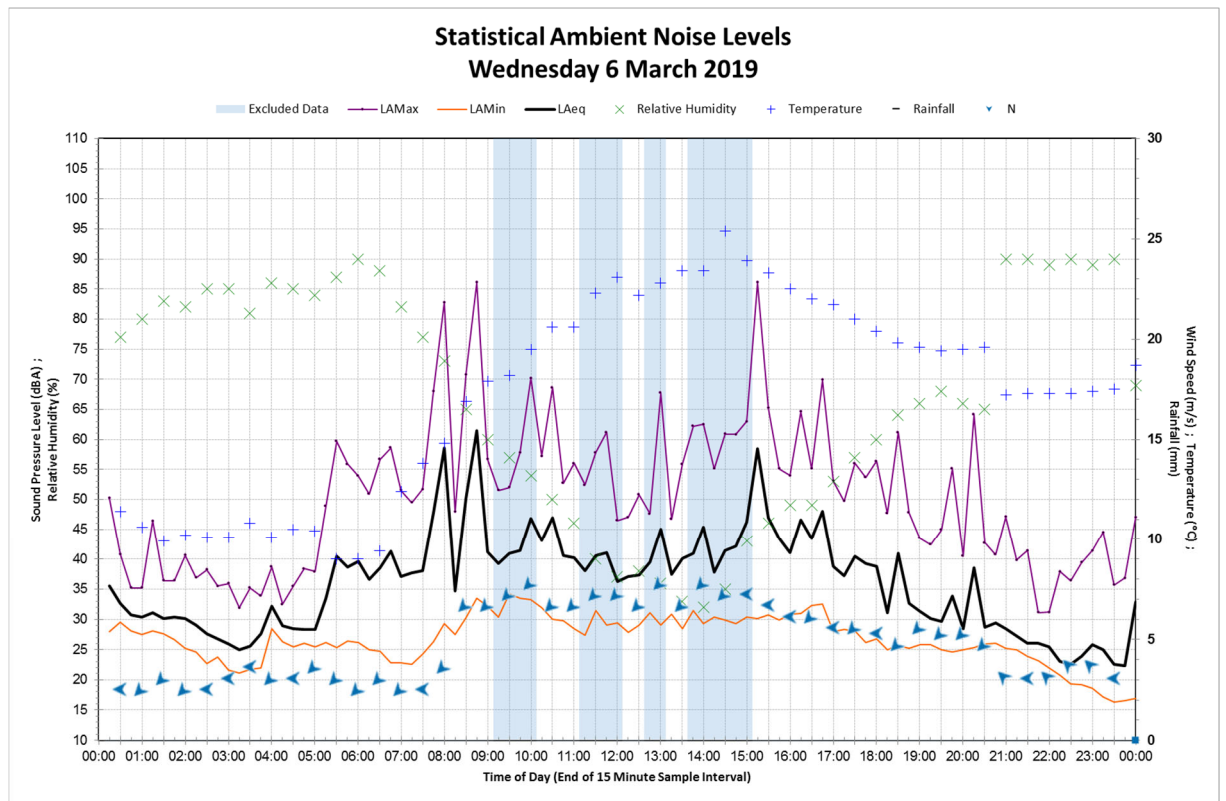
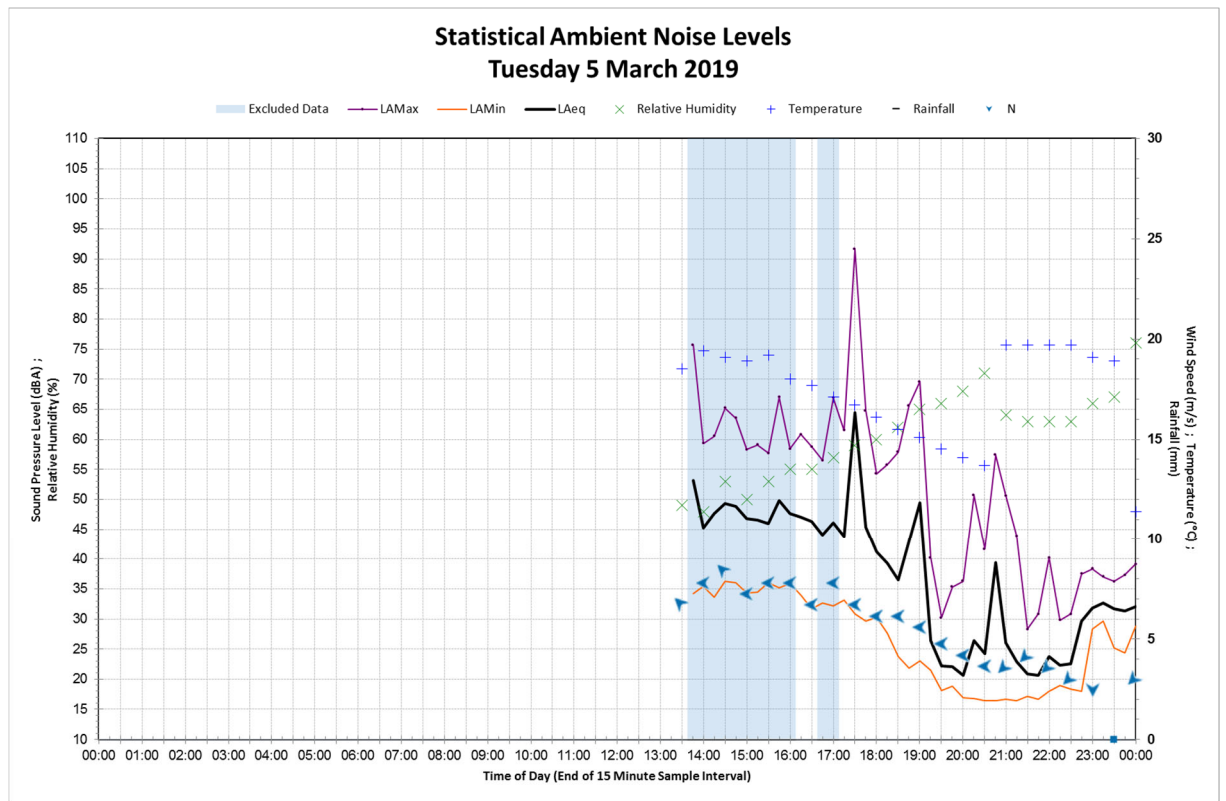
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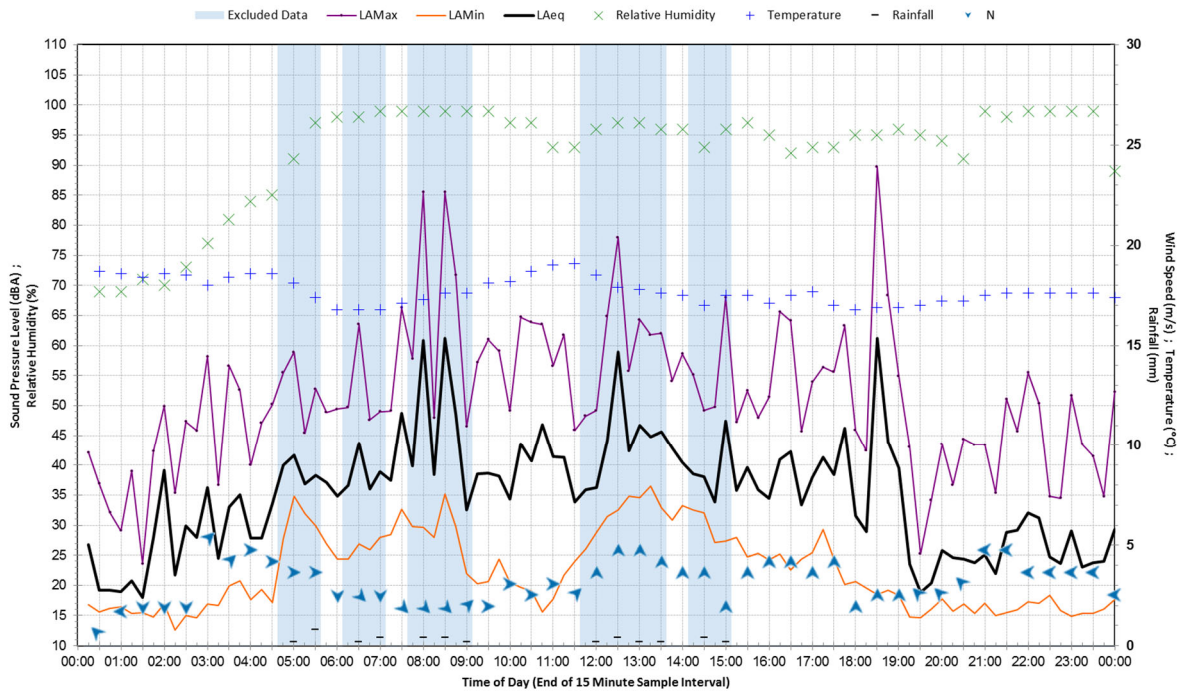
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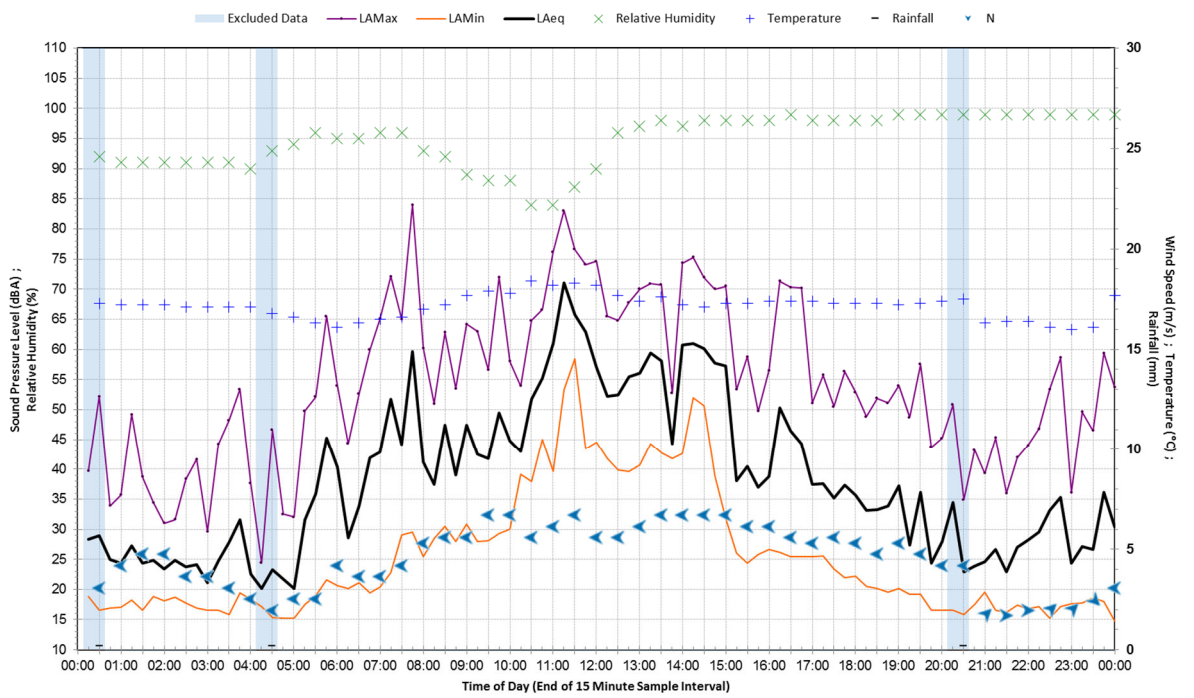
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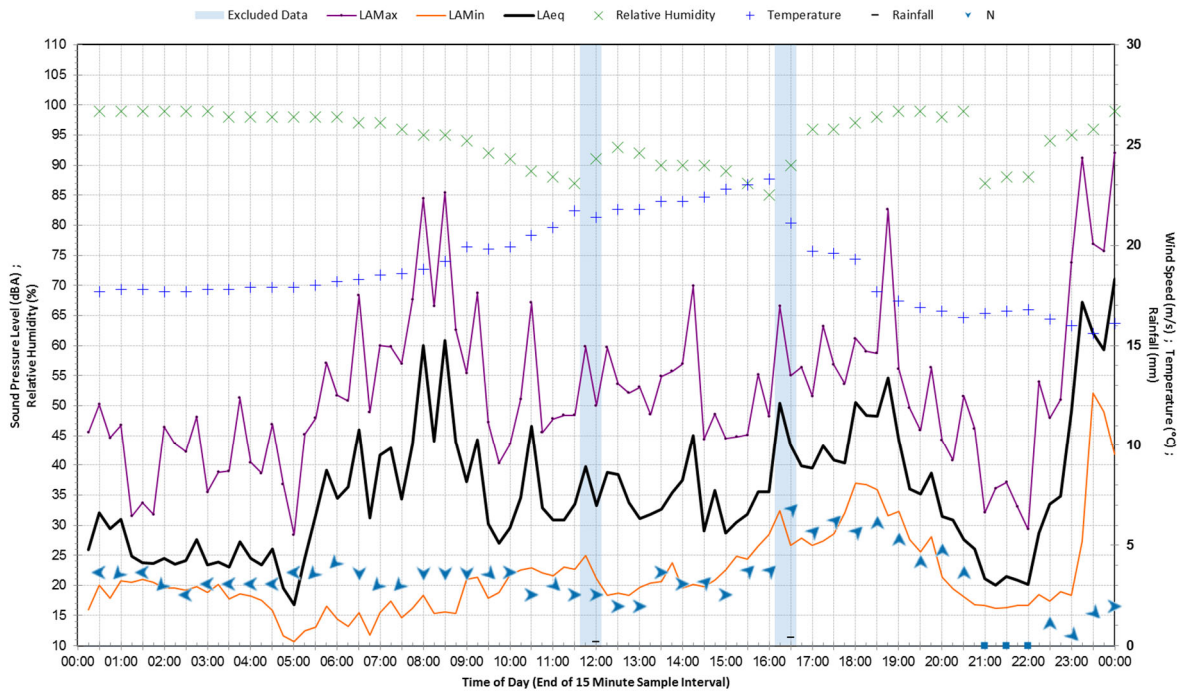
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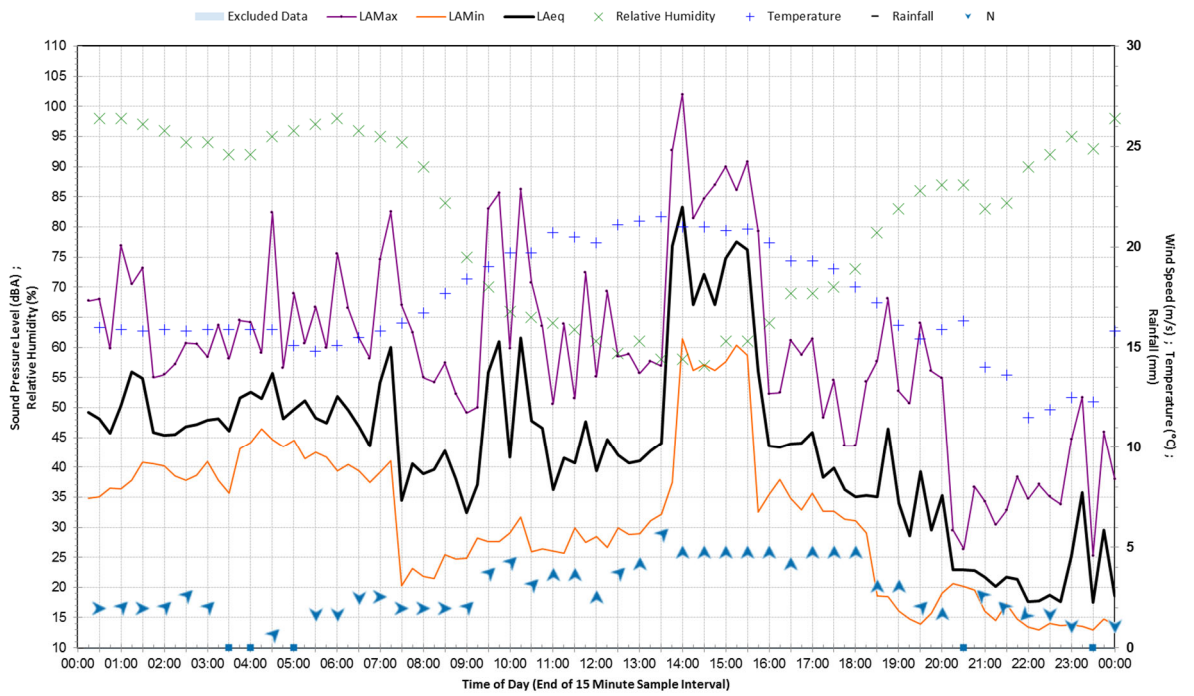
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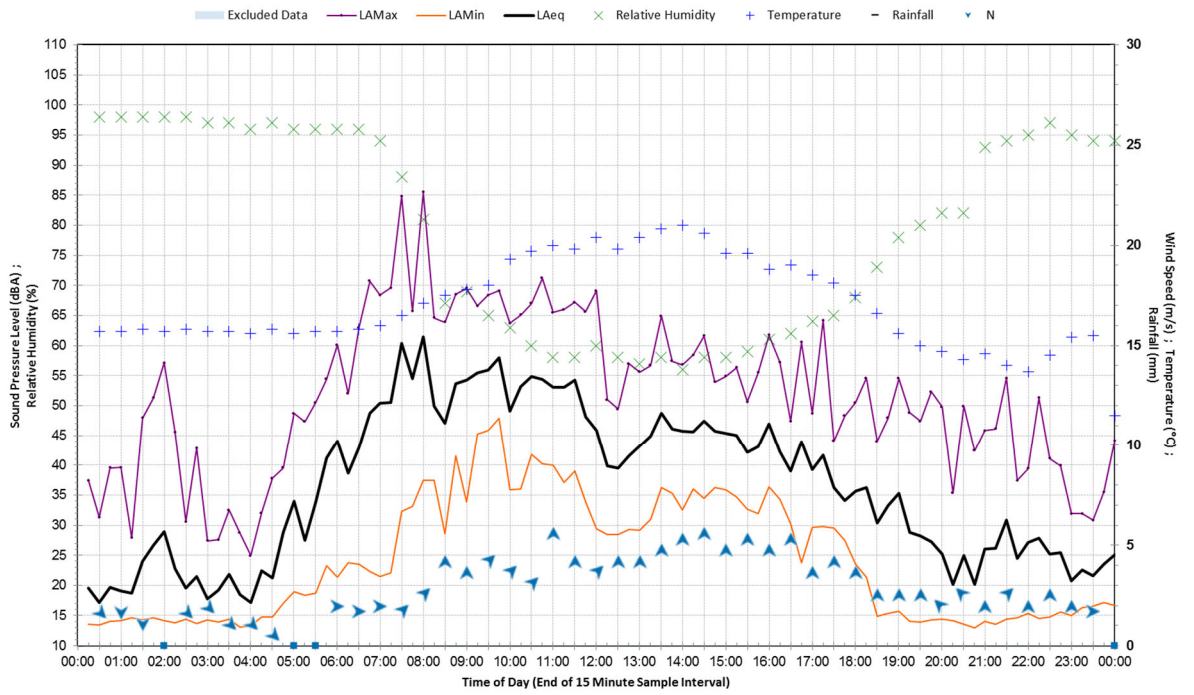
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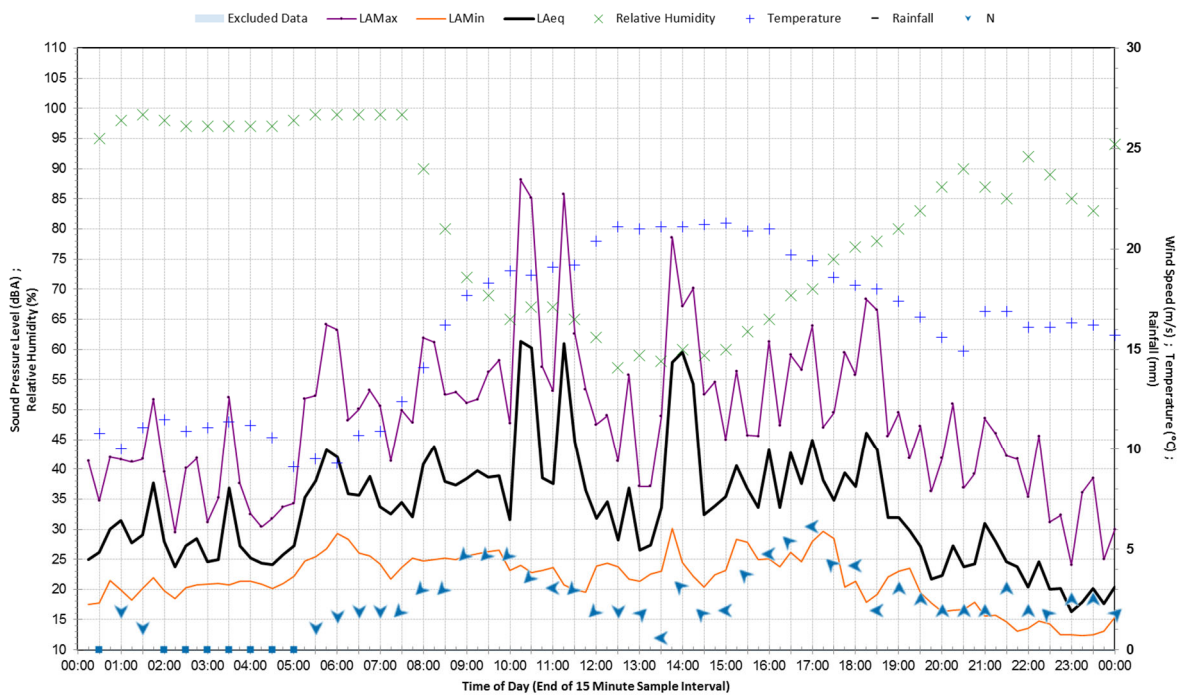
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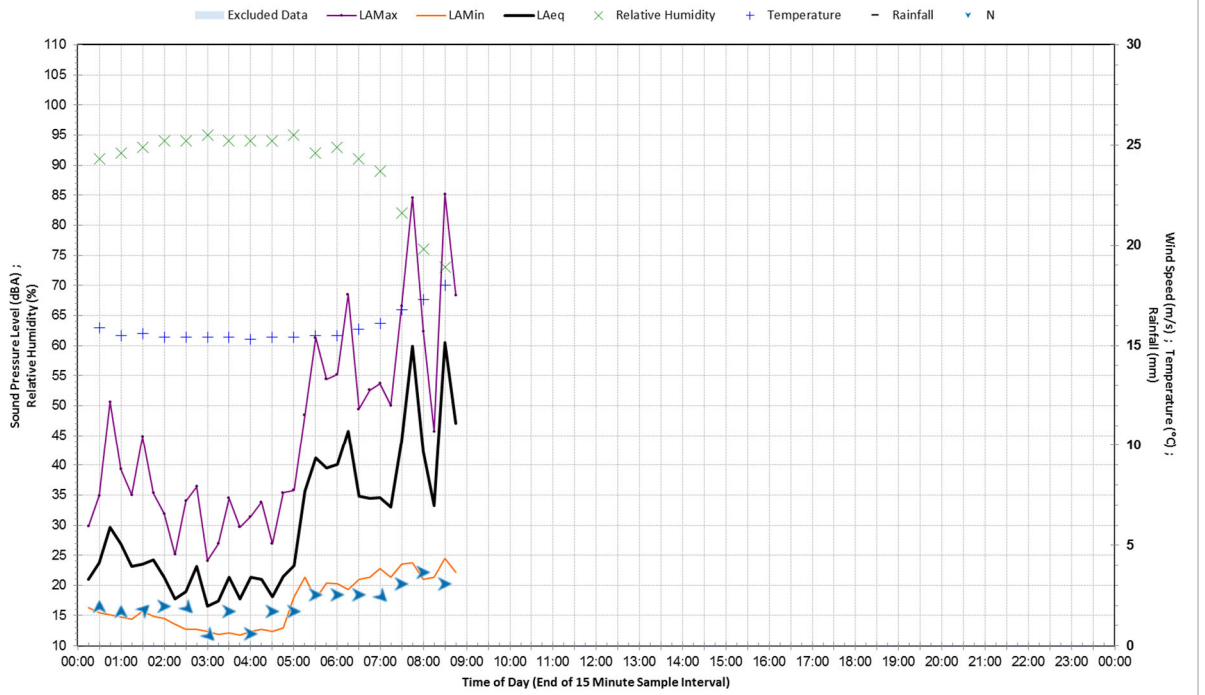
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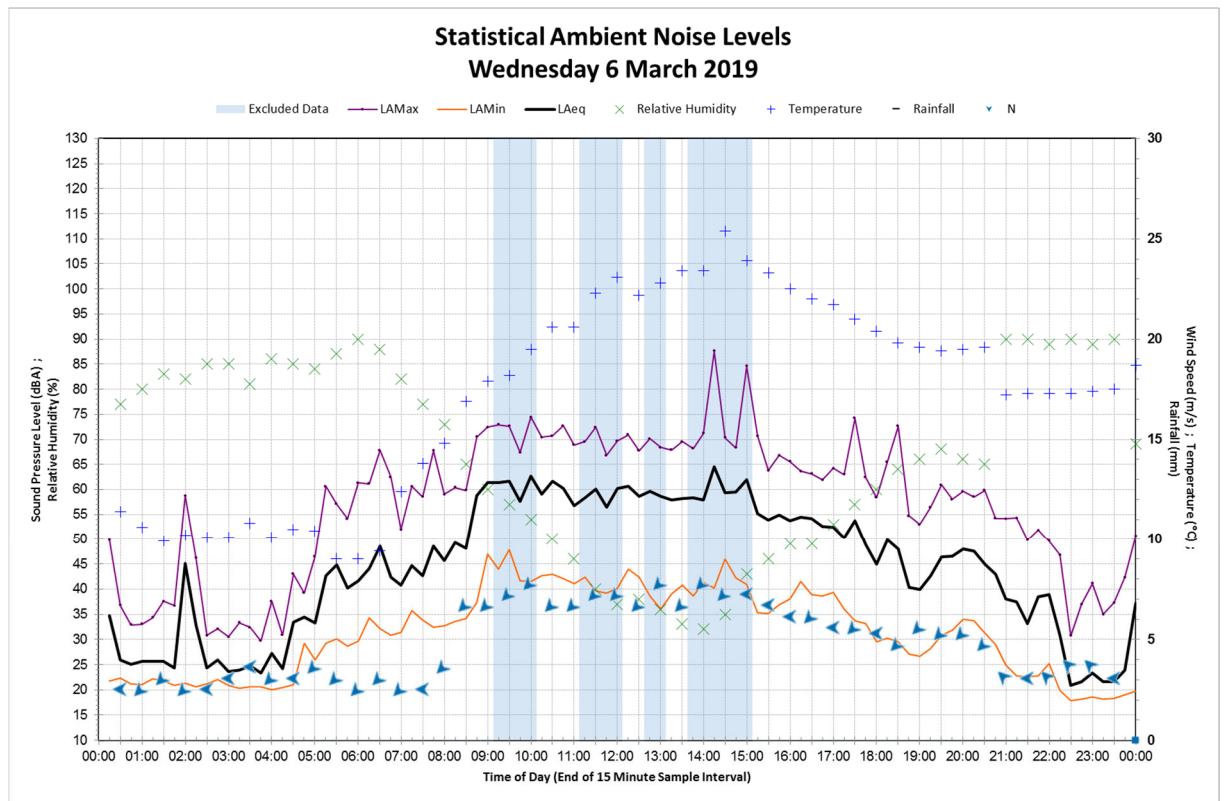
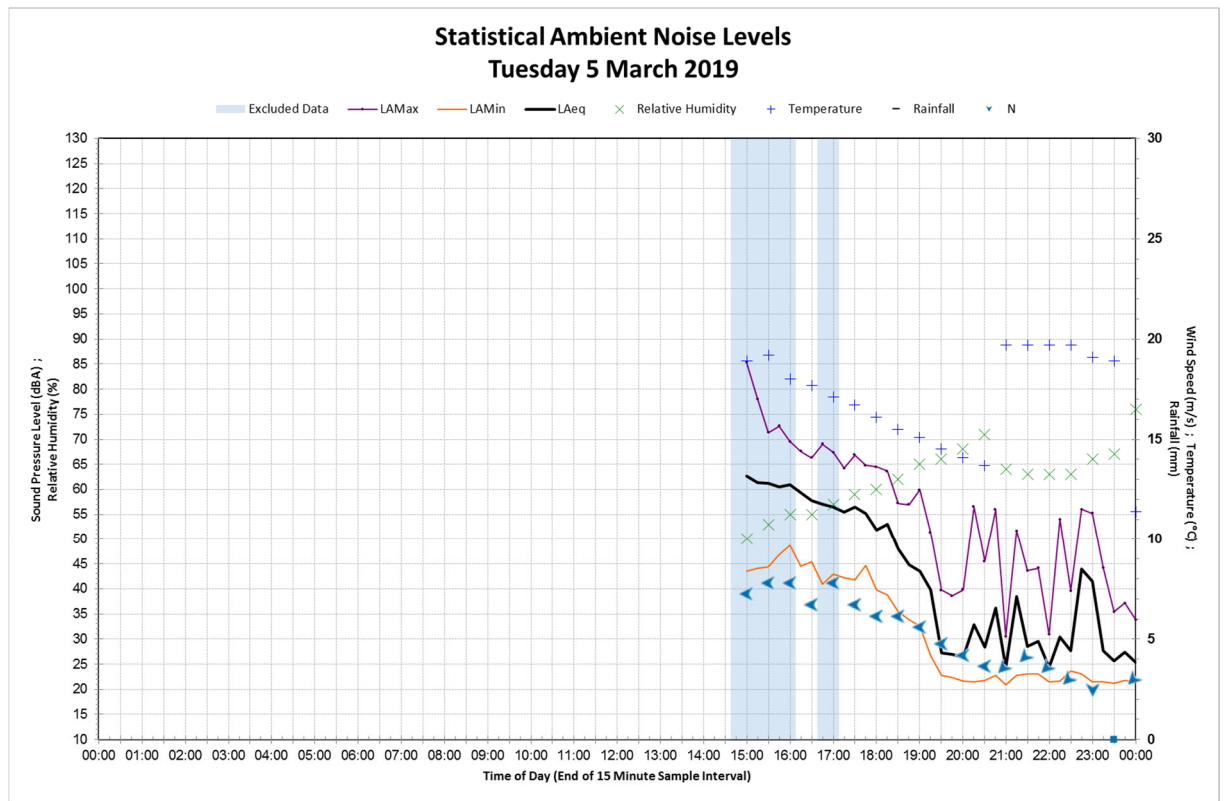
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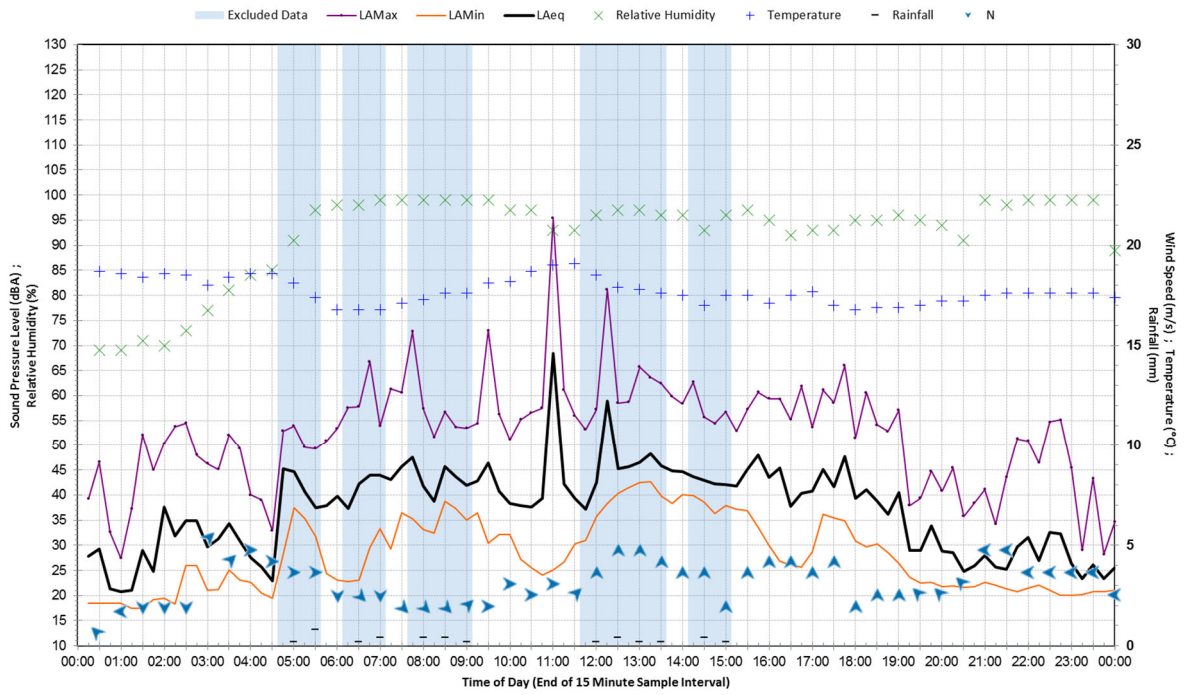
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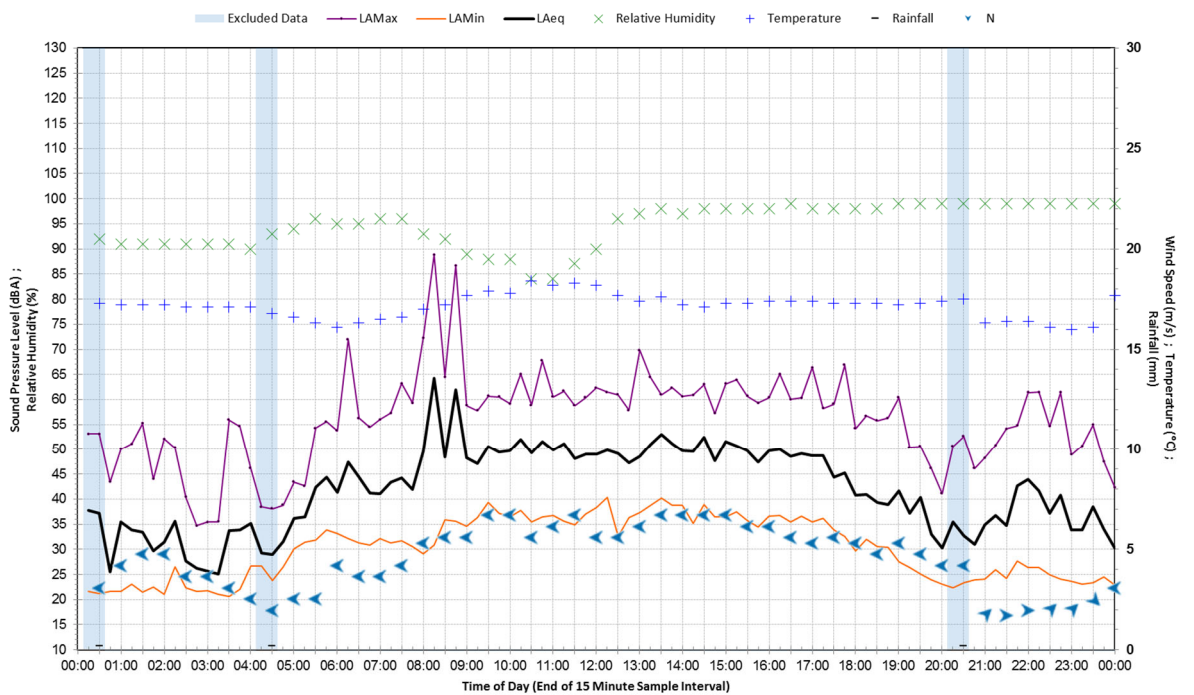
Site C - 727 Marbelup North Road MARBELUP WA 6330



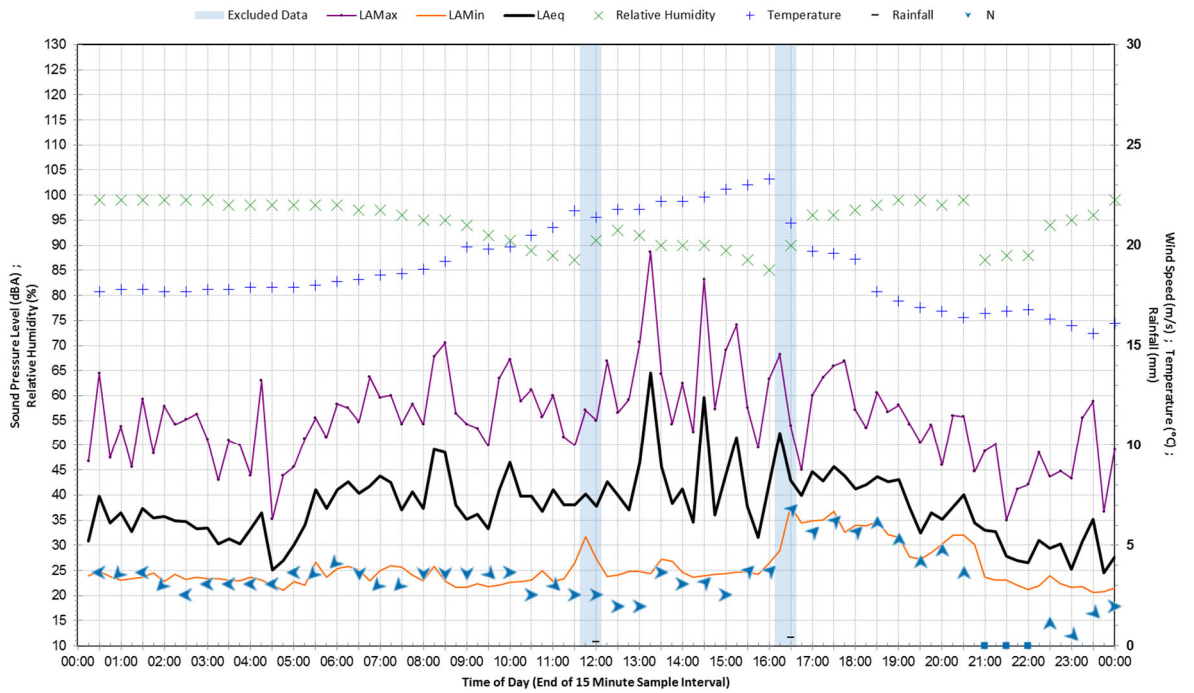
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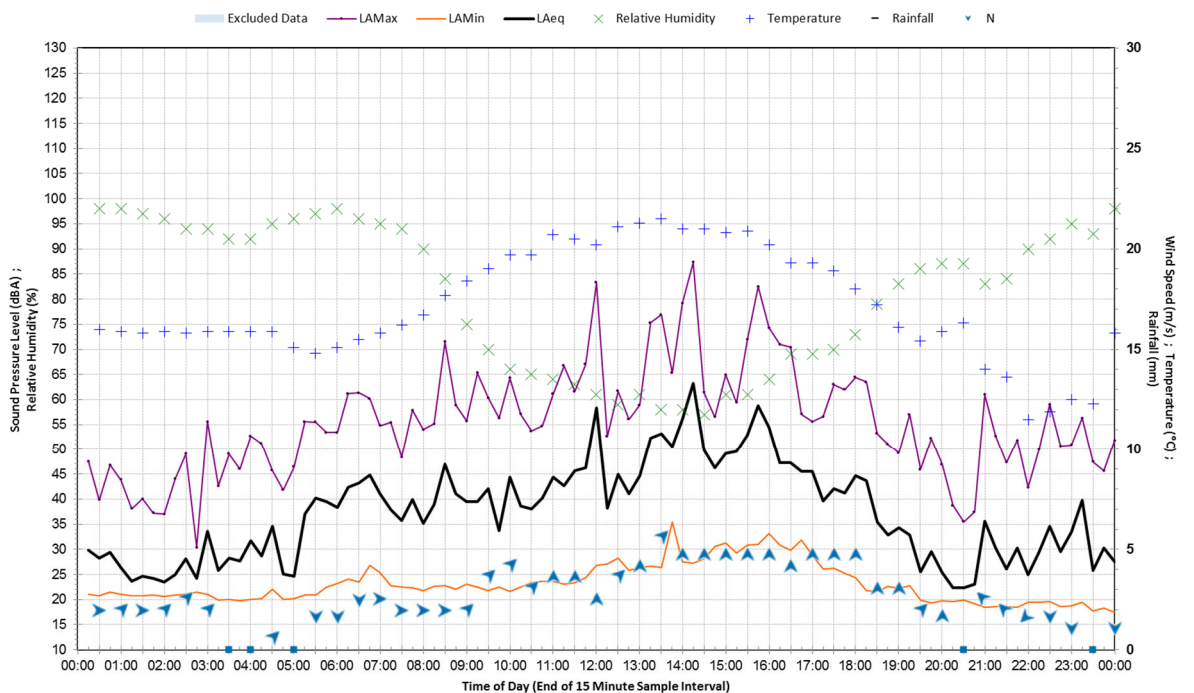
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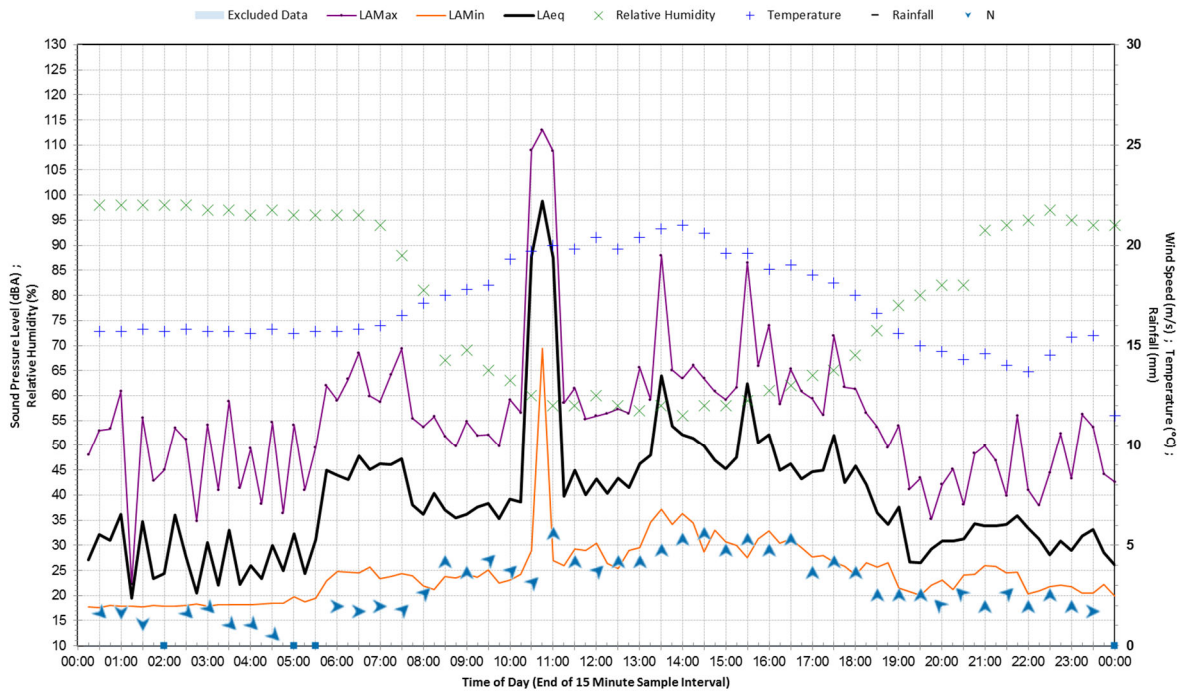
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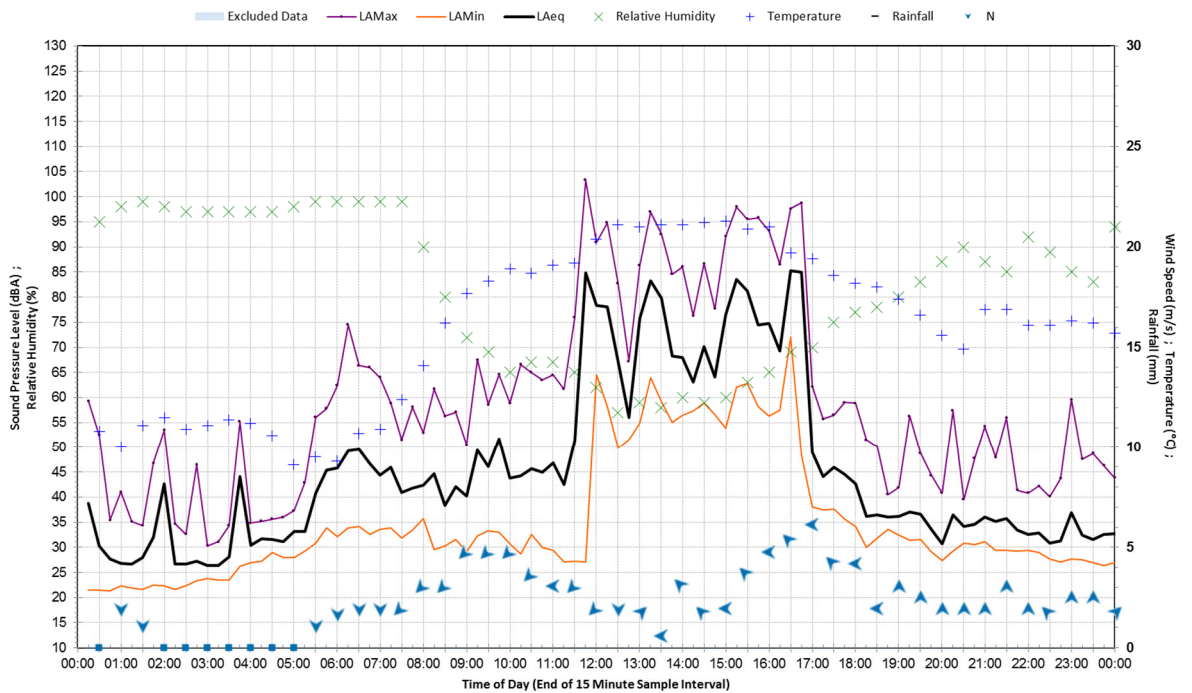
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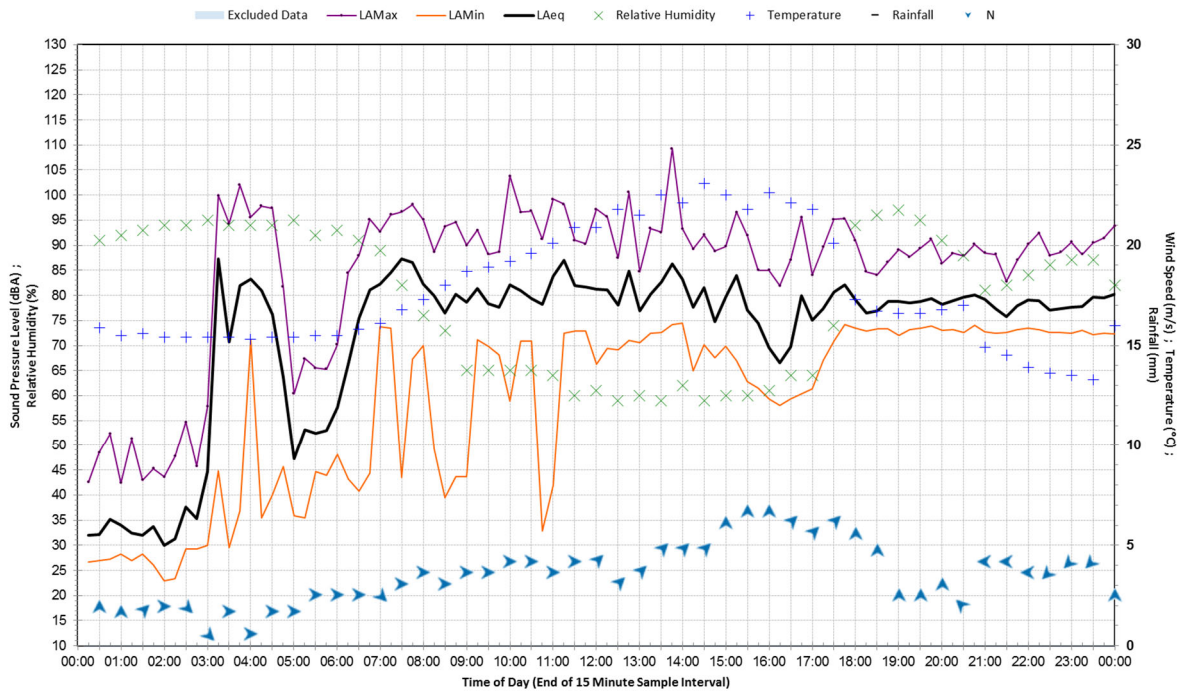
Statistical Ambient Noise Levels Monday 11 March 2019



Statistical Ambient Noise Levels Tuesday 12 March 2019



Statistical Ambient Noise Levels Wednesday 13 March 2019



Appendix C – Example Noise Management Plan

GREAT SOUTHERN MOTORPLEX GROUP

NOISE MANAGEMENT PLAN – ALBANY MOTORSPORT PARK

This noise management plan ('the NMP') has been approved by the Chief Executive Officer (CEO) of the City of Albany ('the CEO') for the purposes of Division 3 of the *Environmental Protection (Noise) Regulations 1997*.

1. VENUE DETAILS

Name of venue	Albany Motorsport Park ('the venue')
Location of venue	Down Road DROME WA
Occupier of venue	Great Southern Motorplex Group ('the occupier')
Affiliations	Confederation of Australian Motor Sports (CAMS) Fédération Internationalé de l'Automobile (FIA) Fédération Internationalé Motocyclisme (FIM) Motorcycling Australia (MA)
Venue maps	Attachment 1 – Map of venue showing facilities

2. APPLICATION

The NMP applies:

1. While the occupier is the leaseholder of the venue
2. To racing activities at the venue organised by the occupier.
3. To the emission of noise during a racing activity at the venue.
4. From the date of approval by the CEO until the expiration of the approval.

Regulation 7 of the *Environmental Protection (Noise) Regulations 1997* does not apply to noise emitted from the venue during a racing activity if the activity is conducted in accordance with the NMP.

The occupier must ensure that the conditions and ancillary measures designated as such in the CEO's approval notice are implemented.

3. TYPES OF RACING ACTIVITIES AND CLASSES OF VEHICLES

3.1 Types of racing activities covered by the NMP

- Car test and tune days
- Car speed events (Club, State and National)
- Supercars event (National)
- Bike test and tune days
- Bike speed events (Club, State and National)
- Motocross training

- Motocross events (Club and State)
- Drifting days (Club and State)
- Motorkhana events (Club)
- Special events

3.2 Classes of vehicles

The following classes of vehicles may compete in events at this venue:

- Various classes of cars including street cars, Formula Vee, Formula Classic, Formula Ford, HQ Holden sedans, saloon cars, sports sedans, production sports cars and marque sports cars, historic touring cars, improved production cars, Formula 1000 and Excel Cup.
- Various drift cars
- Various classes of motorcycles including historic, 125 cc, 250 cc, 500 cc, Grand Prix, Superbikes, solo and sidecar bikes
- Various classes of motocross bikes including junior, senior, 65 cc, 85 cc, 125 cc
- Special exhibition vehicles
- Various other vehicles of smaller engine capacity, including road registered vehicles

4. LIMITATIONS ON RACING ACTIVITIES

4.1 Scheduled race meetings and practice sessions

The following limits apply to scheduled race meetings and practice sessions at the venue:

1. Motorsport racing and practice may occur year round, within the limitations established by this noise management plan.
2. Racing can only take place at a race meeting or practice session.
3. Racing vehicles are not to be operated at the venue at any time other than a race meeting, practice session or tuning day.
4. No more than XX race meetings are to be held during a year.
5. In addition to the XX race meetings per season, a preliminary meeting may be held to conduct tests on racing vehicles to establish their compliance with this Noise Management Plan.
6. Races at a race meeting can only take place within a eight hour period on any one day.
7. The eight hour period must be between 8:00 am to 6:00 pm, Monday to Saturday, 9:00 am to 6:00 pm on Sunday and public holidays. No evening (after 7:00 pm) or night (after 10:00 pm) events will be scheduled.

4.2 Special events

Where a special event that is to be open to the public is proposed to be held at the venue, but the event cannot be conducted within the limits for scheduled race meetings and practice sessions, the occupier is to apply to the CEO for approval of the event under Regulation 18.

5. MEASURES TO CONTROL NOISE EMISSIONS

5.1 Access to race track

In order to prevent noise emissions due to unauthorised use of the race track by racing vehicles, the gates to the race track are to remain locked at all times other than:

1. In preparation for and during race meetings, practice sessions and special events approved by the CEO.
2. During maintenance or improvement of venue facilities.

5.2 Certification of racing vehicles

Each <<vehicle type>> that is to race at a race meeting at the venue must have a current certificate indicating that its noise level does not exceed a noise limit of $L_{A\ slow}$ 95 dBA ('noise limit') when tested in accordance with the noise test procedure.

For all other class of vehicle that is to race at a race meeting at the venue must have a current certificate indicating that its noise level does not exceed a noise limit of $L_{A\ slow}$ 90 dBA ('noise limit') when tested in accordance with the noise test procedure.

The noise level for a racing vehicle is to be obtained at or before the first meeting of the season at which that racing vehicle is entered to race.

Vehicles that have been measured in accordance with accepted measurement procedures (Section 5.3) at another racing venue are deemed to have complied with the requirement for certification and testing for noise emissions providing the measurements have been conducted by a competent person.

If the exhaust system or engine of a racing vehicle is modified or replaced after the level of noise emitted by the vehicle had been measured, the occupier is to ensure that the level of noise emitted by the vehicle is measured again and the vehicle complies before the vehicle is raced at an event.

Certification is valid for 12 months only.

Information provided in the certificate shall include:

1. Engine and chassis identification number
2. Exhaust type
3. Owner of vehicle
4. Date and location of testing
5. Individual and average measured sound pressure level

5.3 Noise test procedure

5.3.1 Measuring individual racing vehicles

The level of noise emitted by a racing vehicle (the tested vehicle) is to be measured while the tested vehicle completes three consecutive laps of the venue within a period that is not greater than four times the average lap time record.

Average lap times are to be calculated during the previous racing season for races at the speedway in the class of racing vehicle to which the vehicle belongs.

1. The measurements shall be made at a point that is:

- Inside the inner boundary of the venue track in use by the vehicle racing
 - Not less than 29 metres and not more than 31 metres from the inner boundary
 - On, or as close as practicable to, the shorter axis of the track
2. With the measuring microphone not less than 1.2 m or more than 1.4 m above the ground plane.

5.3.2 Calculation of average noise level

The level of noise emitted by a racing vehicle is taken to be the level obtained by:

1. Adding together the maximum level of noise measured for the vehicle on each of the laps referred to in Section 5.3.1.
2. Dividing the total resulting from that addition by three

5.3.3 Instruments

Instruments used to measure noise emissions shall:

1. Be calibrated in accordance with and otherwise comply with Schedule 4 of the *Environmental Protection (Noise) Regulations 1997*
2. Be operated by a person who is approved by the CEO
3. Preferably be a Type 1, although Type 2 instruments are acceptable provided allowance is made for their measurement tolerances.
4. Copies of the calibration certificates must be provided to the CEO on request.

5.4 Responsibility for noise measurement and certification

The Venue Manager will ensure that only competent persons utilising equipment conforming to the requirements of Section 5.3.3 are engaged as required to assess compliance. Also, that all noise measurements, calculation, certification and testing requirements are met for venue events under the control of occupier to the requirements of the CEO.

5.5 Record of tests

The operator is to record all results from tests carried and retain those results in a form that shows (for each test):

1. Details of the racing vehicle tested, including engine and chassis identification number and exhaust type
2. The racing vehicle's owner
3. The date and location of the test
4. The calculated lap time
5. The actual time for the three laps of the test
6. The point of measurement
7. The measured noise levels
8. The signature of the noise test operator

Records of tests are to be provided to the CEO on request.

5.6 Scrutiny of racing vehicles

1. A Chief Steward shall be designated for the duration of a race meeting and practice session to verify noise certificates and to evaluate noise emissions from race vehicles.
2. The Chief Steward may reject a certificate and require a new test if not satisfied with the noise test on which the certificate is based or if he considers that a racing vehicle has been modified to the extent that the certificate is no longer representative of noise emission from the vehicle.
3. If a racing vehicle at the speedway emits a level of noise that is conspicuously louder than that of the other racing vehicles in the same class at the meeting, the Chief Steward may require that vehicle to immediately cease racing and may prevent that vehicle from further racing at the speedway until that vehicle's noise level has been shown to comply with the noise limit.

5.7 Public address system noise

The public address (PA) system consists of loudspeaker towers placed around the track, facing towards the track and angled down towards the track.

The loudspeakers are not to be moved or adjusted by any person without the approval of the Chief Steward.

Noise emissions from the public address system at the venue are to be under the control of the Chief Steward, who is to designate persons who are authorised to use the system.

The public address system controls are to be set to provide a suitable audience sound level during the preliminary meeting each year, with the assistance of such persons as the Chief Steward requires, ensuring the minimum practicable 'spill' of sound into nearby noise sensitive areas.

The public address cabinet is to be locked for access only by the Chief Steward and his authorised assistants at all other times.

The public address system will only be used during race meetings; it is not to be used during practice sessions or at any other time except in the case of an emergency.

5.8 Review of racing activities in response to noise complaint

If complaints are made during a racing activity the occupier will review racing activities to reduce noise where practicable for the remainder of that event.

5.9 Written instruction to members

The club management committee shall provide all club members with a written instruction explaining the noise issues and the members' responsibility to maintain the noise limitation requirements.

6. NOTICE OF RACING ACTIVITIES

Notice of the program for racing activities for a season is to be published and distributed to members of the public as follows:

1. The notice is to be published in the local newspaper, showing proposed dates of racing activities (where known) for the coming season and the telephone number for noise complaints.
2. In addition to (1), the notice is to be delivered to the address of each noise sensitive premises at locations within 5 km of the venue.
3. The notice is to be published and delivered during the month of the year in which the season starts.
4. A change to the racing program is to be published in the local newspaper and a notice provided in accordance with (2) above within four weeks before the changed meeting is to occur.
5. Notice of a special event approved by the CEO is to be given in accordance with the conditions of the approval.

7. COMPLAINT PROCEDURE

1. A designated telephone line will be manned during racing activities for the receipt of noise complaints.
2. A complaint received will be recorded on the noise complaint form.
3. All complaints will be treated with due consideration and investigated and responded to as appropriate.
4. The occupier will as far as practicable provide advice to the complainant within 48 hours as to the outcomes of the investigation and where appropriate, any proposed modifications to operations.
5. The results of complaint investigations, details of measures taken or considered to reduce noise emissions under Measure 5.5 and an outline of the responses given to the complainant shall be recorded on the noise complaint form.
6. Completed noise complaint forms will be retained at the motorsport park for the period of the approval and made available to the CEO on request.
7. Noise complaint details are to be provided to the City of Albany on the next business day following receipt of the complaint.

8. RECORDS

8.1 Record of vehicle tests

The occupier is to retain records of all tests of race vehicles under Measure 5.2 for a period of two years.

8.2 Record of loud racing vehicles

The occupier is to make a record of all racing vehicles that have been required to cease racing by the steward under Measure 5.4 (Item 3) and retain that record for two years in a form that shows:

1. Details of the racing vehicle required to cease racing.
2. The racing vehicle's owner.
3. The date and time at which the request to cease racing occurred.
4. The action taken by the driver of the racing vehicle following the request.
5. The action taken by the owner of the racing vehicle to remedy the excessive noise emissions.

8.3 Records to be forwarded on request

If requested to do so in writing by the CEO, the occupier is to forward a copy of all or any of the records made under Measure 8.2 within 21 days of the request.

9. RESPONSIBILITIES

Club Committee:	Appointment of Chief Steward Development of program for scheduled race meetings
Chief Steward:	Implementation of this Noise Management Plan Designation and training of stewards Control of public address system
Head Scrutineer:	Scrutiny of racing vehicles

GHD

Level 10

999 Hay Street

T: 61 8 6222 8222 F: 61 8 6222 8555 E: permail@ghd.com

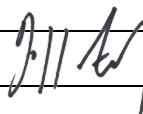
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https://projects.ghd.com/oc/WesternAustralia1/albanymotorsportspar/Delivery/Documents/613733101-REP_AlbanymotorsportPark_NoiseAssessment_23Sept2020.docx

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		Name	Signature	Name	Signature	Date
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Rev3	J Forrest	J Foley		J Foley		24/9/2020

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