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WAT-HSE-PLN-00009	Rev 0B	11/06/2024

MITSUI E&P Australia

Waitsia Gas Project Stage 2: Construction Noise Management Plan

Disclaimer

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RELATED DOCUMENTS

This document should be read in conjunction with following documents:

Document Number	Document Title
MS 1164	Ministerial Statement 1164: Waitsia Gas Project Stage 2
WAT-HSE-PLN-00008	Herring Storer Acoustics Waitsia Stage 2B Project Drilling Campaign Out of Hours Construction

TERMS, ABBREVIATIONS AND DEFINITIONS

Term or Abbreviation	Definition
CAR	Compliance Assessment Report
CEO	Chief Executive Officer
Construction	Well site construction and drilling activities
dB	Decibel
DBNGP	Dampier to Bunbury Natural Gas Pipeline
DWER	Department of Water and Environmental Regulation
EP Act	*Environmental Protection Act* 1986
EPA	Environmental Protection Authority
HSA	Herring Storer Acoustics
$L_{A\ 1}$	A sound level, determined as an L_A value, exceeded for 1% of the time period over which the level is determined
$L_{A\ 10}$	A sound level, determined as an L_A value, exceeded for 10% of the time period over which the level is determined.
$L_{A\ MAX}$	Maximum sound level, determined as a L_A value
MEPAU	Mitsui E&P Australia Pty Ltd
May, Should	Discretionary
MS	Ministerial Statement
Must, Shall, Will	Mandatory, non-discretionary
Noise Regulations	Environmental Protection (Noise) Regulations 1997
Noise sensitive premise	Premises referred to in Schedule 1 Part C of the Noise Regulations that are not industrial, utility or commercial premises.
PGER Act	*Petroleum and Geothermal Energy Resources Act* 1967.
PGER(R)	Petroleum and Geothermal Energy (Environment) Regulations 2012
PJ	Petajoule
The Proposal	The Waitsia Gas Project Stage 2

Term or Abbreviation	Definition
Tonality	Noise containing a prominent frequency and characterised by a definite pitch as defined by Part 2 Division 1 of the Noise Regulations.
WGP	Waitsia Gas Plant
WGP2	Waitsia Gas Project Stage 2

1.0 SUMMARY

A summary of this Construction Noise Management Plan is provided in Table 1-1.

Table 1-1 Summary of the Proposal

Proposal Title	Waitsia Gas Project Stage 2 (WGP2)
Proponent Name:	MEPAU Perth Basin Pty Ltd
Purpose of this Construction Noise Management Plan:	The purpose of this Construction Noise Management Plan is to identify the direct and potential indirect impacts on noise sensitive premises and develop management measures that minimises construction noise emissions impacts associated with the implementation of the Proposal. This Construction Noise Management Plan has been prepared in line with the "Instructions on how to prepare *Environmental Protection Act* (EP Act) 1986 Part IV Environmental Management Plans" (EPA, 2018).
Ministerial Statement:	The Proposal has been assessed by the EPA (Assessment 2226) and on 1 February 2021, a Ministerial Approval was received via Ministerial Statement (MS) 1164, with associated Proposal implementation conditions.
Condition Clauses:	Condition 11
Proposed Construction and Operation Dates:	Construction of the Proposal commenced in July 2021 and is anticipated to be finalised by mid-2026. The Waitsia Gas Plant (WGP) is expected to be operational for at least 20 years.
Plan Required Pre-Construction:	Yes
Key Environmental Factor/s and Objective/s:	Key environmental factor: Land – Social Surroundings – Noise Amenity **EPA Objective**: To protect social surroundings from significant harm. (EPA, 2023)
Key Provisions:	• Noise modelling study; • Analysis of direct and indirect impacts associated with implementing the Proposal; • Ongoing static noise monitoring; • Implementation of management actions; and • Annual reporting (including results of monitoring).

1.1 Ministerial Statement 1164 Conditions

Table 1-2 provides a summary of the conditions outlined in MS 1164 in relation to Noise and the relevant sections of the Noise Management Plan where these conditions have been addressed[1].

Table 1-2 Summary of MS 1164 Conditions Relating to the Noise Management Plan

MS 1164 Condition No.	Description	Location in Document
11	**Noise Management**	-
11-1	The proponent must implement the proposal to meet the following environmental outcome: 1) comply with the assigned noise levels in the Noise Regulations within fifteen (15) metres of any noise sensitive premises that is occupied.	Table 4-2
11-2	No later than sixty (60) days after the completion of construction and testing of wells Waitsia-13, Waitsia-17 and Waitsia-18, the proponent shall produce and provide a report on noise management to the CEO. The report shall detail the actions taken to ensure compliance with the outcome in condition 11-1 including relocation of residents from any occupied premises where the assigned noise levels in the Noise Regulations were likely to be exceeded.	Table 4-2 & Section 4.3

[1] MEPAU's Compliance Assessment Plan [WAT-HSE-PLN-00004] outlines MEPAU's approach to compliance with all conditions of MS 1164.

2.0 INTRODUCTION

MEPAU Perth Basin Pty Ltd is a wholly-owned subsidiary of Mitsui E&P Australia Holdings Pty Ltd, which in turn is a wholly-owned subsidiary of Mitsui & Co., Ltd. The Mitsui E&P Australia Holdings Pty Ltd group of companies operates under the brand Mitsui E&P Australia (MEPAU).

3.0 CONTEXT, SCOPE AND RATIONALE

This Construction Noise Management Plan has been prepared to support the assessment, approval and implementation of the Proposal under Part IV of the *Environmental Protection Act* 1986 (EP Act).

The Waitsia Gas Project Stage 2 (WGP2) was referred under the *Environmental Protection Act* 1986 (EP Act) to the Environmental Protection Authority (EPA) on 23 August 2019. In September 2020, the EPA recommended approval of WGP2 (detailed in Report 1687)). On 1 February 2021, Ministerial Approval was received for the project via Ministerial Statement (MS) 1164.

Under s.45C of the EP Act, an application to amend the Development Envelope was submitted to the EPA due to further refine the well locations/reservoir targets and make associated minor changes to the flowline routes. MS 1164 was amended on 4 October 2021.

A s.45C application of the EP Act was submitted to the EPA on 12 June 2023 and amended on 22 November 2023 to amend the development envelope and footprint and increase the number of gas production wells to a maximum of nineteen (19) to allow further development of the Waitsia Gas Field and to enable the approved production rate to be achieved over the life of the project. MS 1164 was amended on 17 April 2024.

Herring Storer Acoustics (HSA) was commissioned by MEPAU to prepare a Noise Modelling Report for well site construction and drilling activities outside of the construction hours of 07:00 to 19:00 Monday to Saturday for the construction works at the Waitsia Gas Field.

This Construction Noise Management Plan has been written in accordance with the "Instructions on how to prepare *Environmental Protection Act* (EP Act) 1986 Part IV Environmental Management Plans" (EPA, 2018).

3.1 Proposal

The Proposal (known as WGP2) is a conventional gas proposal located approximately 16km East-South-East of the Dongara-Port Denison town sites (Figure 3-1). It includes the construction and operation of the 91.25 Petajoule per annum Waitsia Gas Plant (WGP), related wells and gas gathering infrastructure.

Table 3-1 provides a summary of WGP2.

Table 3-1 Proposal Overview

Proposal Title	Waitsia Gas Project Stage 2
Proponent Activities	Development of a conventional gas reservoir by designing and constructing wells, a gathering system, gas processing plant and export pipeline to the Dampier to Bunbury Natural Gas Pipeline (DBNGP).
Short Description	WGP2 includes the following components:

Proposal Title	Waitsia Gas Project Stage 2
	• Construction and operation of the WGP with a maximum export capacity of 91.25 Petajoule (PJ) per annum; • Up to nineteen (19) gas production wells; • Installation of a gathering system comprising flowlines and hubs to convey the extracted gas to the WGP and the gas distribution network; • Construction of a (~1 km) pipeline (PL 128) to connect the WGP to the existing Waitsia Export Pipeline (PL 124); • Installation of flowline from the WGP to up to three (3) water injection wells to inject produced water into a disused petroleum formation; • Clearing of no more than 16.5 ha of native vegetation within a 580.9 ha development envelope; • Disturbance footprint of up to 479.2 ha within the 580.9 ha development envelope; and • Scope 1 Emissions up to ~300,000 tCO_2-e per annum.

Waitsia Stage 2B activities are scheduled to commence with earthworks at Waitsia-12 well pad followed by additional well sites and drilling tentatively in July 2024. A schedule of well site construction and drilling activities is provided in Table 3-2.

Table 3-2 Well Site Construction and Drilling Schedule of Activities

Activities	Approximate duration
Site preparation and earthworks	8 – 10 weeks per well site
Mobilisation of drilling package, ancillary services, site office, personnel and supplies	10 – 14 days per well
Drilling, evaluation and completion	40 – 50 days per well
Well completion performance evaluation / clean up and suspension	10 – 21 days per well
Well testing	up to 72 hours
Cathodic Protection installation	~10 days per well

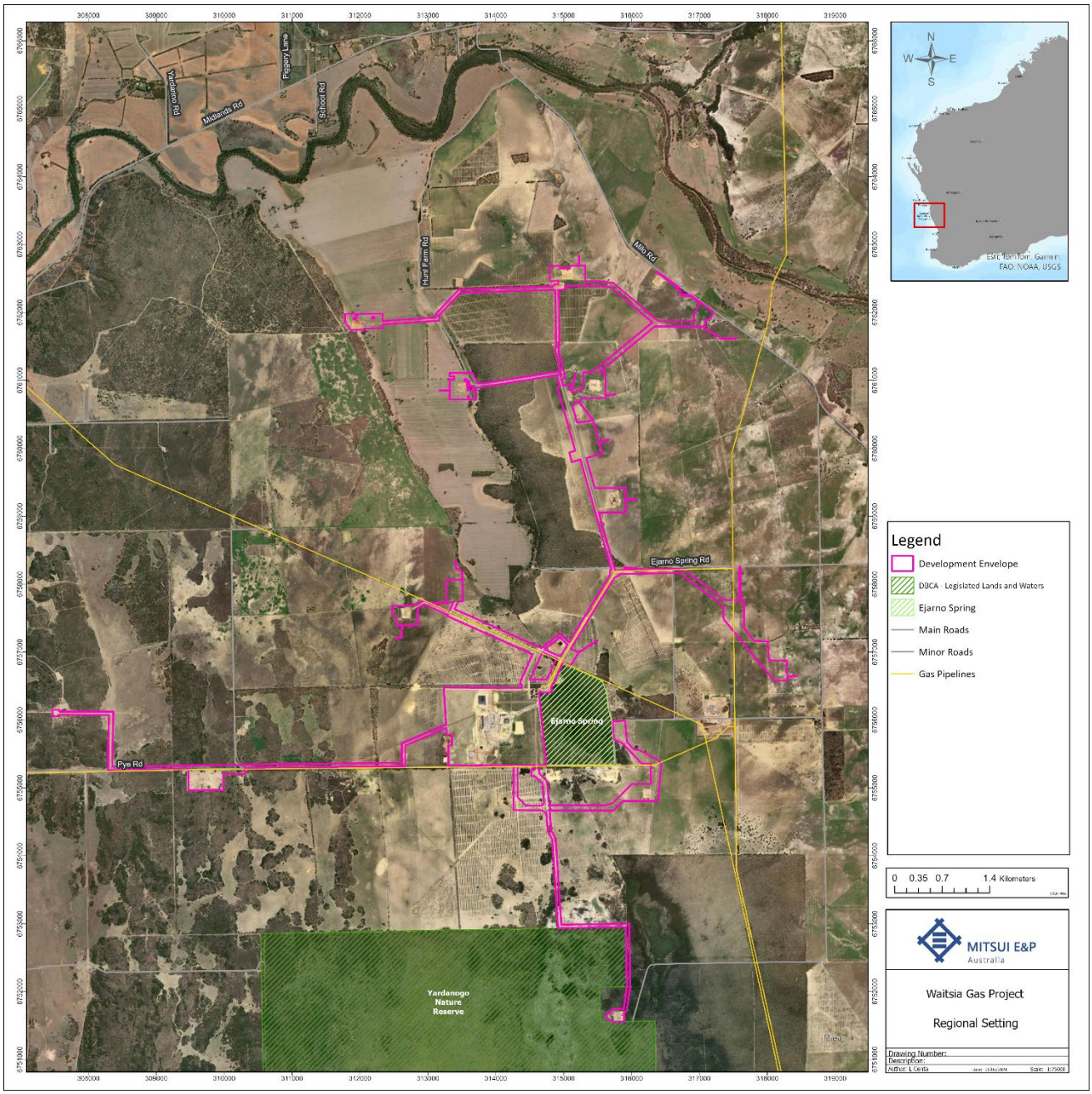

Figure 3-1 Regional Setting

3.2 Key Environmental Factors

The preliminary key environmental factors that have been identified by the EPA includes Air Quality, Flora and Vegetation, Inland Waters, and Social Surroundings (Noise amenity). The Construction Noise Management Plan addresses the Noise Emissions key environmental factor. A summary of the Noise Emissions factor with a specific focus on the impacts on social surroundings by the WGP2 are detailed in Table 3-3. The other preliminary key environmental factors and their management provisions are outlined in separate environmental management plans.

Impacts will be managed via the management measures detailed in Section 4.0.

Table 3-3 Summary of Key Environmental Factors – Noise Emissions

Noise Emissions	
EPA Objective	To protect social surroundings from significant harm.
Policy and Guidance	• Environmental Protection (Noise) Regulations 1997 • Environmental Factor Guideline – Social Surroundings • Part V of the *Environmental Protection Act* 1986 • *Petroleum and Geothermal Energy Resources Act* 1967
WGP2 Activities	• Construction of well sites will be short term and undertaken during daylight hours; • Drilling of gas production wells and well testing will result in short-term increases in noise emissions at each well site; and • Highest noise levels limited to typically up to 72 hours during well testing activities.
Potential impacts – Direct impacts	• Short-term elevated noise levels at noise sensitive premises that can be managed to meet the requirements of the Noise Regulations.
Potential impacts – Indirect impacts	• N/A

3.3 Rationale and Approach

A number of key information sources and aspects inform the rationale and approach of the management provisions outlined in Section 4.0. The following sub-sections summarise:

- Noise studies completed and findings (Section 3.3.1);
- Key assumptions and uncertainties (Section 3.3.2);
- The management approach (Section 3.3.3); and
- The rationale for choice of provisions (Section 3.3.4).

3.3.1 Noise Modelling Overview and Findings

3.3.1.1 Allowable Noise Levels

The allowable noise levels at the surrounding premises are prescribed by the Environmental Protection (Noise) Regulations 1997 are shown Table 3-4. Regulations 7 and 8 stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100 m and 450 m from the premises of concern.

Table 3-4 Baseline Assigned Outdoor Noise Levels

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 m of a dwelling	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF
Commercial	At All Times	60	70	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3-5.

Table 3-5 Adjustments to Measured Levels

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

3.3.1.2 Noise Modelling

A Noise assessment was completed by Herring Storer Acoustics (HAS, 2024) for well site construction and drilling activities outside of the construction hours of 07:00 to 19:00 Monday to Saturday for the Waitsia Stage 2B construction activities.

The Waitsia Stage 2B development as part of the expansion of the WGP2 project includes:

- Drilling an additional five (5) to six (6) new production wells; and
- Installing flowlines and hubs to convey the extracted gas back to the gas gathering system for the WGP.

The nearest noise sensitive premise (Residence A) is situated approximately 650 m from the nearest construction site at the Waitsia-13 well site, with other noise sensitive premise (Residence C) located approximately 1.5 km from Waitsia-17 and Waitsia-18 well sites. The proposed sites and receiver locations are shown in Figure 3-2.

Data used for the modelling inputs was based on noise level measurements of similar equipment used in the construction industry and previous well testing monitoring conducted for WGP2 well sites.

Results of the calculated noise levels have been summarised in Table 3-6. Noise levels have been assumed to contain tonal characteristics, hence, noise levels in Table 3-6 have been adjusted by + 5 dB to reflect the emission containing tonal characteristics in accordance with the Environmental Protection (Noise) Regulations 1997.

Table 3-6 Assessment of Night Period Noise Level Emissions L_{a10}

Receiver	Scenario							
	Waitsia-12	Waitsia-13	Waitsia-14	Waitsia-15	Waitsia-16	Waitsia-17	Waitsia-18	Waitsia-19
Res A	18	**54**	22	32	26	23	23	32
Res B	21	15	29	25	17	10	10	25
Res C	9	26	20	20	32	**42**	**42**	20
Res D	9	11	31	18	21	13	13	17
Res E	3	8	13	7	19	22	22	8
Res F	4	7	16	8	19	18	18	9

Note: Highlighted noise levels exceed the 35 dB(A) noise criteria for night (Regulation 7).

Based on the resultant noise levels, wells Waitsia-12, -14, -15, -16, and -19 were assessed to comply with the regulatory assigned noise level for all hours. For wells Waitsia-13, -17 and -18, the assigned noise levels are exceeded for the regulatory period of “night”, hence this Construction Management Plan is required. Worst case noise contour plots for the Waitsia Stage 2B well sites are provided in Attachment 1 (HSA, 2024).

While noise levels are typically elevated during the period of well testing when the well is flowed for up to 72 hours, due to insufficient quantitative data previously collected across the well construction (drilling) phase, management measures will be applied for the duration of well construction and well testing activities to ensure no exceedances to the noise regulations.

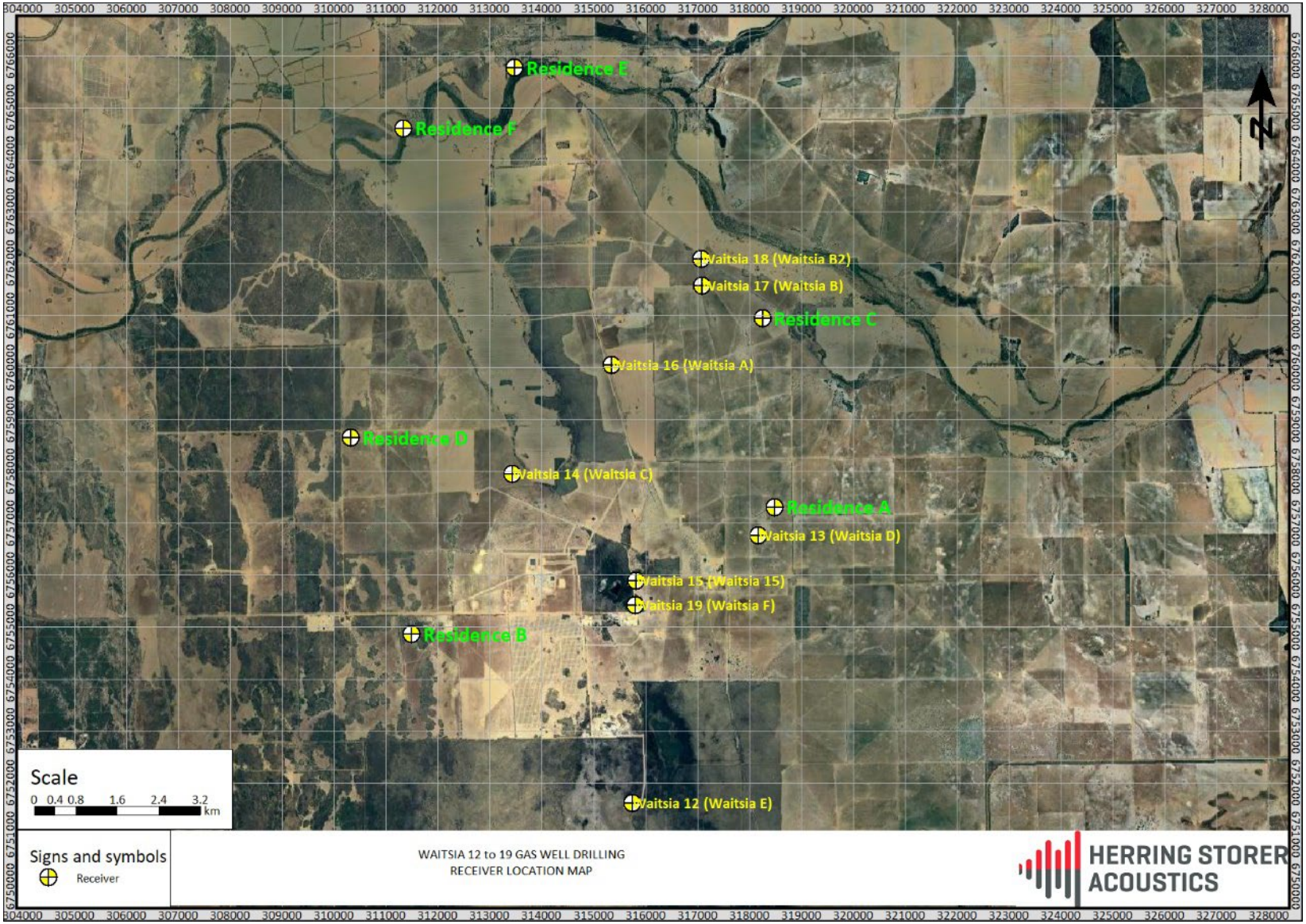

Figure 3-2 Noise Sensitive Receptors

3.3.2 Key Assumptions and Uncertainties

The key assumptions and uncertainties relating to the Noise Modelling detailed in Attachment 1 are summarised in Table 3-7.

Table 3-7 Assumptions and Uncertainties

#	Assumptions and Uncertainties	Comment
1	Drilling timing	Drilling activities cannot stop after commencement until completion of the well. This is to ensure operational continuity and to monitor well integrity due to critical safety reasons. The same is applicable to well flow testing. Hence the requirement for continuous operations, and this Construction Noise Management Plan.
2	Well testing	Well testing activities cannot stop after commencement until completion of the test. The purpose of the testing is to obtain data used to evaluate well and field performance, diagnose reservoir characteristics, integrate test results with other studies, plan for future development, and perform the overall management of the reservoir.
3	Surrounding land use noise levels	Based on the surrounding land use, there are no uses which would increase the influencing factor, hence it would be 0 dB, with the assigned noise levels being used for the base values.
4	Predictive noise modelling	Predictive noise modelling using the proposed equipment's noise emissions has been carried out using SoundPlan. Receiver locations have been based on the closest noise sensitive premises in relation to the site.

3.3.3 Management Approach

MEPAU plans to implement outcome-based provisions under this Construction Noise Management Plan. The reason for this approach is that the outcome can be readily measured with clear thresholds set to enable a level of protection to be achieved.

3.3.4 Rationale for Choice of Provisions

Given the short timeframe required for construction activities, consultation with landowners and that both construction and operation of the well site's post construction can be managed to meet the Environmental Protection (Noise) Regulations 1997, the proposed amendments are unlikely to result in a significant impact to noise levels at noise sensitive premises.

4.0 NOISE SENSITIVE RECEPTORS NOISE MANAGEMENT

A series of environmental objectives have been developed to mitigate environmental impacts on noise emissions associated with the implementation of the WGP2 activities. Table 4-1 details the environmental objectives for this Construction Noise Management Plan.

Table 4-1 Environmental Objectives

Potential Impact	Environmental Objective
Disturbance to noise sensitive premises	A Land Access Agreement will be in place with relevant landowners prior to the commencement of the WGP2 activities. Where a Land Access Agreement is not required with affected landowners, the Company has undertaken consultation specifically on noise disturbance with no objections raised.
	Affected residences will be uninhabited during drilling and well testing activities.
	Ongoing consultation with relevant stakeholders over the course of the WGP2 activities.
	A flaring silencer will be installed as part of the flaring equipment spread for well testing activities.
	Noise reduction measure for equipment and machinery.
	Complaints received over the course of the WGP2 activities are recorded and investigated.

4.1 Construction Noise Management Plan Provisions

Table 4-2 identifies the management-based provisions (respectively) that MEPAU will implement to ensure that the environment outcomes are met during the implementation of the WGP2.

Table 4-2 Outcome Based Provisions for Noise

EPA Objective		To protect social surroundings from significant harm		
Potential Impact	**Management Objective**	**Response Actions**	**Monitoring**	**Reporting**
Disturbance to noise sensitive premises	A Land Access Agreement will be in place with relevant landowners prior to the commencement of WGP2 activities. Where a Land Access Agreement is not required with affected landowners, the Company has undertaken consultation specifically on noise disturbance with no objections raised.	A Land Access Agreement will be prepared in consultation with the landowners for each well site and will include consideration of the well construction phase. As such, the development of any infrastructure in this area will be subject to a Land Access Agreement, as required under Section 20 of the *Petroleum and Geothermal Energy Resources* (PGER) *Act* 1967. Residence A for which is also the owner of the land on which the proposed Waitsia-13 well will be established has not raised any concerns around noise emissions during ongoing consultation associated with the proposed activity.	Section 6.0	• Petroleum and Geothermal Energy (Environment) Regulations 2012 (PGER(R)) Annual Environmental Report
	Affected residences will be uninhabited during drilling and well testing activities.	Affected residences where the Environmental Protection (Noise) Regulations 1997 are likely to be exceeded during the drilling or well testing activities will be uninhabited for the duration of the activity. An agreement will be put in place with the affected landowners to ensure residences are uninhabited ahead of any drilling or well testing activities occurring.	Section 4.2 Section 6.0	• PGER(R)) Annual Environmental Report • Noise Management Report to the Department of Water and Environmental Regulation (DWER) Chief Executive Officer (CEO) within 60 days after the completion of construction and testing of wells Waitsia-13, Waitsia-17 and Waitsia-18. • Ministerial Conditions Annual Compliance Assessment Report (CAR)
	Ongoing consultation with relevant stakeholders over the course of the WGP2 activities.	MEPAU are committed to stakeholder engagement and undertakes ongoing consultation with relevant stakeholders associated with WGP2 activities. MEPAU will ensure: • Ongoing engagement with all relevant stakeholders; • MEPAU has specifically engaged with Residence C (non-permanent residence) closest to Waitsia-17 and Waitsia-18 and no concerns have been raised regarding noise emissions associated with the proposed activity; and • Prior to commencement of any activities, an information sheet will be sent to relevant stakeholders detailing the activities to be carried out and the reasons for the construction work. The information sheet will also provide contact details (email) for registering comments, concerns or complaints about the activity.	Section 6.0	• PGER(R)) Annual Environmental Report • Ministerial Conditions Annual CAR

EPA Objective		To protect social surroundings from significant harm		
Potential Impact	**Management Objective**	**Response Actions**	**Monitoring**	**Reporting**
	A flaring silencer will be installed as part of the flaring equipment spread for well testing activities.	A flaring silencer (diffuser) will be installed as part of the flaring equipment spread for well testing activities and used once the completion fluid unloading process is complete. Well flaring activities can typically last up to 72 hours, however the short duration noisiest part of the activity predominately occurs during the day when the well is initially unloading completion fluid. A Flare Diffuser Noise Predictive study undertaken for AWE (SVT, 2015) suggests that a ~20 dB reduction would be achievable using a flare diffuser. MEPAU have available two diffusers facilitating dual diffuser configuration for high-rate well testing flow periods. The well test package will include appropriate diffuser/s based on anticipated flowrates which will be installed during well testing rig-up activities. These diffusers provide an effective means of noise reduction (estimated 20 dB) for high-rate gas wells but may not be practically implemented at low flow rates. However, as noise emissions are related to flare line exit velocity; these diffusers will be made available as a noise mitigation measure during high flow periods when they are most effective.	Section 4.2	• PGER(R)) Annual Environmental Report • Ministerial Conditions Annual CAR
	Noise reduction measure for equipment and machinery.	To reduce noise of equipment and machinery, where necessary MEPAU will implement the following mitigation measures during construction activities for WGP2: • Where possible, doors (engine enclosures) will be in place and remain closed; • Limited operational times, i.e. when not in demand, equipment will be shut down (not left idling); and • Equipment and machinery will be maintained in accordance with the Contractors maintenance system to minimise excessive noise emissions to ensure that they are in good operating order.	Section 4.2	• PGER(R)) Annual Environmental Report
	Complaints received over the course of the WGP2 activities are recorded and investigated.	Any complaints received over the course of the WGP2 activities are recorded and investigated as per the External Stakeholder Complaint Management Procedure [BOS-EXT-PRO-00002]. Complaints will be recorded and include the following information: • Details of the complaints received; and • Any action taken in response to the complaint.	Section 6.0	• PGER(R)) Annual Environmental Report • Ministerial Conditions Annual CAR

4.2 Monitoring

To clearly understand if the environmental criteria have been met or exceeded, MEPAU will conduct static noise monitoring during drilling and well testing activities to confirm against the Environmental Protection (Noise) Regulations 1997, noise modelling presented in Table 3-6 and to identify any anomalies to noise sensitive premises.

4.3 Reporting

The environmental objectives will be reported for each calendar year in the annual CAR for the Proposal. The CAR will also include a summary of analysis of monitoring data to facilitate adaptive management.

No later than sixty (60) days after the completion of construction and testing of wells Waitsia-13, Waitsia-17 and Waitsia-18, MEPAU will complete a noise management report to the DWER CEO.

5.0 ADAPTIVE MANAGEMENT

5.1 Monitoring

MEPAU will implement adaptive management to mitigate measures, monitor and evaluate against Construction Noise emissions.

Adaptive management practices that will be assessed as part of this approach may include:

- Evaluation of the static noise monitoring data collected during drilling and well testing activities with comparison to noise modelling and Environmental Protection (Noise) Regulations 1997 during construction activities;
- Validate the assumptions and uncertainties based on the outcomes of the monitoring program;
- Re-evaluation of the risk assessment and revision of risk-based priorities as a result of monitoring outcomes; and
- Assessment of changes which are outside the control of the project and the management measures identified (i.e. a new project within the area or region; regional change affecting management).

5.2 Management Plan Review

This Construction Noise Management Plan is intended to be dynamic and may be updated to reflect changes in management practices and the natural environment over time. This approach will allow flexibility to adopt new approaches and management measures. This will include:

- Amendment of management actions that are not achieving the desired outcomes;
- Monitoring that identifies additional impacts requiring additional management actions or changes to existing management actions;
- Changes to relevant legislation that may affect the implementation of management actions; and
- Improvements to management practices to achieve a greater environmental outcome.

6.0 STAKEHOLDER CONSULTATION

Consistent with the EPA's expectations for this Construction Noise Management Plan to align with the principles of Environmental Impact Assessment, MEPAU have already consulted with relevant stakeholders on the upcoming campaign which has included specific engagement on noise disturbance. MEPAU will continue to maintain effective communication with local and regional stakeholders throughout the delivery of the WGP2.

Any additional consultation regarding this Construction Noise Management Plan will be captured in subsequent revisions.

7.0 PUBLIC AVAILABILITY

A copy of this Construction Noise Management Plan is available on the MEPAU website. As per MEPAU's Compliance Assessment Plan [WAT-HSE-PLN-00004], this Construction Noise Management Plan and any associated validated data shall be made available to members of the public within 7 days of MEPAU receiving such a request.

8.0 REFERENCES

Department of Environment and Water Regulation. 2022. *Environmental Protection Act* 1986 Environmental Protection (Noise) Regulations 1997. https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_44713.pdf/$FILE/Environmental%20Protection%20(Noise)%20Regulations%201997%20-%20%5B02-e0-00%5D.pdf?OpenElement.

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Herring Storer Acoustics. 2024. Waitsia Stage 2B Project Drilling Campaign: Out Of Hours Construction Noise Management Plan.

SVT Engineering Consultants. 2015. AWE Flare Diffuser Noise Prediction. Unpublished report prepared for AWE Limited.

ATTACHMENTS

ATTACHMENT 1

WAITSIA STAGE 2B PROJECT DRILLING CAMPAIGN: OUT OF HOURS CONSTRUCTION NOISE MANAGEMENT PLAN (HERRING STORER ACOUSTICS, 2024)

DOCUMENT NO	REVISION	DATE OF REVISION
WAT-HSE-PLN-00008	Rev 0	11/03/2024

MITSUI E&P Australia

Waitsia Stage 2B Drilling Campaign - Out of Hours Construction Noise Management Plan

WAITSIA STAGE 2B PROJECT
DRILLING CAMPAIGN
OUT OF HOURS CONSTRUCTION NOISE MANAGEMENT PLAN

FOR

MITSUI E&P AUSTRALIA

MARCH 2024

REFERENCE: WAT-HSE-PLN-00008

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DOCUMENT CONTROL PAGE

OUT OF HOURS CONSTRUCTION NOISE MANAGEMENT PLAN

WAITSIA STAGE 2B PROJECT
DRILLING CAMPAIGN
Job No: 23415

Document Reference: 32138-3-23415

FOR

MITSUI E&P AUSTRALIA

CONTENTS

APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics (HSA) has been commissioned by Mitsui E&P Australia to prepare a Noise Management Plan (NMP) for construction activities outside of the construction hours of 07:00 to 19:00 Monday to Saturday for the construction works at the Waitsia gas Field, located 18km east-southeast of Dongara.

Waitsia Stage 2B development includes expansion of the Waitsia Gas Project to include an additional five (5) to six (6) wells and associated flowlines to tie back to the gas gathering system for the Waitsia Gas Plant. There are eight (8) nominated locations for the new wells, with plan to drill five (5) wells. Out of the eight (8) wells considered for Waitsia Stage 2B, two (2) of the wells are contingent on consent of another operator in the area and one (1) is contingent on the performance of the five (5) main wells.

The location plan for the proposed well sites are shown in Figure 1.1 below and contained in Appendix A.

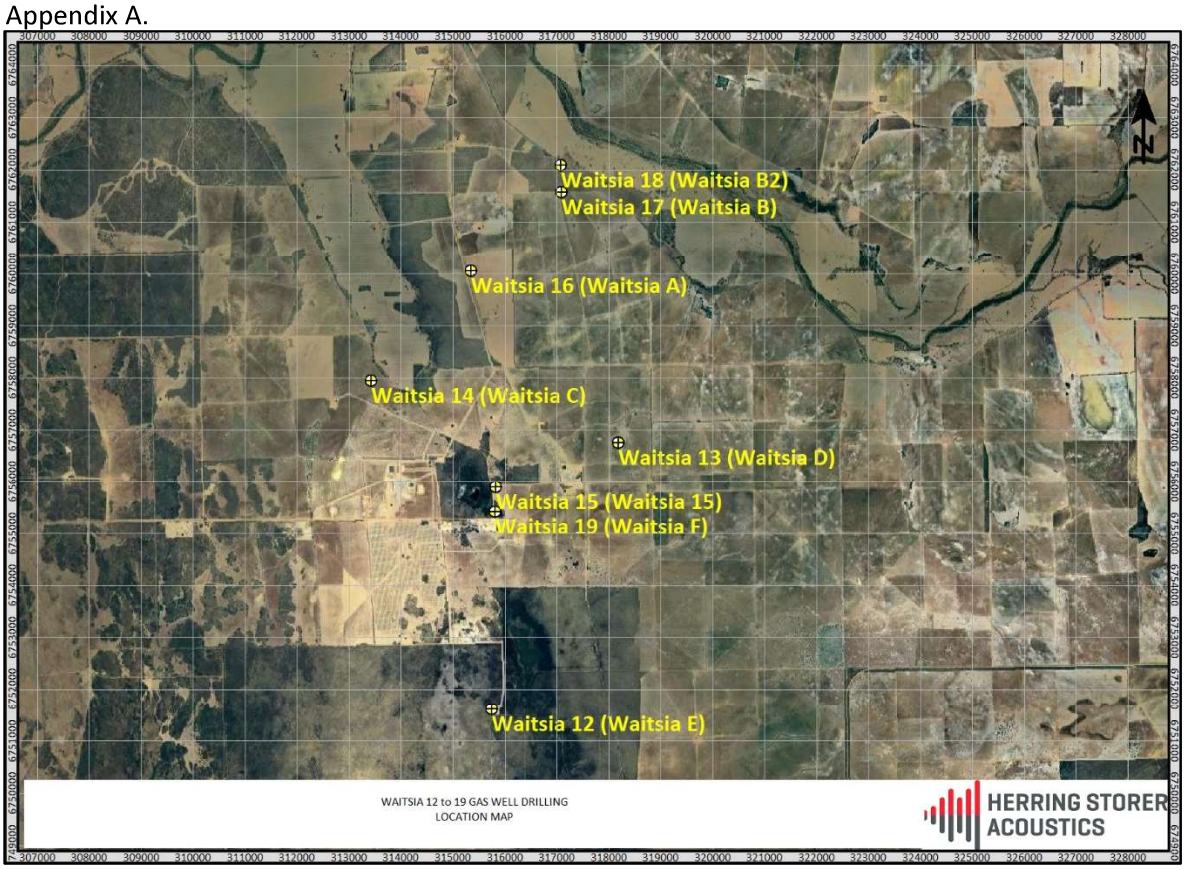


FIGURE 1.1 – PROPOSED GAS WELL LOCATIONS

The works are scheduled to commence with earthworks for Waitsia-12 followed by other wells and drilling tentatively in July 2024 when it is expected to receive all the required approval for Stage 2B. The earthworks for Waitsia-12 have been authorised by the regulator under existing Stage 2 approvals. The construction activities will be as per the details in Table 1.1 below.

It is noted that the drilling works cannot stop after commencement until completion the well. This is to ensure operational continuity and to monitor well integrity due to critical safety reasons. The same is applicable to flow testing. Hence the requirement for continuous operations, and this out of hours management plan.

TABLE 1.1 – CONSTRUCTION DETAILS

Activities	Approximate duration
Site preparation and earthworks	8 – 10 weeks per well site
Mobilisation of drilling package, ancillary services, site office, personnel and supplies	10 – 14 Days
Drilling, evaluation and completion	40 – 50 Days per well site
Well completion performance evaluation / clean up and suspension	4 – 10 Days per well site
Cathodic Protection installation	10 days per well site

We note that under Regulation 13 of the *Environmental Protection (Noise) Regulations 1997*, construction work carried out between 07:00 to 19:00 Monday to Saturday does not need to comply with the assigned noise levels as determined under Regulation 7.

Additionally, noise emissions from construction work outside the above times can also be exempt for Regulation 7 if the occupier of the construction site complies with the requirements of Regulation 13(3).

2. CRITERIA

2.1 REGULATION 13 – CONSTRUCTION SITES

Noise and impact assessment in Western Australia is governed by the Environmental Protection (Noise) Regulations 1997. Within these, Regulation 13 addresses noise from construction sites. This Regulation does not provide specific noise levels which must be met but rather, provides management procedures to be followed as detailed below.

2.1.1 Normal Construction Hours

Where work is carried out between 07:00 and 19:00 on any day except Sundays and Public Holidays, then the assigned noise levels as determined under Regulation 7 do not apply and would be considered reasonable, provided:

- The construction work is carried out in accordance with Section 4 of AS2436-2010 Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites.
- The equipment used is the quietest reasonably available.
- If a noise management plan was required to be prepared, then:
    1. The noise management plan (NMP) is prepared, given and approved by the Chief Executive Officer; and
    2. The construction work was carried out in accordance with the management plan.

Notes :

1 Under sub-regulation (4), the Chief Executive Officer may require an occupier of a construction site on which it is proposed to carry out construction work to prepare a noise management plan in respect to the premises.

2 Councils have the delegated authority with regards to the *Environmental Protection (Noise) Regulations 1997* and for this project, the Chief Executive Officer referred to above is the Chief Executive Officer of the local shire.

2.1.2 Out-of-Hours Construction

Where work is carried out outside the hours of 07:00 and 19:00 on any day except Sundays and Public Holidays, then the assigned noise levels as determined under Regulation 7 do not apply, provided the occupier of the construction site shows that:

- The construction work is carried out in accordance with Section 4 of AS2436-2010 Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites.
- The equipment used is the quietest reasonably available.
- The construction was carried out in accordance with a noise management plan in respect of the construction site –
    1. is prepared and given to the Chief Executive Officer not later than 7 days before the construction work commenced: and
    2. is approved by the Chief Executive Officer.
- At least 24 hours before construction work commences, the occupier of the construction site gives written notice of the proposed construction work to the occupiers of all premises at which noise emissions received were likely to fail to comply with the standard prescribed under Regulation 7; and
- It was reasonably necessary for the construction work to be carried out.

2.1.3 NMP TO CONTAIN

Under sub-regulation (6), when a NMP is to be prepared, in accordance with the Regulations, this report forms part of and specifically this shall include but not to be limited to:

a) Details of, and reasons for, construction work on the construction site that is likely to be carried out other than between 07:00 and 19:00 on any day which is not a Sunday or Public Holiday;

b) Details of, and the duration of, activities on the construction site likely to result in noise emissions that fail to comply with the standard prescribed under regulation 7 of the *Environmental Protection (Noise) Regulations 1997* (provided in this report);

c) Predictions of noise emissions on the construction site (provided in this report);

d) Details of measures to be implemented to control noise emissions (provided in this report where necessary and/or practicable);

e) Procedures to be adopted for monitoring noise emissions (provided in this report); and

f) Complaint response procedures to be adopted.

2.2 ALLOWABLE NOISE LEVELS

The allowable noise levels at the surrounding premises are prescribed by the Environmental Protection (Noise) Regulations 1997. Regulations 7 & 8 stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern.

TABLE 2.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF
Commercial	At All Times	60	70	80

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means 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;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3dB 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 8dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 2.2 below.

TABLE 2.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The nearest noise sensitive premise (Residence A to F dependant on Well location) is situated approximately 650m from the nearest construction site.

The proposed sites and receiver locations are shown in Figure 2.1, and Appendix A.

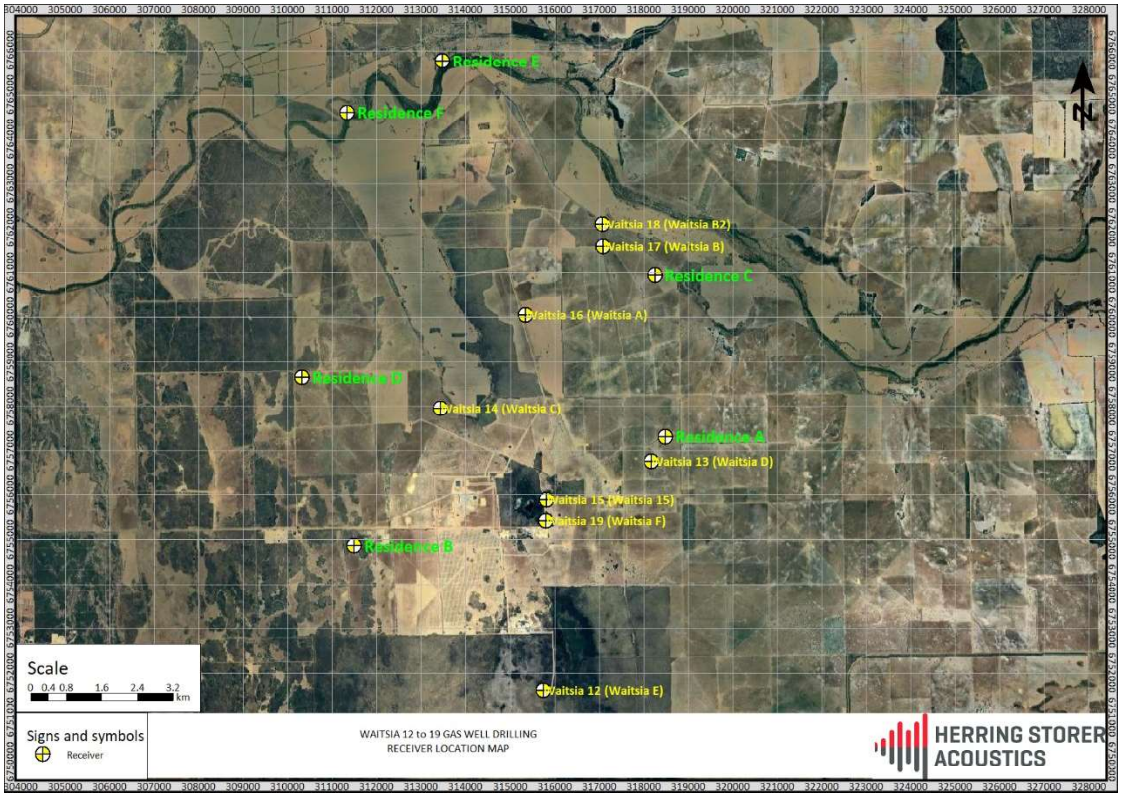


FIGURE 2.1 – RECEIVER POINTS

Based on the surrounding land use, there are no uses which would increase the influencing factor, hence it would be 0 dB, with the assigned noise levels being as for the base values in Table 2.1.

3. MEASUREMENTS AND OBSERVATIONS

3.1 REGULATION 13(6)(A)

While every effort shall be made to select equipment that minimises the generation of noise and that is in good repair, it is acknowledged that the equipment, machinery and plant to be used will generate noise.

3.2 REGULATION 13(6)(B)

See 3.3 below.

3.3 REGULATION 13(6)(C)

Calculations of noise levels from the construction activities have been based on information provided and file data for similar equipment proposed for use in the operations. Previously, noise level measurements of an ARC Energy (Drill Rig 18) were conducted at the Redhill Site in Dongara. These measured noise levels have been used as the basis of the sound power level calculations for the expected noise sources at the Well sites.

Predictive noise modelling using the proposed equipment's noise emissions has been carried out using SoundPlan. Receiver locations have been based on the closest noise sensitive premises in relation to the site.

The location of the proposed wells is contained in Table 3.1.

TABLE 3.1 – WELL DETAILS AND LOCATION

Well name	Waitsia-16		Waitsia-17		Waitsia-18		Waitsia-15		Waitsia-19		Waitsia-13		Waitsia-14		Waitsia-12	
Well name (historic)	**Waitsia-A**		**Waitsia-B**		**Waitsia-B2**		**Waitsia-15**		**Waitsia-F**		**Waitsia-D**		**Waitsia-C**		**Waitsia-E**	
Well Type	Deviated		Deviated		Deviated		Deviated		Deviated		Deviated		Deviated		Deviated	
GL Elevation (m)	101.00		69.00		69.00		43.00		43.00		114.00		46.00		33.00	
Assumed RT (m)	8.73		8.73		8.73		8.73		8.73		8.73		8.73		8.73	
Height above GL (m)	109.73		77.73		77.73		51.73		51.73		122.73		54.73		41.73	
Coordinates	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
Surface Location	315353	6760046	317037	6761946	317078	6762004	315820	6755890	315824	6755826	318180	6756764	313430	6757948	315745	6751611

Table 3.2 details the equipment sound power levels used, with Table 3.3 providing the resultant noise level at the neighbouring residential premises.

TABLE 3.2 – EQUIPMENT SOUND POWER LEVELS

Equipment	Sound Power Levels dB(A)
Generator	117
Mud Pumps	103-107
Agitators	100
Hydraulic Drive Unit	115
Rig Drive Motor	115
Winch	103
Flare	92

Results of the calculated noise levels have been summarised in Table 3.3. Noise levels have been assumed to contain tonal characteristics, hence, noise levels in Table 3.3 have been adjusted by + 5 dB to reflect the emission containing tonal characteristics in accordance with the *Environmental Protection (Noise) Regulations 1997*.

TABLE 3.3 – ASSESSMENT OF NIGHT PERIOD NOISE LEVEL EMISSIONS L_{A10}

Receiver	Scenario							
	Waitsia 12	Waitsia 13	Waitsia 14	Waitsia 15	Waitsia 16	Waitsia 17	Waitsia 18	Waitsia 19
Res A	18	***54***	22	32	26	23	23	32
Res B	21	15	29	25	17	10	10	25
Res C	9	26	20	20	32	***42***	***42***	20
Res D	9	11	31	18	21	13	13	17
Res E	3	8	13	7	19	22	22	8
Res F	4	7	16	8	19	18	18	9

Note: Highlighted noise levels exceed the 35 dB(A) noise criteria for night (Regulation 7).

Appendix B contains a noise contour plot of the proposed Well sites.

Based on the resultant noise levels, wells 12, 14, 15, 16, and 19 comply with the regulatory assigned noise level for all hours.

For wells 13, 17 and 18, the assigned noise levels are exceeded for the regulatory period of "night", hence this Out of Hours Noise Management Plan is required.

3.4 REGULATION 13(6)(D)

Noise control measures include:

- Where possible doors will be in place and remain closed (engine enclosures)
- Limited operational times, i.e. when not in demand, equipment will be shut down (not left idling).
- Broadband alarms will be fitted to all equipment on site.

3.5 REGULATION 13(6)(E)

If required, noise levels for the activities will be measured via the use of an environmental noise monitor (Logger). The automatic noise logger will be utilised to measure 15 minute intervals in accordance with EPA Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise. The logger records statistical noise level data of which the L_{A1}, L_{A10}, and L_{A90} levels are reported.

The logger will record noise data continuously and will form the basis of assessable noise levels for any complaint response procedure.

3.6 REGULATION 13(6)(F)

Mitsui E & P has a list of all relevant stakeholders within the L1/L2 permit area. Prior to commencement of any activities, an information brochure will be sent to those stakeholders explaining the activities to be carried out and reasons for the construction work. The brochure will also provide contact details (telephone and email) for registering comments, concerns or complaints about the activities.

Any complaints received will be handled in accordance with Mitsui E & P's External Stakeholder Complaint Management Procedure BOS-EXT-PRO-00002.

Any complaints will be registered in a log book stating:

- Where the complaint was from.
- Where and what was the equipment operating.
- If a verbal response was given to the resident, what was it and was the resident satisfied with the response.
- Did Mitsui E&P (or a representative) personnel go to the property to discuss the complaint and what was resolved at this point.

  After the complaint has been received and responded, noise emissions from the offending item(s) of equipment should be investigated. If noise levels from offending item(s) are found to be excessive, then alternative construction methodologies and equipment should be considered or noise control measures to be applied.

4. CONCLUSION

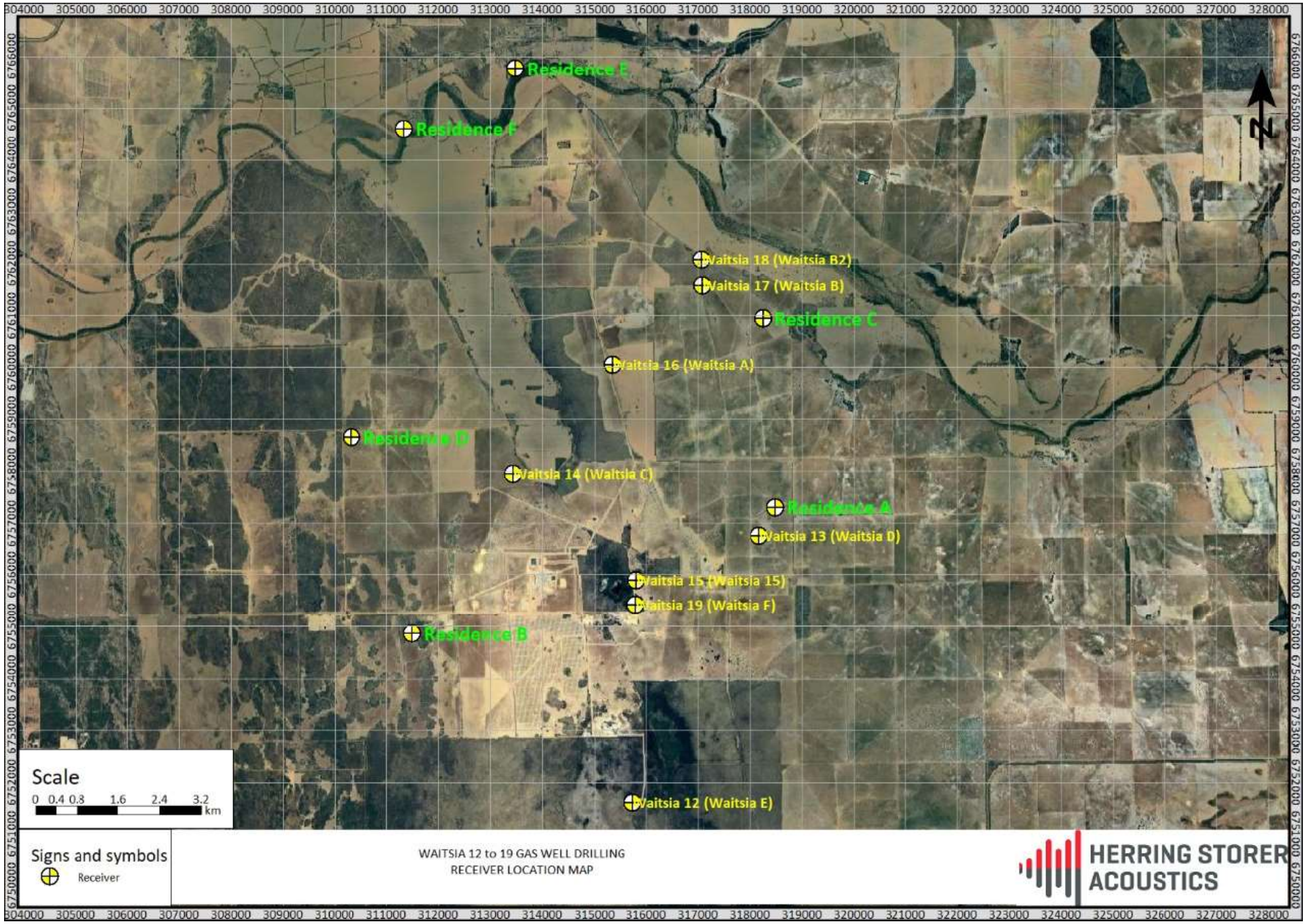
It is noted that the drilling works cannot stop after commencement until completion. This is to ensure operational continuity and to monitor well integrity due to critical safety reasons. The same is applicable to flow testing. Hence the requirement for continuous operations, and this out of hours management plan.

We believe that this out of hours work is considered justified and reasonably necessary given the duration of the proposed activity, the noise control to be considered and the measures to be implemented during the construction activity are listed in the report above.

APPENDIX A

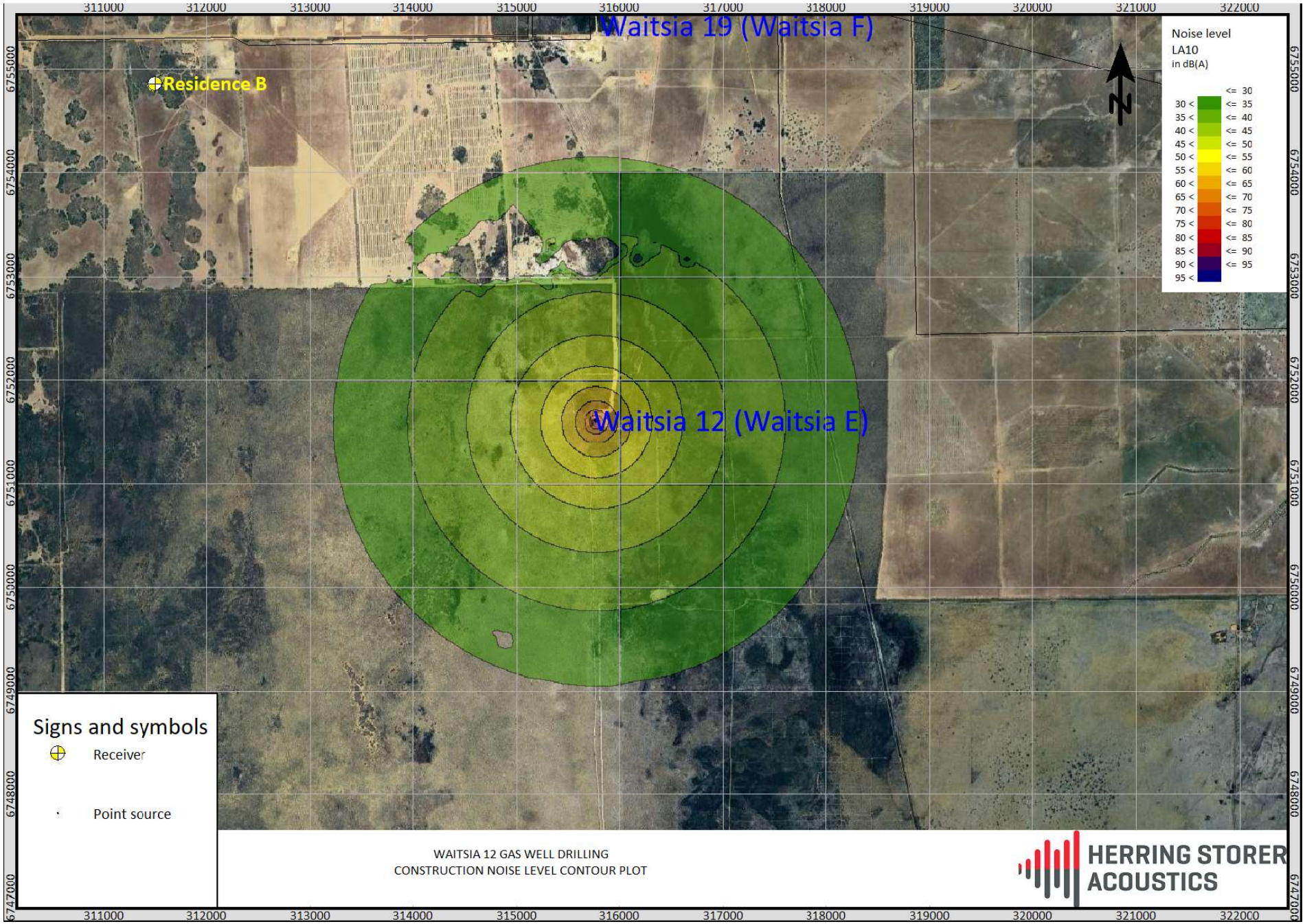
LOCATION PLAN

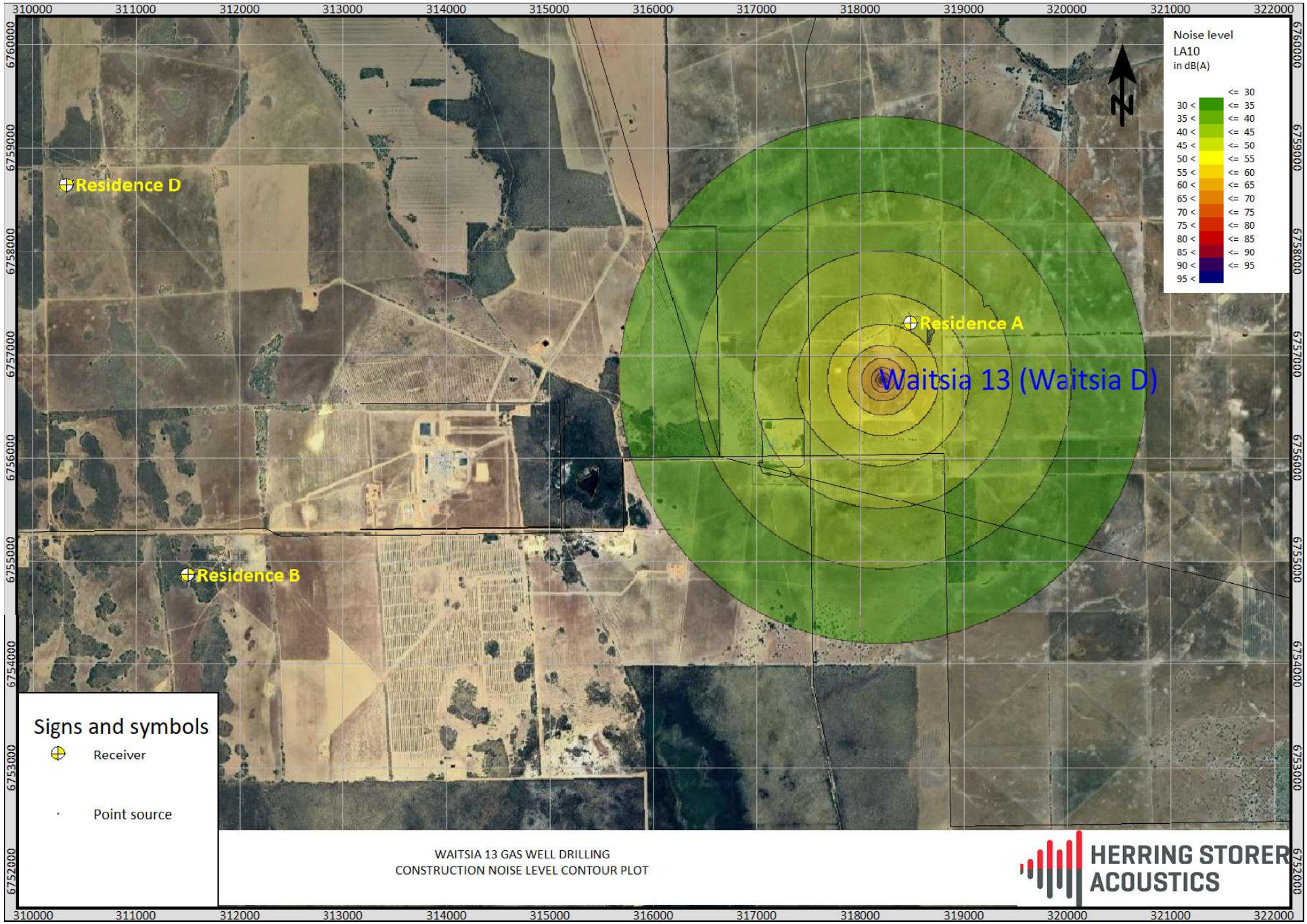
FIGURE 1 – LOCALITY PLAN



APPENDIX B

WORST CASE
NOISE CONTOUR PLOT


Waitsia 19 (Waitsia F)
Residence B
Waitsia 12 (Waitsia E)
Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
N
311000
312000
313000
314000
315000
316000
317000
318000
319000
320000
321000
322000
6755000
6754000
6753000
6752000
6751000
6750000
6749000
6748000
6747000
Signs and symbols
Receiver
Point source
WAITSIA 12 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER
ACOUSTICS


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
N
Residence D
Residence A
Waitsia 13 (Waitsia D)
Residence B
Signs and symbols
Receiver
Point source
WAITSIA 13 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS
310000
311000
312000
313000
314000
315000
316000
317000
318000
319000
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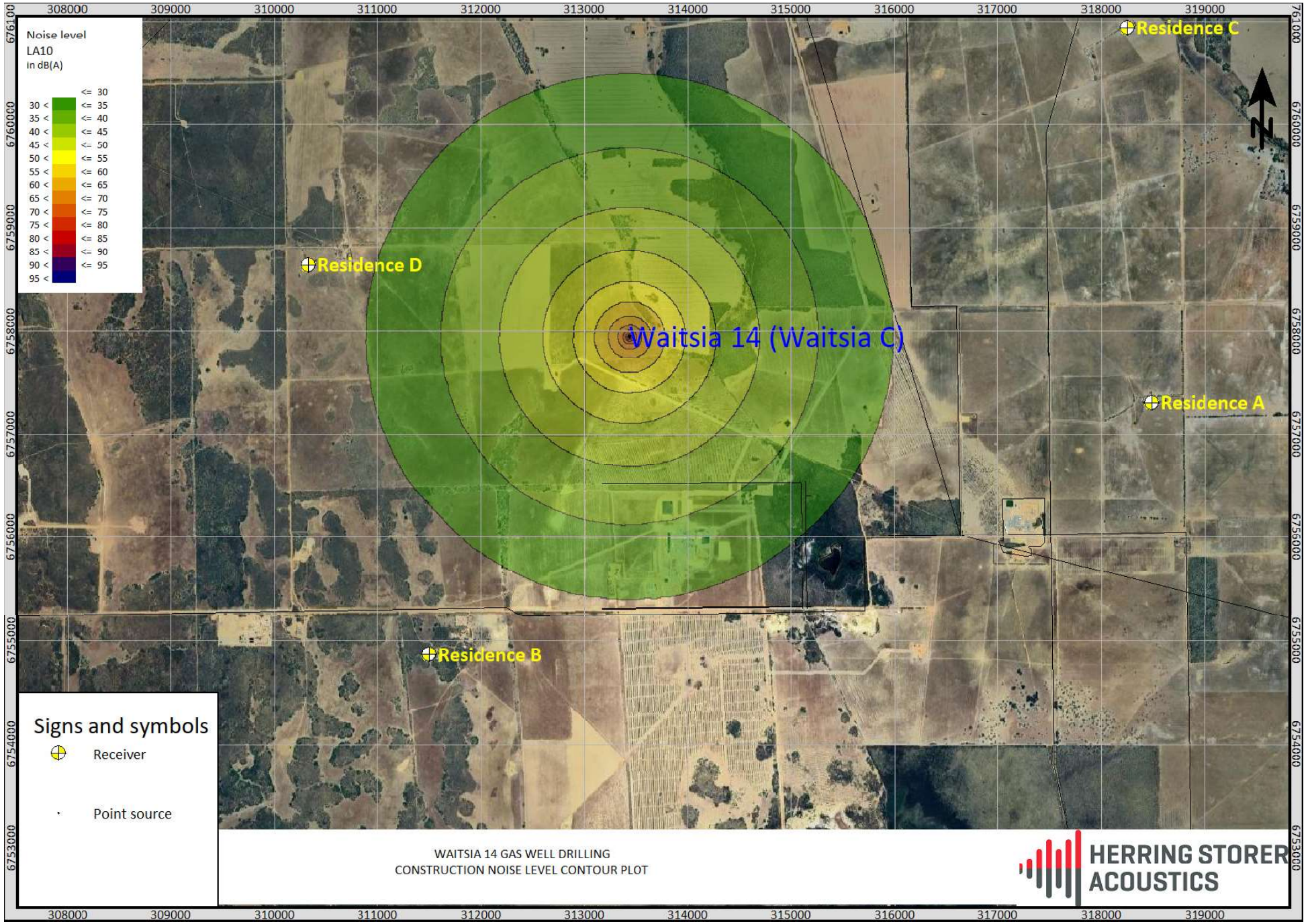
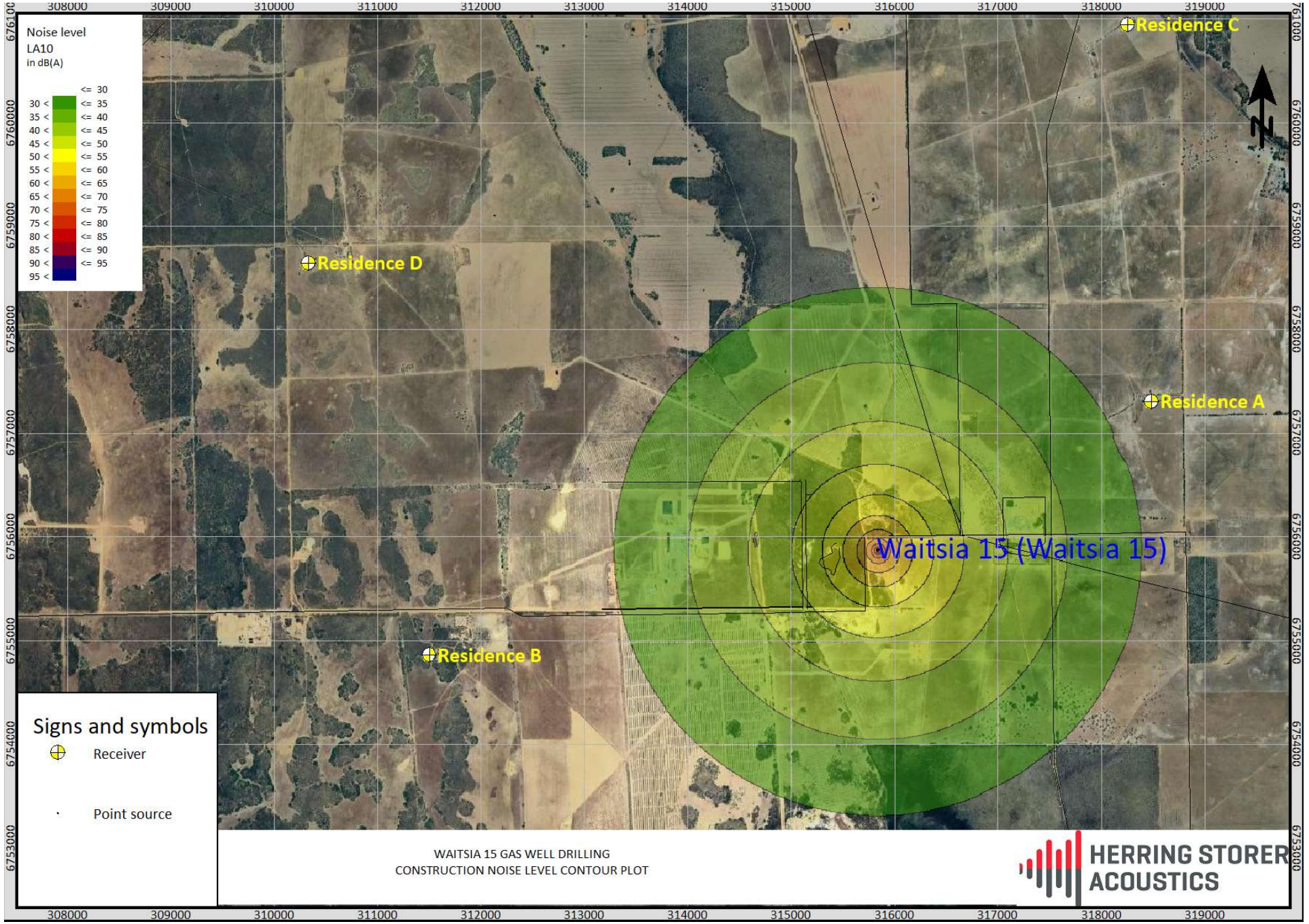
6757000
6756000
6755000
6754000
6753000
6752000


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence C
Residence D
Waitsia 14 (Waitsia C)
Residence A
Residence B
N
Signs and symbols
Receiver
Point source
WAITSIA 14 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence C
Residence D
Residence A
Residence B
Waitsia 15 (Waitsia 15)
N
Signs and symbols
Receiver
Point source
WAITSIA 15 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS
308000
309000
310000
311000
312000
313000
314000
315000
316000
317000
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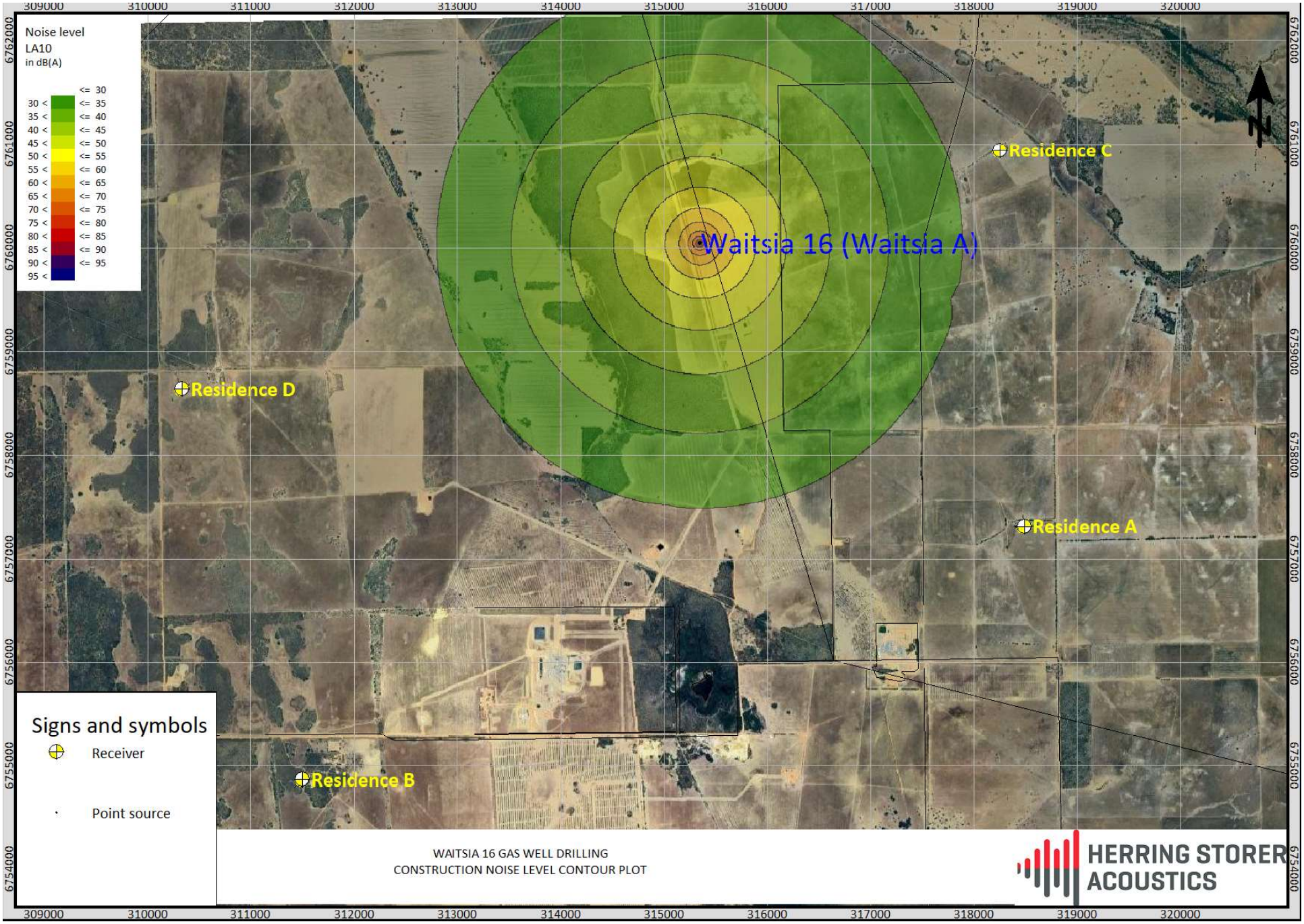
6754000
6753000


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Waitsia 16 (Waitsia A)
Residence C
Residence D
Residence A
Residence B
Signs and symbols
Receiver
Point source
WAITSIA 16 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS
309000
310000
311000
312000
313000
314000
315000
316000
317000
318000
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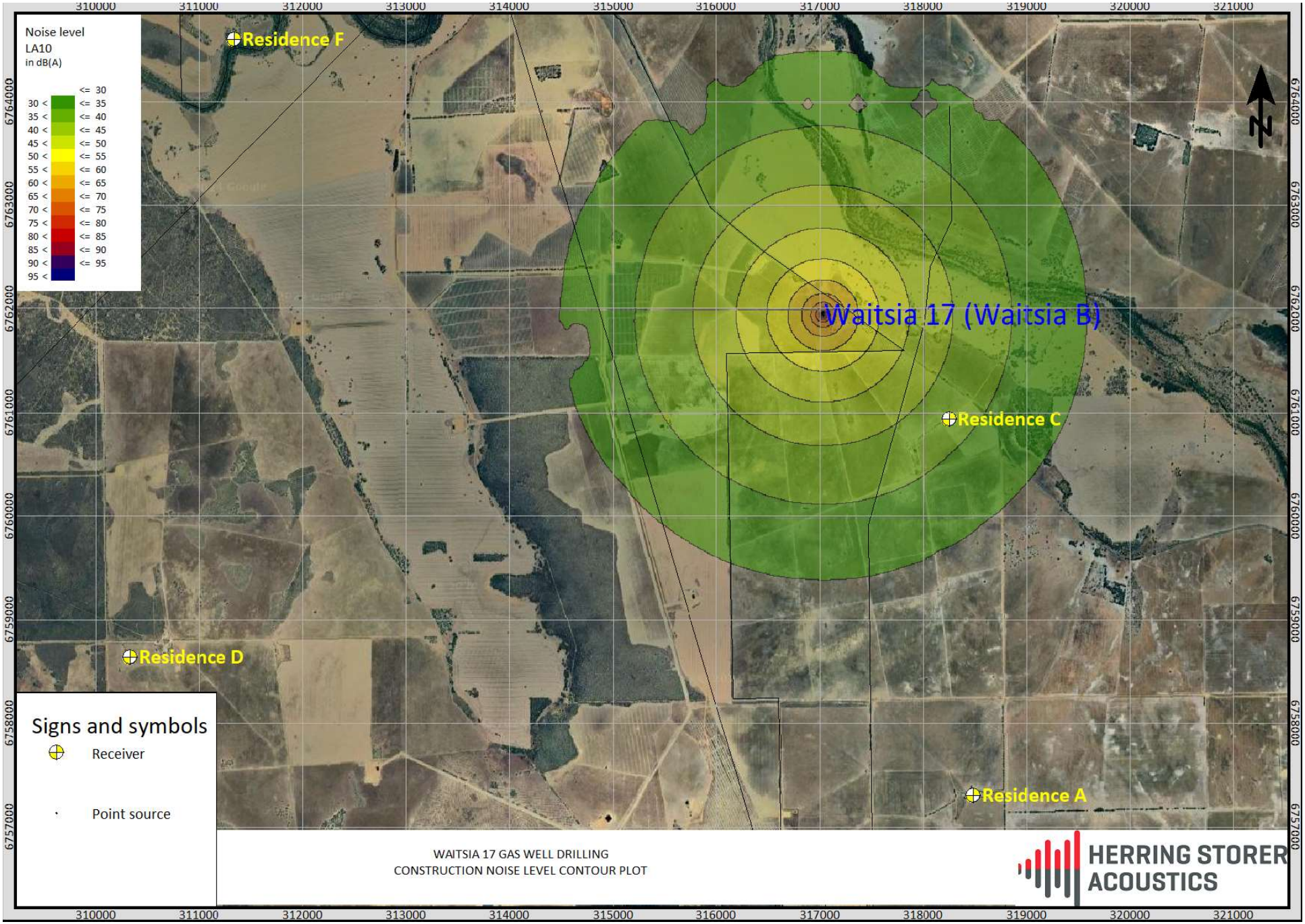
6759000
6758000
6757000
6756000
6755000
6754000


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence F
Waitsia 17 (Waitsia B)
Residence C
Residence D
Residence A
N
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311000
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314000
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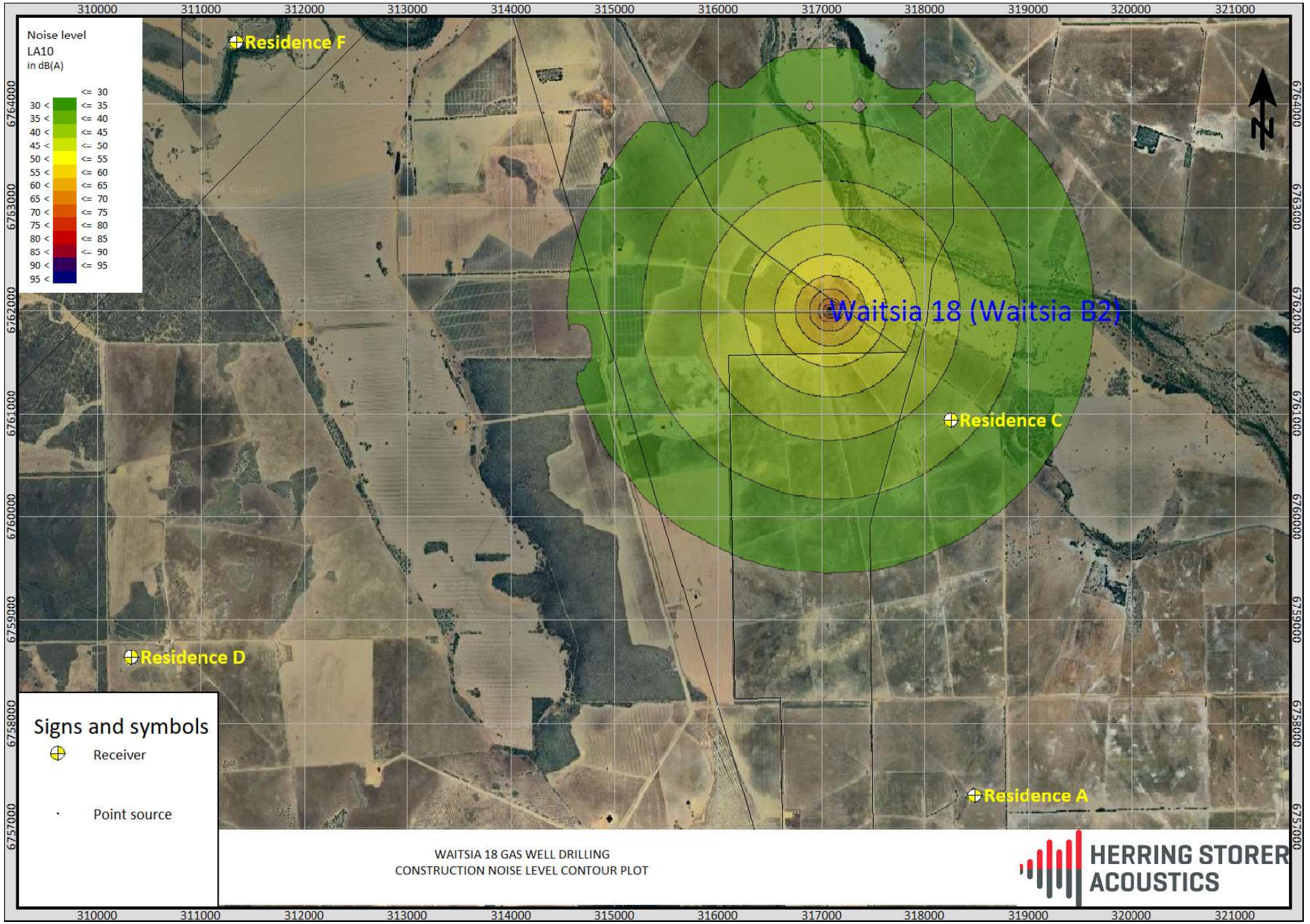
319000
320000
321000
6764000
6763000
6762000
6761000
6760000
6759000
6758000
6757000
Signs and symbols
Receiver
Point source
WAITSIA 17 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS


Noise level
LA10
in dB(A)
<= 30
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35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence F
Waitsia 18 (Waitsia B2)
Residence C
Residence D
Residence A
N
Signs and symbols
Receiver
Point source
WAITSIA 18 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER ACOUSTICS
310000
311000
312000
313000
314000
315000
316000
317000
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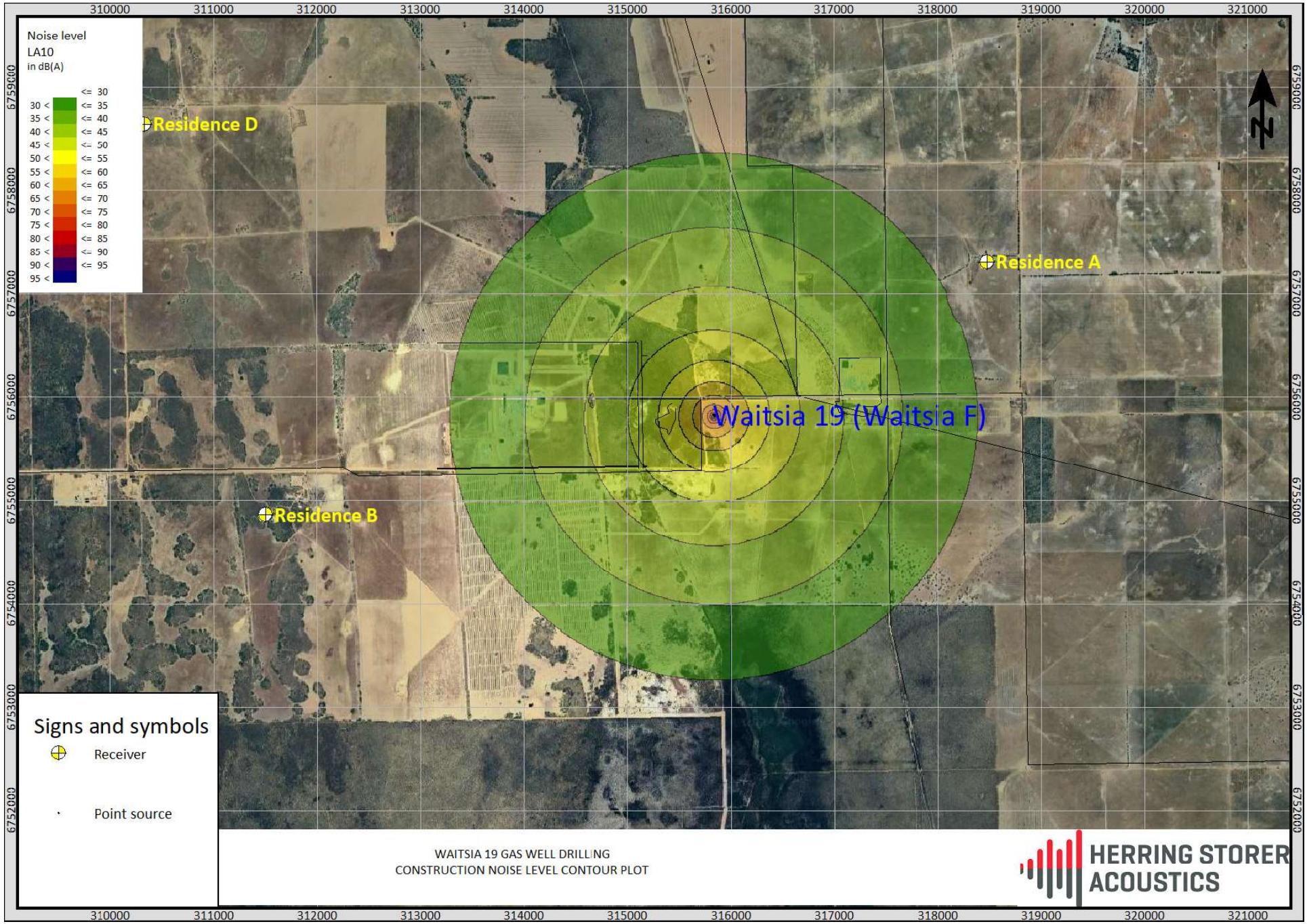
Noise level
LA10
in dB(A)
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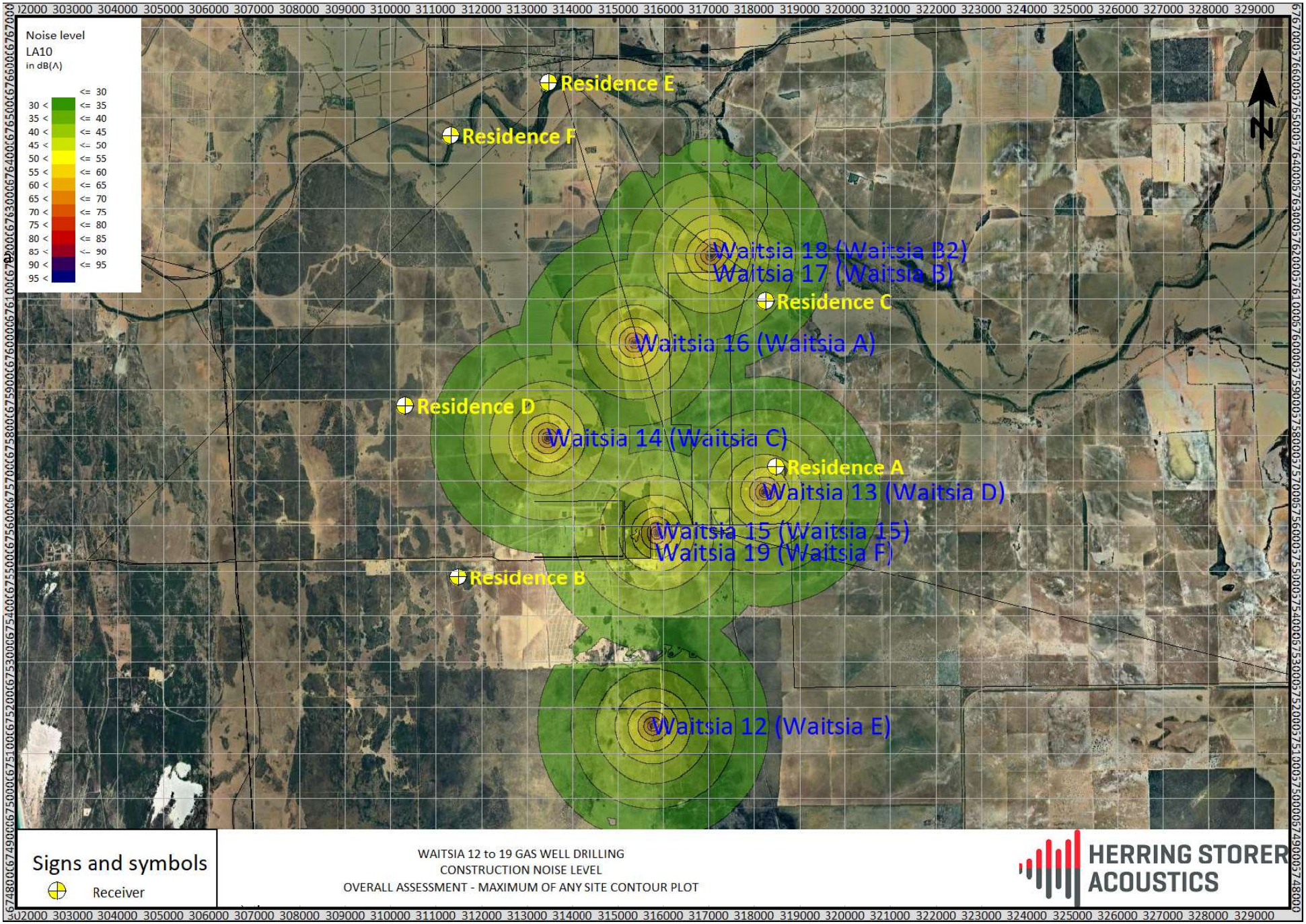
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence D
Residence A
Residence B
Waitsia 19 (Waitsia F)
N
310000
311000
312000
313000
314000
315000
316000
317000
318000
319000
320000
321000
6759000
6758000
6757000
6756000
6755000
6754000
6753000
6752000
Signs and symbols
Receiver
Point source
WAITSIA 19 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL CONTOUR PLOT
HERRING STORER
ACOUSTICS


Noise level
LA10
in dB(A)
<= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 < <= 75
75 < <= 80
80 < <= 85
85 < <= 90
90 < <= 95
95 <
Residence E
Residence F
Waitsia 18 (Waitsia B2)
Waitsia 17 (Waitsia B)
Residence C
Waitsia 16 (Waitsia A)
Residence D
Waitsia 14 (Waitsia C)
Residence A
Waitsia 13 (Waitsia D)
Waitsia 15 (Waitsia 15)
Waitsia 19 (Waitsia F)
Residence B
Waitsia 12 (Waitsia E)
N
Signs and symbols
Receiver
WAITSIA 12 to 19 GAS WELL DRILLING
CONSTRUCTION NOISE LEVEL
OVERALL ASSESSMENT - MAXIMUM OF ANY SITE CONTOUR PLOT
HERRING STORER ACOUSTICS