

BEING A GOOD NEIGHBOUR MINIMISING NOISE



Operations at this site are governed by set noise limits to minimise our impact on adjacent landholders, the community and your team mates.

This includes noise from camps, vehicles and personnel as well as plant and equipment.

How you can help

Be considerate, particularly in the early morning and evenings when carrying out activities that can cause noise.

Activities that can cause a noise complaint include:

- dropping pipes or equipment
- loud conversations near to residences
- beeping car horns
- loud music
- car radios
- revving car engines
- reversing beepers and
- special cases such as acute noise events from particular plant operation

» If you are unsure of the noise limits for this site or where our neighbours are located check in with your Environmental Advisor.

What to do if you receive a complaint about noise

Be considerate if approached by a landholder or other community member, listen to what they say and then let your supervisor know.

» **LANDOWNERS, EMPLOYEES AND MEMBERS OF THE COMMUNITY CALL 1800 526 369 FOR MORE INFORMATION**



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Your Ref: CR59404

31 October 2013

The Department of Environmental
& Heritage Protection
PO Box 731
TOOWOOMBA QLD 4350

Attention: David Darvall

Dear Sir/Madam

**Alleged Contravention of Section 430 of the Environmental Protection Act 1994 – PL195
– EPPG00885313 ("Environmental Authority")**

1. We act for Halliburton Australia Pty Ltd and have been handed your letter dated 26 September 2013, for reply.
2. Our instructions are that the department has already received a response in relation to the same matter addressed to Origin/Australia Pacific LNG (APLNG) by letter from them Reference: CR59404 dated 29 October 2013.
3. Our instructions are that these matters are most appropriately and properly dealt with as between the Department and APLNG because APLNG is the proper organisation to manage noise modelling and management for all the operations relevant to the Environmental Authority. This is confirmed by the fact that APLNG (not Halliburton) has dealt with this matter since July 2013 and has sought to respond to the Department in its own right and on behalf of Halliburton.
4. Further corroboration that it would be more effective for APLNG and not Halliburton to deal with the issues is borne out by the following:
 - (a) The inability to identify a specific source of noise which may or may not have resulted in the Environmental Authority noise limits being exceeded. We note from the APLNG letter to you dated 29 October 2013 the statement "A review of the drilling logged by SLR for activities at DM107 of the evening of the first event (12 July 2013) indicated that a Halliburton cement truck **may have been cementing** the surface casing at the time of the noise **increase**" (our emphasis). This does not confirm that any operation of a Halliburton cement truck caused noise levels to exceed the Environmental Authority noise emission requirements in relation to the first incident.
 - (b) In relation to the second incident, Halliburton was not involved in the unloading of pipe casing, once again confirming that the management of noise emissions is properly within the control of APLNG.
5. Incidentally, we note that the APLNG letter dated 29 October 2013 was not approved in final form by Halliburton and consequently Halliburton may seek to provide its own detailed response, should this become necessary.

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6. We are instructed that authority EPPG00885313 was not specifically brought to our client's attention, also corroborating that our client was not called upon to manage the noise emissions in the context of the whole project and that this was properly to be managed by APLNG for this project.
7. In any event, it cannot be said that in breach of s.430 of the *Environmental Protection Act 1994* Halliburton **wilfully contravened** a condition of the authority in the above circumstances.
8. We therefore request confirmation that the Department will take no further action against Halliburton in relation to this matter. Should the Department disagree with that conclusion, there are further defences available to Halliburton which Halliburton would raise but we do not wish to embark upon a lengthy exchange of correspondence, given that the points explained above are sufficient to put an end to the matter as far as Halliburton is concerned. But, if contrary to Halliburton's expectations, more defences are needed, these can be addressed in a follow-up letter, should this become necessary.
9. We therefore seek your confirmation that this brings the matter as against Halliburton to an end or a response to the contrary and an opportunity to present further responses to the Department.

Yours faithfully

sch4p4(6) Personal information

Barry George
Jackson McDonald

sch4p4(6) Personal information

RTI DL RELEASE - EHP



ENVIRONMENTAL MANAGEMENT PLAN

Noise Management Plan - Gas Field Operations

Q-LNG01-15-MP-0085

Australia Pacific LNG Upstream Phase 1

Noise management plan relating to gas field operations to meet requirements of model EA conditions

Revision	Date	Description	Originator	Checked	QA/Eng	Approved
1	16/04/2013	Issued for Use	Glyn Cowie	Mark Caslin	Angie Walter	Mack Dreyer
0	15/10/2012	Issued for Use	Stuart Fletcher	Cher Bartlett	Ruth Lee	Amelia Hodge

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This document has been prepared, reviewed and approved by suitably qualified persons, in line with the requirement of Environmental Authority Model Condition E1.

Document Conventions

The following terms in this document apply:

- Will, shall or must indicate a mandatory course of action
- Should indicates a recommended course of action
- May or can indicate a possible course of action.

Document Custodian

The custodian of this document is the Australia Pacific LNG Upstream Phase 1 Project - Manager, Environmental Approvals & Strategy. The custodian is responsible for maintaining and controlling changes (additions and modifications) to this document and ensuring the stakeholders validate any changes made to this document.

Deviations from Document

Any deviation from this document must be approved by the Australia Pacific LNG Upstream Phase 1 Project - Manager, Environmental Approvals & Strategy.

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RTI DL RELEASE - EHP

1. Purpose

This Noise Management Plan (NMP) provides the noise management measures to be implemented during construction and operation of the Australia Pacific LNG gas field operations.

The purpose of this NMP is to identify noise management measures in accordance with condition E1 / F6 of the Environmental Authority (EA) for the following EA Permit Numbers.

Currently the Model Environmental Authority conditions are included in the following EAs:

- *Environmental Protections Act 1994* Level 1 EA Chapter 5A Petroleum Activity, Department of Environmental and Heritage Protection (DEHP) Permit Number PEN101674310, Condabri, Schedule E (Condabri EA)
- *Environmental Protections Act 1994* Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN101718810, Combabula, Schedule E (Combabula EA).
- *Environmental Protections Act 1994* Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN100067807, Walloons, Schedule E (Walloons EA).
- *Environmental Protections Act 1994* Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN100070307, Spring Gully, Schedule F (Spring Gully EA).

This NMP is considered to be a generic NMP that can be applied to any EA held by Australia Pacific LNG that contains the same noise EA license conditions as the above mentioned four (4) EAs.

2. Scope

The gas field operations causing noise consist of fixed plant operations, well development activities and associated construction noise.

The fixed plant operations include:

- Gas processing facilities (GPF);
- Water treatment facilities (WTF); and
- Well head pumps and potentially well head compression
- Water transfer stations
- Gas or diesel generators
- Fixed plant operations also include activities such as pipeline pigging and flaring

The well development activities may include:

- Drilling activities
- Drilling of exploration development wells
- Down-hole well maintenance (work-over)
- Completion rig operations
- Flow stimulation activities
- Hydraulic fracturing ('fracking')
- Cavitation
- Flaring

Construction noise activities may include:

- Construction of fixed plant sites
- Construction of well gathering system
- Construction of lease sites for drilling

Predicted noise levels associated with activities listed above are set out in documents identified in Table 1.

3. Document references

The *Environment Protection Act 1994* (EP Act) provides the framework for the management of the acoustic environment in Queensland. The *Environmental Protection (Noise) Policy 2008* (EPP Noise) is subordinate legislation to the EP Act, which sets the acoustic quality objectives as:

- Protecting the health and biodiversity of ecosystems
- Ensuring a suitable acoustic environment for individuals to sleep, study or learn, or be involved in recreation including relaxation and conversation
- Protecting the amenity of the community

Table 1: Associated Document References

Document Number	Title
	Noise Measurement Manual - for use in testing for compliance with the <i>Environmental Protection Act 1994</i>
PEN100067807	<i>Environmental Protection Act 1994</i> Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN100067807 Schedule E - Noise
PEN100070307	<i>Environmental Protection Act 1994</i> Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN100070307 Schedule F - Noise
PEN101674310	<i>Environmental Protection Act 1994</i> Level 1 EA Chapter 5A petroleum activity, DEHP Permit Number PEN101674310 Schedule E - Noise
PEN101718810	<i>Environmental Protection Act 1994</i> Level 1 EA Chapter 5A Petroleum Activity, DEHP Permit Number PEN101718810 Schedule E - Noise
Q-4200-15-RP-1014	Australia Pacific LNG Upstream Ph1 - Noise Modelling Drill Rig Noise Modelling Results - 620.10092 Combabula DRM Results 20111109
Q-4500-15-RP-0041	Australia Pacific LNG Upstream Ph1 - Noise Modelling Drill Rig Noise Modelling Results - Condabri Central - SLR (CC Drill Rig Modelling Results 20111006)
Q-4500-15-RP-0092	Attended Noise Monitoring Report for Savanna 65 Workover Rig at CNN099
Q-4560-15-RP-0004	Australia Pacific LNG Upstream Ph1 - Noise Modelling Drill Rig Noise Modelling Results - Condabri North - SLR (CN DRM Results 20111006)
Q-4560-15-RP-1005	Australia Pacific LNG Upstream Ph1 - Noise Modelling Drill Rig Noise Modelling Results - Condabri South - SLR (CN DRM Results 20111006)
Q-LNG01-15-EA-0045_01	Australia Pacific LNG Environmental Impact Statement
Q-8200-15-TR-1014	Australia Pacific LNG Upstream Ph1 - Spring Gully Upstream Noise Modelling, Detailed Design Noise Modelling Results - SLR (Spring Gully Noise Modelling Jul12.pdf)
Q-LNG01-15-MP-0045	Noise Constraint Plan
Q-LNG01-15-RP-0282	FSG Gathering System and Lease Pad Construction Noise (620.10092 Australia Pacific LNG Gathering System and Lease Pad Construction Noise LR 20111006)
Q-LNG01-15-RP-0335	Attended Noise Monitoring Report for Savanna 406 Drill Rig at CON149
Q-LNG01-15-AQ-0044	Attended Noise Monitoring Report Form

4. Terms & abbreviations

4.1. Document terms and definitions

Table 2: Terms and Definitions

Term	Definition
dB(A)	The weighted sound pressure level that represents the frequency response curve which resembles the normal frequency hearing curve for most people
LAeq.adj.15 min	The Equivalent continuous A-weighted sound pressure level Over 15 minute time period
LMax	The highest recorded A-weighted sound level during a measurement period.

4.2. Abbreviations

Table 3: Abbreviations

Abbreviation	Description
Australia Pacific LNG	Australia Pacific LNG Pty Limited
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
CG	Coordinator Generals Report
CSG	Coal Seam Gas
DEHP	Department of Environment and Heritage Protection (Queensland) [formerly Department of Environmental and Resource Management]
DERM	Department of Environmental and Resource Management
DRM	Drill Rig Modelling
EA	Environmental Authority
EIS	Environmental Impact Statement
EP Act	Environmental Protection Act 1994
EPP Noise	Environmental Protection (Noise) Policy 2008
FSG	Field Services Group
GPF	Gas Processing Facilities
HSE	Health, Safety and Environment
HSSE	Health, Safety, Security and Environment
LNG	Liquefied Natural Gas
NMP	Noise Management Plan
OE	Origin Energy
QLD	Queensland, Australia
WTF	Water Treatment Facilities

4.3. Revision History

Table 4: Revision History

Date	Revision Number	Description of changes
16/04/13	1	Document amended to include reference to revised Spring Gully EA noise limits in Section 1

5. Responsibilities

Origin Energy Resources Ltd (Origin), as the Upstream Operator for Australia Pacific LNG, will construct and operate the gas field operations on behalf of Australia Pacific LNG. The construction and operations workforce, including contractors, are required to adhere to the general environmental duty, as specified under Section 319 of the EP Act, as follows:

'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm'.

Specific roles and responsibilities for the staffing of this NMP are provided in Table 5.

Table 5: Roles and Responsibilities

Role	Responsibilities
Australia Pacific LNG Project Director	The Australia Pacific LNG Chief Executive Officer (CEO) [whose delegate is the Australia Pacific LNG Project Director] is committed to the implementation of this NMP and will ensure adequate allocation of staff and resources to the establishment and operation of the Noise Management Plan
Group Health, Safety, Security and Environment Manager (HSSE)	Ensure the necessary resources and processes are in place for implementation of the NMP
Business Unit HSSE Managers	Ensure the necessary resources and processes are in place for implementation of the NMP
All Project and Operations Managers QLD CSG	Ensure the necessary resources and processes are in place for implementation of the NMP
Environmental Manager - HSSE and Team Lead - Monitoring and Assurance	Ensure the NMP requirements are implemented and maintained Ensure non-conformances are identified, recorded and reported Ensure sufficient planning and resources for noise management measures Ensure regular environmental monitoring and auditing of the NMP
Senior Environmental Advisor - Monitoring & Complaints	Monitor implementation and effectiveness of the NMP Ensure environmental complaints are closed out to a satisfactory conclusion Develop NMP to meet EA and CG conditions Coordinate the development of the noise models for gas field operations Coordinate monitoring and reporting requirements to demonstrate compliance with the NMP Identify and report non-conformances Implement corrective actions

Role	Responsibilities
	Work with the Sub-Project managers and environmental team in planning and implementing noise management measures
Approvals, Land and Stakeholder Manager and Approvals & Strategy Environmental Manager	Review statutory compliance and ensure all approvals in place Ensure compliance with NMP
Field Environment Officer	Monitor the implementation and effectiveness of the NMP Conduct environmental auditing, monitoring and training Complete environmental reporting requirements to Australia Pacific LNG Provide advice on environmental matters and corrective actions as requested
Land Relationship Advisor	Day-to-day responsibility for management of construction related landholder negotiations e.g. advising of construction commencing on land, management of construction noise related issues Provide landholder information through disturbance approvals process Responsible for Australia Pacific LNG's on-going landholder liaison matters Key contact with landholders in regard to complaint resolution
All personnel including contractors	Complying with the requirements of applicable environmental legislation and environmental authorities Undertaking all activities in an environmentally responsible manner Complying with specific requirements of the development assessment approvals supporting documentation Conducting activities in accordance with this NMP, the Environmental Management Plan, CEMP and HSE Plans Escalation of issues relating to noise if they are unsure of their responsibilities Reporting of all incidents and complaints relating to noise

6. Training

The Australia Pacific LNG workforce and contractors are required to complete an induction prior to commencing work on any worksite. The induction introduces the workforce to Origin's standards and environmental management requirements.

Personnel will undertake Origin's Health, Safety and Environment (HSE) modules 0, 1 and, during construction, Origin's Development Area induction.

In addition to the inductions, regular tool box meetings will be held which include a discussion on environmental aspects, recent incidents and observations and possible improvements in procedures. These meetings reinforce training and promote greater awareness of specific issues including noise. The site based environmental advisors will regularly interact with employees and contractors across work areas sharing knowledge and providing feedback on environmental management requirements.

Origin has in place a hierarchy of training modules that dove-tail with specific project roles and responsibilities. This includes more targeted technical training for personnel with specific roles in mitigating noise impacts or measuring noise. This training will consist of on the job training conducted by environmental professionals with relevant environmental or noise training as well as independent off site technical training courses for those responsible in the modelling and monitoring of noise.

Any Origin personnel with specific noise qualifications will be required to demonstrate that they have maintained their technical competency to continue to provide expert advice in the area of noise mitigation.

Any noise consultants engaged to provide assistance to Origin will be required to demonstrate competencies in noise modelling and monitoring.

7. Risk and constraints analysis methodology

Prior to any undertaking any new operation (e.g. a drill site) or installation of new equipment within a gas field that has the potential to create a noise nuisance, Origin will undertake a risk and constraints analysis in accordance with the methodology outlined below.

7.1. Noise modelling

The standard noise modelling methodologies that will be utilised to predict noise emissions for petroleum activities are those described in Ecoaccess Guideline for Planning for Noise Control (Ecoaccess Guideline).

In order to calculate the noise emission levels at the various noise sensitive receiver locations, a SoundPLAN (Version 7.0) environmental computer model has been developed. SoundPLAN is a software package which enables compilation of a sophisticated computer model comprising a digitised ground map (containing ground contours and buildings), the location and acoustic sound power levels of potentially critical noise sources on site and the location of receivers for assessment purposes.

The computer model can generate noise emission levels taking into account such factors as the source sound power levels and locations, distance attenuation, ground absorption, air absorption and shielding attenuation, as well as meteorological conditions, including wind effects.

The CONCAWE prediction methodology is utilised within SoundPLAN. The CONCAWE prediction method is specially designed for large facilities and incorporates the influence of wind effects and the stability of the atmosphere. The statistical accuracy of environmental noise predictions using CONCAWE was investigated by Marsh (Applied Acoustics 15 - 1982). Marsh concluded that CONCAWE was accurate to ± 2 dBA in any one octave band between 63 Hz and 4 kHz and ± 1 dBA overall.

7.2. Meteorological conditions

In accordance with the Ecoaccess Guideline, consideration will be given to the effects of prevailing and worst case meteorological conditions (wind, temperature, humidity and temperature inversions) on noise propagation from the petroleum activities.

7.2.1. Wind effects

Annual meteorological data from Bureau of Meteorology (BOM) stations located at Miles will be sourced and analysed in order to determine wind roses for the area.

In accordance with the Ecoaccess Guideline, annual meteorological data will be analysed for the following wind parameters:

- 30% occurrence in any assessment period (day, evening or night) in any season; and
- 3 m/s (or less) source to receiver component.

7.2.2. Temperature inversion

The Ecoaccess Guideline recommends that the effects of temperature inversions should be assessed when they occur for greater than 30 percent of the total night-time period (6.00pm to 7.00am) during winter (June, July and August).

In accordance with the Ecoaccess Guideline, as temperature inversions are considered to be a characteristic of worst case weather conditions in the area, the following temperature inversion parameters are applicable (non-arid areas):

- Moderate inversion (F-class stability category); and
- 3°C/100m inversion strength with a 2 m/s source to receiver component.

7.3. Noise control and abatement measures

Reasonable and practicable noise control or abatement measures that can be undertaken will be considered for all potentially affected receptors.

7.3.1. Identification of potentially affected receptors

Potentially affected receptors will be identified as those sensitive receptors where noise modelling (taking into account any implemented noise mitigation measures) indicates that noise from construction or drilling activities may exceed the EA the noise limits in Schedule E - Table 1: Noise Limits at Sensitive Receptors. Potentially affected receptors will be identified from GIS Mapping, aerial photographs, noise contours maps, local government records or land titles.

7.3.2. Engineering design

Upon site selection, noise modelling will enable engineering best practice noise mitigation options to be reviewed and evaluated.

Origin has undertaken a detailed design review of different noise mitigation measures options for each activity and site. Each site will be considered and treated on a case-by-case basis.

Possible engineering design mitigation measures could involve the use of acoustic barriers on site, acoustic panelling to form enclosures and acoustic treatment at the sensitive receptor.

7.3.3. Drilling specific design mitigation options

Noise modelling will predict the overall noise level from drilling at each potentially affected receptor location and will also take into account the directivity noise profile of the rig. Where possible the best option for rig orientation will be implemented on each drill site. The best option represents the orientation of the rig which produces the lowest noise levels at sensitive receptors.

Drill rigs that are scheduled to drill well sites that could potentially affect sensitive receptors will have acoustic noise curtains fitted around the rig generators. Preliminary measurements of the acoustic curtains show that noise levels can be reduced by 5 - 10 dBA.

On workover rigs water suppression will be used on the primary jet where measurements have shown that noise levels will be reduced by around 12 dBA.

7.3.4. Other control and abatement measures

Other control or abatement measures that will be considered on a case-by-case basis include relocating the activity, altering the hours of operation, or having an alternative arrangement in place with any potentially affected person.

8. Noise measurement and monitoring to determine compliance

Noise monitoring of field development activities will be conducted in accordance with the methodology detailed in the Queensland Department of Environment and Resource Management's (DERM) Noise Measurement Manual.

9. Noise monitoring programs

9.1. Fixed Plant

9.1.1. Post-commissioning compliance monitoring

Post-commissioning noise monitoring of all new or replacement fixed plant will be undertaken to validate the predicted noise levels determined through noise modelling.

9.1.2. Periodic compliance monitoring

Periodic noise monitoring will be conducted around all fixed plant sites.

9.2. Field development activities (Drilling & Construction)

Noise monitoring will be targeted during drilling and construction activities where potentially affected receptors have been identified.

10. Complaints management

Complaints received from external stakeholders will be investigated. The results of the investigation and details of any abatement measures implemented will be communicated back to the complainant within a reasonable timeframe (usually within 3 business days from receipt of the complaint) with a record of the complaint and any actions taken recorded in the complaints database.

For complaints received from the administering authority, the results of the investigation (including an analysis and interpretation of any monitoring results) and details of any abatement measures implemented will be provided to the administering authority within 3 business days from receipt of the complaint in accordance with the applicable Environmental Authority conditions.

If necessary, attended and unattended noise monitoring will be initiated by a suitably qualified acoustic specialist at suitable locations to quantify the noise levels at receptor locations and also at the noise sources as appropriate. A report outlining the noise monitoring results will be prepared.

11. Community Liaison and Consultation

Australia Pacific LNG recognises that ongoing consultation and communication with potentially affected individuals and communities is a critical element in the successful development of petroleum activities in the upstream gas fields.

Community newsletters outlining the development plans, monitoring and progress will be published and distributed to individuals and communities, as appropriate during each phase of development. Local media will be utilised to provide community information, as appropriate.

Meetings with the community will also be held to inform and communicate the proposed development plans and the potential impacts upon and benefits to the community over the coming periods.

Consultation with individual landholders who may be affected may include individual meetings, telephone conversations, letters or emails. Noise fact sheets which describe the likely type, duration and extent of noise will be distributed, along with contact details for appropriate Origin land liaison personnel that the landholder can contact if they have any questions or concerns about noise from the petroleum activities.

12. Noise Monitoring Records

The results of all noise monitoring will be recorded in the approved Noise Monitoring Survey form. Where necessary the results may be described in more detail in the form of a letter report.

13. Mediation

Where a noise complaint is unable to be resolved, Origin will agree to participate in a mediation with the complainant to try to resolve the complaint. The mediation will be facilitated by a suitable independent person agreed by Origin and the complainant. If the parties cannot agree on a suitable independent person, Origin will agree to utilise the conference process under Part 1AA of Chapter 10 of the *Petroleum and Gas (Production and Safety) Act*.

RTI DL RELEASE - EHP



Memorandum

From	Glyn Cowie	Date	4 July 2013
To	Charles Murphy		
Copy			
Subject	Changes to Spring Gully Environmental Authority (PEN100070307) Noise Limits		

Effective on 15 March 2013, the Spring Gully Environmental Authority (EA) PEN100070307 Noise Limits were updated to be brought in-line with Australian Pacific LNG's Condabri, Combabula and Walloon's Gas Fields.

This memorandum provides a summary of the revised noise limits, and indicative buffer distances for general day-time construction activities (excluding drilling).

Revised Noise Limits

Schedule F - Table 1 of EA PEN100070307 imposes the following noise limits at Sensitive Receptors which are presented below in Table 1.

Table 1 Measured Noise limits at Sensitive Receptors

Time Period	Metric	Short Term Noise Event	Medium Term Noise Event	Long Term Noise Event
7:00am - 6:00pm	LAeq, adj, 15min	45 dBA	43 dBA	40dBA
6:00pm - 10:00pm	LAeq, adj, 15min	40 dBA	38 dBA	35 dBA
10:00pm - 07:00am Noise from drilling activities	LAeq, adj, 15min	30dBA (measured indoors any sensitive receiver)		
10:00pm to 07:00am Noise from Fixed Plant in gas fields	LAeq, adj, 15min	28dBA (measured indoors any sensitive receiver)		
10:00pm - 6:00am	Max LpA, 15 min	55 dBA		

Noise limits in Table 1 are taken to be measured noise levels outside a sensitive receptor unless stated otherwise. LAeq and Max LpA are to be measured over any 15 minute period.

Short, medium and long term noise events are defined as the following:

- **Short** - A noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven days.
- **Medium** - A noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five days and does not re-occur for a period of at least four weeks.
- **Long** - A noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five days, even when there are respite periods when the noise is inaudible within those five days.

'Re-occurrence' is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.

If the noise subject to a complaint is tonal or impulsive, the adjustments listed in Table 2 are to be added to the measured noise level to derive the LAeq, adj, 15 min limit.

Table 2 Adjustments to be Added to Noise Level Limits at Sensitive Receptors

Noise Characteristic	Adjustment to LAeq, adj, 15min
Tonal characteristic is just audible	+ 2 dB (A)
Tonal characteristic is clearly audible	+ 5 dB (A)
Impulsive characteristic is just audible	+ 2 dB (A)
Impulsive characteristic is clearly audible	+ 5 dB (A)

In addition to the above, the emission of low frequency noise must not exceed the following limits in the event of a valid complaint about low frequency noise being made to the administering authority:

- a. 60 dB (C) measured outside the sensitive receptor; and
- b. The difference between the internal external A-weighted and C-weighted noise levels is no greater than 20 dB; or
- c. 50 dB (Z) measured inside the sensitive receptor; and
- d. The difference between the internal A-weighted and Z-weighted noise levels is no greater than 15 dB.

Revisions to Day-time Construction Indicative Safe Buffer Distances

Computer noise modelling of construction activities associated with the gathering systems, lease pads, and well separator installation has been undertaken by SLR Consulting Australia Pty Ltd (SLR). Predicted construction noise levels associated with the gathering systems, lease pads, and well separator installation activities at various off-set distances are shown in Table 3. A 'safe working buffer distance' (from a noise sensitive receptor) has also been stated to comply with the day-time, long term noise limit of 40 dBA LAeq.

The predicted construction noise levels and safe working buffer distance in Table 3 assume all modelling methodologies, assumptions and input information documented in SLR's report '620.10092 APLNG Gathering System and Lease Pad Construction Noise LR 201208014'.

Table 3 Results of Construction Noise Modelling for Gathering Systems, Lease Pads and Separator Installation Activities

Distance to Work Front	Lease Pad (dBA)	Gathering Flowline System						Well Separator	
		Item 3	Item 6	Item 9	Item 16	Item 17	Item 28	Stage 3A (dBA)	Stage 3B (dBA)
		Clearing (dBA)	Trenching (dBA)	Backfill of Pipe (dBA)	Backfill of Cables (dBA)	Access Track (dBA)	Laydown Area (dBA)		
25 m	76	74	74	74	74	70	71	60	58
50 m	71	69	68	68	68	65	66	57	55
100 m	64	62	60	60	60	58	59	52	50
250 m	53	51	47	49	48	48	48	42	40
500 m	45	44	39	42	40	41	41	35	33
1000 m	37	36	31	35	32	34	33	27	25
2000 m	28	28	22	26	23	26	25	19	17
2500 m	25	25	19	23	20	23	22	16	14
5000 m	12	13	7	12	8	11	10	4	2
Safe Working Buffer Distance to comply with 40 dBA LAeq	800m	760m	430m	630m	490m	570m	560m	300m	250m

Key: Cells highlighted red indicate an unacceptable risk, while cells highlighted green indicate an acceptable risk.

Based on the safe working buffer distance stated in Table 3, a **general safe working buffer distance of 800m** has been advised for gathering systems, lease pads, and well separator installation construction activities to comply with the day-time, long term noise limit of 40 dBA LAeq.

Although this revised safe working buffer distance of 800m has been reduced from the previously stated safe working buffer distance for the Spring Gully field of 2,800m, the revised safe working buffer distance of 800m reflects the changes in EA noise limits and is consistent with that for the Condabri, Combabula and Walloons gas fields.

I trust that the above is sufficient for your present requirements. Please do not hesitate to contact me on the below number if I can assist you further with this or any other matter regarding the construction noise modelling for APLNG.

Yours sincerely,

Glyn Cowie
Senior Environmental Consultant - Noise
Environmental Technical Solution
07 3028 3535 - Glyn.Cowie@originenergy.com.au



Memorandum

From	Glyn Cowie	Date	4 July 2013
To	Charles Murphy		
Copy			
Subject	Changes to Spring Gully Environmental Authority (PEN100070307) Noise Limits		

Effective on 15 March 2013, the Spring Gully Environmental Authority (EA) PEN100070307 Noise Limits were updated to be brought in-line with Australian Pacific LNG's Condabri, Combabula and Walloon's Gas Fields.

This memorandum provides a summary of the revised noise limits, and indicative buffer distances for general day-time construction activities (excluding drilling).

Revised Noise Limits

Schedule F - Table 1 of EA PEN100070307 imposes the following noise limits at Sensitive Receptors which are presented below in Table 1.

Table 1 Measured Noise limits at Sensitive Receptors

Time Period	Metric	Short Term Noise Event	Medium Term Noise Event	Long Term Noise Event
7:00am - 6:00pm	LAeq, adj, 15min	45 dBA	43 dBA	40dBA
6:00pm - 10:00pm	LAeq, adj, 15min	40 dBA	38 dBA	35 dBA
10:00pm - 07:00am Noise from drilling activities	LAeq, adj, 15min	30dBA (measured indoors any sensitive receiver)		
10:00pm to 07:00am Noise from Fixed Plant in gas fields	LAeq, adj, 15min	28dBA (measured indoors any sensitive receiver)		
10:00pm - 6:00am	Max LpA, 15 min	55 dBA		

Noise limits in Table 1 are taken to be measured noise levels outside a sensitive receptor unless stated otherwise. LAeq and Max LpA are to be measured over any 15 minute period.

Short, medium and long term noise events are defined as the following:

- **Short** - A noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than eight hours and does not re-occur for a period of at least seven days.
- **Medium** - A noise exposure, when perceived at a sensitive receptor, persists for an aggregate period not greater than five days and does not re-occur for a period of at least four weeks.
- **Long** - A noise exposure, when perceived at a sensitive receptor, persists for a period of greater than five days, even when there are respite periods when the noise is inaudible within those five days.

'Re-occurrence' is deemed to apply where a noise of comparable level is observed at the same receptor location for a period of one hour or more, even if it originates from a different source or source location.

If the noise subject to a complaint is tonal or impulsive, the adjustments listed in Table 2 are to be added to the measured noise level to derive the LAeq, adj, 15 min limit.

Table 2 Adjustments to be Added to Noise Level Limits at Sensitive Receptors

Noise Characteristic	Adjustment to LAeq, adj, 15min
Tonal characteristic is just audible	+ 2 dB (A)
Tonal characteristic is clearly audible	+ 5 dB (A)
Impulsive characteristic is just audible	+ 2 dB (A)
Impulsive characteristic is clearly audible	+ 5 dB (A)

In addition to the above, the emission of low frequency noise must not exceed the following limits in the event of a valid complaint about low frequency noise being made to the administering authority:

- a. 60 dB (C) measured outside the sensitive receptor; and
- b. The difference between the internal external A-weighted and C-weighted noise levels is no greater than 20 dB; or
- c. 50 dB (Z) measured inside the sensitive receptor; and
- d. The difference between the internal A-weighted and Z-weighted noise levels is no greater than 15 dB.

Revisions to Day-time Construction Indicative Safe Buffer Distances

Computer noise modelling of construction activities associated with the gathering systems, lease pads, and well separator installation has been undertaken by SLR Consulting Australia Pty Ltd (SLR). Predicted construction noise levels associated with the gathering systems, lease pads, and well separator installation activities at various off-set distances are shown in Table 3. A 'safe working buffer distance' (from a noise sensitive receptor) has also been stated to comply with the day-time, long term noise limit of 40 dBA LAeq.

The predicted construction noise levels and safe working buffer distance in Table 3 assume all modelling methodologies, assumptions and input information documented in SLR's report '620.10092 APLNG Gathering System and Lease Pad Construction Noise LR 201208014'.

Table 3 Results of Construction Noise Modelling for Gathering Systems, Lease Pads and Separator Installation Activities

Distance to Work Front	Lease Pad (dBA)	Gathering Flowline System						Well Separator	
		Item 3	Item 6	Item 9	Item 16	Item 17	Item 28	Stage 3A (dBA)	Stage 3B (dBA)
		Clearing (dBA)	Trenching (dBA)	Backfill of Pipe (dBA)	Backfill of Cables (dBA)	Access Track (dBA)	Laydown Area (dBA)		
25 m	76	74	74	74	74	70	71	60	58
50 m	71	69	68	68	68	65	66	57	55
100 m	64	62	60	60	60	58	59	52	50
250 m	53	51	47	49	48	48	48	42	40
500 m	45	44	39	42	40	41	41	35	33
1000 m	37	36	31	35	32	34	33	27	25
2000 m	28	28	22	26	23	26	25	19	17
2500 m	25	25	19	23	20	23	22	16	14
5000 m	12	13	7	12	8	11	10	4	2
Safe Working Buffer Distance to comply with 40 dBA LAeq	800m	760m	430m	630m	490m	570m	560m	300m	250m

Key: Cells highlighted red indicate an unacceptable risk, while cells highlighted green indicate an acceptable risk.

Based on the safe working buffer distance stated in Table 3, a general safe working buffer distance of 800m has been advised for gathering systems, lease pads, and well separator installation construction activities to comply with the day-time, long term noise limit of 40 dBA LAeq.

Although this revised safe working buffer distance of 800m has been reduced from the previously stated safe working buffer distance for the Spring Gully field of 2,800m, the revised safe working buffer distance of 800m reflects the changes in EA noise limits and is consistent with that for the Condabri, Combabula and Walloons gas fields.

I trust that the above is sufficient for your present requirements. Please do not hesitate to contact me on the below number if I can assist you further with this or any other matter regarding the construction noise modelling for APLNG.

Yours sincerely,

Glyn Cowie
Senior Environmental Consultant - Noise
Environmental Technical Solution
07 3028 3535 - Glyn.Cowie@originenergy.com.au

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5 November 2013

Department of Environmental and Heritage Protection
Attention: David Darvall
PO Box 731
Toowoomba QLD 4350

Dear Sir,

**RE: ALLEGED CONTRAVENTION OF SECTION 430 OF THE ENVIRONMENTAL PROTECTION
ACT 1994 – PL195 – EPPG00885313**

We acknowledge receipt of your letter dated 31 October 2013.

We kindly request a copy of the Report on which the finding set out in your letter is based in order for us to properly consider the alleged contravention and respond formally to your letter.

We respectfully request that the deadline specified in your letter be extended in order for us to properly consider the Report and alleged contravention.

Yours sincerely,

ENSIGN DRILLING AUSTRALIA PTY LIMITED

sch4p4(6) Personal information

ADAM WATTS

CSM Well Servicing Division Manager (Toowoomba office)

sch4p4(6) Personal information

adam.watts@ensignenergy.com

Case Heidi

From: Noble, Campbell [Campbell.Noble@originenergy.com.au]
Sent: Tuesday, 5 November 2013 5:48 PM
To: Case Heidi
Subject: RE: Spring Gully Noise Management Plan
Attachments: Q-LNG01-15-MP-0085.1.IFU.pdf

Heidi

Please find attaché NMP for our gas-fields.

This covers the requirements of a number of EAs, including that of Spring Gully.

Thanks

Campbell

From: Case Heidi [mailto:Heidi.Case@ehp.qld.gov.au]
Sent: Tuesday, 5 November 2013 8:58 AM
To: Noble, Campbell
Subject: RE: Spring Gully Noise Management Plan

Hi Campbell,

If you get a chance today, that would be great.

Thank you

Heidi

From: Noble, Campbell [mailto:Campbell.Noble@originenergy.com.au]
Sent: Tuesday, 5 November 2013 8:52 AM
To: Case Heidi
Subject: RE: Spring Gully Noise Management Plan

Hi Heidi

Yes I can supply, when do you need it by?

Campbell

Campbell Noble

smtp4(6) Personal information

Please call my mobile number for any immediate requests

From: Case Heidi [mailto:Heidi.Case@ehp.qld.gov.au]
Sent: Tuesday, 5 November 2013 8:47 AM
To: Noble, Campbell
Subject: Spring Gully Noise Management Plan

Hi Campbell,

Could you please forward me a copy of the Noise Management Plan required by condition F(6) of the Spring Gully EA? Please advise me, if you would prefer that I go through the more official channels.

(F6) A Noise Management Plan must be developed prior to 31 May 2013 for petroleum activities authorised by this environmental authority.

Kind regards

Heidi Case

Senior Environmental Officer

Phone: 07 4699 4306

Fax: 07 4699 4399

Environmental Services and Regulation

Southern Region (West)

Department of Environment and Heritage Protection

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RTI DL RELEASE / EHP

Case Heidi

From: Spalding Rob
Sent: Friday, 1 November 2013 5:30 PM
To: Case Heidi
Cc: Darvall David
Subject: Noise conditions - Spring Gully
Follow Up Flag: Follow up
Flag Status: Yellow

Heidi,

In my view APLNG was required to develop a noise management plan under condition F7(c) that provided for delivery of training to staff **and contractors** and maintenance of competencies; and F7(g) requires community liaison and consultation procedures including but not limited to consultation for when night time petroleum activities (i.e. between 10:00PM and 6:00AM) are likely to exceed 25 dB(A).

But clearly they had not done this, as evidenced by Halliburton's claim that they were not made aware of the noise limits that applied. You could therefore require them under sections 451 or 466 to produce the noise management plan and evidence that the training and community consultation had been developed and included in the plan prior to 31 May 2013 as required by condition F6. This may provide the additional offence (in addition to the breach of condition F9) if there is no prospect of proving an offence having been committed by Halliburtons.

Perhaps our litigation unit may also have some advice for you about this.

Rob Spalding

Principal Environmental Officer
 Environmental Services - Southern Region
 Department of Environment and Heritage Protection
 173 Hume Street, Toowoomba QLD 4350
 P.O. Box 731 Toowoomba QLD 4350
 Ph: (07) 46994349

next steps

- Review Noise Management Plan APLNG
- Request APLNG provideance that training of contractors regarding noise requirements → s.451