

TWEED SAND PLANT

MOD1 Noise Management Plan

Prepared for:

Hanson Construction Materials
c/o Tweed Sand Plant
PO Box 2010
Kingscliff, NSW 2487

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hanson Construction Materials (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

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1 Introduction

1.1 Background

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Hanson Construction Materials Pty Ltd (Hanson) to prepare a Noise Management Plan (NMP) for Hanson's Tweed Sand Plant (TSP) operation in Cudgen, NSW. The NMP is required to satisfy Schedule 3, Conditions 1 to 3 of the 'Notice of Modification' for DA 152-6-2005 issued by the New South Wales Department of Planning and Environment (DPE) on 20 August 2018, following an application lodged by Hanson on 7 February 2017 to change the site's condition from an annual extraction limit of 150,000 m³ to transporting no more than 500,000 tonnes of product (sand) from the site per financial year.

This increase in sand production results in proportional increases in heavy vehicle movements with potential for resulting impacts on dust generation and vehicle related noise. The Notice of Modification constitutes a revision of the Notice of Modification conditions issued in July 2006 for Phases 3 and 4 of TSP and requires the preparation and update of various management plans to guide environmental management at the site.

This NMP, as required under the Notice of Modification, establishes responsibilities and procedures for the management of noise related aspects of the TSP operations and includes a noise monitoring program. This NMP constitutes an updated version of the site's existing noise monitoring plan which was reviewed, updated and approved in 2016.

Definitions of the acoustical terminology used in this report are contained in **Appendix A**.

This NMP has been prepared by SLR's Glyn Cowie, who DPE has appointed as 'a suitably qualified and experienced person'. A copy of this appointment is included in **Appendix B**.

1.2 NMP Requirements

This NMP has been developed to satisfy the requirements of Schedule 3 Condition 3 '*Noise Management Plan*' and Schedule 5 Condition 2 '*Management Plan Requirements*' of the Notice of Modification. The specific requirements for each of these two (2) Conditions, along with section references to this NMP, are contained in **Table 1** and **Table 2** respectively.

It is noted that although TSP also operates under an EPA License Condition (EPL), this NMP is not intended to address any specific requirements from that EPL and has been solely developed to satisfy the Notice of Modification requirements pertaining to Noise. In stating this, EPA has been consulted as part of developing this NMP (refer to **Section 3**).

Table 1 NMP Requirement – Schedule 3 Condition 3 'Noise Management Plan'

Requirement	NMP Section/s Reference
<i>The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:</i>	
<i>(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;</i>	Section 1 and Appendix B
<i>(b) be prepared in consultation with the EPA;</i>	Section 3 and Appendix C

Requirement	NMP Section/s Reference
<p>(c) describe the measures to be implemented to ensure:</p> <ul style="list-style-type: none"> compliance with the noise criteria and operating conditions of this consent; best practice management is being employed; and the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 2¹); 	<p>Sections 6 and 7</p> <p>Section 6</p> <p>Sections 5.2 and 6.1</p>
<p>(d) describe the proposed noise management system; and</p>	Whole document
<p>(e) include a monitoring program to be implemented to measure noise from the development against the noise criteria in [Table 5], and which evaluates and reports on the effectiveness of the noise management system on site.</p>	Sections 7 and 8

Note 1: This is reproduced in **Section 5.2** of this NMP.

Table 2 NMP Requirement – Schedule 5 Condition 2 ‘Management Plan Requirements’

Requirement	NMP Section/s Reference
<p>The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p>	
<p>(a) a summary of relevant background or baseline data;</p>	Sections 2.1 and 4
<p>(b) a description of:</p> <ul style="list-style-type: none"> the relevant statutory requirements (including any relevant approval, licence or lease conditions); any relevant limits or performance measures/criteria; and the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; 	<p>Section 1.2 and 1.3</p> <p>Section 5</p> <p>Section 11.2</p>
<p>(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p>	Section 6
<p>(d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> impacts and environmental performance of the development; and effectiveness of any management measures (see (c) above); 	Sections 7 and 8
<p>(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible.</p>	Section 9
<p>(f) a program to investigate and implement ways to improve the environmental performance of the development over time;</p>	Section 11.3
<p>(g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> incidents; complaints; and non-compliances with statutory requirements; 	Section 9
<p>(h) a protocol for periodic review of the plan; and</p>	Section 10
<p>(i) a document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of the person/s who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary’s approval.</p>	Document Control Table (Page 2)

1.3 Operating Conditions – Noise

In addition to the specific NMP requirements reproduced in **Section 1.2**, the Notice of Modification also include Operating Conditions specific to noise which need to be acknowledged in this NMP (Schedule 3 Condition 2). Much of the Operating Conditions are inherently addressed through the specific NMP requirements (**Section 1.2**), however for completeness, **Table 3** provides a reference between the stated Operating Conditions specific to noise and relevant sections within this NMP.

Table 3 NMP Requirement – Schedule 3 Condition 2 ‘Operation Conditions (Noise)’

Requirement	NMP Section/s Reference
<i>The Applicant must:</i>	
<i>(a) implement best practice management to minimise the construction, operational and road transportation noise of the development;</i>	Section 6
<i>(b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 2)¹;</i>	Sections 5.2 and 6.1
<i>(c) carry out attended noise monitoring (at least every 3 months or as otherwise agreed by the Secretary) to determine whether the development is complying with the relevant conditions of this consent (see Appendix 2)^{1,2}; and</i>	Section 7
<i>(d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent,</i>	Sections 7.2.2 and 8.1
<i>to the satisfaction of the Secretary</i>	

Note 1: This is reproduced in **Section 5.2** of this NMP.

Note 2: *Monitoring under this consent is not required at all residences and the use of representative monitoring locations can be used to demonstrate compliance with criteria, if agreed to by the Secretary.*

2 Project Description

2.1 Overview and Project Site

TSP is located off Altona Road in Cudgen, Northern NSW. The site is formally described as Lot Plans; 22DP1082435, 23DP1077509 and 494DP720450, with a total area of approximately 77 hectares (ha) of which some 46 hectares (ha) is the approved extraction area.

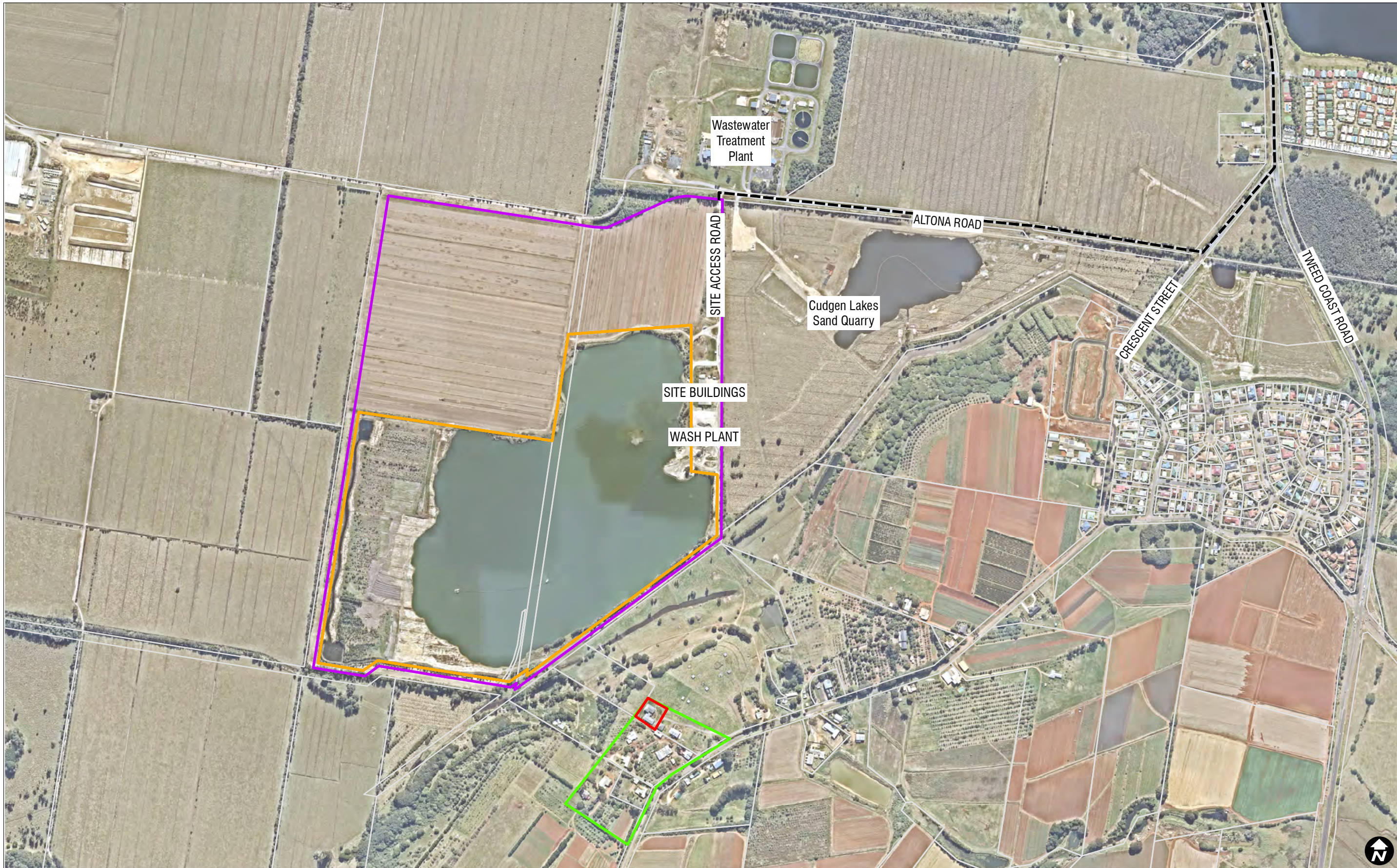
Sand extraction has been undertaken on this site since 1983 with Hanson taking over operation of the existing site in 2005. TSP is located within the Tweed Valley flood plain and is surrounded by the following land uses/receptors:

- North – Tweed Shire Council’s wastewater treatment facility; the proposed Carbrook Sands Quarry isolated residential receptors; agricultural land (cane, grazing); Pacific Motorway and township of Chinderah in the distance (approximately 2 km).
- East – Cudgen Lake Sand Quarry (Cudgen Lakes); township of Cudgen (approximately 1 km); Township of Kingscliff in the distance (approximately 3 km).
- South – Residential receptors located along Cudgen Road ridge.

- West – Australian Bay Lobster Producers Pty Ltd; Melaleuca Station Memorial Gardens and Crematorium; Pacific Motorway; agricultural land (cane, grazing).

TSP operates a single dredge unit which is linked to an onshore wash plant via a floating flow line. Sand product is processed through the wash plant, stock piled and loaded via a front end loader into standard highway trucks. Loaded trucks then pass across the site weighbridge (logging product weight and truck departure date/time) then follow the standard haul route of Altona Road onto Crescent Street onto Tweed Coast Road then generally north or south bound on the Pacific Highway to their ultimate destination.

An overview of TSP including the location of the adjacent receptors described in this NMP is contained within **Figure 1**.



H:\Projects\SLR620-BNE\620-BNE\620_12479_TSP_MCD1_Management_Plans - HCM\06_SLR_Data\01_CAD\GIS\ArcGIS\SLR62012479_F01_SiteLayout_01.mxd

0 150 300 450 600
m

Scale: 1:8,000
GDA 1994 MGA Zone 56

19-Oct-2018

LEGEND

- TSP site boundary
- Approved extraction area
- Standard haul route
- Nearest noise receptors
- 543 Cudgen Road
- Cadastre

**Tweed Sand Plant
Noise Management Plan
Site Overview**

FIGURE 1

2.2 Hours of Operation

Schedule 2 Condition 10 of the Notice of Modification state the operating hours that TSP must comply with. These are reproduced in **Table 4**

Table 4 Schedule 2 Condition 10 – Hours of Operation

Activity	Permissible Hours ¹
Quarrying operations (excluding loading and dispatch of trucks)	<ul style="list-style-type: none"> 7 am to 5 pm Monday to Friday 7 am to 4 pm Saturday At no time on Sundays or public holidays
Loading and dispatch of trucks	<ul style="list-style-type: none"> 7 am to 5 pm Monday to Friday 7 am to 12 pm Saturday At no time on Sundays or public holidays
Maintenance	<ul style="list-style-type: none"> May be conducted at any time, provided that these activities are not audible at any privately-owned residence

Note 1: These hours of operation relate to a NSW operating site which will be 1 hour ahead of Queensland during daylight saving periods (relevant to interstate truck movements).

In addition to the Hours of Operation stated in **Table 4**, Schedule 2 Condition 10 of the Notice of Modification states:

The following activities may be carried out outside the hours specified in [Table 4] above:

- (a) delivery or dispatch of materials as requested by Police or other public authorities; and*
- (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.*

In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

2.3 Noise Sensitive Receptors

A number of noise sensitive receivers are located in the area surrounding the Project site, but predominantly to the south of TSP along Cudgen Road ridge. As identified in the MOD1 EA, under a worst-case dredge operational scenario¹, the 40 dBA LAeq(15min) criterion has been predicted to be exceeded at the following identified lot plans and potential noise sensitive receptors:

- Lot Plan 1DP777905 (543 Cudgen Road, Cudgen) – One (1) noise sensitive receptor, which TSQ currently has a noise agreement with (see **Section 5.1**).
- Lot Plan 1DP551126 (Cudgen Road, Cudgen). Two (2) to three (3) potential noise sensitive receptors.
- Lot Plan 2DP568035 (Cudgen Road, Cudgen). One (1) to two (2) potential noise sensitive receptors.

These receptors are shown in **Figure 1**.

¹ With reference to noise modelling completed by SLR in 2015 (SLR report 'Hanson Tweed Sand Quarry – Noise Assessment Report' (ref: 620.11006-R3) dated 11 December 2015). This modelling predicted a worst-case noise level of 49 dBA LAeq at the nearest noise sensitive receptor (543 Cudgen Road, Cudgen) however historical noise monitoring has routinely measured average noise levels at this same receptor of 43 dBA LAeq (see **Section 4**).

Proposed noise monitoring locations are also presented in **Figure 2** and are discussed in **Section 7**.

3 Consultation for this Management Plan

This NMP has been prepared as per Schedule 3 Condition 3 of the Notice of Modification which required this plan to be prepared in consultation with the EPA.

The EPA (Geff Cramb – North Cast Operations Officer – Environment Management Unit) responded to SLR/Hanson consultation request by email on 27 September 2018, stating:

1. SLR – *Could you please confirm whether you require any additional considerations into developing the noise management plan above those specifically stated in the Consent and copied into this email? If you do, could you please state your considerations.*

EPA Response – Please note that the ‘Noise Policy for Industry (2017)’ replaces the ‘NSW Industrial Noise Policy (2000)’. Please refer to the information found at the following link:

[https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-\(2017\)](https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017))

2. SLR – *Do you request a copy of the draft plan for review/feedback prior to HCM’s submission to DPE for ultimate approval?*

EPA Response – No.

A full copy of this response from EPA is attached as **Appendix C**.

4 Baseline Data

As dredging operations have occurred at the site since the 1980’s, the most recent referenceable ‘baseline’ noise data is considered to be the 2005 Environmental Impact Statement (leading to the approval of Notice of Modification DA 152-6-2005 which this Notice of Modification has superseded). The noise impact assessment prepared by James Heddle Acoustical Consultants (May 2005) to support the EIS stated:

The ambient noise in the locale was typical of rural environments with a daytime level similar to night-time levels. The Rating Background (noise) Level was 35 dBA, establishing the intrusive noise criterion of 40 dBA.

The noise criterion of 40 dBA is consistent with the current Notice of Modification (see **Section 5.1** for further details).

SLR has undertaken the annual noise survey at TSP since 2014. With respect to ambient sources (i.e. excluding noise contributions from TSP operations), the following are routinely noted:

- Bird song
- Wind and associated tree noise
- Passenger aircraft flyovers, and
- Road traffic noise from the Pacific Motorway.

With respect to TSP operations, the TSP annual noise surveys conducted by SLR have demonstrated consistent TSP attributable average noise levels of 43 dBA LAeq,15min as measured at the nearest sensitive noise receptor². While the consistent noise levels have been a marginal exceedance, DPE has historically accepted this and further to this point, TSP has historically received no noise complaints. With reference to the 2016 annual noise survey report³:

It was found that the dredge noise source was the only [operational TSP] source that had the potential to significantly contribute to the ambient noise level experienced at the nearest sensitive receiver. This was attributed to the sound power level and the proximity of the dredge to the receiver location when compared with the other operational noise sources such as the wash plant and truck loading operations.

It is recommended that each noise monitoring campaign, as required under the Noise Monitoring Program (see **Section 7**), would identify both audible and dominant TSP noise sources and their correspondence noise levels (as per the methodology outlined in **Section 7.2.6**).

5 Project Criteria

5.1 Noise Criterion

Schedule 3 Condition 1 of the Notice of Modification outlines the operational noise criterion that TSP must not exceed at any residence on privately-owned land. The noise criterion is reproduced in **Table 5**.

Table 5 Schedule 3 Condition 1 – Noise Criterion

Receiver	Day LAeq (15 minute), dBA
Any residence on privately owned land	40

Schedule 3 Condition 1 of the Notice of Modification states further:

Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy. [Section 5.2] sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.

However, the noise criteria in [Table 5] do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

The noise monitoring program is detailed in **Section 7** of this NMP.

² 543 Cudgen Road, Cudgen for which TSP has a current noise agreement with – see **Section 5.1**.

³ SLR Consulting Pty Ltd (SLR) report 'Hanson Tweed Sand – Noise Monitoring Program – 2016 Update' (ref: 620.11006-R04-v1.1) dated 7 June 2016 and approved by the DPE on 14 June 2016.

At the time of reporting, TSP has entered into an agreement with Mr Grant Ducat of 543 Cudgen Road, Cudgen, with regard to noise from the TSP. The agreement is dated 2 July 2018 and valid for a period of three years. The agreement has been submitted to DPE and was accepted as a valid agreement by DPE (via email) on 6 July 2018 (see **Appendix D**). The agreement means that the noise limits for TSP do not apply at that receptor location. The Occupant reserves the right to revisit the agreement at any time should the Property's amenity be affected by noise generated from the project.

5.2 Applicable Meteorological Conditions

Appendix 2 of the Notice of Modification sets out the applicable meteorological conditions for TSP with regard to noise compliance assessments:

The noise criteria in [Table 5] are to apply under all meteorological conditions except the following:

- (a) wind speeds greater than 3 m/s at 10 m above ground level; or*
- (b) temperature inversion conditions between 1.5°C and 3°C/100 m and wind speed greater than 2 m/s at 10 m above ground level; or*
- (c) temperature inversion conditions greater than 3°C/100 m.*

As TSP is permitted to operate between the hours of 7:00 am to 5:00 pm Monday to Friday (i.e. day-time periods), typically point (a) will be the relevant meteorological condition to consider as points (b) and (c) relate to Pasquill stability class F (1.5 to 3.0 °C/ 100m) which are classified as night-time conditions with varied cloud cover and winds up to 3 m/s. It is however noted that in the context of Pasquill stability classes, the 'night-time' refers to 1 hour before sunset and 1 hour after sunrise, and for assessment purposes taken as the period from 6:00 pm to 7:00 am⁴. To these points, the assumed period of 6:00 pm to 7:00 am is outside of the permitted hours of operations (being 7:00 am to 5:00 pm), however local conditions do have sunrises to 6:35 am and sunset of 4:58 pm in the winter months. As a conservative approach, the first and final hour of operations (i.e. between 7:00 and 8:00 am, and between 4:00 and 5:00 pm) may occur under meteorological condition where points (b) and (c) need to be considered, albeit this limited in duration and to the winter months.

It should be noted that Appendix 2 of the Notice of Modification fails to acknowledge rainfall as a meteorological condition where the noise criterion should not apply, or more strictly speaking, in accordance with Section A4 of the NSW EPA Noise Policy for Industry (2017), '*Noise monitoring should not be conducted (or the data should be excluded) ... when rainfall occurs*'.

In accordance with Schedule 3 Conditions 2 and 3 of the Notice of Modification (see **Table 1** and **Table 3**) states:

minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 2).

⁴ Reference: NSW EPA Noise Policy for Industry (2017) – Section D1.

This in effect requires TSP to minimise noise impacts using feasible and reasonable measures relevant to the operations during all periods of operation regardless of meteorological conditions. Site activity during periods of wind speed greater than 3 m/s or during strong temperature inversions will therefore be managed using the same general best practice noise management measures outlined in **Section 6.1** to ensure noise emissions from TSP are not intentionally or unintentionally elevated even during periods where the noise criterion (**Table 5**) do not apply. In stating this, the following observations typical to these meteorological conditions have been made:

- **Wind speeds greater than 3 m/s** – During such wind speeds, wind and tree noise would become elevated either masking TSP noise or making it difficult to accurately determine a source contribution due to the broadband nature of wind noise. Further, as the nearest noise sensitive receptors are located to the south/southeast of TSP, this requirement would be most relevant during periods of north/northwest wind.
- **Strong temperature inversions (greater than 3°C/100 m / Pasquill stability class G)** – with reference to Table D4 of NSW EPA *Noise Policy for Industry* (2017), a Pasquill stability class G occurs during the night-time period⁵ with $\leq 3/8$ cloud cover and average wind speeds < 2 m/s (measured at 10 m above ground level). As noted on the previous page, the occurrence of such meteorological conditions would be limited to winter operations between 7:00 and 8:00 am and 4:00 and 5:00 pm. If noise impacts occur at adjacent receptors during such meteorological conditions, their duration would be short-term (i.e. less than 1 hour).

A summary of meteorological parameters relevant to noise monitoring is discussed further in **Section 7.1.2**.

6 Noise Mitigation and Management Measures

In accordance with Schedule 3 Condition 2 and 3 of the Notice of Modification, TSP will implement best practise noise management, including all reasonable and feasible noise mitigation measures to minimise the operational and road traffic noise generated by TSP.

6.1 Day-to-day Operations

The following best practice noise control measures shall be implemented during day-to-day operations:

- Adherence to hours of operation outlined in **Section 2.2**, noting these are relevant to a NSW operating site which will be 1 hour ahead of Queensland during daylight saving periods;
- Noise monitoring is performed and reported in accordance with **Sections 7** and **8.1** respectively;
- Where noise monitoring determines an exceedance of the noise criterion in **Table 5**, TSP will implement all practical and feasible noise management measures to address this exceedance as outlined by the subsequent noise monitoring summary report;
- Keep plant and equipment well maintained. Regularly inspect and maintain equipment to keep in good working order and operate at the lowest feasible noise level. This is particularly relevant to the dredge which has been determined to be the dominant noise source at TSP.

⁵ With reference to the previous paragraph, 'night-time' refers to 1 hour before sunset and 1 hour after sunrise, and for assessment purposes taken as the period from 6:00 pm to 7:00 am.

- Equipment deemed not to be in good working order and/or identified as such through the noise monitoring program will not operate or operate at reduced capacity until it is maintained or repaired back to good working order;
- Regularly train staff and contractors (i.e. toolbox talks) to use equipment in ways to minimise noise;
- Operate mobile plant in a quiet, efficient manner;
- Switching off vehicles and plant when not in use;
- A speed limit of 30 km/hour will be applied and enforced for all vehicles onsite;
- Incorporate clear signage at the site including relevant contact numbers for community enquiries;
- Prompt response to any community issues of concern;
- Designated haul route of Altona Road to Crescent Street to Tweed Coast Road to Pacific Motorway will be adhered to including sign posted speeds;
- Project related trucks slowing to use the Altona Road/Crescent Street and Crescent Street/Tweed Coast Road intersections will not use engine or compression braking systems (when accessed from either direction);
- Altona Road will be maintained in good working order to reduce wear and tear (i.e. potholes, rutting etc) which has the ability to increase noise emissions from truck movements; and
- Truck operators will adhere to specific noise requirements stated in the 'Driver Code of Conduct' (detailed as part of the Traffic Management Plan).

As noted in **Section 5.2**, Schedule 3 Conditions 2 and 3 of the Notice of Modification requires TSP to minimise operational noise impacts through adopting the aforementioned feasible and reasonable measures during all periods of operations regardless of meteorological conditions.

6.2 Dredge Noise Mitigation Plan

To address feedback from DPE during their review of this NMP⁶, the following dredge noise mitigation (attenuation) plan has been provided to address the following specific DPE requirements:

- *clear commitments to specific noise attenuation measures that would be adopted to reduce operational noise from the dredge motor;*
- *clear timeframes for the implementation of those attenuation measures; and*
- *contingency measures that would be adopted if the attenuation of dredge noise does not meet the required operational noise criteria.*

The noise impact assessment⁷ to support the MOD1 states that:

'Based on the findings from this assessment, exceedances of the day time 40 dBA LAeq(15min) criterion have been both measured and modelled. The range of exceedances was 3 to 9 dBA above the criterion.'

⁶ Rob Beckett email dated 18 March 2019, included in Appendix E of this NMP.

⁷ Gilbert & Sutherland 'Noise Impact Assessment – Modification Application for the Tweed Sand Quarry Extraction Limit' June 2017 (Ref: '11792_NIA_RGC2F').

A series of noise mitigation measures are detailed within the MOD1 noise impact assessment to address the identified exceedance. Based on those measures, TSP is committed to investigate the following attenuation measure to minimise operational noise from the dredge in order to achieve compliance with the noise criterion at all relevant noise sensitive receptors:

- Attenuation Measure 1 – Install purpose designed and built acoustic engine enclosure to be retrofitted to the existing dredge engine.

TSP commit to a six (6) month timeframe to investigate and implement the proposed attenuation measure, including the following milestones:

- Month 1 – Obtain preliminary vendor data and conduct detailed 3D noise modelling of acoustic enclosure design.
- Month 2 – Consult with preferred vendor/s to refine attenuation design, remodel final design.
- Month 3 and 4 – Source, construct and install enclosure to dredge.
- Month 5 – Commissioning of enclosure.
- Month 6 – Compliance noise measurements and reporting to DPE.

The following contingency measures will be adopted if the attenuation of dredge noise does not meet the noise criterion stated in **Table 5**. One or more of the following options will be implemented depending on the level of noise criterion exceedance identified.

- Design and install new quieter, more efficient dredge engine.
- Conduct detailed noise measurements to determine residual noise issues from the dredge and identify source contributions where practicable. Engage with noise attenuation vendor to design final solution (if practical/feasible).
- Obtain noise agreements with required landowners.

Should one or more of the above options need to be implemented, this will be discussed with DPE as required to confirm their acceptance of the proposed approach.

During the six (6) month period for the proposed dredge noise attenuation plan (documented above), at the request of DPE, dredging works will cease should TSP receive a valid noise complaint relating to operation of the dredge. The noise complaint will then require investigation in accordance with this NMP. Dredging works shall not resume until the complaint investigation has been completed, or an alternate resolution has been made (such as the implementation of a noise agreement). During such time, sand stockpiling, loading and truck movements will remain operational.

DPE has also requested that during the six (6) month period for the proposed attenuation plan, dredging works cease in weather conditions where a noise complaint is likely to occur. TSP operations and applicable meteorological conditions are discussed further in **Section 5.2**.

7 Noise Monitoring Program

The Noise Monitoring Program is designed to satisfy Notice of Modification Schedule 3 Conditions 2 and 3, and ensure that noise is measured at representative locations in the vicinity of TSP. Data from the monitoring program will be used to determine the noise impact of TSP operations at the surrounding receivers, and the compliance status of the TSP operations in relation to the noise criterion presented in **Section 5.1**.

This Noise Monitoring Program has been reproduced in part from the previously approved TSP Noise Monitoring Program (approved by DPE on 14 June 2016), adapting any specific requirements of the current Notice of Modification. It has also been produced to comply with the requirements of Notice of Modification Appendix 2 – Compliance Monitoring, being:

3. *Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:*
 - (a) *monitoring locations for the collection of representative noise data;*
 - (b) *equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;*
 - (c) *modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and*
 - (d) *the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing at any individual residence if low frequency noise is present (in accordance with the NSW Noise Policy for Industry (2017, or its latest version) Fact Sheet C) and before comparison with the specified noise levels in the consent.*

7.1 Instrumentation and Measurement Parameters

7.1.1 Noise Monitoring Surveys

All acoustic instrumentation employed throughout the monitoring program shall be designed to comply with the requirements of Standards Australia AS IEC 61672.1-2004 (AS61672) – *Electro Acoustics - Sound Level Meters Specification* and carry current manufacturer calibration certificates.

All instrumentation shall be programmed to record continuously statistical noise level indices in 15-minute intervals which would include the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, and the L_{Aeq}.

Instrument calibration will be checked before and after each measurement survey, with the variation in calibrated levels not to exceed ±0.5 dBA.

7.1.2 Weather Monitoring

All noise measurements will be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period as outlined in **Table 6**. A portable automatic weather station (AWS) should be installed adjacent to the unattended noise monitoring equipment⁸ and would be programmed to continuously record the meteorological parameters at site for the duration of the required monitoring. If this is not practical, reference will be made to the nearest appropriate Bureau of Meteorology (BOM) station (i.e. Coolangatta Airport – Station ID 040717).

The AWS should be programmed to measure 15-minute interval data consistent with the 15-minute noise monitoring interval.

Table 6 Meteorological Measurement Parameters

Measured Parameter	Measurement Method	Unit	Criteria
Mean wind speed	AWS	m/s	Not greater than 3 m/s ¹
Mean wind direction	AWS	Degrees	Nil
Rainfall	AWS	mm	Not greater than 0 mm
Temperature	AWS	°C	Nil
Humidity	AWS	%	Nil
Temperature Inversion	Qualitative ²	Pasquill stability class	Not greater than Pasquill stability class F with wind speeds up to 2 m/s
Cloud Cover	Qualitative	1/8	Nil

Note 1: When measured at 10m above ground level or adjusted to 2.4 m/s at 1.5m above ground level.

Note 2: Through such a method as determining cloud cover, wind speed and solar elevation (Pasquill–Gifford stability classification scheme and Turner scheme).

In accordance with Section A4 of the NSW EPA Noise Policy for Industry (2017), *‘Exceptions to this rule [wind speed and rainfall criteria] are allowed provided the proponent is able to show that the wind-induced noise on the microphone, and sound levels due to rain, are at least 10 dB below the noise levels under investigation’*. However, based on historical monitoring, conditions requiring this exception will rarely be experienced.

7.1.3 Plant and Equipment Log

During the attended noise measurements, the operator will record any observed TSP generated noise sources (i.e. dredge, highway trucks, loader, etc) and collect information regarding the operating equipment and machinery. In addition, the operator will obtain copies of the relevant plant and mobile equipment operating shift logs during the longer-term unattended monitoring period (operational dates and times). This log will include specific dates and times for dredge operations.

7.2 Noise Monitoring Methodology

7.2.1 Monitoring Timing

Noise monitoring would be undertaken at the following times:

⁸ Due to the coastal environment where TSP is situated, elevated wind speeds are routinely observed. For this reason, weather monitoring adjacent to the noise monitoring equipment is preferred.

1. To satisfy 'routine' compliance requirements (discussed below)
2. If the operating configuration of plant changes (i.e. new dredge, mobile or fixed plant items).
3. In the event of receiving a substantiated noise complaint.
4. In the event of new noise sensitive receivers appearing adjacent to the site that through modelling has the potential to exceed the noise criterion in **Table 5**.
5. If a non-compliance is identified in Item 1 above.

Schedule 3 Condition 2 part c states:

'(c) carry out attended noise monitoring (at least every 3 months or as otherwise agreed by the Secretary) to determine whether the development is complying with the relevant conditions of this consent (see Appendix 2).'

As noted at the start of **Section 7**, TSP has previously operated under an annual noise monitoring program including both attended and unattended noise monitoring, with the most recent update of that monitoring program being approved by DPE on 14 June 2016. The requirement for quarterly attended noise monitoring is new to this Notice of Modification (following the MOD1 approval). To augment the previously approved noise monitoring program with quarterly attended noise monitoring, the following 'routine' compliance noise monitoring regime is proposed:

- Quarterly attended noise monitoring, whilst all components of TSP are operating and under suitable weather conditions to avoid receiver to source wind directions (i.e. potentially resulting in a false compliant measurement).
- Annual long-term unattended and attended noise monitoring, whilst all components of TSP are operating and during suitable long-term weather conditions. This annual noise monitoring would supplement one (1) quarterly attended measurement each year⁹.

The inclusion of annual long-term unattended and attended noise monitoring, consistent with the previous noise monitoring program, is considered to provide more effective long-term noise management due to providing a better understand of typical day-to-day noise level emissions at the site over a period of time (i.e. one (1) week or longer). Although consistent average noise levels have historically been monitored, day-to-day noise levels vary depending on the operational status of TSP (primarily the dredge), prevailing weather conditions, and contributions from ambient sources. Sole reliance on attended noise monitoring to determine compliance contains inherent risk due to day-to-day noise level variation.

Should routine compliance noise monitoring demonstrate consistent compliance with the noise criterion in **Table 5**, Hanson may wish to seek an amendment to the Notice of Modification and this NMP to remove the requirement for quarterly attended noise monitoring.

7.2.2 General Requirements

The noise measurement procedures employed throughout the monitoring program shall be in accordance with the requirements of AS 1055 1997 'Acoustics - Description and Measurement of Environmental Noise', and the NSW EPA Noise Policy for Industry (2017).

⁹ Each 12-month period will contain three (3) quarterly attended measurements and one (1) annual unattended and attended measurement to satisfy the 'routine' compliance requirements.

Noise measurements undertaken for the purposes of quantifying the intrusive noise emissions should only be done so when metrological parameters satisfy the requirements in **Table 6**. Where unattended noise logging is completed, periods where metrological parameters do not satisfy the requirements in **Table 6** will be excluded from the analysis.

Measurement durations will be 15-minute intervals. Attended measurements will only be undertaken during the day-time period with TSP operational (preferably with the dredge operating). Longer term unattended noise monitoring will require reference to the obtained plant and equipment logs (see **Section 7.1.3**) to confirm dates and times when TSP was operational during the monitoring period (namely the dredge).

Measured noise levels should be adjusted for the presence of tonal, impulsive, low frequency and/or modulating characteristics in accordance with Fact Sheet C from the NSW EPA *Noise Policy for Industry* (2017).

Noise monitoring data and reports will be reviewed by the TSP Manager. If monitoring reports or site activities indicate noise above criterion, TSP will review site activities in an attempt to effectively manage noise.

7.2.3 Noise Monitoring Locations

To assess routine compliance with the noise criterion stated in **Table 5** of this NMP, noise monitoring would be carried out at the noise monitoring locations identified in **Figure 2**, which comprise:

- Nearest Noise Sensitive Receptor – on TSP land adjacent to 543 Cudgen Road, Cudgen, and
- Control Noise Monitoring Location (refer to explanation below).

If the measured noise levels at this closest residential location are compliant with the noise criterion then it would be assumed that noise levels are in compliance at the dwellings further from TSP.

The noise monitoring locations include a 'control' location which is located nearer to the operating dredge and used to acoustically identify and confirm periods of dredge operations. To be effective, this control noise monitoring location may move along the bank of the dredge lake to be located in a suitable position, depending on the location of the dredge, to maintain a near straight line between the residential noise logger and the dredge. The control noise monitoring location is not strictly a compliance monitoring location as it is not adjacent to a noise sensitive receptor. It may be used to help inform long-term unattended noise monitoring, and operator discretion should be applied as to whether monitoring at this location is relevant during routine quarterly attended noise monitoring (i.e. when no unattended noise monitoring is conducted).

In the event of a substantiated noise complaint, noise monitoring would be undertaken at the specific residential location as part of the investigation to address that complaint.

Figure 2 Routine Compliance Noise Monitoring Locations



Source: Nearmap Image Date 8 August 2018.

7.2.4 Operator Attended Noise Surveys

Operator attended short-term noise measurements would be undertaken to satisfy quarterly noise measurement requirements, and to complement longer term unattended noise monitoring e.g. annual noise monitoring or a noise complaint investigation. Operator attended measurements would be undertaken at the nearest noise sensitive receptor monitoring location (shown in **Figure 2**). Supplementary measurements may also be undertaken at the control noise monitoring location and/or other locations around the site where required to determine compliance.

The operator would quantify and characterise the average ($L_{Aeq}(15\text{minute})$) noise level from the dredging and processing operations over a 15-minute measurement period. The operator would also quantify the presence of tonal, impulsive, low frequency and/or modulating characteristics in accordance with Fact Sheet C from the NSW EPA *Noise Policy for Industry* (2017). In addition, the operator shall quantify and characterise the overall levels of ambient noise (i.e. L_{Amax} , $LA1$, $LA10$, $LA90$) over the 15-minute measurement interval. Digital audio recordings will be conducted to allow for additional post analysis of TSP contributed noise levels and to assist in source identification.

7.2.5 Unattended Noise Monitoring

Unattended noise monitoring would be undertaken annually to quantify the noise emission levels at the noise monitoring location shown in **Figure 2**. Unattended monitoring would be undertaken for a period of one (1) week, where TSP is under normal operating conditions. Additional days of monitoring would be undertaken if unsuitable weather conditions and/or limited TSP operations occur during the first week of monitoring (referencing **Table 6**).

7.2.6 Determining Compliance

The contributed noise emissions from operational activities associated with TSP shall be evaluated and assessed against the noise criterion provided in **Table 5**. In order to determine noise generated from TSP (only), the following methods (or a combination of) would be used:

- Direct measurement of ambient noise levels;
- Operator estimated LAeq(15minute) contribution;
- Analysis of operator attended noise monitoring results;
- Calculation from near field measurements;
- From post analysis of audio recordings;
- Measurement at a representative location; and/or
- A combination of the above.

8 Reporting

8.1 Noise Monitoring Report

All noise monitoring performed as per monitoring times outlined in **Section 7.2.1** will be documented to the below requirements. Noise monitoring reports will be included in the Annual Environmental Monitoring Report (AEMR) which is sent to the relevant authorities as listed in Schedule 5 Condition 13 of the Notice of Modification, and published on the Hanson website in accordance with Schedule 5 Condition 16.

Noise monitoring reports will consist of the following information:

- Summary of all attended and/or unattended noise monitoring results;
- Measured/calculated and/or operator estimated TSP LAeq(15minute) contributed noise levels for each monitoring location;
- Details of any required modifying factors in accordance with the Fact Sheet C from NSW EPA *Noise Policy for Industry* (2017);
- Statement of compliance/non-compliance with the noise conditions contained in the Notice of Modification;
- Details of any complaints relating to noise and their state of resolution; and
- An outline of any practical and feasible noise management measures taken within the monitoring period to address any exceedances of the noise criterion, or to be reviewed/implemented following an identified exceedance of the noise criterion.

8.2 Notification of Exceedances

Schedule 4 Condition 1 of the Notice of Modification requires:

1. *As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any criteria in Schedule 3 the Applicant must:*

(a) notify the affected land owners and tenants in writing of the exceedance, and provide quarterly monitoring results, to each affected party until the development is again complying with the relevant criteria; and

(b) publish on its website the full details of the exceedance.

*Any exceedance of any criteria in Schedule 3 is an incident that must be notified to the Department in accordance with conditions 9 to 12 of Schedule 5. (Detailed in **Section 8.3** of this NMP).*

8.3 Incident Reporting

Schedule 5 Condition 9 to 12 of the Notice of Modification require:

9. The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident.

10. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested. This report must include the time and date of the incident, details of the incident, measures implemented to prevent re-occurrence and must identify any non-compliance with this consent.

11. Any written requirements of the Secretary or relevant public authority (as determined by the Secretary) which may be given at any point in time, to address the cause or impact of an incident must be complied with and within any timeframe specified by the Secretary or relevant public authority.

12. If statutory notification is provided to EPA as required under the POEO Act in relation to the project, such notification must also be provided to the Secretary within 24 hours after the notification was provided to EPA.

In accordance with the Definition section of the Notice of Modification, an 'Incident' is defined as:

A set of circumstances that:

- causes or threatens to cause material harm to the environment; or*
- results in non-compliance with this consent.*

For the purposes of this NMP, the most likely cause for an 'incident' will be due to a non-compliance of the noise criterion in **Table 5**.

9 Protocol for Managing Complaints and/or Non-Compliances

The sections below outline the contingency plan for managing noise impacts and complaints.

9.1 Complaints Handling

All complaints received regarding operational noise emissions from TSP will be responded to within 24 hours by appropriate personnel.

TSP will keep a record of any complaint made to the site or any employee or agent/contractor of TSP in relation to noise from TSP. Records will include:

- Date and time of complaint;
- Method by which the complaint was made;
- Personal details of the complainant (if provided);
- Nature of the complaint;
- Weather conditions corresponding to the time of the complaint;
- Action taken by TSP and any follow up actions; and
- If no action was taken, the reason why no action was taken.

The Hanson website will include Contact Details and a Complaints Register, in accordance with Schedule 5 Condition 16.

9.2 Non-Compliance Response Procedure

Exceedance notification and Incident reporting is to be undertaken as per the requirements in **Section 8.2** and **8.3** of this NMP. In the event of a measured exceedance of the noise criterion or a complaint being received with regard to noise, the following actions will be undertaken:

- Identify the noise source that has caused the complaint/exceedance. This would be completed through consultation with the complainant and/or by conducting a noise survey to quantify the relevant noise emissions. Additional methods such as near field monitoring, unattended noise monitoring or computer noise modelling may be utilised to investigate noise emissions in relation to noise complaints, or to determine compliance with the Notice of Modification conditions where potential non-compliances have been measured or are difficult to quantify from operator-attended noise measurements.
- Reassess the noise reduction techniques employed at the site and implement any reasonable and feasible additional noise controls including relocating and/or modifying TSP activities to reduce impacts.
- Conduct a further investigation, following the adoption of noise controls, to evaluate the effectiveness of the mitigation strategy.
- Report details of any non-compliance and the results of noise monitoring/investigations to DPE in accordance with **Sections 8.2** and **8.3** of this NMP.

10 Periodic Review

This NMP shall be reviewed and revised and/or updated, in accordance with Schedule 5 Condition 4 of the Notice of Modification, within three (3) months of any of the following:

- The submission of an incident report under Schedule 5 Condition 10
- The submission of an Annual Review under Schedule 5 Condition 13
- The submission of an Audit report under Schedule 5 Condition 14, or
- The approval of any modification to the conditions of the Notice of Modification.

Where a review leads to revisions to the NMP, within six weeks of the review the revised NMP must be submitted for DPE approval.

Review of this NMP will also take place if monitoring records indicate that it is warranted or in the event of any significant change to operations or noise management procedures at TSP.

Any modifications to the NMP will be undertaken in consultation with the EPA.

11 Community Consultation and Performance Monitoring

11.1 Community Consultative Committee

Schedule 5 Condition 8 of the Notice of Modification states that the TSP must operate a Community Consultative Committee (CCC) for the site. The CCC must be operated in general accordance with DPE's *Community Consultative Committee Guidelines: State Significant Projects* (2016), for the duration of TSP operations and for at least 6 months following the completion of TSP operations. TSP already has any existing CCC in place that meets biannually.

The CCC is to facilitate communication, consultation and information sharing between TSP and the local community.

11.2 Performance Monitoring

Compliance of this NMP with the Notice of Modification conditions and any other relevant agency requirements will be measured according to the following performance indicators:

- Compliance with the noise criterion stated in **Table 5** at monitoring location/s.
- Compliance with Australian Standards as required and NSW EPA *Noise Policy for Industry* (2017) where prescribed in this NMP (namely **Sections 7** and **8.1**).
- The frequency and nature of complaints reported to TSP in relation to noise emissions.
- Contractor and employee awareness of the company's Environmental Policy and this NMP.
- Compliance with this NMP, as indicated by statutory reporting.

11.3 Continual Improvement

Through the effective application of best practice principles to on site activities including, where cost effective and practicable, the adoption of best practice technologies and noise control measures, TSP will continue to improve on the site's environmental performance with progress to be monitored against the performance indicators noted in **Section 11.2**.

APPENDIX A

Acoustic Terminology

A1 Sound Level or Noise Level

The terms 'sound' and 'noise' are almost interchangeable, except that in common usage 'noise' is often used to refer to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The human ear responds to changes in sound pressure over a very wide range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or L_p are commonly used to represent Sound Pressure Level. The symbol L_A represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

A2 'A' Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4000 Hz), and less sensitive at lower and higher frequencies. Thus, the level of a sound in dBA is a good measure of the loudness of that sound. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dBA or 2 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness. The table below lists examples of typical noise levels.

Table A1 Typical Noise Levels

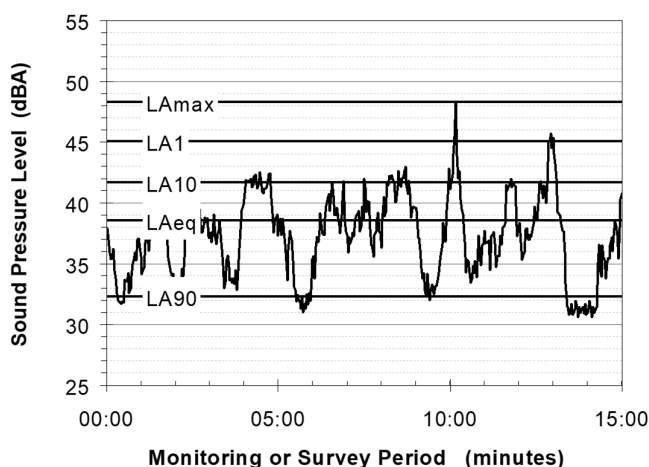
Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	
80	Kerbside of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as ‘linear’, and the units are expressed as dB(lin) or dB.

A3 Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels L_{AN} , where L_{AN} is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the L_{A1} is the noise level exceeded for 1% of the time, L_{A10} the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.



Of particular relevance, are:

L_{A1} The noise level exceeded for 1% of the 15 minute interval.

L_{A10} The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

L_{A90} The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

L_{Aeq} The A-weighted equivalent noise level (basically the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

L_{Amax} The maximum A-weighted noise level measured during the specified measurement period.

When dealing with numerous days of statistical noise data, it is sometimes necessary to define the typical noise levels at a given monitoring location for a particular time of day. A standardised method is available for determining these representative levels.

This method produces a level representing the 'repeatable minimum' L_{A90} noise level over the daytime and night-time measurement periods, as required by the EPA. In addition the method produces mean or 'average' levels representative of the other descriptors (L_{Aeq} , L_{A10} , etc).

A4 Tonality

Tonal noise contains one or more prominent tones (ie distinct frequency components), and is normally regarded as more offensive than 'broad band' noise.

A5 Impulsive

An impulse noise is typified by a sudden rise time and a rapid sound decay. Impulse noise can be defined as having a high peak of short duration or a sequence of such peaks (bangs, clicks, clatters, or thumps).

APPENDIX B

DPE Appointment of G Cowie as a 'Suitably Qualified and Experienced Person'



Mr Murray Graham
Development Manager
Hanson Construction Materials Pty Ltd
PO Box 1636
Toombul QLD 4012


Dear Mr Graham,

**Tweed Sand Quarry (DA 152-6-2005)
Approval of Experts**

I refer to your email dated 10 September 2018, seeking the approval of various experts to prepare management plans for the Tweed Sand Quarry, including:

- Andrew Vernon and Simon Welchman of Katestone Environment, to prepare the Air Quality Management Plan;
- Erin Holton and Chris Anderson of Gilbert Sutherland, to prepare the Soil and Water Management Plan; and
- Glyn Cowie of SLR, to prepare the Noise Management Plan.

The Secretary has approved the appointment of these experts.

Should you have any enquiries in relation to this matter, please contact Genevieve Seed.

Yours sincerely,



Howard Reed 13.9.18
Director
Resource Assessments
as nominee of the Secretary

APPENDIX C

EPA Consultation

Glyn Cowie

From: Geff Cramb <Geff.Cramb@epa.nsw.gov.au>
Sent: Wednesday, 26 September 2018 12:33 PM
To: Glyn Cowie
Subject: RE: 620.12479 - Tweed Sand Plant MOD1 - Noise Management Plan Stakeholder Consultation

Dear Glyn

Thank you for your email. Our responses follow your requests.

1. Could you please confirm whether you require any additional considerations into developing the noise management plan above those specifically stated in the Consent and copied into this email? If you do, could you please state your considerations.

Please note that the 'Noise Policy for Industry (2017)' replaces the 'NSW Industrial Noise Policy (2000)'. Please refer to the information found at the following link:

[https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-\(2017\)](https://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017))

2. Do you request a copy of the draft plan for review/feedback prior to HCM's submission to DPE for ultimate approval?

No

Thanks

Regards

Geff

Geff Cramb

Operations Officer – Environment Management Unit
North Coast, NSW Environment Protection Authority
+61 2 6640 2510

Mon	Tues	Wed	Thurs	Fri
✓	✓	✓	✓	x

geff.cramb@epa.nsw.gov.au www.epa.nsw.gov.au [@EPA_NSW](https://twitter.com/EPA_NSW)

Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555



From: Glyn Cowie <gcowie@slrconsulting.com>
Sent: Monday, 24 September 2018 4:20 PM
To: Geff Cramb <Geff.Cramb@epa.nsw.gov.au>
Cc: Graham, Murray (Skygate) AUS <Murray.Graham@hanson.com.au>
Subject: 620.12479 - Tweed Sand Plant MOD1 - Noise Management Plan Stakeholder Consultation

Hi Geff,

You may be aware of the recently approved Tweed Sand Plant (TSP) MOD1 approval relating to an increase in extraction limit and associated heavy vehicle numbers. In accordance with the approved MOD1 *Notice for Modification Development Consent* (DA 152-6-2005 dated 20 August 2018, 'the Consent'), a noise management plan is required to be prepared for the development to the satisfaction of the Secretary (DPE). SLR Consulting has been engaged by Hanson Construction Materials (HCM, the operator of TSP) to prepare a noise management plan in accordance with the Consent.

The specific requirements for the noise management plan are detailed in Schedule 3 Condition 3 of the Consent, which are copied below.

Noise Management Plan

3. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
 - (a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Secretary;
 - (b) be prepared in consultation with the EPA;
 - (c) describe the measures to be implemented to ensure:
 - compliance with the noise criteria and operating conditions of this consent;
 - best practice management is being employed; and
 - the noise impacts of the development are minimised during meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 2);
 - (d) describe the proposed noise management system; and
 - (e) include a monitoring program to be implemented to measure noise from the development against the noise criteria in Table 2, and which evaluates and reports on the effectiveness of the noise management system on site.

In addition to Schedule 3 Condition 3, Schedule 5 Condition 2 details the broader requirements for management plans supporting this MOD1. These are copied below.

Management Plan Requirements

2. The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
 - (a) a summary of relevant background or baseline data;
 - (b) a description of:
 - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - any relevant limits or performance measures/criteria; and
 - the specific performance indicators that are proposed to be used to judge the performance of the implementation of, the development or any management measures;
 - (c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
 - (d) a program to monitor and report on the:
 - impacts and environmental performance of the development; and
 - effectiveness of any management measures (see (c) above);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - incidents;
 - complaints; and
 - non-compliances with statutory requirements;
 - (h) a protocol for periodic review of the plan; and
 - (i) a document control table that includes version numbers, dates when the management plan was prepared and reviewed, names and positions of the person/s who prepared and reviewed the management plan, a description of any revisions made and the date of the Secretary's approval.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for the management plans.

With regard to specific noise management plan requirements, it is stated that the plan must be prepared in consultation with EPA. To satisfy this requirement, this email serves to commence that consultation. We kindly request a response to the following two (2) points:

1. Could you please confirm whether you require any additional considerations into developing the noise management plan above those specifically stated in the Consent and copied into this email? If you do, could you please state your considerations.
2. Do you request a copy of the draft plan for review/feedback prior to HCM's submission to DPE for ultimate approval?

I appreciate your response on this matter at your earliest convenience. Please note that in accordance with the Consent, HCM will need to submit the noise management plan to DPE before 20 November 2018, for which the Stakeholder consultation process would need to be completed prior to that date.

Please do not hesitate to contact me should you wish to discuss further.

Kind regards,
Glyn

This email is intended for the addressee(s) named and may contain confidential and/or privileged information. If you are not the intended recipient, please notify the sender and then delete it immediately. Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the Environment Protection Authority.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

APPENDIX D

Noise Agreement - 543 Cudgen Road, Cudgen

Glyn Cowie

From: Gen Seed <genevieve.seed@planning.nsw.gov.au>
Sent: Friday, 6 July 2018 11:38 AM
To: Graham, Murray (Skygate) AUS; Howard Reed
Cc: James Epstein
Subject: DPE Accepts Noise Agreement - Hanson Tweed Sand and Grant Ducat effective 2 July 2018
Attachments: Noise Agreement with Grant Ducat signed 2 July 2018.pdf

Good Morning Murray

The Department accepts this noise agreement. Please also provide this to the EPA (referred to as DEC) in accordance with condition 4 of Schedule 3.

Kind regards,

Gen

From: Graham, Murray (Skygate) AUS [mailto:Murray.Graham@hanson.com.au]
Sent: Wednesday, 4 July 2018 5:19 PM
To: Howard Reed <Howard.Reed@planning.nsw.gov.au>; Gen Seed <genevieve.seed@planning.nsw.gov.au>
Cc: Cole, Phil (Skygate) AUS <phil.cole@hanson.com.au>; McQueen, John (Tweed Sands) AUS <John.McQueen@hanson.com.au>
Subject: Noise Agreement - Hanson Tweed Sand and Grant Ducat effective 2 July 2018

Howard/Gen,

Attached please find a copy of the current Noise Agreement for the Hanson Tweed Sand operation, effective 2 July 2018 valid for a period of 3 years.

The Noise Agreement is between Hanson & Grant Ducat of 543 Cudgen Road, Cudgen, NSW being the nearest receptor to our current dredging operation.

The Agreement enables Hanson to generate noise above the limits specified in Development Consent DA 152-6-2005 dated 31 July 2006, provided the generated noise does not impact on the amenity of the Ducat property. Notwithstanding this, Mr Ducat has the right to revisit the Agreement at any time should the amenity of the Ducat property be affected by noise from the Hanson Tweed Sand operation.

Could you please confirm by return email that this Noise Agreement complies with the requirements referred to in Schedule 3 Condition 4 Noise – Impact Assessment Criteria of the above Development Consent.

cheers

Murray Graham
Development Manager



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HANSON CONSTRUCTION MATERIALS PTY LTD
ACN 009 679 734

AND

Grant Ducat of 543 Cudgen Road, Cudgen NSW 2487
in the State of New South Wales

DEED OF AGREEMENT

THIS AGREEMENT is made the 2ND day of JULY 2018

BETWEEN: HANSON CONSTRUCTION MATERIALS PTY LTD, ACN 009 679 734
a company duly incorporated in the State of New South Wales and having its
registered office at Level 10, 35 Clarence Street, Sydney 2000 in the State of
New South Wales ("Hanson")

AND: Grant Ducat, (the "Occupant") of 543 Cudgen Road, Cudgen 2487 in the State of
New South Wales (the "Property")

RECITALS:

1. Hanson Tweed Sand Plant (TSP) conducts annual noise monitoring to assess noise levels generated from the operation. Noise levels are assessed against the site's License criteria listed in Schedule 1.
2. Results of that monitoring indicate that noise emissions from TSP normally meet, but have occasionally exceeded the site's Licence criteria.
3. The sand dredge is currently located on the southern section of the extraction lake in the vicinity of the Property.
4. The dredge is likely to remain in and around this location for a period of 36 months from the date of this deed.
5. Recent noise criteria exceedances are primarily due to the current location of the dredge within the extraction lake in combination with northerly winds that carry noise towards the Property.
6. Hanson does not anticipate any changes to operations at the site that are likely to increase current noise emission levels.

THE PARTIES AGREE THAT:

1. This is a valid Noise Agreement of the kind described and allowed for in the site's Development Consent, a relevant extract of which is reproduced in Schedule 1.
2. In accordance with its ongoing practice and in compliance with its Licence, Hanson shall not generate noise outside the hours specified in the Development Consent as described in Schedule 2.
3. As far as is reasonably practicable, Hanson shall limit noise generation to within the limits specified in the Development Consent extract in Schedule 1.
4. Hanson and the Occupant agree that factors including proximity of the dredge to the Property and wind direction may combine to cause noise generated from TSP to exceed the specified noise limits.

5. The dredge is likely to be operating on the southern section of the extraction lake for a period of 36 months from the date of this deed.
6. Hanson is permitted to generate noise above the limits specified in the Development Consent providing that the generated noise does not impact on the amenity of the Property.
7. Should noise generated from TSP in excess of limits specified in the Development Consent affect the amenity of the Property, the Occupant will notify Hanson, who will take action to reduce generated noise levels.
8. The Occupant reserves the right to revisit this agreement at any time should the Property's amenity be affected by noise generated from the Quarry.

SIGNED SEALED AND DELIVERED by the
 said **HANSON CONSTRUCTION MATERIALS**
 PTY LTD, ACN 009 679 734 by its duly
 Constituted Attorneys

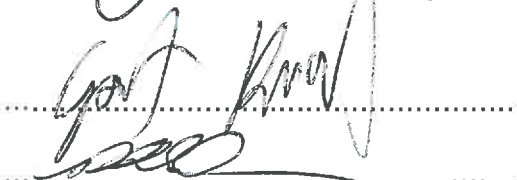
CHARLES OSWALD STONEMAN



JEFFREY DAVID SIMS



SIGNED by **GRANT DUCAT**



In the presence of:



Name

SCHEDULE 1

NOISE

Impact Assessment Criteria

4. ¹The Applicant shall ensure that noise generated by the development does not exceed the criteria specified in Table 1.

Table 1: Noise impact assessment criteria $dB(A)$ L_{Aeq} (15 min)

Receiver Location	Day / Evening	Night
Residences on privately owned land	40	36

Notes:

- The noise criteria do not apply where the Applicant and the affected landowner have a valid agreement in regard to noise from the development, and a copy of the agreement has been forwarded to the Director-General and DEC. In this case the Applicant may exceed the noise limits in Table 1 in accordance with the noise agreement.
- Noise from the premises is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling (rural situations) where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise level limits in Table 1. Where it can be demonstrated that direct measurement of noise from the premises is impractical, the DEC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors presented in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise level where applicable.
- The noise emission limits identified in Table 1 apply under meteorological conditions of wind speed up to 3m/s at 10 metres above ground level.

Cumulative Noise Criteria

5. The Applicant shall take all reasonable and feasible measures to ensure that the noise generated by the development combined with the noise generated by other industrial development does not exceed the following amenity criteria on any privately owned land, to the satisfaction of the Director-General:
- $L_{Aeq(1\text{ hour})}$ 50 dB(A) – Day;
 - $L_{Aeq(4\text{ hour})}$ 45 dB(A) – Evening; and
 - $L_{Aeq(9\text{ hour})}$ 40 dB(A) – Night.

¹ Incorporates DEC GTA

SCHEDULE 2

Operating Hours

6. ²The Applicant shall comply with the operating hours in Table 2.

Table 2: Operating Hours

Activity	Day	Time
Sand extraction and processing, and other quarry related activities	Monday – Friday	7:00am to 5:00pm
	Saturday	7:00am to 4:00pm
	Sunday and Public Holidays	Nil
Sand product delivery and distribution, and other activities involving heavy vehicles movements off-site	Monday – Friday	7:00am to 5:00pm
	Saturday	7:00am to 12:00pm
	Sunday and Public Holidays	Nil
Recreational fishing facility	Any day	Any time
Maintenance (if inaudible at neighbouring residences)	Any day	Any time

7. ³The following activities may be carried out at the premises outside the hours specified in Table 2:
- the delivery of materials as requested by Police or other authorities for safety reasons; and
 - emergency work to avoid the loss of lives, property and/or to prevent environmental harm.
- In such circumstances the Applicant shall notify DEC and affected residents prior to undertaking the works, or within a reasonable period in the case of emergency.

² Incorporates DEC GTA

³ Incorporates DEC GTA

APPENDIX E

DPE Consultation

Glyn Cowie

From: Rob Beckett <Rob.Beckett@planning.nsw.gov.au>
Sent: Monday, 18 March 2019 2:57 PM
To: Glyn Cowie
Subject: Tweed Sand Quarry Noise Management Plan

Hi Glyn,

Thanks for your time on the phone. As discussed, I can confirm that the Department will consider approving the Noise Management Plan prior to noise attenuation measures being implemented on the dredge. For this to occur, the Department would require the Noise Management Plan was updated to include:

- clear commitments to specific noise attenuation measures that would be adopted to reduce operational noise from the dredge motor;
- clear timeframes for the implementation of those attenuation measures; and
- contingency measures that would be adopted if the attenuation of dredge noise does not meet the required operational noise criteria.

Given the length of time that has lapsed since attenuation measures were committed to during Mod 1, we would require attenuation measures to be completed within two months. If this is not an achievable timeframe, we will consider an extended period of time as long as sufficient information was provided to support this.

Kind Regards,

Rob Beckett

Environmental Assessment Officer
Resource Assessments
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