



Noise Management Plan

Williamtown Sand Syndicate Pty Ltd

Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown

26 March 2019



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Cabbage Tree Road, Williamtown

Prepared for:

WILLIAMTOWN SAND SYNDICATE PTY LTD

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1. INTRODUCTION

1.1 BACKGROUND

Newcastle Sand is proposing to construct and operate a sand quarry on four lots of land located at 398 Cabbage Tree Road, Williamtown, approximately 30 km from the Newcastle central business district. Newcastle Sand is a wholly owned subsidiary of Williamtown Sand Syndicate Pty Ltd (WSS), the entity associated with seeking the Project Approval. The Project will extract up to 530,000 tonnes per annum of sand products over a period of up to 15 years.

Development Consent (SSD-6125) was granted by the NSW Independent Planning Commission on 9 May 2018 for construction and operation of the quarry subject to a series of conditions. Condition 6 of Schedule 3 of the Development Consent requires the preparation and implementation of a Noise Management Plan (NMP).

Potential noise impacts associated with the quarry include noise emissions from construction activities and during daily quarry operations at surrounding residential receptors. The quarry will generate noise from the use of quarry equipment (e.g. sand processing plant, conveyors, bulldozers, excavators and front-end loaders) while undertaking clearing, sand excavation and haulage of product sand into and out of the site.

This NMP has been prepared by Kleinfelder Australia Pty Ltd in conjunction with Spectrum Acoustics Pty Limited to satisfy the Conditions of the Development Consent.

1.2 PROJECT OVERVIEW

The key details of the Project are shown within **Table 1** below. The Project operations plan is shown in **Figure 1**.

Table 1: Key Aspects of the Cabbage Tree Road Sand Project

Aspect	Key Aspects of the Project
Key elements	Sand quarry extracting up to 530,000 tonnes per annum over a period of 6 to 15 years including the construction of an intersection with Cabbage Tree Road, sealed and gravel access roads, site office, workshop and weighbridges. Progressive rehabilitation of quarried land returning to native vegetation communities with potential future use of the facilities area.
Location	398 Cabbage Tree Road, Williamtown, within the Port Stephens local government area.
Property Titles	Four titles within the Parish of Stockton, County of Gloucester including: <ul style="list-style-type: none"> Lot 1 DP 224587 at 398 Cabbage Tree Road, Williamtown Lot 121 DP 556403 at 282B Cabbage Tree Road, Williamtown. Lot 11 DP 629503 at 282A Cabbage Tree Road, Williamtown. Lot 1012 DP 814078 at 282 Cabbage Tree Road Williamtown.

Aspect	Key Aspects of the Project
Land Owner	Port Stephens Shire Council under lease to Williamtown Sand Syndicate Pty Ltd.
Proponent	Williamtown Sand Syndicate Pty Ltd, the owner of the quarry operator Newcastle Sand.
Area	Total Project Area of approximately 42.3 hectares from a Subject Land Area of approximately 176.2 hectares.
Project Life	Up to 15 years. At expected demand the quarry will have an eight (8) year life, or six (6) years at maximum extraction rates.
Extraction Rate	Maximum of 530,000 tonnes per annum, and maximum daily rate of 3,000 tonnes.
Operating Hours	<p>Construction of intersection, access and workshop and office:</p> <ul style="list-style-type: none"> 7:00am to 5:00pm Monday to Friday. 8:00am to 1:00pm Saturday. No works on Sunday or public holidays. <p>Quarrying Operations:</p> <ul style="list-style-type: none"> 7:00am to 5:00pm Monday to Friday. 7:00am to 4:00pm on Saturday. No quarrying on Sunday or a Public Holiday. <p>Loading and dispatch of trucks:</p> <ul style="list-style-type: none"> 6:00am to 6:00pm Monday to Friday. 7:00am to 4:00pm Saturday. No works on Sunday or public holidays.
Transport Rate	<ul style="list-style-type: none"> Up to 6 laden trucks per hour (12 trips per hour) during the hours of 6 am to 7 am Monday to Friday. Up to 10 laden trucks per hour (20 trips per hour) during hours of 7 am to 6 pm Monday to Friday (i.e. all haulage hours excluding the morning peak). Up to 10 laden trucks per hour (20 trips per hour) during hours of 7 am to 4 pm Saturdays. Haulage between 5 am and 6 am is subject to agreement from adjacent landowners as per Schedule 3, Condition 1. Up to 6 vehicles of employees would be expected to arrive from approximately 5:30 am to 7 am and leave between 5 pm and 7 pm.
Resource and products	<p>Approximately 3.25 Mt of sand, comprising the following products to be extracted from site by truck onto Cabbage Tree Road for transport to markets:</p> <ul style="list-style-type: none"> Raw fill sand. Screened sand. Sandy loam. Concrete sand. Glass sand (estimated at about 16% of total resource). <p>The Project covers approximately 42.3 hectares (including access roads) with extraction to a depth of not more than 1m above the highest predicted groundwater level.</p>
Extraction	<ul style="list-style-type: none"> Maximum extraction rate of 530,000 tonnes per annum. Excavator and/or bulldozer to clear vegetation and strip topsoil. Bulldozer or grader to windrow sand. Front-end loader to feed conveyors to convey sand to the processing plant. Front-end loader and haul truck to convey sand when conveyor unsuitable.

Aspect	Key Aspects of the Project
Processing Methods	<ul style="list-style-type: none"> • Raw sand product extracted directly from face with no processing. • Sand fed into electrically powered screen. • Screened sand sold as product or fed to electrically powered air separator. • Products stockpiled for loading directly into truck or fill bulker bags for removal from the site by truck.
Support facilities and utilities	<ul style="list-style-type: none"> • Site office, workshop, stores, car parking. • Power supply from local network • Water supply from local network.

1.3 PURPOSE AND SCOPE

This NMP outlines the key management controls to be implemented to minimise noise impacts from quarry construction and operations. It also details noise monitoring requirements associated with operation of the quarry against relevant noise impact assessment criteria.

This document satisfies Development Consent Conditions 1 to 6 within Schedule 3 for the Project. A checklist of where each condition has been addressed in this document is provided in **Section 2.2**.

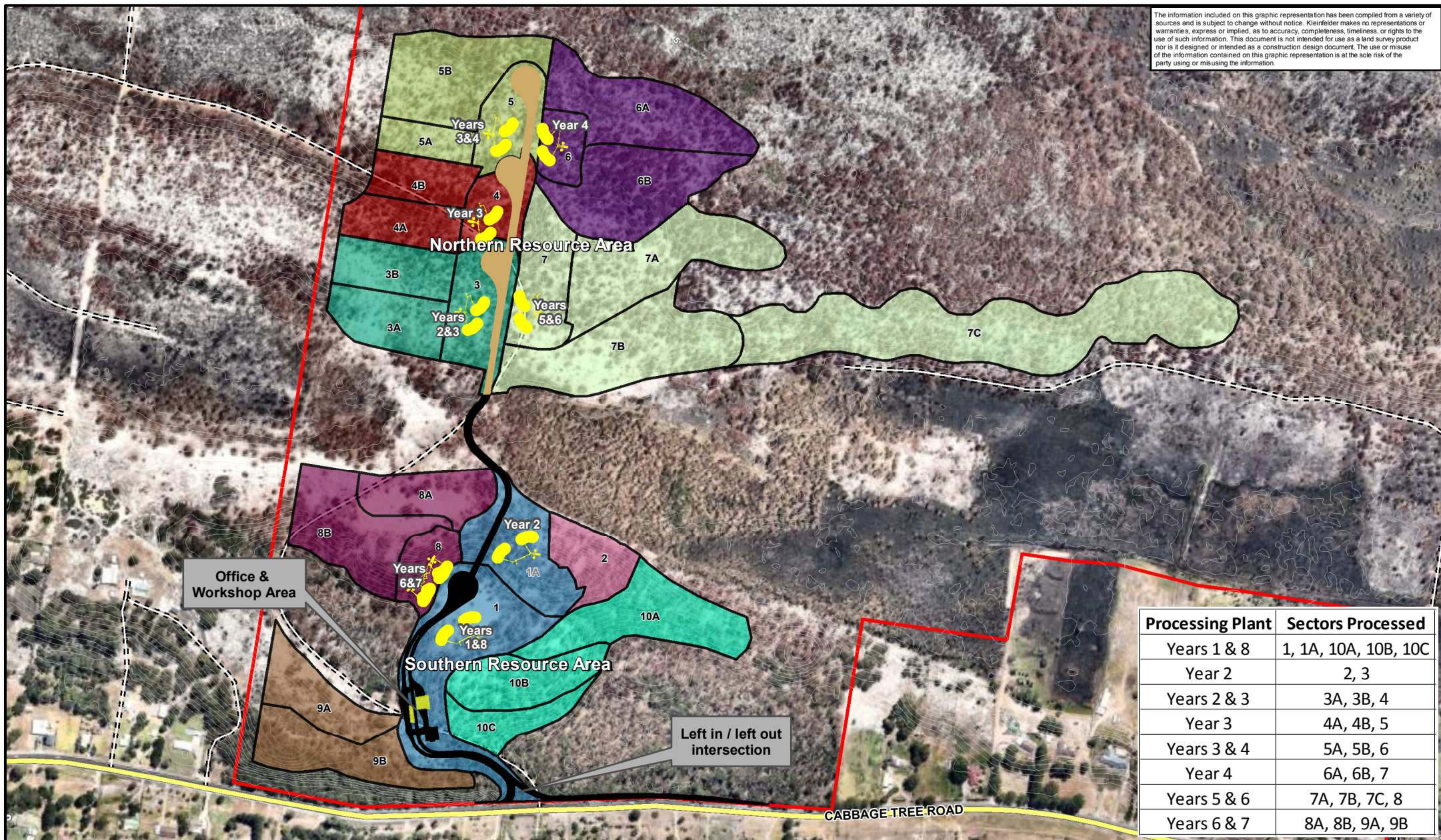
An overarching Environmental Management Plan (EMP) has also been prepared for the Project and provides the strategic context for the environmental management of quarry construction and operation along with management for other project aspects. This NMP should be implemented along with the overarching project Environmental Management Plan (EMP) for the duration of quarry operations.

1.4 CONSULTATION

The plan was supplied to the EPA for review and comment. As of the date of Version 3 of this plan, no response has been received from the EPA. It is understood the EPA regulate Environmental Protection Licence (EPL) as the preferred mechanism for management of noise impacts.

Copies of correspondence relating to the plan are included within **Appendix 1**.

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Processing Plant	Sectors Processed
Years 1 & 8	1, 1A, 10A, 10B, 10C
Year 2	2, 3
Years 2 & 3	3A, 3B, 4
Year 3	4A, 4B, 5
Years 3 & 4	5A, 5B, 6
Year 4	6A, 6B, 7
Years 5 & 6	7A, 7B, 7C, 8
Years 6 & 7	8A, 8B, 9A, 9B

Legend

- Subject Land
- Road - gravel
- Road - sealed
- Processing Plant & Infrastructure

- Arterial Road
- Track
- Contours (1m)

- Sector**
- 1
 - 2
 - 3
 - 4
 - 5

- 6
- 7
- 8
- 9
- 10

Metres
0 25 50 100 150 200 250



PROJECT REFERENCE: 20190803

DATE DRAWN: 6/08/2018 15:03 Version 1

DRAWN BY: gjoyce

DATA SOURCE:
NSW DFSI - 2017
Nearmap - 2018

Quarry Operations Plan

Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

FIGURE:

1

2. STATUTORY REQUIREMENTS

2.1 LEGISLATION AND GUIDELINES

Noise monitoring and management will be undertaken in accordance with the following State legislation:

- *Environmental Planning and Assessment Act 1979.*
- *Noise Policy for Industry 2017.*
- *Protection of the Environment Operations Act 1997.*

Meteorological station set-up and noise monitoring will comply with the requirements in the EPA *Approved Methods for Sampling and Analysis of Air Pollutants in NSW Jan 2007* for the life of the project.

All acoustic instrumentation used for monitoring shall comply with the requirements of AS 1259.2-1990 *Sound Level Meters* and will have current NATA or manufacturer calibration certificates.

2.2 DEVELOPMENT CONSENT

Development Consent was granted for the Project under the *Environmental Planning and Assessment Act 1979* by the NSW Independent Planning Commission. The requirement for a Noise Management Plan arises from Condition 6 within Schedule 3 of the Development Consent. Other Noise Monitoring requirements include Conditions 1 to 5 of Schedule 3 and Appendix 2 – Statement of Commitments.

Table 2 provides a summary of where each requirement of the consent relating to noise is addressed in this document.

Table 2: Development Consent Conditions

Condition	Description	Addressed in Section								
Schedule 3 – Specific Environmental Conditions										
1	<p>Hours of Operation The Applicant must comply with the operating hours set out in Table 1.</p> <p><i>Table 1: Operating Hours</i></p> <table><tr><th>Activity</th><th>Permissible Hours</th></tr><tr><td>Quarrying operations</td><td><ul style="list-style-type: none">7 am to 5 pm Monday to Friday7 am to 4 pm SaturdayAt no time on Sundays or public holidays</td></tr><tr><td>Loading and dispatch of laden trucks</td><td><ul style="list-style-type: none">6 am to 6 pm Monday to Friday7 am to 4 pm SaturdayAt no time on Sundays or public holidays</td></tr><tr><td>Maintenance</td><td><ul style="list-style-type: none">May be conducted at any time, provided that these activities are not audible at any privately-owned residence</td></tr></table> <p>However, if the Applicant reaches agreement to extend the hours of transportation with all owners of privately-owned land fronting Cabbage Tree Road immediately opposite the deceleration and acceleration lanes forming part of the quarry access intersection and has advised the Department in writing of the terms of these agreements, then the Applicant may also undertake loading and dispatch of laden trucks between 5 am and 6 am Monday to Friday.</p>	Activity	Permissible Hours	Quarrying operations	<ul style="list-style-type: none">7 am to 5 pm Monday to Friday7 am to 4 pm SaturdayAt no time on Sundays or public holidays	Loading and dispatch of laden trucks	<ul style="list-style-type: none">6 am to 6 pm Monday to Friday7 am to 4 pm SaturdayAt 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	Section 5.1 and Table 1.
Activity	Permissible Hours									
Quarrying operations	<ul style="list-style-type: none">7 am to 5 pm Monday to Friday7 am to 4 pm SaturdayAt no time on Sundays or public holidays									
Loading and dispatch of laden trucks	<ul style="list-style-type: none">6 am to 6 pm Monday to Friday7 am to 4 pm SaturdayAt 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									
2	<p>Hours of Operation The following activities may be carried out outside the hours specified in Table 1:</p> <p>a) delivery or dispatch of materials as requested by Police or other public authorities; and</p> <p>b) emergency work to avoid the loss of lives, property or to prevent environmental harm.</p> <p>In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.</p>	Section 5.1								
3	<p>Noise Impact Assessment Criteria The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 2 at any residence on privately-owned land.</p> <p><i>Table 2: Noise criteria dB(A)</i></p> <table><tr><th>Receiver</th><th>Day <i>L_{Aeq}</i> (15 minute)</th><th>Shoulder <i>L_{Aeq}</i> (15 minute)</th><th>Shoulder <i>L_{Amax}</i> (1 minute)</th></tr><tr><td>Any residence on privately owned land</td><td>43</td><td>39</td><td>45</td></tr></table> <p>In this condition, ‘the development’ excludes road construction activities associated with the intersection of the quarry access road and Cabbage Tree Road and vegetation clearing operations within the Southern Resource Area (see condition 4 below).</p>	Receiver	Day <i>L_{Aeq}</i> (15 minute)	Shoulder <i>L_{Aeq}</i> (15 minute)	Shoulder <i>L_{Amax}</i> (1 minute)	Any residence on privately owned land	43	39	45	Section 4.1
Receiver	Day <i>L_{Aeq}</i> (15 minute)	Shoulder <i>L_{Aeq}</i> (15 minute)	Shoulder <i>L_{Amax}</i> (1 minute)							
Any residence on privately owned land	43	39	45							

Condition	Description	Addressed in Section
	<p>Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NPI. Appendix 5 of the Development Consent sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.</p> <p>The criteria in Table 2 do not apply if the Applicant has an agreement with relevant landowner/s to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</p>	
4	<p>Operating Conditions</p> <p>The Applicant must only undertake vegetation clearing operations within the Southern Resource Area under the following circumstances:</p> <ol style="list-style-type: none"> noise generated by the development does not exceed 47 dB(A)_{L_{Aeq}} (15 minute); bulldozer(s) or equipment with a sound power level greater than 104 dB(A) are not permitted to be used in Sectors 9B, 10A, 10B and 10C, as shown in Figure 2 of Appendix 1 of the Development Consent; clearing operations are limited to: <ul style="list-style-type: none"> the Day period, Monday to Friday; campaigns not exceeding 5 consecutive working days; no more than four campaigns in any calendar year. 	Section 5.3
5	<p>Operating Conditions</p> <p>The Applicant must:</p> <ol style="list-style-type: none"> implement best practice management to minimise the construction, operational and road transport noise of the development; minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 5 of the Development Consent); carry out noise monitoring (at least every 3 months or as otherwise determined by the Secretary) to determine whether the development is complying with the relevant conditions of this consent; and regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent, to the satisfaction of the Secretary. 	Section 5
6	<p>Noise Management Plan</p> <p>The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:</p> <ol style="list-style-type: none"> be prepared in consultation with the EPA; be submitted to the Secretary at least one month prior to commencing ground disturbing activities, unless otherwise agreed by the Secretary; describe the measures to be implemented to ensure: compliance with the noise criteria and operating conditions in 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 5 of the Development Consent); describe the proposed noise management system; and include a monitoring program to be implemented to measure noise generated by the development against the noise criteria in conditions 3 and 4 of Schedule 3, and which evaluates and reports on the effectiveness of the noise management system on site. <p>The Applicant must not commence ground disturbing activities until the Noise Management Plan is approved by the Secretary.</p> <p>The Applicant must implement the Noise Management Plan as approved from time to time by the Secretary.</p>	Sections 1 - 7

Condition	Description	Addressed in Section
Schedule 5 – Environmental Management, Reporting and Auditing		
3	<p>Management Plan Requirements</p> <p>The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <ul style="list-style-type: none"> (a) detailed baseline data; (b) a description of: <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; (c) a description of the measures that to be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d) a program to monitor and report on the: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan 	Sections 1 - 7
Appendix 2 – Statement of Commitments 8.3.13 Noise		
a)	Noise controls will be revised and updated on determination of the project to ensure management measures proposed adequately reflect the requirements of the Conditions of Consent. The revised controls will be prepared in consultation with the NSW EPA for approval by NSW DPE.	Section 7
b)	<p>The following noise management measures will be employed during construction activities:</p> <ul style="list-style-type: none"> • The proponent will inform potentially noise affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details. • All feasible and reasonable work practices will be implemented where possible to meet the noise affected level. • Construction personnel will be made aware of the requirement to minimise noise, and to implement best practice operating techniques to minimise noise. • Consideration should be given to operating low noise emission plant where possible. 	Section 5
c)	<p>Operational noise mitigation measures will include:</p> <ul style="list-style-type: none"> • Areas 8, 9 and 10 will be extracted last to retain the natural sound attenuation of the sand dunes for as long as possible. • Extraction orientation will, where feasible, maintain the sand face between the operating plant and the nearest dwelling. 	Section 5

Condition	Description	Addressed in Section
	<ul style="list-style-type: none"> Use of a dozer for operational material push up will be restricted to areas within the northern resource area and only used in the southern resource area where monitoring determines noise criteria will not be exceeded at dwellings. All dozers operating within the southern resource area will be restricted to first gear in reverse to minimise associated track noise. All equipment frequently used onsite will be fitted with a BBS-Tek "backalarm" broadband reversing alarms or similar. All plant is to be positioned on each pad with regard to minimising the potential for offsite noise at the surrounding dwellings. Diesel generators used for backup power will be positioned such that the exhaust is generally directed to the north 	
d)	<p>The following noise monitoring is recommended for the construction phase of the project:</p> <ul style="list-style-type: none"> Attended noise monitoring at the potentially most affected residences at commencement, or during the highest noise emitting period, of each construction activity. If non-compliance is demonstrated, additional monitoring will be undertaken within one week following implementation of additional mitigation controls. Vibration monitoring at the potentially most affected residences at commencement, or during the highest vibration emitting period, of Cabbage Tree Road intersection construction activity 	Section 6
e)	<p>Detailed dilapidation reporting will also be undertaken at all properties within a 300 m radius of quarrying activities and/or intersection works where access is provided to undertake the reporting prior to the commencement of any works. Each property owner will be provided a copy of the dilapidation report for their property</p>	Section 6.3
f)	<p>The following monitoring is recommended for the operational phase of the Project:</p> <ul style="list-style-type: none"> Attended noise monitoring at the potentially most affected residences at commencement, or during the highest noise emitting period, of each phase of the Project. These phases should include: <ul style="list-style-type: none"> Clearing and stripping in Areas 1, 3, 7, 8, 9, 10. Extraction and processing works in Areas 1, 8, 9, 10. <p>Periodic attended monitoring with a frequency of one day per quarter unless targeted monitoring is already scheduled in that quarter</p>	Section 6
g)	<p>Attended monitoring results are to be assessed for compliance using the following protocol:</p> <ul style="list-style-type: none"> Results above intrusiveness criteria. Do standard weather conditions apply (as per NPI)? If non-standard weather conditions apply, undertake follow-up monitoring. Are the results considered to be directly related to activities onsite or are they from an unrelated source? <p>If related to activities onsite and standard weather conditions apply a non-compliance has occurred</p>	Section 6
h)	<p>If noncompliance is demonstrated, additional monitoring will be undertaken within one week following implementation of additional mitigation controls.</p>	Section 7
i)	<p>Where noise monitoring or complaints suggest the project is unable to</p>	Section 7

Condition	Description	Addressed in Section
	<p>achieve these noise goals the proponent will undertake the following sequence of investigations and controls:</p> <ul style="list-style-type: none"> Review the details of the noise level exceedances, the weather, operational activities at the time and the nature of the noise exceedance. If due to failure or equipment or to follow operational procedures, undertake corrective actions to prevent recurrence. If exceedance not as a result of failure, review and refine procedures. If operational practices cannot be improved, consult with the residents of impacted dwellings to discuss potential mitigation measures, this may include: <ul style="list-style-type: none"> Double glazing of windows or similar improvements to dwellings. Erection of a noise barrier (on resident's property or near source). <p>Provide compensation to allow receptor to seek relief from noise emissions.</p>	
j)	<p>Attended noise monitoring at representative dwellings will be carried out during normal operations and the results compared with the predicted model results. The model may be recalibrated to allow noise levels for the remaining scenarios to be more accurately predicted.</p>	Section 6
Appendix 5 – Noise Compliance Assessment		
1	<p>Applicable Meteorological Conditions</p> <p>The noise criteria in Table 2 are to apply under all meteorological conditions except the following:</p> <ol style="list-style-type: none"> wind speeds greater than 3 m/s at 10 m above ground level; or 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 temperature inversion conditions greater than 3°C/100 m. 	Section 4.2
2	<p>Determination of Meteorological Conditions</p> <p>Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station required under condition 10 of Schedule 3.</p>	Section 4.2
3	<p>Compliance Monitoring</p> <p>A noise compliance assessment must be undertaken within two months of commencement of quarrying operations. The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with noise criteria presented above. A report must be provided to the EPA within 1 month of the assessment.</p>	Section 6
4	<p>Compliance Monitoring</p> <p>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 NPI (as amended from time to time), in particular the requirements relating to:</p> <ol style="list-style-type: none"> monitoring locations for the collection of representative noise data; equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and 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 NPI) and before comparison with the specified noise levels in the consent. 	Section 6

3. EXISTING ENVIRONMENT

3.1 AMBIENT NOISE LEVELS

The area around the Project Site is rural in nature, comprising an arterial road, Cabbage Tree Road which becomes Tomago Road to the west, impacting all assessed receivers to some degree. The runway at Newcastle Airport carries both commercial and Air Force aircraft and is a significant noise source in the area.

Two ambient noise levels were identified during noise assessments at locations adjoining the project, these are summarised below:

- Elevated receivers (5 to 16 m AHD).
 - Several receivers north of Cabbage Tree Road are elevated (5 to 16 m AHD) with respect to the road and have a greater field of view of the area, implying a greater noise catchment area.
 - The rating background level (RBL) derived from monitoring at receptor 28 (representative of these elevated receivers) was 42 dB(A),L90 (day).
- Lower receivers (below 4 m AHD).
 - Includes receivers at 4 m and below (i.e. at or near the level of Cabbage Tree Road's 2.5m AHD elevation)
 - The rating background level derived from this monitoring event was 38 dB(A),L90 (day).

In its assessment of the project, the DPE adopted the more conservative RBL of 38 dB(A),L90 (day) for all receivers, resulting in a single daytime intrusive criteria of 43 dB(A) $L_{eq(15\text{minute})}$ (i.e. RBL +5dB).

3.2 RECEPTORS

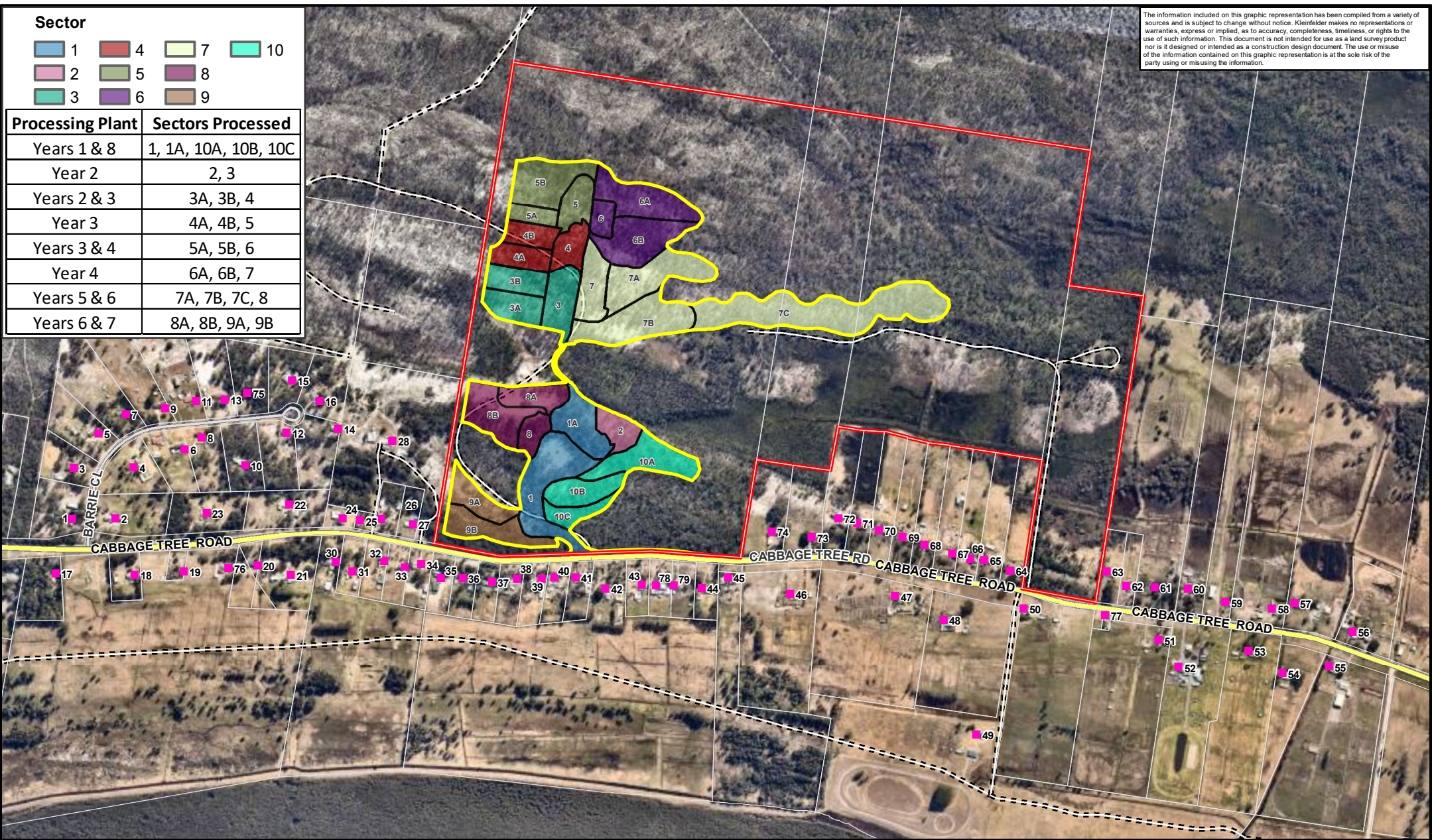
With respect to the proximity of residential dwellings it is important to note that the resource is effectively divided into two areas, the northern portion of the resource and the southern resource area. Land use surrounding these resource areas of the quarry is characterised below and shown within **Figure 2**:

- Northern resource area:
 - One dwelling within 500m of the resource extraction area.
 - Land to the east, west and north of the quarry is uninhabited, comprising land used for biodiversity offset for the project, Hunter Water owned land and the Tilligerry State Conservation Area (SCA).
- Southern resource area:
 - To the south, the closest dwellings are located more than 75 m from Sector 9B (refer to Figure 2) along the southern most extent of the resource.
 - To the south-west, the closest dwelling is located more than 75 m from Sector 9B (refer to Figure 2) along the southern most extent of the resource.
 - To the west the closest dwelling is over 160 m, and the dwellings at the end of Barrie Close are in excess of 300 m from the Sector 8A and 9A.
 - To the east the closest dwelling is over 220 m.

- Sector**
- | | | | |
|---|---|---|----|
| 1 | 4 | 7 | 10 |
| 2 | 5 | 8 | |
| 3 | 6 | 9 | |

Processing Plant	Sectors Processed
Years 1 & 8	1, 1A, 10A, 10B, 10C
Year 2	2, 3
Years 2 & 3	3A, 3B, 4
Year 3	4A, 4B, 5
Years 3 & 4	5A, 5B, 6
Year 4	6A, 6B, 7
Years 5 & 6	7A, 7B, 7C, 8
Years 6 & 7	8A, 8B, 9A, 9B

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Legend

Subject Land Boundary

Project Area Boundary

Arterial Road

Local Road

Track

Receptor

Lot Boundary

Metres

0 50 100 200 300 400 500

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PROJECT REFERENCE: 20190803

DATE DRAWN: 13/11/2018 16:50 Version 1

DRAWN BY: BDeane

DATA SOURCE: NSW DFSI - 2017
Nearmap - 2018

Subject Land and Receptors

Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

FIGURE:

2

L:\GIS FOLDER\00 CLIENT FILES\126863_TrusteeForWSS_UnitTrust\20170448_Willamtown\Mapping\20190803_NMP_Fig02_SubjectLandAndReceptors.mxd

3.3 WEATHER

Historical weather data is available at the Bureau of Meteorological Station located at the Williamstown Airport approximately 4 km to the north east of the northern portion of the site. Based on this data the wind directions have the following key characteristics relevant to the Quarry operations:

- Calm mornings and windy afternoons throughout the year.
- Mornings have a more even distribution of winds, with the following tendencies:
 - Summer has a greater proportion of winds from the south that will direct dust generated at the quarry away from dwellings.
 - Autumn, winter and spring have a higher proportion of winds from the west and north-west that have greater propensity to push dust generated from the quarry to dwellings.
- Afternoons typically have a more dominant wind pattering including:
 - Spring, summer and autumn have dominant south and south east onshore wind that will direct dust generated at the quarry away from dwellings.
 - Winter still have a southerly component, though north and north-westerly winds increase that have greater propensity to push dust generated from the quarry to dwellings.

While noise propagation is subject to a complex range of parameters (e.g. background levels, mixing heights etc), simplistically, based on prevailing winds winter is likely to require the highest level of noise management through the year, followed by the mornings during autumn and spring.

Weather data for assessment of noise impacts will be sourced from an on-site meteorological station.

4. PREDICTED NOISE IMPACTS

4.1 CONSTRUCTION

Construction noise was assessed against the NSW EPA *Interim Construction Noise Guideline 2009* where it was determined that no residence would be considered “highly noise affected” (75 dBA_{Leq(15minute)}), with worst case noise levels assessed at 62 dBA_{Leq(15minute)}.

Construction activities are expected to be 12 weeks in duration and will be undertaken during the standard construction hours of:

- 7 am to 6 pm Monday to Friday.
- 8 am to 1 pm Saturdays.
- No work on Sundays or public holidays.

4.2 OPERATIONS

4.2.1 Noise Sources

Noise sources and sound power levels of quarrying equipment for extraction and processing used in the assessment of noise impacts is listed in **Table 3**.

Table 3: Noise sources and sound power levels, Lw dB(A)

Equipment	Indicative Number	Use	Lw dB(A)
D8 Bulldozer (1st gear)	1	Tree clearing/material push-up	109
CAT 980 Loader	1	Loading conveyors and trucks	104
Excavator (30T)	1	Tree clearing/material push-up	104
Jump conveyor (30m)	1 per 30m	Material transfer	76
Zip line conveyor (150m)	1 per 150m	Material transfer	83
Radial stacker	1	Stacking product	93
Fisher air separator	1	Processing sand	98
McCloskey S190 screen	1	Screening sand	103

4.2.2 Modelled Scenarios

Contours of the modelled noise impacts are included in **Appendix 2**.

Note that private residence R28 has a private noise agreement in place and has not been assessed against the noise criterion in Scenarios 1 to 6 below.

4.2.2.1 Scenario 1

Operation of air dryer and McCloskey screen in Area 1. Truck loading and transport to site boundary on Cabbage Tree Road.

Predicted Noise Levels:

Noise contours for Scenario 1 (Area 1) are shown in **Appendix 2 - Figure 3**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver, with levels less than or equal to 35 dB(A) predicted at all receivers.

4.2.2.2 Scenario 2

Extraction of sand near eastern end of Area 7c using D8 dozer at RL 4. Cat 980 loader loading sand into feed bin. Electric conveyor transferring material back to processing area in Area 3. Truck loading and transport to southern site boundary.

Predicted Noise Levels:

Noise contours for Scenario 2 (Area 7c) are shown in **Appendix 2 - Figure 4**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver, with levels less than or equal to 35 dB(A) predicted at all receivers.

4.2.2.3 Scenario 3

Extraction of sand near western end of Area 8b using D8 dozer at RL 4. Cat 980 loader loading sand into feed bin. Electric conveyor transferring material back to processing area in Area 8. Truck loading and transport to southern site boundary.

Predicted Noise Levels:

Noise contours for Scenario 3 (Area 8b) are shown in **Appendix 2 - Figure 5**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver.

4.2.2.4 Scenario 4

Extraction of sand at southern extent of Area 9b using D8 dozer at RL 4. Cat 980 loader loading sand into feed bin. Southern extraction face at its proposed lower limit of RL 9. Electric conveyor transferring material back to processing in Area 1. Truck loading and transport to southern site boundary.

Predicted Noise Levels:

Noise contours for Scenario 4 (Area 9b) are shown in **Appendix 2 - Figure 6**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver, with levels of 38 dB(A) predicted at the worst impacted receivers south of Cabbage Tree Road and at R14.

4.2.2.5 Scenario 5

Extraction of sand near eastern limit of Area 10a using D8 dozer at RL 4. Cat 980 loader loading sand into feed bin. Electric conveyor transferring material back to processing in Area 1. Truck loading and transport to southern site boundary.

Predicted Noise Levels:

Noise contours for Scenario 5 (Area 10a) are shown in **Appendix 2 - Figure 7**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver, with levels of 36 dB(A) predicted at the worst impacted receivers south of Cabbage Tree Road and at R14.

4.2.2.6 Scenario 6

Extraction of sand near south-eastern limit of Area 10c using D8 dozer at RL 4. Cat 980 loader loading sand into feed bin. Electric conveyor transferring material back to processing in Area 1. Truck loading and transport to southern site boundary.

Predicted Noise Levels:

Noise contours for Scenario 6 (Area 10c) are shown in **Appendix 2 - Figure 8**. There are no exceedances of the 43 dB(A) operational noise criteria at any receiver, with levels of 42 dB(A) predicted at the worst impacted receivers south of Cabbage Tree Road.

4.2.2.7 Short term impacts

Each extraction area will require the vegetation to be cleared prior to recovering the sand. Clearing will occur over short periods in the order of five days. In the most exposed areas (i.e. Areas 9b, 10a and 10c), using a bull dozer may result in the exceedance of noise criteria, as such a dozer must not be used to clear vegetation in the most exposed areas, as per the intent of Condition 4 of the Development Consent.

5. NOISE CRITERIA

5.1 CONSTRUCTION CRITERIA

Under the Interim Construction Noise Guideline (2009), noise impacts and required response to impacts are defined as follows:

- Noise affected, **RBL + 10 dB** – i.e. 48 - 51 dB(A)_{Leq(15minute)}.
 - o Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.
 - o The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
- Highly noise affected, **75 dB(A)**, where this level is exceeded:
 - o Consider respite periods by restricting the hours that the very noisy activities can occur, taking into account:
 - Times identified by the community when they are less sensitive, such as, mid-morning or mid-afternoon for works near residences.
 - Potential for longer period of construction in exchange for restrictions on construction times.

5.2 OPERATIONAL CRITERIA

Noise criteria are set for day and day shoulder periods to protect amenity of neighbouring residents. Noise criteria are expressed as LAeq (15 minute) where: LAeq 15 minute represents the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes.

WSS shall ensure that all quarry operational activities do not exceed the noise criteria shown in **Table 4** at any residence on privately-owned land.

Table 4: Noise criteria

Receiver	Day LAeq (15 minute)	Shoulder* LAeq (15 minute)	Shoulder* LAmx (1 minute)
Any residence on privately owned land	43 dB(A)	39 dB(A)	45 dB(A)

*Shoulder is the period between 5 am to 7am, Monday to Friday.

These criteria do not apply to road construction activities at the intersection of the quarry access road and Cabbage Tree Road and vegetation clearing operations within the southern resource area.

Noise generated by the quarry is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *Noise Policy for Industry 2017*. **Section 5.4** below sets out the meteorological conditions under which these criteria apply.

5.3 VEGETATION CLEARANCE

As per the Development Consent Conditions outlined in **Table 2**, vegetation clearing operations within the Southern Resource Area must adhere to the following criteria:

- Noise generated by the development does not exceed 47 dB(A) LAeq (15 minute).
- Bulldozer(s) or equipment with a sound power level greater than 104 dB(A) are not permitted to be used in Sectors 9B, 10A, 10B and 10C, as shown in Figure 2 of Appendix 1.
- Clearing operations are limited to:
 - The Day period, Monday to Friday.
 - Campaigns not exceeding 5 consecutive working days.
 - No more than four campaigns in any calendar year.

5.4 METEOROLOGICAL CONDITIONS

Project noise criteria are to apply under all meteorological conditions except the following:

- Wind speeds greater than 3m/s at 10 m above ground level; or
- 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
- Temperature inversion conditions greater than 3°C / 100m.

Except for wind speed at microphone height, data for determining meteorological conditions will be recorded by an onsite meteorological station.

6. ROLES AND RESPONSIBILITIES

Roles used within this plan are defined below and responsibilities are shown in Section 6 or otherwise defined below.

6.1 KEY CONTACTS

The following contacts are available in the event of a compliant, enquiry or emergency.

Table 5: Key contacts

Contact	Name	Phone	Email
Quarry Manager	TBA	TBA	TBA
EPA – Incidents Line		131 555	
EPA - Newcastle Office		02 4908 6800	
OEH – Regional Operations - Newcastle		02 4927 3119	

6.2 QUARRY OWNER

The Quarry Owner is WSS who operate the quarry under the wholly owned subsidiary of Newcastle Sand. The Quarry Owner is responsible for the development and assignment of a suitably qualified Quarry Manager and to provide sufficient support to the Quarry Manager to undertake the required actions defined in this plan.

6.3 QUARRY MANAGER

The Quarry Manager is the person who manages the Quarry and is responsible for the day to day activities on the site. The Quarry Manager reports to the Quarry Owner.

The Quarry Manager must read, understand and implement the practical application of this plan. All activities being undertaken on the quarry site are the responsibility of the Quarry Manager.

The responsibilities of the Quarry Manager are defined by **Section 6**.

6.4 ONSITE PERSONNEL

Onsite personnel constitutes all employees and contractors working on the site.

7. MANAGEMENT CONTROLS

Table 7 describes the relevant noise management actions and controls to be implemented for the Project. These controls are based on achieving the Development Consent Conditions in **Table 2**.

Table 6: Noise Management metrics

Aspects	<ul style="list-style-type: none"> Use of quarry equipment Excavation of quarry material Transport of material to and from site 	Impacts	<ul style="list-style-type: none"> Noise emissions and disturbance to neighbouring landowners
Objectives	<ul style="list-style-type: none"> Minimise unreasonable noise impacts on neighbouring landowners Comply with Development Consent conditions Comply with <i>Noise Policy for Industry 2017</i> and other standards 	Targets	<ul style="list-style-type: none"> Zero Environmental Incidents/Non-compliances Zero landowner complaints

Table 7: Noise management measures

Item	Action	Trigger Timing /	Responsibility	Reporting
7.1 GENERAL				
A	Ground disturbing activities will not commence until this Noise Management Plan is approved by DPE.	Prior to commencement of construction	Quarry Manager	Approval of this plan by DPE
B	Inductions for operators and contractors working onsite will include consideration of potential for noise sensitive receptors surrounding the quarry and requested to limit noise emissions where safe to do so.	Prior to commencement of construction	Quarry Manager	Induction records

Item	Action	Trigger Timing /	Responsibility	Reporting
C	Operating hours have been restricted to minimise impacts to neighbouring residences. Quarry activities will be undertaken in accordance with those hours outlined in Table 1 of this plan.	Ongoing	Quarry Manager	Nil
D	<p>The following activities are permitted outside the hours specified in Table 1:</p> <p>a) Delivery or dispatch of material as requested by Police or other public authorities; and</p> <p>b) Emergency work to avoid the loss of lives, property or to prevent environmental harm.</p> <p>In such circumstances, WSS will notify DPE and affected residents prior to undertaking the activities, or as soon as practicable thereafter.</p>	Prior to commencement of these activities or as soon as practicable thereafter.	Quarry Manager	Nil
7.2 DESIGN CONTROLS				
A	Areas 8, 9 and 10 will be extracted last to retain the natural sound attenuation of the sand dunes for as long as possible.	Ongoing	Quarry Manager	Nil
B	Extraction orientation will, where feasible, maintain the sand face between the operating plant and the nearest dwelling.	Ongoing	Quarry Manager	Nil
C	Incorporation of conveyors in operations to minimise noise.	During Construction	Quarry Manager	Nil
7.3 CONSTRUCTION				
A	The proponent will inform potentially noise affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.	Prior to undertaking works	Quarry Manager	Nil
B	All feasible and reasonable work practices will be implemented where possible to meet the noise affected level.	During construction	Quarry Manager	Nil
C	Construction personnel will be made aware of the requirement to minimise noise, and to implement best practice operating techniques to minimise noise.	During construction	Quarry Manager	Nil
D	Consideration should be given to operating low noise emission plant where possible.	During construction	Quarry Manager	Nil

Item	Action	Trigger Timing /	Responsibility	Reporting
7.4 VIBRATION AND DILAPIDATION				
A	Detailed dilapidation surveys will be undertaken at all properties within a 300m radius of quarrying activities and/or intersection works where access is provided to undertake the reporting prior to the commencement of any works. Each property owner will be provided a copy of the dilapidation report for their property.	Prior to commencement of any work within a 300m radius of private dwelling	Quarry Manager	Dilapidation Report
B	Vibration monitoring at the potentially most affected residences at commencement, or during the highest vibration emitting period, of Cabbage Tree Road intersection construction activity.	During estimated 12-week construction phase.	Quarry Manager	Results included within AEMR DPE notified where exceedance identified.
7.5 OPERATIONS				
A	Operations must have regard to the prevailing weather conditions and minimise noise impacts to surrounding properties, including: <ul style="list-style-type: none"> Where adverse meteorological conditions (as per Section 5.2) apply and the operational criteria do not apply. Where wind direction is toward nearby receptors (i.e. generally from west through north to east). 	At all times	Quarry Manager	Nil
B	Vegetation clearing within the southern resource area will be undertaken in line with the following requirements: <ul style="list-style-type: none"> Noise generated by the development does not exceed 47 dB(A) _{L_{Aeq} (15minute)} Bulldozers or equipment with a sound power level greater than 104 dB(A) are not permitted to be used in Sectors 9B, 10B and 10C. Vegetation clearing will be limited to: <ul style="list-style-type: none"> The day period, Monday to Friday; Campaigns not exceeding 5 executive working days; and No more than four campaigns in any calendar year.	Vegetation clearing in southern resource area	Quarry Manager	Nil
C	Use of a dozer for operational material push up will be restricted to areas within the northern resource area and will not be used within Sectors 9B, 10A, 10B and 10C. A dozer may only be used in other areas of the southern resource	Ongoing	Quarry Manager	Nil

Item	Action	Trigger Timing /	Responsibility	Reporting
	area where monitoring determines noise criteria will not be exceeded at dwellings.			
D	All equipment frequently used onsite will be fitted with a BBS-Tek “backalarm” (or equivalent) broadband reversing alarms or similar.	Ongoing	Quarry Manager	Nil
E	All plant is to be positioned at each processing area with regard to minimising the potential for offsite noise at the surrounding dwellings.	Ongoing	Quarry Manager	Nil
F	Diesel generators used for backup power will be positioned such that the exhaust is generally directed to the north.	Ongoing	Quarry Manager	Nil
7.6 MONITORING				
A	<u>Construction</u> Monitoring undertaken during construction will include: <ul style="list-style-type: none"> • Attended noise monitoring at the potentially most affected residences at commencement, or during the highest noise emitting period, of each construction activity. • If noncompliance is demonstrated, additional monitoring will be undertaken within one week following implementation of additional mitigation controls. • Vibration monitoring at the potentially most affected residences at commencement, or during the highest vibration emitting period, of Cabbage Tree Road intersection construction activity 	During construction	Quarry Manager	Attended Noise Monitoring Report
B	<u>Operations</u> A noise compliance assessment must be undertaken within two months of commencement of quarrying operations. The assessment must be conducted by a suitably qualified and experienced acoustical practitioner and must assess compliance with noise criteria presented above. A report must be provided to the EPA within 1 month of the assessment.	Within two months of commencement of quarrying (i.e. after construction)	Quarry Manager	Noise Compliance Report
C	Attended noise monitoring undertaken during operations by a suitably qualified acoustic consultant in line with Section 7 .	Quarterly	Quarry Manager	Updated to website quarterly. Results published in AEMR.
D	Install a meteorological station to allow quarry personnel to access instantaneous wind speed and direction data and generate site specific meteorological data records (refer to Section 6.2)	Ongoing	Quarry Manager	Summary in AEMR.

Item	Action	Trigger Timing /	Responsibility	Reporting
7.7 COMPLIANCE EVALUATION				
A	<p>Attended monitoring results are to be assessed for compliance using the following protocol:</p> <ul style="list-style-type: none"> Results above intrusiveness criteria; Do standard meteorological conditions apply; If non-standard weather conditions apply (as per Section 5.2 / NPI), undertake follow-up monitoring if criterion is exceeded by more than 2 dB; Are the results considered to be directly related to activities onsite or are they from an unrelated source? If related to activities onsite and standard weather conditions apply, a non-compliance has occurred. <p>Results above intrusiveness criteria are considered a project non-compliance. DPE will be notified within 24 hours of an exceedance and be sent a report within 7 days outlining non-compliances and corrective actions undertaken.</p> <p>A summary of any non-compliances and associated corrective actions will be provided in the Annual Environmental Monitoring Report (AEMR) (refer Section 7.5).</p>	<p>When exceedance of noise criteria measured.</p> <p>DPE notified within 24 hours where non-compliance identified.</p>	Quarry Manager	Results included in AEMR Incident Notification
B	If non-compliance is demonstrated, additional monitoring will be undertaken within one week following implementation of additional mitigation controls.	Following non-compliance.	Quarry Manager	Results included in AEMR DPE notified where non-compliance identified.
C	All complaints will be recorded in the Consultation Register and resolved in line with the project Complaints Procedure in Section 5.2.1.2 of the project EMP.	Ongoing	Quarry Manager	Summary in AEMR.
D	Monthly internal inspections as per 6.2 of the project EMP	Monthly	Quarry Manager	Monthly Inspection Report
E	Three-yearly Independent Environmental Audits as per Section 6.3 of the project EMP.	Three-yearly	Quarry Manager	Audit Report

Item	Action	Trigger Timing /	Responsibility	Reporting
7.8 INCIDENT INVESTIGATION AND CORRECTIVE ACTIONS				
A	<p>Incident Investigations will record the following details as part of the Incident Investigation:</p> <ul style="list-style-type: none"> When and where did the incident occur? In the hour prior to and following the incident: <ul style="list-style-type: none"> What were the monitoring results (if available)? What operational activities were occurring at that time? What were the weather conditions (rainfall, wind direction, temperature)? If due to failure or equipment or to follow operational procedures, undertake corrective actions with equipment or onsite personnel to prevent recurrence. If exceedance not as a result of failure, review and refine procedures. If operational practices cannot be improved, consult with the residents of impacted dwellings to discuss potential reasonable and feasible (mitigation measures, this may include: <ul style="list-style-type: none"> Double glazing of windows or similar improvements to dwellings. Erection of a noise barrier (on resident's property or near source). Provide compensation to allow receptor to seek relief from noise emissions. <p>If a non-compliance has occurred, additional monitoring will be undertaken within one week following implementation of relevant additional management controls listed above.</p>	Non-compliance with criteria	Quarry Manager	Incident Investigation and Corrective Actions Report provided to DPE within 7 days of event.
7.9 COMPLAINTS				
A	All complaints will be recorded in the Consultation Register and resolved in line with the project Complaints Procedure in Section 5.2.1.2 of the project EMP.	Receipt of complaint	Quarry Manager	Complaints Register Summary in AEMR.
7.10 CONTINUOUS IMPROVEMENT				
A	All controls in this plan will be reviewed and if necessary, revised to confirm their applicability on an ongoing basis throughout the life of the Project and	Annually at a minimum	Quarry Manager	Summary in AEMR

Item	Action	Trigger Timing /	Responsibility	Reporting
	<p>ensure continual improvement of management practices. In addition the following circumstances will require review of this plan:</p> <ul style="list-style-type: none"> • Internal monthly compliance inspections. • Non-compliance with criteria. • Annual review. • Modifications of the Consent • Audit Report. 			

8. MONITORING

Noise monitoring is to be undertaken by a suitably qualified acoustic consultant in accordance with the following requirements of the Development Consent and in accordance with the EPA *Noise Policy for Industry 2017*.

8.1 ATTENDED MONITORING PROGRAM

Attended noise monitoring will be undertaken quarterly at the most affected neighbouring residences at Project commencement during the highest noise emitting period of each phase of the Project. These phases should include:

- Clearing and stripping in Sectors 1, 3, 7, 8, 9, 10.
- Extraction and processing works in Sectors 1, 8, 9, 10.

Proposed monitoring locations are described in **Table 8** and shown in **Figure 3**.

Table 8: Noise monitoring locations

Generalised Location	Recommended Receptor ID
Nearest residence to west (at road level)	27
Nearest residence to west elevated on hill crest	14 ¹
Residence due south of quarry	38
Nearest residence to the south east	74

Each noise monitoring event will comprise of one hour of measurement during standard hours and normal quarry operations. The following data will be recorded:

- Monitoring location(s).
- Date and time monitoring commenced and ended at each location.
- Height of the microphone above the ground.
- Meteorological data (refer **Section 8.2**).
- Equipment used, calibration details and demonstrated conformity to relevant Australian Standard.
- The LAeq (15 minute) noise level for each 15-minute period.
- The L_{Amax} noise level for each 15-minute period, for any night-time measurement.
- Noise sources contributing to recorded noise levels during the monitoring event.
- Modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

¹ Note that, while private residence R28 is the nearest residence, it has a private noise agreement in place.

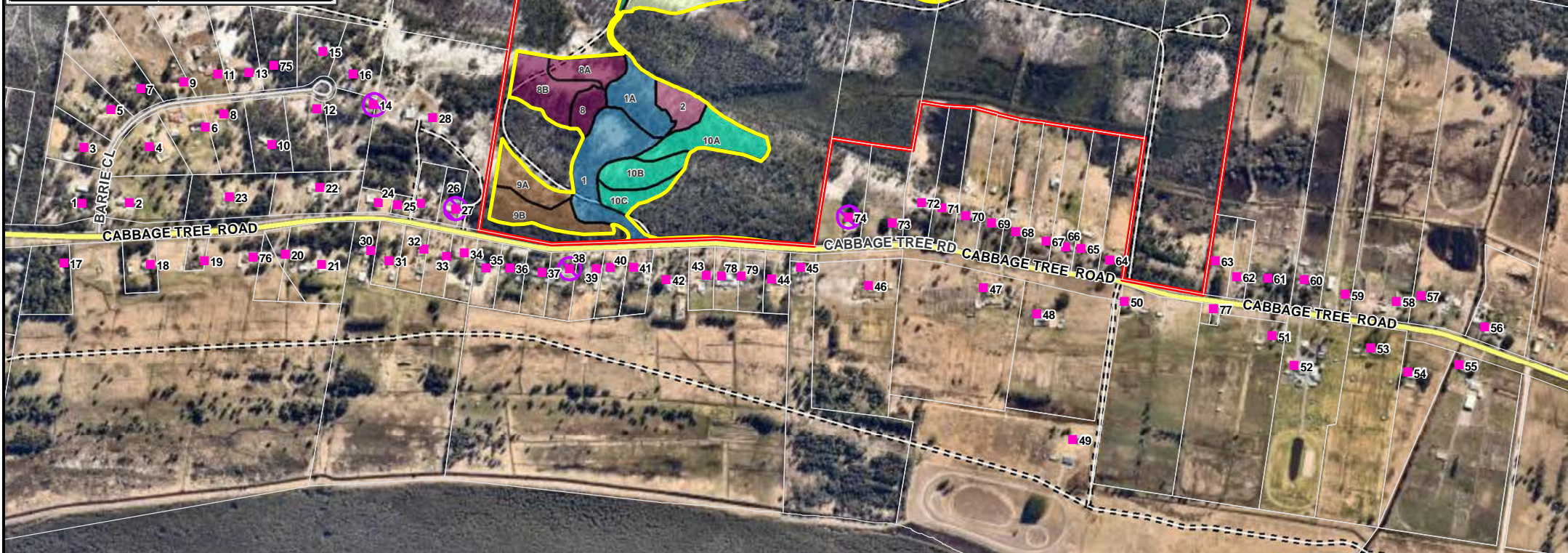
- The use of an appropriate modifying factor for low frequency noise to be applied during compliance testing at any individual residence if low frequency noise is present (in accordance with the *Noise Policy for Industry 2017*) and before comparison with the specified noise levels in **Section 5.1**.

Sector

1	4	7	10
2	5	8	
3	6	9	

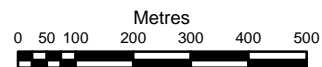
Processing Plant	Sectors Processed
Years 1 & 8	1, 1A, 10A, 10B, 10C
Year 2	2, 3
Years 2 & 3	3A, 3B, 4
Year 3	4A, 4B, 5
Years 3 & 4	5A, 5B, 6
Year 4	6A, 6B, 7
Years 5 & 6	7A, 7B, 7C, 8
Years 6 & 7	8A, 8B, 9A, 9B

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Legend

 Subject Land Boundary	● Receptor
 Project Area Boundary	 Noise Compliance Marker
 Arterial Road	 Lot Boundary
 Local Road	
 Track	



PROJECT REFERENCE: 20190803

DATE DRAWN: 13/11/2018 16:49 Version 1

DRAWN BY: BDeane

DATA SOURCE:
NSW DFSI - 2017
Nearmap - 2018

Noise Compliance

Cabbage Tree Road Sand Quarry
Cabbage Tree Road, Williamtown, NSW

FIGURE:

3

8.2 METEOROLOGICAL DATA

The following meteorological data will be collected where available during each noise monitoring event from the onsite meteorological station:

- Temperature
- Wind speed
- Wind direction
- Cloud cover
- Humidity
- Fog
- Rainfall
- Sigma-Theta

8.3 VIBRATION AND DILAPIDATION MONITORING

To comply with the Statement of Commitments within the Development Consent, additional monitoring will be undertaken to assess vibration and dilapidation impacts to most affected residences.

These are summarised below however do not form part of this Noise Management Plan.

Item	Action	Trigger / Timing	Responsibility	Reporting
A	Vibration monitoring at the potentially most affected residences at commencement, or during the highest vibration emitting period, of Cabbage Tree Road intersection construction activity.	During estimated 12-week construction phase.	Quarry Manager	Results included within AEMR DPE notified where exceedance identified.
B	Detailed dilapidation surveys will be undertaken at all properties within a 300m radius of quarrying activities and/or intersection works where access is provided to undertake the reporting prior to the commencement of any works. Each property owner will be provided a copy of the dilapidation report for their property.	Prior to commencement of any work within a 300m radius of private dwelling	Quarry Manager	Dilapidation Report

9. REPORTING

The following items associated with this plan will be reported and/or recorded during the project.

Table 9: Reporting Requirements

Item	Report	Trigger	Responsibility	Reporting Authority
A	Attended Noise Monitoring Report	Following noise monitoring event	Quarry Manager	DPE
B	Noise Compliance Report	Within two months of operations.	Quarry Manager	EPA
C	Incident Notification	Following identification of a non-compliance.	Quarry Manager	EPA and DPE – within 24 hours
D	Incident Investigation and Corrective Action Report	Incident Notification Completion	Quarry Manager	EPA and DPE – within 7 days
E	Complaints Register, that includes the following information: <ul style="list-style-type: none"> Name, address and contact details of complainant (kept confidential on website). Date and time of complaint. Date and time of incident / subject of complaint. Nature of complaint (type, location, duration). Investigation undertaken in relation to complaint. Actions implemented due to complaint. Notification of complainant of controls implemented. 	Complaints	Quarry Manager	DPE
F	Monthly Inspection Report	Following monthly internal inspections	Quarry Manager	Internal
G	Three-yearly Independent Environmental Audits	Following three-yearly independent audit	Quarry Manager	DPE
H	The Project Website will include the following related to this plan: <ul style="list-style-type: none"> A comprehensive summary of monitoring results from the development. Complaints register. A copy of this plan. 	Updated monthly	Quarry Manager	Public

Item	Report	Trigger	Responsibility	Reporting Authority
I	<p>Annual Environmental Management Report (AEMR).</p> <p>AEMR to include:</p> <ul style="list-style-type: none"> • Summary of all noise monitoring results and management actions undertaken in the 12-month period; • Summary of any noise non-compliances recorded in the 12-month period; • Summary of any noise-related complaints recorded in the 12-month period; • Summary of corrective actions and improvements to reduce noise impacts. <p>AEMR will be uploaded to Project website within two weeks of report being issued.</p>	Annually at time agreed with DPE	Quarry Manager	DPE
J	Dilapidation Report	Prior to intersection construction for dwellings within 300 m of works area.	Quarry Manager	Land Owner and Internal.
K	Vibration Monitoring Report	During construction activities at the nearest residential building.	Quarry Manager	DPE, Land Owner and Internal.

APPENDIX 1: REGULATOR CORRESPONDENCE

Correspondence	Comment	Response
Email from DPE regarding amendment of draft NMP on 19 March 2019	1. Unfortunately the NMP has missed the mark in applying the noise criteria as contained in the Development Consent as granted by the Independent Planning Commission (IPC). The NMP makes reference to two operational noise criteria, where for most practical purposes the consent contains one set of criteria. The figures with noise contours in an Appendix to the NMP have a legend with noise criteria of 43 dB(A) for residences at lower elevations and 47 dB(A) for residences at higher elevation on the relict sand dunes. This approach was put forward in the EIS, and had some merit, but ultimately both the Department and the IPC decided that the noise criterion of 43 dB(A) should apply to all residences.	<ul style="list-style-type: none"> Removed all incorrect references to 47 dB(A) in text and figures
	2. Pages 18-20. Discussion of the various noise generating scenarios (1-6). The discussion of the predicted noise levels against an operational noise criterion of 47 dB(A) is incorrect, and needs to be removed. In its place a renewed discussion against the criterion of 43 dB(A) for all properties should be included. Please note (as noted in Table 8) residence R28 is subject to a private noise agreement and should not be considered against the noise criterion. It would seem in many instances that this would lead to a prediction of compliance with the 43 dB(A) criterion at most other residences.	<ul style="list-style-type: none"> Removed R28 and 47dB(A) references from noise scenarios. Noted that R28 has a private agreement in Section 4.2.2 and 8.1. All revised scenarios are compliant with the 43dB(A) criterion.
	3. Page 20? , section 4.2.2.7 – The Department does not accept that the clearing of vegetation “may result in exceedance of the noise criteria”. What is missing from the early section of the NMP is discussion of the 47 dB(A) criterion that applies to vegetation clearing in the southern sections of the quarry for up to 5 consecutive days on 4 different occasions in a calendar year. This activity is correctly mentioned in Section 7.5 but should be included immediately following discussion of Operational Criteria.	<ul style="list-style-type: none"> Removed this section and added Vegetation Clearance criterion to Section 5.3.
	4. Page 31, Table 8. The selection of residence R28 as one of the four attended noise monitoring locations needs to be supported by a justification as it is a residence subject to a private noise	<ul style="list-style-type: none"> Replaced R28 with R14.

Correspondence	Comment	Response
	agreement and the noise criteria do not apply to the residence. I can see that this residence could be used as the most likely to be affected residence and then calculations made for impacts at other residential locations. If this is so, it should be explained. Alternatively, the next most likely to be affected residence close by to R28 should be selected as a noise monitoring location.	
	5. Page 23, Table 5. I think that "OEH" (x2) should be replaced by "EPA"?	<ul style="list-style-type: none"> Amended OEH to EPA and added contact details for EPA Newcastle Office
	6. Several of the even-numbered pages seems to be missing their pagination	<ul style="list-style-type: none"> Amended page formatting

18 December 2018

File Ref: NMP AQMP - EPA_181218.docx

Document Ref: NCAL19_WSS

Regional Operations Unit - Hunter
NSW Environmental Protection Authority
PO Box 488G,
Newcastle NSW 2300

Attention: Steve Clair
Delivered by email: Steve.Clair@epa.nsw.gov.au

Subject: Cabbage Tree Road Sand Quarry – Air Quality and Noise Management Plan Consultation

The Cabbage Tree Road Sand Quarry was approved 9 May 2018 by the NSW Department of Planning and Environment under application SSD-6125 issued to the Williamtown Sand Syndicate.

Condition 6 and Condition 9 of Schedule 3 of the Consent conditions requires the preparation of a Noise Management Plan and an Air Quality Management Plan in consultation with the the NSW Environmental Protection Authority, with approval by the Secretary of the Department of Planning and Environment.

Accordingly, please find attached a copy of the two management plans for your review. It would be appreciated if you can supply any feedback you may have on the plans by 18 January 2018. The Environmental Protection Licence for the operation is intended to be lodged early in 2019.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Kleinfelder Australia Pty Ltd



Jonathan Berry B.App.Sc (Hons)

Senior Advisor

Environmental Management

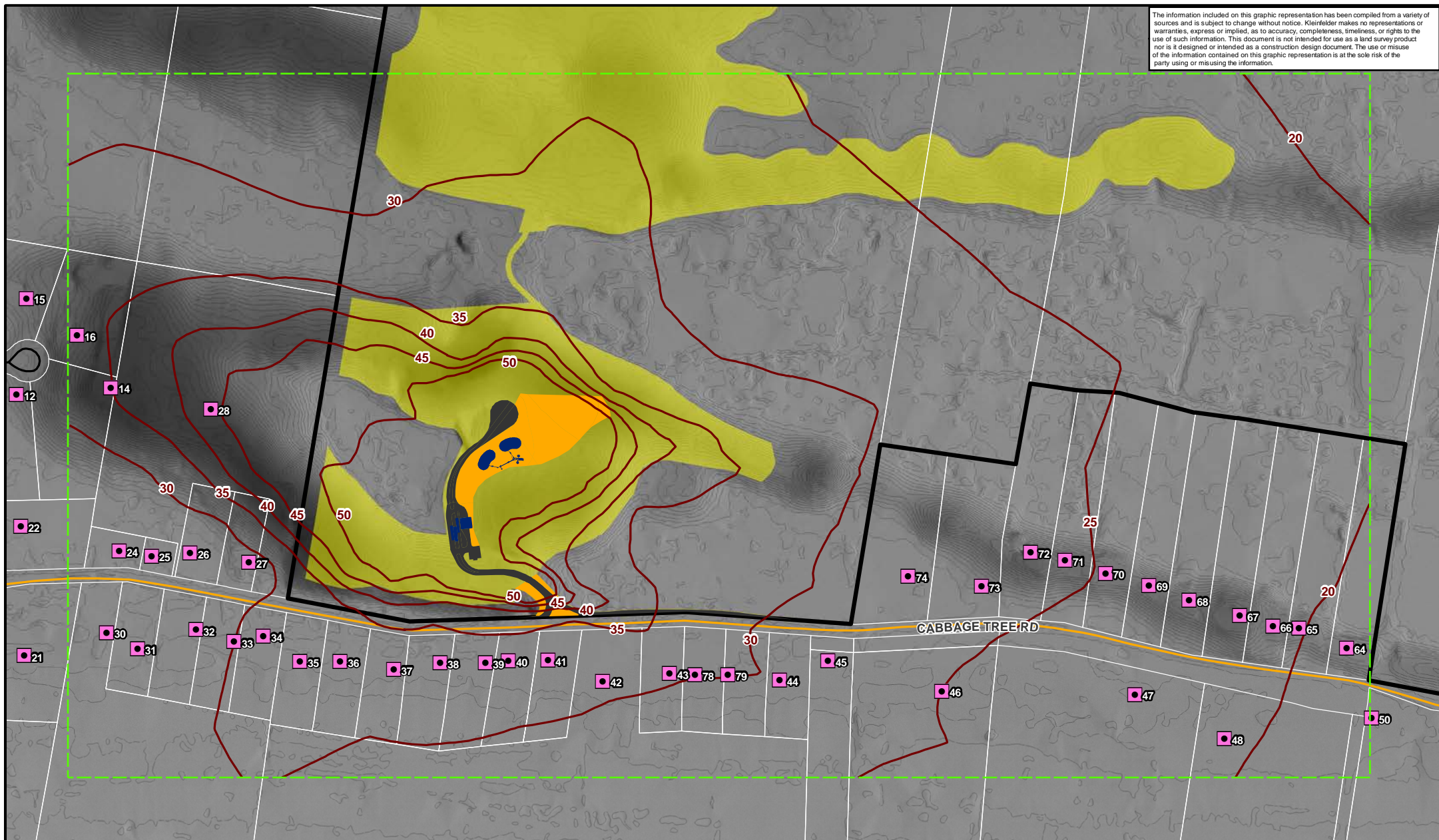
jberry@kleinfelder.com

Mobile: 0421 440 139

Attached: Air Quality Management Plan dated 6 December 2018
Noise Management Plan dated 9 November 2018

APPENDIX 2: NOISE CONTOURS

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Legend

- Subject Land Boundary
- Project Area Boundary
- Site Office and Processing Areas
- Total Disturbance Area
- Road - Sealed
- Arterial Road
- Local Road

Noise Impact Assessment

■ Noise Modelling Area

■ Noise Contours (5db Increments)

Noise Criterion

■ 43 dB(A)_{Leq}(15min)

Metres
0 25 50 100 150 200 250



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PROJECT REFERENCE: 20170448

DATE DRAWN: 25/03/2019 14:06 Version 3

DRAWN BY: G.Joyce

DATA SOURCE:
LPI - 2016
Nearmap - 2016

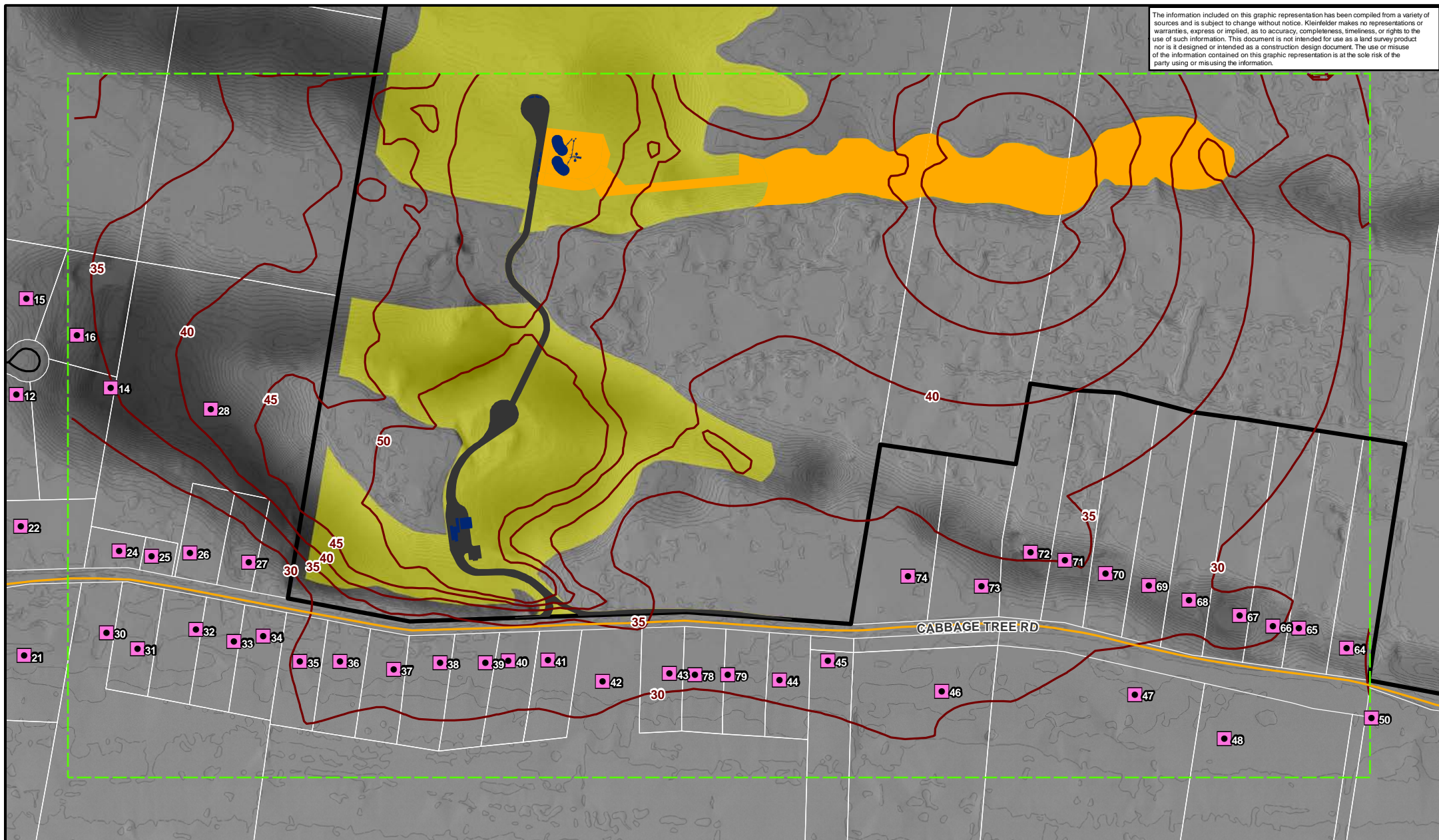
Noise Impact Assessment Scenario 1 Area 1 - Extraction

Williamtown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamtown

FIGURE:

3

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Legend

- Subject Land Boundary
- Project Area Boundary
- Site Office and Processing Areas
- Total Disturbance Area
- Road - Sealed
- Arterial Road
- Local Road
- Noise Modelling Area
- Noise Contours (5db Increments)
- Noise Criterion**
- 43 dB(A), $L_{eq}(15min)$

Metres
0 25 50 100 150 200 250



PROJECT REFERENCE: 20170448

DATE DRAWN: 25/03/2019 14:10 Version 3

DRAWN BY: G.Joyce

DATA SOURCE:
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Nearmap - 2016

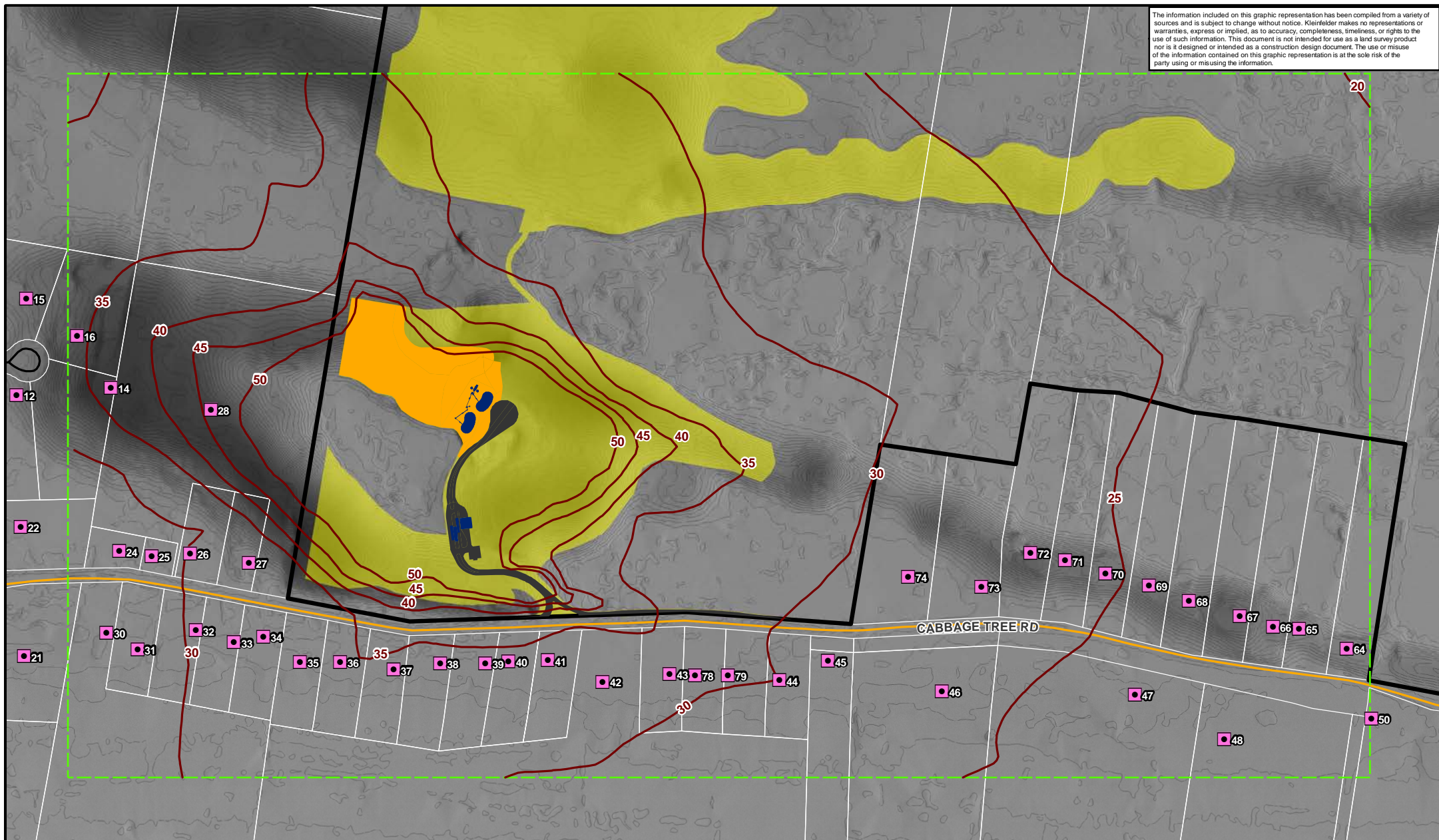
Noise Impact Assessment Scenario 2 Area 7C - Extraction

Williamstown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamstown

FIGURE:

4

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Legend

- Subject Land Boundary
- Project Area Boundary
- Site Office and Processing Areas
- Total Disturbance Area
- Road - Sealed
- Arterial Road
- Local Road
- Noise Modelling Area
- Noise Contours (5db Increments)
- Noise Criterion
- 43 dB(A), L_{eq}(15min)

Metres
0 25 50 100 150 200 250



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PROJECT REFERENCE: 20170448

DATE DRAWN: 25/03/2019 14:11 Version 3

DRAWN BY: G.Joyce

DATA SOURCE:
LPI - 2016
Nearmap - 2016

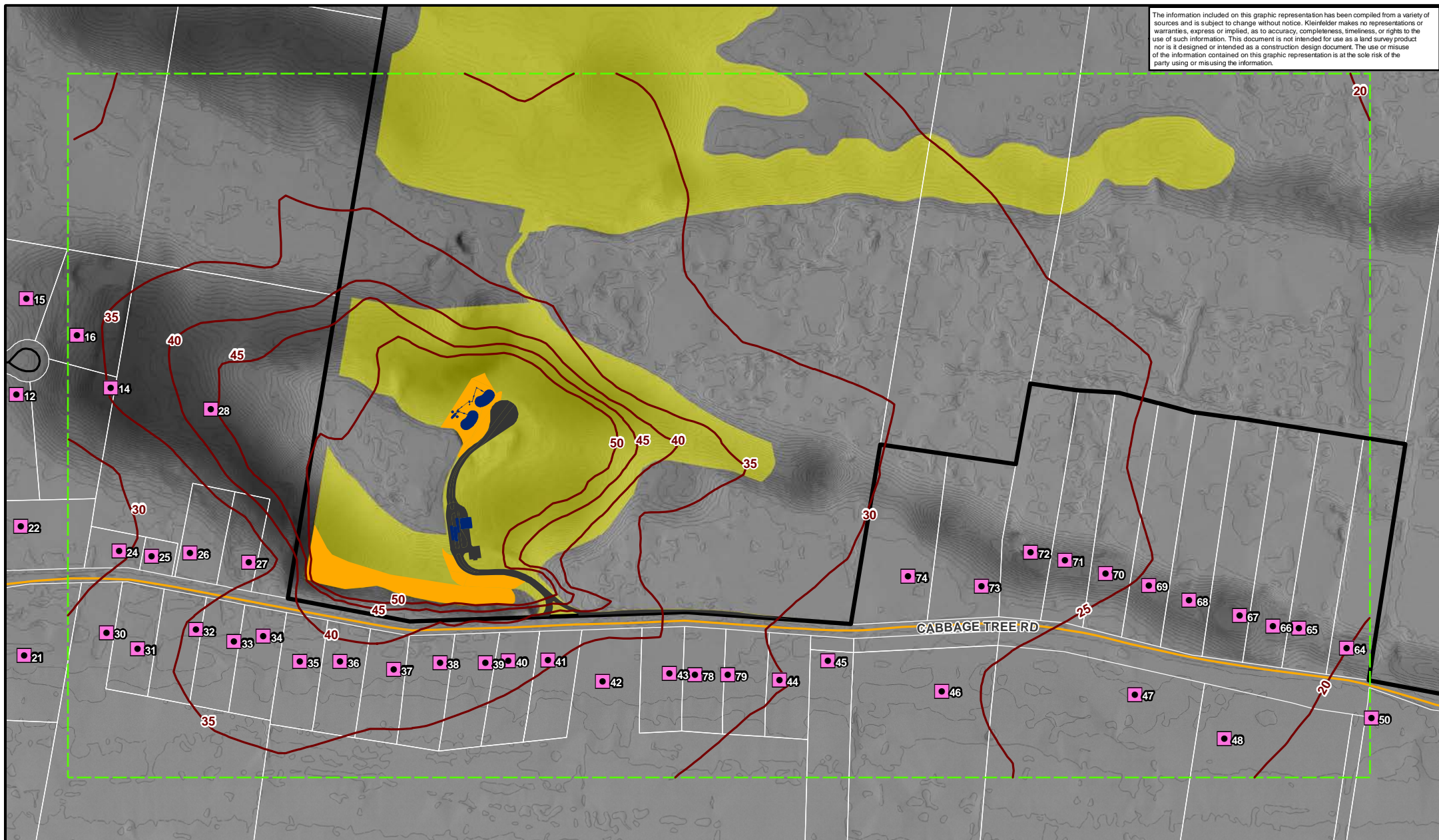
Noise Impact Assessment Scenario 3 Area 8B - Extraction

Williamtown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamtown

FIGURE:

5

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Legend

- Subject Land Boundary
- Project Area Boundary
- Site Office and Processing Areas
- Total Disturbance Area
- Road - Sealed
- Arterial Road
- Local Road

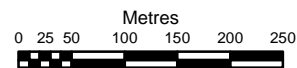
Noise Impact Assessment

Noise Modelling Area

Noise Contours (5db Increments)

Noise Criterion

43 dB(A), $L_{eq}(15min)$



PROJECT REFERENCE: 20170448

DATE DRAWN: 25/03/2019 14:11 Version 3

DRAWN BY: G.Joyce

DATA SOURCE:
LPI - 2016
Nearmap - 2016

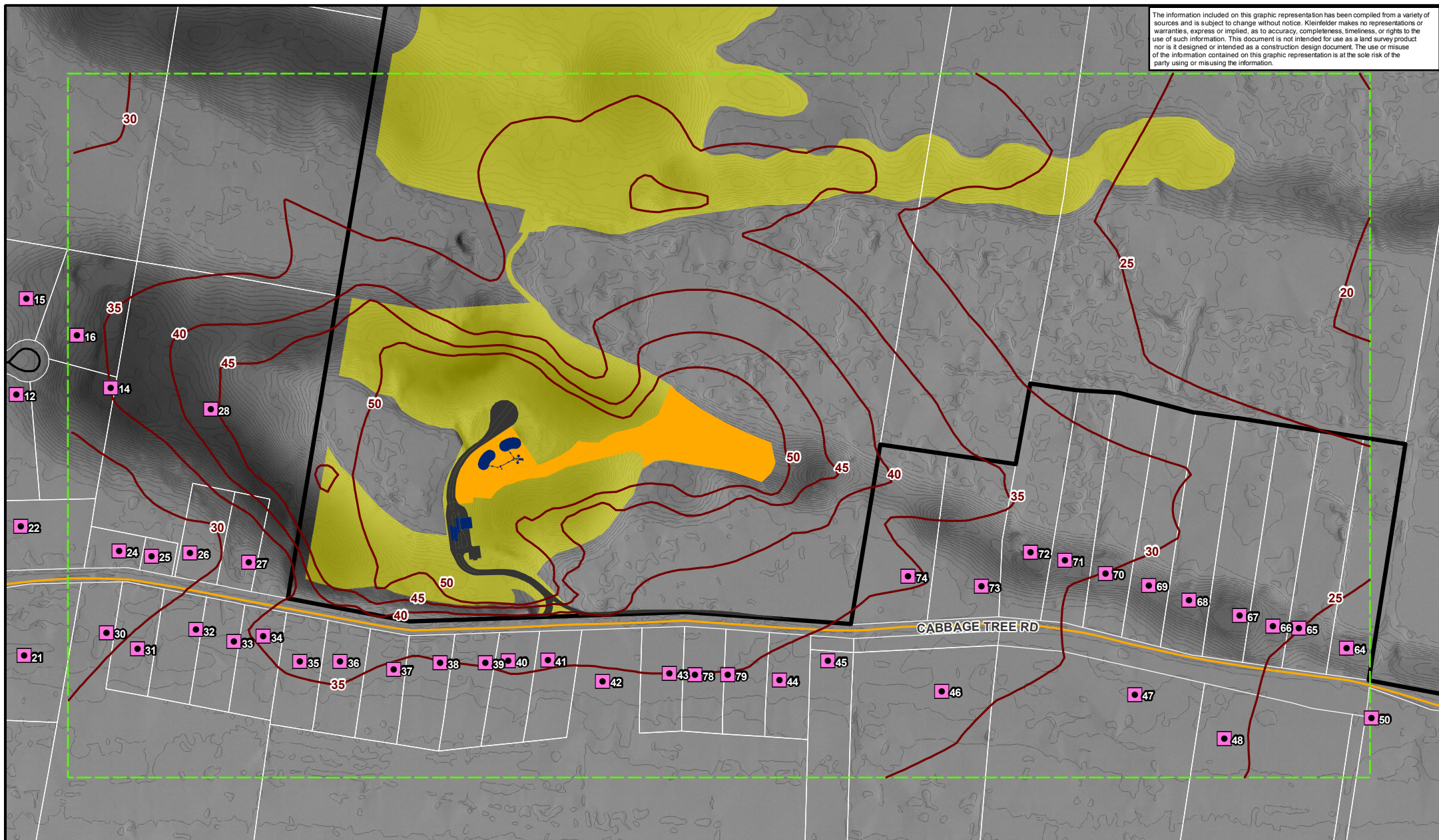
Noise Impact Assessment Scenario 4 Area 9B - Extraction

Williamtown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamtown

FIGURE:

6

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Legend

- Subject Land Boundary
 - Project Area Boundary
 - Site Office and Processing Areas
 - Total Disturbance Area
 - Road - Sealed
 - Arterial Road
 - Local Road
- Noise Impact Assessment**
- Noise Modelling Area
 - Noise Contours (5db Increments)
- Noise Criterion**
- 43 dB(A), $L_{eq}(15min)$

Metres
0 25 50 100 150 200 250



PROJECT REFERENCE: 20170448

DATE DRAWN: 25/03/2019 14:12 Version 3

DRAWN BY: G.Joyce

DATA SOURCE:
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Nearmap - 2016

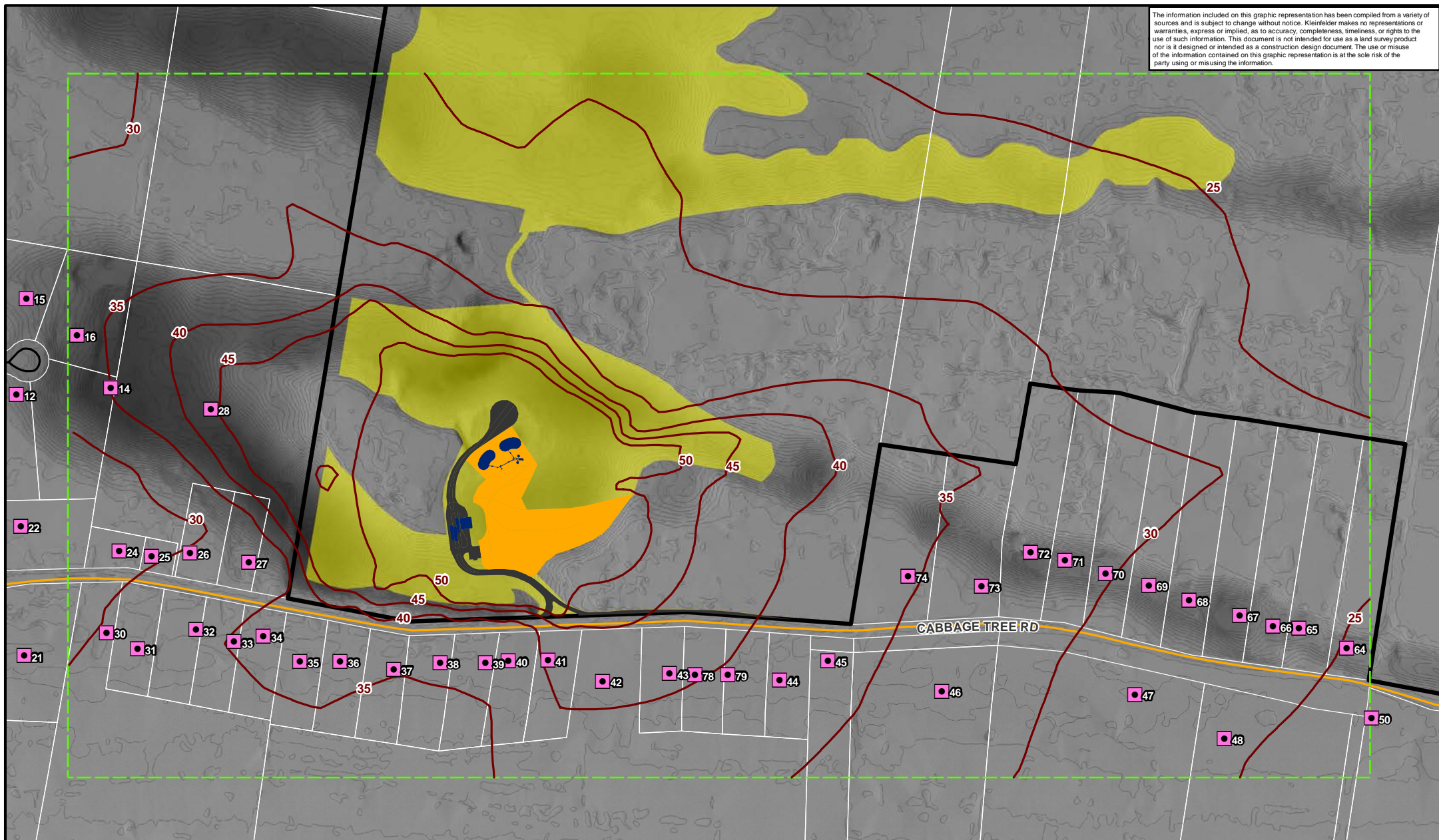
Noise Impact Assessment Scenario 5 Area 10A - Extraction

Williamtown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamtown

FIGURE:

7

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Legend

- Subject Land Boundary
- Project Area Boundary
- Site Office and Processing Areas
- Total Disturbance Area
- Road - Sealed
- Arterial Road
- Local Road

Noise Impact Assessment

Noise Modelling Area

Noise Contours (5db Increments)

Noise Criterion

43 dB(A), $L_{eq}(15min)$

Metres
0 25 50 100 150 200 250



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DRAWN BY: G.Joyce

DATA SOURCE:
LPI - 2016
Nearmap - 2016

Noise Impact Assessment Scenario 6 Area 10C - Extraction

Williamtown Sand Syndicate
Noise Impact Assessment
Proposed Sand Quarry
Cabbage Tree Road, Williamtown

FIGURE:

8