# NEWCASTLE SAND

Name of operation	Cabbage Tree Road Sand Quarry
Name of operator	Newcastle Sand
Development consent #	SSD-6125
Name of holder of	Williamtown Sand Syndicate Pty
development consent /	Ltd
project approval	
Mining lease #	Not applicable
Water licence #	Not applicable
MOP/RMP	Not applicable
Annual Review start date	1 January 2020
Annual Review end date	31 December 2020

I, Darren Williams, certify that this audit report is a true and accurate record of the compliance status of the Cabbage Tree Road Sand Quarry for the period 1 January 2020 to 31 December 2020 and that I am authorised to make this statement on behalf of Newcastle Sand.

#### Note.

a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.

b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).

Name of authorised reporting	Darren Williams
officer	
Title of authorised reporting	Operations Manager
officer	
Signature of authorised reporting officer	Mall
Date	31 March 2020
Version 1.0 o	of 31 March 2021



## STATEMENT OF COMPLIANCE

A statement of compliance is shown below in **Table 1**, where non-compliances were identified these are outlined in **Table 2**, based on the compliance status key shown in **Table 3**.

#### Table 1: Statement of Compliance

Where all conditions of the relevant approvals	complied with?
SSD_6125	No

#### Table 2: Non-compliances

Relevant Approval	Condition	Condition Summary	Compliance Status (see Table 3)	Comment	Where Addressed in Annual Review
SSD_6125	Sch 3, Condition 31	Trucks for Sand Trial limited to 9am to 2pm.	Low	Trucks arrived early on 4 of 5 days of trial. Loading and dispatch of trucks was correct.	Section 9
SSD_6125	Sch 5, Condition 4	Revision of plans and strategies.	Administrative non- compliance	Failure to submit revised management plans consistent with consent.	Section 9

#### Table 3:Compliance status key for Table 2 above.

Risk Level	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for <b>significant</b> environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	<ul> <li>Non-compliance with:</li> <li>Potential for serious environmental consequences, but is unlikely to occur; or</li> <li>Potential for moderate environmental consequences, but is likely to occur.</li> </ul>
Low	Non-Compliant	<ul> <li>Non-compliance with:</li> <li>Potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>Potential for low environmental consequences, but is likely to occur</li> </ul>
Administrative non- compliance	Non-Compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).



## 2020 Annual Environmental Review

## Cabbage Tree Road Sand Quarry Cabbage Tree Road, Williamtown

WILLIAMTOWN SAND SYNDICATE PTY LTD P.O Box 186, Waratah NSW 2298

NEWCASTLE SAND Quarry Manager Shane Burton 398 Cabbage Tree Road, Williamtown NSW 2318 <u>shane@newcastlesand.com.au</u> 0402 648 079

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#### **Document Control:**

Version	Description	Date	Author
1.0	Final	31 March 2021	J.Berry (Wedgetail Project Consulting Pty Ltd)



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- Appendix 11. Noise Monitoring Reports
- Appendix 12. PFAS Exposure Pathways Review
- Appendix 13. Truck Monitoring Records



## 1. INTRODUCTION

### 1.1 SCOPE

Schedule 5 Condition 11 of Development Consent SSD-6125 requires an Annual Review (AR) of the environmental performance of Cabbage Tree Road Sand Quarry. This AR has been prepared for the Cabbage Tree Road Sand Quarry to report on environmental performance in the calendar year 1 January 2020 – 31 December 2020.

Works commenced onsite on 14 August 2019 and focused on construction of the access road and office and workshop compound.

Modification 1 was approved on 26 March 2021 and permitted the transport of 5,000 tonnes of sand from the site prior to the completion of the intersection with Cabbage Tree Road. The purpose of the modification was to enable a trial on the suitability of the white sand onsite for use in glass manufacturing.

The intersection was given its notice of practical completion from Transport for NSW on 14 May 2021, with the first truck leaving site via the completed intersection on 18 May 2020.

For the purpose of the Annual Report, construction occurred from January through to 30 April, and operations from 1 May through to 31 December.

This AR will be distributed to the NSW Department of Planning, Industry and Environment (DPIE), Hunter Water Corporation (HWC) and Port Stephens Council (PSC) and will also be provided to the Community Consultative Committee (CCC) and made publicly available on Newcastle Sands website.



## 1.2 PURPOSE OF REPORT

On 9 of May 2018, Development Consent SSD-6125 was approved under Section 4.38 of the *Environment Planning and Assessment Act 1979* (EPA Act 1979). Schedule 5 Condition 11 of SSD-6125 documents the requirements of the Annual Review, is shown below in **Table 4** including where each aspect is addressed within this Annual Review. Management plan commitments that must be addressed in this review are listed in **Table 5**, including a reference to each document and where the information can be found within.

Table 4:	Annual review	requirements	from	SSD-6125
	Annual ICVICW	requirements	nom	000-0120

Condition	Where Addressed
Schedule 2, Condition 18 – Production Data	
The Applicant must: (a) from the commencement of quarrying operations provide calendar year annual quarry production data to DRG using the standard form for that purpose; and (b) include a copy of this data in the Annual Review.	See 4.1
Schedule 2, Condition 18 – Contributions to Council	
The Applicant must pay to Council an annual financial contribution toward provision of local infrastructure. The contribution must be determined in accordance with the Port Stephens S.94A Development Contribution Plan, or any subsequent relevant contributions plan adopted by Council. This contribution must be paid to Council prior to the issue of any construction certificate for the development. Any annual contributions must be paid to Council within one month of the anniversary date of this consent and reported in the Annual Review.	See 4.2
Schedule 3, Condition 28 – Vehicle Monitoring	
The Applicant must provide a report in each Annual Review which includes details of all fauna injured or killed by development-related vehicles, time and date of any such fauna strike, species involved, action taken following the strike and any consequent measures put in place to prevent or minimise a recurrence.	See 7.7
Schedule 3, Condition 43 (d)– Waste	
(d) report on waste management and minimisation in the Annual Review	See 7.10
Schedule 3, Condition 48 – Review of PFAS Exposure Pathways	
In conjunction with preparation of each Annual Review, unless otherwise agreed with the Secretary, the Applicant shall engage a suitably qualified and experienced independent expert, approved by the Secretary, to review the currently available information on exposure pathways for PFAS contamination originating from the Williamtown RAAF Base, as may be applicable to local residents and the development. This report must assess whether or not	See 5.1.5



Condition	Where Addressed	
quarrying operations are increasing the risk of PFAS exposure for local residents and/or the environment, to the satisfaction of the Secretary.		
The Applicant must ensure that the Review of PFAS Exposure Pathways reports are placed on its website and are available to the CCC and any interested person on request.		
Schedule 5 Condition 11 – Annual Review		
By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the secretary. This review must:	This document	
a) Describe the development (including any progressive rehabilitation) See 2.2 that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year.		
b) Include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the:	See 5	
<ul> <li>Relevant statutory requirements, limits or performance measures/criteria;</li> </ul>	See 5.1.1	
• Requirements of any plan or program required under this consent;		
Monitoring results of previous years; and		
• Relevant predictions in the documents listed in condition 2(a) of Schedule 2;		
c) Identify any non-compliance over the past calendar year, and describe See 9 what actions were (or are being) taken to ensure compliance;		
d) Identify any trends in the monitoring data over the life of the development;		
e) Identify any discrepancies between the predicted and actual impacts See 10 of the development, and analyse the potential cause of any significant discrepancies; and		
f) Describe what measures will be implemented over the current See 11 calendar year to improve the environmental performance of the development.		



#### Table 5: Management Plan Annual Review reporting commitments

Commitment	Where addressed	
Soil Water Management Plan (SWMP)		
AEMR to include: • Summary of all soil and water monitoring results and management actions undertaken in the 12-month period:	See Section 5.1	
<ul> <li>Summary of any soil or water non-compliances recorded in the 12-month period;</li> <li>Summary of any soil or water related complaints recorded in the 12-month period;</li> <li>Summary of corrective actions and improvements to reduce impacts to soil and water.</li> <li>Review of the site water balance.</li> </ul>		
<ul> <li>Volume of water drawn from the HWC network.</li> <li>Volume of water transferred from site (e.g. septic / bunded water capture).</li> <li>Comparison with estimated water use (Section 5.2). Where more than 20% above estimated maximum, review water usage areas and investigate methods to minimise usage where feasible.</li> </ul>		
AEMR will be uploaded to Project website within two weeks of final report being issued.		
Traffic Management Plan (TMP)		
AEMR to include summary of: • All transport monitoring results and management actions undertaken in the 12-month period; • Any transport incidents or non-compliances recorded in the 12-month period; • Any transport-related complaints recorded in the 12-month period; • Corrective actions and improvements to reduce transport impacts.	See Section 5.1	
Heritage Management Plan (HMP)		
AEMR to include summary of: • All heritage monitoring results and management actions undertaken in the 12-month period; • Any heritage non-compliances recorded in the 12-month period; • Any heritage-related complaints recorded in the 12-month period; • Corrective actions and improvements to reduce impacts to heritage.	See Section 7.4	
Biodiversity and Rehabilitation Management Plan (BRMP)		
AEMR to include summary of: • All monitoring results and management actions undertaken in the 12-month period; • Work completed in maintaining the boundary delineation. • Any non-compliances recorded in the 12-month period; • Any complaints recorded in the 12-month period; • Corrective actions and improvements to reduce biodiversity impacts or improve rehabilitation	See Section 2.2, 7.2, and 7.5	
Noise Management Plan (NMP)		
AEMR to include summary of:       See Section 5.3         • All noise monitoring results and management actions undertaken in the 12-month period;       See Section 5.3         • Any noise non-compliances recorded in the 12-month period;       • Any noise-related complaints recorded in the 12-month period;         • Corrective actions and improvements to reduce noise impacts.       • All noise impacts.		
Air Quality Management Plan (AQMP)		
<ul> <li>AEMR to include summary of:</li> <li>All air monitoring results and management actions undertaken in the 12-month period;</li> <li>Recorded weather data in the 12-month period;</li> <li>Effectiveness of trigger mechanisms;</li> <li>Diesel and Electricity Use in the 12-month period;</li> <li>Any air non-compliances recorded in the 12-month period;</li> </ul>	See Section 5.1	
<ul> <li>Any air quality-related complaints recorded in the 12-month period;</li> <li>Corrective actions and improvements to reduce air emissions.</li> </ul>		



## 1.3 PROJECT SUMMARY

The key details of the Project are shown in **Table 6** with the general arrangement and resource extent shown by **Figure 1**.

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	<ul> <li>Four titles within the Parish of Stockton, County of Gloucester including:</li> <li>Lot 1 DP 224587 at 398 Cabbage Tree Road, Williamtown</li> <li>Lot 121 DP 556403 at 282B Cabbage Tree Road, Williamtown.</li> <li>Lot 11 DP 629503 at 282A Cabbage Tree Road, Williamtown.</li> <li>Lot 1012 DP 814078 at 282 Cabbage Tree Road Williamtown.</li> </ul>	
Land Owner	Port Stephens Shire Council under lease to Williamtown Sand with royalty of up to \$17.5 million over the Project life.	
Area	Total Project Area of approximately 42.3 hectares from a Subject Land Area of approximately 176.2 hectares.	
Proponent	Williamtown Sand Syndicate Pty Ltd, the owner of the quarry operator Newcastle Sand.	
Stakeholders	<ul> <li>Key stakeholders include:</li> <li>Adjacent landowners and local community</li> <li>NSW Planning &amp; Environment (DPE)</li> <li>NSW Office of Environment &amp; Heritage (OEH)</li> <li>NSW Department of Primary Industries – Office of Water</li> <li>Hunter Water Corporation (HWC)</li> <li>Port Stephens Council (PSC)</li> <li>Commonwealth Department of Environment.</li> <li>Copies of correspondence by these stakeholders regarding the required content for this document is included within Appendix 2.</li> </ul>	
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.	

 Table 6:
 Key Aspects of the Cabbage Tree Road Sand Project.



Aspect	Key Aspects of the Project
Operating Hours	<ul> <li>Construction of intersection, access and workshop and office:</li> <li>7:00am to 5:00pm Monday to Friday.</li> <li>8:00am to 1:00pm Saturday.</li> <li>No works on Sunday or public holidays.</li> <li>Quarrying Operations:</li> <li>7:00am to 5:00pm Monday to Friday.</li> <li>7:00am to 5:00pm Monday to Friday.</li> <li>No quarrying on Sunday or a Public Holiday.</li> <li>Loading and dispatch of trucks:</li> <li>6:00am to 6:00pm Monday to Friday.</li> <li>7:00am to 4:00pm Saturday.</li> <li>No works on Sunday or public holidays.</li> </ul>
Transport Rate	<ul> <li>Up to 6 laden trucks per hour (12 trips per hour) during the hours of 6 am to 7 am Monday to Friday.</li> <li>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).</li> <li>Up to 10 laden trucks per hour (20 trips per hour) during hours of 7 am to 4 pm Saturdays.</li> <li>Haulage between 5 am and 6 am is subject to agreement from adjacent landowners as per Schedule 3, Condition 1.</li> <li>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.</li> </ul>
Quarry Access	<ul> <li>Upgrade of existing property access to a left in left out intersection with deceleration and acceleration lanes. Incoming speed limits of:</li> <li>40 km/h from Cabbage Tree Road to the weigh bridge.</li> <li>20 km/h from weigh bridge to processing plant and extraction face.</li> <li>Outgoing speed limits of:</li> <li>20 km/h from processing plant and extraction face to weigh bridge.</li> <li>60 km/h weigh bridge to Cabbage Tree Road.</li> </ul>
Resource and products	<ul> <li>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:</li> <li>Raw fill sand.</li> <li>Screened sand.</li> <li>Sandy loam.</li> <li>Concrete sand.</li> <li>Glass sand (estimated at about 16% of total resource).</li> <li>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.</li> </ul>
Extraction	<ul> <li>Maximum extraction rate of 530,000 tonnes per annum.</li> <li>Excavator and/or bulldozer to clear vegetation and strip topsoil.</li> <li>Bulldozer or grader to windrow sand.</li> <li>Front-end loader to feed conveyors to convey sand to the processing plant.</li> <li>Front-end loader and haul truck to convey sand when conveyor unsuitable.</li> </ul>
Processing Methods	<ul> <li>Raw sand product extracted directly from face with no processing.</li> <li>Sand fed into electrically powered screen.</li> <li>Screened sand sold as product or fed to electrically powered air separator.</li> <li>Products stockpiled for loading directly into truck or fill bulker bags for removal from the site by truck.</li> </ul>



Aspect	Key Aspects of the Project
Support facilities and utilities	<ul> <li>Site office, workshop, stores, car parking.</li> <li>Power supply from local network</li> <li>Water supply from local network.</li> </ul>
Water demand and supply	<ul> <li>Water required for stockpile dust suppression and gravel haul road dust suppression.</li> <li>Water sourced from mains supply fed into the site from Cabbage Tree Road.</li> <li>Rainwater tanks at office and workshop area to collect rainwater from rooved areas for use in dust suppression.</li> <li>Water demand estimated at less than 140KL per annum.</li> <li>No groundwater use.</li> <li>No capture or storage of surface runoff.</li> </ul>
Employment	Full time staff for up to six persons. Opportunities for approximately 20 contract and customer truck haulage operators.
Community and amenity	<ul> <li>The following measures are proposed to mitigate and offset adverse impacts to the community:</li> <li>Up to \$17.5 million over the Project life in royalty payments to Port Stephens Council.</li> <li>A 20 m vegetated buffer from Cabbage Tree Road to minimise visual impacts for passing motorists and adjacent residents.</li> <li>A 75m long road side buffer of retained vegetation along the sides on the access from Cabbage Tree Road.</li> <li>Real time triggers on air quality monitors to manage potential air quality impacts.</li> <li>Six monthly attended noise monitoring and noise model confirmation based on actual data prior to extraction of areas 8, 9 or 10 (estimated at Year 6).</li> </ul>
Biodiversity Offset Strategy	<ul> <li>A biodiversity offset strategy that incorporates:</li> <li>The in-perpetuity conservation of the remaining subject land, through the establishment of a Biobank Site.</li> <li>Purchase and retirement of additional Koala species credits, as required to meet credit requirements at the impact site.</li> <li>Reinstatement of lost hollows with suitable nest boxes within rehabilitation area at a ratio of one to one.</li> <li>Long term conservation and security of the majority of the rehabilitated lands.</li> </ul>





Figure 1: Location of the Cabbage Tree Road Sand Quarry











Figure 3: Subject land, resource boundary, , surrounding receptors and proposed onsite offset areas (note offsite offsets not secured by end of period). Progress shown at end of period in aerial imagery, also refer to Figure 4 below.



#### 1.4 ENVIRONMENTAL SETTING

Key environmental attributes of the subject land and surrounds are:

- Landform
  - The site is located on the southern margin of an inner coastal dune barrier system and involves the removal of vegetated Pleistocene age sand dunes that adjoin the Holocene age swamp and tidal margins of Fullerton Cove to the south (Umwelt 2015).
  - Broadly, the landform comprises a gently sloping plain from 3 m AHD in the south to 5.5 m AHD in the north with a two prominent sand dunes reaching up to 17 m AHD elevation, separated by low lying swamp area of 2 m AHD that drains to the east.

#### Water

- The majority of the Project is above the Tomago sand beds (a source for up to 25% of Newcastle's water supply) and as such is within the Hunter Water designated special area under the Hunter Water Regulation 2010.
- The subject land does not contain any defined natural drainage lines, suggesting vertical infiltration into the sand is dominant over runoff and horizontal movement of water.
- The area surrounding the Project Area is frequently water logged during high rainfall, with the groundwater close to the surface.
- The area lies just inside the boundary of PFAS management zones, necessitating diligence in groundwater management.

#### • Ecology

- The low-lying Swamp mahogany paperbark community is listed as an endangered ecological community protected under NSW legislation.
- o The subject land contains preferred and supplementary Koala habitat.
- The Project area and subject land comprises threatened flora Earp's Gum and Camfield's stringybark protected under State and Commonwealth legislation.

#### Weather

- Weather data is available at the Bureau of Meteorological Station located at the Williamtown Airport approximately 4 km to the north east of the northern portion of the
- Summer mornings have light variable vectors that are slightly dominant from the south, until morning vectors through Autumn strengthen from the north west and west and become dominant right through the year until November.
- Summer afternoon vectors are typical of the coastal location with strong onshore winds from the south, south east and east. As winter approaches vectors from the west and north west increase, before westerly and north westerly vectors become dominant. By spring south easterly vectors increase in in dominance during the lead in to summer.
- The most sensitive time of year for the Project is likely to be during winter north westerly vectors dominate throughout both morning and afternoon periods . Figure 4 illustrates long term average temperature, evaporation and rainfall data from the Williamtown Airport Bureau of Meteorological Station.
- Evaporation rates are highest during summer, and are greater than the rate of rainfall.
   The evaporation rate is similar or less than rainfall rate during the months May, June and July.
- o The driest month on average is September, with the wettest in June.





## Figure 4: Long term monthly average rainfall, evaporation, minimum and maximum temperatures against the 2020 records from the Williamtown Airport weather station



#### 1.5 COMMUNITY OVERVIEW

Dwellings surrounding the subject land comprise:

- No dwellings located to the north.
- East: closest dwelling is 244 m. 15 dwellings are located within 1,000 m to the east and north of Cabbage Tree Road.
- South: closest dwelling is 61 m. 29 dwellings are located within 1,000 m to the south and south of Cabbage Tree Road.
- West: closest dwelling is 83 m. 24 dwellings located within 1,000m to the west and north of Cabbage Tree Road.
- Majority of dwellings located below 3 m AHD.
- The subject land and properties immediately surrounding the area are located within the red zone for the RAAF PFAS contamination. It is noted that a low concentration contamination plume extends over only a portion of the site and some residences south and east of the Project.

Refer to Figure 11 for locations of receptors surrounding the Project.



## 2. WORKS DURING PERIOD

Construction continued from the previous period, with a notice of formal completion for the intersection with Cabbage Tree Road being issued on 14 May 2020. The first truck transported sand via the completed intersection on 18 May 2020.

Disturbance at the end of the period is shown in **Figure 5**.

## 2.1 ACTIVITIES DURING PREVIOUS PERIODS

Construction started on 14 August 2019 and continued through to the end of the 2019 period. During the 2019 reporting period the following construction activities were performed:

- Clearing of vegetation for development.
- Earthworks for infrastructure development including:
  - o Intersection with Cabbage Tree Road.
  - o Topsoil batters.
  - o Excavation for pads for office area and operator compound.
  - o Stockpiling of raw bulk excavated material for future use.
- Commencement of building of within the Stage 1 clearing area including:
  - o Access Roads.
  - o Office Area.
  - o Operators Compound.
  - o Weighbridge.
  - o Workshop area.
  - o Security camera installation.
  - o Irrigation system for batters.

#### 2.2 ACTIVITIES PERFORMED DURING THE 2020 REPORTING PERIOD

'*Quarrying Operations*' as defined by the Development Consent commenced on 18 May 2019 when the first laden truck transported sand product from the site. Construction activities associated with the access road and intersection occurred during the first 4 months of 2020.

During the reporting period the following construction activities were performed:

- The internal access road was sealed.
- The intersection received final notice of completion on 14 May 2020.



During the reporting period the following operational activities were performed:

- Erection of frog fence around perimeter of Sector 1A and 2.
- Erection of frog fence along boundary of the access road between the northern and southern resource areas and around Sectors 3 and 3A.
- Clearing of vegetation within Sectors 1A and 2 on 23, 24, and 27 July 2020.
- Clearing of vegetation within the southern portion of Sector 3 (in the northern resource area) on 4 December 2020.
- Extraction within Areas 1, 1A, 2 and 3. During 2020, 124,310.70 tonnes of sand was extracted from the site since commencement of operations in May 2018. Prior to the completion of construction 5,000 tonnes was extracted for a glass sand trial in late March early April 2020 consistent with Modification 1.
- With no quarry floor exposed to enable any final rehabilitation, rehabilitation related activities onsite were limited to the improvement of the rehabilitation on the temporary and permanent roadside batters.

Survey plans by Centurion Civil illustrating area cleared at the end of the period and the proximity to the maximum extraction depth are shown in Figures 4, 5 and 6. Extraction levels are consistent with the quarry approval and are more than 0.7m above the maximum predicted water table. The maximum predicted water table is currently significantly above the actual water table onsite during the period (See Section 5.1.4).



Photograph 1: Temporary batter stabilisation along the boundary of the access road / office area and Sector 9.





Photograph 2: Fencing installed along Cabbage Tree Road and the access road into the quarry



Photograph 3: Rehabilitation progression within the stockpile area within Sector 9.





Photograph 4: Frog exclusion fencing along the northern boundary of Sector 2, extraction occurring with Sector 1A / 2.



Photograph 5: Frog exclusion fencing installed around the perimeter of Sectors 3 and 4





Figure 5: Survey extraction compliance overview plan (Centurion Civil Pty Ltd)





Figure 6: Survey extraction compliance southern area / Sectors 1, 1A and 2 (Centurion Civil Pty Ltd)





#### Figure 7: Survey extraction compliance for northern area / Sector 3 (Centurion Civil Pty Ltd)



## 2.3 FORECAST FOR FUTURE OPERATIONS

Throughout the next period (calendar year 2021) the operations will continue to be developed and refined with the operations responding to the sand resource and market demands.

A modification to the Development Consent was sort in November 2020, and was subsequently approved in March 2021. The wash plant is expected to be installed on the site in April 2021. The wash plant is intended to minimise double handling of sand resources, and improve utilisation of the available resource through the reduction of the silt content.

Rehabilitation of the floor of Sector 1A and 2 is expected toward the second half of 2021, pending ability to process and sell sand.



## 3. APPROVALS AND LICENCES

#### 3.1 NSW DEVELOPMENT CONSENT

Project Approval was granted under the *Environmental Planning and Assessment Act* 1979 by the NSW Independent Planning Commission on 9 May 2018 (amended on 26 March 2020) subject to Development Consent SSD-6125 conditions (**Appendix 1**).

#### 3.2 COMMONWEALTH APPROVAL

Commonwealth Approval was granted on 12 December 2018 to undertake the project. Conditions of the approval are based largely on the NSW approval with some additional checks and to ensure compliance.

#### 3.3 PERMITS AND LICENCES

#### 3.3.1 Environment Protection Licence

Environment Protection Licence (EPL) 21264 has been issued by the NSW Environment Protection Authority (EPA) under the *Protection of Environment Operations Act 1997*. Pursuant to Schedule 1, Clause 16 "Crushing, grinding or separating" and Clause 19 "Extractive activities".

#### **3.3.2 Further Permits and Licences**

The following permits and licences are required and in place to construct and operate the quarry:

- Permit under Section 138 of the Roads Act 1993 from PSC / RMS.
  - This has been attained and is no longer required with the completion of the intersection.
- Hunter Water agreement to undertake extractive industries within the Tomago Special Area.
  - o This has been attained.
- Lease for the land with Port Stephens Council.



o This has been attained.

### 3.4 LEGISLATION

In addition to specific requirements referred to project approvals and licences, the Project is to be conducted in accordance with all relevant Commonwealth and New South Wales legislation outlined in **Table 7**.

	-
Act	Jurisdiction
Environment Protection and Biodiversity Conservation Act 1999	Commonwealth
Environmental Planning and Assessment Act 1979	New South Wales
Biodiversity Conservation Act 2016	New South Wales
Biosecurity Act 2015	New South Wales
Protection of the Environment Operations Act 1997	New South Wales
Roads Act 1993	New South Wales
Waste Avoidance and Resource Recovery Act 2001	New South Wales
Water Management Act 2000	New South Wales

 Table 7:
 NSW and Commonwealth legislation applicable to the Project.



## 4. ADMINISTRATIVE CONDITIONS

### 4.1 SCHEDULE 2 CLAUSE 18 – PRODUCTION DATA

Quarry production commenced on 18 May 2020 with the first product truck (outside of the glass sand trail) being dispatched from site. Production for 2020 is summarised below in **Table 8**.

Aspect	Tonnes	Comments
Total extraction of 'Natural Sand' from the quarry in 2020	124,310.70+ 5,000 tonnes for glass sand trial.	<ul> <li>'Natural Sand' is the reportable attribute for Division of Resources and Geosciences</li> <li>Over 50% was sold as concrete sand, with remainder made up by glass sand, landscape sand and fill sand.</li> <li>Almost 77% of sand sold from the quarry was screened prior to sale.</li> </ul>
Approved Maximum Extraction	530,000.00	• 23% of the approved maximum extraction rate was extracted
Anticipated Year 1 production in EIS	250,000.00	• 75% of anticipated sales for Year 1 of EIS, normalised for 12 months of operations.
Employment	Approximately six full time equivalent employees were employed at the quarry during operations in 2020. This includes contract machinery operators, but excludes truck drivers.	
Total No. of Trucks	3,715 trucks collected sand from the quarry.	
Truck Drivers	266 different truck drivers with minimum of one load, maximum of 316 loads averaging 14 loads per driver.	

 Table 8:
 Production and employment data

## 4.2 SCHEDULE 2 CLAUSE 21 – CONTRIBUTIONS TO COUNCIL

No Construction Certificates have been required for the earthworks and installation associated with temporary structures which construction has been limited to, therefore no Contributions were required during the reporting period.

A levy to the Council has been paid in accordance with the lease agreement for each tonne of sand sold from the quarry.



## 5. MONITORING RESULTS

#### 5.1 WATER MONITORING

Throughout the reporting period water monitoring data continued to be collected, extending on the existing baseline data collected in 2019 and extending the baseline data collected during the EIS to enable a better assessment of potential changes in water quality and levels as a result of the quarrying operations. Kleinfelder are engaged to conduct water monitoring on behalf of Newcastle Sand.

#### 5.1.1 Regulatory Requirements

Water monitoring is managed by the approved Soil and water Management Plan required by the Development Consent.

#### 5.1.2 Water Quality Report - Summary

As per the requirement of the Soil and Water Management Plan, water monitoring has been performed since February 2019. Two years of sampling have now been undertaken, allowing data to be compared previous monitoring years, as well as against historical data. A summary of water monitoring for 2020 has been included in **Appendix 5**, documenting the following keys aspects:

- Monitoring results recorded in 2020.
- Comparison of results with 2019 monitoring results and trigger values established in the baseline report that incorporated past data records and accepted water quality guidelines, including:
  - Australian and New Zealand Environmental Conservation Council (ANZECC)
     Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000
     triggers for slightly disturbed ecosystems.
  - National Health and Medical Research Council Australian Drinking Water Guidelines 2018 and HEPA NEMP (2018).

In the Water Quality Report, Kleinfelder concluded that the sampling program had successfully completed the requirements of the EPL and SWMP. The report notes that while results for 2020 were generally consistent with historical trends, the increased rainfall in 2020 relative to the dryer 2019 results resulted in some elevated concentrations.

The findings of the report are summarised below with the full report available in **Appendix 5**.



#### 5.1.3 Water Monitoring Network

Water monitoring was initiated in February 2019 and has continued through 2020. Sampling times were generally consistent, undertaken each time within the middle of the month (between the 11th and 18th of the month).

In August 2020, BH9A was installed along the southern perimeter of the site at request of DPIE to enable sampling of deeper groundwaters that were below that available at BH9.

The water monitoring network is presented in Figure 9.

#### 5.1.4 Water Levels

Groundwater levels increased throughout 2020, after previously dry conditions that occurred throughout 2019 (**Figure 10** and **Appendix 5** – **Plate 20**). Above average rainfall was recorded for the month of February, however higher than average rainfall in the second half of the year made the most notable change to groundwater levels, with above average rainfall being recorded in July, October and December. **Figure 8** presents the monthly rainfall recorded at Williamtown RAAF and shows during 2020 there was cumulatively approximately 239 mm more rainfall than average. For context, 2019 was 485mm below average, so water levels onsite would still be expected be lower than average. **Figure 10** provides a graphical representation of groundwater elevation identified during gauging at each location.



Figure 8:2020 Monthly Rainfall Totals (Williamtown RAAF) and variation from average











Figure 10: Monthly groundwater elevation from manual gauging and 2019 monthly rainfall

Generally, groundwater elevation was higher for all sites in the second half of 2020 compared to the first half, due to high rainfall. There were some exceptions. BH9 remained dry for much of the 2020 monitoring program, after similar outcomes across 2019 monitoring. Samples were obtained in August and October where small volumes of water were able to be captured within the base of the well, with a bailer. An additional sampling location was installed named BH9A, and sampling data was collected here from September 2020 onward. BH10 remained dry for the entirety of 2020, after being infiltrated by roots the previous year. SW02 was also dry for the year, while SW3 & SW4 were only dry in January, due to the preceding dry conditions.

Groundwater levels are evaluated on a monthly basis against the trigger action response plan levels defined within the Maximum Extraction Depth Report, each of these is presented within the Monthly Water Monitoring Reports in **Appendix 5**. In addition, monthly groundwater levels are plotted within **Appendix 6** for key bores against the maximum predicted groundwater level (i.e. the level that determines the maximum extraction depth).

#### 5.1.5 Water Quality and Data Trends

The sample results obtained were generally found to be consistent with historical trends. Up until the end of the monitoring period the sampling has not indicated a change in the groundwater or surface water conditions across the site resulting from the quarry activities.


It is noted that background sampling was undertaken during a significant drought period and that this sampling period saw a return of more normal rainfall conditions, however, cumulatively rainfall for the two years ended December 2020 was 246mm lower than average.

Some of the sampling results from early in the year were found to be elevated (compared to background results); however, were found to reduce quickly in subsequent monitoring rounds, this is considered likely due to the increased rainfall in comparison to the background sampling events.

A summary of the analysis of monitoring observations and trends is included below and a complete set of water quality graphs is included for reference within **Appendix 5**, **Plate 1-20**:

- pH: for the site remains generally consistent with historic data for both groundwater and surface water However downward trends were observed for BH4, MW239S and SW3. There was an upward trend recorded at SW4.
- Electrical conductivity (EC) in groundwater was generally consistent and within historical variations at the Site indicating a stable to slight increase in trends throughout the sampling program. A notable spike in concentration was observed at BH4 in May 2020 which subsequently decreased to within historical variations. EC in surface waters were generally consistent throughout the 2020 monitoring program with the exception of SW1. A significant decrease in levels followed on from the 2019 monitoring program and continued through to the April 2020 monitoring event which subsequently stabilised for the remainder of 2020. A general decrease trend for EC is evident at all surface water locations throughout the 2020 monitoring program.
- Iron (Fe) remained consistent with historic variations (Plate 5, Appendix 5).
- Manganese (Mn) levels remained consistent with historic variations for most wells. Elevated levels were detected at BH9A after installation, and these levels decreased in subsequent samples (**Plate 6, Appendix 5**).
- Copper (Cu) was elevated for BH1, BH2, BH4 and BH8 reaching peak levels in April and October 2020, during which time all groundwater monitoring locations more elevated, and these levels generally decreased over October to December from their highest concentrations, to within a level similar to historic variation (Plate 4, Appendix 5).
- Barium Concentrations in groundwater were generally consistent throughout the 2020 monitoring period with the exception of BH6. Concentrations reported at BH6 were generally elevated when compared to the 2019 monitoring.
- Chromium Concentrations in groundwater were generally consistent throughout the 2020 monitoring period either below or marginally elevated above the reporting limits. Concentrations of chromium in surface waters were generally consistent throughout the 2020 monitoring period with the exception of SW1. Concentrations of chromium were elevated above the Baseline Trigger Values (0.002 mg/L) for the first part of the monitoring period (February May 2020). A notable decrease in concentrations were reported in the months following the May monitoring event to below reporting limits.



- Zinc Concentrations of zinc were found to be consistent across the year and with historical trends for both ground and surface water with the exception of monitoring location SW4.
- Total petroleum hydrocarbons (TPH) were below reporting levels across the site except for BH4 and BH11. The elevated levels were recorded in April (TRH >C<sub>16</sub>-C<sub>34</sub> at 310 µg/L) and in May (580 µg/L) and this was above trigger levels and the elevated levels recorded in the previous year.
- PFAS were below laboratory reporting levels for 2020 for all but one of the groundwater sampling locations. PFAS was detected at BH9 in both 2019 and 2020. BH9 had become dry, and an additional sampling location (BH9A) was installed and sampled, and no PFAS was detected at this location. Surface waters showed PFAS at SW1, and SW4 for both 2019 and 2020. PFAS levels at all other surface water sampling locations was below reporting limits (Plate 9, Appendix 5).
- Total Phosphorus Concentrations were generally consistent with historical concentrations with the exception of a notable spike at BH11 in May 2020. Concentrations throughout the 2020 monitoring period reported downward trends in concentrations. Concentrations in surface waters were generally consistent with historical concentrations.
- Total Nitrogen Concentrations groundwater were generally consistent with historical variations. Concentrations throughout the 2020 monitoring period reported downward trends in concentrations with the exception of BH2 which reported upward trend in concentration. Concentrations in surface waters were generally consistent with historical concentrations. A general downward trend in concentration was reported for all surface water locations.



## 5.2 FROG MONITORING

Targeted fauna monitoring for the Mahony's Toadlet *(Uperoleia mahonyi)* and Wallum Froglet *(Crinia tinnula)* was conducted by Kleinfelder ecologists during two discreet monitoring events that were conducted between Spring and Autumn 2020 after a sufficient rainfall event had occurred consistent with the BRMP. The surveys are undertaken at sites were Mahony's Toadlet was recorded in optimal conditions in 2018. Surveys occurred on 26 March 2020 and 11 November 2020.

During March 2020, conditions were not optimal despite recent rainfall as water was insufficient to pool within the survey locations. The Wallum Froglet was found in two of the seven locations inspected, while no Mahony's Toadlet was found. A total of four different frog species were recorded in the March survey.

During November 2020, conditions had improved and where pooling water was present the Mahony's Toadlet was detected at three sites. The Wallum Froglet was detected at one location. A total of eight different frog species were recorded in the November survey.

Survey site 1 is located downgradient of the construction area and was one of three sites where Mahony's Toadlet was recorded in November 2020.

The surveys highlight the importance of not only receiving adequate rainfall, but also for pooling water to be present during surveys to detect these frog species. Pooling water in this sandy environment is related to proximity of the groundwater, extended dry periods result in reduced groundwater levels and quicker absorption of rainfall events.

The survey report is included as **Appendix 7**.



### 5.3 NOISE & VIBRATION MONITORING

#### 5.3.1 Construction Noise and Vibration

Noise monitoring events have occurred as per the requirements of the construction management plan. Four noise monitoring events occurred during the reporting period. The results which demonstrate compliance with the criteria are presented in **Table 9**, with the accompanying report provided in **Appendix 11**.

As per Schedule 3 Clause 3 of the project approval, the noise criteria for the project excludes road construction activities associated with the intersection of the quarry access road and Cabbage Tree Road, where a criteria of .48 - 51 dB(A) is considered noise affected, and greater than 75 dB(A) is highly noise affected.

Monitoring was undertaken by Spectrum Acoustics.

Table 9:	Construction noise monitoring – LAeq(15min) at Receptor R40 opposite quarry
	entrance

Date	TOTAL (dB)	Traffic (dB)	Wind (dB)	Sand mine (source (dB))	Operational Criterion* (dB)	Comply (Y/N)	Site Activities
22/01/2020	62	59	41	25	43	Y	<ul> <li>Box out subgrade CH 630-530.</li> <li>Completing water main testing.</li> </ul>
12/02/2020	68	68	NA	30	43	Y	<ul> <li>Place DGB 20 on intersection.</li> <li>Box out retaining wall footing.</li> </ul>
03/03/2020	65	65	NA	35	43	Y	<ul> <li>Tandem Rolling on Cabbage Tree Road</li> </ul>
28/04/2020	74	72	NA	69	43	Y	<ul> <li>Asphalt Sawing on Cabbage Tree Road</li> <li>Pneumatic Rolling on Cabbage Tree Road</li> </ul>
* Works subj	ect to Interi dB(A), an	im Construc Id highly noi	tion Noise Guidel ise affected is 75 (	ine, where guide i dB(A). Levels of 62	is background p 2dB(A) were pre	lus 10dB i dicted in	s noise affected (48-51 the EIS.

Spectrum Acoustics measured vibration levels using a Profound Vibra+ Tri-Axial Groundbourne Vibration Meter, placed on the hardstand frontage of the property at monitoring location R40. The allowable limit for peak particle velocity (PPV) is 5mm/s. The trigger level of the meter was set to 0.5mm/s and <u>there was no exceedance at any point throughout these</u> <u>monitoring periods</u>, with a maximum reading registered at 1.1mm/s due to operation of the vibrating roller along the northern edge of Cabbage Tree Road.



### 5.3.2 Operational Noise Monitoring

With the quarry becoming operational in May 2020 noise monitoring was undertaken on a quarterly basis as prescribed within the NMP and EPL. Monitoring occurred as follows:

- 25-27 June 2020.
- 28-30th September 2020
- 29-31st December 2020

Under each monitoring event completed, that occurs for the 30 minute (morning-shoulder) and 1.5 hour (day) compliance measurement periods, the noise from sand quarry was inaudible at the monitoring location. On each occasion, traffic was the dominant noise source.

### 5.3.3 Noise Data Trends Over Life of Project

The construction phase commenced on 14 August 2019. As such this AEMR presents the first noise monitoring data to be recorded.

Construction noise levels experienced by neighbouring properties were relative to the type and location of works performed. The highest levels were experienced for short durations associated with the intersection construction. These levels were slightly higher than that predicted within the EIS for short durations, but did not exceed criteria for highly noise affected properties, and quarrying activities were typically substantially quieter than the road noise associated with Cabbage Tree Road.

Operational quarrying activities have generally not been audible at neighbouring properties.

#### 5.3.4 Noise Complaints

Three complaints related to noise, and three complaints related to vibration during the reporting period. The matters are described and have been closed out as shown within **Table 17**.



## 5.1 AIR QUALITY

This section addresses compliance with the approved Air Quality Management Plant (AQMP) required by Condition 9 of Schedule 3 of the Development Consent (SSD-6125). While quarrying did not occur during the reporting period with only construction activities occurring, the monitoring network has been established at the earliest feasible opportunity, prior to the commencement of quarrying onsite to better establish site-specific background conditions as per the commitment within the AQMP. Air monitoring commenced at all sites on 14 September 2019.

#### 5.1.1 Regulatory Requirements

Air Quality is governed by the regulatory approved AQMP. The AQMP provides a formal framework for ongoing monitoring of air quality at the site to manage the potential impact of sand extraction on air quality.

#### 5.1.2 Air Quality Monitoring Network

The air quality monitoring network comprises of the following key components:

- Two Beta Attenuation Monitors (BAM) real-time compliance monitors (RT1 and RT2) measuring PM<sub>10</sub> installed between the quarry and dwellings to the south and west of the quarry. Each real-time monitor is fitted with wind direction sensors to enable contributions from the quarry to be better determined.
- A High-Volume Air Sampler (HVAS) with a PM<sub>10</sub> inlet is located to the east of the quarry.
- A HVAS measuring TSP is located to the south of the quarry, adjacent to RT2.

The network has been established prior to the commencement of quarrying onsite to better establish site-specific background conditions.

Locations of the installed air quality monitoring units are provided in Figure 11.

WSS utilise local meteorological data to observe current and predicted wind speed and direction data and also generate site specific meteorological data records. The current method is to access Bureau of Meteorology forecasts on a daily basis to allow preparedness for elevated wind and potential air quality control requirements.





#### Figure 11: Air Quality Monitoring Network Locations



### 5.1.3 Air Quality Criteria

Newcastle Sand *"must ensure that <u>all reasonable and feasible avoidance and mitigation</u> <u>measures</u> are employed so that particulate matter emissions generated by the development do not cause exceedances of the criteria" in Table 10 at any residence on privately-owned land..* 

#### Table 10:Air Quality Criteria

Pollutant	Averaging Period	Criteria*
Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	<sup>a c</sup> 25 μg/m <sup>3</sup>
Particulate matter < 10 µm (PM <sub>10</sub> )	24-hour	<sup>ь</sup> 50 μg/m³
Total suspended particulates (TSP)	Annual	<sup>a c</sup> 90 µg/m <sup>3</sup>

Where:

a - Cumulative impact (i.e. increase in concentrations due to the project plus background concentrations due to all other sources)

b - Incremental impact (i.e. increase in concentrations alone, with zero allowable exceedances of the criteria over the life of the project)

c - Excludes extraordinary events such as bushfire, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by DPIE.

\* Based on standard air quality assessment criteria in the Approved Methods for Modelling and Assessment of Air Pollutants in NSW 2007

### 5.1.4 Review of Air Quality Results

Data represented below summarises the air quality monitoring results at each of the monitoring sites for the reporting period.

#### 5.1.4.1 High Volume Air Samplers (HVAS)

**Figure 12** and **Figure 13** show the monitoring results for  $PM_{10}$  and TSP in  $\mu g/m^3$ . Measured over 24 hours every 6 days for each of the monitoring locations during the reporting period.

Over the 12-month period the average PM10 reached **16.3 \mug/m<sup>3</sup>** against the limit of 25  $\mu$ g/m<sup>3</sup>. Therefore there has been no exceedance of annual average PM10 levels. Over the same period the average at the Beresfield DPIE monitoring station, located 13 km west (and upwind) of the site and HVAS monitors, was 31.02  $\mu$ g/m<sup>3</sup>.

On one occasion (Sunday 30 August) results from the PM10 showed 51.6  $\mu$ g/m<sup>3</sup>, no production or haulage occurred at the quarry on this day, as such this level must be related to other local factors. In addition, given the criteria of 50  $\mu$ g/m<sup>3</sup> for the project is based on an incremental impact, an effective upwind sampling site is the Beresfield DPIE monitoring station which showed daily average levels of 14.4  $\mu$ g/m<sup>3</sup> for the same day showing the negligible potential for contributions from the site alone exceeding 50  $\mu$ g/m<sup>3</sup>.

For TSP, over the 12-month period, the average reached **42.0**  $\mu$ g/m<sup>3</sup> against the limit of 90  $\mu$ g/m<sup>3</sup>. Therefore there has been no exceedance of criteria for annual average TSP levels during this period.





# Figure 12: HVAS (PM10) sample results from 14 September 2019 to 31 December 2020, shows DPIE Beresfield site for context on regional conditions





#### Figure 13: HVAS (TSP) sample results from 14 September 2019 to 31 December 2020



#### 5.1.4.2 BAM Monitoring

Two real-time monitors, which measure  $PM_{10}$  on a real-time continuous basis, have been installed as a management tool for quarry operations to guide proactive and reactive mitigation measures. The air quality management framework is based on a series of staged reactive measures taking into consideration the prevailing winds and measured PM10 levels, that enable the quarry operators to make proactive decisions on what changes may be required to site operations to maintain air quality levels below the relevant criteria.

RT1 is located to the west of the quarry, while RT2 is to the south. RT1 enables the determination of reasonable background conditions during a north-westerly wind such that the contribution of the quarry to the dust measured at RT2 can be determined, and vice-versa during a south-easterly wind.

Over the period the strongest and most persistent winds occurred from the north west direction, and are considered to be the weather conditions onsite likely to have the greatest potential for air quality impacts at receptors south of the quarry.

Monitoring results for the reporting period are shown in **Figure 14** and below in **Table 6**. The BAM results are generally consistent with those measured by the HVAS units. The annual average results from the BAM units show RT2 (south of the quarry), has on average been higher showing the quarry has contributed to an increase in air quality levels. Isolated occurrences of higher dust levels have occurred either on a weekend or during regional dust events. There has been no exceedance of the Annual Average or 24 hour average criteria.

In addition as the quarry moves further north away from receptors air quality impacts would be expected to decrease.

BAM Monitoring Station	2019 4 Month Average (µg/m³)	2020 12 Month Average (µg/m³)	Annual average criteria (µg/m³)
<b>RT1</b> (north of Cabbage Tree Road)	23.8	12.21	
<b>RT1 Adjusted</b> (excluding data from October 30 to 23 December accounting for bushfire related impacts)	16.3	NA	25 #
RT2 (south of Cabbage Tree Road)	26.1	15.0	20
<b>RT2 Adjusted</b> (excluding data from October 30 to 23 December accounting for bushfire related impacts)	18.5	NA	
# – Excludes extraordinary events such as bus incidents or any other activity agreed by DPIE.	hfire, prescribed burn	ing, dust storms, s	ea fog, fire

#### Table 11:BAM monitoring results for 2020





Figure 14: Analysis of Real-Time Air quality data from commencement of monitoring, includes DPIE Beresfield station for context.



### 5.1.5 Trigger Response Effectiveness

The air quality management plan provides for a series of control measures to actively reduce air quality emissions from the quarry through the use of the near-real-time BAM air quality monitors. The Stage 1 trigger is routinely applied, even in the absence of any specific triggers.

During August 2020, where winds are at their strongest and most persistent from the north west, the Quarry Manager actively reviewed changing conditions onsite, the weather and air quality results. This resulted in the progressive shutdown of all machinery onsite and increased use of all dust suppression systems. These measures appeared to assist in maintaining the contribution levels of the quarry below criteria.

### 5.1.6 Monitoring Performance for the Period

Over the period there has several occurrences where various components of the monitoring system that have not performed as expected. On each occasion the matter was addressed in the following manner:

- Observation of problem.
- Local technician or quarry manager inspect the unit and where possible resolves issue.
- Where local technician or quarry manager is unable to resolve matter seek assistance of installer via phone (Thomson Environmental Services TES installed and supported operations).
- If matter can not be resolved over the phone, arrange for TES technician to attend site and resolve issue.
- Where TES technician can not resolve issue, a substitute monitor, where available, is installed while the monitor is fixed.

**Table 12** provides notes with respect to the performance of the BAM units and notable local issues that may have affected air quality during the period. During early 2021, an intermittent electrical fault was detected on the RT1 monitor that resulted in power failures following some wet weather events. This has now been corrected.

#### Table 12: Operational performance notes

Month	Comments
	- Machine error on RT1, average corrected with RT2 data. Service technician booked.
January 2020	- Power lost to both units during storm 28/01/2020
	- HVAS 1 and HVAS 2 , machine error due to software. No data until date reset 10/01/2020



Month	Comments
February 2020	- Machine error on RT1, average corrected with RT2 data. Service technician booked.
March 2020	- Machine error on RT1, average corrected with RT2 data. – RT1 serviced on 4/3/2020.
May 2020	<ul> <li>Machine error on RT1, average corrected with RT2 data.</li> <li>Calibration on BAM and HVAS units</li> </ul>
June 2020	- Machine error on RT1, average corrected with RT2 data.
July 2020	<ul> <li>Machine error on RT1, average corrected with RT2 data.</li> <li>TES technician inspected site during July</li> </ul>
August 2020	- Site experienced seasonal increase in windy weather
September 2020	<ul> <li>Machine error on RT2, average corrected with RT1 data.</li> <li>error occurred after thunderstorm within local area</li> </ul>
October 2020	<ul> <li>Machine (Online logging) error continued on RT2</li> <li>Logger removed for service offsite.</li> <li>Results for RT2 provided directly from the Machine by Thompson</li> </ul>
November 2020	<ul> <li>Machine (Online logging) error continued on RT2</li> <li>Results for RT2 provided directly from the Machine by Thompson</li> </ul>
December 2020	<ul> <li>Machine (Online logging) error fixed on RT2, Results for RT2 provided directly from the Machine by Thompson up to 18/12/2020</li> <li>Machine error at RT2 displaying inaccurate results, machine to be serviced early 2021.</li> </ul>

### 5.1.7 Air Quality Complaints

No complaints were received in relation to air quality during the period.



### 5.2 TRUCK MONITORING

The quarry weighbridge system provides for the logging of all sand sales for the quarry. The system is has been established and calibrated by an accredited contractor and limits the tickets that can be issued during any one hour to the levels prescribed by the Development Consent. On a monthly basis, a summary of the records is uploaded to the Newcastle Sand website (www.newcastlesand.com.au). A copy of these records is included within **Appendix 13**.

Complaints have been received during the period relating to trucks. Refer to Section 8.

Newcastle Sand is actively working with haulage contractors to improve driving behaviours through the induction of all drivers and provision of the Drivers Code of Conduct. Where drivers have arrived prior to opening time, Newcastle Sand implements disciplinary action in order to attempt to limit recurrence. However, it is noted that the ability and perhaps permissibility of Newcastle Sand to control truck driver behaviour outside the bounds of the quarry is limited.



## 6. SCHEDULE 2 CLAUSE 48 – REVIEW OF PFAS EXPOSURE PATHWAYS

WSS engaged suitably qualified and experienced independent expert, approved by the Secretary, to perform as review of PFAS exposure pathways as required by Schedule 2 Clause 48 of the Development Consent.

The report concluded that:

- Base-sourced PFAS is, and has historically been unlikely to be transported to the Site via wind, surface water or groundwater – the Site does not appear to have received PFAS from the Base and does not appear to be acting as a local tertiary PFAS source because:
  - PFAS have not been reported within Site media (shallow and deep soil, surface water and groundwater) which is consistent with the results from the investigation undertaken by the DoD.
- Quarrying has not been performed and has not increased the potential for contaminated groundwater to flow toward the Site's local area. The most probable effect of quarrying will be the formation of a temporary groundwater mound due to increased rainwater infiltration and decreased evapotranspiration, with the local groundwater flow regime unlikely to be influenced for an extended time-period. The influence of quarrying on the groundwater flow regime is expected to decrease the risk of Base derived PFAS.

The report includes a recommendation for the development of a numerical groundwater flow model, this is considered to be reasonably addressed by the existing EIS modelling and can be accounted for in revisions to modelling required under the consent in 2022.

Please refer to **Appendix 12** for the full report.



## 7. ENVIRONMENTAL PERFORMANCE

### 7.1 CLEARING AND REHABILITATION AREAS

Table 13 provides summary clearing and rehabilitation since commencement of the quarry.

Year	Total Area Disturbed	Area Cleared	Area Stripped of Topsoil	Operational Area <sup>1</sup>	Temporary Stabilisation <sup>2</sup>	Long Term Rehabilitation <sup>3</sup>
Footprint	42.3 hectares					
2019 August 2019 to 31 December 2019 Construction	3.98 ha 3.98 ha Total	3.98 ha 3.14 in Area 1 and 0.36 ha on intersection, 0.48 in Area 9 for stockpiling topsoil	3.5 ha	~2.95 ha	~0.35 ha	~0.20 ha
2020 Construction and operations	3.93 ha <b>7.91 Tota</b> l	3.93 ha 2.57 ha of Sector 1A, 2 in June 1.36 ha of Sector 3, 3A, 3B in December	+~3 ha 6.5 ha	6.5 ha	+~0.50 ha 0.85 ha	~0.20 ha

 Table 13:
 Clearing and rehabilitation area

1. Includes extraction, office and road areas.

2. Includes batters or topsoil stockpiles outside of short term disturbance areas where management of the batters

is undertaken, and will be disturbed during future extraction activities.

3. Includes those areas that are rehabilitated without expectation of future disturbance.

## 7.2 CLEARING ACTIVITIES

The clearing process typically involves the following process:

- Pegging of resource boundary.
- Pre-clearance ecological survey of area, including marking of habitat trees and recording of hollows using flagging tape and or spray paint (refer to **Photograph 6**).
- Mulching along inside of resource boundary.
- Erection of frog exclusion fencing.
- Where necessary mulching/ mowing of undergrowth to improve access for inspections and visibility of surface.



- Inspection for items of Aboriginal Heritage by Registered Aboriginal Parties (RAPs).
- Survey of the area by radiation specialist to account for unexpected buried radioactive monazite mineral sands left by RZM.
- Nocturnal survey of clearing area the night before clearing.
- Diurnal surveys each morning prior to clearing.
- Clearing of non-habitat trees, leaving habitat trees to stand for two nights prior to clearing.

Clearing activities and associated ecological inspections were undertaken consistent with the BRMP, copies of these letters are included within **Appendix 10**. The following clearing activities were undertaken during the period:

- On 12 June 2020, pre-clearance surveys were completed by Kleinfelder ecologists of Sectors 1A and 2, noting the following:
  - Inspection area is approximately 2.6 ha (note the 4.5 ha in Kleinfelder letter is in error).
  - Habitat trees were marked, recording 64 hollows requiring replacement at a ratio of 1:1 by Kleinfelder (note the letter incorrectly states only 25 hollows).
     This included 15 small hollows, 46 medium hollows and 3 large hollows.
  - Several trees showed signs of use for gliders with horizontal chew marks.
  - Four exotic weed species were identified.
  - Identification of hollows was made difficult due to charred timber obscuring depth perception (i.e. hollows observed from the ground may have no depth).
- On 10 July 2020, Kleinfelder ecologists conducted pre-installation inspections identifying 25 suitable locations for hollow installation, recording the tree species, diameter, install height, aspect and box type (7 small, 16 medium, 2 large).
- On 22 July 2020, a Kleinfelder ecologist conducted a nocturnal survey within Sectors 1A and 2, the survey was a meandering spotlight survey using call playback targeting Koala and Gliders. No fauna were detected.
- Clearing of Sectors 1A and 2 occurred on 23, 24, 27 July 2020, prior to commencing clearing on each day, a diurnal survey was undertaken. The following was identified during clearing:
  - Non-hollow bearing vegetation was cleared on 23 and 24 July.
  - Habitat trees were left to standing a minimum of two nights.
  - Hollows were inspected following clearing, no hollows were deemed by the ecologist to be suitable for relocation due to poor condition or damage.
  - One pair of Feathertail Gliders was found to be nesting within a small hollow, not identified in prior surveys. The gliders were relocated to the retained vegetation where nest boxes were installed prior to clearing.



- Seed from Smooth Barked Apple and Red Bloodwood was able to be collected from multiple felled individuals.
- No fauna injuries were reported.
- On 29 October 2020, Kleinfelder ecologists completed pre-clearance surveys of Sectors 3, 3A, 3B, 4, 4A and 4B. The intent of inspection of multiple sectors is to determine potential nest box requirements sufficiently in advance of clearing. The following was noted:
  - Area was approximately 6.5 hectares.
  - Survey included preclearance inspection prior to boundary slashing delineation.
  - 12 hollow bearing trees and two dead stags containing hollows were recorded, for a total of 14 small hollows. It is noted that no hollows were recorded here in previous surveys.
  - Several trees showed signs of use for gliders with horizontal chew marks.
  - Three fauna species were recorded during the survey, including a Lace Monitor, Eastern Bearded Dragon and White Throated Nightjar and nest (see Photograph 7). The nest area was flagged off to prevent harm.
  - Depth perception of hollows from the ground is difficult due to previous fires, this may increase the likelihood of a false positive (i.e. a hollow is recorded but isn't present).
  - There are no significant weeds present within the area, no separate stockpiling of weed contaminated soils is considered necessary for these areas.
- On 11 November 2020, a Kleinfelder ecologist conducted a pre-installation survey for nest boxes. The survey identified 39 additional nest box locations (due to error in previous count) and six additional boxes for the access road between the southern and northern resource areas.
- On 20 November 2020, a Kleinfelder ecologist conducted a pre-clearance inspection of the access road area marking one hollow bearing tree, with a suitable location marked adjacent to the disturbance area for placement of a nest box.
- On 2 December 2020, a Kleinfelder ecologist conducted a nocturnal fauna survey for Sectors 3, 3A, 4, 4A, 4B. One Brown Quail was detected during the survey and relocated to outside the resource area.
- On 4 December 2020, (clearing was delayed from starting on 3 December due to weather), a Kleinfelder ecologist supervised the clearing of non-hollow bearing vegetation from Sector 3, of a small portion of Sectors 3A and 3B, and a portion of the access road, the following observations were made:
  - The area cleared was approximately 1.36 ha.
  - Diurnal surveys were completed on the morning of clearing.



- The three habitat trees were not cleared and allowed to remain standing until a later date.
- One Koala was located within a Blackbutt tree (*Eucalyptus pilularis*) (see Photograph 8). Clearing operations were stopped immediately. Manual relocation of the koala was deemed to be hazardous to the welfare of the koala and it was left to relocate overnight. Clearing resumed away from the koala. Inspection of the location the following day failed to locate the koala and has moved into adjacent vegetation.



Photograph 6: Habitat trees recorded in June 2020 clearly marked with spray paint prior to clearing under supervision by an ecologist.



Photograph 7: White-throated Nightjar egg/nest recorded during pre-clearance surveys in October 2020 of Sector 3.





Photograph 8: Koala identified and avoided during clearing of Sector 3 in December 2020.

### 7.2.1 Habitat Trees and Nest Boxes

During the period pre-clearance surveys were undertaken to inspect the clearing areas for hollow bearing trees, as noted above. Once hollow type and number are recorded, Kleinfelder ecologists undertook nest box pre-installation inspections to identify suitable host trees, inspections were as follows:

- On 10 July 2020, Kleinfelder ecologists conducted pre-installation inspections identifying 25 suitable locations for hollow installation, recording the tree species, diameter, install height, aspect and box type (7 small, 16 medium, 2 large).
- On 11 November 2020, a Kleinfelder ecologist conducted a pre-installation survey for nest boxes. The survey identified 39 additional nest box locations (due to error in previous count) and six additional boxes for the access road between the southern and northern resource areas.

Nest boxes are installed by a tree climber under direction of an ecologist or quarry staff to ensure suitable height, aspect and location of nest box installation. Quarry staff completed inspections of the installed boxes 2-3 months after installation to check condition of boxes.

**Table 14** below provides a summary of the hollow inspection, removal and nest box replacement progress. As shown, based on current clearing, there are more than 14 extra hollows installed in adjoining vegetation.



Year	Hollows recorded in EIS for area disturbed	Hollows recorded in Preclearance Surveys <sup>#</sup>			Hollows	Nest Boxes Installed		
	in that year	Small	Medium	Large	Removed	Small <sup>1</sup>	Medium <sup>2</sup>	Large <sup>3</sup>
August 2019 to 31 December 2019 Construction	7	7	-	-	6	-	-	-
2020 – Sectors 1A	5	15	46	3	64	7	16	2
and 2		-	-	-		28	30	1
2020 – access road		6			Nil removed			
2020 – Sectors 3,3A, 4, 4A		14			Nil removed			
Total	99	42	46	3	70	35	46	3
TUTAT	33	86			70	84		
Net balar	Net balance of hollows removed to hollows installed					+14	1 - C	

#### Table 14: Hollow and nest box replacement summary

#. Past fires have resulted in burnt and broken limbs likely to result in false identification of hollows when inspecting from the ground level.

1. Small boxes suited to pygmy possums / micro bats.

2. Medium boxes suited to gliders.

3. Large boxes suited to possums.

## 7.3 RADIATION SURVEY

During the EIS development questions were raised about the potential location for a burial pit of naturally occurring radioactive sand (monazite) accumulated during the RZM mineral sand mining. Anecdotal evidence suggests that it is located outside the resource area, however definitive proof was not available. Conservatively, Schedule 3, Condition 46 was included in the Development Consent to further reduce risks of exposure of the radioactive sand. This section documents the surveys completed for this condition.

Radiation surveys were completed by Bartolo Safety Management Service as follows:

- 22 July 2020, Sectors 1A and 2 were surveyed. This area was not mined previously, as such the presence of concentrated monazite is highly unlikely.
- 1 December 2020, Sectors 3, 3A, 4 and 4A were surveyed. This area was mined previously, so while unlikely, buried monazite concentrates is possible.



No significant radioactive anomalies were identified during the surveys. A copy of the reports are enclosed in **Appendix 9**.

In addition, excavation activities during the period did not uncover any evidence of a buried monazite material (i.e. the reason for radiation surveys to be conducted).

### 7.4 HERITAGE MANAGEMENT

#### 7.4.1 Aboriginal Heritage

AHIMS site #38-4-1381 is located within Sector 8 and has not been disturbed.

The approved Aboriginal Cultural Heritage Management Plan (ACHMP) provides for the management of cultural material on the site in consultation with the Registered Aboriginal Stakeholders (RAPs). To account for the limited visibility during initial surveys and reduce the risk of destroying insitu camp sites, the ACMP provides the for the following procedure:

- Inspection of the extraction area prior to extraction, prior to topsoil stripping.
- Regular inspection of screen reject material. Screened material, was initially stockpiled for inspection, but is now laid out on a batter slope to provide improved visibility of the material, with an added benefit of provided batter stabilisation.
- RAPs collect and rebury artefacts onsite in nominated areas.

Consultation with the RAPs was undertaken during the period and has included the following inspections prior to clearing and topsoil stripping since the commencement of construction:

- Construction area (Sector 1) on 23 August 2019.
- Sectors 1A and 2 on 30 July 2020.
- Screened material inspection on 13 October 2020
- Sector 3.

Inspections undertaken to date have not identified any materials during the pre-extraction inspections, and it has been agreed by RAPs that the inspection of the screened material is adequate to recover material providing opportunity to complete this is provided every 2-3 months, subject to approval of an amend ACHMP.

Record of consultation with RAPs is included within **Appendix 8**.

#### 7.4.2 Historic Heritage

During construction no historic heritage items were identified on site. A concrete slab was located during excavations. This slab was located within south-west corner of the former cleared area understood to be used for silica sand extraction in the 1980s. The slab was inspected by an environmental consultant and Maxim Archaeology to determine whether it had



the potential to be related to the historic radar installation footings expected to be in the area as identified during the EIS process. The slab was uncovered and found to have no features relating to a radar installation and owing to the fine organic materials spreading from the slab in alluvial bands is expected to be related to a small wash plant or bath house type structure associated with the past silica sand extraction.

### 7.5 REHABILITATION

#### 7.5.1 Rehabilitation Bond

Under Schedule 3, Condition 38 of the consent a rehabilitation bond is to be calculated and verified by a suitably qualified quantity surveyor or expert to determine the bond necessary to cover the costs of the implementation of the Biodiversity and Rehabilitation Management Plan (BRMP) for the first three years of quarrying operations at the quarry.

DPIE approved the bond on 29 January 2020, for a total of \$259,278 (exclusive of GST), with payment of the bond on 5 February 2020.

#### 7.5.2 Rehabilitation Area

During the period, the first 4.5 months were associated with construction activities, and the remaining associated with operations. There has been no opportunity to expose any long term rehabilitation areas on the quarry floor as the variability of material and current processing limitations have restricted the ability to clear all resource from the quarry floor. **Table 13** provides a running tally of the areas cleared and under rehabilitation.

#### 7.5.3 Topsoil and Vegetation Management

During the period, vegetation from the areas cleared was stockpiled along the outside of the extraction area for later application on the rehabilitated quarry floor.

Topsoil was stripped at depths up to 300mm thick and stockpiled in the lowest feasible bunds with regard to available working areas toward the outside of the extraction area, typically inside the vegetation stockpile areas.

Some topsoil was stripped and applied to areas for rehabilitation.

#### 7.5.4 Temporary Stabilization Methods

The following measures have been evaluated and adopted:

• All batters and exposed soils are have a sprinkler system installed to enable rapid response to potential dust concerns and help vegetation establishment.



- The use of polymer sprays to seal the sand surface was evaluated in 2019, these products, while potentially effective, come at very high costs and are damaged easily within a sandy environment. There may be opportunity for use of this product in small area, however wide spread use is unlikely to be economically feasible.
- Steep batters on the edge of Sector 10 adjacent to the office area are planned to have pinned geotextile applied and hydromulch with a native seed mix applied to improve stability.
- Medium term batters that can be constructed to suitable slopes have been selected for placement of topsoil and timber consistent with long term rehabilitation areas, these areas are irrigated with a sprinkler system.
- The topsoil / subsoil stockpile from the road and workshop area, has some vegetation regrowth on batters and has had additional topsoil placement to improve stability. This stockpile avoided the offsite haulage of more than 250 trucks prior to an established intersection.

### 7.5.5 Long Term Rehabilitation

Long term rehabilitation during the period was only possible on the entry batters and roadside areas, with insufficient area on the quarry floor available to be rehabilitated.

Areas subject to long term rehabilitation were subject to the following process:

- Application of topsoil to typical depth of 100-300mm subject to availability.
- Spreading of timber branches and brush matting.
- Routine irrigation to minimise dust and assist with plant establishment.
- Road side areas were stabilised with turf consistent with TfNSW requirements for the road reserve.

Areas subject to the above process have responded well during the period and are showing good progress. Weed management is conducted regularly on these batters to weeds that may reduce the long term rehabilitation success of the batters.

### 7.6 FAUNA EXCLUSION FENCING

Frog exclusion fencing was installed along the lower edges of the disturbance area prior to and following clearing activities. The exclusion fencing is specified for the purpose of minimising the movement of frogs from wetter areas outside the disturbance area into the disturbance footprint. This movement would be expected to occur in mid- late Autumn, with frogs moving in the opposite direction (i.e. from areas potentially within the disturbance area to wetter areas outside it) in Spring.



Koala exclusion fencing was erected in April 2019. The fencing design was amended in consultation with DPIE and koala specialists to be barrier fencing that would slow the movement of koalas, but not preclude koala movement, aiming to minimising koala travel along and around fencing. The fencing has crossing fixtures at 200 m intervals.

Fauna cameras have been placed along the koala exclusion fencing, no koalas have been identified in those cameras adjacent to the fencing.

Frog monitoring was undertaken during Autumn and Spring 2020, this included inspection of the frog exclusion fencing.

### 7.7 FAUNA INCIDENTS

No fauna incidents occurred during the reporting period. As a result, no changes to current controls in place regarding fauna interactions have been implemented or are proposed as the results suggest they are adequate. They will continue to be monitored and revised if necessary.

### 7.8 WEEDS AND PESTS

#### 7.8.1 Pest Survey and Management

During the reporting period large canine footprints have been observed within the sand on several occasions. It is presumed that these are wild dogs, however, they may also be domestic animals being walked in the area or roaming from neighbouring properties. Fauna surveillance cameras installed on the property has not provided any confirmation or clarification on these footprint observations.

Fauna trapping, targeting wild dogs will be investigated in the following period. Under the lease with Port Stephens Council, trapping and return of domestic dogs to owners or management otherwise is required.

#### 7.8.2 Weed Survey and Control

WSS undertake progressive weed management on site using manual removal techniques and herbicide application if considered necessary. The presence of weeds on rehabilitation areas are inspected by the WSS staff and removed as necessary based on the Weed Identification Booklet (produced by Kleinfelder).

Preclearing surveys of Sectors 1A and 2 identified scattered individuals and small patches up to 6m<sup>2</sup>, no weeds are considered noxious or identified on Port Stephen Council's list of Priority Weeds for the LGA. Weeds identified during pre-clearance surveys included:

• *Megathyrsus maximus* (Guinea Grass)



- Cyperus aggregatus
- Sida rhombifolia (Paddy's Lucerne)
- Axonopus fissifolius (Narrow-leafed Carpet Grass).

Given the topsoil from this area is not subject to direct transfer, areas containing lower risk weeds have not been segregated.

Wedgetail Project Consulting undertook several walk over inspections during the period targeting common noxious weeds (e.g. Lantana and Bitou Bush). Small patches were identified within future resource areas and are planned for control within the 2021 period.

## 7.9 OFFSETTING

Newcastle Sand must prior to commencing quarrying operations identify the source and within 12 months of quarrying operations retire these credits (i.e. within 12 months from the first sale of sand from the site). At the conclusion of the period, Newcastle Sand had undertaken the following in relation to satisfying the offsets required under SSD\_6125:

- Engaged Kleinfelder to investigate land holdings within the local area to determine feasibility of securing sufficient land or agreement over land for the establishment of sufficient offsite. No land holdings of adequate size could be found for identification of offset sites.
- On the basis of the limited availability of land available for offsetting, a request was made to the Secretary to enable the payment into the Biodiversity Conservation Trust (BCT) in lieu of finding specific offsets. On this basis, in the event that credits cannot be found prior to the expiry of 12 months from the commencement of operations, a payment can be made. Under current pricing, payment into the BCT is over \$2 million dollars, more than three times the value of securing offset credits.
- The onsite offsets are already identified, Kleinfelder has been in communication with the BCD to determine requirements to establish the offset site given the complexities associated with the changing to newer Biodiversity Assessment Methodology.
- A statement of reasonable equivalence for the offsite offset credits has been sought and received from the BCD, this states that the 687 BBAM ecosystem credits are equivalent to 288 BAM credits under current legislation. The species credit requirement remains the same.
- A review of available credits already established and for sale that can satisfy the offset requirements has been completed.
- Given limited availability of existing credits available, a request to the BCD to enable the use of variation criterion (f) to enable a broader use of available offsetting credits. The BCD approved this request in August 2020.

During the following period the following will be undertaken:



- Additional field work and reporting will be required for the onsite offset area.
- Seek to identify and secure an agreement to retire sufficient offsite offset credits to meet BAM requirements.

### 7.10 WASTE MANAGEMENT AND MINIMISATION

Waste is separated at the quarry as follows:

- Drink cans are taken to a Return & Earn facility.
- Cardboard is loaded into a trailer and taken to a recycling facility. Cardboard is not a regular waste stream and is only present where new equipment is ordered.
- Shredded paper is taken offsite and used in mulch or disposed of to the recycling facility.

During the reporting period all general waste was removed from site in 1.5m<sup>2</sup> general waste skip bins by Veolia waste services for offsite disposal. Over the period, the bin was collected on average once per week (46 times), the bin is rarely full as such it is estimated that less than 25m<sup>3</sup> of general waste was removed from site. General waste is varied and rarely of quantities sufficient to justify dedicated recycling bins. General waster will typically consist of crib-room and office waste, weeds, left over frog/ sediment fencing waste.

Machinery servicing is completed by third party contractors that are required under the service agreement to remove and appropriately recycle or dispose of any waste generated (e.g. oil, oil filters etc).

Cleared vegetation has been used for batter stabilisation (**Plate 3**) or stockpiled for future use as required. As such no waste has occurred from clearing activities.

During excavation, a concrete slab was found, this was located within the former cleared area for silica sand extraction. This concrete was transported from site to concrete recycling facility, after inspection for heritage value (see **Section 7.12**).

Septic waste was removed from the site by a licenced contractor as noted below.

### 7.11 WATER USE

Water is sourced from the HWC network for all activities onsite or from rainwater captured from building roofs. Disposal of water from site is limited to disposal of the onsite septic waste that is completed by a licenced third party contractor.

**Table 15** shows the water usage for the quarry since the commencement of construction in comparison to the estimates provided within the EIS.

Year and works	Forecast Usage	Water Used (HWC Network)	Usage vs Estimate	Water Transferred offsite	Water Saving Investigations
August 2019 to 31 December 2019 Construction	9.7 ML	3,087 kL over 139 days – equating to 8.1ML/year	Lower	Septic waste 5.4 kL	<ul> <li>Static polymer for batters.</li> <li>Mobile polymer for haulage roads.</li> </ul>
2020 Construction and operations	9.7 ML	5,675.54 kL	Lower	Septic waste 32 kL*	<ul> <li>Irrigation system installed to improve batter dust suppression.</li> <li>Additional sweeping of roads to minimise dust suppression.</li> <li>Batter revegetation as opposed to stabilisation.</li> </ul>
* Septic waste	e is disposed Il disposal is	l on a per tank basis as likely to be lower	opposed to	an exact volume	, each disposal event is up to 4 kL,

Table 15:Water usage for quarry

## 7.12 ENERGY EFFICIENCY

### 7.12.1 Diesel and Electricity Use

Fuel and electricity usage details estimated within the EIS and those for this and previous periods are provided in **Table 16** below. While current extraction rates are slightly below those used for fuel and energy estimation in the EIS, the actual energy consumption by the quarry is lower than expected.

Year	EI	S Estimate	Act	ual Usage	
	Diesel (L)	Electricity (kW)	Diesel (L)	Electricity (kW)	Comment
2019	Constructio	n period not defined	72,293	117	Construction 4 months, electricity connected on 1 November 2019.
2020	100,000	189,000*	51,746	9,805.57	Construction 4.5 months – excludes third party fuel usage

Table 16:Fuel and electricity usage for quarry



	EI	S Estimate	Act	ual Usage				
Year	Diesel (L)	Electricity (kW)	Diesel (L)	Electricity (kW)	Comment			
					for intersection construction. Operations for 7.5 months			
2021	100,000	189,000*	-	-	First full 12 months of operations.			
* Potential error may be 18,900 kWh.								

### 7.12.2 Review of Opportunities to Improve Energy Efficiency

Energy reduction initiatives that have been implemented at the quarry include:

- A sprinkler system has been commissioned to reduce the time that diesel powered carts are required to be running which reduces the fuel burn.
- Energy efficient lights installed where possible.
- Operation of electric screen only where needed.

### 7.13 INDEPENDANT ENVIRONMENTAL AUDIT

As per Schedule 5 Clause 12 of the project approval, the first Independent Environmental Audit is required within a year of commencing quarrying operations. Quarrying operations have not yet commenced, with the construction phase commencing on 14 August 2019.



## 8. COMMUNITY

### 8.1 COMMUNITY CONSULTATIVE COMMITTEE

One Community Consultative Committee (CCC) meeting was held within the reporting period on 11 October 2019. A copy of the meeting minutes is provided in Appendix 3. Agenda items consisted of discussion around the complaints received which are presented, along with close out actions in **Table 17**.

### 8.2 NEWSLETTERS

Community information newsletters are produced to provide the community with updates regarding:

- Project progress.
- Operating hours, contact information and details of how to provide feedback.
- Ways in which further information can be sought.
- Summary of project issues affecting community and the response and corrective actions to resolve those issues.

Three newsletters were published with this information during the reporting period in July, August and November 2019. The newsletters are provided in Appendix 4.

### 8.3 COMPLAINTS RECORDS

During the period 22 complaints were received by WSS as detailed in **Table 17**. All complaints were resolved as described by the 'Response and Action' column presented in **Table 17**. Complaints received by WSS are available on the public website.

Of the 22 complaints, the following can be summarised:

- 19 were received during the construction period to end of May 2020.
  - 9 related to noise and vibration.
  - 5 related to trucks and traffic.
  - 5 related to construction or operational hours, COVID-19, privacy and light.
- 3 complaints were received during operations.
  - 1 was in relation to the concrete median for the intersection.
  - 1 related to truck movements prior to approved hours.
  - 1 related to noise from truck air brakes.

All complaints were received directly from or via DPIE from two properties adjacent to the intersection with Cabbage Tree Road.



Name	Incident ID	Date	Time	Method of Complaint Communication	Key site activities occurring at time of complaint and where? (e.g. clearing and extraction in Sector 2)	Key Complaint Issue (e.g. noise, dust, traffic)	Details	Response and Action	Date of Closure
Department of Planning, Industry & Environment - Complaint received by unknown applicant.	CTR_INC7	09.01.2020	5.27pm	Email	Construction activities occurring outside approved constructions hours.	Construction hours	1. A request was made by the Department of Planning, Industry and Environment to provide information for various matters.	A Formal response has been prepared by Newcastle Sand and the Contractor. The response has been forwarded to the Department of Planning, Industry and Environment for consideration.	20.01.2020
Keiron Rochester	CTR_INC8	30.01.2020	4.44pm	Email	Westbound vehicle considered turning right into the quarry.	Traffic	1. The observer believes a vehicle considered to turn right into the quarry. However, they did not turn right in and continued on. The vehicle returned and accessed the quarry via a left turn in.	Incident investigated by Quarry Manager and formal response has been emailed. The vehicle did not turn right into driveway and has been counselled in relation to the complaint.	14.02.2020
Keiron Rochester	CTR_INC9	06.01.2020	5.47pm	Email	Loading of pipes into truck	Noise, Operating hours	<ol> <li>Raised concern of work activities prior to 7am</li> <li>Noise from pipes being lowered into trucks for disposal</li> </ol>	Incident investigated by Quarry Manager and formal response has been emailed. No works were undertaken prior to 7am and the pipes were loaded into truck at approximately 7.45am. Additional noise monitoring has been undertaken above the noise monitoring conditions of consent.	14.02.2020
Liam Palmer	CTR_INC10	07.02.2020	12.10pm	Phone Call	Retaining wall piling	Noise	1. Raised concern regarding noise from pile driving of retaining wall.	Advised it was a condition of consent [WAD] to install sheet piling for retaining wall. Quarry Manager contacted acoustic consultant for advise and additional noise monitoring was requested. Discussed over phone advising of acoustic consultant site visit date and time to discuss concern. Advised unavailable to attend. Additional noise monitoring has been undertaken above the noise monitoring conditions of consent.	14.02.2020
Shirley Davis	CTR_INC11	11.02.2020	12.52pm	Text Message	Retaining wall piling	Noise	1. Raised concern regarding noise from pile driving of retaining wall.	Advised it was a condition of consent [WAD] to install sheet piling for retaining wall. Quarry Manager contacted acoustic consultant for advise and additional noise monitoring was requested. Left Phone message advising of acoustic consultant site visit date and time to discuss concern. No response recieved. Additional noise monitoring has been undertaken above the noise monitoring conditions of consent.	14.02.2020

#### Table 17: Complaints Received by WSS during the reporting period

Name	Incident ID	Date	Time	Method of Complaint Communication	Key site activities occurring at time of complaint and where? (e.g. clearing and extraction in Sector 2)	Key Complaint Issue (e.g. noise, dust, traffic)	Details	Response and Action	Date of Closure
Keiron Rochester	CTR_INC12	11.02.2020	6.22pm	Email	Retaining wall piling	Operating hours	1. Raised concern over the pile driving for retaining wall ceased at 5.15pm and operating hours of consent were not adhered to.	Construction operating hours of consent are Mon_Fri 7.00am to 6.00pm. Works were completed at 5.15pm within the consent hours. Email response has been sent.	14.02.2020
Kay Rochester	CTR_INC13	12.02.2020	9.07am	Text Message	Entrance construction and rolling	Vibration, Traffic	<ol> <li>Large vibrations at</li> <li>30am in house</li> <li>Video of truck carring pole excavator turned right out of driveway</li> </ol>	Investigation undertaken by Quarry Manager found the following. 1. Vibration roller was undertaking standard road construction activities at entrance as per RMS construction guidelines. 2. Float carrying pile driver turned right due to the construction activities at the site entrance were restricting a safe left exit from site. Truck was under escort and eastbound traffic was temporarily stopped by escort vehicle during the turn to ensure safe passage.	14.02.2020
Keiron Rochester	CTR_INC14	20.02.2020	6.15pm	Email	No activities on site	Noise	Approximately 3am this morning noise of a machine working was heard by local residents, coming from inside the quarry premises.	Investigated by Quarry Manager. Definitely no activity was being undertaken onsite as described. Email response sent.	24.02.2020
Kay Rochester	CTR_INC15	30.03.2020	3.55pm	Text Message	Entrance construction and rolling	Vibration	Vibrations at 3.30pm in house	Investigation undertaken by Quarry Manager found the following. 1. Vibration roller was undertaking standard road construction activities at entrance as per RMS construction guidelines. Discussed with Robsons regarding alternatives to the activity but roller compaction is essential for the the intersection to be compliant. Return text sent advising roller status for upcoming weeks. Robsons advised to limit vibrator wherever possible.	31.03.2020





Name	Incident ID	Date	Time	Method of Complaint Communication	Key site activities occurring at time of complaint and where? (e.g. clearing and extraction in Sector 2)	Key Complaint Issue (e.g. noise, dust, traffic)	Details	Response and Action	Date of Closure
Shirley Davis	CTR_INC16	30.03.2020	4.15pm	Phone	Entrance construction and rolling	Vibration, Noise	<ol> <li>Vibrations at 3.30am</li> <li>in house</li> <li>Reversing beeper</li> <li>noise</li> </ol>	Investigation undertaken by Quarry Manager found the following. 1. Vibration roller was undertaking standard road construction activities at entrance as per RMS construction guidelines. Discussed with Robsons regarding alternatives to the activity but roller compaction is essential for the the intersection to be compliant. Return text sent advising roller status for upcoming weeks. Robsons advised to limit vibrator wherever possible. 2. Found excavator with beeper. Advised contractor to replace with sqwauker. Interim measures put in place by contractor.	31.03.2020
Keiron Rochester	CTR_INC17	14.04.2020	6.55am	Email	No Activities	Covid-19 Concern	Requesting shortening to operational hours due to Covid-19.	No change to operational hours. Newcastle Sand staying at original consent hours of operation even though legislation has passed allowing for extended construction hours.	15.04.2020
Keiron Rochester	CTR_INC18	14.04.2020	6.55am	Email	Fencing, Concrete formwork	Noise	<ol> <li>Activities prior to</li> <li>7.00am</li> <li>Noise from chainsaw</li> </ol>	Incident investigated by Quarry Manager. Only fencing setup work was being undertaken near 7.00am and the chainsaw was operated by Quarry Manger directly at 7.30	15.04.2020
Keiron Rochester	CTR_INC19	15.04.2020	7.09am	Email	Fencing, Concrete formwork	Noise	Reversing beepers.	No construction vehicles have beepers, they all have squaukers.	15.04.2020
Keiron Rochester	CTR_INC20	21.04.2020	10.59am	Email	Street Lighting	Light	Street lighting effecting residence across the road.	Email response by MT, showing amendments to the original management plan have reduced the light to the subject property.	21.04.2020
Department of Planning, Industry & Environment - Complaint received by Keiron Rochester.	CTR_INC21	21.04.2020	1.01pm	Email	Sand Trial	Truck Movements	Complaint received regarding the truck movements prior to 9am during sand glass trial.	Currently under investigation. Response sent to DPIE.	05.05.2020

Name	Incident ID	Date	Time	Method of Complaint Communication	Key site activities occurring at time of complaint and where? (e.g. clearing and extraction in Sector 2)	Key Complaint Issue (e.g. noise, dust, traffic)	Details	Response and Action	Date of Closure
Liam Rochester	CTR_INC22	23.04.2020	11.42am	Phone	Intersection Asphalting	Traffic turning right	Complained that trucks and vehicles were exiting the site by turning left.	Quarry manager investigated and found that the exit lane was blocked from the site due to hot asphalt being laid by Downer Group. Discussed with Robson supervisor and vehicles were exiting site under supervision of Drayton spotter via the entrance slipway due to safety concern of traffic turning left due to the exit angle. The only safe direction to exit the site was a right turn.	23.04.2020
Keiron Rochester	CTR_INC23	24.04.2020	7.46am	Email	Intersection Construction	Truck Movements	Alleged trucks departing site loaded over previous two weeks in breach of consent.	Awaiting further details pertaining to the complaint from Mr Rochester. No additional information received from Mr Rochester.	11.06.2020
Keiron Rochester	CTR_INC24	29.04.2020	6.17pm	Email	Intersection Construction	Potential Privacy Issue	Held in confidence due to the nature of the complaint.	Forwarded to Police currently under investigation. Police have advised no offence was committed.	05.05.2020
Keiron Rochester	CTR_INC25	3.05.2020	5.03pm	Email	None	Traffic	Safety concern regarding concrete traffic island adjacent to front entrance. Requesting removal of traffic island.	Quarry Manager investigating documentation with key stakeholders. RMS has signed off the roadway compliant to construction requirements.	01.06.2020
Liam Rochester	CTR_INC26	29.06.2020	11.00am	Phone	General site activities	Traffic	Reporting a safety concern regarding concrete traffic island adjacent to front entrance. Vehicle has just missed Kay as she was turning in to her driveway. Requesting removal of traffic island.	Issue of traffic Island raised at last CCC meeting. Newcastle Sand waiting on submission/letter from KR or community then Newcastle Sand will submit request to RMS.	
Shirley Davis	CTR_INC27	23.07.2020	2.13pm	Text Message	N/A	Correspondence	Requesting paper copies of the last two CCC Meetings as previously agreed.	CCC Meeting minutes reprinted and placed in mailboxes.	24.07.2020
Shirley Davis	CTR_INC28	17.08.2020	2.34pm	Text Message	N/A	Noise	Noise of air brakes of arriving and departing trucks	Rang freight control company regarding complaint and posted sign on weighbridge reinforcing requirement not to use engine braking.	18.08.2020





Name	Incident ID	Date	Time	Method of Complaint Communication	Key site activities occurring at time of complaint and where? (e.g. clearing and extraction in Sector 2)	Key Complaint Issue (e.g. noise, dust, traffic)	Details	Response and Action	Date of Closure
Ann Hagerthy	CTR_INC29	25.11.2020	3:35pm	Email	N/A	Truck	Alleged trucks accessing	Information provided to the Department of	01.03.2021
Planning &						Movements	the site on the 24th &	Planning, Industry & Environment.	
Assessment -							25th November 2020	Email sent from Newcastle Sand to all	
Compliance							prior to the approved	customers and haulage contractors	
Department of							hours for loading and	reinforcing our Driver Code of Conduct	
Planning, Industry and							dispatch of trucks.	including opening hours and arrival	
Environment.								procedures.	


#### 9. NON-COMPLIANCES

The following non-compliance is noted:

- Schedule 3, Condition 30A, relating to the Glass Sand Trial, limited the arrival and dispatch of trucks related to the sand trial to between 9am and 2pm. As a result of an oversight at the quarry, trucks arrived prior to the 9am timeframe on four days in April 2020, consistent with the permitted construction hours applicable to the site at the time but not consistent with the approval. Loading and dispatch of trucks was compliant.
- Schedule 5, Condition 4, relates to maintaining currency of management plans following the Annual Review or incidents. Reviews and plan updates have not occurred within the required timeframe. Reviews and updates of plans have occurred to some plans (e.g. SWMP and TMP), however other plans, due to progressive changes occurring onsite and refinement of operational practices not all plans have been submitted for approval. Newcastle Sand is currently in the process of updating all management plans and will submit to DPIE for approval in the following period.

#### 10. DEVELOPMENT IMPACT DISCREPANCIES

PREDICTION

Development impact discrepancies are summarised within the Table 18 below.

Aspect	Predicted Impact	Observed Impact	Above / below / As Expected
Extraction Rate and Truck Numbers	Estimated production of 250,000 tonnes for Year 1, from a maximum rate of 530,000 tonnes.	<ul><li>23% of the approved maximum extraction rate was extracted.</li><li>75% of anticipated sales for Year 1 of EIS, <u>normalised</u> for 12 months of operations.</li></ul>	Below
Noise	Construction noise was expected to result in short term noise disturbance to neighbouring properties during construction, particularly during intersection construction. No resident was expected to be highly noise affected (i.e. above 75 dB(A)). Operational noise levels at neighbouring properties at the current stage of works were modelled to be less than 35dB(A) at neighbouring properties.	Construction noise was largely as expected, short term noise impacts (below 75dB(A)) were experienced at neighbouring properties. Operationally, noise levels are potentially lower than modelling predicted. Traffic noise remains the primary noise source at properties closest to the quarry.	As expected.
Air Quality	Air quality modelling predicted that cumulative annual criteria for dust deposition and PM <sub>10</sub> would be met. The modelling predicted at full production there was a small chance for isolated exceedances of 24 hour	Air quality impacts as a result of the project are consistent with the modelling expectations with typically low contribution levels. Under extreme weather conditions air quality contributions from the site increase and require the implementation of real-time actions to minimise air quality	As expected.

#### Table 18:Development impact prediction discrepancy

#### **Annual Environmental Review**



Aspect	Predicted Impact	Observed Impact	Above / below / As Expected
	criterion occurring 1-2 days per year.	impacts at properties south of Cabbage Tree Road.	
Stage of Disturbance	During Year 1, Sectors 1 and 1A were expected to be processed, with Sectors 2, 3 and 3A processed within Year 2.	Sector 1, 1A, 2 and 3 have been cleared during Year 1 of operations. With disturbance of a portion of Sector 8A/B associated with topsoil storage.	As expected or slightly above for stage of quarry.
	Disturbance (as opposed to processing) would reasonably be expected to occur in advance of any processing.	Processing of sand within Sector 1 is largely completed and processing is occurring within sand in Sector 1A and 2.	
		Difficulties in processing and changing market demands have likely increased disturbance footprint beyond expected in order to meet demand for specific sand types.	
Rehabilitation	A small section of rehabilitation was expected adjacent to the office area. Batter rehabilitation was not expected.	The area proposed for rehabilitation at this stage within the EIS has not been feasible on account of the limited working area available to stockpile sands of different grades.	On balance consistent with expectations.
		Batter rehabilitation has progressed well adjacent to the access road, likely in excess of that expected within the EIS.	
Water	No significant changes to water levels or quality were expected due to the quarry. Water usage was predicted to peak at 126.5 kL/day or up to 30ML/year.	No significant changes have been observed, changes are primarily related to changing weather conditions.	As expected.
		PFAS has not been detected within the quarry, however, monitoring sites to the south, east and north east have shown some evidence of PFAS, these locations are consistent with the existing	



Aspect	Predicted Impact	Observed Impact	Above / below / As Expected
		known or expected PFAS plumes from the RAAF base.	



#### **11. IMPROVEMENT**

As Quarrying operations continue, Newcastle Sand are progressively refining and improving operational practices to minimise the effects on the environment and maintain compliance with the extensive requirements of the management plans and the conditions of consent.

#### 11.1 REVISION OF STRATEGIES, PLANS & PROGRAMS

As per Schedule 5 Clause 4 of the Project approval, within 3 months of the submission of this AEMR WSS will review the strategies, plans and programs under the Development Consent and notify DPIE in writing of any such review being undertaken. Where this review leads to revisions in any such document, then within 6 weeks of the review the revised document will be submitted for approval by DPIE.



**Annual Environmental Review** 

#### APPENDIX 1. PROJECT APPROVAL



#### APPENDIX 2. EPL



# APPENDIX 3. COMMUNITY CONSULTATIVE COMMITTEE MINUTES



#### APPENDIX 4. NEWSLETTERS



#### APPENDIX 5. WATER MONITORING REPORT



#### APPENDIX 6. GROUNDWATER LEVELS



## APPENDIX 7. AMPHIBIAN SURVEY



### APPENDIX 8. RAP INSPECTION RECORDS



## APPENDIX 9. BORTOLO RADIATION SURVEY



# APPENDIX 10. KLEINFELDER ECOLOGICAL INSPECTION LETTERS



#### APPENDIX 11. NOISE MONITORING REPORTS



#### APPENDIX 12. PFAS EXPOSURE PATHWAYS REVIEW



## APPENDIX 13. TRUCK MONITORING RECORDS