

PF FORMATION



# HITCHCOCK ROAD SAND EXTRACTION AND REHABILITATION PROJECT, MAROOTA

ANNUAL ENVIRONMENTAL MANAGEMENT REVIEW  
**2021 - 2022**



# PF Formation

## HITCHCOCK ROAD MAROOTA

### Sand Extraction and Rehabilitation Project

# ANNUAL ENVIRONMENTAL MANAGEMENT REVIEW 2021-2022

Prepared by:



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Document Reference	Version	Date	Prepared by	Reviewed by	Approved
AEMR – PF Formation	1	22/12/2022	South East Environmental	Josh Graham	18/01/2023

### PF Formation

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<b>Name of operation</b>	Hitchcock Road Sand Project
<b>Name of operator</b>	PF Formation
<b>Development consent/project approval #</b>	PA 06_0104 LEC Appeal No 10064 of 1998
<b>Name of holder of development consent/project approval</b>	PF Formation
<b>Mining lease #</b>	N/A
<b>Name of holder of mining lease</b>	N/A
<b>Water licence #</b>	Approval #10WA114809 WAL #42259 Reference # 10AL114808
<b>Name of holder of water licence</b>	PF Graham (No 2) Pty Ltd
<b>MOP/RMP start date</b>	3 <sup>rd</sup> February 2009
<b>MOP/RMP end date</b>	30 <sup>th</sup> November 2038
<b>Annual review start date</b>	1 <sup>st</sup> July 2021
<b>Annual review end date</b>	30 <sup>th</sup> June 2022
<p><b>I, Melissa Mass, certify that this audit report is a true and accurate record of the compliance status of Hitchcock Road Sand Project for the period of July 2021 until June 2022 and that I am authorised to make this statement on behalf of PF Formation.</b></p> <p><i>Note.</i></p> <p>a) <i>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.</i></p> <p>b) <i>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).</i></p>	
<b>Name of authorised reporting officer</b>	Melissa Mass
<b>Title of authorised reporting officer</b>	Senior Ecologist
<b>Signature of authorised reporting officer</b>	<i>M.Mass</i>
<b>Date</b>	22 <sup>nd</sup> December 2022

## Executive Summary

South East Environmental has been engaged by PF Formation to prepare this Annual Environmental Management Review as per the Project Approval Conditions. This document reviews the project criteria and reports on the project performance and compliance from July 2021 until June 2022.

The Hitchcock Road Sand Extraction and Rehabilitation Project was approved in 2009 with an expected and approved life span of 20 years. A project modification was approved on 3<sup>rd</sup> December 2021 extending the life span of the project to 2038. The 100 hectare site has a yearly extraction approval of 400,000 tonnes per annum. Total sales from the site for the reporting period was 173,128.2 tonnes, well below the approved extraction tonnage.

Sand extracted from the Hitchcock Road Project is washed and sold from the Patricia Fay Drive Sand Processing Plant directly to wholesalers and the public.

### Noise

Noise compliance testing and reporting was conducted by Koikas Acoustics Pty Ltd during the 2021-2022 period. The report concluded that the project complied with the nominated noise levels set by the EPA for the project approval. Natural noises and other un-natural noises, such as traffic, were the main contributing factors to noise at the monitoring sites.

There was no noise complaints received during the 2021-2022 reporting period.

### Air

Air quality testing was undertaken by Boral Materials Testing and Environmental Services throughout 2021-2022.

Overall results were consistent with previous years across all monitoring sites with none of the sites exceeding the nuisance criterion annual monthly average of 4 g/m<sup>2</sup>/month.

No dust complaints were received in 2021-2022.

### Water

Ground water levels are monitored continuously throughout the year at four separate bore locations using a Solinst datalogger, although in total 23 wells are manually monitored monthly throughout the year. Manual monitoring of some wells within the quarry was not possible during the reporting period due to excessive rainfall and localised flooding. Pumping did occur from licenced spring POR 167 during the reporting period with far less than the allocated allowance used.

Ground water levels remained consistent throughout the reporting period.

The ground water analysis met all requirements necessary for the year 2021-2022 and showed no abnormalities or exceedances.

### Rehabilitation

Rehabilitation of the site is in line with the targets previously set for the long term success of the project.

### Social Impacts

The Community Consultative Committee met twice during the reporting period of 2021-2022 with no matters arising concerning social impacts on the community at large.

## Overall

The Hitchcock Road Sand Extraction Project is currently working within the existing approvals based on the project conditions.

PF Formation aim to maintain or enhance the sand extraction projects environmental performance at Hitchcock Road in the following 12 month period in order to uphold their exceptional record of compliance.

## Introduction

PF Formation operate a sand quarry at Hitchcock Road Marooka within The Hills District of the Sydney Basin in New South Wales. The Hitchcock Road Sand Extraction and Rehabilitation Project has approval to extract 400,000 tonnes of sand per annum until 2038.

Following the lodgement of a Development Application (DA) and associated Environmental Assessment (EA) under Part 3A of the *Environmental Planning and Assessment Act 1979*, the original development was approved by the Minister for Planning on 3 February 2009. A project modification was applied for and granted in 3 December 2021 which approved the importation of ENM and VENM to the site and an increase in daily truck movements to the site. The new conditions of consent are attached as Appendix 1. The five management plans/monitoring programs which were prepared in line with the original approval include:

- Environmental Strategy
- Noise Management Plan
- Air Quality Monitoring Program
- Water Management Plan
- Landscape Management Plan

The first revision of these Plans occurred in 2011 and the Department of Planning and Environment (DPE) approved the revised Plans on 15 November 2011. The Plans have since been updated with the most recent version of the Landscape Management Plan, Noise Management Plan, Water Management Plan, Air Quality Management Plan and Environmental Management Strategy updated in June 2022 and submitted to the Department for review.

Each of these documents sets out the various monitoring programs required to comply with the requirements of the approval conditions. The monitoring results are summarised in an annual report known as the Annual Environmental Management Review (AEMR). This is submitted 12 months from the date of approval and every year thereafter to the Director-General, relevant agencies and the Community Consultative Committee (CCC).

This AEMR will:

- identify the standards and performance measures that apply to the project
- describe the works that will be carried out in the next 12 months
- include a summary of the complaints received during the past year and compare this to complaints received in previous years
- include a summary of the monitoring results for the project during the past year from July 1 to 30 June
- include an analysis of these results against the relevant

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- impact assessment criteria/limits
  - monitoring results from previous years
  - predictions in the EA
- identify any trends in the monitoring results over the life of the project
  - identify any non-compliance during the previous year; and
  - describe what actions were, or are being, taken to ensure compliance.

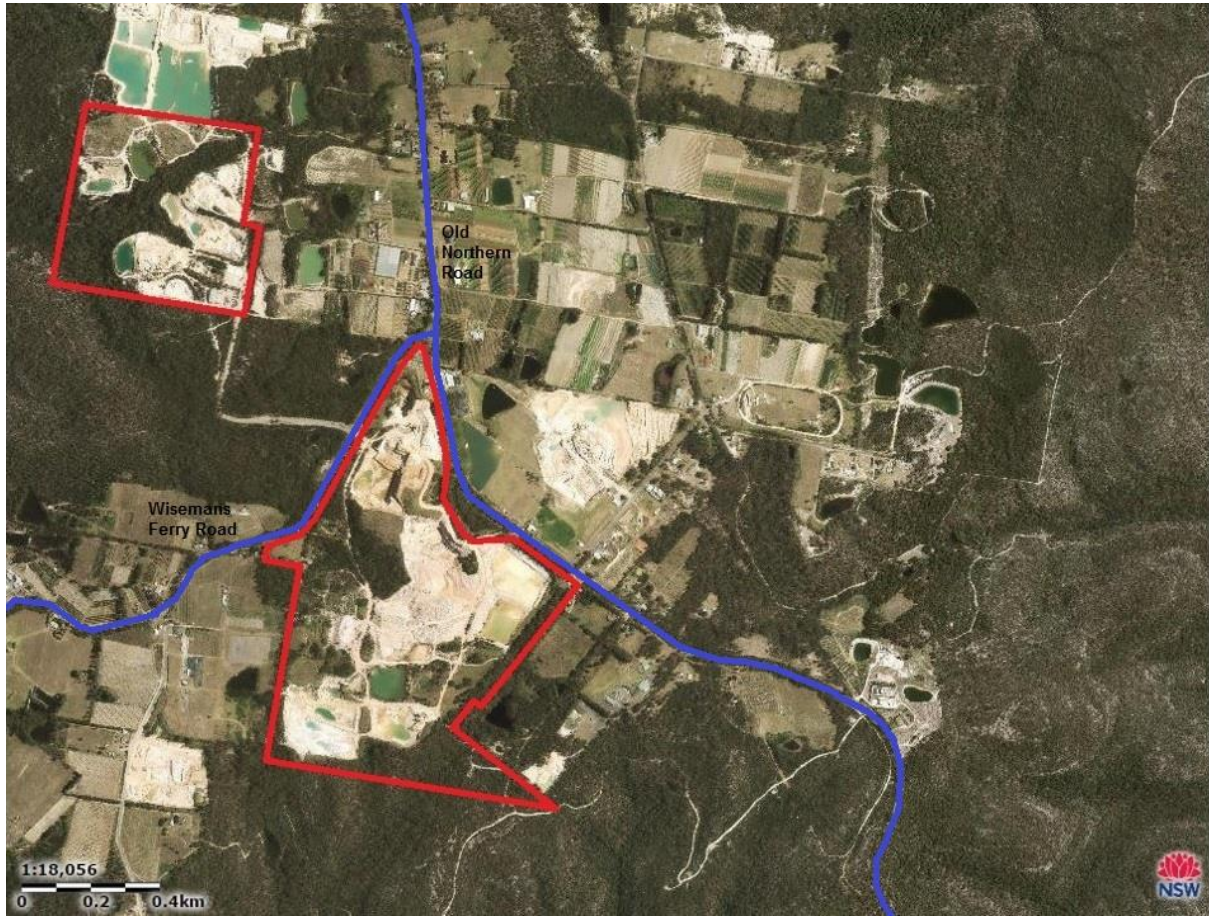
The Approval requires the project to have an Independent Environmental Audit within 12 months of the date of approval and every three years thereafter. Clause 6 of Schedule 5 from within the project approval states:

*Within 12 months of the date of this consent, and every 3 years thereafter, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:*

- (a) be conducted by a suitably qualified, experienced, and independent person(s) whose appointment has been approved by the Planning Secretary;*
- (b) include consultation with the relevant agencies;*
- (c) assess the environmental performance of the development, and its effects on the surrounding environment;*
- (d) assess whether the development is complying with the relevant standards, performance measures and statutory requirements; and*
- (e) review the adequacy of any strategy/plan/program required under this consent, and, if necessary, recommend measures or actions to improve the environmental performance of the development, and/or any strategy/plan/program required under this consent.*

Further information on the Independent Environmental Audit can be found in Section 10 of this Annual Environmental Management Report.

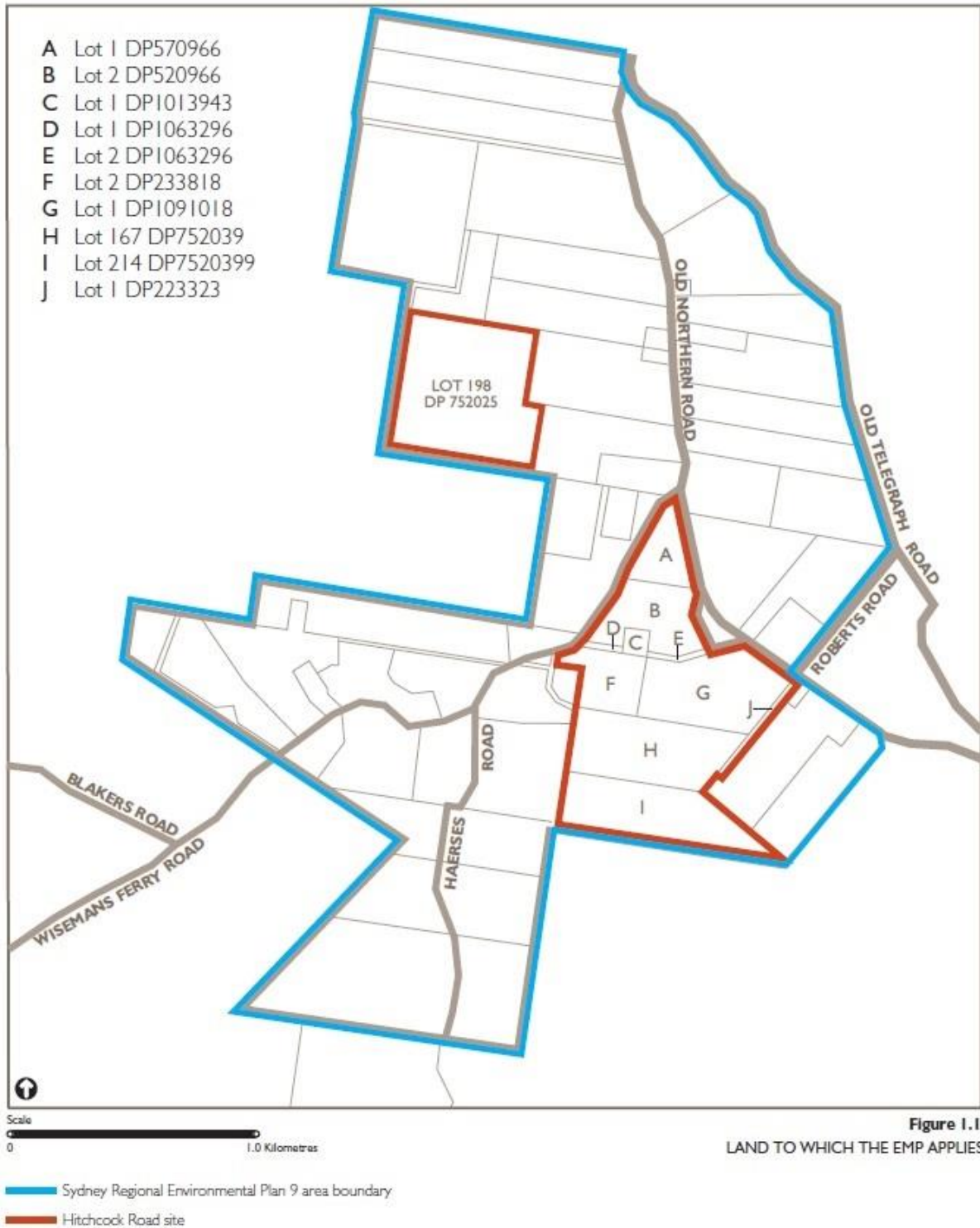
The location of the Hitchcock Road Sand Extraction Project is shown in Figure 1 with Figure 2 demonstrating the lots entailed in the project.



**Figure 1.** Hitchcock Road Sand Extraction Project location

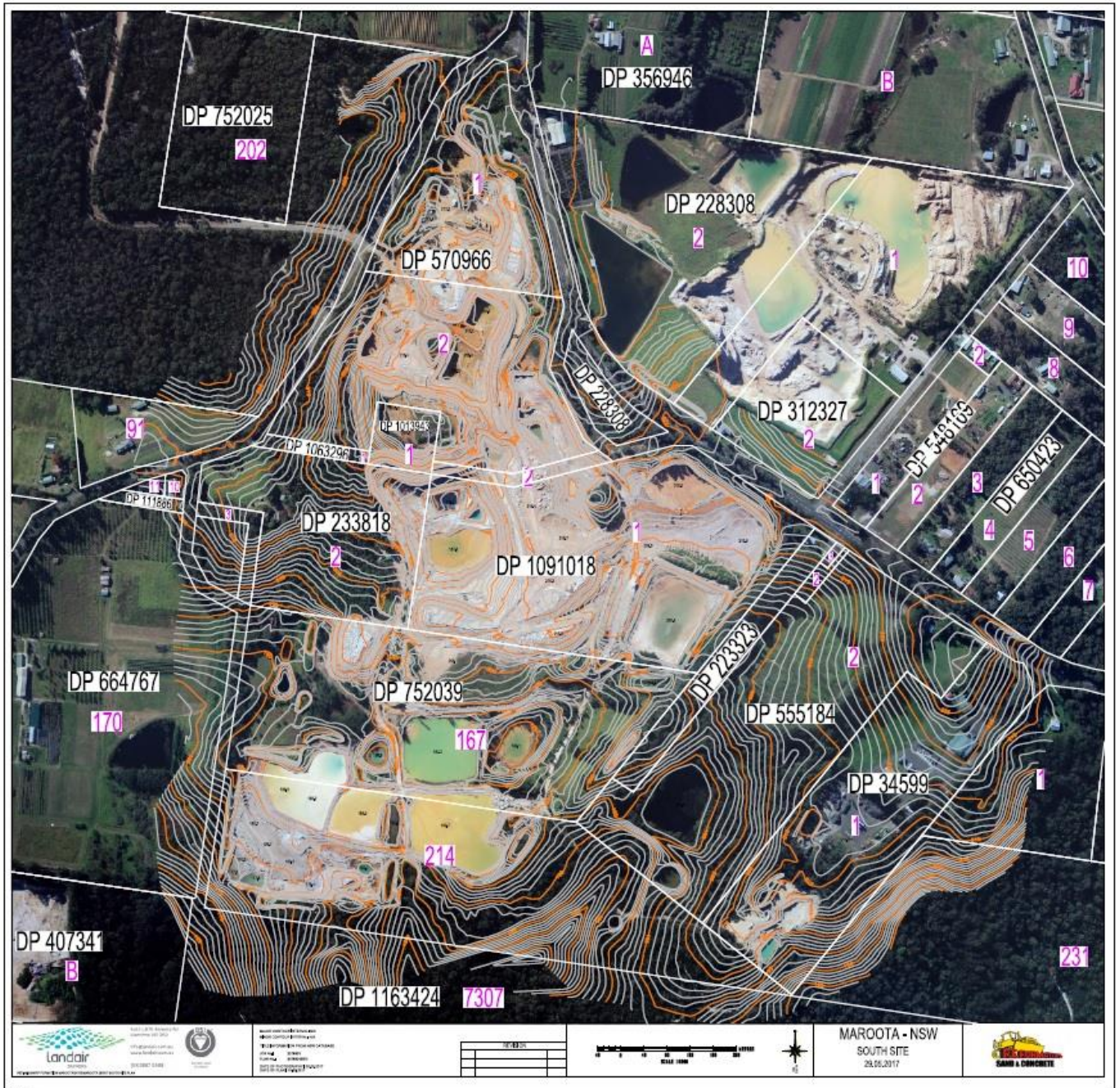


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**Figure 2.** Lots within the Hitchcock Road Sand Extraction Project

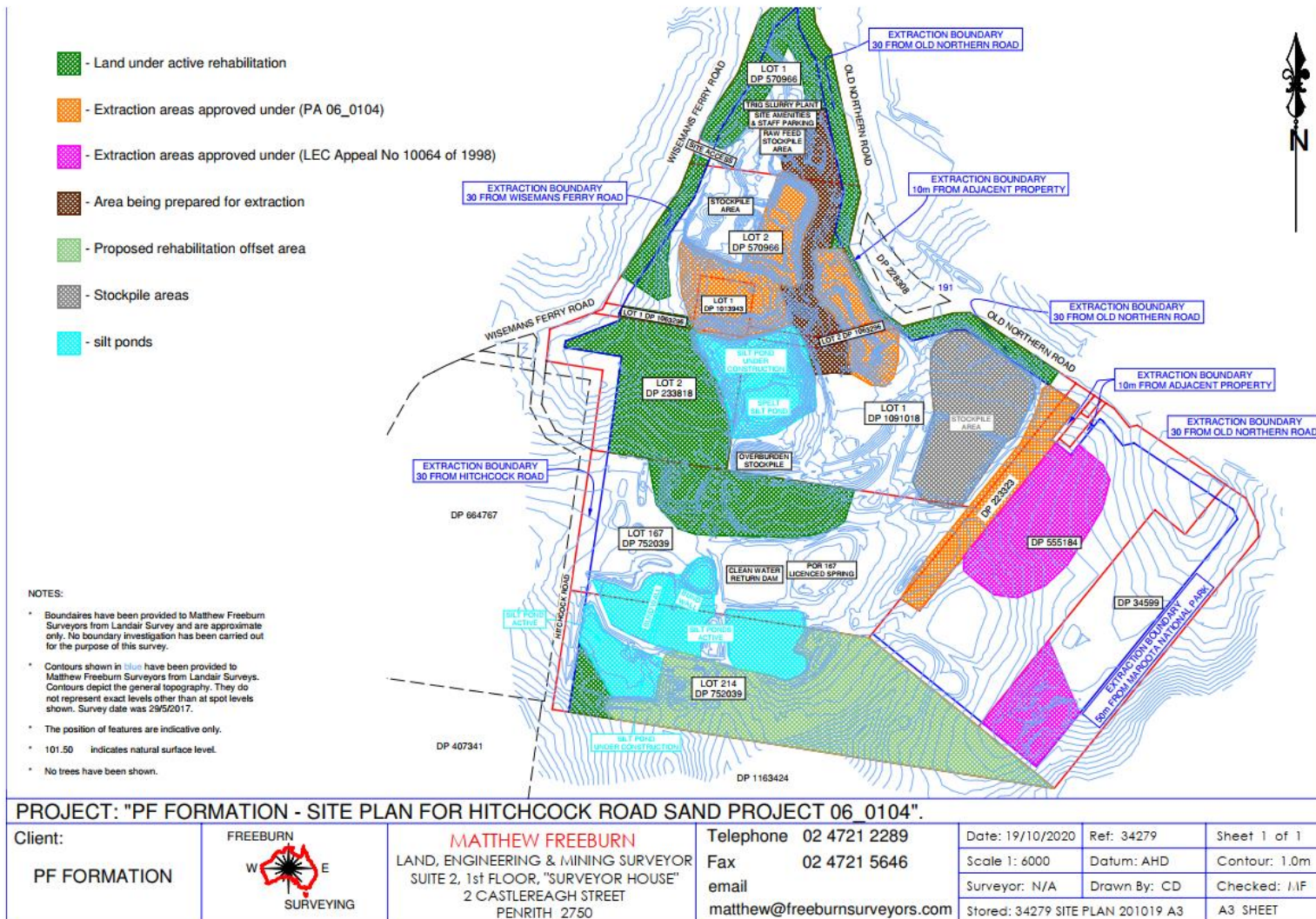
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**Figure 3.** Contour map of lots within the Hitchcock Road Sand Extraction Project

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**Figure 4.** Current site plan

## Statement of compliance

Compliance of the project is paramount to the continuation of operations. Development consent and the environmental protection license has provided enforceable compliance outcomes which are regularly checked via in house monthly assessments, 3 yearly independent audits and random Government compliance audits.

The 3 yearly independent audit was undertaken in June 2020 with four non-compliances found. All non-compliances have been addressed in an action plan by PF Formation as discussed in Incidents and non-compliances within the reporting period found on Page 29.

All Management Plans were revised during the 2021-2022 reporting period as per the requirement of the new modification approval. Plans were finalized and submitted to the Department for review in June 2022.

**Table 1.** Statement of compliance

<b>Were all conditions of the relevant approvals complied with?</b>	
<b>Development consent 06_0104</b>	No – four non-compliances were found by the 3 yearly independent audit
<b>Mining Lease</b>	N/A
<b>Environmental Protection License 3407</b>	YES

## Approvals

Current approvals held by the operator which are relevant to the operation of the Hitchcock Rd Sand Project include the following:

- Project consent issued by the Minister for Planning under section 75J of the Environmental Planning and Assessment Act 1979 (modification 1),
- Environmental Protection License issued by the Environmental Protection Authority

## Operation summary

### Mining Operation

The Hitchcock Road Sand Extraction and Rehabilitation Project was approved in 2009 with an expected and approved life span of 20 years. The project has since been approved via modification 1 to operate at the site until 2038. The 100 hectare site has a yearly extraction approval of 400,000 tonnes per annum. Total sales from the site for the reporting period was **173,128.21** tonnes, well below the approved extraction tonnage.

Sand extracted from the Hitchcock Road Project is washed and sold from the Patricia Fay Drive Sand Processing Plant (Lot 198) directly to wholesalers and the public.

**Table 2.** Production summary

Material	Approved limit (DPE)	Previous reporting period	This reporting period	Next reporting period (forecast)
Waste rock/overburden	N/A	N/A	N/A	N/A
Coarse reject	N/A	N/A	N/A	N/A
Fine reject (tailings)	N/A	N/A	N/A	N/A
Saleable product	400,000 tonne	288,449 tonne	173,128.21 tonne	200,000 tonne

### Other Operations

The Hitchcock Road Project has approval to operate between 7am and 6pm Monday to Saturday. Product transportation into and out of the site can begin at 6am Monday to Saturday although truck movements are limited to 10 per day between 6am and 7am. For the combined operations based at Maroota, PF Formation have approval for 200 truck movements per day. The Hitchcock Road Project averaged **25.15** truck movements per day for the 12 month reporting period of 2021-2022. The highest number of truck movements in one day was on the 12<sup>th</sup> of May when 102 truck movements were recorded. Well below the approved limit of 200.

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Virgin Excavated Natural Material (VENM) has been brought into the site for processing throughout the reporting period. Validation Certificates have been provided for all VENM imported to site and allowable truck movement has not been exceeded. Records have been kept for all trucks importing VENM to the site including: date, time, rego, supplier, tonnes, source location and description of material imported. In total 70,951 tonnes of sandstone material has been imported to the site from various construction sites around Sydney. A summary of VENM imported to site is provided in **Appendix 11**.

Extraction of material on Lot 2 DP 555184 has commenced. All material is processed through the Hitchcock Road processing plant.

#### Next Reporting Period

No significant changes are forecast to take place within the next reporting period. Operations will remain as they are within the approval guidelines.

#### Actions required from previous Annual Review

Actions required from the previous Annual Review include the following:

- Resolve long term security of biodiversity offset areas matter with DPIE;
- Review and revise Pit Shell Plan;
- Review all Environmental Management Plans following Independent Audit and Mod-1.

The long term security of biodiversity offset areas was not accepted by the DPIE and therefore the rehabilitation outlined within the Landscape Management Plan will remain in place.

The Pit Shell Plan has not changed during this reporting period therefore no new plan has been developed.

Environmental Management Plans were reviewed, updated and submitted to the department in June 2022.

#### Environmental performance

The Environmental Operational Procedures detail actions and responsibilities, performance indicators, monitoring and reporting requirements. To document the adherence to this environmental monitoring from an operational viewpoint a monthly Environmental Operations Procedure checklist is undertaken, which addresses all the relevant environmental performances that occur each month. In the 12 month period of this review there were no environmental performances that required immediate action. There were no other complaints from community, stakeholders or staff.

Specific monitoring of water and rehabilitation are discussed in more detailed in the following chapters.

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**Table 3.** Environmental performance

<b>Aspect</b>	<b>Approval criteria/EIS prediction</b>	<b>Performance during the reporting period</b>	<b>Trend/key management implications</b>	<b>Implemented/proposed management actions</b>
<b>Noise</b>	35dB at all locations during 15min night test. 45dB at all locations during 1min night test. 36-42dB at varied locations during 15min day test.	Low quarry noise maintained at all locations.	Vehicle traffic at all monitoring locations remains the dominant background noise.	Continue to keep quarry operation noise to a minimum.
<b>Air Quality</b>	Deposited dust 4g/m <sup>2</sup> /month annually.  Total Suspended Particulate matter 90 µg/m <sup>3</sup> annually.  Particulate matter <10 µm (PM10) 30 µg/m <sup>3</sup> annually.	All criteria met and maintained for monthly and annual allowances.	Maintain low air quality pollution, particularly in dry weather.	Continue current actions. Use of water cart when necessary to minimise traffic dust.
<b>Social Impact</b>	A Community Consultative Committee meeting biannually.  Availability of information on public website.	The committee met twice during the reporting period.  All updated plans and reports uploaded to website.	Ensuring transparency of business and operations.	Maintain current consultation and availability of information.
<b>Heritage</b>	Immediately contact DPIE should Aboriginal relics or skeletal remains be discovered during operation.	No Aboriginal relics or skeletal remains were discovered during the reporting period	Cease all work in the immediate area and report.	None taken during the reporting period. Report as necessary.

## Noise

The Project Approval for the Hitchcock Road development requires the preparation and implementation of a Noise Management Plan in order to demonstrate that compliance with the relevant noise impact assessment listed in the approval has been achieved.

The objectives of the Annual Environmental Management Review on noise issues are therefore;

- identify the environmental noise emission criteria nominated in the relevant approval documents;
- document the results of environmental noise monitoring conducted in the 12 months ended June;
- assess the measured noise emissions levels against the relevant criteria; and
- nominate existing noise emission monitoring methodology and establish routine

**Table 4.** Noise impact assessment monitoring locations

Noise assessment location	Other locations covered	Day	Night <sup>1</sup>	
		LAeq (15 minute)	LAeq (15 minute)	LA1 (1 minute)
1. R9 – Young, Hitchcock Road	R10- Tornatola	39	35	45
2. R5 - Pignataro	R6 Camilleri	42	35	45
3. R3 – Firestation/Jurd	R1 Hammond & R2 Hitchcock	40	35	45
4. R7 – Maroota Public School	R6 Camilleri & R8 Portelli	36(LAeq(1 hour))	N/A	N/A

Note 1: Night time is defined as the period between 10.00pm and 7.00am. Activities on the site start at 6.00am and are completed by 6.00pm. There is no activity on the site during the evening period

measurement procedures.

### Noise emission criteria

The Noise Management Plan requires the noise criteria set out in Table 4 to be applied to the impact assessment. These assessment locations as shown on Appendix 1 of **Attachment 12** were selected because they are representative or closer to the quarry than the Noise Assessment Locations identified in Table 1 of Schedule 3 to the Notice of Project Approval.

The following noise parameters are measured at the nominated monitoring locations.

- LAeq(15 minute) noise level measured at an appropriate free-field location close to the façade of the relevant residence or other building during day time and evening hours.
- LAeq(1 minute) noise level measured at an appropriate free-field location close to the façade of the relevant residence during night time hours.

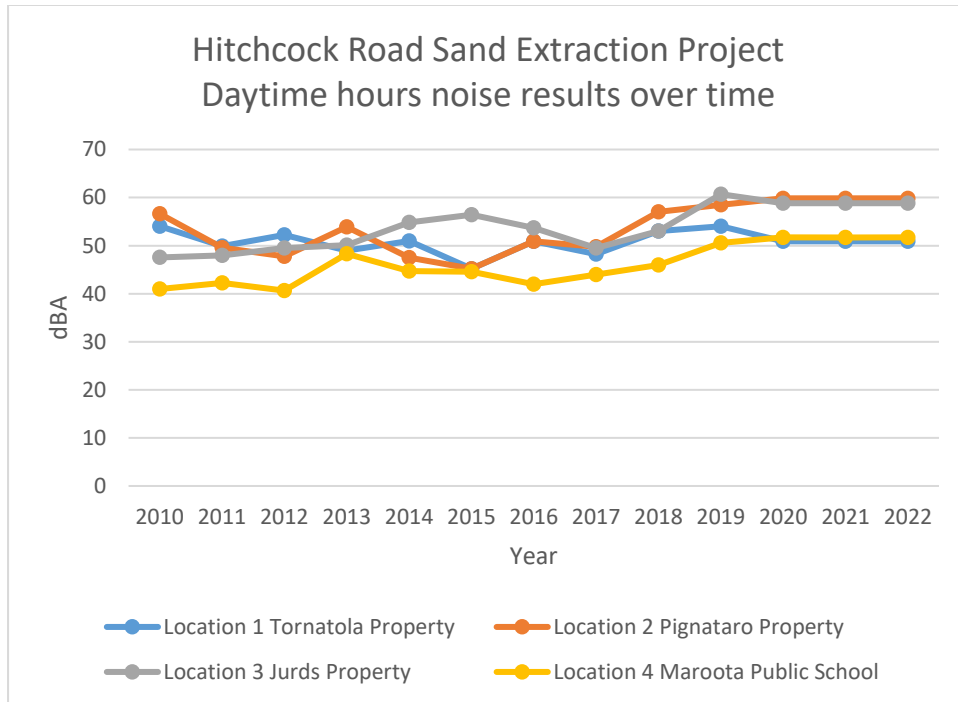
### Operator-attended noise survey results



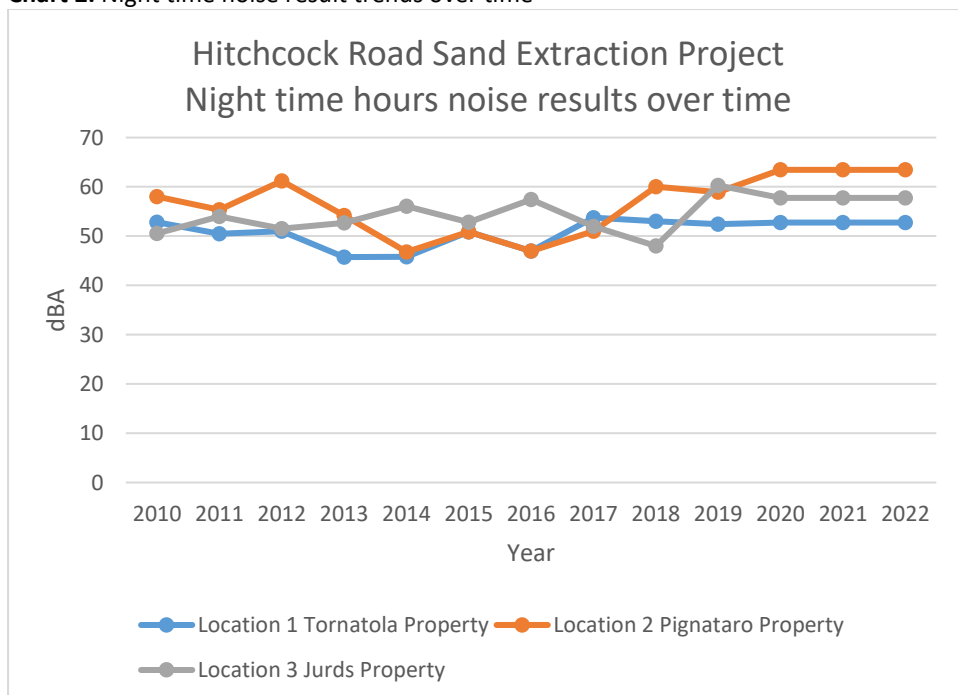
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In accordance with the Noise Management Plan PF Formation conducted its quarterly operator attended daytime noise surveys at each of the four test locations. An external Noise Consultant was employed to prepare a report to assess and review the results against the noise criteria. The report prepared by Koikas Acoustics Pty Ltd is attached as **Attachment 12**.

**Chart 1.** Daytime noise result trends over time



**Chart 2.** Night time noise result trends over time



Koikas Acoustics concluded that noise results at all sites had been dominated by traffic or environmental noises during acoustic surveys over the past 12 month period and that quarry noise was either barely audible or inaudible. The site therefore complies with the nominated noise criteria.

## Air Quality

The Project Approval (Schedule 3 Condition 12) for the Hitchcock Road development required the preparation and implementation of an Air Quality Monitoring Program. The objectives of the Annual Environmental Management Review on air quality issues are therefore:

- identify the dust deposition criteria nominated in the relevant approval documents and listed in the Air Quality Monitoring Program;
- document the results of dust deposition monitoring conducted in the 12 months ended June;
- assess the measured dust deposition levels against the relevant amenity criteria; and
- nominate existing dust deposition monitoring methodology and establish routine measurement procedures.

### Dust impact assessment criteria

The proponent will ensure that dust generated by the project does not cause exceedances of the criteria listed in **Tables 5.1** and **5.2** at any residence or on more than 25 per cent of any privately owned land.

**Table 5.1**

Impact Assessment Criteria for Particulate Matter		
Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90µg/m <sup>3</sup>
Particulate matter < 10µm (PM10)	Annual	30µg/m <sup>3</sup>
	24 hour	50µg/m <sup>3</sup>

**Table 5.2**

Impact Assessment Criteria for deposited dust			
Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2g/m <sup>2</sup> /month	4g/m <sup>2</sup> /month

**Note** - Deposited dust is assessed as insoluble solids as defined by Standards Australia 1991 AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric

### Dust monitoring

PF Formation maintained a program of continuous monthly dust deposition monitoring. This is in compliance with the requirements of the Air Quality Monitoring Program. Three dust deposition gauges have been selectively located on neighbouring properties to monitor air quality surrounding the Hitchcock Road Sand Quarry site.

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Analysis of the dust composition measurements was carried out independently by Boral Materials Testing and Environmental Services. The analysis procedure was in accordance with AS3580.10.1-1991 Methods for Sampling and Analysis of Ambient Air Method 10.1: Determination of Particulate Deposited Matter – Gravimetric Method.

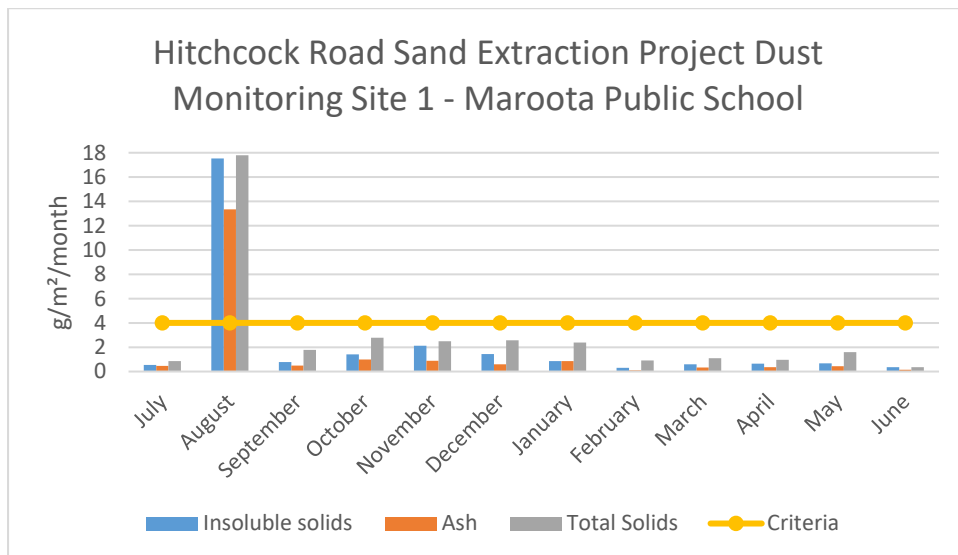
**Monitoring results**

A summary of the monthly dust deposition monitoring results and the detailed measurement and analysis results by month as prepared by Boral Materials Testing and Environmental Services are summarised in **Attachment 13**. Location 4 and 5 in the Test Report is not relevant to the Hitchcock Road site.

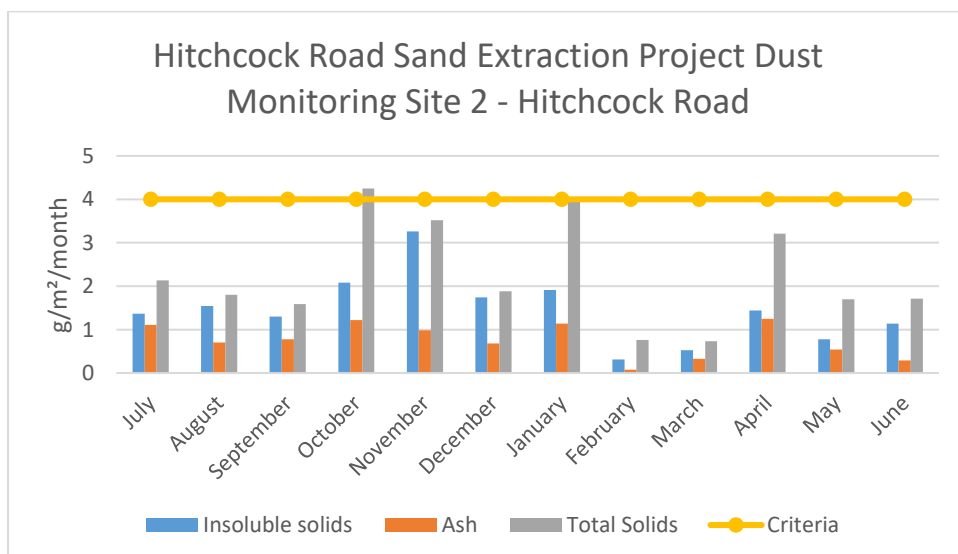
In general, dust monitoring procedures were guided by the requirements of AS2724.1-1984

*Ambient Air Particulate Matter, Part 1 – Determination of Deposited Matter Expressed as Insoluble Solids, Ash, Combustible Matter, Soluble Solids and Total Solids.*

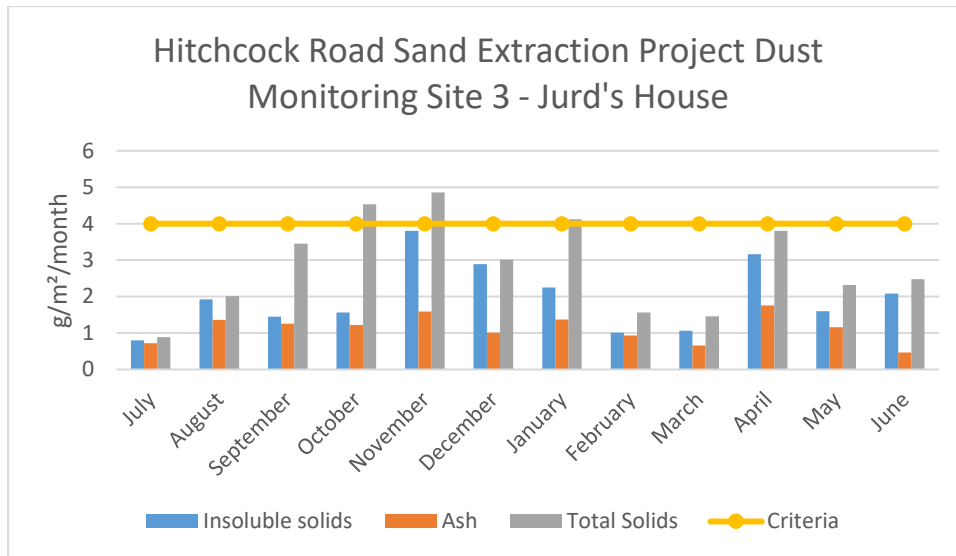
**Chart 3.** Dust monitoring results at Site 1 – Maroota Public School



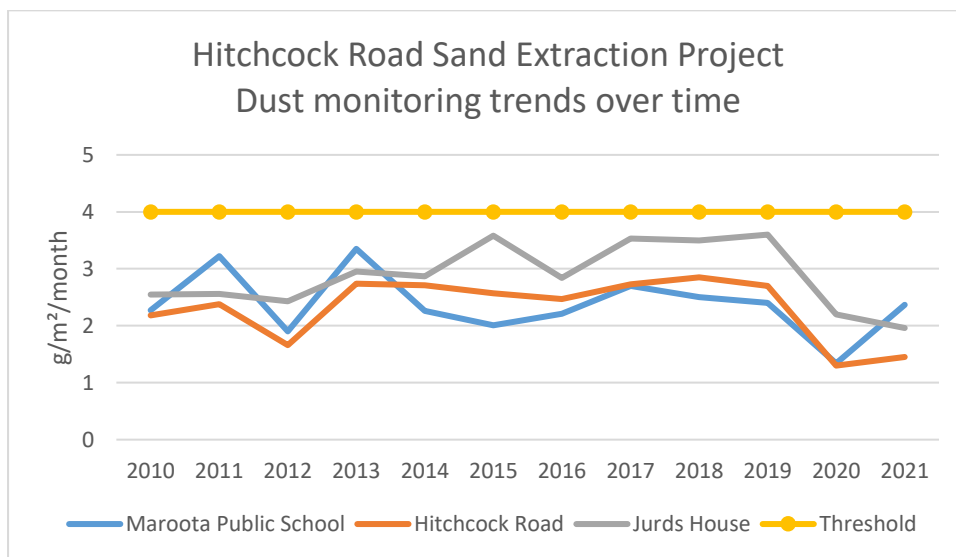
**Chart 4.** Dust monitoring results at site 2 – Hitchcock Road



**Chart 5.** Dust monitoring results at Site 3 – Jurd’s House



**Chart 6.** Dust monitoring trends over time – Insoluble Solids



The following information can be derived from these results in relation to the dust nuisance criterion.

- The insoluble solids portion of deposited dust is expected to be mineral matter with the ash content indicating the level of solid dust particles of inorganic origin such as soil/dust that could be derived from a source such as sand extraction and processing operations.
- The monitoring results are characterised by generally low average levels over extended periods with an occasional spike when high levels are experienced. As the operations from the site are very consistent, the dust generated from the site is consistent subject to weather impacts. Spikes are usually caused by factors unrelated to the quarry such as mowing or horticultural activities near the monitoring station or regional issues such as bush fires and dust storms.

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- The spike in August is related to the Maroota Muster event held annually at the Maroota Public School. Dry conditions with slashing/mowing of the adjacent paddock for heavy traffic flow on the day of the event almost always leads to a spike in total solids each reporting period. Although this event was not held during 2021 due to Covid 19 restrictions, the site was still prepared for the event with mowing and increased farm machinery usage in the immediate vicinity of the dust monitoring gauge. Results were compared with a neighbouring quarry (Dixon Sand) who also reported a spike in insoluble solids. The weather conditions recorded via the TEOM (owned by Dixon Sand) indicated that the event took place on a Sunday when no quarry activity was being undertaken.
- The annual average ambient dust deposition rate (insoluble solids) considered a nuisance criterion is 4 g/m<sup>2</sup>/month. All sites monitored had annual averages below this level despite the occasional monthly spike. Location 1 – Maroota School average was 2.27g/m<sup>2</sup>/month, Location 2 – Hitchcock Road average was 1.45g/m<sup>2</sup>/month, Location 3 – Jurd's House average was 1.96g/m<sup>2</sup>/month.
- The distances from the quarry operations and the significant other factors impacting the dust deposit gauge results, high recordings are not necessarily a result of quarry operations. It is reassuring when all locations have relatively low results in the last few years under normal environmental conditions.
- PF Formation and Dixon Sand (a neighbouring operator) have an agreement whereby if the rolling 24-hour PM10 average recorded by the TEOM (owned by Dixon Sand) reaches 42.5 µg/m<sup>3</sup>, PF Formation would be notified if the wind direction indicates PF Formation operations may have triggered the high level result. At no time in the last 12 months has Dixon Sand contacted PF Formation due to results derived from the TEOM reaching the designated trigger during operation hours.
- There have been no complaints concerning dust generation over the past year.
- A summary of the weather conditions recorded on-site are in **Attachment 6**.

### Conclusions

In accordance with the requirements of the Project Approval, PF Formation has implemented a program of dust deposition monitoring. The results of the regular monthly dust deposition monitoring conducted over the past year and analysed externally by Boral Materials Testing and Environmental Services show that deposition rates from all sources have remained below the maximum level criteria.

### Social Impact Management

Community representatives participate in the Community Consultative Committee which has met twice during the year. Minutes from the meeting is included as **Attachment 10**. There were no quarry associated matters raised by the community or resident representatives during the meeting or any other time during the reporting period.

### Aboriginal Heritage Management

There are no known Aboriginal Heritage sites within the operation area of the Hitchcock Road Sand Project. No Aboriginal relics or skeletal remains were discovered during the reporting period.

## Conclusion

All environmental monitoring indicated that the quarry operations are within the defined limits and no indicators of new potential issues were identified.

From the procedure conducted there were no trends identified as yet and no areas of non-compliance.

## Water Management

The groundwater monitoring program included in the Water Management Plan approved by the Planning Secretary of the Department of Planning and Environment includes:

- provision of additional monitoring bores around the periphery of the site;
- detailed baseline data on groundwater levels, flows and quality in the region and particularly any groundwater bores, springs and seeps (including spring and seep fed dams) that may be affected by operations on site;
- groundwater assessment criteria including trigger levels for investigating any potentially adverse groundwater impacts;
- a program to monitor:
  - groundwater levels and quality in new and existing monitoring bores;
  - impacts of the project on any groundwater bores, springs and seeps (including spring and seep fed farm dams) on privately-owned land and any groundwater dependent ecosystems; and
  - a protocol for further groundwater modelling to confirm the limits to excavation depth across the site permitted in accordance with Condition 9 of Schedule 2.

A summary of water taken by the operation in the 12 month reporting period can be seen in Table 8.

**Table 8.** Water use summary for 2021-2022

Water Licence #	Water sharing plan, source and management zones	Entitlement	Passive take/inflows	Active pumping	TOTAL
<b>Approval</b> #10WA114809	Greater Metropolitan region groundwater sources, Maroota tertiary sands groundwater source	44 ML	N/A	2.256ML	2.256ML
<b>WAL</b> #42259					
<b>Reference</b> #10AL114808					

## Groundwater management

An updated Water Management Plan was developed during the previous 12 month reporting period. The revised Water Management Plan was prepared to address the issues raised by DPI Water (now called Department of Planning and Environment (DPIE) - Water) and as a result of the Independent Environmental Audit.

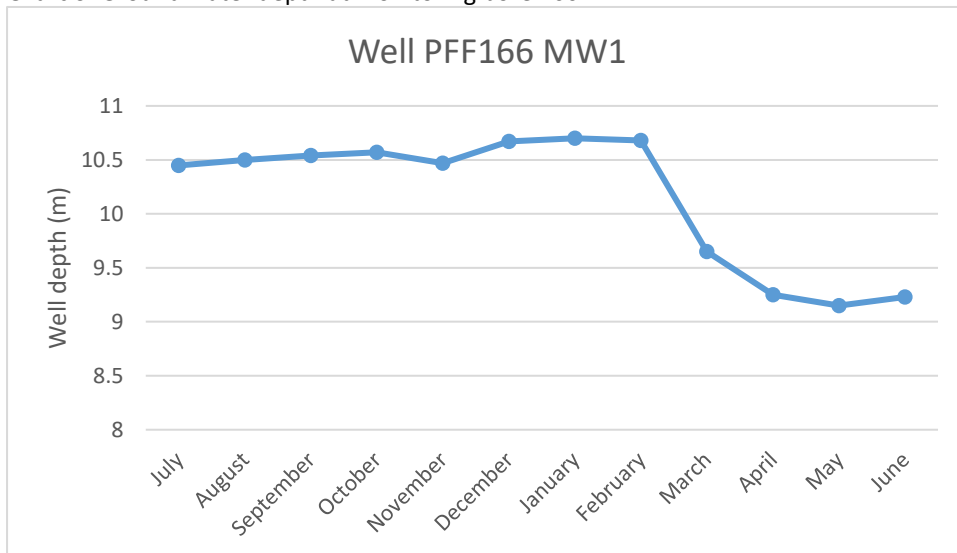
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An annual Groundwater Report which includes updated groundwater monitoring data collected throughout the reporting period has been prepared by Earth2Water with the full report available to view in **Attachment 14**.

The above average rainfall in the past 12 months has seen a steady increase in ground water depth at all deep water monitoring wells across the site. Water quality remained stable through the drought conditions from 2017-2020 with only two deep wells having a slight increase in EC and TDS. These wells have now stabilized with the return of regular rainfall events and the recharging of the ground water. All other test results have remained stable when compared to previous years.

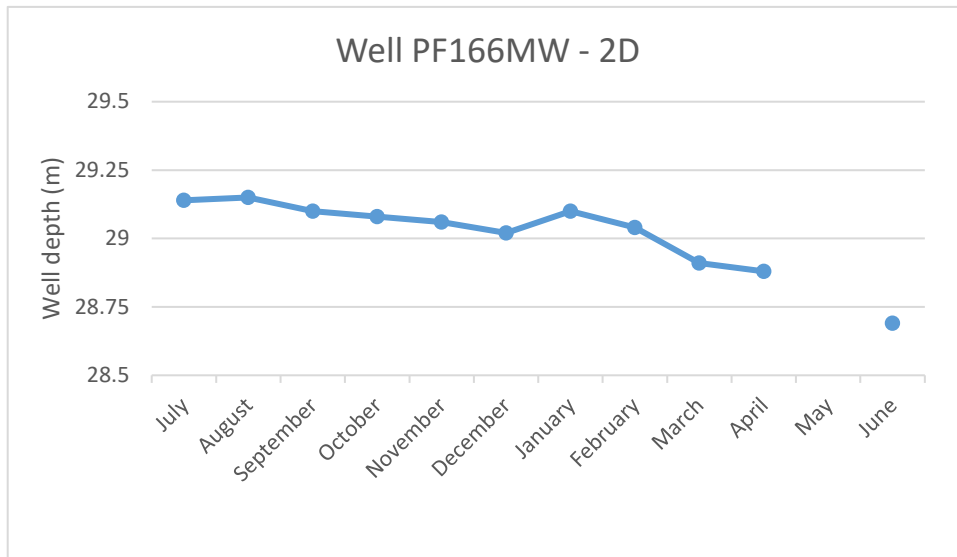
PF Formation volunteered to participate in the new regional groundwater study which was undertaken in the Maroota area by the Department of Industry – Land and Water. The revised Water Management Plan was provided with no comments received. The Maroota Extractive Industry Groundwater Study concluded that there has been no significant decline in ground water level over time and that ground water quality remains in relatively good condition and suitable for stock, irrigation and domestic use.

**Chart 6.** Ground water depth at monitoring bore 166MW1

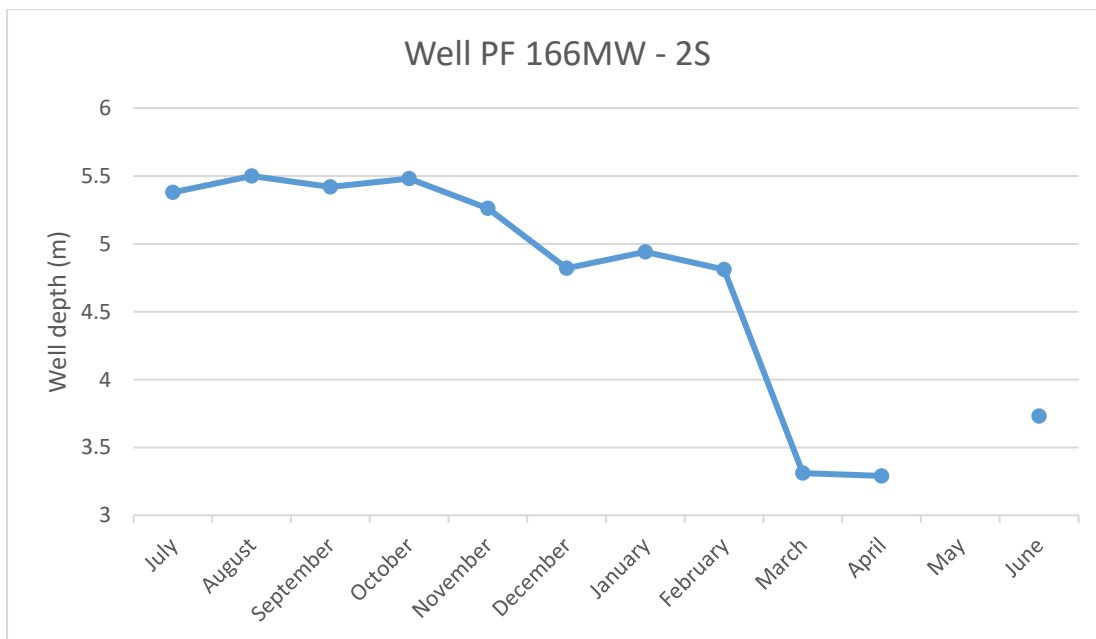


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**Chart 7.** Ground water depth at monitoring bore 166MW-2D (Access restricted during part of the year due to flooding)



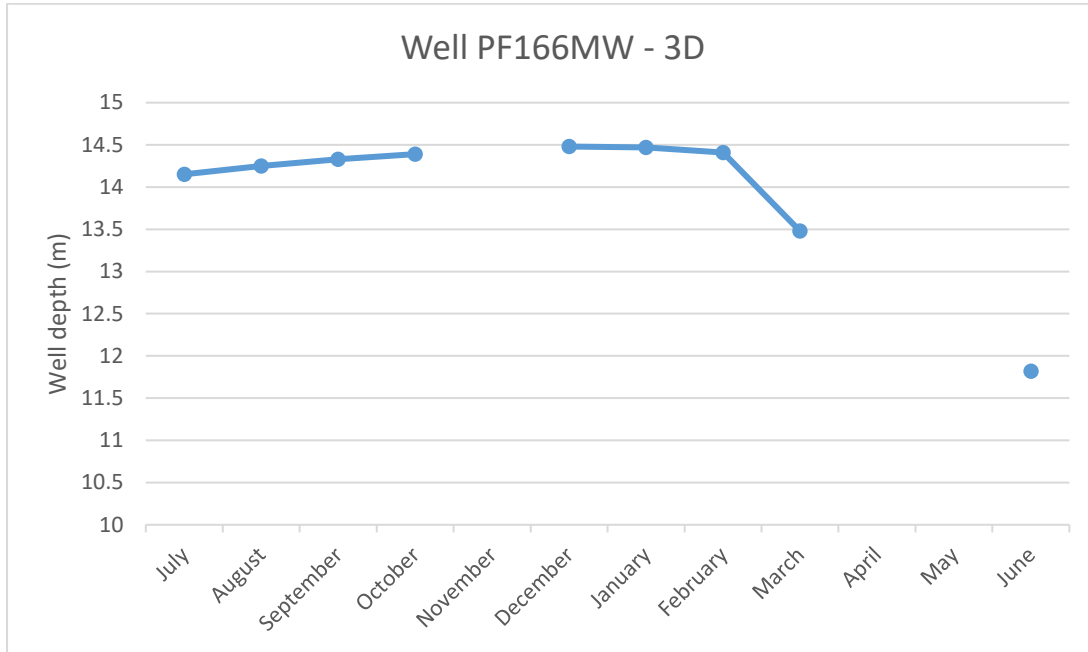
**Chart 8.** Ground water depth at monitoring bore 166MW-2S (Access restricted during part of the year due to flooding)



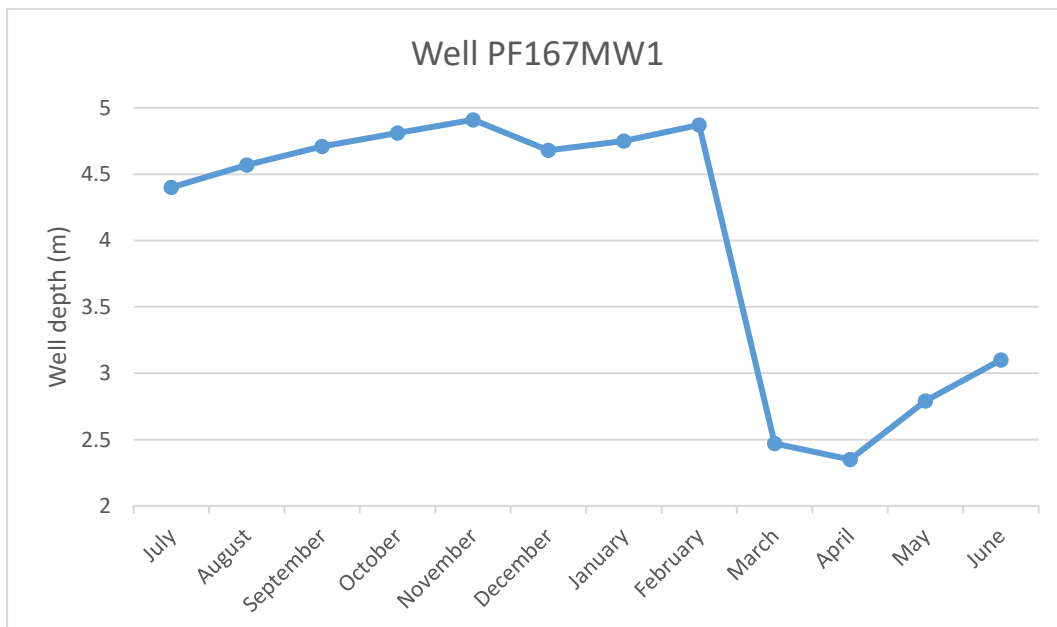
**Chart 9.** Ground water depth at monitoring bore 166MW-3D (Access restricted during part of the year due to flooding)



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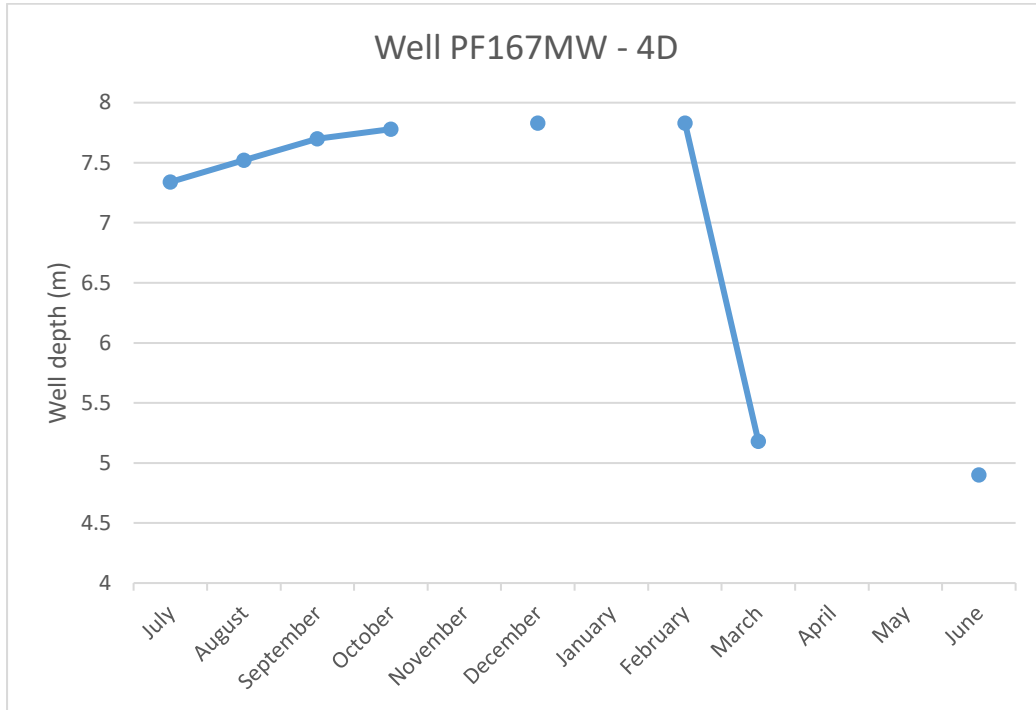


**Chart 10.** Ground water depth at monitoring bore 167MW1

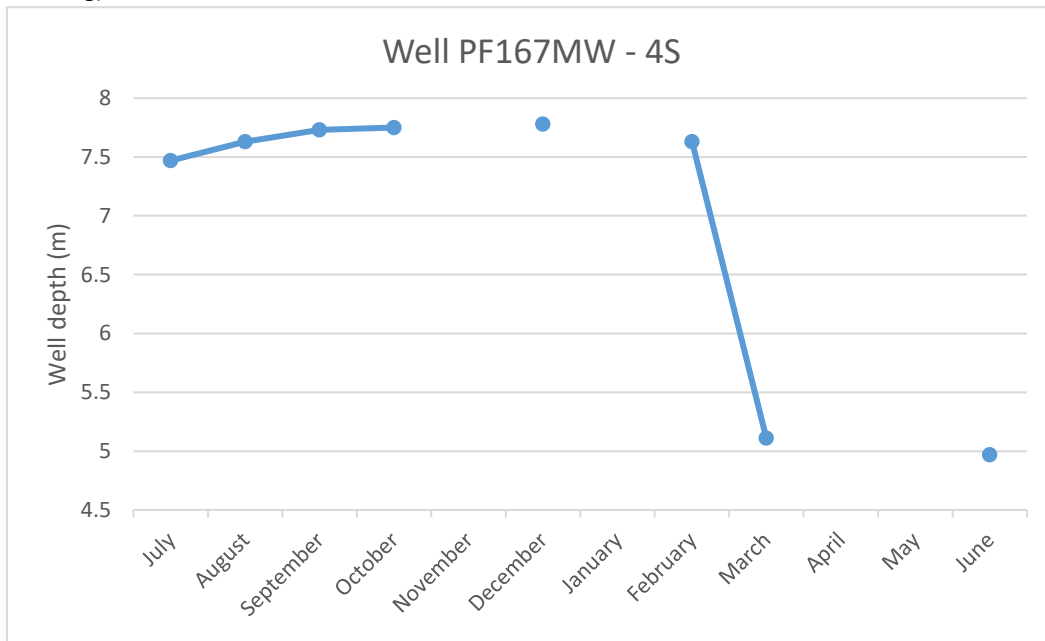


**Chart 11.** Ground water depth at monitoring bore 167MW-4D (Access restricted during part of the year due to flooding)

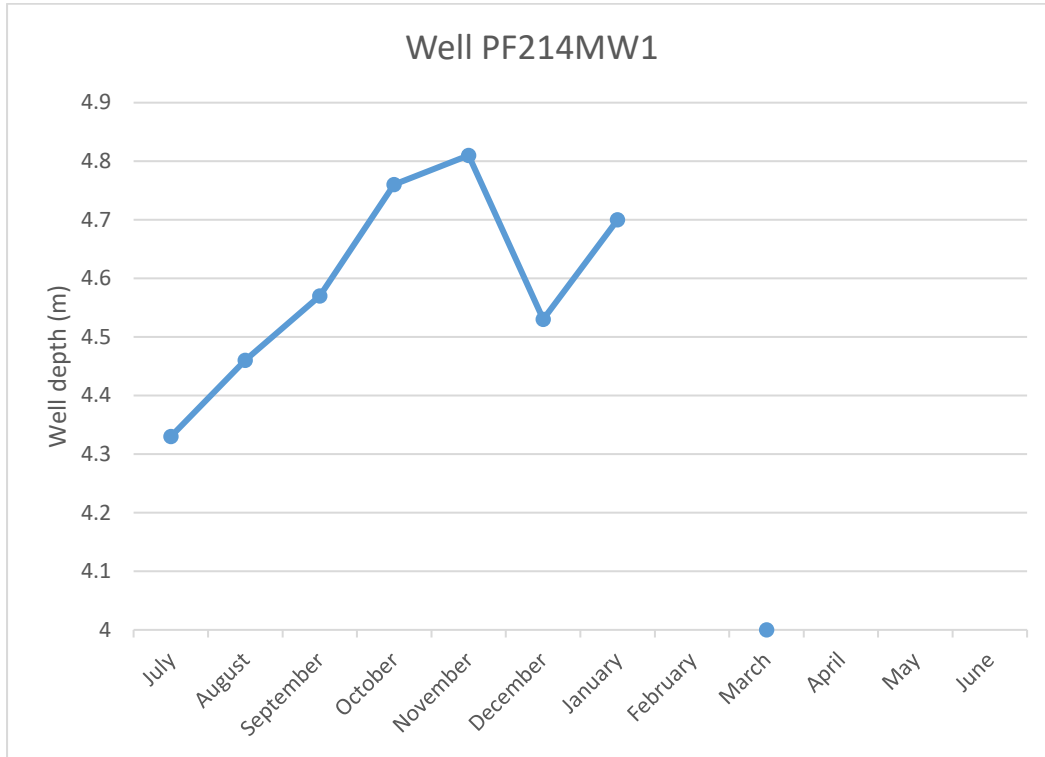
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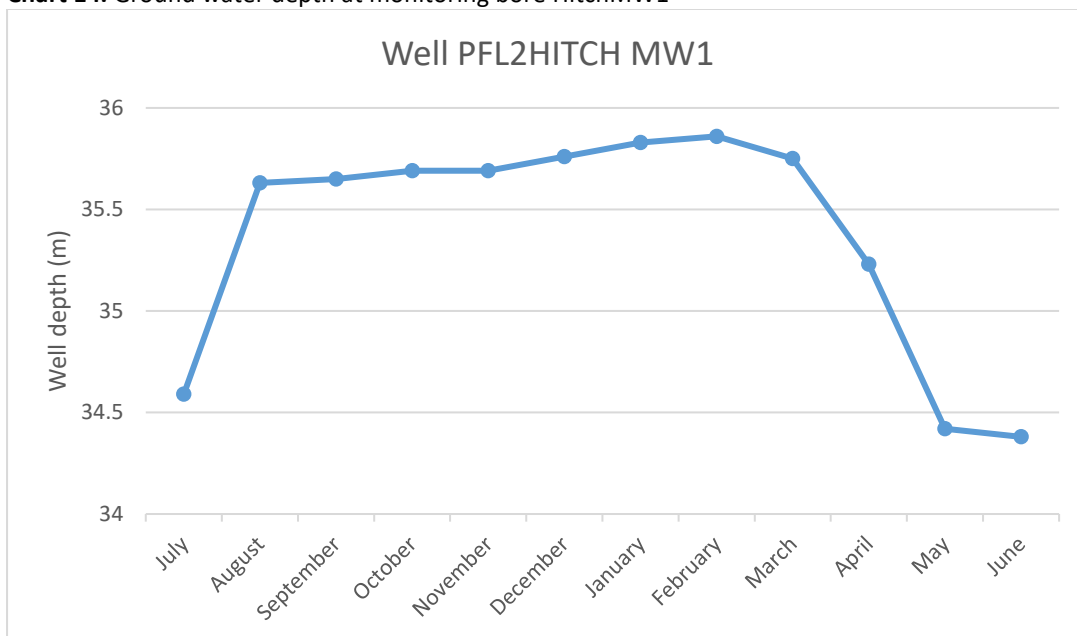
**Chart 12.** Ground water depth at monitoring bore 167MW-4S (Access restricted during part of the year due to flooding)



**Chart 13.** Ground water depth at monitoring bore 214MW1 (Access restricted during part of the year due to flooding)



**Chart 14. Ground water depth at monitoring bore HitchMW1**



Surface water management

### ***Current site conditions***

The location of the current extraction areas, tailings ponds and sediment basins is shown on the figure at **Attachment 8**. Extraction within Lot 1 DP 1013943 and Lot 2 DP 570966 is currently underway. Active silt pond locations has changed slightly with previously capped ponds becoming active again and other ponds being merged together.

The following points respond, where appropriate, to the specific surface water issues listed in the Water Management Plan.

### **Treatment of sediment-laden water**

Sediment-laden water is treated by the use of a series of tailings ponds which enable the sediment to progressively settle out of suspension with the resulting clean water returned to the processing cycle.

Stormwater runoff from disturbed areas flows to these ponds and other sediment basins across the site to maximise reuse of all water. Prior to overflow and discharge from the spillways and the site, the stormwater runoff is treated where necessary.

The clean water supply dam, located close to the southern boundary of the southern catchment, comprises the final sediment basin before any discharge of stormwater from the Hitchcock Road site. It is included in the process water cycle and, at the time of the inspection, was estimated to be using about 80 percent of its calculated capacity of 25,000 cubic metres.

The clean water supply dam is connected by pipe to the clean water dam on Lot 198 DP 752025 below the central processing plant (sand washplant). A sediment trap system has been built in front of the dam to pump the washplant sediment back into the washplant. The system is working well and minimal operational sediment now enters the clean water dam. The capacity is 50,000 cubic metres and was estimated to be using 80 percent at the time of inspection. Water can be balanced between the two sites as necessary.

### **Maintaining/monitoring current surface water quality**

The site does not have any permanently flowing surface waters. Existing surface water is limited to a supply sump in an area of previous extraction and a number of small farm dams. The existing tailings ponds and sediment basins will maintain the quality of the intermittent surface water flows experienced on the site.

Monitoring of surface water quality outside of the property boundary in the Maroota State Forest south from Lot 214 DP 752039 commenced in March 2018. This monitoring has continued on a quarterly basis with results being available in **Attachment 14**.

Quarterly samples were also taken from an existing monitoring site on the creek below Lot 198 DP 752025. The results from these samples are available in **Attachment 14**. The PH, electrical conductivity and oil and grease results were all within the expected ranges.

### **Dewatering of water pits**

Of the commissioned ponds, numbers 11, 13 and 14 are currently in the tailings stream cycle. Pond 12 is currently being prepared to come back into the tailings stream cycle to allow pond 11 to settle.

All other tailings ponds have been fully capped. The location of the previous tailings ponds 9 and 10 is currently being used as the stockpile area for the site.

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Decant water from the tailings ponds flows to the clean water supply dam and then to the slurry plant and the processing/wash plant on Lot 198.

### Destination points for waters collected within the extraction areas

In the southern catchment, the collected waters flow to the tailings ponds and the clean water dam (southern sediment basin) and thence to the slurry plant and the main process plant on Lot 198.

In the northern part of the Hitchcock Road site water flows to the northern sediment basin and thence (if not recovered and reused) via the overflow spillway, and two further minor sediment traps to the Wisemans Ferry Road surface drains. There are no indications that any surface water has been discharged from this area of the Hitchcock Road site and all available water is used in the processing cycle.

Throughout the 2021-2022 reporting period there have been two 1-100 year rainfall events and other minor flooding in the region. The Hitchcock Road site was able to withstand this amount of water collection however access in and around the site was restricted for extended periods as water slowly dissipated.

### On-site reuse of collected waters

All collected waters are reused in the processing cycle during the operational stage of the extraction works.

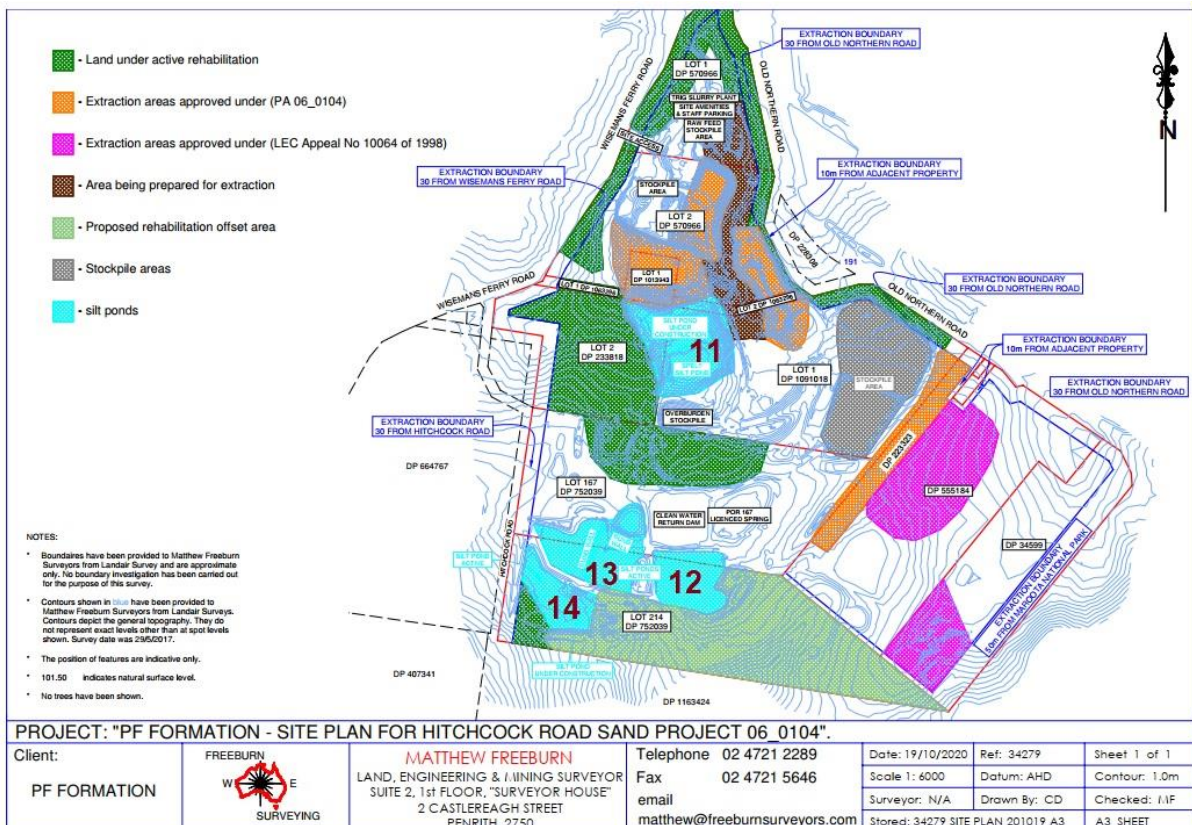


Figure 5. Location of numbered Silt ponds in tailings stream cycle.

### Water levels within the existing water sump

Water levels and volumes within the sump are detailed in the Ground Water Report **Attachment 14**. The sump (dam) is located at the lowest point- in the south-eastern corner of the existing pit on Portion 167 on the eastern side of the clean water dam. The capacity of this area is essentially the full extent of the existing pit and would greatly exceed that calculated in the Rehabilitation Plan as necessary for the total capture of runoff from the 100 year time of concentration storm event (19,400 m<sup>3</sup>).

### Significant site features, recharge areas and natural areas

The main extraction area changes within the site but only impacts internal water flows. Groundwater recharge areas, outside the current extraction areas remain essentially unaltered and the Groundwater Management Plan has concluded that there has been no apparent impact on the sustainability of the groundwater (see **Attachment 14**).

### Conclusion

Groundwater and surface water levels have been monitored and water samples tested with no abnormalities noted. The upgrade of ground water monitoring across the site has occurred with approval of the Revised Groundwater Management Plan. The extreme wet weather conditions during the reporting period has witnessed a rise in ground water levels which quickly levelled out to a reasonably consistent level at most deep wells. Ground water used from licensed bores did not exceed the yearly entitlement.

## Rehabilitation

A Landscape Management Plan has been prepared in compliance with the requirements of the current Project Approval and was approved by the Department of Planning. The following section therefore describes the current phase of site rehabilitation.

### Rate of rehabilitation

Rehabilitation of the site is taking place generally in the expectation with the overall staging program. The removal of material from the first phases has been completed and extraction has continued as shown on the Site Plan at in **Figure 4**.

Rehabilitation of the project is dependent on three main factors:

- Material for backfilling does not become available until topsoil and overburden are removed from later phases as similar material from the first phase area is used to form peripheral mounds and the earthworks required for the tailings dams.
- Substantial parts of the operational area are occupied by a series of basins required for surface water treatment. These require capping prior to any major rehabilitation-taking place in the area. This cannot be undertaken until new basins are developed as part of the next phase development which in turn serve the whole project. In addition, capping cannot take place until the ponds are sufficiently dry to accommodate heavy vehicles with safety. This can take up to three years.
- The timing of the rehabilitation of the initial phases is therefore dependent on a substantial start being made on the next phase. Activity to date has focused on the provision of the

peripheral mounds which are required for acoustic and visual reasons. These have been constructed, so far, in those areas particularly sensitive to these impacts.

A number of the early tailings dams have been capped and the area is in the process of rehabilitation. This is particularly the case in the western part of the site immediately to the south of the former Crown Road where several silt ponds have been capped and the ground contours reconfigured. 4.2 hectares of the western section has been seeded under the guidance of Greening Australia and Parsons Brinckerhoff and has been subject to bi-annual monitoring reports since 2010. The Bi-annual Rehabilitation Monitoring Report prepared in Dec 2021 found the 2004 revegetation area was considered to have met all the requirements of the revegetation success criteria outlined by Parsons Brinckerhoff 2008 – Methodology to assess success of revegetation within Hitchcock Road site, although species diversity had not met the average target. The 2006 revegetation area had exceeded the 10 year criteria and was close to reaching the 15 year targets. The 2011 revegetation area had met the 5 year criteria although it was struggling with species diversity and exotic pasture species in the drought conditions of 2019.

### **Final Landform (Strategy A)**

Two options for the final landform were incorporated in the planning documents. Strategy B was based on final landforms if PF Formation was unable to get approval from the Director General to disturb the SHTW in the middle of the site. On 15 March 2013 the NSW Department of Planning and Infrastructure gave approval to proceed with the clearing of the SHTW. Therefore the final landform will be based on Strategy A from the planning documents.

### **Maintenance of vegetated conservation zones and rehabilitated areas**

Conservation zones identified in the Landscape Management Plan are regularly inspected as required in the Environmental Strategy (Strategy 7.1). These areas are signposted and the areas suitably protected. All existing vegetation around the periphery of the site will be protected within setbacks and buffer zones. Weed management has been undertaken within the reporting period to maintain and improve the biodiversity value of the rehabilitated areas.

The peripheral bunds constructed to date have been planted. These are regularly inspected and the areas maintained.

### **Retention and protection of vegetation within buffer zones**

All existing vegetation within the defined buffer zones will be retained and protected. A setback with a minimum depth of 30 metres is being maintained along Hitchcock Road and all existing vegetation within this area will be retained.

### **Integration of the site rehabilitation with the surrounding terrain**

Operations have been undertaken on the Hitchcock Road site under the previous consent since November 1998. These have inevitably concentrated on the site works required for the development including retention basins and the construction of the peripheral bunds. It is too early in the life of the development, with more than 10 years of life remaining, to consider the establishment of the

final landform in any detail. The area in the south has been reformed with final batter slopes which give an indication of the way in which the final landform will integrate with the surrounding area.

The final landform of the Hitchcock Road site will be influenced by the depth of extraction, the location of commercially available resource and the volume of overburden, mainly clay, available for re-contouring the extracted areas. Sand has been extracted from part of the site to the depth allowed in the previous consent and part of this area has been rehabilitated. The existing topography and setbacks is also shown on the Site Survey Plan. The final landform has been developed in response to the requirements of the proposed biodiversity offset strategy.

The final landform (Strategy A) comprises a large gently sloping basin with steeper side slopes along the boundary to Old Northern Road. Some of the levels have been amended to reflect changes in the extraction areas to minimise vegetation removal.

### **Vegetative cover**

In 2010 Greening Australia were commissioned to prepare a plan of management for the rehabilitation area of 2.4 hectares previously planted and for the additional area of 1.6 hectares to be rehabilitated. Based on that plan of management the additional area was planted in Spring 2011 to give an area subject to SHTW rehabilitation exceeding 4 hectares.

### **Rehabilitation monitoring program**

Regular monitoring of flora and fauna within the rehabilitation areas is a requirement of the Environmental Strategy. Results to date are encouraging. A report prepared by South East Environmental was completed in December 2021 and is appended as **Attachment 15**. The report states that 'the rehabilitation is progressing well and is generally meeting or exceeding the targets set'.

### **Conservation of threatened species, populations and ecological communities**

It is a requirement of the Environmental Strategy that all those areas to be retained and defined as needing protection will be clearly identified. Signs have been placed at intervals around the areas needing protection being the native vegetation boundary in the southern area of Lot 214. Signs have also been erected along boundaries to rehabilitation areas and buffer zones.

### **Construction of acoustic and visual bunding**

Construction of the peripheral bunds has already been noted. Improvements have taken place along Old Northern Road to better screen the sand slurry plant.

### **Compliance with current environmental laws, standards and practices**

The Department of Planning, Industry and Environment attended the Hitchcock Road rehabilitation site on the 2<sup>nd</sup> of June 2021 as part of a review process they were undertaking for select quarries throughout NSW. Following the site inspection a letter was received on the 29<sup>th</sup> of July 2021 which stated:



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*Rehabilitation of the quarry is progressing in alignment with the Landscape Management Plan v01.2 dated December 2016. However, although the overall condition of the rehabilitated areas was observed to be good, weeds were also present.*

*As an outcome of the review, it is recommended that active weed control measures continue to be implemented throughout the year to reduce weed abundance to a level like that of the vegetation to be removed for ongoing excavation.*

Active weed control measures do occur throughout the year with a minimum of monthly work undertaken.

**Actions for the next reporting period**

Ongoing maintenance of weed control within the rehabilitation areas will continue. An updated Rehabilitation Monitoring Report will be completed and available for the next annual reporting period.

**Table 9.** Rehabilitation status

Mine Area Type	Previous reporting period 2020-2021	This reporting period 2021-2022	Next reporting period 2022-2023
<b>Total mine footprint</b>	36.5 hectares	36.5 hectares	36.5 hectares
<b>Total active disturbance</b>	3.175 hectares	3.175 hectares	3.175 hectares
<b>Land being prepared for rehabilitation</b>	1.45 hectares	1.45 hectares	1.45 hectares
<b>Land under active rehabilitation</b>	4.2 hectares	4.2 hectares	5 hectares
<b>Completed rehabilitation</b>	3.7 hectares	3.7 hectares	N/A

**Community**

Two meetings were held during the reporting period for the Community Consultative Committee. There were no complaints received during the reporting period so therefore no actions undertaken in response to complaints. There were no community contributions received. The minutes to the CCC meeting can be viewed as **Attachment 10**.

**Independent audit**

The approval of the Hitchcock Road Sand Extraction and Rehabilitation Project facilitates the independent audit of operations each three year period since the approval date, 3rd February 2009.

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Since the project commencement an independent audit has been completed in 2011, 2014, 2017 and the most recent in June 2020. The next independent audit is scheduled to take place during 2023. The results of Independent Environmental Audit are published on the PF Formation website.

### Incidents and non-compliances during the reporting period

There were no incidents and non-compliances during the 2021-2022 reporting period.

The most recent Independent Audit in 2020 raised four issues of non-compliance during the site inspection.

The Hitchcock Road Sand Extraction Project had submitted a modification request to offset existing native vegetation of high quality within Lot 214 DP752039 for the removal of vegetation of lower quality within Lot 1 DP1013943. The DPIE did not accept this new proposed strategy therefore the Landscape Management Plan was updated and submitted to the Department in June 2022 to reflect this outcome.

There were locations within the operational extraction areas which were not clearly defined by steel star posts during the audit site inspection. The steel posts have since been correctly positioned and all machine operators made aware of the visual boundary

A sediment fence on the underside of a silt pond had become overloaded with sediment and was somewhat damaged in sections. This sediment fence, and others around the site, have been replaced or repaired following the excessive rainfall experienced during the reporting period.

The fore mentioned non-compliances had resulted in an additional non-compliance of the development not operating without non-compliance. However it was noted that the development is generally being carried out in accordance with the EA, Statement of commitments and with the conditions of approval.

**Table 10.** PF Formation action plan in response to non-compliances

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Item	Reference	Non-compliance	Recommended Action	Time Frame for Completion	Response to Recommendations
1.	Schedule 2 Condition 2	The development is generally being carried out in accordance with the EIS and with the conditions of development consent, however a number of non-compliances were identified.	Recommendations are provided against the specific conditions below.	See below	Noted.  See below response to recommendation of non-compliances.
2.	Schedule 3 Condition 1	Extraction boundaries had previously been marked with star pickets, however during the 2020 site inspection it was observed that these boundaries were not clearly identified in some areas.	Extraction boundary markers should be reviewed, provided with clear signage, and updated and maintained to be permanent markers.	3 months	Agreed.  Extraction boundary markers have been disturbed in certain areas where rehabilitation has taken place however no extraction has occurred outside the approved areas. Permanent galvanised star pickets have been installed with signage along the extraction boundary.
3.	Schedule 3 Condition 18	During the site inspection, sediment fences on the southern boundary of the pit 14 tailings dam were observed overloaded with sediment and were damaged in areas.	Sediment fences are to be cleaned out regularly to ensure they maintain their integrity and should form part of regular inspection and maintenance.	1 month	Agreed.  All sediment fences throughout the site were cleaned and reinstated.
4.	Schedule 3 Condition 23	The Landscape Management Plan references the offset strategy for the site, however there was no evidence available to confirm these arrangements have been implemented to the satisfaction of the Director-General. A revised Offset Strategy is currently being prepared as part of an application for a consent modification	A revised Offset Strategy should be prepared and implemented as soon as practicable that is consistent with current offsetting requirements in NSW.	6 months	Agreed.  A Modification Report was submitted for proposed modifications to the Hitchcock Road Quarry-Mod-1 (MP06_0104-Mod-1). A revised Offset Strategy was included in the Modification report however this was not supported by DPIE. The Landscape Management Plan has been updated and submitted to the

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					department in June 2022.
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**Activities to be completed in the next reporting period**

It is expected that the following work will have been undertaken by the next reporting period:

- Continue importing VENM material from construction sites around Sydney;
- Start importing ENM and other materials with an approved Resource Recovery Order and Exemption;
- Continue overburden removal, extraction and processing of material in Lot 2 DP555184 in the areas shown on Figure 4.