PF FORMATION

# HITCHCOCK ROAD SAND EXTRACTION AND REHABILITATION PROJECT, MAROOTA

# PF Formation

## HITCHCOCK ROAD MAROOTA

## Sand Extraction and Rehabilitation Project

# ANNUAL ENVIRONMENTAL MANAGEMENT REVIEW
## 2018-2019

Prepared by:

South East Environmental
ABN 13 927 340 723
72 Mitchells Road
Sackville North
NSW 2756

| Document Reference | Version | Date | Prepared by | Reviewed by | Approved |
|---|---|---|---|---|---|
| **AEMR – PF Formation** | 1 | 4/10/2019 | South East Environmental | Josh Graham | |
| | 2 | 22/10/2019 | South East Environmental | Josh Graham | Josh Graham |

**PF Formation**
1 Patricia Fay Drive
Maroota, NSW 2756
Telephone: (02) 4566 8257
Facsimile: (02) 4566 8349

| | |
|---|---|
| **Name of operation** | Hitchcock Road Sand Project |
| **Name of operator** | PF Formation |
| **Development consent/project approval #** | 06_0104 |
| **Name of holder of development consent/project approval** | PF Formation |
| **Mining lease #** | N/A |
| **Name of holder of mining lease** | N/A |
| **Water licence #** | Approval #10WA114809<br><br>WAL #42259<br><br>Reference # 10AL114808 |
| **Name of holder of water licence** | PF Graham (No 2) Pty Ltd |
| **MOP/RMP start date** | 3rd February 2009 |
| **MOP/RMP end date** | 30th November 2028 |
| **Annual review start date** | 1st July 2018 |
| **Annual review end date** | 30th June 2019 |

**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 2018 until June 2019 and that I am authorised to make this statement on behalf of PF Formation.**

*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 officer** | Melissa Mass |
| **Title of authorised reporting officer** | Senior Ecologist |
| **Signature of authorised reporting officer** | M.Mass |
| **Date** | 4/10/2019 |

# 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 2018 until June 2019.

The Hitchcock Road Sand Extraction and Rehabilitation Project was approved in 2009 with an expected and approved life span of 20 years. 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 108,974 tonnes, far less than 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 2018-2019 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 2018-2019 reporting period.

## Air

Air quality testing was undertaken by Boral Materials Testing and Environmental Services throughout 2018-2019. The summer months of 2018/2019 recorded spikes in total deposited dust however this can be attributed to the dust storms which occurred on a regular basis over this period as a result of the ongoing drought conditions in the western regions of NSW.

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 $g/m^2$/month.

No dust complaints were received in 2018-2019.

## Water

Ground water levels are monitored continuously throughout the year at 5 separate licenced bore locations using a Solinst datalogger, although in total 9 wells are monitored monthly throughout the year and an additional 3 were monitored for part of the year. Pumping did occur from 2 licenced bores on lot 198 throughout the year however the annual allocation of 60ML was not exceeded. Water pumping also took place from licenced spring POR 167 however the annual allocation of 50ML from this spring was not exceeded.

The ground water analysis met all requirements necessary for the year 2018-2019 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 2018-2019 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. There were no compliance issues raised throughout the year.

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 Maroota 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 over a period of 20 years.

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 present development was approved by the Minister for Planning on 3 February 2009 (**Attachment 1**). The conditions attached to the approval required, among other things, the preparation of five management plans/monitoring programs:

- 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 approval given on the 21st of July 2016.

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
    - 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. The audit will:

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

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.

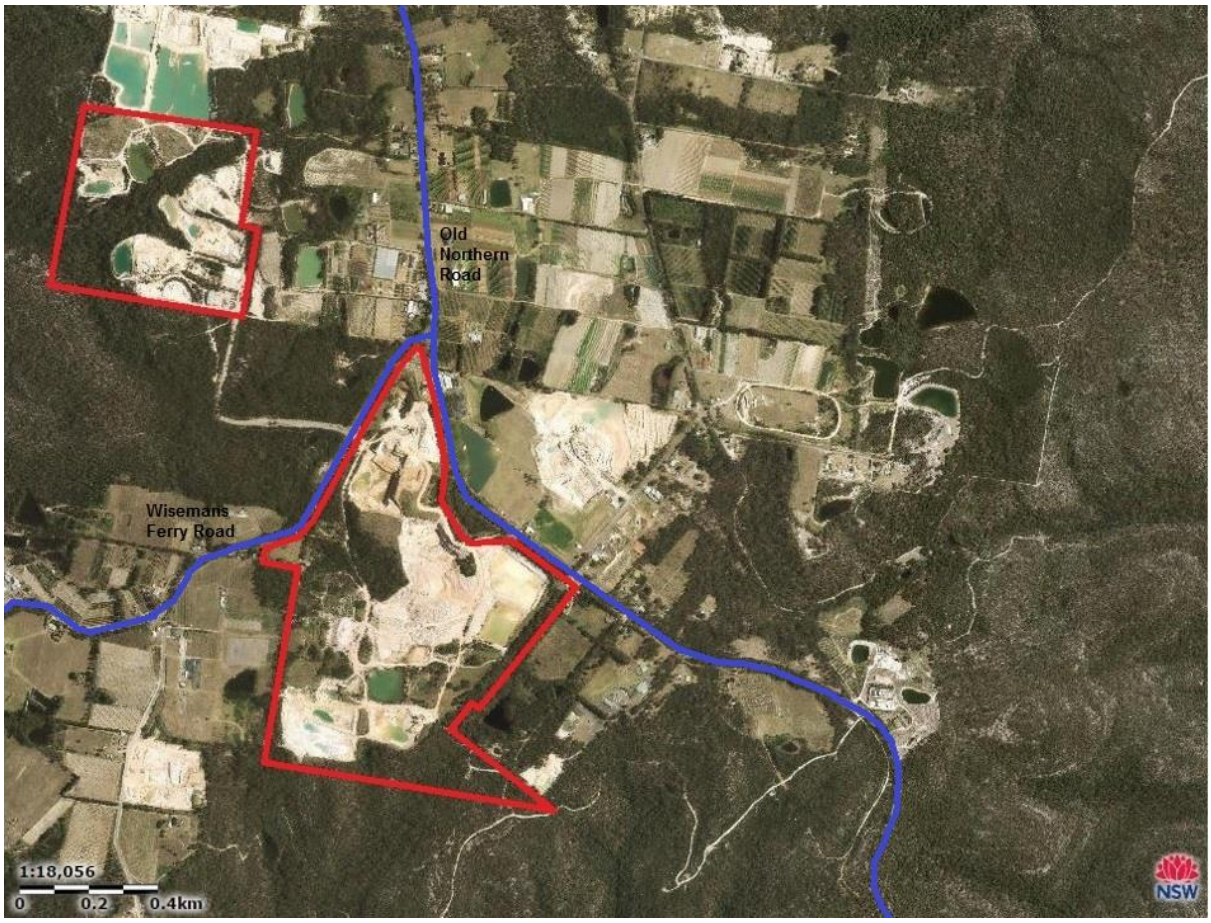



**Figure 1.** Hitchcock Road Sand Extraction Project location

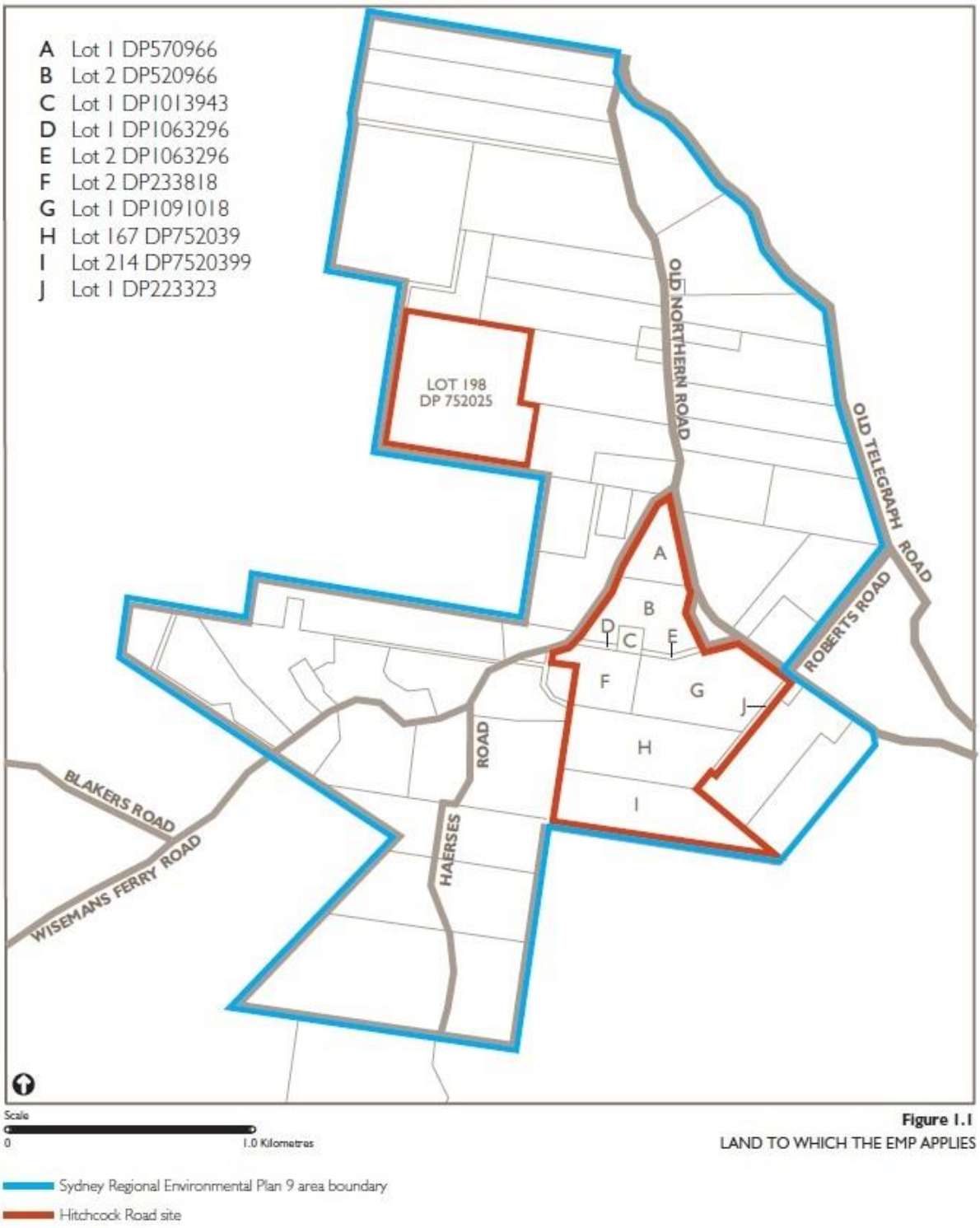



**Figure 2.** Lots within the Hitchcock Road Sand Extraction Project


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

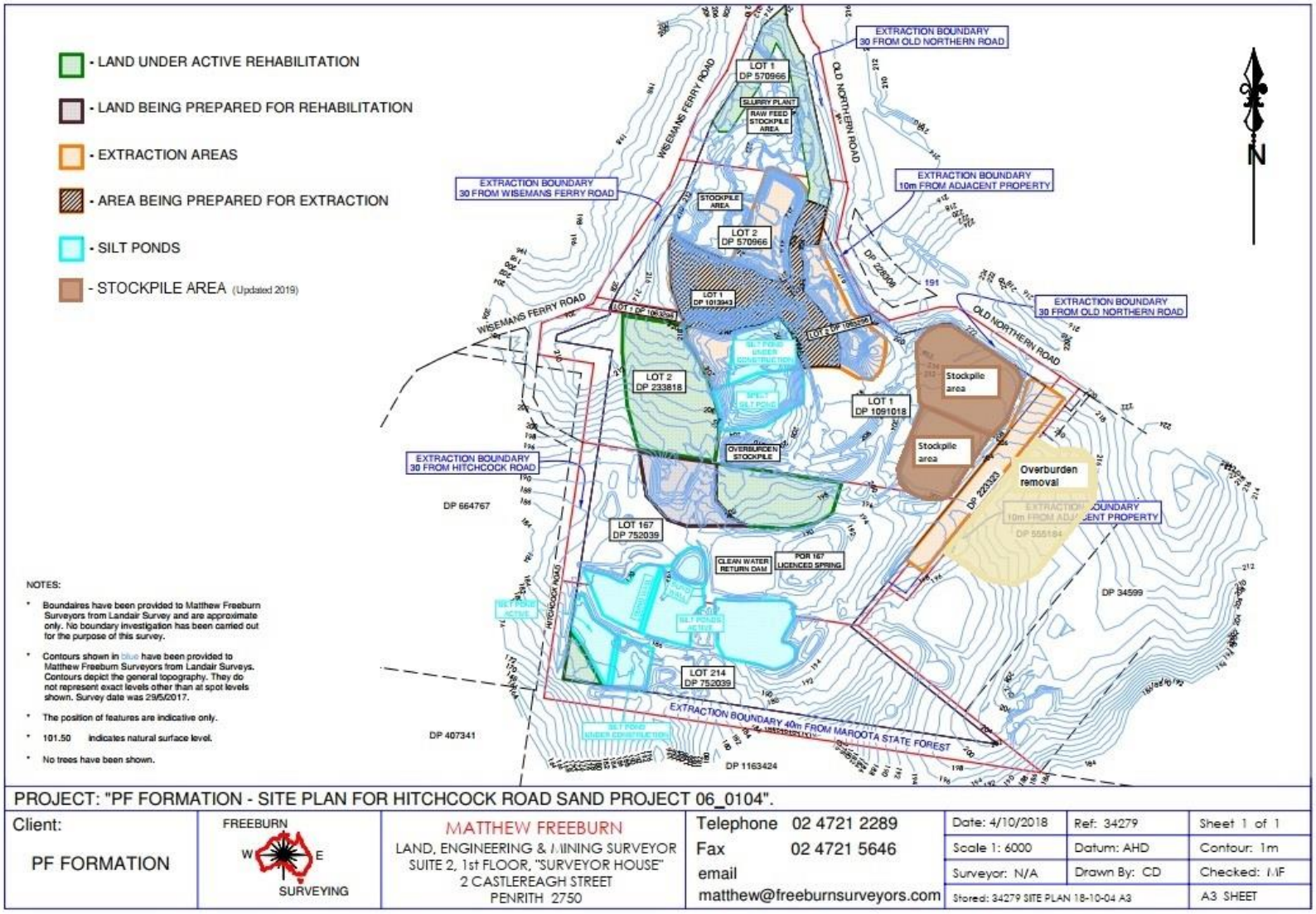



**Figure 4.** Current site plan July 2019

## 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.

**Table 1.** Statement of compliance

| **Were all conditions of the relevant approvals complied with?** | |
|---|---|
| **Development consent 06_0104** | YES |
| **Mining Lease** | YES |
| **Environmental Protection Licence 3407** | YES |

**Table 2.** Non-compliance issues from 2016-2017 addressed within the previous 12 month period

| **Relevant approval** | **Condition #** | **Condition description** | **Compliance status** | **Comment** | **Where addressed in Annual Review** |
|---|---|---|---|---|---|
| **DC 06_0104** | Schedule 3<br><br>Condition 23 | Landscape Management | Non-compliant | Long term security for the offset areas not agreed | Rehabilitation Page 23 |

## 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,
- Environmental Protection Licence 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 100 hectare site has a yearly extraction approval of 400,000 tonnes per annum. Total sales from the site for the reporting period was **108,974** tonnes, far less than 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 3.** 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 | 193,000 tonne | 108,974 tonne | 250,000 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 **13.01** truck movements per day for the 12 month reporting period of 2018-2019.

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.

### Next Reporting Period

Overburden removal will take place on Lot 2 DP555184. The new area will be incorporated in the Pit Shell Plan when it is revised during the next reporting period.

No other 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

There are no outstanding actions required from the previous annual review.

## 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. Annually, the actions required by the Environmental Operations Procedures are reviewed and signed. 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.

**Table 4.** Environmental performance

| Aspect | Approval criteria/EIS prediction | Performance during the reporting period | Trend/key management implications | Implemented/proposed management actions |
|---|---|---|---|---|
| **Noise** | 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. |
| **Air Quality** | Deposited dust 4g/m²/month annually.<br><br>Total Suspended Particulate matter 90 µg/m3 annually.<br><br>Particulate matter <10 µm (PM10) 30 µg/m3 annually. | All criteria met 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. |
| **Social Impact** | A Community Consultative Committee meeting biannually. | The committee met twice during the year.<br><br>All updated plans and | Ensuring transparency of business and operations. | Maintain current consultation and availability of information. |

| | | | | |
|---|---|---|---|---|
| | Availability of information on public website. | reports uploaded to website. | | |
| **Heritage** | Immediately contact OEH 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 measurement procedures.

**Noise emission criteria**

The Noise Management Plan requires the noise criteria set out in Table 5 to be applied to the impact assessment. These assessment locations as shown on Appendix 1 of **Attachment 10** 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**

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 10**.

**Table 5.** Noise impact assessment monitoring locations

| Noise assessment location | Other locations covered | Day | Night [1] | |
|---|---|---|---|---|
| | | $L_{Aeq}$ (15 minute) | $L_{Aeq}$ (15 minute) | $L_{A1}$ (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

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

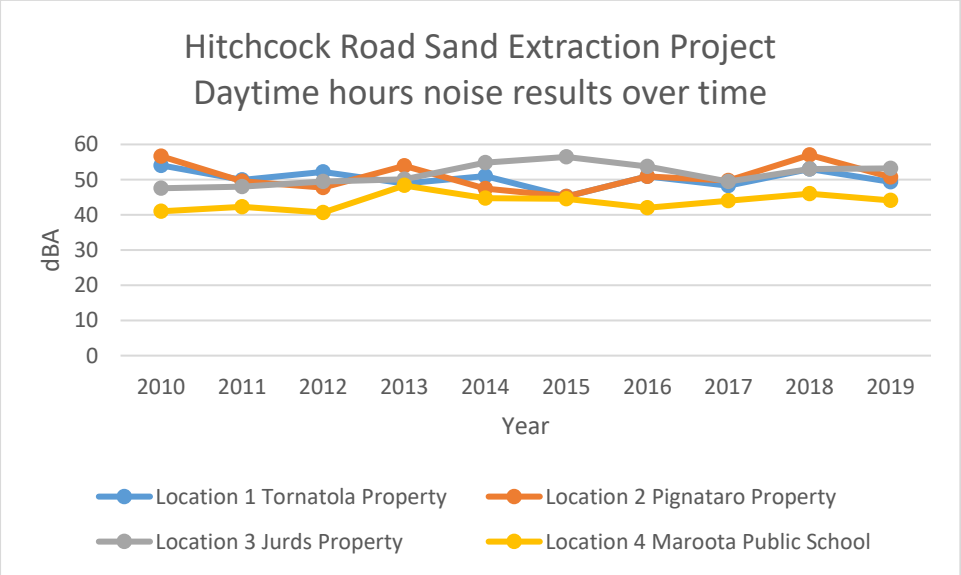
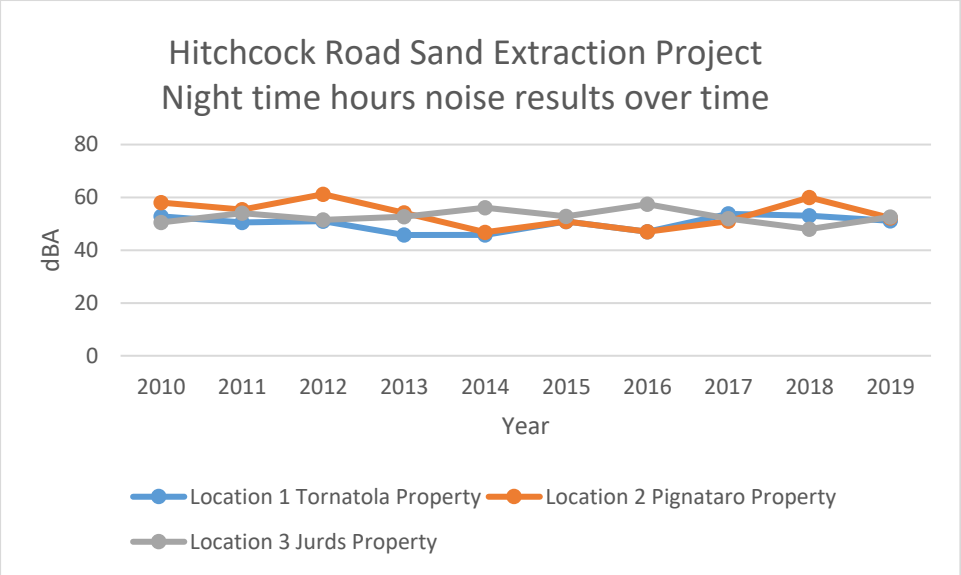


**Chart 2.** Night time noise result trends over time




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 6.1** and **6.2** at any residence or on more than 25 per cent of any privately owned land.

**Table 6.1**

| Impact Assessment Criteria for Particulate Matter | | |
|---|---|---|
| **Pollutant** | **Averaging period** | **Criterion** |
| Total suspended particulate (TSP) matter | Annual | 90µg/m3 |
| Particulate matter < 10µm (PM10) | Annual | 30µg/m3 |
| | 24 hour | 50µg/m3 |

| **Table 6.2** 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$^{2/}$month | 4g/m$^{2/}$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.

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 11**. 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

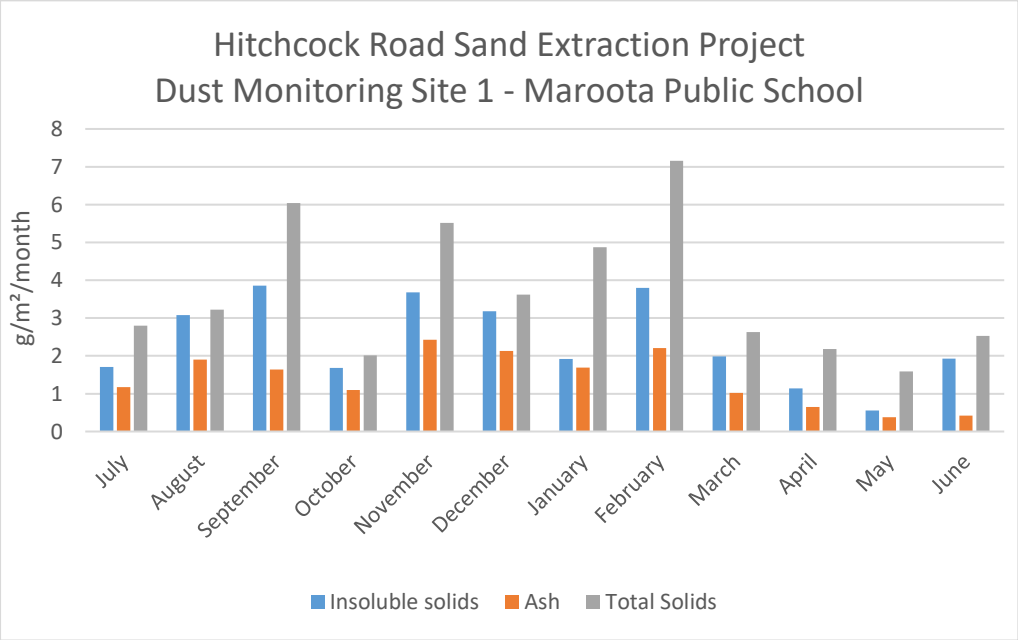


**Chart 4.** Dust monitoring results at site 2 – Hitchcock Road

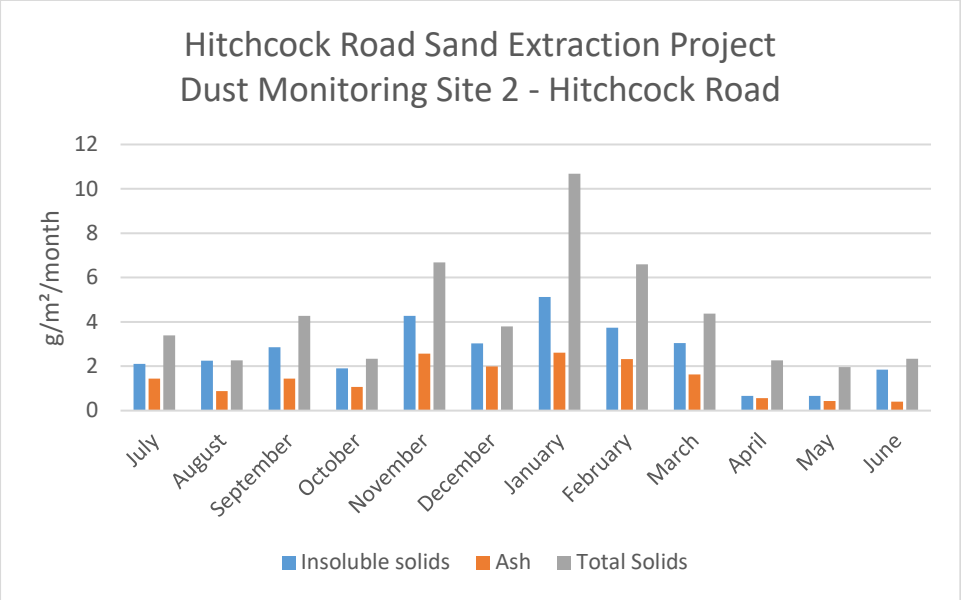



**Chart 5.** Dust monitoring results at Site 3 – Jurd's House

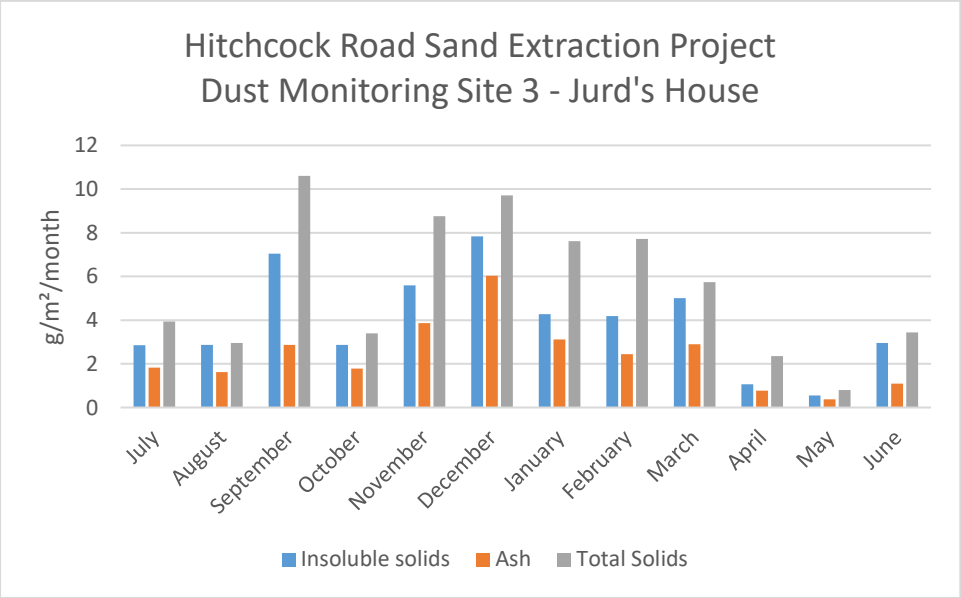
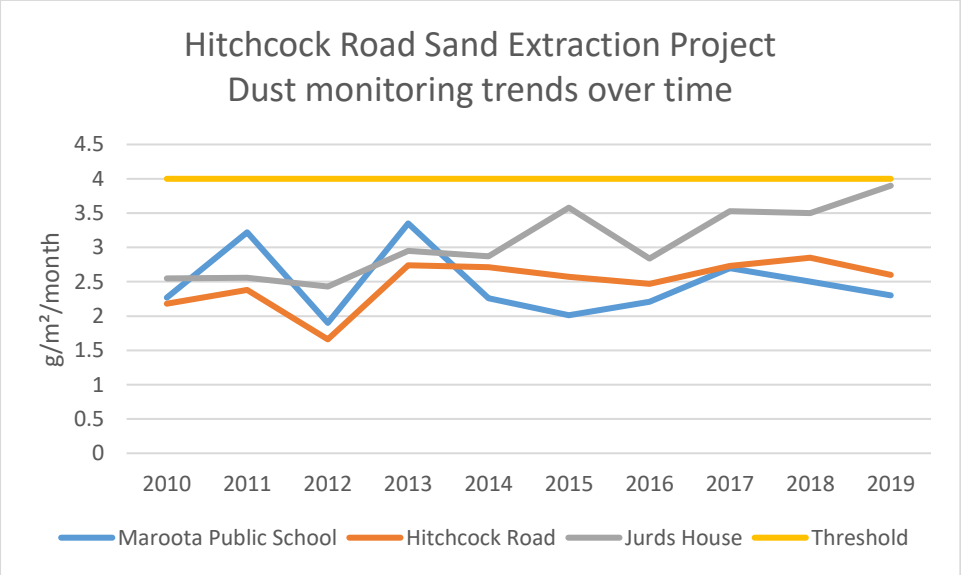


**Chart 6.** Dust monitoring trends over time – Insoluble Solids




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.
- During the summer months of the reporting period several dust storms were recorded by the Bureau Of Meteorology within the Sydney region which were a result of the drought conditions in Western NSW and strong westerly winds.
- The annual average ambient dust deposition rate (insoluble solids) considered a nuisance criterion is 4 g/m$^2$/month. All sites monitored had annual averages below this level. Location 1 – Maroota School average was 2.3g/m$^2$/month while Location 2 – Hitchcock Road was 2.6 g/m$^2$/month.
- The annual average ambient dust deposit rate (insoluble solids) at Location 3 – Jurd's House was 3.9 g/m$^2$/month. This is less than the dust nuisance criterion of 4 g/m$^2$/month but higher than it has been in past years. This may be attributed to the location of the monitoring station in the front yard of a dwelling which has no sealed driveway. The extreme dry conditions throughout the monitoring period may have increased the amount of dust generated by the traffic generated by the occupant of the dwelling. The dwelling has since become permanently vacated and the dust monitoring station has been moved across Old Northern Road to the next nearest sensitive receiver. Monthly monitoring results have decreased since this move occurred.

- The results of the dust deposit gauges were very good for the year being below the nuisance criterion. Because of 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.
- 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/$m^3$, 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.
- There have been no complaints concerning dust generation over the past year.
- A summary of the weather conditions recorded on-site are in **Attachment 5**.

**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 of these meetings are included as **Attachment 9.** There were no mattered raised by the community or resident representatives during either of these meetings.

### 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 Director-General 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 2017-2018

| Water Licence # | Water sharing plan, source and management zones | Entitlement | Passive take/inflows | Active pumping | TOTAL |
|---|---|---|---|---|---|
| **Approval** #10WA114809<br><br>**WAL** #42259<br><br>**Reference** #10AL114808 | Greater Metropolitan region groundwater sources, Maroota tertiary sands groundwater source | 44 units | N/A | 26.009ML | 26.009ML |

## 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.

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 13**.

The continued dry weather has seen a steady decrease in ground water depth at all monitoring wells across the site. Water quality has not been affected with test results remaining 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 (Dry)

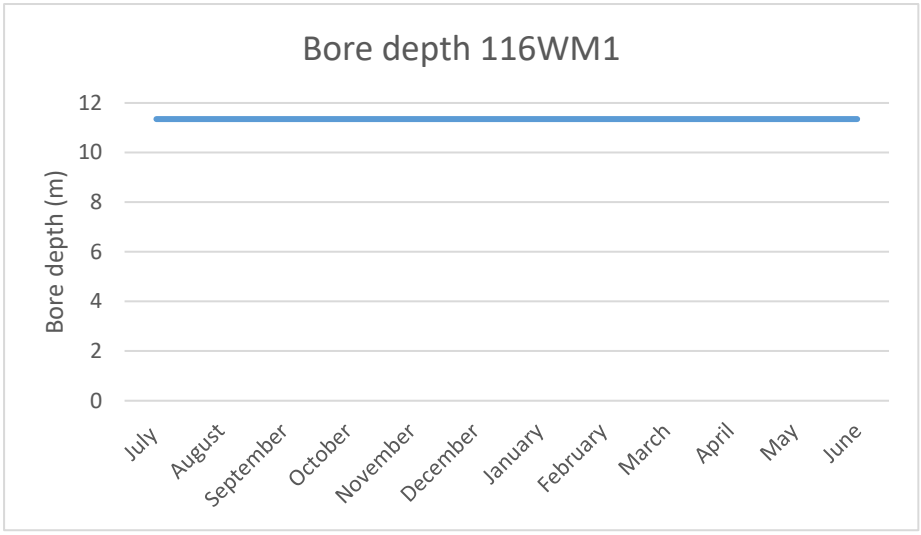



**Chart 7.** Ground water depth at monitoring bore 166MW-2D

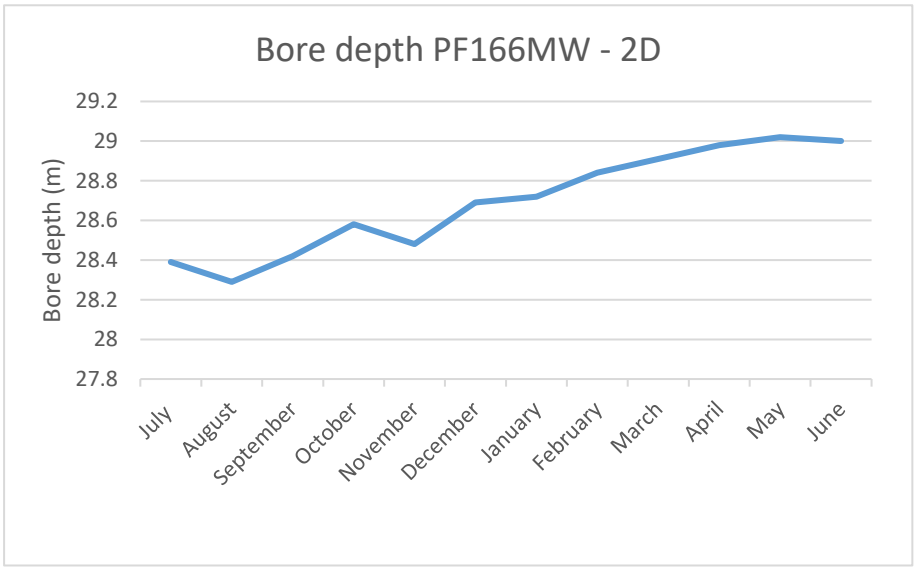



**Chart 8.** Ground water depth at monitoring bore 166MW-2S

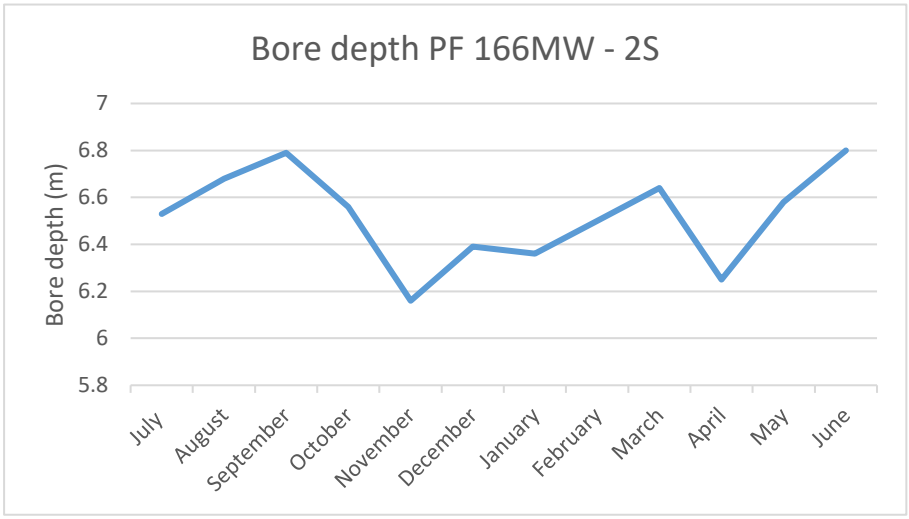


**Chart 9.** Ground water depth at monitoring bore 166MW-3D

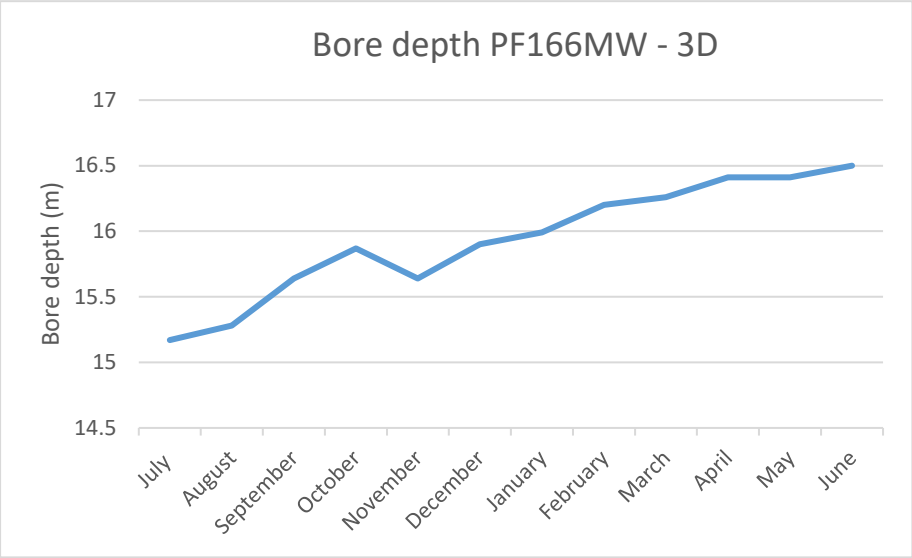



**Chart 10.** Ground water depth at monitoring bore 167MW1

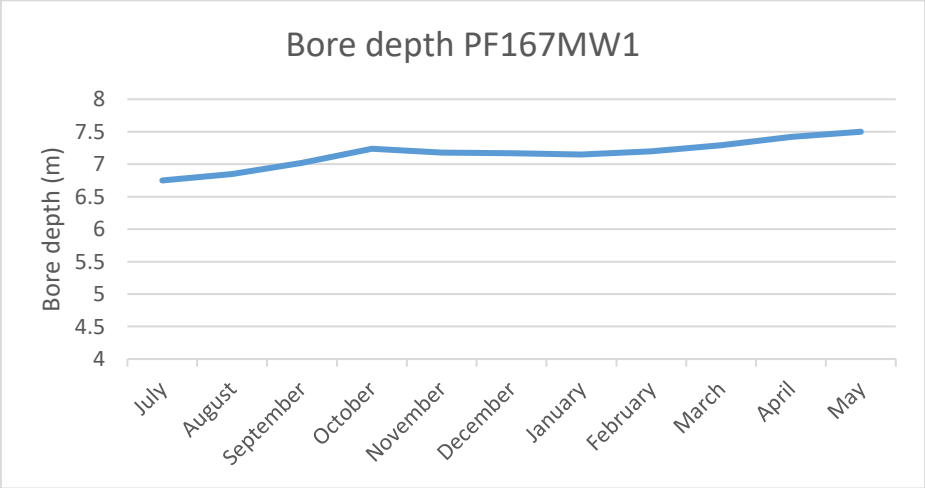



**Chart 11.** Ground water depth at monitoring bore 167MW-4D

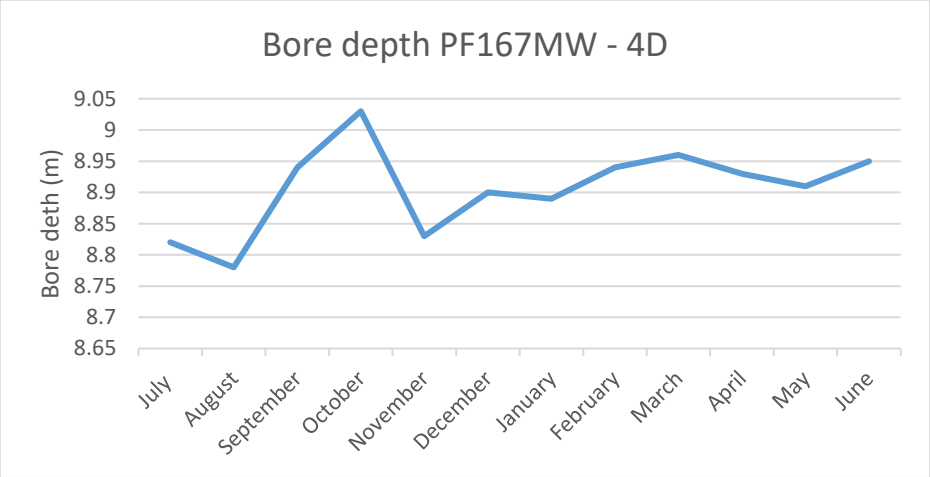


**Chart 12.** Ground water depth at monitoring bore 167MW-4S

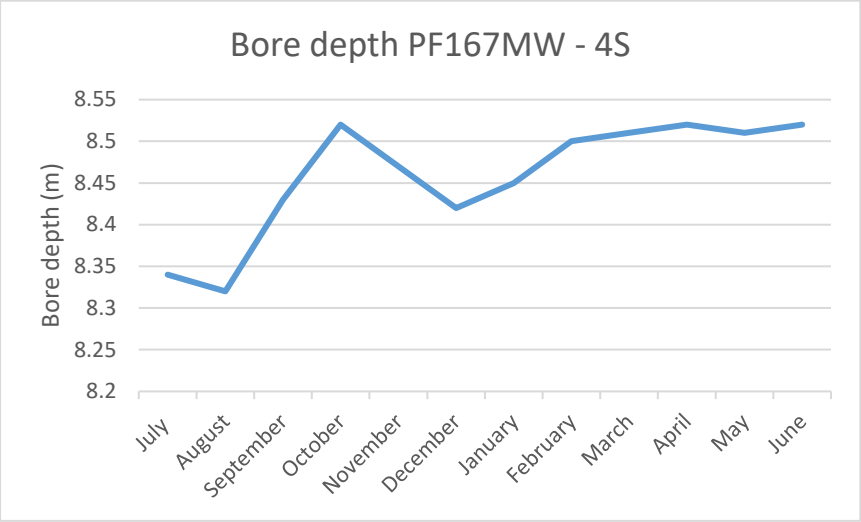



**Chart 13.** Ground water depth at monitoring bore 214MW1

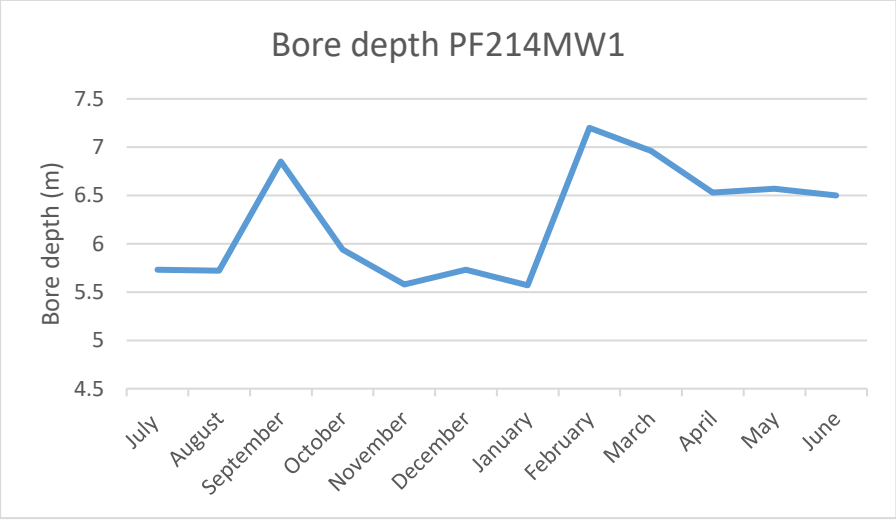
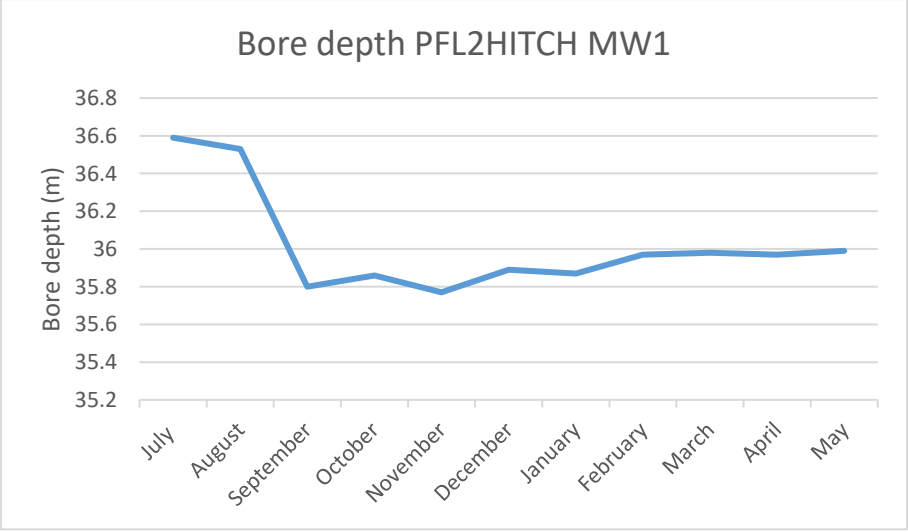



**Chart 14.** Ground water depth at monitoring bore HitchMW1



## 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 7**. Preparation for extraction within Lot 1 DP 1013943 and Lot 2 DP 570966 is currently underway with extraction expected to begin within the next reporting period. Active silt pond locations has changed slightly with capping of previously used ponds completed in the eastern area of the site.

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 50 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 60 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 will continue on a quarterly basis with results being available in **Attachment 12**.

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 12**. 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. Ponds 9 and 10 have now been completely capped and the area is currently being used to stockpile

overburden material for the current extraction area. Pond 12 is not currently being used allowing the sediment to settle in preparation for capping.

All other tailings ponds have been fully capped. The site of former silt pond 2 is currently being prepared for rehabilitation.

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.

### On-site reuse of collected waters

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

### Water levels within the existing water sump

Water levels and volumes within the sump are detailed in the Ground Water Report **Attachment 13**. 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 m3).

### 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 13**).

### 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 dry weather conditions throughout the reporting period has witnessed a drop in ground water levels. 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. Reference is also made to the biodiversity offset strategy which is described in more detail in the Landscape Management Plan.

**Proposed Modification to offset**

PF Formation have recently (Sept-2019) submitted a Modification to the Conditions of Approval (Mod-1) to incorporate changes to the Biodiversity Offset Strategy for the Sydney Hinterland Transition Woodland (SHTW). The proposal includes using a neighboring portion of land deemed as having good Biodiversity Value as offset for the SHTW approved for removal. Furthermore Mod-1 proposes to increase the amount of Excavated Natural Material (ENM) and Virgin Excavated Natural Material (VENM) received at the site which would extend the lifespan of the quarry operations by a further 10 years, until 2038, without increasing the existing total permissible truck movements. More information will be available during the next annual reporting period.

**Rate of rehabilitation**

Rehabilitation of the site is taking place generally in phase 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 **Attachment 7**.

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. This work has now been completed.

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 hectares of the eastern section has been seeded under the guidance of Greening Australia and Parsons Brinckerhoff.

**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 area 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 WSP was completed in November 2017 and is appended as **Attachment 14**. 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.

**Construction of acoustic and visual bunding**

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

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

All the necessary management controls and related actions are in conformity with all relevant current laws, standards and practices as indicated in the document.

**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 2017-2018 | This reporting period 2018-2019 | Next reporting period 2019-2020 |
|---|---|---|---|
| **Total mine footprint** | 35.85 hectares | 35.85 hectares | 36.5 hectares |
| **Total active disturbance** | 3.175 hectares | 3.175 hectares | 3.175 hectares |

| | | | |
|---|---|---|---|
| **Land being prepared for rehabilitation** | 1.44 hectares | 1.45 hectares | 1.45 hectares |
| **Land under active rehabilitation** | 4.12 hectares | 4.12 hectares | 5.55 hectares |
| **Completed rehabilitation** | 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 meetings can be viewed as **Attachment 9**.

## 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. Since the project commencement an independent audit has been completed in 2011, 2014 and the most recent in April 2017. The next independent audit is scheduled to take place during 2020.

## Incidents and non-compliances during the reporting period

There were no incidents or non-compliances which occurred during the reporting period.

## 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:

- Resolve long term security of biodiversity offset areas matter with DPE (Mod-1 Submitted Sept -2019);
- Start importing VENM material from Maroota Lodge (113 Old Telegraph Rd Maroota);
- Commence overburden removal in Lot 2 DP555184 in the areas shown on Figure 4;
- Complete Independent Audit;
- Review and revise Pit Shell Plan;
- Review all Environmental Management Plans following Independent Audit and Mod-1.