

PF Formation

HITCHCOCK ROAD MAROOTA

Sand Extraction and Rehabilitation Project

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT 2017-2018

ATTACHMENTS

- 1.** Project approval
- 2.** EPA Licence Annual Return
- 3.** Monthly Environmental Operational Procedures Checklist
- 4.** Annual Environmental Operational Procedures
- 5.** Location Weather Chart
- 6.** Site Current Photos
- 7.** Current Site Plan
- 8.** Weighbridge Verification Certificate
- 9.** CCC Meeting Minutes
- 10.** Noise Management Report
- 11.** Air Quality Report
- 12.** Surface Water Monitoring Results
- 13.** Ground Water Management Report
- 14.** Rehabilitation Report

ATTACHMENT 1

PROJECT APPROVAL

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project referred to in Schedule 1, subject to the conditions set out in Schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for on-going environmental management of the project.



Hon Kristina Keneally MP
Minister for Planning

Sydney

3 February 2009

SCHEDULE 1

Project Application:	06_0104
Proponent:	PF Formation
Approval Authority:	Minister for Planning
Land:	See Appendix 1
Project:	Hitchcock Road Sand Project

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DEFINITIONS

AEMR	Annual Environmental Management Report
Council	The Hills Shire Council
Day	The period from 7.00am to 6.00pm on Monday to Saturday, and
NSW Government Department of Planning	

8.00am to 6.00pm on Sundays and Public Holidays

DECC Department of Environment and Climate Change

Department Department of Planning

Director-General Director-General of the Department of Planning, or delegate

DPI Department of Primary Industries

DWE Department of Water and Energy

EA Environmental Assessment for the project titled *Hitchcock Road Sand Extraction and Rehabilitation Project Environmental Assessment and Appendices* (3 volumes), dated November 2007, prepared by DFA

Consultants, including the response to submissions and preferred project report

EP&A Act *Environmental Planning and Assessment Act 1979*

EP&A Regulation *Environmental Planning and Assessment Regulation 2000*

EPL Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997*

Evening The period from 6.00pm to 10.00pm

Extraction Area The land described as the extraction area in Appendix 1

Land Land means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval

Minister Minister for Planning, or delegate

Night The period from 10.00pm to 7.00am on Monday to Saturday, and 10.00pm to 8.00am on Sundays and Public Holidays

Privately owned land Land not owned by a public agency or the Proponent or its related companies

Preferred Project Report The Proponent's Preferred Project Report dated September 2008, prepared by DFA Consultants, as modified in the Proponent's email to the Department of 18 November 2008

Project The development as described in the EA

Proponent PF Formation, or its successors in title

Response to Submissions The Proponent's response to issues raised in submissions, dated March 2008, prepared by DFA Consultants, and subsequent submissions to the Department dated 27 August 2008

RTA	Roads and Traffic Authority
SHTW	Sydney Hinterland Transition Woodland
Site	Land to which the project application applies
Statement of Commitments	The Proponent's commitments in Appendix 3
Strategy A, Strategy B	The alternative rehabilitation proposals described in the preferred project report
Vegetation Offset	The conservation and enhancement program described in the preferred project report, to occur on the land shown on the plan in Appendix 5
VENM	Virgin Excavated Natural Material, as defined in the <i>Protection of the Environment Operations Act 1997</i>

SCHEDULE 2 ADMINISTRATIVE

Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

Terms of Approval

2. The Proponent shall carry out the project generally in accordance with the:
 - (a) EA;
 - (b) preferred project report; (c) statement of commitments; and (d) conditions of this approval.

Notes:

- The layout of the project is shown in the figure in Appendix 2; and
- The statement of commitments is included in Appendix 3.

3. If there is any inconsistency between the above:
 - (a) the preferred project report shall prevail over the EA; (b) the conditions of this approval shall prevail generally, to the extent of the inconsistency.
4. The Proponent shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
 - (a) any reports, plans, programs or correspondence that are submitted in accordance with the conditions of this approval; and
 - (b) the implementation of any actions or measures contained in these reports, plans, programs or correspondence.

Existing Sand Mining Consent

5. Subject to an agreement in accordance with condition 7 below, the Proponent may accept material extracted from Lot 2 DP 555184 and Lot 1 DP 34599 in accordance with the development consent issued by the Land and Environment Court on 14 July 1998 to be transported across the site and to the slurry plant on Lot 1 DP 570966 via the slurry pipeline and processed on Lot 198 DP 752025.

Limits on Approval

6. Extraction and processing operations may take place until 30 November 2028.

Note: Under this approval, the Proponent is required to rehabilitate the site and provide offsets to the satisfaction of the Director-General. Consequently this approval will continue to apply in all other respects other than the right to conduct extraction and processing operations until the site has been rehabilitated and the offset provided to a satisfactory standard.

7. The quantity of processed material produced at the site, together with material produced on Lot 2 DP 555184 and Lot 1 DP 34599 in accordance with the development consent issued by the Land and Environment Court on 14 July 1998, shall not exceed 400,000 tonnes a year.

Prior to the commencement of any processing of extractive material (under the above consent) from activities on Lot 2 DP 555184 or Lot 1 DP 34599, the Proponent shall demonstrate, to the satisfaction of the Director-General, that it has reached an agreement with the owners of those Lots regarding the proportion of the extraction limit as it applies to each Lot.

8. The Proponent shall restrict total laden truck movements associated with the project to:
- (a) 200 per day, for the Proponent's combined operations at Maroota;
 - (b) 20 per day, for trucks importing VENM to the site; and
 - (c) 10 per day, for trucks entering/exiting the site between 6.00am and 7.00am.

Note: For the avoidance of doubt, 200 is the maximum laden truck movement volume allowed on any one day, including the VENM and early morning truck movements.

9. The Proponent shall not undertake any extraction within 2 metres of the established wet weather groundwater level.

Note: The wet weather groundwater level shall be established in accordance with condition 3 of Schedule 3.

10. The Proponent shall not disturb any SHTW vegetation (as shown on the plan in Appendix 5) on site without the prior written approval of the Director-General. In seeking this approval the Proponent shall demonstrate, to the satisfaction of the Director-General, that it has established at least 3.7 hectares of SHTW on the site, to a standard that meets the criteria in Appendix 6.

Note: This demonstration must include an assessment by a suitably qualified and independent ecologist.

Management Plans / Monitoring Programs

11. With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

Demolition

12. The Proponent shall ensure that all demolition work is carried out in accordance with *AS 2601-2001: The Demolition of Structures*, or its latest version.

Protection of Public Infrastructure

13. The Proponent shall:

- (a) repair, or pay all reasonable costs associated with repairing, any public infrastructure that is damaged by the project; and
- (b) relocate, or pay all reasonable costs associated with relocating, any public infrastructure that needs to be relocated as a result of the project.

Operation of Plant and Equipment

14. The Proponent shall ensure that all plant and equipment used at the site is:

- (a) maintained in a proper and efficient condition; and
- (b) operated in a proper and efficient condition.

Crown Land

15. The Proponent shall not commence any development authorised by this approval on Crown land without the prior approval of the Department of Lands.

Section 94 Contributions

16. The Proponent shall pay a monthly contribution to the Council for the upgrade and maintenance of roads in accordance with Baulkham Hills Shire Council's section 94 plan in force at the date of this approval.

SCHEDULE 3 ENVIRONMENTAL PERFORMANCE

GENERAL EXTRACTION AND PROCESSING PROVISIONS

Identification of Boundaries

1. Within 3 months of the date of this approval, or as otherwise agreed by the Director-General, the Proponent shall:

- (a) engage an independent registered surveyor to survey the boundaries of the approved limit of extraction and the approved ancillary work areas;
- (b) submit a survey plan of these boundaries to the Director-General; and
- (c) ensure that these boundaries are clearly marked at all times in a permanent manner that allows operating staff and inspecting officers to clearly identify those limits.

Note: The limit of extraction and ancillary areas is shown conceptually on the layout plans in Appendix 2, as amended/clarified by the conditions below.

General Limits of Extraction

2. Notwithstanding the layout plans in Appendix 2, the Proponent shall not undertake extraction within:

- (a) 30 metres of Hitchcock Road; and
- (b) 10 metres of the property boundary of Lot 2 DP 555184, unless sand extraction has commenced on that lot, and extraction in this buffer has been agreed by the Director-General.

Maximum Extraction Depth Map

- 3. The Proponent shall:
 - (a) establish the wet weather groundwater level for the site based on all available (and at least 12 months) site specific groundwater monitoring data;
 - (b) engage a suitably qualified and experienced expert to establish the maximum extraction depths to which extraction can be undertaken on site, to comply with condition 9 of Schedule 2;
 - (c) submit a Maximum Extraction Depth Map (contour map or similar) for the project to the Director-General within 3 months of the date of this approval; and (d) comply with the extraction depths specified in the map, to the satisfaction of the Director-General.
- 4. Within 3 months of the completion of the Independent Environmental Audit (see condition 6 of Schedule 5), the Proponent shall review and update the Maximum Extraction Depth Map for the project to the satisfaction of the Director-General.

NOISE

Operational Noise Assessment Criteria

- 5. The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1 at any residence or on more than 25 per cent of any privately-owned land.

Noise Assessment Location	Day	Night	
	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{A1} (1 minute)
R1 - Hammond	41	35	45
R2 – Hitchcock	40	35	45
R5 – Pignataro	42	35	45
R6 – Camilleri	40	35	45
R7 – Maroota Public School	36 _{(L_{Aeq}(1 Hour))}	N/A	N/A
R8 – Portelli	39	35	45
R9 – Young	39	35	45
R10 - Tornatola	39	35	45

Table 1: Noise Impact Assessment Criteria

Notes:

- To determine compliance with the $L_{Aeq(15 \text{ minute})}$ noise limits, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, alternative means of determining compliance may be accepted (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise level where applicable.
- To determine compliance with the $L_{A1(1 \text{ minute})}$ limit, noise from the project is to be measured at 1 metre from the dwelling façade.
- The noise limits apply under meteorological conditions of:
 - wind speed up to 3m/s at 10m above ground level;
 - temperature inversion conditions of up to 3 degrees C/100m and wind speed up to 2m/s at 10m above the ground;
 where the wind velocity and temperature gradients are determined to be relevant to the project site in accordance with the NSW Industrial Noise Policy.
- The Director-General may relax the noise limits in Table 1 for any property where the Proponent has an agreement with the relevant owner/s to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.
- For more information on the noise assessment locations see Appendix 4.

Cumulative Noise Criteria

6. The Proponent shall take all reasonable and feasible measures to ensure that the noise generated by the project combined with the noise generated by other extractive industries does not exceed the following amenity criteria on any privately owned land, to the satisfaction of the Director-General:

- $L_{Aeq(11 \text{ hour})}$ 50 dB(A) – Day;
- $L_{Aeq(4 \text{ hour})}$ 45 dB(A) – Evening; and
- $L_{Aeq(9 \text{ hour})}$ 40 dB(A) – Night.

Operating Hours

7. The Proponent shall comply with the operating hours in Table 2.

Activity	Day	Time
	Monday - Friday	7.00am to 6.00pm
	Saturday	8.00am to 1.00pm
	Sunday and Public Holidays	None
	Monday – Saturday	7.00am to 6.00pm
	Sunday and Public Holidays	None
	Monday – Saturday	6.00am to 6.00pm
	Sunday and Public Holidays	None
	Monday – Saturday	7.00am to 6.00pm
	Sunday and Public Holidays	None

Table 2: Operating Hours

Notes:

- Product transportation prior to 7.00am is restricted as per condition 8 of Schedule 2.
- Maintenance activities may be conducted outside the hours in Table 2 provided that the activities are not audible at any residence beyond the boundary of the site.

- *This condition does not apply to delivery of material if that delivery is required by police or other authorities for safety reasons, and/or the operation or personnel or equipment are endangered. In such circumstances, notification is to be provided to DECC and the affected residents as soon as possible, or within a reasonable period in the case of emergency.*

Noise Management Plan

8. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan shall:
 - (a) be submitted to the Director-General within 3 months of the date of this approval;
 - (b) be prepared in consultation with DECC;
 - (c) include details of how the noise performance of the project would be monitored, and include a noise monitoring protocol for evaluating compliance with the relevant noise limits in this approval; and
 - (d) include an investigation and assessment (including modelling) of additional reasonable and feasible noise mitigation measures that would be implemented to ensure that noise emissions at all stages of the project comply with the noise impact assessment criteria in Table 1.

Note: The EA predicted that receiver locations R5, R6, R9 and R10 would exceed the applicable noise criteria by between 2 and 5 decibels, during worst case operations.

9. If the additional noise mitigation measures identified in condition 8(d) are not able to reduce noise levels to within 2 decibels of the impact assessment criteria in Table 1 then, upon receiving a written request from the applicable landowner, the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner.

These additional mitigation measures must be reasonable and feasible.

If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

AIR QUALITY

Impact Assessment Criteria

10. The Proponent shall ensure that dust generated by the project does not cause exceedances of the criteria listed in Tables 3, 4 and 5 at any residence or on more than 25 per cent of any privately owned land.

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³

Table 3: Long Term Impact Assessment Criteria for Particulate Matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³

Table 4: Short Term Impact Assessment Criteria for Particulate Matter

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

Table 5: Long Term Impact Assessment Criteria for Deposited Dust

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.11991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

Operating Conditions

11. The Proponent shall ensure any visible air pollution generated by the project is assessed regularly, and that quarrying operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately owned land.

Air Quality Monitoring

12. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program shall:
- (a) be submitted to the Director-General for approval within 3 months of the date of this approval; (b) be prepared in consultation with DECC;
 - (c) include details of how the air quality performance of the project would be monitored, providing for additional dust deposition monitoring in the vicinity of clusters of residences to the north and west of the site; and
 - (d) include a protocol for evaluating compliance with the relevant air quality criteria in this approval.

METEOROLOGICAL MONITORING

13. The Proponent shall ensure the project has a suitable meteorological station on the site or in the immediate vicinity that complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* publication.

WATER

Water Supply

14. The Proponent shall ensure that it has sufficient water for all stages of the project, and if necessary, adjust the scale of operations to match its water supply.

Note: The Proponent is required to obtain necessary water licences for the project under the Water Act 1912 and/or Water Management Act 2000.

Discharges

15. The Proponent shall not discharge any water from the quarry or its associated operations except in accordance with an EPL.

Water Management and Monitoring

16. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan shall:
- (a) be submitted to the Director-General within 3 months of the date of this approval;
 - (b) be prepared in consultation with DWE and DECC; and (c) include a:
 - Site Water Balance;
 - Erosion and Sediment Control Plan;
 - Surface Water Monitoring Program; and
 - Groundwater Monitoring Program.
17. The Site Water Balance shall:
- (a) include details of:
 - sources and security of water supply;
 - water use on site;
 - water management on site, including the location and capacity of water storages on site and the means of access;
 - off-site water transfers; and
 - reporting procedures; and
 - (b) investigate and describe measures to minimise water use by the project.
18. The Erosion and Sediment Control Plan shall:
- (a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, 2004* (Landcom);
 - (b) identify activities that could cause soil erosion and generate sediment;
 - (c) describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters;
 - (d) describe the location, function, and capacity of erosion and sediment control structures;
 - (e) demonstrate that the design capacity of basins intended to collect storm runoff will not be compromised by storage of operational water; and
 - (f) describe what measures would be implemented to maintain (and if necessary decommission) the structures over time.
19. The Surface Water Monitoring Program shall include:
- (a) detailed baseline data on surface water flows and quality in downstream watercourses that could be affected by the project;
 - (b) surface water quality and stream health assessment criteria, including trigger levels for investigating any potentially adverse surface water impacts; and (c) a program to monitor:

- surface water flows, quality, and impacts on water users; • stream health; and
- channel stability.

20. The Groundwater Monitoring Program shall include:

- 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; (d) a program to monitor:
 - groundwater levels and quality in new and existing monitoring bores;
 - the 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.

LANDSCAPE MANAGEMENT

Rehabilitation

21. The Proponent shall progressively rehabilitate the site to the satisfaction of the Director-General, in a manner that is generally consistent with the concept final landform (Strategy A or Strategy B) in the preferred project report (as reproduced in Appendix 7).

Offset Strategy

22. The Proponent shall implement the Offset Strategy described in the preferred project report, and summarised in Table 6 (shown conceptually on the plan in Appendix 5), to the satisfaction of the Director-General.

Area	Minimum Size (hectares)
On-Site Revegetation Area (SHTW)	7.9
On-Site Revegetation Area (Other Woodland)	4.1
Total	12

Table 6: Offset Strategy

23. Within 3 years of the date of this approval, the Proponent shall make suitable arrangements to provide appropriate long term security for the offset areas to the satisfaction of the Director-General.

Note: The Department acknowledges that the arrangements may provide for staged or delayed implementation, in accordance with the extraction in these areas.

Landscape Management Plan

24. The Proponent shall prepare and implement a Landscape Management Plan for the project to the satisfaction of the Director-General. This plan must:

- (a) be prepared in consultation with DECC by suitably qualified expert/s whose appointment/s have been approved by the Director-General;
- (b) be submitted to the Director-General for approval within 6 months of the date of this approval; and
- (c) include a:
 - Rehabilitation and Offset Management Plan; and
 - Quarry Closure Plan.

Rehabilitation and Offset Management Plan

25. The Rehabilitation and Offset Management Plan must include:

- (a) the rehabilitation objectives for the site, vegetation offsets and landscaping;
- (b) a description of the short, medium, and long term measures that would be implemented to:
 - rehabilitate the site;
 - implement the Offset Strategy; and
 - maintain and enhance existing site vegetation outside the disturbance area;
- (c) detailed performance and completion criteria for the site rehabilitation and implementation of the Offset Strategy;
- (d) a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for:
 - progressively rehabilitating disturbed areas;
 - implementing vegetation offsets;
 - protecting vegetation and soil outside the disturbance areas;
 - rehabilitating creeks and drainage lines on the site to ensure no net loss of stream length and aquatic habitat;
 - undertaking pre-clearance surveys;
 - managing impacts on fauna;
 - landscaping the site to minimise visual impacts;
 - conserving and reusing topsoil;
 - collecting and propagating seed for rehabilitation works;
 - salvaging and reusing material from the site for habitat enhancement;
 - controlling weeds and feral pests;
 - controlling access; and
 - bushfire management;
- (e) a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria;
- (f) a description of the potential risks to successful rehabilitation and/or revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and (g) details of who would be responsible for monitoring, reviewing, and implementing the plan.

Quarry Closure Plan

26. The Quarry Closure Plan must:

- (a) include provision for certification from a qualified geotechnical engineer that the final proposed landform is stable;
- (b) define the objectives and criteria for closure of the quarry;
- (c) investigate options for the future use of the site, including any final void;

- (d) describe the measures that would be implemented to minimise or manage the ongoing (post closure) environmental effects of the project; and
- (e) describe how the performance of these measures would be monitored over time.

Rehabilitation and Offset Bond

27. Within 3 months of the approval of the Landscape Management Plan, the Proponent shall lodge a rehabilitation and offset bond for the project with the Director-General. The sum of the bond shall be calculated at:

- (a) \$2.50/m² for the area of disturbance in each 3 year review period, including the offset areas; and
- (b) \$1.00/m² for the total area of land previously disturbed by the quarry, or as otherwise directed by the Director-General.

Notes:

- *If the rehabilitation and offsets are completed to the satisfaction of the Director-General, the DirectorGeneral will release the bond.*
- *If the rehabilitation and/or offsets are not completed to the satisfaction of the Director-General, the DirectorGeneral will call in all or part of the bond, and arrange for the satisfactory completion of the relevant works.*

ABORIGINAL HERITAGE

28. Should the Proponent discover material suspected of being Aboriginal relics or skeletal remains, work in that area shall cease and the Proponent shall advise DECC and proceed in accordance with DECC instructions.

TRAFFIC AND TRANSPORT

Materials Transport

29. The Proponent shall transport all excavated material between the extraction site and processing plant site, including processing residues, via slurry pipelines.

Note: When the slurry system is unusable by reason of breakdown or essential maintenance, extractive material may be transported by truck during the period of such breakdown or maintenance. The Proponent shall ensure that such periods are as brief as possible and shall advise the Council each day that truck transport is to be used.

Haulage Records

30. The Proponent shall record and maintain a log of the extraction quantities and traffic movement in and out of the site, available for inspection at the request of the Director-General or the Council.

Road Haulage

31. The Proponent shall ensure that:

- (a) all loaded vehicles entering or leaving the site are covered; and
- (b) all loaded vehicles leaving the site are cleaned of materials that may fall on the road, before they leave the site.

VISUAL

Visual Amenity

32. The Proponent shall minimise the visual impacts of the project to the satisfaction of the Director-General.

Lighting Emissions

33. The Proponent shall:

- (a) take all practicable measures to mitigate off-site lighting impacts from the project; and
- (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*, to the satisfaction of the Director-General.

Advertising

34. The Proponent shall not erect or display any advertising structure(s) or signs on the site without the written approval of the Director-General.

Note: This does not include traffic management and safety or environmental signs.

WASTE MANAGEMENT

Waste Minimisation

35. The Proponent shall:

- (a) only import VENM to the site; and
- (b) minimise the amount of waste generated by the project to the satisfaction of the Director-General.

EMERGENCY AND HAZARDS MANAGEMENT

Dangerous Goods

36. The Proponent shall ensure that the storage, handling, and transport of dangerous goods are conducted in accordance with the relevant Australian Standards, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

Safety

37. The Proponent shall secure the project to ensure public safety to the satisfaction of the Director-General.

Bushfire Management

38. The Proponent shall:

- (a) ensure that the project is suitably equipped to respond to any fires on-site; and
- (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire on site.

PRODUCTION DATA

39. The Proponent shall:

- (a) provide annual production data to the DPI using the standard form for that purpose; and (b) include a copy of this data in the AEMR.

SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. If the results of monitoring required in Schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria, then the Proponent shall notify the Director-General and the affected landowners and/or existing or future tenants accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the relevant criteria.

INDEPENDENT REVIEW

2. If a landowner of privately owned land considers that the operations of the quarry are exceeding the impact assessment criteria in Schedule 3, then he/she may ask the Proponent in writing for an independent review of the impacts of the project on his/her land.

If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 3 months of the Director-General advising that an independent review is warranted:

- (a) consult with the landowner to determine his/her concerns;
 - (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to determine whether the project is complying with the relevant criteria in Schedule 3, and identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and (c) give the Director-General and landowner a copy of the independent review.
3. If the independent review determines that the quarrying operations are complying with the relevant criteria in Schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.
 4. If the independent review determines that the quarrying operations are not complying with the relevant criteria in Schedule 3, and that the quarry is primarily responsible for this non-compliance, then the Proponent shall:
 - (a) implement all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and

- (b) conduct further monitoring to determine whether these measures ensure compliance; or
- (c) secure a written agreement with the landowner to allow exceedances of the relevant criteria in Schedule 3, to the satisfaction of the Director-General.

If the additional monitoring referred to above subsequently determines that the quarrying operations are complying with the relevant criteria in Schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

If the Proponent is unable to finalise an agreement with the landowner, then the Proponent or landowner may refer the matter to the Director-General for resolution.

If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 8).

5. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the Director-General for resolution.

If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 8).

SCHEDULE 5 ENVIRONMENTAL MANAGEMENT, MONITORING, REPORTING & AUDITING

ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy shall be submitted to the Director-General within 3 months of the date of this approval, and;
 - (a) provide the strategic context for environmental management of the project;
 - (b) identify the statutory requirements that apply to the project;
 - (c) describe in general how the environmental performance of the project would be monitored and managed;
 - (d) describe the procedures that would be implemented to:
 - keep the local community and relevant agencies informed about the construction, operation and environmental performance of the project;
 - receive, handle, respond to, and record complaints;
 - resolve any disputes that may arise during the life of the project;
 - respond to any non-compliance;
 - manage cumulative impacts; and
 - respond to emergencies; and
 - (e) describe the role, responsibility, authority, and accountability of the key personnel involved in the environmental management of the project.

ENVIRONMENTAL MONITORING PROGRAM

2. The Proponent shall prepare an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program shall be submitted to the Director-General concurrently with the submission of the various monitoring programs and consolidate the various monitoring requirements in Schedule 3 of this approval into a single document.

REPORTING

Incident Reporting

3. Within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) harm to the environment, the Proponent shall notify the Department and other relevant agencies of the exceedance/incident.
4. Within 6 days of notifying the Department and other relevant agencies of an exceedance/incident, the Proponent shall provide the Department and these agencies with a written report that:
 - (a) describes the date, time, and nature of the exceedance/incident;
 - (b) identifies the cause (or likely cause) of the exceedance/incident;
 - (c) describes what action has been taken to date; and
 - (d) describes the proposed measures to address the exceedance/incident.

Annual Reporting

5. Within 12 months of the date of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General, relevant agencies and CCC. This report shall:
 - (a) identify the standards and performance measures that apply to the project;
 - (b) describe the works that will be carried out in the next 12 months;
 - (c) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
 - (d) include a summary of the monitoring results for the project during the past year; (e) include an analysis of these monitoring results against the relevant:
 - impact assessment criteria/limits;
 - monitoring results from previous years; and
 - predictions in the EA;
 - (f) identify any trends in the monitoring results over the life of the project;
 - (g) identify any non-compliance during the previous year; and
 - (h) describe what actions were, or are being, taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

6. Within 12 months of the date of this approval, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit shall:
 - (a) be conducted by a suitably qualified, experienced, and independent person(s) whose appointment has been approved by the Director-General;
 - (b) include consultation with the relevant agencies;

- (c) assess the environmental performance of the project, and its effects on the surrounding environment;
- (d) assess whether the project is complying with the relevant standards, performance measures and statutory requirements; and
- (e) review the adequacy of any strategy/plan/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.

Note: The person(s) conducting the audit should have expertise in flora and fauna assessment, hydrogeology and quarry rehabilitation.

7. Within 6 weeks of completion of each Independent Environmental Audit, the Proponent shall submit a copy of the audit report to the Director-General, with a response to any of the recommendations in the audit report.
8. Within 3 months of submitting a copy of the audit report to the Director-General, the Proponent shall review and if necessary revise:
 - (a) each of the environmental management and monitoring strategies/plans/programs in Schedules 3 and 5; and
 - (b) the sum of the Vegetation Offset Bond (see Schedule 3). This review shall consider:
 - the effects of inflation;
 - any changes to the total area of disturbance; and
 - the performance of the vegetation offsets against the completion criteria of the Rehabilitation and Vegetation Offset Management Plan,

to the satisfaction of the Director-General

COMMUNITY CONSULTATIVE COMMITTEE

9. The Proponent shall establish a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General, in general accordance with the Department's *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects*.

Note: The Proponent may continue the operation of the Liaison and Review Committee established under condition 6.7 of the development consent issued by the Land and Environment Court on 14 July 1998 to fulfil this condition.

ACCESS TO INFORMATION

10. Within 1 month of the approval of any plan/strategy/program required under this approval (or any subsequent revision of these plans/strategies/programs), or the completion of the audits or AEMR required under this approval, the Proponent shall:
 - (a) provide a copy of the relevant document/s to the relevant agencies and to members of the general public upon request; and
 - (b) ensure that a copy of the relevant document/s is made publicly available on its website and at the Proponent's office.
11. During the project, the Proponent shall:
 - (a) make a summary of monitoring results required under this approval publicly available on its website and at the site office; and

- (b) update these results on a regular basis.

APPENDIX 1 SCHEDULE OF LAND

Extraction Area	<ul style="list-style-type: none">• Lots 1 & 2 DP 570966• Lots 1 & 2 DP 1063296• Lot 1 DP 1013943• Lot 2 DP 233818• Lot 1 DP 1091018• Lot 1 DP 223323• Lots 167 & 214 DP 752039
Processing Plant	<ul style="list-style-type: none">• Lot 198 DP 752025

APPENDIX 2 GENERAL LAYOUT OF PROJECT



- Area already extracted and partially rehabilitated
- Area for future extraction
- Clean water dam
- Existing internal haul road
- Land included in the application



APPENDIX 3 STATEMENT OF COMMITMENTS

Noise and Vibration

- Site activities will be managed so that any necessary high noise and vibration levels occur at times of least impact.
- All site activities will be undertaken incorporating noise attenuation measures such as restricting working hours for certain works required in the proximity of sensitive receptors.
- All equipment used on site will be certified in relation to noise performance.
- Panels and covers of silenced plant will be kept shut and plant and equipment switched off when not in use.
- All mechanical equipment will be silenced by the best practical means using current technology, prior to use. Noise suppression devices will be fitted according to manufacturer's instructions. Noise control kits will be fitted to noisy mobile equipment and shrouds provided around stationary equipment where necessary.
- All plant and equipment will be inspected regularly to ensure that it is well maintained to minimise noise emissions.
- The L_{10} noise level at the boundary of adjacent receivers where baseline data has been obtained will not normally exceed the background level by more than 5 dB(A).
- Compliance monitoring of noise levels will be undertaken and appropriate records of measurements kept.
- The local community will be informed of the level and duration of noise to be expected during specific activities and phases of development when necessary. Communication of concerns to the Environmental Manager will be invited.

Air Quality and Greenhouse Gas Emissions

- Ambient air quality monitoring will be conducted at identified sites.
- Dust suppression equipment will be fitted to all processing plant on the site. This will be regularly inspected and maintained in good working order at all times.
- Trafficable areas will be defined to prevent unnecessary vehicle movement into other parts of the site.
- All unsealed trafficable areas and working areas will be kept damp by spraying regularly with a water cart, water sprays or sprinklers to minimise dust emissions. Frequency of spraying to be determined based on weather conditions, soil erodibility and the observation of any visible dust.
- Speed controls will be applied to all unsealed areas (maximum speed of 20 km/h) and signposted accordingly.
- All semi-permanent stockpiles will be vegetated with suitable groundcover and regularly watered until the vegetation is well established.

- Work on any extraction activity producing dust will cease due to high winds if control cannot be achieved by watering or other means. Work will not resume until the wind velocity decreases and any dust generation can be controlled by normal means.
- All loaded trucks leaving the central processing plant on Lot 198 DP 752025 will have their payloads fully covered by a suitable material to prevent spillage.
- No fires will be permitted on-site without a permit.
- A mechanical road sweeping unit and water cart will be maintained for use as required to keep all roads including the intersection of the haul road and Wisemans Ferry Road free from deposited material.
- Exhausts from all vehicles and plant/equipment will be inspected to ensure that they are maintained at an acceptable level.
- All vehicles will be regularly serviced to ensure that exhaust emissions comply with the regulations. Appropriate service records will be maintained.
- Any opportunities to minimise machinery use and ensure that all equipment used on the site is energy efficient will be identified.

Access and Traffic

- If the sand slurry plant and transport system is unusable due to breakdown or during maintenance periods, trucks will be used for the transport of extractive material on a temporary basis. This will cease once the system is operating satisfactorily.
- The number of laden vehicle movements will not exceed a combined total of two hundred per day via the intersection of the haulage road and Wisemans Ferry Road. This is the total of laden vehicle movements allowed for PF Formation's combined extractive industry operations in Baulkham Hills Shire.
- Operations involving the transportation of material on the site will only be undertaken between 07.00 and 18.00 hours, Monday to Saturday, except a maximum of 10 laden vehicles will be allowed to enter and leave the site between 06.00 and 07.00 hours, Monday to Saturday only. Vehicles will not be allowed to arrive at the site prior to 05.45 hours on any day.

Erosion and Sediment Control

- Soil and Water Management Plan will be reviewed and revised, if required.
- Temporary erosion and sedimentation control structures such as detention basins and catch drains will be constructed as appropriate to collect runoff from cleared land including extraction areas and access roads.
- Silt traps and erosion control fencing will be erected as appropriate along extraction area boundaries and drainage lines.
- Sediment basins with a minimum storage capacity of 400 m³ per hectare of catchment will be constructed. Spillway capacity and stability will be designed as follows: – life of less than 5

years, adopt the 20 year tc event; – life between 5 and 10 years, adopt the 50 year tc event; and – life greater than 10 years, adopt the 100 year tc event.

- Stormwater control measures will be assessed and routine inspections conducted to ensure that compliance with best practice guidelines and relevant legislation is achieved.
- Locations for topsoil and material stockpiles will be selected on level ground and away from drainage lines. Diversion drains and sediment filter fences will be installed up slope as appropriate.
- Training will be provided to operational personnel on the importance of erosion control measures and drivers informed of the damage that can be caused to the environment by heavy vehicles.
- Areas of exposed land will be kept to a minimum compatible with operational requirements.
- Exposed areas not in use will be stabilized with an appropriate cover crop and watered until well established.
- Erosion and sediment controls will be monitored regularly and immediately following a rainfall event. Monitoring will take place initially on a weekly basis, then monthly once operating correctly. Sediment will be cleared when the traps have collected 60% of the capacity of the basin or where sediment build-up is less than 300 mm below the spillway crest. Sediment will be removed to a location where further pollution to downslope lands and waterways will not occur.
- Maintenance of erosion and sediment controls will be undertaken when any deterioration is identified or when replacement is necessary.
- Stored stormwater will be reused for dust control and the watering of site vegetation.
- Soil stockpiles will be seeded where these are to remain unused for a period in excess of four weeks. The area will be watered until the vegetation is well established.

Water Management

- Maximum depth of extraction will be restricted to not less than two metres above the wet weather high groundwater level. (nominally 181 m AHD).
- The groundwater will not be breached or contaminated. In the event that either should occur, operations will cease in the affected area and the Department of Environment and Climate Change consulted to determine the basis on which extraction may recommence.
- Retention basins will be designed to accommodate the 100-year tc event. The minimum basin capacities are:
 - Northern catchment 10,000 m³
 - Southern catchment 38,000 m³

The volume of these basins can be varied depending on the extent of the area exposed for extraction within each catchment.

- All retention basins will be regularly inspected and an annual report prepared on their effectiveness.
- A minimum of two groundwater monitoring bores will be installed. One will be located within or near the extraction area and another at some location within the site beyond the area of any direct extraction influence. The location of these bores will meet the requirements of the Department of Environment and Conservation and Baulkham Hills Shire Council.

Flora and Fauna

- All areas which are not to be disturbed will be clearly marked.
- Topsoil will be separated and stored or use in rehabilitation works.
- An area of not less than 12 hectares will be identified, and indicated on the site survey. This will be identified as a revegetation area and access controlled.
- Seed will be collected from the existing woodland communities (Sydney Hinterland Transition Woodland), stored under controlled conditions, made available for future broadcasting and a suitable proportion propagated to provide tubestock for revegetation.
- Stored topsoil and that derived from suitable areas adjacent to the woodland communities will be spread over the defined revegetation area and seed broadcast over the site to augment the soil-borne native seed bank. Tube stock suitably protected against animal predation will also be used in appropriate locations.
- Access to bushland will be restricted to minimise the potential for damage. These areas will be marked and signs erected to ensure that this prohibition is made clear. The boundary of the site will be fenced to prevent external access.

Rehabilitation

- The Rehabilitation Plan will be reviewed and amended as necessary to reflect changing operational conditions. This will include a revised phasing plan and implementation programme.
- Setbacks to all roads and adjacent properties will be defined taking account of existing trees and other features. Programmes of mound construction and screen planting will be undertaken as required in the Rehabilitation Plan. All plant material used will reflect the species mix existing in the area.
- A staged seeding and planting programme will be undertaken as areas become available following completion of extraction and capping of sediment basins. This will be aimed at producing a dense plantation on the steeper slopes derived from the flora resources already established. The aim is to replicate as far as possible the mix and density of planting which is currently present.
- All suitable plant material will be used on the site as a seed and planting medium. Topsoil will be stored in appropriately marked low stockpiles for reuse in locations as close as possible to their source. Care will be taken to ensure that this does not become contaminated with the seeds of exotic species and weeds.

- The site will be rehabilitated in stages leaving areas exposed for as short a time as possible. This will be undertaken in conformity with the approved Rehabilitation Plan with maximum final batter grades of 4(H):1(V) on north and west facing slopes and 3(H):1(V) on those facing south and east. Final slopes will be as gentle as possible depending on the availability of fill material.
- All soil stockpiles and exposed areas will be seeded with an appropriate vegetation cover where no activity is to take place for more than four weeks.
- Revegetation of the site will be undertaken on the following basis:
 - as far as possible re-establish the Sydney Hinterland Transitional Woodland using seed and mulch collected from the area ;
 - rehabilitate other areas to native species with a light sowing of cereal and allowing natural regeneration;
 - rehabilitate the soil to achieve a full profile;
 - lime, fertilise and sow areas where improved grass cover is required; and
 - suitably turf surfaces expected to experience high surface flows leaving the site.
- A maintenance programme aimed at promoting and protecting the growth of the rehabilitated areas will be established.

Social Impact Management

- Material concerning activities at the site will be prepared and published on the company's website which will allow the community and others to be informed about current news on the site.
- Regular bi-annual meetings of community representatives will be established to discuss issues in relation to sand extraction on the site.
- A Complaints Register will be established incorporating date and time, type of communication, contact details of the complainant, nature of the complaint and response taken.

Heritage

- All work will cease in the area if an archaeological or heritage item is identified during extraction operations and the National Parks and Wildlife Service, the Deerubbin Aboriginal Land Council or the Heritage Office consulted to determine any appropriate course of action prior to recommencement of the work.
- Any additional survey work required for submittal of application to destroy artefact scatters located in the later stages of the development will be undertaken. Reasonable requirements of the National Parks and Wildlife Service (DECC), the Deerubbin Aboriginal Land Council and the Heritage Office arising out of any additional studies will be implemented.

Visual Amenity

- Peripheral bunds will be constructed within the established setbacks where necessary to screen extraction activities. These will be a minimum of three metres high with slopes ranging from 3(H):1(V) to 6(H):1(V) depending on the location using overburden stripped from the site.
- Screen planting works will be undertaken in the peripheral areas to an agreed specification using mulch to allow for native plant regeneration. This species mix will be reinforced using appropriate plantings at specified intervals.
- A tree planting programme will be undertaken within the ten metre buffer zones and in other defined parts of the site to establish a dense plantation using an appropriate mix of species reflecting that of the existing community.
- The final rehabilitated landform will be established in conformity with the Rehabilitation Plan.
- All temporary fencing will be removed when no longer required.
- Vegetation in areas suitable for agricultural/horticultural uses will be re-established.
- All site infrastructure including the slurry plant and its associated pipelines will be removed. Those areas affected by the plant will be restored and rehabilitated.
- All waste materials will be removed and disposed of in an appropriate manner.
- The final Rehabilitation Plan will be reviewed and proposals for future use of the site prepared.

Waste Management

- Waste handling areas will be clearly delineated.
- Specific areas for the collection of materials for reuse and recycling will be defined and clearly labelled.
- Cleared vegetation will be used within the landscape programme.
- All topsoil will be stored in stockpiles for later use in site rehabilitation.
- Bins or skips will be provided for the collection and storage of recyclable material and waste. General construction waste will be stored in a skip located at the workshop on Lot 198 DP752025. Waste food will be removed and stored in a vermin proof bin for collection by a waste contractor. Paper waste generated from site offices, plastics and glass will be collected separately for recycling.
- Hazardous wastes (including empty drums, rags, soil contaminated with oil) will be separated from nonhazardous wastes and managed in accordance with the relevant legislation.
- Liquid wastes (chemicals, oils and greases) will be temporarily stored in an appropriately bunded area and disposed of via a licensed contractor. Wash down water will be directed to an appropriate settlement basin if quality is acceptable.
- Copies of current licences of all waste removal contractors on site will be retained.
- All documentation relating to waste removal and disposal will be retained on file at the site. This documentation will include dockets for the removal and disposal of waste at a licensed facility.

- Waste material will be progressively separated and stockpiled in designated areas for collection. Adequately secure waste disposal areas to prevent access by wildlife.
- All waste licences will be reviewed and terms and conditions for compliance monitored.
- Any materials and waste remaining on the site following completion of extraction operations will be recycled or sent of disposal. This will be either recycled or disposed of in an appropriate manner.

Emergency Response

- All personnel on site during operations will be trained in appropriate procedures including site induction, materials handling and response procedures.
- Emergency response procedures will be developed and put in place. Appropriate individuals will be appointed as emergency services liaison officers.
- An emergency response table listing contact details of all relevant parties required in an environmental emergency will be prepared.
- A Register of Environmentally Hazardous Materials to be stored and used on site will be established.
- Appropriate safety and spill response equipment will be made available on site.
- All materials to be used and stored on site will be clearly labelled.
- Emergency response procedures will be reviewed and updated bi-annually.
- Appropriate safety and response equipment will be available at all times.

Hazard, Risk and Safety

- A licence to keep dangerous goods will be obtained from WorkCover NSW for all materials stored on site which require licensing.
- A Register of Hazardous Materials setting out details of quantities, storage and specific handling requirements for all relevant materials stored on site will be established.
- Material Safety Data Sheets for all hazardous materials stored on site will be obtained.
- Appropriate storage and secondary containment facilities for all hazardous materials stored on site will be provided. All bunded areas will be designed to contain at least 110% of the volume of materials stored within the area.
- A Safety Officer will be appointed for the development.
- All flammable material storage areas will be located at least ten metres from possible ignition sources.

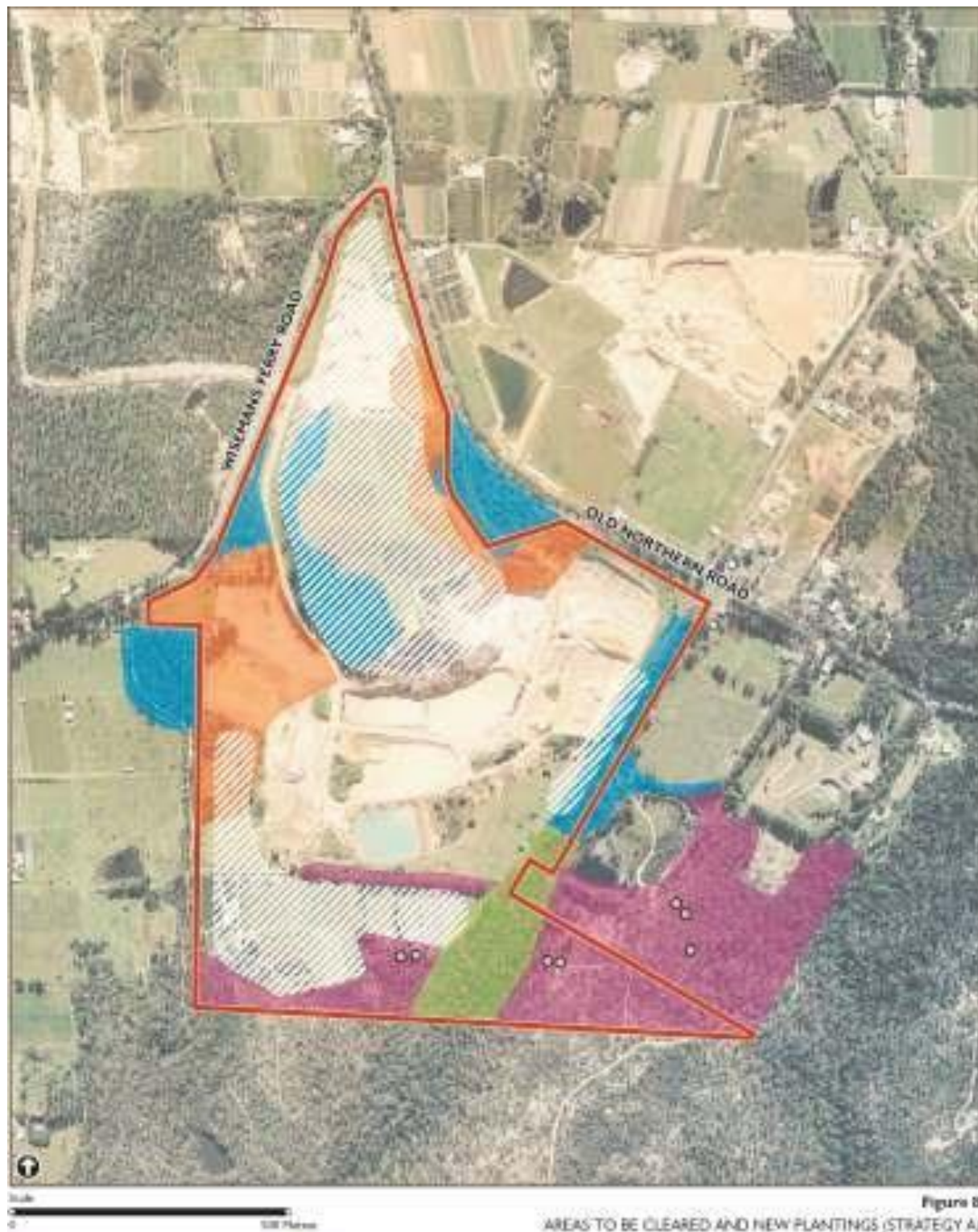
- Contents of all above ground storage areas will be clearly labelled.
- All hazardous and dangerous goods storage areas will be secured and appropriate signage displayed. All incompatible material will be segregated.
- All personnel will be trained in the handling and safety procedures required for the hazardous materials stored and used on site.
- An Emergency Response Plan will be developed and put in place.
- A mobile spill control kit containing appropriate absorbent materials, neutralising chemicals and other spill containment equipment will be provided.
- Personal protective equipment will be provided and personnel instructed in its use.
- Any spills beyond the bunded area will be cleaned up immediately and the contaminated material disposed of in an appropriate manner.
- The relevant authorities will be contacted in the event of a leak or spill and any instructions followed. Any contamination will be remediated to the satisfaction of the regulatory authorities.
- Any spills or hazardous wastes that cannot be recycled will be collected and disposal by a licensed waste contractor arranged. All records of waste removal on site will be retained.



Figure 4.2
NOISE MONITORING AND ASSESSMENT LOCATIONS

APPENDIX 4 NOISE ASSESSMENT LOCATIONS

APPENDIX 5 VEGETATION OFFSET PLAN



APPENDIX 6 CRITERIA TO MONITOR SUCCESS OF REVEGETATION

Table 3-1 Criteria to monitor success of revegetation

Category	Criteria	1 year	5 years	15 years	Final condition of vegetation to be achieved
Native species	Native species diversity	20	25	40	48
	Percentage number per 400m ² quadrat				
	Average number of individuals per species per 400m ² quadrat	15	20	30	34.5 + 1.5t
	Native species cover	40	45	49.5	50
Weeds	% of vegetation cover in 400m ² quadrat	10	10	10	10
	% of vegetation cover in 400m ² quadrat	Controlled	Controlled	Controlled	Restricted
Vegetation structure	Vegetation structure	Canopy, shrub layer and groundcover well established. However, shrubs are sparse, generally consisting of low canopy and ground cover	Canopy, shrub layer and groundcover well established. Shrub layer beginning to develop	Well structured and includes canopy, shrub layer and ground cover	Well structured and includes canopy, shrub layer and ground cover
Canopy	Average canopy height (m)	4	8	12	12-16
	Native canopy cover (minimum % cover)	5	6	6	6
	(marked on a 0-100% scale)	1	11	12	13
Shrub layer	Native shrub cover (minimum % cover)	10	12	18	22.5 + 1.75t
	(marked on a 0-100% scale)	13	14	19	20
	Average shrub layer height (m)	0.5	1	1	1.25
Ground cover	Native ground cover (minimum % cover)	5	10	10	15 + 0.5t
	(marked on a 0-100% scale) ^a	10	12	13	14

Category	Criteria	Target			Long-term condition of vegetation to be assessed
		3 years	10 years	15 years	
Ecosystem function	plant species	Vegetation structure beginning to develop	Woodland and Lands matured Habitat structure beginning to develop including groundcover such as leaf litter and fallen timber	Woodland to be matured Habitat structure beginning to develop including groundcover such as leaf litter and fallen timber	Provides minimal habitat for fauna however many woodland and lands are used Wood structure matured includes moderate levels of leaf litter and fallen timber
	Native representation indicating dispersal of seed into soil and/or presence of seed bank	Yes	Yes	Yes	Yes

There is a range of canopy species and species may be further locally due to succession of species with different seed size type, growing north, centrally and in the presence of surrounding species. Native representation indicating dispersal of seed into soil and/or presence of seed bank

2. Multi-plant species seed bank

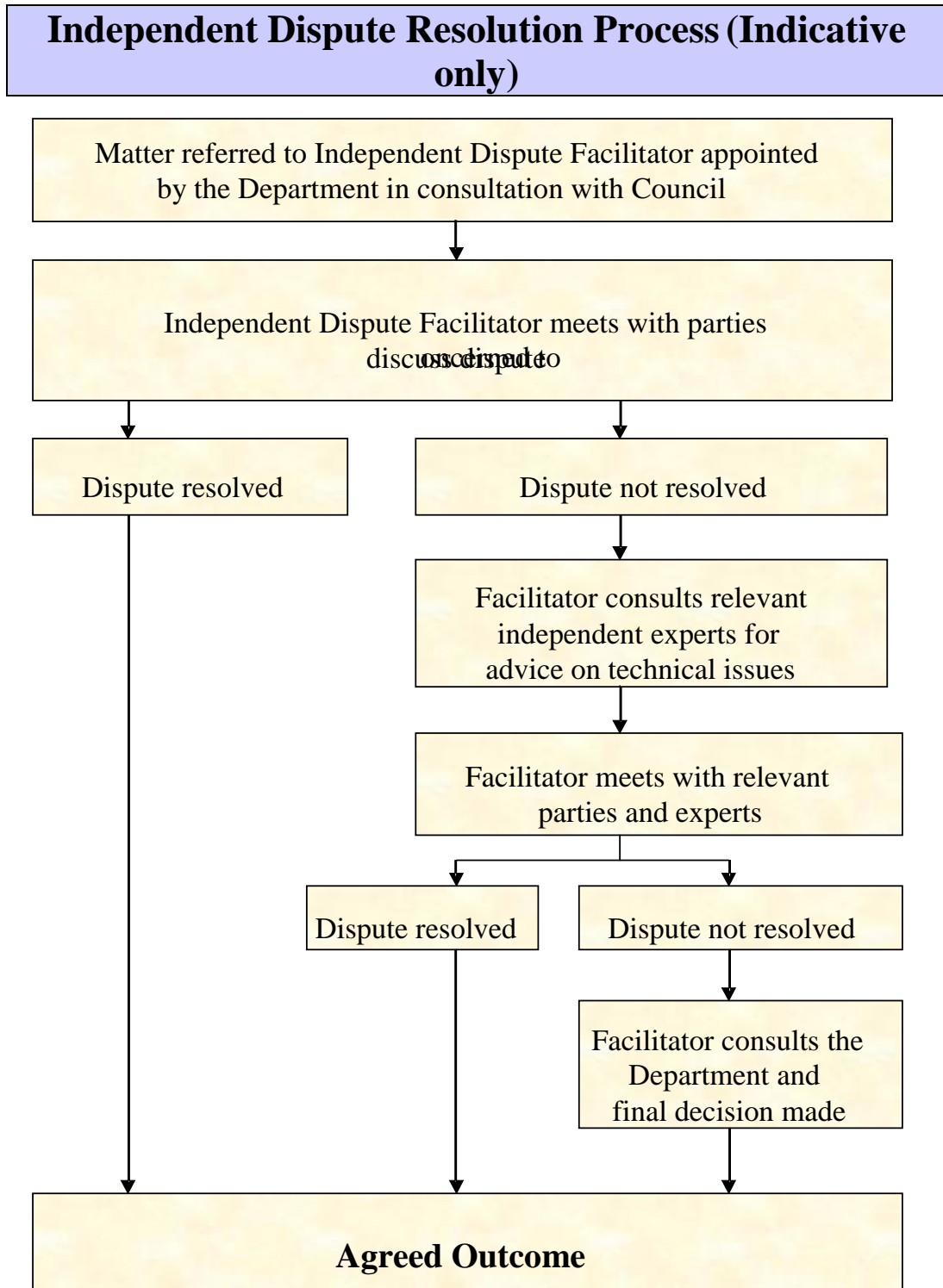
1. < 5% - seed bank not suitable
2. < 10% - suitable
3. < 15%
4. < 20%
5. < 25%
6. > 25%

APPENDIX 7 FINAL LANDFORM PLANS





APPENDIX 8 INDEPENDENT DISPUTE RESOLUTION PROCESS



ATTACHMENT 2

EPA LICENCE ANNUAL RETURN

A. Statement of Compliance - Licence Details

ALL Licence holders must check that the Licence details in Section A are correct.

If there are changes to any of these details, **you must advise Environment Protection Authority (EPA) and apply as soon as possible for a variation to your Licence or for a Licence transfer.**

Licence variation and transfer application forms are available on the EPA website at:
<http://www.epa.nsw.gov.au/licensing> or from regional offices of the EPA, or by contacting by telephone 02 9995 5700.

If you are applying to vary or transfer your Licence, you must still complete and submit this Annual Return.

A1. Licence holder

Licence number : 3407
Licence holder : ETRA PTY LTD
Trading name (if applicable) : PF FORMATION
ABN :
ACN :
Reporting period : From: 30-9-2016 To: 29-9-2017

A2. Premises to which Licence Applies (if applicable)

Common name (if any) : ETRA PTY LTD
Premises : WISEMANS FERRY ROAD MAROOTA 2756 NSW

A3. Activities to which Licence Applies

Extractive activities

A4. Other Activities (if applicable)

Concrete Works

A5. Fee-Based Activity Classifications

Note that the fee based activity classification is used to calculate the administrative fee.

Fee-based activity	Activity scale	Unit of measure
Land-based extractive activity	> 100,000.00 - 500,000.00	T annual capacity to extract, process or store

A6. Assessable Pollutants (if applicable)

Note that the identification of assessable pollutants is used to calculate the **load-based fee**.

The following assessable pollutants are identified for the fee-based activity classifications in the licence:

B. Monitoring and Complaints Summary

B1. Number of Pollution Complaints

Pollution Complaint Category	Complaints
Air	0

Water	0
Noise	0
Waste	0
Other	0
Total complaints recorded by the licensee during the reporting period	0

B2. Concentration Monitoring Summary

For each concentration monitoring point identified in your licence, details are displayed below. If concentration monitoring is not required by your licence, **no data** will appear below.

If data was provided from an uploaded file, the file name will be displayed below instead of any data.

Note that this does not exclude the need to conduct appropriate concentration monitoring of assessable pollutants as required by load-based licensing (if applicable).

Monitoring Point 1

Dust monitoring, Dust gauge labelled "1- School" on the Map faxed to the EPA on 5 August 2002

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	1.49	2.41	3.9

Monitoring Point 2

Dust monitoring, Dust gauge labelled 2 - intersection of Hitchcock and Wisemans Ferry Road

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	0.81	2.66	5.03

Monitoring Point 3

Dust monitoring, Dust gauge labelled as "Jurds Paddock - 3 Por168" on the map faxed to the EPA on 5 August 2002

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	1.43	3.21	6.96

B3. Volume or Mass Monitoring Summary

For each volume or mass monitoring point identified in your licence, details are displayed below. If volume or mass monitoring is not required by your licence, **no data** will appear below.

If data was provided from an uploaded file, the file name will be displayed below instead of any data.

Note that this does not exclude the need to conduct appropriate volume or mass monitoring of assessable pollutants as required by load-based licensing (if applicable).

C. Statement of Compliance - Licence Conditions

C1. Compliance with Licence Conditions

Were all conditions of the licence complied with (including monitoring and reporting requirements)?	Yes
---	-----

D. Statement of Compliance - Load Based Fee Calculation

If you are not required to monitor assessable pollutants by your licence, **no data** will appear below.

If assessable pollutants have been identified on your licence, the following worksheets for each assessable pollutant will determine your load based fee for the licence fee period to which this Annual Return relates.

Loads of assessable pollutants must be calculated using any of the methods provided in EPA's Load Calculation Protocol for the relevant activity. A Load Calculation Protocol would have been already sent to you with your licence. If you require additional copies, you can download the Protocol from the EPA's website or you can contact us on telephone 02 9995 5700.

You are required to keep all records used to calculate licence fees for four years after the licence fee was paid or became payable, whichever is the later date.

E. Statement of Compliance - Requirement to Prepare PIRMP

Have you prepared a Pollution Incident Response Management Plan (PIRMP) as required under section 153A of the Protection of the Environment Operations (POEO) Act 1997?		Yes
Is the PIRMP available at the premises?		Yes
Is the PIRMP available in a prominent position on a publicly accessible website?		Yes
Address of the web page where the PIRMP can be accessed z		
www.pfformation.com.au		
Has the PIRMP been tested?		Yes
The PIRMP was last tested on	31-10-2017	
Has the PIRMP been updated?		Yes
The PIRMP was last updated on	31-10-2017	
Number of times the PIRMP was activated in this reporting period?		0
The PIRMP was activated on		

F. Statement of Compliance - Requirement to Publish Pollution Monitoring Data

Are there any conditions attached to your licence that require pollution monitoring to be undertaken as required under section 66(6) of the Protection of the Environment Operations (POEO) Act 1997?	Yes
Do you operate a website?	Yes

Is the pollution monitoring data published on your website in accordance with the EPA's written requirements for publishing pollution monitoring data?	Yes
Address of the web page where the pollution monitoring data can be accessed is	
www.pfformation.com.au	

G. Statement of Compliance - Environment Management System and Practices

Do you have an ISO 14001 certified Environmental Management System (EMS) OR any other system that EPA considers is equivalent to the accountability, procedures, documentation and record keeping requirements of an ISO 14001 certified EMS?	No
Have you conducted an assessment of your activities and operations to identify the aspects that have a potential to cause environmental impacts and implemented operational controls to address these aspects?	Yes
Have you established and implemented an operational maintenance program, including preventative maintenance?	Yes
Do you keep records of regular inspections and maintenance of plant and equipment?	Yes
Do you conduct regular site audits to assess compliance with environmental legal requirements and assess conformance to the requirements of any documented environmental practices, procedures and systems in place?	Yes
Are the audits of documented environmental practices, procedures and systems undertaken by a third party?	Yes
Have you established and implemented an environmental improvement or management plan?	Yes
Do you train staff in environmental issues that may arise from your activities and operations and keep records of this	Yes

H. Signature and Certification

This Annual Return may only be signed by person(s) with legal authority to sign it as set out in following categories: an Individual, a Company, a Public authority or a Local council.

It is an offence to supply any information in this form that is false or misleading in a material respect, or to certify a statement that is false or misleading in a material respect. There is a maximum penalty of \$250,000 for a corporation and \$120,000 for an individual.

I/We

- ± declare that the information in the Monitoring and Complaints Summary in Section B of this Annual Return application is correct and not false or misleading in a material respect, and
- ± certify that the information in the Statement and Compliance in sections A, C, D, E, F, G and H and any other pages attached to Section C is correct and not false or misleading in a material respect.

Signed by: Director

Name	Joshua Graham
-------------	---------------

Position	Director
Email Address	josh@pfformation.com.au
Phone Number	02 4566 8257

Signed by: Director

Name	Luke Graham
Position	Director
Email Address	luke@pfformation.com.au
Phone Number	02 4566 8314

Signature		Signature	
Name		Name	
Position		Position	
Date	/ /	Date	/ /
Declaration I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.		Declaration I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.	

ATTACHMENT 3

MONTHLY ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

<u>CHAPTER</u> Page No.	<u>STRATEGY</u> Point No.	<u>MANAGEMENT CONTROLS</u>	<u>STATUS</u> ✓ or ✗	<u>COMPLAINTS</u> RECEIVED	<u>COMMENTS</u>
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	X	Two	Department of Planning and Environment found that two sections of the quarry, north-west pit and south-west pit, had exceeded the maximum depth therefore placing the groundwater at risk of contamination. Extraction depth survey markers and an additional monitoring bore will be installed.
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	

<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	
<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i> Date: 31/7/2017	

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for August 2017 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i> Date: 5/9/2017	

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	Noise testing results showed quarry noise was minimal at all locations.
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for September 2017 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	Water sample results all within acceptable range.
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 3/10/2017

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✕	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for October 2017 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	Spray grass/Hydro mulching undertaken to stabilise sediment and prevent erosion.
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	Spray grass/Hydro mulching undertaken in rehabilitation area
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 2/11/2017

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for November 2017 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 4/12/2017

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for December 2017 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 2/01/2018

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✕	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for January 2018 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 1/02/2018

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES

Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

<u>CHAPTER</u> Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for February 2018 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u>	8.1	Social Impact Management	✓	Nil	

55-56					
<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 1/03/2018

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for March 2018 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 3/04/2018

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

<u>CHAPTER</u> Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for April 2018 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 1/05/2018

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES
Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

<u>CHAPTER</u> Page No.	<u>STRATEGY</u> Point No.	<u>MANAGEMENT CONTROLS</u>	<u>STATUS</u> ✓ or ✗	<u>COMPLAINTS</u> RECEIVED	<u>COMMENTS</u>
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	

<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	
<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i> Date: 30/6/2017	

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES**Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota**

The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.

CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for June 2018 showed low levels at all locations.
<u>A4</u> 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded. Weighbridge records were reviewed.
<u>A5</u> 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	Rehabilitation work undertaken. Weed removal and habitat enhancement.
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	

<u>A9</u> 57-58	9.1	Heritage Management	✓	Nil	
<u>A10</u> 59-61	10.1	Visual Amenity Management	✓	Nil	
<u>A11</u> 62-64	11.1	Waste Management	✓	Nil	
<u>A12</u> 65-66	12.1	Emergency Response Management	✓	Nil	
<u>A13</u> 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Contractor (South East Environmental)				Signed: <i>Melissa Mass</i>	Date: 1/07/2018





ATTACHMENT 4

ANNUAL ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST




Strategy 2.1: Ensure that the site operations are undertaken in a manner that minimises the especially noisy activities. Manager

- 2.1.3 Undertake all site activities incorporating noise attenuation measures such as restricting working hours for certain works required close to sensitive receptors Quarry Manager
- 2.1.4 Ensure that panels and covers of silenced plant are kept shut and plant and equipment switched off when not in use. Quarry Manager
- 2.1.5 Ensure that mechanical equipment is silenced by the impacts of noise and vibration. Quarry Manager

Actions	Responsibility
<p>2.1.1 Manage site activities so that any necessary high noise vibration levels occur at times of least impact.</p> <p>Advise neighbouring properties at least 24 hours in advance of the extent and expected duration of Environmental best practical means using current technology, prior to use. Noise suppression devices should be fitted</p>	<p>Quarry Manager</p> <p>Quarry Manager/ advance</p> 
<p>according to manufacturer's instructions. Residential class mufflers should be used where possible. Noise control kits should be fitted to noisy mobile equipment and shrouds provided around stationary equipment where necessary.</p>	
<p>21.6 Working hours will be limited to 7.00am to 6.00pm, Monday to Saturday and at no time on Sundays and public holidays. A maximum of ten laden vehicles will be permitted to enter and leave the site between the hours of 6.00am and 7.00am, Monday to Saturday, excluding Sundays and public holidays.</p>	<p>Quarry Manager</p> 
<p>2.1.7 Arrange for all plant and equipment to be inspected regularly to ensure that it is well maintained to minimise noise emissions.</p>	<p>Quarry Manager</p> 
<p>2.1.8 Conduct compliance monitoring of noise levels at the defined locations and keep records of measurements.</p>	<p>Environmental Manager</p>  <p>Conducted by South East Environmental</p>

Performance indicator Noise from operational activities does not exceed the guideline limits. - See Kaitas Roosh's report.

Number of complaints received Nil



Monitoring Long term monitoring of noise levels during site operations at nominated receptors. Monitoring periods should be planned to OCCU during predicted noisy activities and at random. Results will be measured against baseline and OEH criteria and any exceedances noted.



exceedances noted.

Reporting

Annual reporting of noise levels, exceedances and complaints in the appropriate AEMR. Reports will include measures adopted to ensure that future exceedances/complaints do not occur. Monitoring results will be suitably summarised for posting on the PF Formulation website.

Formulation website.



A2.4 Monitoring and reporting

The Environmental Manager will be responsible for conducting and arranging noise monitoring for the assessment of impacts and determination of compliance. The Environmental Manager will compile the results and findings of the monitoring together with all complaints, responses and remedial action in relation to noise and vibration emissions from the site for inclusion in the AEMR.

Strategy 3.1: Ensure that the site operations are undertaken in a manner that minimises and controls dust and vehicle emissions.

Actions	Responsibility
3.1.1 Conduct ambient air quality monitoring at identified sites	Environmental Manager <i>12 Deposited dust samples collected and analysed.</i>
3.1.2 Fit dust suppression equipment to all processing plant on dust suppression equipment to all processing plant on is to be regularly inspected and times. Manager	Quarry Manager/ Environmental maintained in good working order at all times. <i>Fit</i>
3.1.3 Define haul road areas to prevent unnecessary vehicle movement into others	Quarry Manager <i>[Signature]</i>
3.1.4 Keep all unsealed trafficable areas and working areas dust emissions by spraying regularly with a water cart, water sprays or sprinklers. Frequency of spraying to be determined based on weather conditions, soil erodibility and the observation of any visible dust.	Quarry Manager/ Environmental Manager <i>[Signature]</i>
3.1.5 Apply speed controls to all unsealed areas (maximum 20 km/h) and signpost accordingly.	Quarry Manager <i>[Signature]</i> speed of
3.1.6 Vegetate all semi-permanent stockpiles with suitable groundcover and water where necessary until the vegetation is well established.	Quarry Manager
3.1.7 Cease work on any extraction activity producing dust due to high winds that cannot be controlled by watering or other means. Work will not resume until the wind velocity decreases and any dust generation can be controlled by normal means.	Quarry Manager <i>[Signature]</i>
3.1.8 Ensure that all loaded trucks leaving the site on Lot 198 have their payloads fully covered by a suitable material to prevent spillage.	Quarry Manager DP595538
3.1.9 Construct dust screens such as earth bunds and barriers.	Quarry Manager vegetated <i>[Signature]</i>
3.1.10 A mechanical road sweeping unit and water cart will be maintained for use as required to keep all roads including the intersection of the haul road and Wisemans Ferry Road free from deposited material.	Quarry Manager <i>[Signature]</i>
3.1.11 No fires to be permitted on-site.	Quarry Manager <i>[Signature]</i>

Performance indicator Ambient air quality data compiled.

Dust generated from site activities to comply at all times with EPA specified air quality criteria.

Below 4g/m³ for 2017-2018 reporting period.

Monitoring

Dust monitoring at identified locations.

Compilation of a complaints register. *No complaints received.*

Reporting

Annual reporting in the AEMR. Monitoring results will be suitably summarised for posting on the PF Formation website.

Dust results posted to company website throughout reporting period. Summary of results in AEMR. AEMR posted to website when complete.

Strategy 3.2: Minimise and control vehicle and plant exhaust emissions.

Actions

Responsibility

3.2.1 Inspect all exhausts from vehicles and plant/equipment Quarry Manager to ensure that they are maintained at an acceptable level.

3.2.2 Regularly service all vehicles to ensure that exhaust emissions comply with the regulations. Maintain appropriate service records. Quarry Manager

3.2.3 Identify any opportunities to minimise machinery use and Quarry Manager ensure that all equipment used on the site is energy efficient.

Performance Indicator

Vehicle and plant emissions comply with the regulations.

Monitoring

Regular vehicle and plant inspections.

Reporting

Annual reporting of inspection results in the AEMR.

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Strategy 4.1: Minimise the impact of operational traffic on the local community.


Actions

Responsibility

4.1.1 Ensure that the number of laden vehicle movements Quarry Manager/ does not exceed a combined total of two hundred per Environmental day via the intersection of the haulage road and Manager

Wisemans Ferry Road. This is the total of laden vehicle movements allowed for PF Formation's combined extractive industry



Neighbridge records reviewed - vehicle movement complied with 

1.2 Undertake operations involving the transportation of material on the site only between 6.00am and 6.00pm, Monday to Saturday.

Quarry Manager/
Environmental Manager

4.1.3

Allow a maximum of ten laden vehicles to enter and leave the site between 6.00am and Monday to operations in The Hills Shire.

Quarry Manager/
Environmental

Saturday only. Ensure that vehicles do not arrive at the site prior to 5.45am on any day.

Manager



4.1.4 Ensure that all vehicle loads leaving the site are suitably covered.

Quarry Manager/
Environmental Manager



Performance Indicator Minimum of complaints from the community.

Monitoring

Number and type of complaints received. - Nil

Weighbridge records of arrival and departure times.

Reporting
Reporting

Annual report on complaints received.

Annual report on complaints received.

- nil complaints 




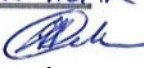
A4.4 Monitoring and reporting

The Environmental Manager will be responsible for the monitoring of complaints on traffic issues from the community. Annual reports will be compiled on community complaints and reported in the AEMR.

A5.3 Management controls

OPERATIONAL PHASE

Strategy 5.1: Provide for treatment of stormwater runoff from extraction areas, stockpiles and access roads.

Actions	Responsibility
5.1.1] Construct temporary erosion and sedimentation control structures such as detention basins and catch drains as appropriate to collect runoff from cleared land including extraction areas and access roads.	Quarry Manager/ Environmental Manager As required. 
 5.1.2 Erect silt traps and erosion control fencing as appropriate along extraction area boundaries and drainage lines.	Quarry Manager/ Environmental Manager 
5.1.3 Design sediment basins with a minimum storage capacity of 400 mg per hectare of catchment. Spillway capacity and stability will be designed as follows: tc event • life greater than 10 years, adopt the 100 year tc	Quarry Manager • life of less than 5 years, adopt the 20 year tc event • life
5.1.4 Undertake regular inspections to assess stormwater control measures and conduct routine inspections to ensure that compliance with between 5 and 10 years, adopt the 50 year	Quarry Manager/ Environmental
best practice guidelines and relevant legislation is achieved. relevant legislation is achieved.	Manager and Surface water monitoring conducted by South East Environmental - see AEMK 

Performance indicator Stormwater control measures are in place prior to commencement of extraction in the particular phase of development and are effective in reducing sedimentation to acceptable levels.

Monitoring

Review effectiveness of the stormwater basins and treatment methods during and following major rainfall events.

Reporting Report on effectiveness of control measures once sedimentation works completed and then on an annual basis.

Strategy 5.2: Plan site operations to minimise opportunities for soil erosion and sedimentation.




Actions	Responsibility
5.2.1 5.20 Select locations for topsoil and material stockpiles on level ground and away from drainage lines. Install cd'version drains UP slope and sediment filter fences as appropriate	Quarry Manager/ Environmental Manager
Provide training to operational personnel on the importance of erosion control measures and inform drivers of the damage that can be caused by to the environment by heavy vehicles	Quarry Manager/ Environmental Manager
Performance indicator Soil erosion control measures are incorporated in the operational activities on the site and are effective in reducing soil erosion.	
Monitoring Monitor suspended solid concentrations in stormwater runoff from the undisturbed parts of the site.	
Reporting	Report on the effectiveness of soil erosion control measures prior to extraction.

Downstream

water quality

Actions		Responsibility
5.3.1	ecosystems (ANZECC 2000)	Quarry Manager
5.3.2	<i>Downstream water quality testing conducted. - OK.</i>	<i>OK</i>
53.3	Keep areas of exposed land to a minimum compatible with operational requirements. Where practicable, provide silt fences to minimise erosion and sedimentation from exposed areas.	Quarry Manager Environmental Manager
53.4	Stabilise exposed areas that are not in use with an appropriate cover crop and water until well established.	Quarry Manager Environmental Manager
	Construct sediment retention basins with a capacity of at least 300m ³ per hectare of catchment, which will necessitate regular cleaning out, and a minimum freeboard of one metre.	Quarry Manager
Strategy 5.3: Ensure that suspended solid levels in stormwater discharging from the site meets the guidelines for the protection of aquatic ecosystems (ANZECC 2000)		

5.3.5	Monitor erosion and sediment controls regularly and immediately following a rainfall event. Clear sediment traps when the traps have collected 60% of the capacity of the basin or where sediment build-up is less than 300mm below the spillway crest. Remove sediment to a location where further pollution to downslope lands and waterways will not occur.	Quarry Manager/ Environmental Manager
5.3.6	Undertake maintenance of erosion and sediment controls when any deterioration is identified or when replacement is necessary.	Quarry Manager/ Environmental Manager
5.3.7	Reuse stored stormwater for dust control and the	Quarry Manager/ Environmental Manager

	watering of site vegetation.	Environmental Manager
5.3.8	Seed material stockpiles where these are to remain unused for a period in excess of four weeks. Water the area when required until the vegetation is well established.	Quarry Manager/ Environmental Manager
5.3.9	Control vehicle movement on the site by the identification of the haul road and current working areas.	Quarry Manager

Performance indicator Acceptable control of sedimentation and erosion is achieved so that suspended solids levels in any stormwater leaving the site does not exceed ANZECC guideFines or other regulatory requirements.

Monitoring Monitor suspended solids levels in stormwater following rainfall events. Compare results with other appropriate locations.

Reporting

Report on suspended solid levels and performance of erosion and sedimentation control measures for inclusion in the relevant AE-MR.




A5.4 Monitoring and reporting

The Environmental Manager will be responsible for the monitoring of the effectiveness of the sediment and soil erosion control measures installed on-site, suspended solids levels in stormwater runoff and any off-site discharges. An annual report will be included in the

A6.3 Management controls

OPERATIONAL PHASE

Strategy 6.1: Plan site operations to minimise potential impacts on groundwater

Actions	Responsibility
6.1.1 Restrict maximum depth of extraction to 2 metres above Quarry Manager the wet weather high groundwater level as determined following at least 12 months site specific groundwater monitoring data.	
6.1.2 Ensure that the groundwater is not breached or Quarry Manager contaminated. In the event that either should occur, operations are to cease and the Department of Water and the Department of Planning consulted to determine the basis on which extraction may recommence.	
6.1.3 The sediment retention basins are to accommodate the 100-year tc event with the minimum basin capacities as follows: <ul style="list-style-type: none"> Southern catchment (Basin 1) 19,400 mg Northern catchment (Basin 2) 7,800 ma <p>The volume of these basins can be varied depend'ng on the extent of the area exposed for extraction within each catchment.</p>	Quarry Manager 
6.1.4 Arrange for regular inspection of the capacity and stability of all retention basins and report on their effectiveness.	Quarry Manager/ Environmental Manager 
6.1.5 Install a minimum of two groundwater monitoring bores. One should be located within or near the extraction area and another at some location within the site beyond the area of any direct extraction influence. The location of these bores is to meet the requirements of the Department of Water and the Department of Planning.	Quarry Manager/ Environmental Manager 

Performance indicator Maintenance of groundwater quality. Existing water levels and groundwater quality will be determined from data derived from the bores on the site.

Monitoring

Regular monitoring of water levels and water quality data from the on-site bores.

E2 Water Groundwater Report - Included in AEMR.

- Water levels reviewed*
- Water quality checked*
- Data loggers downloaded.*



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Reporting Annual reporting of groundwater quality 'SSI_jeS and assessment of impacts of site operations for inclusion in the AEMR.



the AEMR.








A6.4 Monitoring and reporting

The Environmental Manager will be responsible for the monitoring of the effectiveness of the water management measures installed on-site. Annual reports will be prepared by consultants using Information gathered throughout the reporting period by the Environmental manager. This report will be included in the AEMR.

A7.3 Management controls

OPERATIONAL PHASE

Strategy 7.1: Implement measures to ensure the protection of native vegetation, including threatened species.

Actions	Responsibility
7.1.1 Clearly identify and mark out all areas which are not to be disturbed.	Quarry Manager/ Environmental Manager 
1.2 Assess areas where trees are to be removed to determine the commercial value of any which are too large to remove. Any with commercial value are to be marked and arrangements made for removal.	Environmental Manager 
7.1.3 Prepare an assessment of the species mix of the Sydney Environmental Hinterland Transition Woodland and arrange for purchase or collection of seeds. Mulch vegetation removed from the area and stockpile for later use. This will initially be used on the peripheral bunds followed by other areas of the site where the regrowth of the species mix is to be undertaken. Protect young plants from predation by feral pests.	
7.1.5 Restrict access to bushland to minimise the potential for damage. Suitably identify and mark out these areas to ensure that this prohibition is made clear.	Quarry Manager/ Environmental Manager 
1.6 Separate topsoil for use in rehabilitation works.	Quarry Manager/ Environmental Manager 
1.7 Incorporate flora and fauna issues (to the extent it is relevant) in the education program so that the site operatives are aware of the requirements of this EMP.	
1.8 Once each extraction phase is complete, initiate the rehabilitation and revegetation program as set out in the Landscape management Plan.	Quarry Manager/ Environmental Manager 


Performance indicator	All areas of significant flora and fauna habitat are protected prior to the start of extraction.
Monitoring	<p>Ensure that the above are implemented prior to the commencement of extraction activities in the area.</p> <p>Monitor condition of flora and fauna habitats on a regular basis.</p>
Reporting	<p>A report with appropriate maps identifying the areas under rehabilitation and extraction activity is to be prepared.</p> <p>Prepare an annual report on the status of the flora of the site for inclusion in the AEMR.</p>

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Strategy

- 7.2: Undertake the rehabilitation of the site to achieve an agreed and acceptable landform with appropriate planting.

Actions	Responsibility
7.2.1 Mulch all suitable plant material for reuse on the site as a seed and planting medium. Store all topsoil in Manager appropriately marked low stockpiles for reuse in locations as close as possible to their source. Care should be taken to ensure that this does not become contaminated with the seeds of exotic species and weeds.	
2.2 Rehabilitate the site in stages leaving areas exposed for Quarry Manager/ as short a time as possible. This should be undertaken in Environmental conformity with the approved Rehabilitation Plan with Manager maximum final batter grades of 40-1): 1 (V) on north and west facing slopes and (V) on those facing south and east. Final slopes should be as gentle as possible depending on the availability of fill material.	
2.3 Sow all stockpiles and exposed areas where no activity is Quarry Manager/ to appropriate vegetation cover.	Manager
take place for more than four weeks with an Environmental appropriate vegetation cover. Manager	

-
- 7.2.4 Undertake revegetation of the site on the following basis: Environmental Manager
- re-establish the Sydney Hinterland Transition Woodland using seed and mulch collected from the area
 - rehabilitate other areas to native species with a light sowing of cereal and allowing natural regeneration
 - lime, fertilise and sow areas where improved grass cover is required
 - suitably turf surfaces expected to experience high surface flows leaving the site
- Revegetation techniques determined by Senior Ecologist - Melissa May.*


- 7.2.5 Establish a maintenance program aimed at promoting Quarry Manager/ and protecting the growth of the rehabilitated areas. Environmental Manager

Manager



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Performance Indicator Completion of site rehabilitation in conformity with the approved Landscape Management Plan.

-
- | | |
|------------|--|
| Monitoring | Regular site inspections to ensure that the following is achieved: |
| | <ul style="list-style-type: none">• rate of rehabilitation is in conformity with the staging program• conservation zones and rehabilitated areas are being appropriately maintained• vegetative covers are being established• site works such as bunding and the establishment of re-vegetated areas are progressing in accordance with the Landscape Management Plan• all sensitive flora and fauna habitat is being adequately protected from damage |

-
- | | |
|-----------|---|
| Reporting | Reports of site inspections and annual reviews in the AEMR. |
|-----------|---|



A7.4 Monitoring and reporting

The Environmental Manager will be responsible for monitoring the effectiveness of the measures included for the protection of native vegetation on the site and the progress of site

rehabilitation. Annual reports will be prepared by the Environmental Manager for inclusion in the AEMR.

A8.3

OPERATIONAL

Strategy 8.1: Consider community feedback in determining operating procedures to minimise negative impacts.

Actions		Responsibility
8.1.1	Maintain an open door policy. Widely publish contact and provide an early response to all Environmental Manager queries and requests for information.	Quarry Manager/ phone number <i>Pat</i> queries, comments
8.1.2	Provide access to all relevant environmental documentation and monitoring results on the PF Formation web site.	Environmental management Manager
8.1.3	Organise and manage bi-annual meetings of the Environmental Community Consultative Committee to discuss issues in relation to environmental management of sand extraction on the site.	Manager
8.1.4	Establish a complaints register incorporating date and type of communication, contact details of the complainant, nature of the complaint and response taken.	Quarry Manager/ time, Environmental Manager <i>Pat</i> z/ taken.
Performance indicator	Minimal complaints from the community. <i>No complaints Pat.</i>	
Monitoring	Number and type of responses and complaints raised by the community and improved performance.	
Reporting	Annual reporting of community responses and complaints together with an assessment of any changes put in place to minimise any future difficulties for inclusion in the AEMR.	

A8.4 Monitoring and reporting

The Environmental Manager will be responsible for the monitoring of the effectiveness of the measures included in response to community concerns. Annual reports will be prepared by the Environmental Manager for the AEMR.

A9.3 Management controls

OPERATIONAL PHASE

Strategy 9.1: Protect items of heritage value during site operations.

9.1.1	Cease all work if an archaeological or heritage item is identified during extraction operations and consult the National Parks and Wildlife Service, the Deerubbin	Quarry Manager/ Environmental Manager
Actions		Responsibility
	Aboriginal Land Council or the Heritage Office to determine any appropriate course of action prior to recommencement of the work. Obtain any required permits and submit together with supporting information. Notify the Hills Shire Council to ensure compliance with the conditions of approval,	<i>No items found</i> <i>Park</i>
1.2	Undertake additional survey work required for submittal of application to destroy artefact scatters located in the Manager later stages of the development. Comply with the reasonable requirements of the National Parks and Wildlife Service, the Deerubbin Aboriginal Land Council and the Heritage Office arising out of any additional studies and notify the Hills Shire Council to ensure compliance with the conditions of the approval.	<i>Not required during reporting period.</i> <i>Park</i>
Performance Indicator	Any item of heritage significance is protected during site operations.	
Monitoring	The protection of any heritage items identified during site operations is to be monitored.	
Reporting	Any heritage item identified during site operations is to be documented.	







A9.4 Monitoring and reporting

The Environmental Manager will be responsible for the reporting of any heritage items identified during the course of site activities. Annual reports will be prepared by the Environmental Manager.

AIO.3

OPERATIONAL

Strategy 10.1: Ensure that impacts on visual amenity are minimised during site activities and following completion.

Actions	Responsibility
10.1.1 Clearly mark all vegetation to be retained.	Quarry Manager/ Environmental Manager 
10.1.2 Construct peripheral bunding within the established setbacks. These should be a minimum of three metres high with slopes ranging from 3(H):1 (V) to (V) depending on the location using overburden stripped from the site	Quarry Manager/ Environmental Manager 
10.1.3 Undertake screen planting works to the peripheral areas to an agreed specification using mulch to allow for native plant regeneration. Reinforce this species mix using appropriate plantings at specified intervals.	Quarry Manager/ Environmental Manager 
10.1.4 Undertake a tree planting program within areas defined in the Landscape Management Plan to establish a dense native plantation using an appropriate mix of species reflecting that of the existing community.	Quarry Manager/ Environmental Manager 
10.1.5 Re-establish the landform of the extraction areas to that shown in the Landscape Management Plan.	Quarry Manager 
10.1.6 Complete the rehabilitation of the site in conformity with the proposals set out in the Landscape Management Plan.	Quarry Manager 
10.1.7 Remove all temporary fencing when no longer required.	Quarry Manager
10.1.8 Re-establish vegetation in areas suitable for agricultural/horticultural uses.	Quarry Manager
10.1.9 Remove all site infrastructure including the slurry plant and its associated pipelines. Restore those areas affected by the plant and rehabilitate.	Quarry Manager
10.1.10 Remove all waste materials and dispose of in an appropriate manner.	Quarry Manager
10.1.11 Review Quarry Closure Plan and prepare proposals for future use of the area.	Quarry Manager

Performance Indicator	<p>No complaints received regarding visual amenity during site operations and following completion.</p> <p>Completion of the development in conformity with the requirements of the Rehabilitation Plan.</p>
Monitoring	Ensure that the above actions are undertaken.
Reporting	<p>Complaints from the community regarding visual amenity. <i>complaints Pak</i></p> <p>Compliance with the requirements of the Landscape Management Plan.</p>






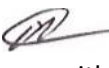

AI 0.4 Monitoring and reporting

The Quarry Manager and the Environmental Manager will be responsible for ensuring that the various environmental protection measures are installed and maintained in good condition. Annual reports will be prepared by the Quarry Manager on progress with the completion of their installation. The Environmental Manager is responsible for monitoring and reporting complaints regarding aesthetics and amenity received from the local community.

AI 1.3

OPERATIONAL


Strategy 11.1: Appropriate management and disposal of wastes generated during site operations.

Actions	Responsibility
11.1.1 Clearly delineate waste handling areas.	Quarry Manager 
11.1.2 Define specific areas for the collection of materials for reuse and recycling and clearly label	Quarry Manager 
11.1.3 Process cleared vegetation on site for use as mulch within Environment the landscape program. Manager	Quarry Manager 
11.1.4 Store all topsoil in stockpiles for later use in site Environmental rehabilitation. Manager	Quarry Manager 
11.1.5 Provide bins or skips for the collection and storage of Quarry Manager recyclable material and waste. General construction waste will be stored in a skip located at the workshop on Lot 1 98 DP595538. Waste food will be removed on a daily basis and stored in a vermin proof bin for collection by waste contractor. Paper waste generated from site offices, plastics and glass are to be collected separately for recycling.	
11.1.6 Separate hazardous wastes (including empty drums, rags, Quarry Manager soil contaminated with oil) from non-hazardous wastes and manage in accordance with the relevant legislation.	
11.1.7 Temporarily store liquid wastes (chemicals, oils and Quarry Manager greases) in an appropriately bunded area and dispose of via a licensed contractor. Direct washdown water to an appropriate settlement basin if quality is acceptable. Otherwise, store and dispose as a liquid waste.	Quarry Manager
11.1.8 Retain copies of current licences of all waste removal contractors on site.	Quarry Manager
11.1.9 Keep all documentation relating to waste removal and Quarry Manager disposal on file at the site. This documentation includes dockets for the removal and disposal of waste at a licensed facility.	
11.1.10 Progressively separate and stockpile waste material in Quarry Manager designated areas for collection. Adequately secure waste disposal areas to prevent access by wildlife.	


11.1.1.1 Review all waste licences and monitor terms and conditions for compliance. Environmental Manager



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11.1.1.2 Recycle or d'spose of any materials and waste remaining on the site following completion of extraction operations. Environmental Manager All should be cfsposed of in an appropriate manner. 

Performance Indicator Effective use of waste recycling area and maximisation of material reuse.

Appropriate removal of all waste from the site on completion. 

Monitoring Regular review of recycling opportunities, quantities and cost savings.

Reporting Annual report on waste management, reuse and recycling on the site.




A 11.4 Monitoring and reporting

The Quarry Manager will be responsible for conducting regular waste audits, monitoring the currency of any waste disposal contracts and documentation relating to transport and disposal of wastes. The Quarry Manager will also monitor the quantities and costs/savings associated with the effective management of waste materials.

AI 2.3

OPERATIONAL

Strategy 12.1: Ensure that procedures and controls are implemented to prevent, or if necessary, control any potential environmental emergency

Actions	Responsibility
Ensure that all personnel on site during operations have been trained in appropriate procedures including site induction, materials handling and response procedures.	Quarry Manager
Develop and put in place emergency response procedures. Appoint appropriate individuals as emergency services liaison officers.	Quarry Manager
Establish an emergency response table listing contact details of all relevant parties required in an environmental emergency.	Quarry Manager
Establish a Register of Environmentally Hazardous Materials to be stored and used on site.	Quarry Manager
Ensure that appropriate safety and spill response equipment has been made available.	Quarry Manager 
Clearly label all materials to be used and stored on site.	Quarry Manager 
Review and update emergency response procedures biannually.	Quarry Manager 
Ensure that appropriate safety and response equipment is available at all times.	Quarry Manager
Performance indicator	Emergency response procedures, controls and training adequate for potential emergencies.
Monitoring	Regular monitoring of response procedures and equipment.
Reporting	Annual report on incidents.


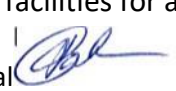



AI 2.4 Monitoring and reporting

The Quarry Manager will be responsible for maintaining the currency of the emergency procedures and reporting on incidents.

A13.3 Management controls

OPERATIONAL PHASE

Strategy 13.1 : Minimise the risks associated with the storage and handling of hazardous materials.

Actions	Responsibility
13.1.1 Obtain a licence to keep dangerous goods from WorkCover NSW for all materials stored on site which require licensing	Quarry Manager
13.1.2 Establish a Register of Hazardous Materials setting out Quarry Manager/ details of quantities, storage and specific handling requirements for all relevant materials stored on site. Manager	Environmental Manager 
13.1.3 Obtain Material Safety Data Sheets for all hazardous materials stored on site.	Quarry Manager/ Manager
13.1.4 Provide appropriate storage and secondary containment facilities for all hazardous materials stored on site. All bunded areas must be designed to contain at least 110% of the volume of materials permanently stored within the area. Temporary facilities should have drip trays.	Quarry Manager/ Environmental Manager 
13.1.5 Appoint a Safety Officer for the development.	Quarry Manager
13.1.6 Locate all flammable material storage areas at least ten metres from possible ignition sources.	Quarry Manager/ Environmental Manager 
14.1.7 Clearly label the contents of all above ground storage areas.	Quarry Manager/ Environmental Manager 
13.1.8 Secure all hazardous and dangerous goods storage areas and display appropriate signage. Segregate all Environmental incompatible material.	Quarry Manager/ Manager 

13.19 Train all personnel in the handling and safety procedures Quarry Manager/ required for the hazardous materials stored and used on Environmental site during Staff Safety Meetings. Manager

Performance Indicator Storage and handling of hazardous materials complies with legislative requirements and demonstrates due diligence.



Monitoring	Regular review of compliance with legislative requirements for the storage and handling of hazardous materials.
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Reporting	AEMR.
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Strategy 13.2: Ensure that procedures are implemented and facilities made available for clean up in the event of a pollution incident.

Actions	Responsibility
13.2.1 Emergency Response Plan in place (see Chapter 12).	Quarry Manager
13.20 Provide a mobile spill control kit containing appropriate absorbent materials, neutralising chemicals and other spill containment equipment.	Quarry Manager
13.2.3 Provide personal protective equipment and instruct personnel on its use.	Quarry Manager
13.2.4 Clean UP any spills beyond the bunded area immediately and dispose of the contaminated material in an appropriate manner.	Quarry Manager
13.2.5 Contact the relevant authorities in the event of a leak or spill. Follow any instructions provided. Remediate any contamination to the satisfaction of the regulatory authorities.	Quarry Manager
13.2.6 Collect any spills or hazardous wastes that cannot be recycled and arrange for disposal by a licensed waste contractor. Maintain all records of waste removal on site.	Quarry Manager

Performance Indicator All pollution incidents contained and cleaned UP without impact on the environment or injury to personnel. All incidents recorded.

No environmental pollution incidents occurred 

Monitoring Stormwater and soil contamination monitoring undertaken following any spill and subsequent clean up.

Reporting Report on all pollution events and the results of any clean up.

ATTACHMENT 5

LOCATION WEATHER CHART

Daily Weather Conditions at Lot 198 Weighbridge from 1st July 2017 – 30th June 2018

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/07/2017	0	2.164	N	SW	0	1	13.7	79.94688	1007.167
2/07/2017	0.003	2.237	N	NNW	0.2	1.6	14.7	84.03229	1004.167
3/07/2017	0.1	3.026	N	N	0.2	2.8	14.2	85.83229	996.8375
4/07/2017	0.328	4.573	NNE	NW	0	10.9	19.7	60.68021	991.2458
5/07/2017	0.058	3.404	NNW	NW	0	9	18.7	53.70938	992.225
6/07/2017	0.019	2.242	NNW	N	0	6.3	16.3	69.33333	994.2438
7/07/2017	0.071	2.82	N	NW	0	3.5	17.8	66.85	991.3333
8/07/2017	0.063	2.444	NNW	WNW	0	5.6	16	65.4625	994.3521
9/07/2017	0.089	2.12	NNE	NNW	0	3.7	16.2	66.43958	998.5146
10/07/2017	0.061	2.034	NNW	SW	0	5.2	15.5	64.96875	1003.618
11/07/2017	0.089	2.216	N	SSW	0	2.4	16.2	75.97083	1008.098
12/07/2017	0.05	2.436	S	S	0	5.6	14.2	83.27708	1010.381
13/07/2017	0.015	2.272	NNW	N	0.2	4.2	15.9	85.14271	1004.641
14/07/2017	0.332	2.958	NNW	N	0	6.7	16.9	72.81875	996.7
15/07/2017	0.002	1.912	N	NW	0	7.9	15.2	76.4375	996.9073
16/07/2017	0.014	1.72	N	N	0	4	15.4	73.63333	999.9219
17/07/2017	0.041	3.172	N	NW	0	5.3	16.9	75.40833	997.3302
18/07/2017	0.085	3.845	NNW	NW	0	7	21.5	69.41343	991.9701
19/07/2017	0.047	2.94	NW	WSW	0	7	16	55.875	987.0875
20/07/2017	0.061	3.309	NNW	SW	0	6.1	15.8	57.48229	991.9438
21/07/2017	0.024	3.407	SW	WSW	0	2.4	14.7	64.99896	998.6896
22/07/2017	0.042	2.594	NNE	NNW	0	2	17.3	64.88542	999.65
23/07/2017	0.402	3.363	NW	NW	0	7.3	20	40.63438	994.9167
24/07/2017	0.116	2.477	NNE	W	0	9	19.7	42.95938	997.2688
25/07/2017	0.152	3.027	N	NW	0	5	19.4	61.95	999.201
26/07/2017	0.104	3.688	NNE	WSW	0	8.5	20	47.06042	996.0146
27/07/2017	0.123	2.103	NE	NNW	0	4.3	16.3	66.83125	1001.423
28/07/2017	0.127	3.587	NNW	W	0	6.7	18.5	55.05313	996.6313
29/07/2017	0.117	2.536	NNW	NNW	0	3.2	19	54.42188	997.3667
30/07/2017	0.425	3.607	NNW	NW	0	12.5	24.9	29.60313	993.6354
31/07/2017	0.135	2.692	SSE	SW	6.6	7.9	17.5	75.46146	995.6677

Total rainfall 7.2

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/08/2017	0.012	2.861	NE	S	0.2	4.4	15.8	79.38020833	1001.36875
2/08/2017	0.032	2.725	SSE	WNW	0	3.2	16.1	79.55104167	1001.853125
3/08/2017	0.011	1.832	N	NNE	11.4	4.2	16	90.040625	994.9854167
4/08/2017	0.403	4.231	NW	NW	0	8.5	14.5	72.00833333	988.41875
5/08/2017	0.24	3.609	NNW	NW	0	7.1	18.2	50.97916667	991.3354167

6/08/2017	0.291	4.498	NNW	NW	0	10.7	19.4	47.640625	991.2
7/08/2017	0.313	4.682	NNW	WNW	0	8.7	16.7	45.85833333	989.2635417
8/08/2017	0.104	2.919	NW	W	0	5.9	17.7	50.85	995.6041667
9/08/2017	0.1	2.21	N	W	0	4	18.1	65.378125	999.8354167
10/08/2017	0.059	4.059	NNW	NW	0	6.8	22.9	52.43645833	995.021875
11/08/2017	0.251	3.508	NNW	SW	0	12.1	24.5	31.46979167	992.08125
12/08/2017	0.082	2.102	NW	NW	0	5.4	19.7	51.615625	997.4625
13/08/2017	0.064	1.434	NNW	W	0	6.1	19.3	63.71458333	999.8520833
14/08/2017	0.064	2.254	NW	NNW	0	4.3	21.1	64.0125	996.4677083
15/08/2017	0.173	3.253	NNW	NNW	1.4	10.4	22	50.96041667	990.2677083
16/08/2017	0.401	4.786	WSW	WSW	0	12.4	21.7	41.96354167	982.571875
17/08/2017	0.244	3.626	NNW	NW	0	7.7	21	44.86458333	986.596875
18/08/2017	0.919	4.399	WNW	W	0	9.7	15.8	44.98191489	988.6223404
19/08/2017	0.229	4.745	WSW	SSW	0	3.9	14.6	51.85208333	995.4489583
20/08/2017	0	3.273	SW	SW	0	3.6	14.2	62.57395833	1000.698958
21/08/2017	0.022	2.354	N	NNW	0	4.8	13.9	79.84791667	996.8802083
22/08/2017	0.002	1.7	N	NNE	0	5.2	18.7	71.9875	997.3260417
23/08/2017	0.008	1.859	NNW	NNE	0	5.5	22.2	75.290625	996.7229167
24/08/2017	0.092	3.096	NNW	SSE	0.2	5.4	17.5	74.35104167	996.2239583
25/08/2017	0.026	3.635	SSW	S	0	6.8	17	70.56875	1001.645833
26/08/2017	0.002	1.931	NNW	NNW	0	3.8	18.9	73.96041667	1000.860417
27/08/2017	0.085	2.929	NW	SW	0	5.4	17	60.284375	994.6135417
28/08/2017	0.008	3.651	SW	S	0	4.9	14.7	60.83333333	997.3270833
29/08/2017	0.004	1.817	NW	NNE	0	3.4	15.7	70.853125	999.85
30/08/2017	0.024	3.07	SSW	S	0	4.2	17.3	68.478125	1000.410417
31/08/2017	0.123	3.008	SW	S	0	5.9	16.1	54.771875	1004.958333

Total rainfall 13.2

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/09/2017	0.037	2.649	NNW	NW	0	3.3	17.5	71.77604167	1002.585417
2/09/2017	0.008	2.131	NW	NW	0.2	4	22.2	68.51354167	998.525
3/09/2017	0.043	5.543	N	NNW	0	8.6	27.7	42.74166667	989.7979167
4/09/2017	0.172	4.118	NNW	NW	0	11	21.1	39.475	987.61875
5/09/2017	0.327	4.008	NW	NW	0	7.9	17.8	39.88333333	989.8666667
6/09/2017	0.454	3.637	WNW	W	0	10.4	18.3	40.74270833	992.9520833
7/09/2017	0.256	3.309		WNW	0	10.4	19.5	35.13235294	996.8323529
8/09/2017	0.183	3.231	NW	WNW	0	7.4	18.9	45.01458333	996.41875
9/09/2017	0.067	3.032	SSW	NE	0	3.7	18	52.646875	999.75
10/09/2017	0.052	2.059	NW	NNW	0	3.6	19.2	67.015625	999.84375
11/09/2017	0.05	1.761	NNW	NNW	0	5	23.5	64.63125	997.0864583
12/09/2017	0.062	3.483	NNW	NNW	0	10.3	28.1	38.53333333	992.8052083
13/09/2017	0.602	6.941	NNW	NW	0	18.1	33	25.87395833	984.578125
14/09/2017	0.069	4.109	W	W	1	7.3	18.2	47.95416667	990.7770833
15/09/2017	0.14	2.976	NW	WNW	0	7	21.2	49.009375	996.915625
16/09/2017	0.091	3.758	NW	SW	0	7.1	22.6	53.040625	997.5927083

17/09/2017	0.018	2.192	NW	NW	0	4.7	18.7	65.253125	1003.83125
18/09/2017	0.041	3.903	NNW	NW	0	4.4	26.5	52.321875	999.471875
19/09/2017	0.367	3.695	S	WNW	0	10.4	23.4	33.953125	993.7041667
20/09/2017	0.017	2.031	SSW	NNE	0	5	20.6	60.44375	997.7385417
21/09/2017	0.011	2.32	NW	NNE	0	6.3	27.8	60.85520833	993.6635417
22/09/2017	0.089	2.619	NNW	NNW	0	12.8	30.5	26.67083333	991.2260417
23/09/2017	0.134	5.519	NNW	NNW	0	18.2	34.5	22.31041667	985.5708333
24/09/2017	0.13	4.78	NNW	WNW	0	18.7	30	20.83854167	981.809375
25/09/2017	0.146	3.075	NNW	WNW	0	13.7	24.9	31.11979167	986.7364583
26/09/2017	0.015	2.141	N	ESE	0	8.8	23.1	52.325	994.196875
27/09/2017	0.021	1.85	WSW	SSE	0	9.4	25.3	73.57708333	991.94375
28/09/2017	0.191	4.053	N	WNW	0.2	14.5	23.7	58.94895833	987.8354167
29/09/2017	0.122	2.806	NNW	SW	0	10.4	25.2	42.78854167	992.2239583
30/09/2017	0.07	3.23	WNW	WSW	0	11.5	23.8	35.659375	994.4890625

Total rainfall 1.4

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/10/2017	0.027	2.248	NW	SE	0	7.9	24.7	62.31979	999.0052
2/10/2017	0.002	2.198	SSW	S	0	8.4	25.3	65.03125	1000.884
3/10/2017	0.002	2.787	NNW	NNW	0	12.9	24.8	75.6	999.9646
4/10/2017	0.032	1.554	NW	ENE	0	12.5	24.1	85.3	998.8896
5/10/2017	0.029	3.106	NNW	SE	0	14	29.6	73.58542	994.3073
6/10/2017	0.039	2.831	S	ENE	0	12.5	21.7	73.76146	993.8094
7/10/2017	0.025	2.362	SSW	SE	0	10.6	21.3	66.84583	1000.519
8/10/2017	0	2.473	NNW	N	0.4	9.3	19.8	84.90833	996.401
9/10/2017	0.201	3.605	NNW	SW	0	16.4	31.4	62.73542	989.3
10/10/2017	0.264	2.796	SSW	ENE	0.8	14	20.6	81.94479	995.601
11/10/2017	0.104	1.958	N	N	0.2	16.7	27.2	83.68646	993.0427
12/10/2017	0.028	3.736	NW	SW	0	13.4	29	57.62083	989.9958
13/10/2017	0.012	2.501	N	SE	0	12.2	25.8	76.27604	995.5802
14/10/2017	0.358	3.102	SSE	SSE	1	13.3	16.7	89.26771	1001.054
15/10/2017	0.047	1.318	SW	SE	7.6	12.4	20.1	94.57292	1003.452
16/10/2017	0	1.655	NW	SE	0	12.5	22.5	82.91771	1005.37
17/10/2017	0.015	2.012	N	NE	0	12.8	23.2	75.06771	1005.825
18/10/2017	0.059	1.865	NNW	NNE	0	13.1	23.8	78.29479	1005.355
19/10/2017	0.023	2.883	NW	SSE	0	11.8	30.7	68.65313	1000.634
20/10/2017	0.169	3.113	NNE	S	30	12.2	19.2	96.56354	999.0875
21/10/2017	0.081	3.59	S	S	0	9.3	17.9	76.89271	998.9208
22/10/2017	0	2.145	NNW	SSE	6	8.3	19.9	82.45417	993.2271
23/10/2017	0.075	2.34	SSW	NE	0.2	9.9	21.6	81.03854	996.1073
24/10/2017	0.054	2.18	NW	SSW	0	11.5	28.4	66.46458	995.5844
25/10/2017	0	3.345	NNW	NW	0	15.5	30.4	49.66979	990.6385
26/10/2017	0.229	2.949	WSW	SSE	9.4	13.2	25.4	82.42604	984.8875
27/10/2017	0.009	3.382	SSW	S	14.6	12.6	23	88.48125	987.824

28/10/2017	0.021	2.516	NNW	N	0	14.2	28	76.35208	988.975
29/10/2017	0.068	3.506	NW	WSW	0	18.7	31.9	51.00104	985.8417
30/10/2017	0.153	7.031	NNW	NW	0	15.3	34.3	48.99271	983.025
31/10/2017	0.05	3.278	SSW	SSE	0	10.4	21.1	49.79063	992.2365

Total rainfall 70.2

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/11/2017	0.026	3.189	SSW	S	0	7.8	23.2	57.43542	991.3458
2/11/2017	0.009	2.071	NNW	SSE	0	9.8	22.9	68.05521	992.1208
3/11/2017	0.077	3.504	NW	WNW	1	12.8	28.9	61.70104	990.8615
4/11/2017	0.372	2.52	SSW	S	5.4	12.3	15.6	97.76146	996.551
5/11/2017	0.026	1.476	SSE	S	14	12.2	15	95.23958	999.1729
6/11/2017	0.146	4.73	NNW	WSW	8.6	12.8	23.6	79.03646	987.6906
7/11/2017	0.018	2.855	S	SSE	0	9.8	20.8	62.32292	994.5219
8/11/2017	0.028	2.563	SSW	SE	0	11.2	19.5	71.11458	1003.539
9/11/2017	0.013	1.565	SW	E	0	8.4	22.7	71.28021	1004.953
10/11/2017	0.178	1.68	NNW	SSE	0	10	23.8	82.36667	1006.323
11/11/2017	0.05	1.736	NW	ENE	0	10.6	23.1	73.19479	1004.549
12/11/2017	0.003	1.786	NNW	SSE	0	11.5	23.5	71.78333	1002.823
13/11/2017	0.002	1.711	N	SE	0	10.5	22.6	69.37396	1001.845
14/11/2017	0.094	1.714	SSE	E	0	10.5	23.7	71.35417	1000.256
15/11/2017	0.035	2.031	E	NNE	0	12	25.7	72.46146	997.0698
16/11/2017	0.042	2.035	NNE	S	1.2	13.1	24.7	80.95625	994.4354
17/11/2017	0.022	1.862	NNW	NE	0	15.5	24.6	79.06875	995.5229
18/11/2017	0.369	1.567	NNE	ESE	0	17.4	22.7	74.41042	997.5396
19/11/2017	0.014	1.883	NNE	S	0	15.5	23.9	70.76875	1001.131
20/11/2017	0.062	2.544	S	ENE	0.6	13.7	23.9	80.025	1003.126
21/11/2017	0.064	2.095	SSW	ENE	0.4	13.5	23.9	73.20625	1001.885
22/11/2017	0.005	1.696	SSW	SE	2.6	13.6	24.1	80.07708	998.2417
23/11/2017	0.011	2.298	NNW	NNE	0	13.5	27	74.09479	995.1188
24/11/2017	0.029	2.037	NW	ESE	0	14.1	31.1	67.37292	994.8146
25/11/2017	0.071	1.913	N	SSE	0	13.9	29	74.49063	995.8396
26/11/2017	0.013	2.056	WNW	NE	0	15.4	28.8	77.82188	994.6969
27/11/2017	0.018	1.686	ENE	NNW	0	17.8	26.2	82.74063	994.3385
28/11/2017	0.019	1.908	SSW	ESE	1.8	16.9	27.5	82.74167	996.9281
29/11/2017	0.042	2.104	S	SSE	0	17.2	26.1	86.38438	997.8417
30/11/2017	0.02	1.906	NW	NNE	0.2	17	28.4	81.30313	995.4229

Total rainfall 35.8

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/12/2017	0.081	3.22	NNW	NE	0	17.3	32.7	71.73021	991.3771
2/12/2017	0.136	5.353	NNW	ENE	16.4	16.5	27.8	77.10104	984.6271
3/12/2017	0.071	2.98	NW	WSW	0	16	27.4	58.44167	985.224

4/12/2017	0.177	2.66	S	S	2.4	15.4	18.1	83.57917	988.7833
5/12/2017	0.516	3.512	SSW	SSE	1	14.6	23.9	80.64792	985.074
6/12/2017	0.035	3.142	WNW	NW	2	14.5	24.9	79.04375	982.3427
7/12/2017	0.309	3.813	NNW	WSW	0	15.6	31.5	49.25938	984.8052
8/12/2017	0.193	2.606	NNW	SSE	7.8	16.8	29.4	65.95521	989.2594
9/12/2017	0.154	2.308	S	N	1.2	14.5	24.5	78.24583	997.6667
10/12/2017	0.001	1.777	WNW	SE	0	12.6	27.2	74.12917	999.9302
11/12/2017	0.017	1.961	NW	N	0	14.9	30.2	68.13542	997.4031
12/12/2017	0	2.041	ENE	NE	0	15.5	29.7	72.525	995.7729
13/12/2017	0.044	2.237	NNW	NNE	0	15.9	34.6	63.84479	991.0844
14/12/2017	0.173	3.366	NNW	NW	0	18.8	39.7	45.12604	986.7635
15/12/2017	0.032	3.231	S	S	0	19.7	28.2	74.64167	991.049
16/12/2017	0.144	2.945	NNW	E	1	20	36.7	63.39063	991.5438
17/12/2017	0.072	3.156	SSW	SSE	0	19.7	30	83.26042	994.1396
18/12/2017	0.002	2.061	NNW	SSE	0.4	18	33.7	78.1125	990.6094
19/12/2017	0.065	3.936	NW	NW	0	20.5	40.5	59.51146	985.9677
20/12/2017	0.259	3.589	NW	SSE	9	20.2	39.3	52.83646	986.3219
21/12/2017	0	2.384	S	SSE	8	18.4	20.7	96.59063	995.5104
22/12/2017	0.114	1.581	SW	ENE	1.6	17.8	26.3	88.23646	994.2813
23/12/2017	0.022	1.911	NW	NNE	0.2	17.2	34.3	70.90938	989.8385
24/12/2017	0	4.193	NNW	WSW	0	18.7	39.6	60.63854	987.0604
25/12/2017	0.208	2.492	S	S	4	16.2	20.6	87.84063	994.3458
26/12/2017	0.262	1.495	S	NNE	0	15.9	20.8	86.82708	997.1854
27/12/2017	0.08	1.549	NNW	ENE	0.8	17	25.8	80.46667	996.2448
28/12/2017	0.017	2.054	WNW	ESE	0	15.6	32.8	72.78125	993.7906
29/12/2017	0.005	2.136	NW	SSE	0	19.4	35.6	64.92188	989.0813
30/12/2017	0.208	3.252	NNW	W	7.4	20.5	34.5	69.76875	984.475
31/12/2017	0.058	2.304	N	NNE	0	19	26.3	78.41563	989.0792

Total rainfall 63.2

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/01/2018	0.013	2.99	SW	SE	0	17.6	31.6	73.8625	984.9656
2/01/2018	0.015	1.84	SW	E	1	16.8	29.7	81.28333	984.7771
3/01/2018	0.041	2.911	SSW	SSE	0	17.5	24	81.75208	989.8708
4/01/2018	0.019	1.862	SE	SE	0	15.1	24.9	75.14271	994.9719
5/01/2018	0.019	2.687	NNW	E	0.2	13.6	32	70.38125	994.8417
6/01/2018	0.014	2.114	NNW	ENE	0	15.4	37.7	60.77917	993.874
7/01/2018	0.156	4.185	NNW	SSW	0	21.8	42.6	42.01042	991.1271
8/01/2018	0.217	2.484	NW	ESE	1.4	20.8	39.4	59.43438	992.376
9/01/2018	0.503	4.346		NNW	9	19.5	29.2	90.27143	993.5086
10/01/2018	0.065	2.672	S	ENE	1.4	17.2	22.5	83.75417	997.2052
11/01/2018	0	1.703	NW		0	17.7	21.1	84.86087	997.5326
12/01/2018	0.552	1.593	NNW	NE	0	19.6	32.8	70.59091	987.6182
13/01/2018	0.005	4.1	NW	WSW	0	18.2	33.9	65.78125	981.1375
14/01/2018	0.126	4.954	SSW	S	0.6	12.8	23.7	61.63958	987.4

15/01/2018	0.272	3.998	SSW	SSW	0	13.1	25.7	58.03021	993.5417
16/01/2018	0.12	4.48	S	S	0	14.1	23.1	57.29479	997.651
17/01/2018	0.037	3.39	S	S	0	13.4	26.2	58.67083	997.6052
18/01/2018	0.034	2.24	NW	ENE	0	11.2	33.6	53.13333	996.925
19/01/2018	0.029	2.652	NW	ESE	0	13.9	37.1	48.55521	994.0563
20/01/2018	0.078	1.898	NW	SE	0	13.5	37.2	54.10625	993.3938
21/01/2018	0.02	1.862	NNE	SSE	0	15.8	34.9	65.11771	991.2865
22/01/2018	0.206	2.381	NNW	SSE	0.2	18.4	40	55.83229	988.2594
23/01/2018	0.166	2.049	SW	ENE	0	19.8	28.7	68.57813	989.8479
24/01/2018	0.124	2.035	NNW	SSE	0	19.4	35.2	71.55	989.7417
25/01/2018	0.035	2.485	S	SSW	0	19.7	27.6	82.81458	990.1938
26/01/2018	0.011	1.719	SW	NE	0	20.5	31.9	80.02813	990.5365
27/01/2018	0.037	1.656	NNE	SE	0	22	32.8	75.82083	991.0781
28/01/2018	0.204	1.745	N	SE	0	20.6	30	74.41042	992.2333
29/01/2018	0.027	1.883	WNW	NE	0	19.3	30.6	72.85833	991.1417
30/01/2018	0.036	3.352	NNW	SSE	0	17.4	35.1	68.51146	985.0188
31/01/2018	0.533	3.623	SSW	SSE	1.6	15.8	21.6	78.89688	987.8406

Total rainfall 15.4

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/02/2018	0.38	2.911	S	NNE	0	15.5	20.9	62.18958	993.4969
2/02/2018	0.13	2.715	SSW	SE	0.4	14.5	22.3	73.5875	995.901
3/02/2018	0.087	3.786	SSW	S	2.8	14.4	24.6	76.50833	998.9188
4/02/2018	0	2.826	SSW	ESE	0.2	13.2	25.6	77.04896	1000.93
5/02/2018	0.005	2.392	W	SSE	0	13.5	29.3	70.43542	998.6188
6/02/2018	0.008	1.636	WNW	SSE	0	14.5	28.6	68.43021	998.7667
7/02/2018	0	1.82	NW		0	15.2	28.2	75.38039	1000.004
8/02/2018	0.06	2.698	NW	ESE	0	14.5	34.8	57.65938	996.3531
9/02/2018	0.142	3.774	NW	SE	3.8	18.3	37.6	68.73125	992.3052
10/02/2018	0.078	3.058	S	NE	1.4	17.9	33.4	77.0125	988.5188
11/02/2018	0.257	3.03	NW	SSE	4	19.6	33	71.4375	984.775
12/02/2018	0.018	2.117	NNW	SE	0	18.4	31.8	73.28438	987.2063
13/02/2018	0.027	1.882	S	ESE	0	20.2	29.3	74.91146	989.9031
14/02/2018	0.044	4.035	NNW	WSW	0	20	37.6	55.19896	987.6844
15/02/2018	0.133	3.178	ENE	SE	0	19.5	31.6	65.78646	991.7156
16/02/2018	0.065	3.229	NNW	ENE	0.2	15.6	32.2	65.86667	989.8323
17/02/2018	0.073	1.819	S	NE	0	17	29	69.51146	992.65
18/02/2018	0.06	1.853	NW	SE	0	17.2	33.2	71.61667	990.4635
19/02/2018	0.101	2.354	ENE	SSE	0	19.1	28.5	70.9125	991.0917
20/02/2018	0.152	3.665	SSE	SSE	9	16.2	20.7	73.39896	996.6063
21/02/2018	0.031	1.808	S	S	0	15	25.7	69.36875	997.1771
22/02/2018	0.02	1.718	NW	SSE	0	14.5	26.4	69.50833	995.5646
23/02/2018	0.024	1.946	N	ESE	0	15.1	29.5	75.32708	993.7344
24/02/2018	0.097	4.156	NNW	NNW	0	18.5	34.8	62.33958	987.4146
25/02/2018	0.142	3.065	S	S	47.4	16	28.7	84.36979	986.1385

26/02/2018	0.078	3.516	S	S	30.4	15.2	20	92.27396	992.2417
27/02/2018	0.061	2.622	S	E	0.2	14.3	23.9	76.8625	996.2375
28/02/2018	0.008	3.455	NNW	N	0	13	33.3	70.27292	990.2167

Total rainfall 99.8

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar
1/03/2018	0.056	1.769	SSW	SSE	0	18.1	26.8	68.46979	990.2938
2/03/2018	0.054	1.881	SSW	NNE	0	17	25.5	78.24896	992.6469
3/03/2018	0.038	2.266	NNW	SSE	0	16.3	31.1	79.4875	989.3854
4/03/2018	0.063	2.641	WSW	SSE	0	19.3	26.5	83.12396	990.4563
5/03/2018	0.017	2.43	SW	SSE	15.2	18.3	23.4	89.77396	994.2156
6/03/2018	0.703	3.431	SSW	SSE	4.4	15.3	22.5	89.18646	1001.058
7/03/2018	0.047	2.254	SSE	SSE	1.4	15.1	23.9	77.98646	1004.271
8/03/2018	0.031	2.232	S	NE	0	13.2	23.8	76.60417	1004.005
9/03/2018	0.002	1.888	S	ESE	0	14.6	24.6	78.75729	1004.977
10/03/2018	0.028	1.695	SW	NE	0	14.6	25.3	76.55313	1004.969
11/03/2018	0	1.922	NW	NNW	0	12.8	28.7	72.24688	1000.606
12/03/2018	0.021	1.647	W	ENE	0	12.9	27.6	74.06354	996.5073
13/03/2018	0.058	2.073	SSE	SSW	9.2	16.9	21.2	92.19375	998.5979
14/03/2018	0.227	2.292	NW	SE	0.2	16.4	26.6	93.55167	998.5433
15/03/2018	0.073	2.983	NNW	N	0	18.2	32.9	72.74896	991.5885
16/03/2018	0.038	2.137	S	ENE	0	19.8	25.7	79.28542	995.5448
17/03/2018	0.002	1.613	NW	NW	0	18.5	34.7	67.83021	993.9615
18/03/2018	0.007	5.387	NNW	NNW	0	17.6	37.3	47.46771	991.2438
19/03/2018	0.102	2.574	SSW	NNE	0	18.9	34.2	73.7	993.874
20/03/2018	0.008	4.024	S	S	1.4	14.8	28.2	79.0625	999.1448
21/03/2018	0.627	2.766	SSW	SSE	15	15.3	19	98.2125	1005.398
22/03/2018	0.591	2.181	S	SSE	9.8	14.5	20.4	91.2875	1004.798
23/03/2018	0.027	1.994	SSW	NNW	5.2	15.5	22.5	93.70521	1002.255
24/03/2018	0	3.194	E	NNE	3.4	14.6	25.2	90.09688	996.7875
25/03/2018	0.14	4.116	NNW	NNW	2.6	16.9	30.5	75.8	988.026
26/03/2018	0.057	4.211	W	NW	12	13.5	24.1	60.38646	987.3625
27/03/2018	0.038	1.809	NW	E	0	8.4	22.6	67.61875	996.1219
28/03/2018	0.011	2.071	SW	NNW	0	13.2	28.3	78.74375	995.625
29/03/2018	0.002	1.843	N	NNE	0.2	15.3	28.6	84.11458	994.701
30/03/2018	0.072	2.549	NW	NW	0	17.6	33	70.87604	992.9052
31/03/2018	0.028	1.732	S	E	0	17.4	25.3	81.55729	997.3323

Total rainfall 80

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/04/2018	0.023	2.164	NNW	NNW	0.2	17.4	31.9	73.55104	994.1927

2/04/2018	0.028	2.342	NW	NNE	12.6	17.5	32.3	69.83229	993.625
3/04/2018	0.051	2.77	S	SSE	0	16.6	23.1	85.21354	999.7229
4/04/2018	0.053	1.776	SSW	SE	0	17	25.3	82.46458	999.0417
5/04/2018	0.003	2.495	N	N	0	15.3	27.7	81.58229	995.6417
6/04/2018	0.019	1.507	NNW	NNE	0.2	14.7	27.5	86.60104	996.3083
7/04/2018	0	2.759	NW	N	0.2	16.7	28.7	76.91667	998.1073
8/04/2018	0.053	2.17	NNW	ENE	0	15	30.3	72.08646	997.3083
9/04/2018	0.155	2.69	NNW	SSW	0	16.3	33.6	52.95729	996.4167
10/04/2018	0.007	1.311	NW	SSE	0	14.4	25.2	77.75729	1000.593
11/04/2018	0.097	2.44	NNW	N	0	15.7	29.3	75.19375	999.1385
12/04/2018	0.113	3.846	NNW	NW	0	18.3	31.5	53.49688	994.7156
13/04/2018	1.376	4.596	NNW	NNW	0	21.6	29.9	40.93542	990.6917
14/04/2018	0.92	6.127	NNW	NW	0	20.8	28.2	45.78333	983.8406
15/04/2018	0.444	4.742	WNW	NW	0	16.9	23.5	42.85521	986.0375
16/04/2018	0.182	3.023	N	WSW	0	15.2	28.2	51.58646	991.3938
17/04/2018	0.024	2.366	SSE	SSE	0	13	22.7	71.98646	999.7104
18/04/2018	0	1.284	SW	N	0	11.5	20.3	74.25833	1003.094
19/04/2018	0.005	2.689	NW	NNE	0.8	11.7	24.9	85.24583	999.0438
20/04/2018	0.002	1.761	NW	E	0.2	12.2	24.7	87.29063	998.9406
21/04/2018	0	2.35	SSW	E	0	14.6	22.7	83.56146	1001.118
22/04/2018	0.011	2.341	S	NNE	0	13.2	23.3	81.68646	1001.136
23/04/2018	0	1.483	N	E	0.2	12	24.2	83.49063	999.026
24/04/2018	0.047	2.144	SW	SE	0	12.9	24.4	88.3875	998.2018
25/04/2018	0.011	2.235	SSW	SSW	3.8	10.7	23.3	90.90208	994.4771
26/04/2018	0.014	2.234	NNW	SSE	2.2	13.6	24.7	89.00521	994.3823
27/04/2018	0.067	3.089	S	SSE	0.2	13.4	18.9	79.18333	1001.647
28/04/2018	0.081	2.811	S	S	0.8	12.2	18.8	88.03542	1003.483
29/04/2018	0.014	4.327	S	NNE	3.2	10.8	19.7	80.82396	1003.434
30/04/2018	0.009	2.424	ESE	S	4.6	8.4	19.9	88.41875	1004.838

Total rainfall 29.2

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R- FALL	temp Min	temp Max	% RH	mBar
1/05/2018	0.008	1.548	N	NNE	0.2	9	22.3	79.08021	1004.53
2/05/2018	0.008	2.303	NW	N	0	11	21.2	84.44896	999.9865
3/05/2018	0.036	2.533	NNW	N	0.2	12	25.3	68.88333	997.2563
4/05/2018	0.22	4.894	NNW	WSW	0	11.6	25.6	51.74479	994.575
5/05/2018	0.079	1.922	NNW	NNW	0	7.2	21.4	58.71979	1005.208
6/05/2018	0.016	1.858	N	NNE	0	5.9	21.2	72.43438	1008.317
7/05/2018	0	3.572	N	NNW	0	8.5	23.4	72.34792	1002.728
8/05/2018	0.039	2.168	NNW	NNW	0	10.8	23.2	63.30208	1000.31
9/05/2018	0.041	1.978	NNW	N	0	9.3	24	68.87813	997.8563

10/05/2018	0.222	4.491	NNW	NW	0	11.1	24.1	47.58125	989.6208
11/05/2018	0.308	4.144	NW	WNW	0	7.2	14.8	52.19583	988.2438
12/05/2018	0.03	3.688	WNW	SW	0.6	9.3	17.9	64.93333	988.9365
13/05/2018	0.643	4.22	SSW	S	0	11.8	17.5	62.29375	998.1438
14/05/2018	0.04	3.608	SSW	S	0	10.9	18.3	66.68542	1002.769
15/05/2018	0.026	2.134	N	S	0	6.9	19.3	75.17188	1001.249
16/05/2018	0.02	2.2	SSW	SSE	0	8.2	17	81.18125	1004.705
17/05/2018	0.005	2.402	N	N	0.2	6.8	18.3	77.67708	1003.466
18/05/2018	0.024	2.175	N	NNW	0	5.3	19.2	68.41875	999.6656
19/05/2018	0.046	1.656	NNW	NNE	0	5.8	19.4	74.69479	1000.414
20/05/2018	0.04	1.821	NNW	NE	0	4.8	20.3	67.75313	998.3563
21/05/2018	0.152	2.672	NNW	WSW	0	7.3	21	58.72083	998.575
22/05/2018	0.025	2.294	NNW	SW	0	8.1	23	57.81458	998.2469
23/05/2018	0.028	1.891	N	NNW	0	8.5	20.6	72.09375	1002.144
24/05/2018	0.022	2.353	N	SSE	0	7.6	19.9	83.67604	1002.426
25/05/2018	0.029	1.644	S	SE	0	9.6	17.8	77.76667	1006.652
26/05/2018	0	2.052	NNW	N	0.2	6.9	19.7	83.82708	1007.474
27/05/2018	0	2.127	NNW	NNW	0.2	6.8	19.4	80.85938	1006.083
28/05/2018	0.013	1.982	NNE	NNW	0	8.9	20	80.44688	1002.72
29/05/2018	0.042	2.758	NNE	NNW	1	10.2	23	65.46042	997.7938
30/05/2018	0.028	3.403	SSW	SSW	5.8	6.1	16.9	76.81146	997.3208
31/05/2018	0.151	3.998	NNW	S	0	4.8	16.2	62.85104	999.4438

Total rainfall 8.4

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar
1/06/2018	0.339	2.323			0	10	14.1	59.11935	1000.416
2/06/2018	0.515	4.565	SW	S	0.6	9	15.1	67.38125	997.9531
3/06/2018	0.186	3.371	S	SSW	0	10.2	17.5	78.42292	998.3521
4/06/2018	0.011	3.284	ESE	SSE	0.2	8.3	18.1	81.30104	998.574
5/06/2018	0.006	3.485	SSW	S	5.4	9	14.5	87.33542	1003.895
6/06/2018	0.025	2.139	S	SSE	6.6	10.2	15	98.16979	1008.454
7/06/2018	0.005	1.564	NNW	NE	0.2	8.5	18.5	87.0125	1009.019
8/06/2018	0.017	2.785	NNW	NNW	2.2	8.1	14.8	87.85729	1003.415
9/06/2018	0.051	1.736	NNW	NW	4.8	10.1	13.7	95.59063	1001.011
10/06/2018	0.009	2.972	SSW	S	0.6	7.4	15.6	91.68854	1003.1
11/06/2018	0.027	2.51	S	WSW	0	8	17.2	85.74375	1000.83
12/06/2018	0.002	2.652	N	E	0.6	5.9	17.6	87.31563	991.7135
13/06/2018	0.03	2.472	NNW	WSW	0	8.5	17	71.58646	989.7104
14/06/2018	0.087	2.483	NNW	WSW	0	8	17.9	62.45521	993.5833
15/06/2018	0.235	4.666	NW	NW	0	8.8	18.3	55.03958	994.1052
16/06/2018	0.134	4.17	NW	WNW	0	7.2	16.4	47.68021	993.8021
17/06/2018	0.46	3.53	NW	WNW	0	5.2	13.5	56.39063	991.4979
18/06/2018	0.022	4.333	SW	SSW	1.6	6.9	15.5	67.11458	994.9135
19/06/2018	0.246	3.966	SSW	SW	16.8	7.2	12.2	87.27813	1000.454

20/06/2018	0.06	2.641	S	SSE	5.8	7.6	15.5	86.91146	1005.314
21/06/2018	0	2.104	WNW	SSW	0	7.7	15.1	87.41354	1005.818
22/06/2018	0	1.658	NE	N	0.2	4.6	17.3	86.45521	1005.449
23/06/2018	0.052	1.721	S	SSW	0.2	3.8	18.2	95.92941	1003.194
24/06/2018	0.008	2.175	N	WNW	0	2.6	16.2	79.85417	1004.968
25/06/2018	0	1.834	N	NW	0.2	3	15.5	80.34583	1008.224
26/06/2018	0.011	1.912	N	SSW	0.2	3.7	16.1	82.78125	1011.019
27/06/2018	0	1.52	N	ENE	0.2	5.5	15.5	93.06875	1008.886
28/06/2018	0	3.299	N	WSW	11.6	6.6	17.7	95.13542	1002.465
29/06/2018	0.147	2.931	N	NNW	0.2	4.7	13.3	83.11042	999.5792
30/06/2018	0.119	2.798	NW	WNW	0	5.7	18.2	63.18958	1001.102

Total rainfall 58.2

ATTACHMENT 6

SITE CURRENT PHOTOS



Current extraction area (south)



Current extraction area (west)



Current extraction area (north)



Tailings pond 12 ready for capping



Tailings pond 14 in use



Tailings pond 11 being spelled



Fresh water dam



Stockpile and processing area

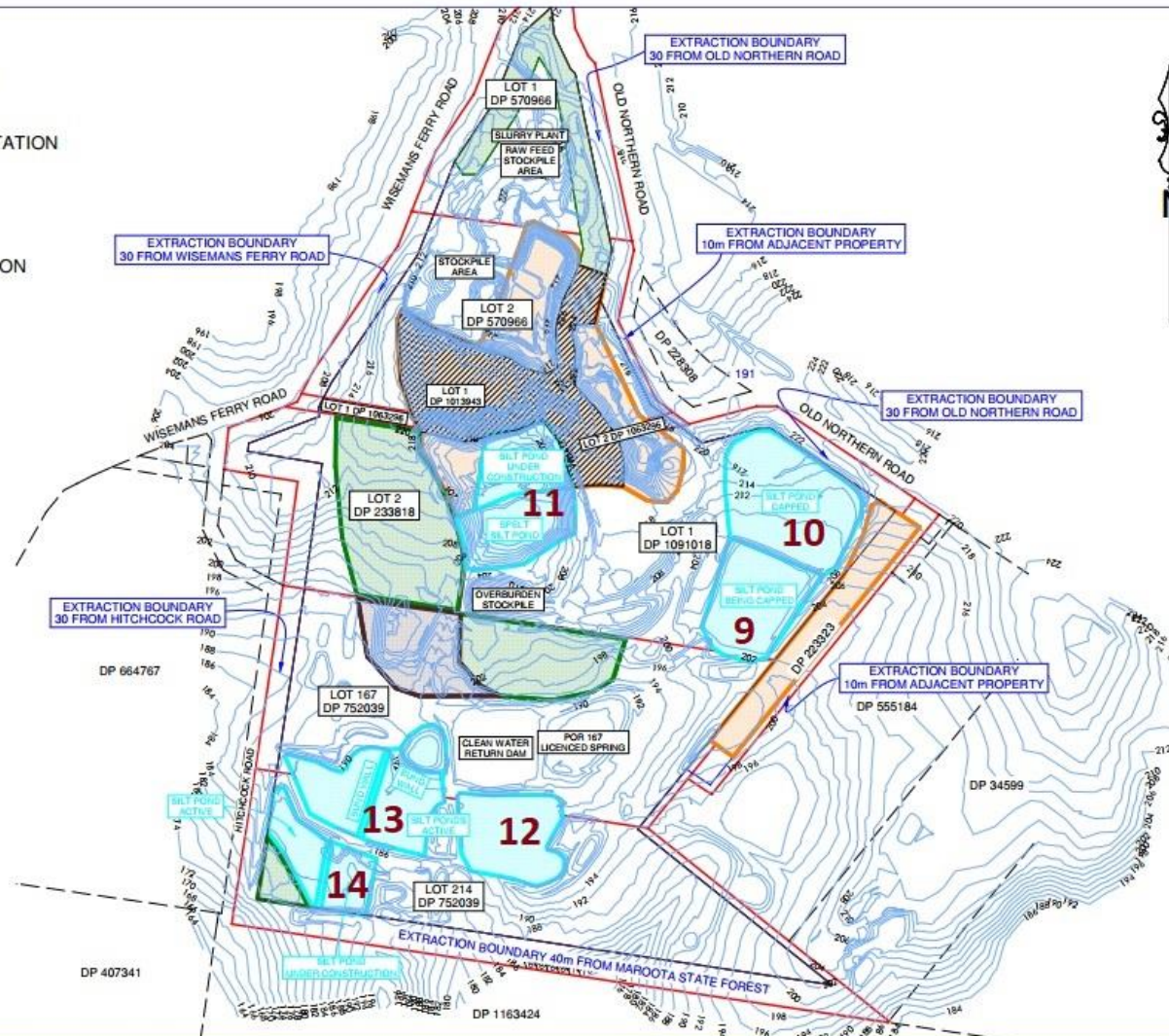


Rehabilitation area along east haul road

ATTACHMENT 7

CURRENT SITE SURVEY PLAN


- LAND UNDER ACTIVE REHABILITATION
- LAND BEING PREPARED FOR REHABILITATION
- EXTRACTION AREAS
- AREA BEING PREPARED FOR EXTRACTION
- SILT PONDS



NOTES:

- * Boundaries have been provided to Matthew Freeburn Surveyors from Landair Survey and are approximate only. No boundary investigation has been carried out for the purpose of this survey.
- * Contours shown in blue have been provided to Matthew Freeburn Surveyors from Landair Surveys. Contours depict the general topography. They do not represent exact levels other than at spot levels shown. Survey date was 29/5/2017.
- * The position of features are indicative only.
- * 101.50 indicates natural surface level.
- * No trees have been shown.

PROJECT: "PF FORMATION - SITE PLAN FOR HITCHCOCK ROAD SAND PROJECT 06_0104".

Client: PF FORMATION	FREEBURN 	MATTHEW FREEBURN LAND, ENGINEERING & MINING SURVEYOR SUITE 2, 1st FLOOR, "SURVEYOR HOUSE" 2 CASTLEREAGH STREET PENRITH 2750	Telephone 02 4721 2289 Fax 02 4721 5646 email matthew@freeburnsurveyors.com	Date: 4/10/2018 Scale 1: 6000 Surveyor: N/A Stored: 34279 SITE PLAN 18-10-04 A3	Ref: 34279 Datum: AHD Drawn By: CD	Sheet 1 of 1 Contour: 1m Checked: JLF A3 SHEET
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ATTACHMENT 8

WEIGHBRIDGE VERIFICATION CERTIFICATE



Weighbridge Verification Form

Company Name:	<input type="text" value="PF Formation"/>	Date:	<input type="text" value="4/6/2018"/>	Ref No:	<input type="text" value="C3R382"/>
Site Name:	<input type="text" value="pf for-4 : Pf Formation-Upgrade-Maroota"/>			Permit to work requirement:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Contractor:	<input type="text" value="AWS (Aussie Weighbridge Systems) Pty Ltd- T/A: Weigh-More Solutions"/>			Approved By:	<input type="text" value="Tim Major"/>
Job/Task:	<input type="text" value="Pf Formation-Upgrade-Maroota"/>			Asset:	<input type="text"/>

Equipment Details

Manufactures/s	Model	Serial nr
<input type="text" value="Toledo"/>	<input type="text" value="7560"/>	<input type="text" value="IN0054217"/>
NSC Number(s)	Min and Max	VSI e=d= Class
<input type="text" value="6/10b/46"/>	<input type="text" value="0.40t and 60.00t"/>	<input type="text" value="0.02"/> <input type="text" value="III"/>
Calibration Date	Calibration Due	
<input type="text" value="1/6/18"/>	<input type="text" value="June 2019"/>	

Visual Inspection

Y/N

Does the instrument comply with its certificate/s of approval?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the instrument being used in an appropriate manner?	Y <input type="checkbox"/> N <input type="checkbox"/>
Are all mandatory descriptive markings clearly and permanently marked on the data plate?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the data plate fixed on the instrument?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the instrument complete?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the instrument clean?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the Instrument Operational?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Is the level-indicating device (if fitted) secured and functional?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Mounted on a firm base?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Are there any apparent obstructions to the operation of the instrument?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Does the operator have a clear view of the indicating device?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Does additional devices repeat what is on indicator and comply with certificates	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	NA <input type="checkbox"/>

Test Details

Available test masse	MPE Change Points
18t	10.00t/40.00t

Performance Testing

Repeatability Test Mass	Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>		
41.54t			
First Reading	Second Reading	Third Reading	Difference
41.54t	41.54t	41.54t	0t

Eccentricity Test

Eccentricity: Number of Supports	Mass	g <input type="checkbox"/> kg <input type="checkbox"/>	
6	6.16t	t <input checked="" type="checkbox"/>	
Position 1	Position 2	Position 3	Position 4
6.16t	6.16t	6.16t	6.16t
Position 5	Position 6	Position 7	Position 8
6.16t	6.16t		
Eccentricity Test Results		Pass <input checked="" type="checkbox"/> Fail <input type="checkbox"/>	

Weighing Performance Up Test

Load	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
1t test mass	1.00t	0.01t	1.00t	0.01t	+0.006	+0.004			Fail <input type="checkbox"/>
Load applied	Reading	MPE	IND	1/2e	DL	E (error)	L Sub	L sub round	Pass <input checked="" type="checkbox"/>
10t test mass	10.00t	0.01t	10.00t	0.01t	+0.004t	+0.006			Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L Sub	L sub round	Pass <input checked="" type="checkbox"/>
18t test mass	18.00t	0.02t	18.00t	0.01t	+0.008	+0.002			Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
sub1	17.80t	0.02t	17.80t	0.01t	+0.006	+0.004	17.808t	17.80t	Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
18t test mass +sub1	35.80t	0.02t	35.80t	0.01	+0.014	-0.004			Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
Sub 2	28.76t	0.02t	28.76t	0.01	+0.008	+0.002	28.768t	28.76t	Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
18t test mass + sub2	46.76t	0.03	46.76t	0.01	+0.012	-0.002			Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input checked="" type="checkbox"/>
13t +sub1 + 2	59.56t	0.03t	59.56t	0.01	+0.016t	-0.006			Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	

									Pass <input type="checkbox"/>
									Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input type="checkbox"/>
									Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	L sub	L sub round	Pass <input type="checkbox"/>
									Fail <input type="checkbox"/>

Weighing Performance Down Test

Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	Pass <input checked="" type="checkbox"/>
18t test mass	18.00t	0.02t	18.00t	0.01t	+0.008	+0.002	Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	Pass <input checked="" type="checkbox"/>
10t test mass	10.00t	0.01t	10.00t	0.01t	+0.004	+0.006	Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	Pass <input checked="" type="checkbox"/>
1t test mass	1.00t	0.01t	1.00t	0.01	+0.006	+0.004	Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	Pass <input type="checkbox"/>
							Fail <input type="checkbox"/>
Load Applied	Reading	MPE	IND	1/2e	DL	E (error)	Pass <input type="checkbox"/>
							Fail <input type="checkbox"/>

Zero Setting (clause 5.3)	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>
Over-range blanking	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>
Discrimination (clause 5.5)	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>
Sensitivity (clause 5.6)	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
	NA <input checked="" type="checkbox"/>	
Accuracy of tare setting (clause 5.7)	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>
	NA <input type="checkbox"/>	
Price computation (clause 5.8)	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
	NA <input checked="" type="checkbox"/>	
Overall Result	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>

Technician name Identification Number

Checklist Item	Date Actioned	Actioned By
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Comments

Tim major 4/6/2018 @ 7:04PM

Employee

Trojan

ATTACHMENT 9

**COMMUNITY CONSULTATIVE
COMMITTEE**

MEETING MINUTES

**Community Consultative Committee
Hitchcock Road and Lot 198 Maroota
Sand Extraction and Rehabilitation Projects**

**Minutes
8 November 2016**

Attendance

Kristine McKenzie – The Hills Shire Council (THSC) – Chairperson

Daniel Giffney – The Hills Shire Council (THSC)

Marianne Sheumack – Resident

Lisa Aylward - Resident

John Graham – PF Formation (PF)

Peter Cummins – PF Formation (PF) Joshua Graham
– PF Formation (PF)

Apologies:

Shaunagh Hitchcock – Resident

Megan Dawson – Department of Planning ('DOP')

Minutes of Previous Meeting

- Accepted

Matters Arising from Minutes

- None

Report on Current Status of Operations by John Graham (PF)

- There have been no complaints in the last 6 months
- The area adjoining the entry road has had soil placed on it to encourage regrowth
- The new water cart has been effective

- A new GPS device was trialed recently. It was used to confirm existing levels and markers. The use of the machine allowed further level markers to be created.
- The Department of Planning (DOP) has setup a new regulatory arm that will expand on its audit and monitoring activities.

Reporting

- PF Formation received approval from the Department of Planning relating to the updated monitoring strategies/plans/programs and reviewed vegetation offset bond sent to the Department last year. These updated Plans are available for viewing on the PF Formation website
- The summary of the audit findings of the DOP for all sand quarries in the State is available for viewing on the PF Formation website.
- The Annual Environmental Management Plan ('AEMR') has largely been completed for the 2016 year. A new environmental planner (& ecologist) has been used and the AEMR should be up on the website in the next week or so. No unusual or significant matters were identified in the AEMR.

Environmental Matters

- The monthly dust deposit results were reviewed and discussed.
- The dust results generally were low but the regular high August figure at the School monitoring station was again considered to be attributable to the annual Maroota School Muster.
- No explanation could be provided for the high August figure at 'Jurd's House'. The sample collected contained high levels of combustible matter and low ash content which would indicate the dust was not from the quarry.
- No new vegetation rehabilitation has occurred recently although soil is stored ready for use. Significant reshaping of the land has been done.

Other Matters Discussed

- At the meeting Lisa asked when the overtaking lane would be constructed on Old Northern Road. Kristine advised she would confirm the time frame and advise.

Following the meeting, Kristine advised that the overtaking lane on Old Northern Road (north of Canoelands Road) is due to be completed by the end of the 2016/2017 financial year.

Department of Planning Matters

- The Department of Planning advised that if issues were raised that warranted it, they may attend a meeting to discuss issues further with the Community Consultative Committee. The Department will be invited to attend the next meeting to discuss the concerns.
- Following the meeting, Marianne provided a list of concerns. These concerns will be forwarded to the Department with the invitation to attend the next meeting.

Site Visit

- A site inspection was conducted.

Next Meeting

□ 10.00 am Tuesday 2 May 2017

Community Consultative Committee Hitchcock Road and Lot 198 Maroota Sand Extraction and Rehabilitation Projects

Minutes 2 May 2017

Attendance

Kristine McKenzie – The Hills Shire Council (THSC) – Chairperson

Robert Buckham – The Hills Shire Council (THSC)

Marianne Sheumack – Resident

Shaunagh Hitchcock – Resident

Lisa Aylward - Resident

Stewart Mclachlan – Department of Planning and Environment ('DPE')

Kathleen Withers – Department of Planning and Environment ('DPE')

Peter Cummins – PF Formation (PF)

Joshua Graham – PF Formation (PF)

Minutes of Previous Meeting

- Accepted

Matters Arising from Minutes

- None

Report on Current Status of Operations by Joshua Graham (PF)

- There have been no complaints in the last 6 months
- Whilst there is high demand in the industry PF has been limiting sales. Examples of some of the bigger jobs were discussed.
- Tertiary (Maroota) sand and sandstone differences and locations were discussed.
- Operations have been routine with less tertiary sand and more sandstone being sold.
- Personal dust monitoring has been conducted in the last week on several employees. This was required as part our Mine Safety requirements. Lung testing will also be done on some employees.

Reporting

- The Annual Environmental Management Plan ('AEMR') was completed in December and is on the website. No significant matters were raised.
- No significant reporting matters have occurred in the period.
- PF is continually updating the website with its regular monitoring information.

Environmental Matters

- The monthly dust deposit results were reviewed and discussed.
- The dust results generally were low in the 6 month period but January was higher than usual at Hitchcock Road and Jurd locations. Most of the Insoluble Solids were combustible meaning they could not be quarry sourced.
- PF received no notification of high TEOM results in the period.
- No new vegetation rehabilitation has occurred recently.

Department of Planning and Environment Matters

- The representatives of DPE gave a discussion and provided handouts on Compliance Overview including contact details for complaints
- There has been an increase in the monitoring and enforcing of State Significant developments based on the size of the development and risk factors
- Community members directly raised their issues to DPE in particular to the cumulative impact of trucks, truck movements and car safety.
- DPE advised that they monitor condition requirements regarding movements and times but issues on the road are for Police. More monitoring of driver speeds and behaviour is required but it was questioned as to how this occurs without individuals (community members) following through incidents.
- PF confirmed that any incidents of driver speeding/poor driving is taken seriously by all quarries in the area and the truck involved in any incident should be able to be readily identified and action taken by the quarries.

Other Matters Discussed

- Changes are being drafted by the DPE regarding the conduct and process of CCC meetings. More information should be available over the next 6 months.
- Possible expansion of quarries in the area by a new owner/operator was mentioned

Site Visit

- A site inspection was conducted.

Next Meeting

□ 10.00 am Tuesday 14 November 2017