

PF Formation

HITCHCOCK ROAD MAROOTA

Sand Extraction and Rehabilitation Project

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT 2016-2017

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.** Noise Management Report
- 10.** Air Quality Report
- 11.** Ground Water Management Report
- 12.** Surface Water Monitoring Results
- 13.** Rehabilitation Report
- 14.** CCC Meeting Minutes
- 15.** 2017 Independent Audit

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
Construction work	Monday - Friday	7.00am to 6.00pm
	Saturday	8.00am to 1.00pm
	Sunday and Public Holidays	None
Quarrying and Processing, (inc. overburden removal)	Monday – Saturday	7.00am to 6.00pm
	Sunday and Public Holidays	None
Product Transportation	Monday – Saturday	6.00am to 6.00pm
	Sunday and Public Holidays	None
Maintenance	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 DirectorGeneral.

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 DirectorGeneral.

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 DirectorGeneral.

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

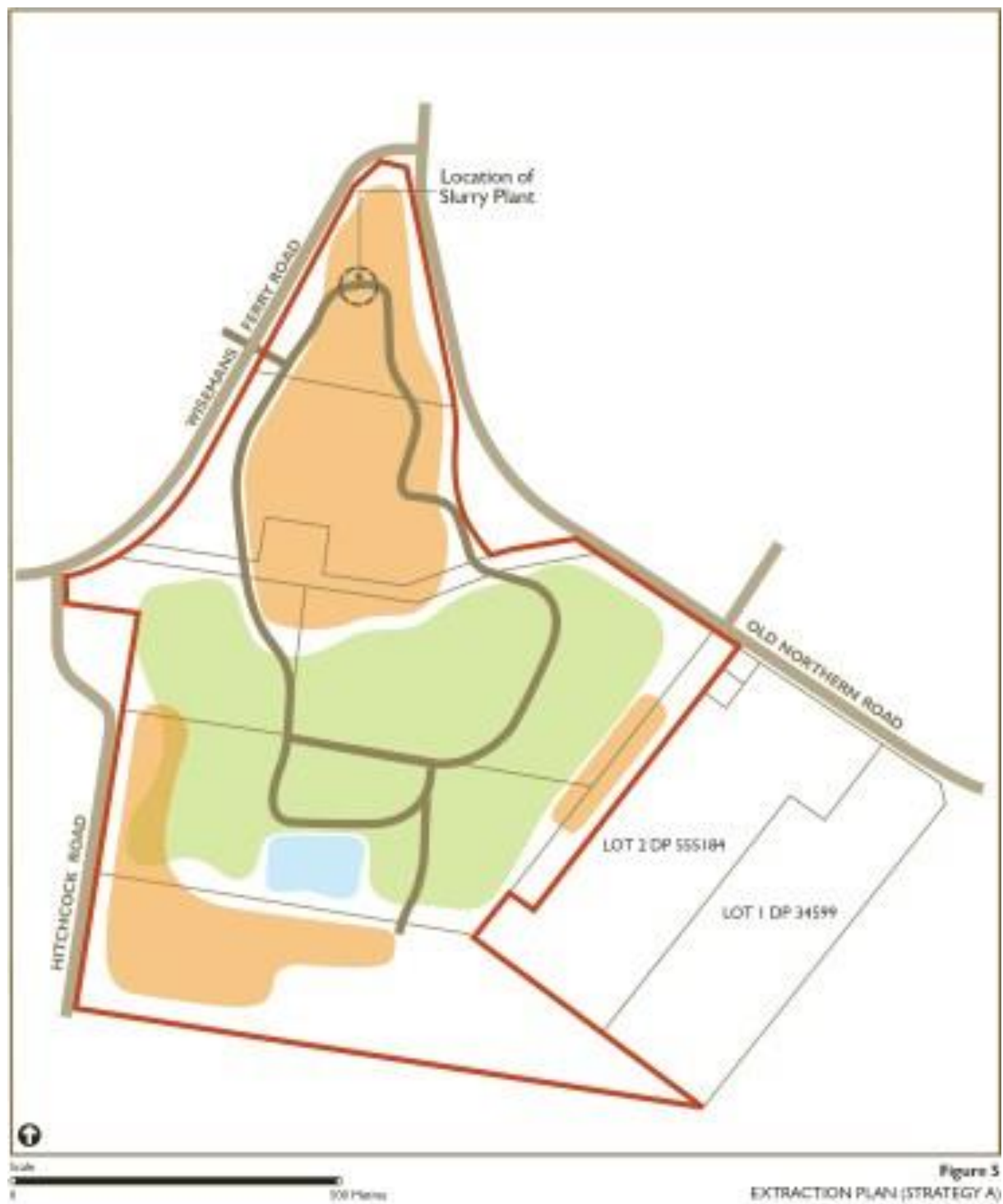




Figure 1
DEVELOPMENT AND DEVELOPMENT STRATEGIES

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.

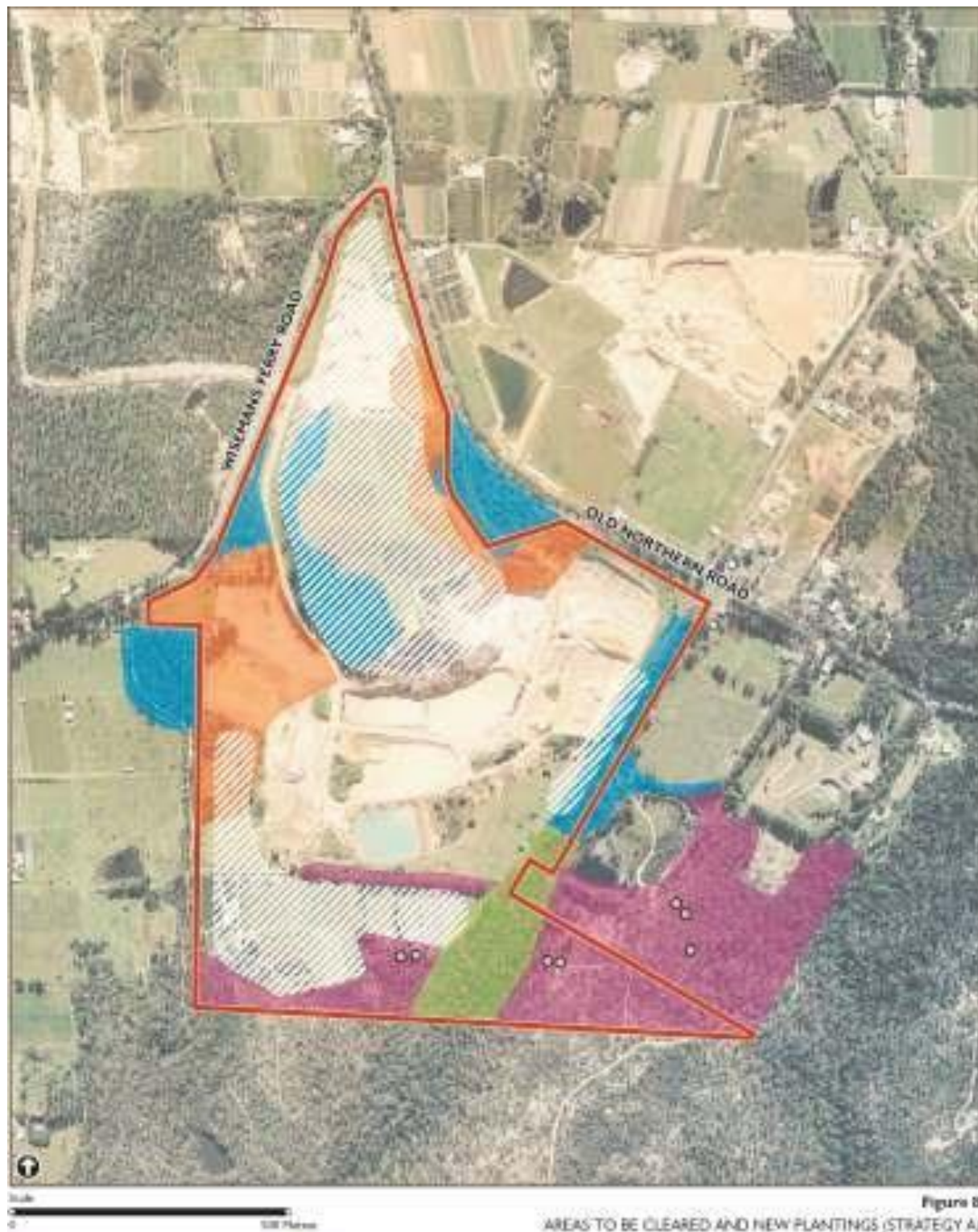
- Contents of all above ground storage areas will be clearly labelled.
- All hazardous and dangerous goods storage areas will be secured and appropriate signage displayed. All incompatible material will be segregated.
- All personnel will be trained in the handling and safety procedures required for 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 restored
Native species	Native species diversity	20	25	40	48
	Average number of native species per 400m ² quadrat	15	20	30	34.5 + 1.5t
	Average number of native species per 100m ² quadrat	15	20	30	34.5 + 1.5t
	Native species cover	40%	45%	45%	50%
Weeds	Number of weeds per 400m ² quadrat	10	10	10	10
	Number of weeds per 100m ² quadrat	10	10	10	10
Vegetation structure	Vegetation structure	Controlled	Controlled	Controlled	Restored
	Vegetation structure	Controlled	Controlled	Controlled	Restored
Canopy	Average canopy height (m)	4	8	12	12-10
	Native canopy cover (minimum % cover)	5	10	10	10
	Native canopy cover (maximum % cover)	10	10	10	10
	Native canopy cover (minimum % cover)	10	10	10	10
Shrub layer	Native shrub cover (minimum % cover)	10	10	10	10
	Native shrub cover (maximum % cover)	10	10	10	10
Ground cover	Native ground cover (minimum % cover)	5	10	10	10
	Native ground cover (maximum % cover)	10	10	10	10

Category	Criteria	Target			Long-term condition of vegetation to be assessed
		3 years	10 years	15 years	
Ecosystem function	Structural complexity	Vegetation structure beginning to develop	Woodland and Lands structure Habitat structure beginning to develop including groundcover such as leaf litter and fallen timber	Woodland structure mature 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 present Wood structure mature includes moderate levels of leaf litter and fallen timber
	Native vegetation indicating dispersal of seed into soil and/or presence of seed bank	Yes	Yes	Yes	Yes

Native vegetation of country wetlands and grasslands may be further healthy due to healthy soils or grasslands with diverse seed bank type, growing mostly, sporadically and in the presence of scattered shrubs. Native vegetation is a measure of ecosystem health and soil health. The presence of native vegetation is a measure of ecosystem health and soil health.

2. Management of wetland soils

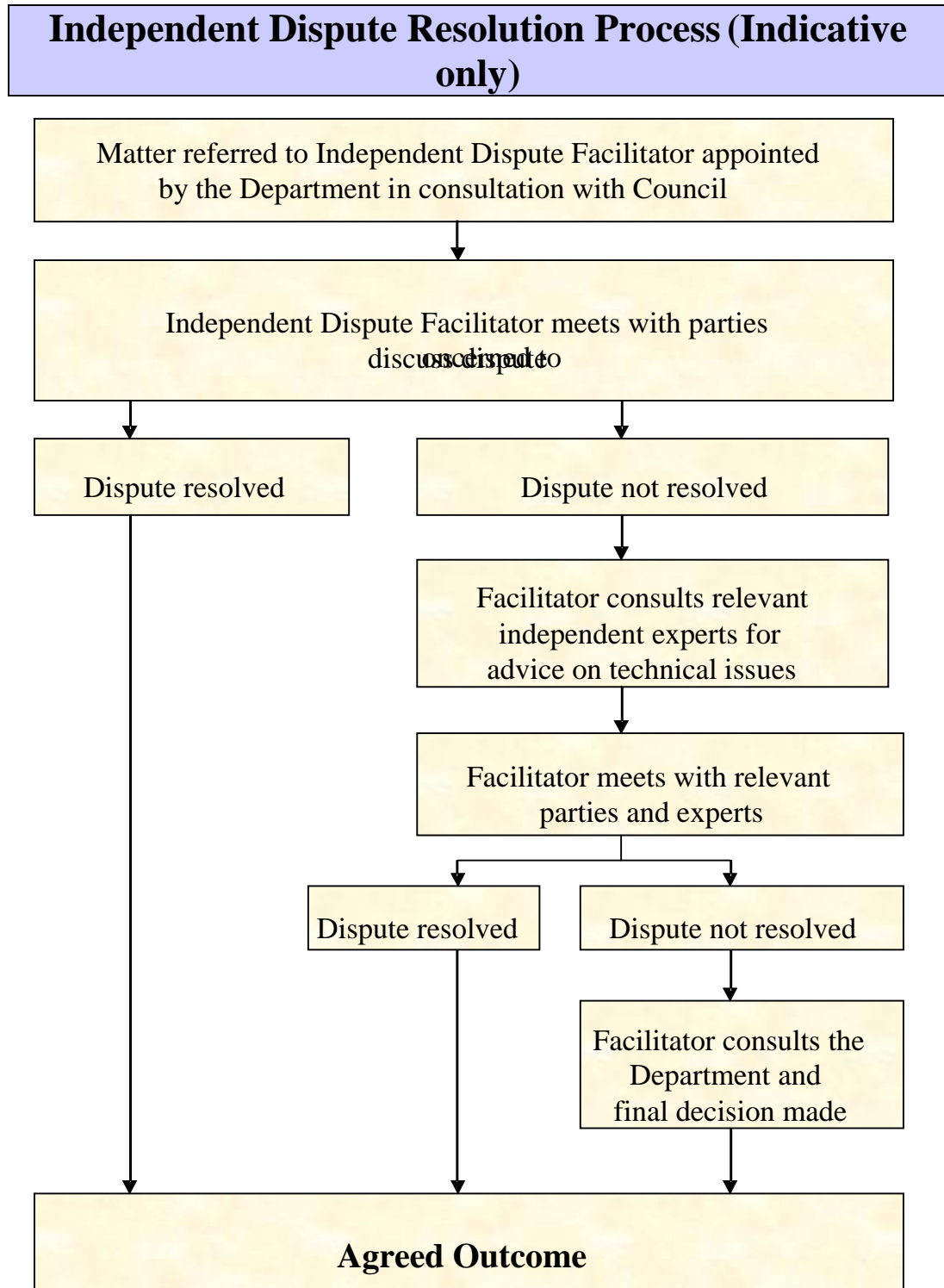
1. Soil structure is available
2. Soil structure
3. Soil structure
4. Soil structure
5. Soil structure
6. Soil structure

APPENDIX 7 FINAL LANDFORM PLANS





APPENDIX 8 INDEPENDENT DISPUTE RESOLUTION PROCESS



ATTACHMENT 2

EPA LICENCE ANNUAL RETURN



Our Reference: Licence No. 3407

ETRA PTY LTD
1774 WISEMANS FERRY ROAD
MARROOTA NSW 2756

30-Sep-2016

LICENCE 3407 - ANNIVERSARY NOTICE

I refer to Environment Protection Licence No. 3407, issued to ETRA PTY LTD by the Environment Protection Authority (EPA), under the *Protection of the Environment Operations Act 1997* (the POEO Act).

This letter is to remind you of the annual licensing obligations, in particular the requirement to submit an Annual Return and annual licence fees.

Annual Return

Condition R1.5 of your licence requires that you complete and submit an Annual Return within 60 days of the end of each reporting period.

You can complete and submit your Annual Return online via eConnect EPA - the EPA's licensing portal at: www.epa.nsw.gov.au/licensing/econnectepa.htm.

Your environment protection
licence Annual Return is due
to the EPA by:
28-Nov-2016
If you do not submit the Annual
Return by the due date you may
receive a fine of up to \$3000

If you are unable to submit your Annual Return online, you must complete the attached Annual Return and send it to the EPA by Registered Post to the following address:

Regulatory and Compliance Support Unit
Environment Protection Authority
PO Box A290
SYDNEY SOUTH NSW 1232

Licence Fees

Once your Annual Return is received by the EPA, the information provided will inform the EPA's determination of your environmental management category which the EPA will use to calculate the annual licence administrative fee. Once the EPA has determined your annual fee a Tax Invoice/Statement will be sent to you.

If the licensed activities are subject to Load-Based Licensing (LBL), payment of a load-based fee may also be required. The EPA will calculate the load based fee using the data you provide in the Annual Return. If the payment of a load based fee is required a separate Tax Invoice/Statement will be sent to you.

The licence fees will need to be paid to the EPA by **27-Jan-2017**.

For information on risk-based licensing please refer to the EPA's website at:
www.epa.nsw.gov.au/licensing/licencereg.htm.

As of 1 July 2016 the EPA will not consider environmental improvement works in the calculation of the environmental management category. For further information regarding this change please refer to www.epa.nsw.gov.au/licensing/EMCP.htm.

The EPA is committed to assisting the licensed community to meet its obligations under the POEO Act. Please refer to: www.epa.nsw.gov.au/licensing for guidance on completing annual returns. If you have any questions relating to the submission of the Annual Return or payment of the licence fee, please contact the EPA on 02 9995 5700.

Yours sincerely



CHRISTOPHER KELLY
Head Regulatory and Compliance Support Unit
Environment Protection Authority

Annual Return

ETRA PTY LTD



ANNUAL RETURN

LICENCE NO	3407
LICENCE HOLDER	ETRA PTY LTD
REPORTING PERIOD	30-Sep-2015 to 29-Sep-2016

If your licence has been transferred, suspended, surrendered or revoked by the EPA during this reporting period, cross out the dates above and specify the new dates to which this Annual Return relates below:

REVISED REPORTING PERIOD ____ / ____ / ____ to ____ / ____ / ____

(Note: the revised reporting period also needs to be entered in Section H)

THIS ANNUAL RETURN MUST BE RECEIVED BY THE EPA BEFORE 29-Nov-2016

Your Annual Return must be completed, including certification in Section H, and submitted to the EPA no later than 60 Days after the end of the reporting period for your licence.

Failure to submit this Annual Return within 60 days after the reporting period ends may result in:

- the issue of a Penalty Notice for \$1500 (individuals) or \$3000 (corporations);
- OR
- prosecution.

Please send your completed Annual Return by Registered Post to:

**Regulatory and Compliance Support Unit
Environment Protection Authority
PO Box A290
SYDNEY SOUTH NSW 1232**

It is an offence to supply any information in this form to the EPA 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 OR \$120,000 FOR AN INDIVIDUAL.

Details provided in this Annual Return will be available on the EPA's Public Register in accordance with section 308 of the *Protection of the Environment Operations Act 1997*.

Annual Return

ETRA PTY LTD



Use the checklist below to ensure that you have completed your Annual Return correctly.

(✓ the boxes)

CHECKLIST		
<input checked="" type="checkbox"/>	Section A:	All licence details are correct
<input checked="" type="checkbox"/>	Section B1:	You have entered the correct number in the complaints table
<input checked="" type="checkbox"/>	Section B2 – B3:	If there are tables, you have provided the required details
<input checked="" type="checkbox"/>	Section C:	You have answered question 1, and 2 if applicable
<input checked="" type="checkbox"/>	Section D:	If applicable, you have completed all load calculation worksheets
<input checked="" type="checkbox"/>	Section E:	You have answered question 1, 2, 3, 4, 5 and 6 if applicable
<input checked="" type="checkbox"/>	Section F:	You have answered question 1, 2 and 3 if applicable
<input checked="" type="checkbox"/>	Section G:	You have answered question 1 and question 2, 3 and 4 or question 5 through to 11 if applicable
<input checked="" type="checkbox"/>	Section H:	The Annual Return has been signed by appropriate person(s) and, if applicable, the revised reporting period entered
<input checked="" type="checkbox"/>	Make a copy of the completed Annual Return and keep it with your licence records	

Please send your completed Annual Return by **Registered Post** to:

Regulatory and Compliance Support Unit
Environment Protection Authority
PO Box A290
SYDNEY SOUTH NSW 1232

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 the 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 us on telephone 02 9995 5700.

If you are applying to vary or transfer your licence you must still complete this Annual Return.

A1 Licence Holder

Licence Number 3407
Licence Holder ETRA PTY LTD
Trading Name (if applicable) PF FORMATION

A2 Premises to which Licence Applies (if applicable)

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

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 (Not Applicable)

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ETRA PTY LTD



B Monitoring and Complaints Summary

B1 Number of Pollution Complaints

Number of complaints recorded by the licensee during the reporting period. If no complaints were received enter nil in the attached box, otherwise complete the table below.	nil
---	-----

Pollution Complaint Category	Number of Complaints
Air	
Water	
Noise	
Waste	
Other	

B2 Concentration Monitoring Summary

For each monitoring point identified in your licence complete all the details for each pollutant listed in the tables provided below.

If concentration monitoring is **not** required by your licence, **no tables** will appear below.

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 by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	1.28	2.58	6.86

Monitoring Point 2

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

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	1.50	2.53	3.43

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 by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Particulates - Deposited Matter	grams per square metre per month	12	12	1.59	3.66	9.82

B3 Volume or Mass Monitoring Summary

For each monitoring point identified in your licence complete the details of the volume or mass monitoring indicated in the tables provided below.

If volume or mass monitoring is not required by your licence, **no tables** will appear below.

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



C Statement of Compliance - Licence Conditions

C1 Compliance with Licence Conditions

(☒ the boxes)

- 1 Were all conditions of the licence complied with (including monitoring and reporting requirements)? ☒ Yes ☐ No
- (☒ a box)

- 2 If you answered 'No' to question 1, please supply the following details for each non-compliance in the format, or similar format, provided on the following page.

Please use a separate page for each licence condition that has not been complied with.

- a) What was the specific licence condition that was not complied with?
- b) What were the particulars of the non-compliance?
- c) What were the date(s) when the non-compliance occurred, if applicable?
- d) If relevant, what was the precise location where the non-compliance occurred?

Attach a map or diagram to the Statement to show the precise location.

- e) What were the registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance?
- f) What was the cause of the non-compliance?
- g) What action has been, or will be, taken to mitigate any adverse effects of the non-compliance?
- h) What action has been, or will be, taken to prevent a recurrence of the non-compliance?

3. How many pages have you attached?

Each attached page must be initialised by the person(s) who signs Section G of this Annual Return



C2 Details of Non-Compliance with Licence

Licence condition number not complied with
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
If required, further details on particulars of non-compliance
Date(s) when the non-compliance occurred, if applicable
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
Cause of non-compliance
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
Action taken or that will be taken to prevent a recurrence of the non-compliance

D Statement of Compliance - Load-Based Fee Calculation Worksheets

If you are not required to monitor assessable pollutants by your licence, no worksheets will appear below. Please go to Section E.

If assessable pollutants have been identified on your licence (see licence condition L2), complete the following worksheets for each assessable pollutant to 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 the EPA's Load Calculation Protocol for the relevant activity. A Load Calculation Protocol would have been 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.

PENALTIES APPLY FOR SUPPLYING FALSE OR MISLEADING INFORMATION

D1 - D8 (Not Applicable)

F Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan (PIRMP) Under Section 153A of the POEO Act 1997

- 1 Have you prepared a PIRMP as required under s153A of the Protection of the Environment Operations Act 1997?

(✓ a box)

☒ Yes

☐ No

If you answered 'Yes' to question 1, please tick the appropriate box to indicate the following:

- 2 Is the PIRMP available at the premises?

(✓ a box)

☒ Yes

☐ No

- 3 Is the PIRMP available in a prominent position on a publicly accessible web site?

(✓ a box)

☒ Yes

☐ No

If the PIRMP is available on a publicly accessible web site please indicate clearly below the address of the web site where the PIRMP can be accessed:

Web site Address

www.pfformation.com.au

- 4 Has the PIRMP been tested in the last 12 months?

(✓ a box)

☒ Yes

☐ No

If you answered 'Yes' to question 4 please indicate clearly below the date that the PIRMP was last tested:

The PIRMP was last tested on

19/10/2016

- 5 Has the PIRMP been updated?

(✓ a box)

☒ Yes

☐ No

If you answered 'Yes' to question 5 please indicate clearly below the date that the PIRMP was last updated:

The PIRMP was last updated on

19/10/2016

- 6 How many times has the PIRMP been activated in this reporting period?

Nil

If the PIRMP has been activated, please indicate clearly below the date/s when the PIRMP was activated:

The PIRMP was activated on

 / /

The EPA's guidelines for preparation of pollution incident response management plans are available at

<http://www.epa.nsw.gov.au/legislation/20120227egpreppirmp.htm>

F Statement of Compliance - Requirement to Publish Pollution Monitoring Data Under Section 66(6) of the POEO Act 1997

1 Are there any conditions attached to your licence that require pollution monitoring to be undertaken?

(✓ a box)

☒ Yes

☐ No

If you answered 'Yes' to question 1, please tick the appropriate box to indicate the following:

2 Do you operate a web site?

(✓ a box)

☒ Yes

☐ No

3 Is the pollution monitoring data published on your web site in accordance with the EPA's written requirements for publishing pollution monitoring data?

(✓ a box)

☒ Yes

☐ No

If you publish pollution monitoring data on a web site please indicate clearly below the address of the web site where the pollution monitoring data can be accessed:

Web site address

www.pfformation.com.au

The EPA's written requirements for publishing pollution monitoring data are available at
<http://www.epa.nsw.gov.au/legislation/20120263regpubpmdata.htm>

Note - if you do not maintain a web site, you must provide a copy of any monitoring data that relates to pollution, to any person requests a copy of the data at no charge to the person requesting the data.

Statement of Compliance - Environmental Management Systems and Practices

1 Do you have an environmental management system (EMS) certified to ISO 14001 or any other demonstrated equivalent system¹? (see note below on demonstrated equivalent)

(✓ a box)

☐ Yes

☒ No

If your answer to question 1 is 'No', please proceed to question 5. If your answer to question 1 is 'Yes', please proceed to question 2.

2 When was the last check of the EMS² completed (see note below on check of EMS)?

3 Were there any non-conformances related to environmental issues identified in the last check of the EMS?

(✓ a box)

☐ Yes

☐ No

4 If there were non-conformances identified, were these non-conformances rectified?

(✓ a box)

☐ Yes

☐ No

If you answered 'No' to question 1, please answer questions 5 - 11. If you answered 'Yes' to question 1 please proceed to section H. Questions 5-11 relate to any documented environmental practices, procedures and systems in place. Refer to <http://www.epa.nsw.gov.au/licensing/EMCP.htm> for guidance on how to complete questions 5 to 11. If unsure of the answer, tick No.

5 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?

(✓ a box)

☒ Yes

☐ No

6 Have you established and implemented an operational maintenance program, including preventative maintenance?

(✓ a box)

☒ Yes

☐ No

7 Do you keep records of regular inspections and maintenance of plant and equipment?

(✓ a box)

☒ Yes

☐ No

8 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?

(✓ a box)

☒ Yes

☐ No

9 Are the audits of documented environmental practices, procedures and systems undertaken by a third party?

(✓ a box)

☒ Yes

☐ No

10 Have you established and implemented an environmental improvement or management plan?

(✓ a box)

☒ Yes

☐ No

11 Do you train staff in environmental issues that may arise from your activities and operations and keep records of this

(✓ a box)

☒ Yes

☐ No

¹ Demonstrated equivalent refers to an environmental management system that the EPA considers is equivalent to the accountability, procedures, documentation and record keeping requirements of an ISO 14001 system. For further information go to:

<http://www.epa.nsw.gov.au/resources/licensing/150402-environmental-management-systems-guidelines.pdf>

² Undertaking a 'check of an EMS' refers to the ISO 14001 requirements that an organisation demonstrates conformity to the requirements of its EMS and to the standard, these checks require third-party certification that requirements have been met.

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ETRA PTY LTD



H Signature and Certification

This Annual Return may only be signed by a person(s) with legal authority to sign it as set out in the categories below. **Please tick (✓) the box** next to the category that describes how this Annual Return is being signed.

If you are uncertain about who is entitled to sign or which category to tick, please contact us on telephone 02 9995 5700.

If the licence holder is:	the Annual Return must be signed and certified by one of the following:
an individual	<input type="checkbox"/> the individual licence holder, or <input type="checkbox"/> a person acting on behalf of the individual licence holder in accordance with a power of attorney for the individual. A copy of the power of attorney must be submitted with the Annual Return.
a company	<input checked="" type="checkbox"/> by two directors, or <input checked="" type="checkbox"/> by a director and a company secretary, or <input type="checkbox"/> if a proprietary company that has a sole director who is also the sole company secretary - by that director, or <input type="checkbox"/> by a person delegated to sign a copy of the Annual Return on the company's behalf in accordance with the Corporations Act 2001. Delegation of authority must be submitted with the Annual Return, or <input type="checkbox"/> by affixing the common seal, in accordance with the Corporations Act 2001
a public authority other than a Council	<input type="checkbox"/> by the Chief Executive Officer of the public authority, or <input type="checkbox"/> by a person delegated to sign on the public authority's behalf in accordance with its legislation.
a local Council	<input type="checkbox"/> by the General Manager in accordance with s377 of the Local Government Act 1993, or <input type="checkbox"/> by affixing the seal of the Council in a manner authorised under the Local Government Act 1993.

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 or \$120,000 for an individual.

I/We

- 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
- certify that the information in the Statement of Compliance in sections 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.

If your licence has been transferred, suspended, surrendered or revoked by the EPA during this reporting period, cross out the dates below and specify the new dates to which this Annual Return relates below:

For the reporting period 30-Sep-2015 to 29-Sep-2016 or ___/___/___ to ___/___/___

SIGNATURE: Joshua Graham

NAME: Joshua Graham
(printed)

POSITION: Director

DATE: 19 / 10 / 2016

SIGNATURE: LUKE GRAHAM

NAME: LUKE GRAHAM
(printed)

POSITION: Director


DATE: 19 / 10 / 2016


SEAL(if signing under seal)

PLEASE ENSURE THAT ALL APPROPRIATE BOXES HAVE BEEN COMPLETED AND THAT THE CHECKLIST ON PAGE 2 OF THE ANNUAL RETURN HAS BEEN COMPLETED

ATTACHMENT 3

MONTHLY ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST – APRIL 2017					
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 x	COMPLAINTS RECEIVED	COMMENTS
A2 33-35	2.1	Noise Management	✓	Nil	
A3 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for March 2017 showed low levels at all locations.
A4 40-41	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded, weighbridge records were reviewed.
A5 42-45	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
A6 46-49	6.1	Water Management	✓	Nil	
A7 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	
A8 55-56	8.1	Social Impact Management	✓	Nil	
A9 57-58	9.1	Heritage Management	✓	Nil	
A10 59-61	10.1	Visual Amenity Management	✓	Nil	
A11 62-64	11.1	Waste Management	✓	Nil	
A12 65-66	12.1	Emergency Response Management	✓	Nil	
A13 67-71	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	
Completed by Environmental Manager (Josh Graham)			Signed:  Date: 28 th April 2017		

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST – March 2017 Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota <i>The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.</i>					
CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or x	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 2017 showed low levels at Sites 1 and 3 and higher than average levels at site 2. Site 2 test results showed higher levels of combustible matter than the other sites.
<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 Manager (Josh Graham)			Signed:  Date: 31 st March 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 monitoring was carried out at the nominated locations. Results from testing showed that quarry noise was inaudible at 3 locations and audible but not measurable at 1 location.
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for January 2017 were low at Site 1 and marginally higher than the previous month's results at sites 2 and 3. The average for the reporting period to date is within the criterion defined by the EPA.
<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	Water samples were collected downstream from Lot 198 and sent away for analysis. Results from testing showed low levels of TSS and turbidity.
<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 Manager (Josh Graham)

Signed: 

Date: 28th February 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 x	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	Noise readings will be undertaken next month.
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for December 2016 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 Manager (Josh Graham)


Signed:





Date: 31st January 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 x	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 and November 2016 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	Water samples were collected on 1/12/16 downstream from Lot 198. Results from testing showed low levels of TSS and Turbidity.
<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 Manager (Josh Graham)				Signed: 	Date: 23 rd December 2016

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota <i>The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.</i>					
CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or x	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	
<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	Downstream water quality testing results are summarised in the AEMR. Results from testing throughout the year show low levels of TSS.
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	Weed control has been continually carried out in the 2011 revegetation area. No noxious weeds have been observed in the site.
<u>A8</u> 55-56	8.1	Social Impact Management	✓	Nil	The Community Consultative Committee Meeting was held at PF Formation's site office on 8 November 2016. The minutes from the meeting can be found on the PF Formation website.
<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 Manager (Josh Graham)			Signed:  Date: 30 November 2016		

PF FORMATION – ENVIRONMENTAL OPERATIONAL PROCEDURES Hitchcock Road Sand Extraction and Rehabilitation Project, Maroota <i>The chapter, page number and strategy point number are references to the approved Environmental Strategy Appendix A – Environmental Operational Procedures.</i>					
CHAPTER Page No.	STRATEGY Point No.	MANAGEMENT CONTROLS	STATUS ✓ or ✗	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	Noise monitoring was carried out at the nominated locations. Results were consistent with previous results and have been placed on the PF Formation website.
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results were low at Sites 1 and 2 and higher than normal at Site 3. The high level of insoluble solids at Site 3 contained 3.09g/m2/month of combustible matter, which is unlikely to be derived from quarry operations.
<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 Manager (Josh Graham)			Signed:  Date: 31 October 2016		

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 x	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 showed high levels at Site 1 and Site 3 and a low level at Site 2. The high results show high levels of combustible matter, likely caused by organic material deposited in the gauge.
<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	Water samples were collected downstream from Lot 198, results from testing showed low levels of TSS and turbidity.
<u>A6</u> 46-49	6.1	Water Management	✓	Nil	The 2016 Groundwater Report has been completed and will be attached to the AEMR. The maximum extraction depth at the site is 191 AHD, groundwater levels indicate the extraction level is above the groundwater table.
<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 Manager (Josh Graham)


Signed:



Date: 30th September 2016

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

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 x	COMPLAINTS RECEIVED	COMMENTS
<u>A2</u> 33-35	2.1	Noise Management	✓	Nil	The updated Noise Management Plan was approved by DPE.
<u>A3</u> 36-39	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for July 2016 showed low levels at all locations. The updated Air Quality Management Plan was approved by DPE.
<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	The updated Water Management Plan was approved by DPE. The data loggers were downloaded and water samples were collected in preparation for the annual groundwater report.
<u>A7</u> 50-54	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	The updated Landscape Management Plan was approved by DPE.
<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	The incomplete bunding along Hitchcock Rd identified in the DPE Audit has been completed and soiled over.
<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 Manager (Josh Graham)				Signed: 	Date: 31 st August 2016

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
A2 A3-A5	2.1	Noise Management	✓	Nil	Noise monitoring was carried out at the nominated locations. Quarry noise was either audible but not measurable or not audible at all.
A3 A6-A9	3.1, 3.2	Air Quality Management	✓	Nil	Deposited dust results for June 2016 showed low levels at all locations.
A4 A10-A11	4.1	Access and Traffic	✓	Nil	Truck movements were not exceeded, weighbridge records were reviewed.
A5 A12-A15	5.1, 5.2, 5.3	Erosion & Sediment Control	✓	Nil	
A6 A16-A19	6.1	Water Management	✓	Nil	
A7 A20-A24	7.1, 7.2	Rehabilitation & Vegetation Offset Management	✓	Nil	Weed spraying and slashing work has commenced in SHTW rehabilitation area. Areas are being prepared for supplement tube stock planning to commence in early Spring.
A8 A25-A26	8.1	Social Impact Management	✓	Nil	
A9 A27-A28	9.1	Heritage Management	✓	Nil	
A10 A29-A31	10.1	Visual Amenity Management	✓	Nil	
A11 A32-A34	11.1	Waste Management	✓	Nil	
A12 A35-A36	12.1	Emergency Response Management	✓	Nil	
A13 A37-A40	13.1, 13.2	Hazard, Risk and Safety Management	✓	Nil	

Completed by Environmental Manager (Josh Graham)

Signed:



Date: 29th July 2016










ATTACHMENT 4

ANNUAL ENVIRONMENTAL OPERATIONAL PROCEDURES CHECKLIST

A2.3 Management controls

OPERATIONAL PHASE

Strategy 2.1: Ensure that the site operations are undertaken in a manner that minimises the impacts of noise and vibration.

Actions	Responsibility
2.1.1 Manage site activities so that any necessary high noise and vibration levels occur at times of least impact.	Quarry Manager 
2.1.2 Advise neighbouring properties at least 24 hours in advance of the extent and expected duration of especially noisy activities.	Quarry Manager/ Environmental 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 best practical means using current technology, prior to use. Noise suppression devices should be fitted 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.	Quarry Manager 
2.1.6 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.	Quarry Manager 
2.1.7 Arrange for all plant and equipment to be inspected regularly to ensure that it is well maintained to minimise noise emissions.	Quarry Manager 
2.1.8 Conduct compliance monitoring of noise levels at the defined locations and keep records of measurements.	Environmental Manager  See annual report
Performance indicator	Noise from operational activities does not exceed the guideline limits. — Noise criteria complied with Number of complaints received — Nil 

Monitoring

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

A3.3 Management controls

OPERATIONAL PHASE

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>Deposited dust - monthly.</i>
3.1.2 Fit dust suppression equipment to all processing plant on site as required. This is to be regularly inspected and maintained in good working order at all times.	Quarry Manager/ Environmental Manager
3.1.3 Define haul road areas to prevent unnecessary vehicle movement into others	Quarry Manager
3.1.4 Keep all unsealed trafficable areas and working areas damp to minimise 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>Charged daily</i>
3.1.5 Apply speed controls to all unsealed areas (maximum speed of 20 km/h) and signpost accordingly.	Quarry Manager
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
3.1.8 Ensure that all loaded trucks leaving the site on Lot 198 DP595538 have their payloads fully covered by a suitable material to prevent spillage.	Quarry Manager
3.1.9 Construct dust screens such as earth bunds and vegetated barriers.	Quarry Manager
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
3.1.11 No fires to be permitted on-site.	Quarry Manager

Performance indicator	Ambient air quality data compiled. Dust generated from site activities to comply at all times with EPA specified air quality criteria. <i>2016-2017 below 9g/m³ Insoluble Solids.</i>
Monitoring	Dust monitoring at identified locations. Compilation of a complaints register. <i>NO complaints</i>
Reporting	Annual reporting in the AEMR. Monitoring results will be suitably summarised for posting on the PF Formation website.

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

Actions		Responsibility
3.2.1	Inspect all exhausts from vehicles and plant/equipment to ensure that they are maintained at an acceptable level.	Quarry Manager <i>R</i>
3.2.2	Regularly service all vehicles to ensure that exhaust emissions comply with the regulations. Maintain appropriate service records.	Quarry Manager <i>R</i>
3.2.3	Identify any opportunities to minimise machinery use and ensure that all equipment used on the site is energy efficient.	Quarry Manager <i>R</i>
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.	

A4.3 Management controls

OPERATIONAL PHASE

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 does 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 The Hills Shire.	Quarry Manager/ Environmental Manager <i>Vehicle movements complied with [Signature]</i>
4.1.2 Undertake operations involving the transportation of material on the site only between 6.00am and 6.00pm, Monday to Saturday.	Quarry Manager/ Environmental Manager <i>[Signature]</i>
4.1.3 Allow a maximum of ten laden vehicles to enter and leave the site between 6.00am and 7.00am, Monday to Saturday only. Ensure that vehicles do not arrive at the site prior to 5.45am on any day.	Quarry Manager/ Environmental Manager <i>[Signature]</i>
4.1.4 Ensure that all vehicle loads leaving the site are suitably covered.	Quarry Manager/ Environmental Manager <i>[Signature]</i>
Performance Indicator	Minimum of complaints from the community. <i>no complaints [Signature]</i>
Monitoring	Number and type of complaints received. - Nil
	Weighbridge records of arrival and departure times. - Maintained <i>[Signature]</i>
Reporting	Annual report on complaints received.







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 
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 m ³ per hectare of catchment. Spillway capacity and stability will be designed as follows: <ul style="list-style-type: none"> • life of less than 5 years, adopt the 20 year t_c event • life between 5 and 10 years, adopt the 50 year t_c event • life greater than 10 years, adopt the 100 year t_c event. 	Quarry Manager 
5.1.4 Undertake regular inspections to assess stormwater control measures and conduct routine inspections to ensure that compliance with best practice guidelines and relevant legislation is achieved.	Quarry Manager/ Environmental Manager 
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 Select locations for topsoil and material stockpiles on level ground and away from drainage lines. Install diversion drains up slope and sediment filter fences as appropriate	Quarry Manager/ Environmental Manager 
5.2.2 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.

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)

hot 198, Downstream water testing

Actions	Responsibility
5.3.1 Keep areas of exposed land to a minimum compatible with operational requirements.	Quarry Manager 
5.3.2 Where practicable, provide silt fences to minimise erosion and sedimentation from exposed areas.	Quarry Manager/ Environmental Manager 
5.3.3 Stabilise exposed areas that are not in use with an appropriate cover crop and water until well established.	Quarry Manager/ Environmental Manager 
5.3.4 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 

5.3.5	Monitor erosion and sediment controls regularly and immediately following a rainfall event. Clear sediment 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 watering of site vegetation.	Quarry Manager/ 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 guidelines or other regulatory requirements.
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Monitoring	Monitor suspended solids levels in stormwater following rainfall events. Compare results with other appropriate locations.
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Reporting	Report on suspended solid levels and performance of erosion and sedimentation control measures for inclusion in the relevant AEMR.
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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 AEMR.

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 the wet weather high groundwater level as determined following at least 12 months site specific groundwater monitoring data.	Quarry Manager <i>Max depth of extraction was exceeded, refer to AEMK</i> <i>[Signature]</i>
6.1.2 Ensure that the groundwater is not breached or 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.	Quarry Manager <i>RL Markers installed in all extraction pits.</i> <i>[Signature]</i>
6.1.3 The sediment retention basins are to accommodate the 100-year t_c event with the minimum basin capacities as follows:	Quarry Manager
<ul style="list-style-type: none"> Southern catchment (Basin 1) 19,400 m³ Northern catchment (Basin 2) 7,800 m³ 	<i>[Signature]</i>
The volume of these basins can be varied depending on the extent of the area exposed for extraction within each catchment.	
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 <i>[Signature]</i>
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 <i>[Signature]</i>
Performance indicator	Maintenance of groundwater quality. Existing water levels and groundwater quality will be determined from data derived from the bores on the site. <i>[Signature]</i>
Monitoring	Regular monitoring of water levels and water quality data from the on-site bores. <i>E2W Groundwater Report.</i> <i>[Signature]</i>

Reporting

Annual reporting of groundwater quality issues and assessment of impacts of site operations for inclusion in 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 
7.1.2 Assess areas where trees are to be removed to determine the commercial value of any which are too large to mulch. 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 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.	Environmental Manager 
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
7.1.6 Separate topsoil for use in rehabilitation works.	Quarry Manager/ Environmental Manager
7.1.7 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.	Environmental Manager 
7.1.8 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	Ensure that the above are implemented prior to the commencement of extraction activities in the area. Monitor condition of flora and fauna habitats on a regular basis. 






Reporting


A report with appropriate maps identifying the areas under rehabilitation and extraction activity is to be prepared.

Prepare an annual report on the status of the flora of the site for inclusion in the AEMR.



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

Actions	Responsibility
<p>7.2.1 Mulch all suitable plant material for reuse on the site as a seed and planting medium. Store all topsoil in 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.</p>	<p>Environmental Manager</p> 
<p>7.2.2 Rehabilitate the site in stages leaving areas exposed for as short a time as possible. This should 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 should be as gentle as possible depending on the availability of fill material.</p>	<p>Quarry Manager/ Environmental Manager</p> 
<p>7.2.3 Sow all stockpiles and exposed areas where no activity is to take place for more than four weeks with an appropriate vegetation cover.</p>	<p>Quarry Manager/ Environmental Manager</p> 
<p>7.2.4 Undertake revegetation of the site on the following basis:</p> <ul style="list-style-type: none"> • 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 	<p>Environmental Manager</p> 
<p>7.2.5 Establish a maintenance program aimed at promoting and protecting the growth of the rehabilitated areas.</p>	<p>Quarry Manager/ Environmental Manager</p> 

Performance Indicator	Completion of site rehabilitation in conformity with the approved Landscape Management Plan.
<hr/>	
Monitoring	<p>Regular site inspections to ensure that the following is achieved:</p> <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
<hr/>	
Reporting	<p>Reports of site inspections and annual reviews in the AEMR.</p> 






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 Management controls

OPERATIONAL PHASE

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 phone number and provide an early response to all queries, comments and requests for information.	Quarry Manager/ Environmental Manager 
8.1.2 Provide access to all relevant environmental management documentation and monitoring results on the PF Formation web site.	Environmental Manager 
8.1.3 Organise and manage bi-annual meetings of the Community Consultative Committee to discuss issues in relation to environmental management of sand extraction on the site.	Environmental Manager 
8.1.4 Establish a complaints register incorporating date and time, type of communication, contact details of the complainant, nature of the complaint and response taken.	Quarry Manager/ Environmental Manager 
Performance indicator	Minimal complaints from the community. <i>No complaints</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. 



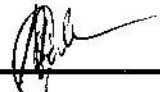
A8.4 Monitoring and reporting

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.

Actions	Responsibility
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 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.	Quarry Manager/ Environmental Manager 
9.1.2 Undertake additional survey work required for submittal of application to destroy artefact scatters located in the 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.	Environmental Manager N/A 
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. None identified 











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.

A10.3 Management controls

OPERATIONAL PHASE

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 6(H):1(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.	Environmental Manager 
10.1.4 Undertake a tree planting program within areas defined in the Landscape Management Plan to establish a dense plantation using an appropriate mix of species reflecting that of the existing community.	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	No complaints received regarding visual amenity during site operations and following completion. Completion of the development in conformity with the requirements of the Rehabilitation Plan.
Monitoring	Ensure that the above actions are undertaken.
Reporting	Complaints from the community regarding visual amenity. <i>NO COMPLAINTS</i> Compliance with the requirements of the Landscape Management Plan.











A10.4 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.

A11.3 Management controls

OPERATIONAL PHASE

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 the landscape program.	Environmental Manager  N/A
11.1.4 Store all topsoil in stockpiles for later use in site rehabilitation.	Environmental Manager 
11.1.5 Provide bins or skips 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 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.	Quarry Manager 
11.1.6 Separate hazardous wastes (including empty drums, rags, soil contaminated with oil) from non-hazardous wastes and manage in accordance with the relevant legislation.	Quarry Manager 
11.1.7 Temporarily store liquid wastes (chemicals, oils and 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 disposal on file at the site. This documentation includes dockets for the removal and disposal of waste at a licensed facility.	Quarry Manager 
11.1.10 Progressively separate and stockpile waste material in designated areas for collection. Adequately secure waste disposal areas to prevent access by wildlife.	Quarry Manager 
11.1.11 Review all waste licences and monitor terms and conditions for compliance.	Environmental Manager 

- 11.1.12 Recycle or dispose of any materials and waste remaining on the site following completion of extraction operations. All should be disposed of in an appropriate manner.

Environmental
Manager



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.



A11.4 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.

A12.3 Management controls

OPERATIONAL PHASE

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

Actions	Responsibility
12.1.1 Ensure that all personnel on site during operations have been trained in appropriate procedures including site induction, materials handling and response procedures.	Quarry Manager 
12.1.2 Develop and put in place emergency response procedures. Appoint appropriate individuals as emergency services liaison officers.	Quarry Manager 
12.1.3 Establish an emergency response table listing contact details of all relevant parties required in an environmental emergency.	Quarry Manager 
12.1.4 Establish a Register of Environmentally Hazardous Materials to be stored and used on site.	Quarry Manager 
12.1.5 Ensure that appropriate safety and spill response equipment has been made available.	Quarry Manager 
12.1.6 Clearly label all materials to be used and stored on site.	Quarry Manager 
12.1.7 Review and update emergency response procedures bi-annually.	Quarry Manager
12.1.8 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.

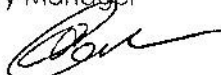








A12.4 Monitoring and reporting

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 NA 
13.1.2 Establish a Register of Hazardous Materials setting out details of quantities, storage and specific handling requirements for all relevant materials stored on site.	Quarry Manager/ Environmental Manager 
13.1.3 Obtain Material Safety Data Sheets for all hazardous materials stored on site. <i>Records in neighbordge</i>	Quarry Manager/ Environmental 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  <i>Persons with statutory function</i>
13.1.5 Appoint a Safety Officer for the development.	N/A 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 incompatible material.	Quarry Manager/ Environmental Manager 
13.1.9 Train all personnel in the handling and safety procedures required for the hazardous materials stored and used on site during Staff Safety Meetings.	Quarry Manager/ Environmental 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 
13.2.2	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.
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Monitoring	Stormwater and soil contamination monitoring undertaken following any spill and subsequent clean up.
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Reporting	Report on all pollution events and the results of any clean up.
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ATTACHMENT 5

LOCATION WEATHER CHART

DATE	TEMP-MIN	TEMP-MAX	WIND-SPD	WIND-DIR	BAR	RAIN	CONDITION
1/07/2016	8	15	0-0	SW-SW	1016.3	NIL	FINE
2/07/2016	4	13	0-6	SW-SW	1025.5	NIL	FINE
3/07/2016	SUNDAY						
4/07/2016	4	14	0-0	NW-NW	1022.2	NIL	CLOUDY
5/07/2016	8	15	0-8	NW-NW	1013.8	5	RAIN
6/07/2016	10	13	0-3	NW-NW	1008.2	2	CLOUDY
7/07/2016	12	14	0-11	ESE-SE	1014.9	NIL	RAIN
8/07/2016	11	13	0-0	S-S	1021	5	RAIN
9/07/2016	9	13	0-0	S-ESE	1023.3	2	FINE/CLOUDY
10/07/2016	SUNDAY						
11/07/2016	12	14	0-11	NW-NW	1016.8	NIL	CLOUDY
12/07/2016	16	16	6-8	NW-NW	1010.8	NIL	FINE
13/07/2016	9	11	6-0	SW-SW	1018.7	NIL	CLOUDY
14/07/2016	2	16	0-0	SW-NW	1030.2	NIL	FINE
15/07/2016	3	16	0-0	NW-SW	1030.7	NIL	FINE
16/07/2016	4	14	0-0	SE-S	1033	NIL	FINE
17/07/2016	SUNDAY						
18/07/2016	11	22	0-0	NW-NW	1026.1	2	FOG/CLOUDY
19/07/2016	16	23	0-0	NW-NW	1021.3	NIL	CLOUDY
20/07/2016	16	15	0-0	NW-SW	1019.6	15	RAIN
21/07/2016	13	17	0-0	S-SE	1020.8	30	RAIN
22/07/2016	13	23	0-0	NW-NW	1013.1	NIL	FOG/CLOUDY
23/07/2016	15	24	6-11	SW-SW	1001.6	NIL	WINDY/CLOUDY
24/07/2016	SUNDAY						
25/07/2016	8	15	0-3	NW-W	1014.7	NIL	CLOUDY
26/07/2016	10	17	6-0	NW-SW	1015	NIL	FINE

27/07/2016	11	16	6-8	NW-SW	1014.9	NIL	FINE
28/07/2016	7	18	0-0	SW-NW	1024.1	NIL	FINE
29/07/2016	3	16	0-0	SW-NW	1024.1	NIL	FINE
30/07/2016	4	15	0-0	SW-SW	1024	NIL	FINE
31/07/2016	SUNDAY						

DATE	TEMP-MIN	TEMP-MAX	WIND-SPD	WIND-DIR	BAR	RAIN	CONDITION
1/08/2016	10	16	0-0	NW-NW	1018.5	NIL	CLOUDY
2/08/2016	10	9	0-6	NW-NW	1013.7	15	CLOUDY
3/08/2016	9	10	0-0	NW-SW	1018	20	RAIN
4/08/2016	9	11	0-0	NW-NW	1018.7	8	RAIN
5/08/2016	11	14	0-11	S-SW	1031.4	NIL	CLOUDY/RAIN
6/08/2016	10	14	0-6	N-NNE	1030	NIL	CLOUDY
7/08/2016	SUNDAY						
8/08/2016	6	16	0-3	NW-SSE	1026.3	NIL	FINE
9/08/2016	5	18	0-0	NW-NNE	1023.7	NIL	FOG/CLOUDY
10/08/2016	12	22	0-12	NNW-N	1017.1	NIL	FINE
11/08/2016	10	18	0-7	WNW-SW	1018.6	NIL	FINE
12/08/2016	3	16	0-5	NW-N	1024.6	NIL	FINE
13/08/2016	3	17	0-0	SW-SW	1024	NIL	FINE
14/08/2016	SUNDAY						
15/08/2016	5	20	0-5	WNW-NE	1032.2	NIL	FINE
16/08/2016	6	20	0-5	NW-NW	1031.7	NIL	FINE
17/08/2016	6	21	1-3	NW-NW	1027.3	NIL	FINE
18/08/2016	7	20	0-9	NNW-N	1025	NIL	FINE
19/08/2016	7	20	0-3	NW-NW	1021.4	NIL	FINE
20/08/2016	9	15	0-15	WNW-NW	1014.8	NIL	CLOUDY/RAIN
21/08/2016	SUNDAY						
22/08/2016	6	9	0-0	NW-NW	1018.2	NIL	SHOWERS
23/08/2016	7	13	0-5	NW-SE	1014.1	4	FOG/FINE

24/08/2016	11	11	0-3	SE-W	1015.5	2	RAIN
25/08/2016	8	13	0-3	WNW-N	1012.5	30	RAIN
26/08/2016	4	12	0-7	WNW-WSW	1012.5	NIL	FINE
27/08/2016	3	14	3-7	WSW-WSW	1019.7	NIL	FINE
28/08/2016	SUNDAY						
29/08/2016	4	16	0-5	NW-EE	1020.3	NIL	FINE/CLOUDY
30/08/2016	7	18	0-3	NW-N	1014.1	NIL	FINE/CLOUDY
31/08/2016	14	18	0-12	NW-NNW	1014.8	4	CLOUDY/RAIN
DATE	TEMP-MIN	TEMP-MAX	WIND-SPD	WIND-DIR	BAR	RAIN	CONDITION
1/09/2016	10	18	0-9	NW-ENE	1023.7	NIL	FINE
2/09/2016	13	14	1-3	SSW-SW	1031.4	10	RAIN
3/09/2016	14	16	10-27	NW-WNW	1031.1	10	CLOUDY
4/09/2016	SUNDAY						
5/09/2016	5	20	0-7	NW-NE	1006.6	NIL	FINE
6/09/2016	7	22	0-0	NW-NNW	1007.1	NIL	FINE
7/09/2016	12	19	0-1	SSE-SW	1007.7	NIL	FINE/CLOUDY
8/09/2016	12	19	0-0	WSW-SSE	1006.7	NIL	CLOUDY
9/09/2016	12	22	0-2	ESE-NNW	999.9	NIL	FINE/CLOUDY
10/09/2016	12	19	3-7	NNW-NNW	990.8	2	RAIN/CLOUDY
11/09/2016	SUNDAY						
12/09/2016	9	17	0-0	SSE-SSW	999.8	NIL	CLOUDY
13/09/2016	12	18	0-0	NW-NNW	999.4	NIL	CLOUDY
14/09/2016	14	21	1-4	NNW-NNW	992.3	NIL	RAIN
15/09/2016	13	18	1-2	WNW-NW	989.5	3	CLOUDY
16/09/2016	13	21	1-4	NE-WSW	995	NIL	FINE

17/09/2016	9	19	0-1	NNW-NNW	1000	NIL	FINE
18/09/2016	SUNDAY						
19/09/2016	12	19	1-1	NW-WNW	985.9	25	CLOUDY
20/09/2016	7	17	0-0	NNW-SSE	995.9	NIL	CLOUDY
21/09/2016	11	16	1-2	NNW-NNW	992.3	NIL	CLOUDY
22/09/2016	12	16	0-2	NNW-WSW	985.6	NIL	CLOUDY
23/09/2016	14	19	2-1	SW-S	989.8	NIL	CLOUDY
24/09/2016	14	20	0-1	S-S	989.7	NIL	FINE
25/09/2016	SUNDAY						
26/09/2016	7	19	0-2	S-S	991	7	FOG/CLOUDY
27/09/2016	10	18	1-2	NNW-W	990.1	NIL	FINE/CLOUDY
28/09/2016	-0.2	5.5	0-3	N-N	991.9	NIL	FINE
29/09/2016	0.1	11.1	1-4	NNE-NNE	979.9	NIL	CLOUDY
30/09/2016	0-0	11.3	1-3	NE-N	977.1	NIL	FINE

DATE	WS min	WS max	WD	R-FALL	Temp min	Temp max	% RH	mBar
01/10/16 02:11:37	0.211	4.395	NNW-NW	0	10.8	18.9	52.58	985.34
02/10/16 13:56:37	0.129	3.29	N-NNW	0	10.6	26.3	46.33	988.28
03/10/16 10:56:37	0.74	5.248	NW	0	14.2	22.8	41.56	980.81
04/10/16 23:55:53	0.367	4.474	WNW-NW	0	11.5	22.3	41.17	985.16
05/10/16 14:40:53	0.307	3.972	NNE-WNW	0	8.7	21.1	36.66	993.27
06/10/16 13:40:53	0.123	2.492	N-WSW	0	9.9	26.1	38.39	997.05

07/10/16 13:40:53	0.079	2.943	N-NNW	0	14.6	29.3	44.14	997.50
08/10/16 17:25:53	0.237	3.376	ENE-S	0	12.7	23.8	55.07	996.15
09/10/16 11:10:53	0	2.782	NNW	0	11.2	22.4	63.64	997.73
10/10/16 12:55:53	1.024	4.123	N-NW	0	15.5	31.4	46.91	986.97
11/10/16 10:25:53	0.07	3.697	N-SW	0.4	7.2	19.3	46.95	992.31
12/10/16 18:25:53	0.082	3.095	NNE-SW	0	4.9	20.6	52.40	993.34
13/10/16 08:55:53	0.1	3.902	NNE-S	0	7.9	17.2	61.97	999.35
14/10/16 08:55:53	0.056	2.37	N-S	0	5	19.8	63.57	1002.07
15/10/16 15:40:53	0.042	3.012	N-N	0	9.3	25.6	48.28	997.92
16/10/16 16:25:53	0.072	4.083	N-NNW	0	14	28.2	37.71	990.36
17/10/16 06:40:53	0.115	5.132	N-NW	3.8	10.7	22.7	60.49	986.39
18/10/16 14:55:53	0.172	3.429	NNE-NW	0	8	23.5	53.48	991.69
19/10/16 13:10:53	0	3.188	SSW	0	10.3	22.7	53.42	995.95
20/10/16 13:25:53	0	2.108	N	0	10.4	21	71.36	1000.15
21/10/16 20:55:53	0.1	4.247	N-NNW	11.2	10	26.7	70.14	994.14
22/10/16 16:10:53	0.067	3.418	N-S	12	8.4	19.7	79.96	989.30
23/10/16 10:25:53	0.009	4.606	S	0	6.6	18.4	58.32	995.75
24/10/16 12:25:53	0	2.528	SW	0	5.6	20.8	70.26	996.14
25/10/16 15:40:53	0.024	3.092	N-NW	0	8.6	26.6	56.39	994.95
26/10/16 15:55:53	0.059	2.986	N-NW	0	13.3	28.5	40.16	993.21
27/10/16 23:40:53	0.114	2.036	N-S	3.8	12.9	23.5	65.87	994.03
28/10/16 04:55:53	0	1.983	SSW	0.8	11.5	16.9	92.97	997.63
29/10/16 12:40:53	0.081	1.754	N-NNW	1.2	14	22.5	86.56	996.36

30/10/16 14:55:53	0.047	4.079	N-NNW	1.2	15.4	26.5	78.89	989.41
31/10/16 02:25:53	0.155	2.757	NNE-NW	0	11.5	22.8	46.89	988.86

	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar	
1/11/2016	0.023	2.621 SW		NNW		0	8.8	23	53.44	990.62
2/11/2016	0.134	3.12 WSW		W		0	8.7	25.5	56.45	992.45
3/11/2016	0	2.018 WSW		N		0	9.2	27.8	62.19	995.01
4/11/2016	0.044	3.068 NNW		W		0	12.1	29.4	50.51	990.77
5/11/2016	0.29	4.118 WSW		W		0	14	25.1	25.54	984.64
6/11/2016	0.45	3.579 WNW		SW		0	12.6	25.3	36.90	988.01
7/11/2016	0.117	4.191 NNW		NW		0	12.4	32.3	38.74	987.71
8/11/2016	0.244	3.138 NNW		SE	4.6	17	33.6	51.14		986.77
9/11/2016	0.098	2.366 S		SSE	26.8	15.8	24.7	89.57		989.34
10/11/2016	0.035	2.01 NW		ENE	0	14.6	27.4	80.41		987.24
11/11/2016	0.068	1.396 S		SW	0	15.6	25.3	80.85		988.87
12/11/2016	0.181	4.086 NNW		WNW	28	16.9	32.5	66.99		980.33
13/11/2016	0.162	5.101 NNW		WNW	0	15.4	28.1	37.11		977.55
14/11/2016	0.24	2.998 WSW		SSE	4.4	13.3	23	63.43		983.30
15/11/2016	0.064	1.917 WSW		S	0.2	12	22.2	79.77		993.65
16/11/2016	0.017	1.691 ESE		S	0	10.6	23.7	72.68		998.81
17/11/2016	0.045	2.219 NNW		E	0	14.3	25.5	73.29		1001.13
18/11/2016	0.148	2.043 NNW		S	0	14.5	34	50.96		994.69
19/11/2016	0.09	1.689 SSE		ESE	0	17.1	25.2	70.40		996.15
20/11/2016	0.071	2.029 NNW		SSE	0	16.6	28.2	75.40		998.06
21/11/2016	0.008	3.086 N		NNW	3	17.2	32.8	75.55		995.72
22/11/2016	0.111	2.696 NNW		ESE	0	17.5	34.2	54.46		992.07
23/11/2016	0.107	5.286 N		SSE	0.6	16.2	19.7	74.91		988.09

24/11/2016	0	3.459 SW	E	0	12.3	23.3	57.27	990.57
25/11/2016	0	2.86 N	ESE	0	12.3	25.6	63.18	991.74
26/11/2016	0.012	2.326 NW	S	0	12.4	27.5	73.37	993.99
27/11/2016	0.239	2.158 SSW	E	0	17.4	24.5	80.88	995.10
28/11/2016	0.059	2.4 NNW	ENE	0	18.3	30.2	74.33	991.22
29/11/2016	0.032	1.868 SW	SSE	0	17	26.7	78.19	989.56
30/11/2016	0.046	1.796 NNW	SSE	0.6	15.4	25.7	77.95	989.35

	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar
1/12/2016	0.07	2.381 NNW	NNE		0	14.6		30.4 61.728125	985.6645833
2/12/2016	0.038	3.429 NNW	WSW		0	16		35.7 42.610417	987.7447917
3/12/2016	0.309	2.208 SSW	ENE		0	17.5		26.5 73.24375	993.2458333
4/12/2016	0.015	2.285 NW	ESE		0	16.3		29.7 78.244792	992.6114583
5/12/2016	0.04	4.877 NNW	SE		5.8	19.6		33 78.928125	988.0666667
6/12/2016	0.034	1.902 SSW	SSE		4	18.2		23.2 94.978125	990.3322917
7/12/2016	0.033	2.459 SW	ESE		3.6	15.6		24.9 83.955208	992.64375
8/12/2016	0.305	4.23 NNW	NNW		1.2	17.2		35.5 66.051042	983.225
9/12/2016	0.23	4.113 SW	SW		0	15.4		25.5 45.251042	988.5583333
10/12/2016	0.04	1.77 ENE	S		0	13.8		24.6 68.336458	998.728125
11/12/2016	0.029	1.632 WNW	SE		0	14.5		27.6 73.177083	999.1645833
12/12/2016	0.02	2.469 NNW	ESE		5.8	15.5		31.5 75.26875	998.0395833
13/12/2016	0.05	4.03 NNW	NW		0	18.1		36.4 47.515625	992.35
14/12/2016	0.783	4.573 NNW	WSW		0.2	19.1		35.4 38.970833	988.565625
15/12/2016	0.232	2.413 S	SSE		7.8	15.2		18.9 99.013542	994.7885417
16/12/2016	0.133	2.167 SSW	NNW		24.8	15.6		20.2 99.619792	990.0989583
17/12/2016	0.345	3.029 NW	WNW		0	19		31.5 59.702083	986.084375
18/12/2016	0.048	2.852 N	S		0	14.9		20.7 75.864583	996.9645833
19/12/2016	0.121	1.734 S	NE		0.4	13.7		23.4 77.751042	996.81875
20/12/2016	0.03	4.726 NNW	NW		0	13		34.8 58.085417	987.25
21/12/2016	0.196	1.973 S	NE		0	18		29.1 71.092708	990.765625
22/12/2016	0.326	1.878 E	NNE		0	18.2		22.9 71.91875	996.6229167
23/12/2016	0.062	1.89 NE	NNE		0	16.8		25.5 73.809375	995.7520833
24/12/2016	0.09	2.511 NNW	ENE		11.8	16.3		30.8 82.071875	993.36875
25/12/2016	0.054	1.894 ESE	NNE		1.4	16.4		28.3 81.5125	994.1614583

26/12/2016	0.022	2.464 NNW	ENE	0	17.2	31.6	70.65625	991.753125
27/12/2016	0.018	2.199 SSW	SSE	0	19.9	31.6	73.142708	991.7020833
28/12/2016	0.081	1.916 NNW	ESE	0	17.7	34.1	67.098958	989.3927083
29/12/2016	0.038	2.463 NNW	S	0	22.4	38	45.182292	985.3020833
30/12/2016	0.071	2.282 NW	NNW	0	20.9	36.4	46.751042	982.0885417
31/12/2016	0.142	2.565 SSW	SE	0	20.7	33.3	65.078125	982.6083333

								Min		Max	Min	Av	Max
	Date	Min Temp	Av Temp	Max Temp	RAIN mm	Min WS	Av WS	Max WS	Humidity	Av Humidity	Humidity	Pressure	pressure
	Pressure												
	1/01/2017	20.0	22.8	26.0	1.0	0.0	2.2	9.0	65.9	83.8	94.9	982.2	983.7 985.0
	2/01/2017	18.0	21.1	25.0	0.2	0.1	4.2	14.2	61.2	81.3	95.1	982.6	987.6 993.6
	3/01/2017	17.0	19.8	24.0	0.4	0.0	3.9	16.3	57.8	80.0	95.8	993.1	995.0 997.1
	4/01/2017	17.0	20.5	25.0	0.2	0.0	4.1	16.7	44.1	71.3	93.6	995.6	996.8 998.3
	5/01/2017	18.0	20.3	25.0	11.0	0.1	3.5	21.5	65.1	85.4	95.8	992.3	994.5 996.4
	6/01/2017	19.0	20.9	25.0	15.8	0.0	3.2	25.6	53.3	83.1	96.2	992.7	994.5 996.6
	7/01/2017	16.0	21.3	26.0	0.0	0.0	4.0	20.7	49.1	74.8	95.8	990.0	993.1 996.0
	8/01/2017	17.0	24.4	33.0	0.0	0.2	3.9	15.4	25.1	61.9	91.1	985.4	988.7 991.8
	9/01/2017	20.0	27.5	35.0	0.0	0.0	4.5	18.1	28.5	50.4	86.1	985.1	987.3 990.9
	10/01/2017	21.0	26.4	35.0	0.0	0.0	2.8	11.8	32.7	64.9	92.8	984.6	987.7 990.9
	11/01/2017	23.0	29.6	39.0	0.0	0.0	3.8	19.1	19.9	51.9	83.1	980.5	984.3 987.1
	12/01/2017	21.0	23.7	29.0	0.0	0.0	4.9	23.0	49.3	72.3	90.6	986.6	988.1 990.2
	13/01/2017	21.0	30.4	42.0	0.0	0.2	5.5	24.1	16.9	51.6	84.7	975.9	982.6 989.9

14/01/2017	22.0	29.5	38.0	0.0	0.0	4.6	23.7	10.5	52.6	87.4	978.4	981.4	988.5
15/01/2017	20.0	22.6	27.0	0.0	0.4	6.0	21.6	53.1	72.4	87.4	988.5	991.4	994.0
16/01/2017	18.0	23.6	31.0	0.0	0.1	4.6	20.0	39.4	69.4	90.9	989.1	992.2	994.6
17/01/2017	19.0	29.5	42.0	0.0	0.1	4.3	21.4	14.8	52.8	92.1	983.8	988.0	991.9
18/01/2017	19.0	30.3	42.0	0.0	0.3	6.5	36.5	16.1	46.4	86.5	981.4	985.0	992.7
19/01/2017	17.0	18.2	20.0	2.6	0.2	3.6	13.5	73.2	85.3	94.7	987.2	990.5	992.5
20/01/2017	18.0	22.5	30.0	13.4	0.1	5.0	25.9	60.3	82.4	95.3	971.2	977.8	987.2
21/01/2017	19.0	21.2	26.0	0.4	0.0	4.1	21.1	45.7	64.4	82.6	979.8	987.7	993.9
22/01/2017	17.0	21.6	27.0	0.0	0.2	4.5	23.1	50.7	69.1	90.2	990.4	993.0	994.9
23/01/2017	18.0	26.2	36.0	0.0	0.0	4.8	19.6	29.3	61.7	94.7	984.5	988.8	992.5
24/01/2017	18.0	28.7	36.0	5.4	1.2	6.9	22.1	32.1	53.0	96.0	984.2	987.4	996.4
25/01/2017	17.0	18.8	21.0	5.4	0.0	2.5	10.6	79.0	90.4	97.0	993.0	995.6	997.9
26/01/2017	19.0	20.8	25.0	0.2	0.1	2.7	12.8	70.9	85.3	95.0	991.0	992.5	994.9
27/01/2017	18.0	21.1	26.0	0.6	0.1	3.2	11.8	65.6	83.8	96.1	992.8	994.2	995.6
28/01/2017	19.0	25.9	35.0	0.0	0.1	4.1	16.1	25.6	66.8	94.3	987.9	991.3	994.3
29/01/2017	21.0	25.2	32.0	0.0	0.1	3.8	20.9	49.4	75.4	93.0	990.2	992.1	994.2
30/01/2017	22.0	30.6	40.0	0.0	0.2	6.0	24.5	20.4	55.6	96.3	983.8	987.8	992.2
31/01/2017	21.0	30.2	41.0	3.2	0.2	6.0	24.5	19.0	53.2	96.3	983.8	987.4	993.0
	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar				
2/02/2017	0.316	0.768				0	21.1	21.9	78.810526	994.5578947			

3/02/2017	0	1.57 NNW	NNE	1.8	19	23.5	93.55	993.5
4/02/2017	0.013	3.777 WNW	NE	0.6	20.8	33.4	87.055208	991.0020833
5/02/2017	0.323	4.866 NW	WNW	0	25.5	39.4	46.965625	988.421875
6/02/2017	0.104	3.467 N	SE	0	23.1	36.9	54.207292	989.38125
7/02/2017	0.035	3.171 SSW	SSE	2.2	20.7	23.1	96.503125	996.7145833
8/02/2017	0.197	1.578 E	SE	11.2	19.4	26.3	91.598958	999.6895833
9/02/2017	0.06	2.778 NNW	NNW	4	19.8	33.9	76.172917	994.703125
10/02/2017	0.185	2.219 NNW	SW	0	21.8	42.6	51.295833	987.7697917
11/02/2017	0.024	4.493 NNW	WSW	0	21.4	45.3	59.909375	984.7385417
12/02/2017	0.038	3.679 N	SSE	0	19.7	36.9	77.759375	980.9802083
13/02/2017	0.042	2.042 SW	E	0.6	15.8	28.1	57.430208	986.753125
14/02/2017	0.006	3.208 N	SSE	0	17	24.9	75.992708	993.5822917
15/02/2017	0.049	1.849 WNW	NNE	0	16.7	26.7	72.655208	993.4760417
16/02/2017	0.027	2.523 NW	ENE	0	16.4	35.3	60.575	989.2739583
17/02/2017	0.028	4.872 NW	S	17	20	37	63.589583	987.6260417
18/02/2017	0.375	3.306 NNW	ENE	4.2	19.8	31.6	78.340625	984.8510417
19/02/2017	0.262	2.65 SSW	NE	8.4	17.6	24.9	80.298958	985.6875
20/02/2017	0.128	3.094 W	W	0	12.2	27	49.919792	989.690625
21/02/2017	0.02	2.756 S	ESE	0	12.7	26.3	60.292708	997.3

22/02/2017	0	2.3 N	NNE	0	15.5	28.7	70.46875	997.8822917
23/02/2017	0.005	1.768 NNE	SSE	0	15.9	32.9	69.24375	996.7135417
24/02/2017	0.07	1.636 SSW	SSE	0	16.9	28.2	77.005208	997.4916667
25/02/2017	0.592	2.83 SSW	S	5.8	17.1	21.4	97.552083	998.64375
26/02/2017	0.201	2.805 SW	S	14.8	16.4	23	84.128125	1000.1625
27/02/2017	0.194	2.932 W	S	4.6	15.2	25.3	82.680208	1001.4
28/02/2017	0.145	1.476 WSW	SSE	9	17.4	24.3	93.18125	1000.5375

								Min		Max	Min	Av	Max
Date	Min Temp	Av Temp	Max Temp	RAIN mm	Min WS	Av WS	Max WS	Humidity	Av Humidity	Humidity	Pressure	pressure	
	Pressure												
1/03/2017	19.0	20.4	24.0	31.0	0.1	2.9	11.7	76.1	93.3	97.3	995.7	996.9	998.4
2/03/2017	18.0	21.3	26.0	1.0	0.0	3.1	18.7	59.5	87.0	97.7	992.1	994.4	996.6
3/03/2017	18.8	20.1	24.2	25.8	0.3	3.6	10.7	76.4	94.6	97.6	992.1	993.5	994.9
4/03/2017	18.1	19.2	20.8	19.2	0.2	4.8	18.5	92.8	97.1	98.0	989.2	991.4	994.1
5/03/2017	17.5	19.3	22.1	2.8	0.3	4.2	22.1	71.0	86.6	97.5	986.7	987.9	989.1
6/03/2017	16.0	20.0	24.8	0.2	0.0	6.8	22.5	47.7	64.4	77.9	988.1	990.5	993.8
7/03/2017	14.9	17.3	23.1	1.4	0.5	4.8	17.9	58.4	80.2	95.5	993.1	994.8	996.8
8/03/2017	14.4	16.8	23.1	1.0	0.3	4.5	13.4	54.4	83.2	95.2	994.0	995.1	996.4
9/03/2017	14.9	17.5	21.6	0.8	0.4	3.9	16.5	58.4	81.4	96.7	992.7	993.8	995.0
10/03/2017	15.4	18.9	24.9	0.0	0.2	4.1	15.2	46.1	70.3	86.0	990.7	992.2	993.6

11/03/2017	13.8	19.0	26.0	0.0	0.4	3.4	18.6	39.8	71.9	92.6	988.2	990.4	992.4
12/03/2017	14.6	21.6	30.8	0.0	0.2	4.8	23.0	31.2	65.7	91.5	983.3	986.6	990.0
13/03/2017	17.8	22.1	28.8	0.0	0.0	5.0	27.7	46.4	74.9	91.4	984.7	988.7	993.8
14/03/2017	18.7	20.0	22.9	22.4	0.2	6.3	19.4	84.3	91.0	96.3	992.9	995.7	997.6
15/03/2017	18.5	20.3	23.9	14.4	0.2	4.3	22.1	74.4	92.4	97.5	994.0	996.2	997.9
16/03/2017	20.3	22.0	26.1	17.6	0.1	3.7	23.0	71.6	90.9	97.0	986.1	989.1	994.0
17/03/2017	17.1	19.0	21.1	7.8	0.0	7.3	25.8	77.1	87.4	96.9	989.0	995.5	999.3
18/03/2017	17.1	20.3	24.4	52.0	0.2	5.9	27.2	76.3	91.6	98.2	997.1	998.8	1000.2
19/03/2017	20.0	22.8	26.9	13.6	0.2	7.2	24.8	71.3	90.2	97.4	993.7	996.0	998.6
20/03/2017	21.2	23.4	27.6	0.0	0.3	3.7	12.8	63.9	86.0	96.8	992.0	994.3	995.9
21/03/2017	20.8	23.3	29.7	3.0	0.0	3.7	13.5	58.0	86.4	97.7	989.2	991.7	993.6
22/03/2017	19.6	23.0	29.0	3.6	0.4	4.0	22.3	63.7	85.6	97.9	988.2	990.3	994.0
23/03/2017	17.7	19.3	21.4	1.4	0.3	3.4	11.2	76.1	89.6	97.7	993.7	995.1	996.8
24/03/2017	16.7	18.6	22.7	3.4	0.0	4.6	16.7	67.0	88.2	98.2	994.9	996.5	997.8
25/03/2017	16.6	19.7	23.9	0.0	0.0	2.8	13.0	62.4	81.9	95.7	990.7	993.5	996.9
26/03/2017	17.4	21.3	27.8	0.0	0.1	3.3	16.3	50.9	82.4	97.8	990.9	992.7	995.4
27/03/2017	17.4	22.5	28.7	0.2	0.2	3.9	19.4	48.5	75.1	96.4	987.1	991.5	995.0
28/03/2017	19.7	21.1	24.4	0.0	0.3	2.7	12.2	62.7	85.2	97.2	987.5	990.2	992.1
29/03/2017	19.7	25.2	32.6	0.4	0.2	5.0	16.5	53.1	78.5	98.8	984.2	987.6	991.4

30/03/2017	13.7	20.8	27.8	53.8	0.3	6.9	24.7	56.0	83.3	98.0	983.3	986.1	991.5
31/03/2017	13.6	16.3	21.6	0.0	0.4	5.9	18.4	47.3	67.1	84.4	990.8	993.0	995.8
								Min		Max	Min	Av	Max
Date	Min Temp	Av Temp	Max Temp	RAIN mm	Min WS	Av WS	Max WS	Humidity	Av Humidity	Humidity	Pressure	pressure	
1/04/2017	12.5	17.6	24.3	0.0	0.2	3.5	13.3	40.3	70.5	89.8	993.1	995.1	998.5
2/04/2017	12.9	15.5	20.5	0.4	0.6	5.4	19.1	60.7	80.8	93.3	998.2	1001.5	1004.0
3/04/2017	12.0	14.0	19.1	11.2	0.0	6.3	16.8	73.6	93.6	97.9	1002.5	1004.2	1005.6
4/04/2017	12.1	14.8	20.3	7.4	0.0	3.8	13.5	57.1	88.5	97.4	1002.9	1003.8	1005.4
5/04/2017	12.2	15.1	20.1	0.6	0.2	3.0	16.2	60.7	83.3	98.8	999.9	1001.6	1003.7
6/04/2017	11.2	15.8	21.3	0.2	0.0	2.1	9.3	52.5	75.3	96.6	1000.3	1001.8	1003.3
7/04/2017	12.0	16.8	22.1	0.0	0.1	2.9	15.4	49.8	73.9	96.6	1002.1	1003.4	1005.5
8/04/2017	13.1	17.9	23.7	0.0	0.2	2.8	12.5	43.0	72.8	90.1	996.9	1000.4	1003.5
9/04/2017	13.4	18.5	25.6	10.0	0.4	6.1	23.4	41.5	70.0	94.8	982.5	989.7	996.8
10/04/2017	9.5	12.8	16.3	0.0	0.0	4.2	27.2	45.2	60.4	74.9	985.7	987.5	990.1
11/04/2017	12.5	17.2	21.5	0.0	0.0	4.5	24.0	49.0	62.8	81.0	989.4	994.3	998.4
12/04/2017	14.5	16.8	21.1	0.0	0.5	4.7	14.5	61.6	76.1	93.3	998.1	999.7	1001.0
13/04/2017	13.9	16.7	22.1	0.6	0.1	2.8	10.4	50.4	79.4	96.1	997.6	999.2	1001.2
14/04/2017	12.8	17.3	23.9	0.0	0.0	2.1	7.9	33.6	69.9	94.0	996.0	997.5	999.4
15/04/2017	11.7	16.8	23.4	0.0	0.0	2.8	12.3	37.1	75.3	92.2	995.0	996.8	998.3

16/04/2017	14.2	18.1	24.6	0.0	0.0	2.6	15.2	31.9	68.1	92.7	994.7	996.9	999.4
17/04/2017	12.3	17.1	23.5	0.0	0.0	2.2	10.5	50.3	73.8	88.7	998.7	1000.1	1002.2
18/04/2017	14.1	18.2	23.8	0.0	0.0	2.4	12.6	51.4	76.4	94.2	1001.1	1003.1	1005.6
19/04/2017	14.2	17.4	22.6	0.0	0.2	2.7	10.9	61.3	82.0	94.6	1004.8	1006.0	1007.8
20/04/2017	14.4	17.6	22.7	0.4	0.2	2.8	14.5	51.0	78.2	97.8	1004.0	1005.6	1007.4
21/04/2017	13.2	17.8	22.4	0.0	0.1	2.9	8.5	54.7	72.3	85.7	1001.4	1003.2	1005.4
22/04/2017	15.3	18.4	23.5	0.0	0.1	2.1	6.8	52.6	81.0	94.6	999.3	1001.1	1003.0
23/04/2017	13.5	18.4	25.0	0.0	0.0	2.5	10.6	39.1	77.0	94.0	997.5	999.6	1001.2
24/04/2017	14.3	18.3	23.5	0.0	0.0	2.6	8.6	46.5	81.7	97.6	995.1	997.6	1000.1
25/04/2017	16.4	19.1	26.0	1.2	0.2	6.0	23.2	46.1	78.0	89.8	986.0	989.4	995.0
26/04/2017	10.9	15.9	22.4	0.2	0.1	3.6	16.3	36.3	66.9	83.5	980.2	984.6	988.4
27/04/2017	9.7	12.9	17.7	0.0	0.1	3.5	18.1	42.9	62.3	75.2	988.4	992.3	996.2
28/04/2017	8.6	13.4	18.4	0.0	0.2	3.8	16.0	36.9	58.8	76.1	996.2	998.0	1000.0
29/04/2017	8.7	14.1	20.3	0.0	0.1	2.2	8.6	40.0	65.6	82.0	995.3	997.1	998.8
30/04/2017	10.6	14.9	21.1	0.0	0.1	2.2	10.0	55.1	79.5	94.7	997.7	998.7	1000.4

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar
1/05/2017	0.014	3.159 NNW	NW		0.2	10.1	22.9	77.234375	996.6166667
2/05/2017	0	2.059 NNW	S		0	12.1	22.2	66.726042	995.6302083
3/05/2017	0.031	2.214 SSW	SSE		0	10.2	16	76.776042	1004.760417

4/05/2017	0	1.824 S	NNE	0	9.4	18.1	85.540625	1008.426042
5/05/2017	0	2.002 NNW	E	0	9.2	20.5	81.625	1007.401042
6/05/2017	0.014	3.114 NNW	NNW	0	9.3	23.2	74.447917	1002.604167
7/05/2017	0	2.97 SW	S	0	8.5	19.7	60.578125	1001.825
8/05/2017	0	2.657 SW	SE	0	5	18.2	70.971875	1004.608333
9/05/2017	0.03	2.498 NW	S	0	5.9	18.5	81.223958	1003.960417
10/05/2017	0	1.663	SSW	0	9.6	19.7	74.104762	1001.164286
11/05/2017	0.002	1.63 NNW	SSW	0.2	7.3	19.3	86.4125	1002.125
12/05/2017	0.002	2.577 S	NW	0	9.5	17.2	89.286458	1003.7
13/05/2017	0	2.11 NW	N	0	11.5	19.4	92.501042	1001.807292
14/05/2017	0.003	2.042 S	SSE	0.2	11.8	18.5	95.230208	999.0260417
15/05/2017	0.033	2.92 S	SW	0.2	10.1	18.9	84.416667	994.775
16/05/2017	0.002	1.586 NNE	SW	0.2	7	19.1	81.32766	995.9021277
17/05/2017	0	2.006 NNW	ENE	0	6.9	19.4	87.148958	1000.401042
18/05/2017	0.008	1.435 NNW	S	0.2	9.1	20.5	91.190625	1003.773958
19/05/2017	0	1.952 NNW	N	7.8	11.6	18	96.740625	1001.589583
20/05/2017	0.002	2.139 NNW	NNE	4.2	13.5	20.7	94.18125	995.8885417
21/05/2017	0.005	1.615 NW	S	0.2	12.4	20.6	90.897917	998.515625
22/05/2017	0.002	1.549 S	NE	0.2	10.9	19.7	92.917708	1001.359375
23/05/2017	0.008	2.432 N	N	0.2	12.6	21.2	87.16875	998.35625

24/05/2017	0.184	3.265 N	W	1	10.6	22.2	70.28125	994.0854167
25/05/2017	0.026	1.293 N	NNW	0	6.9	18.4	75.798958	998.190625
26/05/2017	0.024	1.93	SSW	0.2	6.3	17.4	87.53125	999.0229167
27/05/2017	0.002	2.28 S	NNW	0.2	8.5	19	86.730208	998.2291667
28/05/2017	0.154	3.657 NNW	NNW	0	10	21	73.452083	991.3614583
29/05/2017	0.113	2.73 WNW	SSW	0	5.2	16.6	56.334375	996.5260417
30/05/2017	0.049	1.834 N	W	0	2	15.6	73.163542	1000.321875
31/05/2017	0.02	3.405 N	S	0	5	14.1	72.261458	1004.105208

DATE	WS LOW	WS HIGH	WD 9AM	WD 4PM	R-FALL	temp Min	temp Max	% RH	mBar
1/06/2017	0.001	2.925 SW	SSW		0	4.2	15.2	68.886458	1009.841667
2/06/2017	0.021	2.59 N	SW		0	3.6	15.9	74.828125	1009.797917
3/06/2017	0	2.73 S	SSW		0	8.8	15.6	79.8875	1008.016667
4/06/2017	0.013	2.359 S	SSW		0	7.6	18	87.20625	1004.785417
5/06/2017	0.016	1.53 N	NW		0.2	6.1	17.2	85.319792	1001.428125
6/06/2017	0.067	2.768 NNW	SSW		3.8	4.3	15.6	72.652083	997.5020833
7/06/2017	0.727	2.861 SSW	SSW		37.6	7.8	12.1	97.33125	998.4166667
8/06/2017	0.328	3.102 S	S		13	10.6	15.8	98.959375	1002.069792
9/06/2017	0	2.93 SSE	SSE		19.8	9.8	17.3	95.285417	1005.469792
10/06/2017	0.19	2.545 S	S		30	11.5	14.3	99.985417	1008.8
11/06/2017	0.023	1.478 SW	N		0.8	10.3	15.6	98.725	1006.032292
12/06/2017	0.026	1.476 SSW	NNW		0.2	8.9	18.6	92.895833	1003.298958
13/06/2017	0.02	2.373 SSE	SSE		0.2	8.6	17.1	91.20625	1007.304167
14/06/2017	0.015	1.985 NW	NNE		0.2	10.6	17	91.044792	1007.972917
15/06/2017	0	1.536 N	NNW		0.4	7.6	18.3	94.140625	1004.602083
16/06/2017	0	1.335 WNW	WSW		0.2	9.7	15.4	95.241667	1002.964583
17/06/2017	0	2.357 S	SW		0	10.8	15.2	93.648958	1001.614583
18/06/2017	0.028	3.133 S	S		0.2	9	16.5	87.266667	1003.883333
19/06/2017	0.008	2.778 S	ESE		0	8.3	16.9	84.917708	1007.384375
20/06/2017	0.014	2.307 S	NW		0.8	9.5	16.7	94.0125	1005.284375
21/06/2017	0.043	2.003 NW	S		0.2	6.4	16	90.584375	1003.861458
22/06/2017	0.016	1.867 NNE	NNW		0.2	5.9	16.8	87.895833	1004.445833
23/06/2017	0.074	2.724 NNW	NW		0.2	6.7	16.2	81.671875	996.9479167

24/06/2017	0.128	2.063 NNW	WNW	0	6.9	17.7	65.794792	994.78125
25/06/2017	0.121	2.696 E	W	0	5.5	17.8	67.967708	995.9666667
26/06/2017	0.005	1.774 ENE	S	0	4.8	16.1	74.584375	999.8916667
27/06/2017	0	1.156 NNW	N	0	3.7	14.5	89.523958	1003.511458
28/06/2017	0	1.925 NNW	N	2.6	8	12.8	94.120833	1000.63125
29/06/2017	0	1.43 WNW	NW	1	7.5	13.7	95.297917	998.890625
30/06/2017	0.056	2.607 NNE	S	0.2	3.3	13.7	75.598958	1002.486458

ATTACHMENT 6

SITE CURRENT PHOTOS



Current extraction area (south) with in use silt pond



Current extraction area (north)



Tailings pond being spelt



Tailings pond ready for capping



Fresh water dam



Area being prepared for rehabilitation



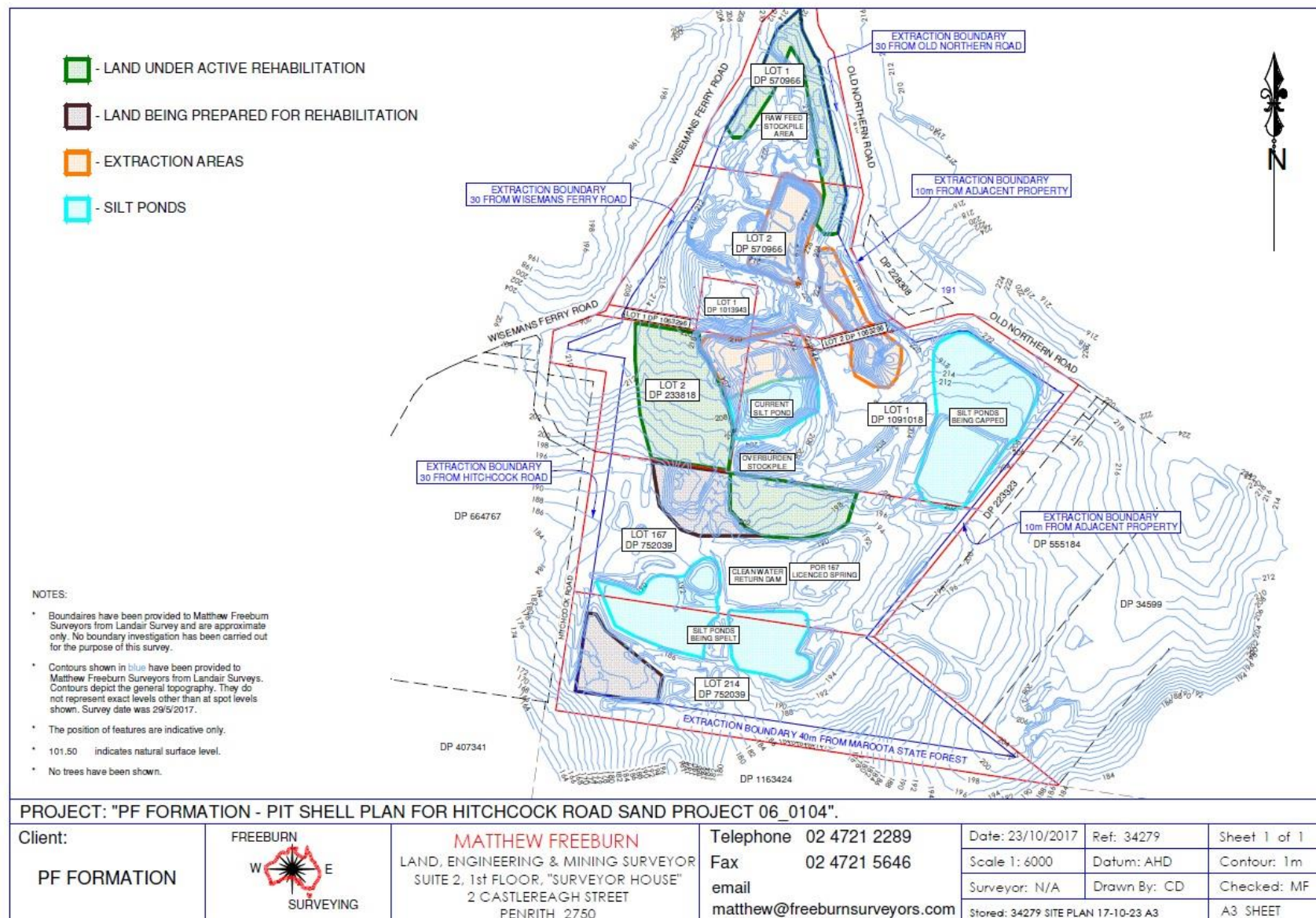
Rehabilitation area



Rehabilitation area

ATTACHMENT 7

CURRENT SITE SURVEY PLAN



ATTACHMENT 8

WEIGHBRIDGE VERIFICATION CERTIFICATE

Test report reference number: 0006587 **Calibration Sticker Reference:**

Verification: Y

In-Service Test:

Date of Test: 04/05/16

For in-service inspection record the verification/certification mark:

Name of owner/user: PF FORMATION- VERIFICATION

Contact:

Address of owner/user: 1774 WISEMAN FERRY RD

Phone:

Report Emailed from Site? N

DESCRIPTION OF INSTRUMENT:

Serial No: 3139483

Make / Model: RANGER 5000

NSC No S363
Class III

Capacity: 60.00t

Min: 0.4t

VSI e=d= 0.02t

DESCRIPTION	Y/N	
Instrument complies with NMI certificate?	Y	The data plate is fixed on instrument?
Instrument is being used appropriately?	Y	Is the instrument clean?
Is the instrument complete?	Y	Level-ind device fitted & Operates?
Is the Instrument Operational?	Y	Mounted on a firm base?
Is the instrument level?	Y	Mandatory marks are clear & permanent?
Any apparent obstructions to Inst?	N	
Does the operator &/OR customer, have a clear and unobstructed view of the indicator & the weighing operation?		
Add indicating devices: Do the repeat the primary indication. Does price computation and/or, ticket/label comply with S1/0/A?		
If applicable, does the steelyard, tare bar or proportional weight comply with the mandatory requirements in respect to design and marking?		
Is the instrument adequately protected against abnormal dust, air movement, vibrations, atmospheric conditions and any other influence likely to affect its performance?		
Suspended weighing instruments: does it hang freely & are all transparent covers in good repair?		

Repeatability Test: Pass or Fail? PASS	Zero Settings Pass or Fail? PASS
--	----------------------------------

1. 39.92t	2. 39.92t	3. 39.92t
Difference: 0		

Eccentricity Reading 1 - 12:

1. 6.18t	2. 6.18t	3. 6.18t	4. 6.18t	5. 6.18t	6. 6.18t	M
7.	8.	9.	10.	11.	12.	6

Eccentricity Test Pass or Fail? P

No. of Supports? 6

Comments: FORKLIFT+2t

Weighing performance using substitution load (clause 5.4.2)

Substitution Load 1: TRUCK 1
Substitution Load 2: TRUCK 2
Substitution Load 3:

Method Used: Method A? Y
Method B?

MPE change points: 10.00t, 40.00t
Available weights: 20.00t

WEIGHBRIDGE WEIGHT TEST:

Up: Load Make up of load: MPE: 1: 1/2 e: DL: E: Lsub:
(rounded) P or F?

1.	WEIGHT	5.00t	0.01t	5.00t	0.01t	-	-	-	-
2.	WEIGHT	10.00t	0.01t	10.00t	0.01t	-	-	-	-
3.	WEIGHT	20.00t	0.02t	20.00t	0.01t	-	-	-	-
4.	WEIGHTS+	39.86t	0.02	39.86t	0.01t	-	-	-	-
5.	WEIGHTS+	59.96t	0.03t	59.96t	0.01t	-	-	-	-

Over range blanking Pass or Fail? PASS

Discrimination (clause 5.5): PASS

Down: Load Make up of load: MPE: 1: P or F?

1.	59.96t			59.96t	PASS
2.	39.86t			39.38t	PASS
3.	20.00t			20.00t	PASS
4.	10.00t			10.00t	PASS
5.	5.00t			5.00t	PASS

Accuracy of tare setting
(clause 5.7): PASS

Test Required: NA

Weight test Pass or
Fail?: PASS

Sensitivity (clause 5.6):

NA

Test Required: NA

OVERALL RESULT? PASS
AUS1872

Technicians Name: SAM SINTMAARTENSDYK

ID No:

All scales are tested using uniform testing procedures as per NITP 6.1-6.4 using Reg 13 traceable masses and complies with the requirements of the NCS
International Certified Quality Management System ISO9001

NATIONAL TRADE MEASUREMENT								
CERTIFICATE OF VERIFICATION OR NOTICE OF NON VERIFICATION OF A MEASURING INSTRUMENT								
Note: * denotes mandatory field and must contain data								
Instrument Owner/User details	Business Name*	Street Number*	Street name*	Suburb/Locality*	Postcode*	Business type (drop down list)*	ABN Number	Verifiers Declaration The measuring instruments listed below (unless marked with an Instrument Performance Code "H") have been tested in accordance with National Test Procedures and found suitable for use for trade and marked in accordance with the National Measurement Act 1960. Instrument(s) marked with a "H" Code in the Instrument Performance Code column is or are unverified and are not to be used for trade.
	PF FORMATION	1774	WISEMAN FERRY RD	MAROOA	2756			
Instrument location details If street name or Suburb/Locality is not applicable, provide GPS Coordinates (eg for a mine site). **denotes mandatory if address is applicable ^ denotes mandatory if address is not applicable	Street Number**	Street Name**	Suburb/Locality**	Postcode**	GPS Coordinates ^	Is this a weighbridge* Y for Yes or N for No	Public Weighbridge No. (if a public weighbridge)*	
	1774	WISEMAN FERRY RD	MAROOA	2756		Y		
Servicing Licensee details	Licence Number*	Licensees Business Name*	ABN Number*					
	SL-0375	Aussie Weighbridge Systems	818082421396					
Verifier details	Verifiers Registration No*	Name of Verifier*	Verifiers Mark*					
	VR-01872	Sam Sintmaartensdyk	AUS1872					
Instrument details	Date of verification*	Make*	Model*	Serial Number*	NMI Pattern Approval Number *	Capacity or Flow rate* (eg 60t or 30 l/m)	Instrument Performance Code* (drop down list)	*If Verification Code is "H", please provide reasons-eg non payment by owner, parts to repair not available, replaced with new instrument etc.
	ELECTRONIC WEIGHBRIDGE	4/May/16	RANGER	5000	3139483	S363	60.00t	
							G-routine inspection or contract requirement (within MPE but recalibrated)	