

# PF FORMATION



## HITCHCOCK ROAD SAND EXTRACTION AND REHABILITATION PROJECT MAROOTA

### ANNUAL ENVIRONMENTAL MANAGEMENT REPORT



**2009-2010**

# **PF Formation**

**HITCHCOCK ROAD**  
**Sand Extraction and Rehabilitation Project Maroota**

**ANNUAL ENVIRONMENTAL MANAGEMENT REPORT**  
**2009-2010**

**PF Formation**  
1774 Wisemans Ferry Road  
Maroota NSW 2756  
Telephone: (02) 4566 8257  
Facsimile: (02) 4566 8349

## Hitchcock Road sand extraction and rehabilitation project

# Annual Environmental Management Report 2009-2010

### Contents list

#### Terms and Abbreviations

	Page number
<b>1 Introduction</b>	<b>1</b>
<b>2 Status of the project</b>	<b>3</b>
<i>Attachment</i> 2A - Site survey plan	
2B - Land ownership	
2C - Photos	
<b>3 Environmental Monitoring Program</b>	<b>5</b>
Operational Monitoring Program	5
Analysis of Monitoring Results	5
<i>Attachment</i> 3A - Summary of Monitoring Results	
3B - Monthly Environmental Checklist	
3C - Environmental Operating Procedures Checklist	
<b>4 Noise Management</b>	<b>6</b>
Introduction	6
Noise emission criteria	6
Noise monitoring	6
Operator-attended noise survey results	7
Conclusion	7
<i>Attachment</i> 4A - Noise assessment location map	
4B - Acoustic Assessment by Koikas Acoustics	
<b>5 Air quality</b>	<b>8</b>
Introduction	8
Dust impact assessment criteria	8
Dust monitoring	9
Monitoring results	9
Conclusion	10
<i>Attachment</i> 5A - Dust deposit gauge location map	
5B - Annual dust deposition monitoring summary	
5C - Monthly dust deposition monitoring results	
5D - Action Plan for high TEOM dust readings	
5E - Summary of weather conditions	
<b>6 Ground and surface water management</b>	<b>11</b>
Introduction	11
Groundwater Management	11
Surface water management	11
Conclusion	13
<i>Attachment</i> 6A - URS Groundwater review	
6B - Water quality sampling	

<b>7</b>	<b>Rehabilitation</b>	<b>14</b>
	Introduction	14
	Earth bunding and rehabilitation	14
	Rehabilitation Issues	14
	Conclusion	16
	<i>Attachment</i> 7A - Parsons Brinkerhoff monitoring of revegetation	
<b>8</b>	<b>Social Impact Management</b>	<b>17</b>
	<i>Attachment</i> 8A- Minutes of Community Consultative Committee meetings	

<b>Term</b>	<b>Abbreviation</b>
<b>AEMR</b>	Annual Environmental Management Report
<b>AHD</b>	Australian Height Datum. The standard reference level used to express the relative elevation of various features. A height given in metres AHD is essentially the height above sea level.
<b>Airshed</b>	Lower atmosphere within a defined geographic area.
<b>Ambient</b>	The background level at a specific location, being a composite of all sources.
<b>Annual Average Daily Traffic</b>	Annual average daily traffic volume representing the total traffic in both directions at a specified location calculated from mechanically obtained axle counts.
<b>Annual Exceedance Probability (AEP)</b>	The probability of a flood event exceeding a nominated level in a year. A one percent AEP is the probability of an event exceeding a nominated level in 100 years.
<b>Aquifer</b>	Geologic formation, group of formations, or part of a formation capable of transmitting and yielding economic quantities of water.
<b>Archaeology</b>	The scientific study of human history, particularly the relics and cultural remains of the distant past.
<b>ARI</b>	Average Recurrence Interval-average or expected period between exceedance of a flood.
<b>Background Noise Level</b>	The ambient sound pressure noise level in the absence of the sound under investigation exceeded for 90 percent of the measurement period. Normally equated to the average minimum A-weighted sound pressure level.
<b>Batter</b>	The side slope of walls, embankments and cuttings or the degree of such slope, usually expressed as a ratio of horizontal distance to one vertical height.
<b>Bore</b>	A cylindrical drill hole sunk into the ground from which water is pumped for use or monitoring.
<b>Buffer</b>	A physical barrier, structure or width of land which encloses, partially encloses or defines a particular environment. It serves to minimise the impacts of non-desirable external influences on the adjoining environment.
<b>Bund Wall</b>	A wall erected to prevent the escape of various emissions into the environment (liquids, noise or views).
<b>Catchment</b>	The area drained by a stream or body of water or the area of land from which water is collected.
<b>Clay</b>	Very fine grained sediment, often defined as having a particle size less than 2 microns (0.002mm) in diameter.
<b>Compaction</b>	The process of compressing individual grains in a soil or sediment in response to pressure.
<b>Conservation</b>	The management of resources in a way that will benefit both present and future generations.
<b>Contaminant</b>	Any physical, chemical, biological or radiological substance or matter in water or soil that is not of natural origin.

<b>Term</b>	<b>Abbreviation</b>
<b>Contamination</b>	The degradation of the natural environment as a result of human activities.
<b>Council</b>	The Hills Shire Council.
<b>Day</b>	The period from 7.00am to 6.00pm on Monday to Saturday and 8.00am to 6.00pm on Sunday and public holidays.
<b>dBA</b>	Decibels using the A-weighted scale measured according to the frequency of the human ear.
<b>DECC</b>	NSW Department of Environment and Climate Change.
<b>Decibel</b>	A scale unit used in the comparison of powers and levels of sound energy. The number of decibels is ten times the logarithm to the base of ten of the ratio of the powers.
<b>Department</b>	NSW Department of Planning.
<b>Director-General</b>	Director-General of the Department of Planning or delegate.
<b>DPI</b>	NSW Department of Primary Industries
<b>DWE</b>	NSW Department of Water and Energy
<b>EA</b>	Environmental Assessment of the project entitled <i>Hitchcock Road Sand Extraction and Rehabilitation Project Environmental Assessment and Appendices</i> (3 volumes) dated November 2007, prepared by DFA Consultants, including the response to submissions and Preferred Project Report.
<b>Ecology</b>	The relationship between living things and their environment.
<b>Ecologically Sustainable Development</b>	Using, conserving and enhancing the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased.
<b>Ecosystem</b>	A functional unit of energy transfer and nutrient cycling in a given place. It includes all relationships within the biotic community and between the biotic components of the system.
<b>Emission</b>	Discharge of a substance to the environment.
<b>Environment</b>	A term for all the conditions (physical, chemical, biological and social) in which an organism or group of organisms, including humans, exists.
<b>Environmental Assessment (EA)</b>	impact on the physical, social and economic environment. It includes an evaluation of alternatives and an overall justification of the project. The EA is used as a vehicle to facilitate public comment and as the basis for analysing the project with respect to granting approval under relevant legislation.
<b>Environment Protection Licence</b>	A licence that allows pollution of the environment under controlled conditions regulated by the Department of Environment and Climate Change.
<b>EMP</b>	Environmental Management Plan

<b>Term</b>	<b>Abbreviation</b>
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979.</i>
<b>EP&amp;A Regulation</b>	<i>Environmental Planning and Assessment Regulation 2000.</i>
<b>EPL</b>	Environmental Protection Licence issued under the <i>Protection of the Environment Operations Act 1997.</i>
<b>Equivalent Continuous Sound Level (LAeq)</b>	The constant sound level which when operating over the same time interval as a fluctuating sound over an extended time, is equivalent to the same sound energy.
<b>Erosion</b>	The wearing away of the land surface by the action of water, wind and ice.
<b>Evening</b>	The period from 6.00pm to 10.00pm.
<b>Excavate</b>	Dig into natural material and remove using specialist machinery.
<b>Extraction</b>	A term referring to the removal of material from the earth synonymous with quarrying.
<b>Extraction area</b>	The land described as the extraction area in Appendix 1 of the Project Approval.
<b>Evapotranspiration</b>	Loss of water from a land mass through transpiration from plants and evaporation from the soil.
<b>Fauna</b>	All animals including birds, reptiles, marsupials and fish.
<b>Flora</b>	All plants
<b>Frequency</b>	Similar to the pitch of a musical note in sound pressure fluctuations of cycles per second (Hertz). Most sounds comprise a composite of frequencies of varying sound pressure levels in the range of 20 Hertz to 20,000 Hertz.
<b>Friable</b>	Easily crumbled.
<b>Front-end loader</b>	Machine used to lift and place soil, earth, rocks and other materials within an extraction site or to load products into trucks.
<b>Gradient</b>	Rate of change of a given variable with distance, such as temperature or elevation.
<b>g/m<sup>2</sup>/month</b>	grams per square metre per month
<b>Greenhouse effect</b>	Changes in climate that could occur due to increases in atmospheric concentrations of certain gases.
<b>Groundwater</b>	Subsurface water contained within the saturated zone.
<b>Hawkesbury Sandstone</b>	Prominent cliff-forming sandstone occurring across the Sydney basin.
<b>Head (hydraulic head)</b>	Energy contained in a water mass produced by elevation, pressure or velocity.

<b>Term</b>	<b>Abbreviation</b>
<b>Heritage</b>	Things of value which are inherited from the past.
<b>Hydrocarbon</b>	Any organic compound, gaseous, liquid or solid, consisting only of carbon and hydrogen.
<b>Hydrogeology</b>	The study of subsurface water in its geological context.
<b>Impact</b>	The effect of human-induced action on the environment.
<b>Infiltration</b>	The process of surface water soaking into the soil.
<b>Infrastructure</b>	Supporting installations and services supplying the needs of a project.
<b>Introduced species</b>	Plants and animals not native to Australia and known or thought to have been brought here by humans.
<b>Land</b>	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 the approval.
<b>Landform</b>	A specific feature of the landscape or the general shape of the land.
<b>µg/m<sup>3</sup></b>	micrograms per cubic metre
<b>µs/cm</b>	microsiemens per centimetre
<b>micron</b>	Unit of measure-one millionth of a metre.
<b>mg/L</b>	milligrams per litre
<b>Mitigation measures</b>	Measures put in place to reduce an impact.
<b>Modelling</b>	Use of mathematical equations to simulate and predict real events and processes.
<b>Monitoring</b>	Regular measurement of components of the environment to understand their condition and establish if necessary standards are being met.
<b>Minister</b>	NSW Minister for Planning or delegate.
<b>Night</b>	The period from 10.00pm to 7.00am on Monday to Saturday and 10.00pm to 8.00am on Sunday and public holidays/
<b>Observation well</b>	A well constructed or utilised for the purpose of observing groundwater parameters such as water levels, pressure changes and water quality.
<b>Palaeochannel</b>	An ancient river bed, often filled with more recent sediments.
<b>Perched water</b>	Unconfined groundwater separated from an underlying body of groundwater by an unsaturated zone.
<b>pH</b>	A measure of acidity or alkalinity of a solution, numerically equal to 7 for neutral solution, increasing with increasing alkalinity and decreasing with increasing acidity. Originally stood for the words potential of hydrogen.

<b>Term</b>	<b>Abbreviation</b>
<b>Piezometer</b>	A pipe in which the elevation of the water level or potentiometric surface can be determined.
<b>Privately owned land</b>	Land not owned by a public agency or the proponent or its related companies.
<b>Preferred Project Report</b>	The proponent's Preferred Project Report dated September 2008 prepared by DFA Consultants as modified in the Proponent's email to the Department of Planning on 18 November 2008.
<b>Process plant</b>	Equipment used to clean and separate sand into various sizes.
<b>Project</b>	The development as described in the EA.
<b>Proponent</b>	PF Formation or its successors in title.
<b>Recharge</b>	Addition of water to the zone of saturation; also the amount of water added.
<b>Recovery</b>	The difference between the observed water level during the recovery period after cessation of pumping and the water level measured immediately before pumping stopped.
<b>Receptor</b>	An environmental modelling term used to describe a map reference point where the impact is predicted. A sensitive receptor is a home, work place, school or other place where people spend some time. An elevated receptor is a point above ground level.
<b>Rehabilitation</b>	Preparation of a final landform following extraction and its stabilisation with vegetation.
<b>Remnant vegetation</b>	Native vegetation remaining after widespread clearing has taken place.
<b>Resource</b>	Potentially usable material in a defined area that can be economically extracted.
<b>Response to Submissions</b>	The proponent's response to issues raised in submissions dated March 2008 prepared by DFA Consultants and subsequent submissions to the Department of Planning dated 27 August 2008.
<b>RL</b>	Reduced level, usually in metres to an arbitrary datum.
<b>RTA</b>	NSW Roads and Traffic Authority
<b>Run-off</b>	The proportion of precipitation discharged through surface water systems.
<b>Sand</b>	Sediment comprising particles ranging between 0.063mm and 2mm.
<b>Sandstone</b>	A fine grained rock of sedimentary origin composed primarily of sand-sized particles (0.06 to 2 mm).
<b>Sedimentation basin</b>	An area where runoff is ponded to allow sediment to be deposited. The longer the period that the runoff is held, the smaller the size of the sediment deposited. Such basins have to be regularly cleaned.

<b>Term</b>	<b>Abbreviation</b>
<b>SHTW</b>	Sydney Hinterland Transition Woodland
<b>Silt</b>	Sediment comprising most particles between 0.004mm and 0.063mm.
<b>Species</b>	Taxonomic grouping of organisms that are able to interbreed with each other but not with other species.
<b>Stakeholder</b>	An individual or group with an interest in the proposal.
<b>Statement of Commitments</b>	The proponent's commitments in Appendix 3 of the Project Approval.
<b>Stockpile</b>	Mound used to store material.
<b>Stormwater</b>	Rainwater which runs off catchments following rain events. The untreated water is carried into creeks, rivers and lakes.
<b>Strategy A, Strategy B</b>	The alternative rehabilitation proposals described in the Preferred Project Report.
<b>Terrestrial</b>	Relating to the land as distinct from air or water.
<b>Tertiary</b>	Geologic time at the beginning of the Cainozoic era, 65 to 2 million years ago, after the Cretaceous and before the Quaternary.
<b>Topography</b>	The physical relief and contours of the area.
<b>Topsoil</b>	The surface layer of a soil profile containing most of the organic material and viable life forms and seeds.
<b>Total Dissolved Solids (TDS)</b>	The dissolved mineral content of groundwater, commonly expressed in milligrams/Litre.
<b>Total Suspended Solids</b>	A measure of suspended solids concentrations in a water body and expressed in terms of mass per unit of volume.
<b>Triassic</b>	The earliest of the three periods that constitute the Mesozoic Era. Approximately between 230 and 180 million years before present.
<b>TSC Act</b>	NSW Threatened Species Conservation Act.
<b>Turbidity</b>	A measure of light penetration through a water column containing particles of matter in suspension.
<b>Underflow</b>	The volume of groundwater that flows through a cross sectional area of an aquifer. It depends on permeability and the prevailing gradient.
<b>Unsaturated zone</b>	That part of an aquifer between the land surface and water table.
<b>Vegetation Offset</b>	The conservation and enhancement program described in the Preferred Project Report to occur on the land shown on the plan in Appendix 5 of the Project Approval.
<b>VENM</b>	Virgin Excavated Natural Material as defined in the <i>Protection of the Environment Operations Act 1997</i> .

<b>Term</b>	<b>Abbreviation</b>
<b>Wash plant</b>	Equipment designed to wash unwanted sized materials from the product.
<b>Water quality</b>	Degree or lack of contamination.
<b>Water table</b>	The surface of saturation in an unconfined aquifer at which the pressure of the water is equal to that of the atmosphere.
<b>Well</b>	A hole sunk into the ground and completed for the abstraction or injection of water or for water observation purposes. Generally synonymous with bore.
<b>1 in 100 Year Flood Level</b>	The flood which occurs on average once every 100 years. Also known as the 100 year Average Recurrence Interval of a flood.