Permit[1]

Environmental Protection Act 1994

Environmental Authority

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Permit[1] number: EPML00951013

Environmental authority takes effect: 03 June 2013

The annual fee is payable on or before **29 November** each year.

The anniversary date of this environmental authority is the same day each year. An annual return and the payment of the annual fee which is currently $26,496.00 will be due each year on this day.

Environmental authority holder(s)

Name	Registered address
Pacific Silica Pty Ltd	565 Bestmann Road, NINGI QLD 4511

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
16-(2a) Extractive >5000t but <100000t yr	Lot 2 on RP902709
Mining - ML mineral sand - 12, Site Specific 16-(2c) Extractive >1000000t	ML50064 ML50088 ML50140 ML50156

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority is issued is a restatement of the ERA as defined by legislation at the time the approval is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an environmental authority as to the scale, intensity or manner of carrying out an ERA, then the conditions prevail to the extent of the inconsistency.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Signature

07/06/2013

Date

John Harden
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

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Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Conditions of Environmental Authority

Agency Interest: General

Prevent and/or minimise likelihood of environmental harm

(A1) Prevent and/or minimise likelihood of environmental harm.

In carrying out an ERA to which this approval relates, all reasonable and practicable measures must be taken to prevent and / or to minimise the likelihood of environmental harm being caused.

(A2) The only activity to be carried out on the approved premises is extraction of sand, gravel and mineral sands.

Operating Plan

(A3) From commencement of the activity, an Operating Plan must be implemented. The Operating Plan must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The Operating Plan must also provide for the review and 'continual improvement' in the overall environmental performance of all activities that are carried out.

The operating plan must address the following matters:

- Environmental commitments - a commitment by senior management to achieve environmental goals.
- Identification of environmental issues and potential impacts.
- Control measures for routine operations to minimise likelihood of environmental harm.
- Contingency plans and emergency procedures for non-routine situations.
- Organisational structure and responsibility.
- Effective communication.
- Monitoring of contaminant releases, including releases to waters via a monitoring regime that at least addresses monitoring requirements in this environmental authority.
- Conducting environmental impact assessments.
- Staff training.
- Record keeping.
- Periodic review of environmental performance and continual improvement.

In conjunction with the above matters, the operating plan must also include:

- An acid sulphate soil visual inspection program.
- A site rehabilitation program.
- Erosion protection measures and sediment controls.
- Maintenance and clean-up procedures.
- Pond integrity management.
- Acid soil drainage and leachate management.
- Storage and handling of flammable and combustible liquids.
- Flood management measures.
- Measures to address compliance with the latest edition of the Queensland Environmental Protection Agency's *Instructions for the treatment and management of acid sulphate soils, 2001* produced by the Queensland Environmental Protection Agency in consultation with the Department of Natural Resources and Mines and the Department of Primary Industries.

Monitoring Report

(A4) From commencement of the activity, an annual Monitoring Report must be available upon inspection detailing:-

- all surface water and groundwater monitoring and graphical compilation;
- progress on rehabilitation of the sites;
- an up to date plan of the premises showing the accurate location of:
  - all ponds, pits, lakes and depressions that may hold water permanently, or from time to time; and
  - numbered representative monitoring locations that are being used to fulfil the monitoring location categories described in **Agency Interest C Table 1**.

Records

(A5) Record, compile and keep all monitoring results required by this document and present this information to the administering authority when requested, in a specified format.

NOTE: *Conditions A6 and A7 relate to mining leases only.*

Financial Assurance

(A6) Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

*NOTE: The calculation of financial assurance for Condition **(A6)** must be in accordance with Guideline 17 and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial Assurance = Highest Total Annual Rehabilitation Cost x Percentage Required)*

(A7) The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority

Maintenance of Measures, Plant and Equipment

(A8) The environmental authority holder must ensure:

(i) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and

(ii) that such measures, plant and equipment are maintained in a proper condition; and

(iii) that such measures, plant and equipment are operated in a proper manner.

Acid sulphate soils (ASS)

(A9) Acid sulfate soils must be managed such that contaminants are not be directly or indirectly released, as a result of the activity, to any waters or the bed and banks of any waters outside the mining leases.

Monitoring

(A10) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.

(A11) Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

Buffer Zones for Sand Extraction Projects

(A12) A buffer from the environmentally relevant activities at the site must be provided to each external boundary of the project site. The buffer must:

(i) be of sufficient width to ensure the continued stability of adjacent lands and the structural integrity of the ponds on-site;
(ii) be of sufficient width to ensure the Melaleuca ecosystems to the north are protected from impact from the activity;
(iii) be vegetated with local endemic riparian species appropriate to the Beachmere area;
(iv) vegetation within the buffer must be progressively rehabilitated by supplementary plantings to establish a vegetated corridor, provide habitat for wildlife, stabilise pond walls and minimise erosion; and
(v) a weed control program must be implemented to progressively remove existing weeds from the buffer and to minimise future weed invasions.

END OF CONDITIONS FOR AGENCY INTEREST A

Agency Interest: Air

(B1) The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.

Dust Nuisance

(B2) The release of dust and/or particulate matter resulting from the ERA must not cause an environmental nuisance at any nuisance sensitive or commercial place.

(B3) When requested by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

a) for a complaint alleging dust nuisance, dust deposition; and
b) for a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere over a 24hr averaging time.

(B4) Dust and particulate matter must not exceed the following levels when measured at any nuisance sensitive or commercial place:

a) Dust deposition of 120 milligrams per square metre per day, when monitored in accordance with Australian Standard AS 3580.10.1 of 2003 (or more recent editions); OR

b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (μm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, when monitored in accordance with:

- Australian Standard AS 3580.9.6 of 2003 (or more recent editions) 'Ambient air
- Particulate matter - Determination of suspended particulate PM10 high-volume sampler with size-selective inlet -Gravimetric method'; or
- any alternative method of monitoring PM10 which may be permitted by the 'Air Quality Sampling Manual' as published from time to time by the administering authority.

END OF CONDITIONS FOR AGENCY INTEREST B

Agency Interest: Water

Release to waters

(C1) Contaminants must not be directly or indirectly released from any source on the licensed place to any waters at any location other than the contaminants and sources at the locations listed below:

(i) NO RELEASES APPROVED FROM THE SITE.

(C2) All water from the screening and processing of materials must be returned to the on-site extraction ponds or sediment ponds.

Monitoring

(C3) Monitoring must be undertaken and records kept for the groundwater and surface water quality characteristics and not less frequently than specified in **Agency Interest C Table 1**. All determinations of the quality of contaminants released must be:

a) made in accordance with methods prescribed in the latest edition of the Environmental Protection Agency Water Quality Sampling Manual; and

b) carried out on samples that are representative of the waters.

Agency Interest C - Table 1 (Water Quality Monitoring)

Monitoring point	Surface water quality characteristics	Minimum monitoring frequency
Wet Plant Pond – fines disposal	pH	Daily
One location in each pond where mining is occurring or fines are stored	pH, Electrical conductivity, Salinity, Water colour (Visual observaton), Pond surface water level (as m AHD)	Weekly or fortnightly as appropriate
One location in each pond where mining is occurring or fines are stored	Titratable Acidity, Hardness (as $CaCO_3$)	Monthly
One location in each pond where mining is occurring or fines are stored	Total Iron and Ferrous Iron and Ferric Iron, Total Aluminium and Dissolved Aluminium	Once every three (3) months
Monitoring point	**Groundwater quality characteristics**	**Minimum monitoring frequency**
Appropriate monitoring locations referred to in Pacific Silica's annual monitoring program	pH, Electrical Conductivity, Water level (as m AHD)	Weekly or fortnightly as appropriate
Appropriate monitoring locations referred to in Pacific Silica's annual monitoring program	Titratable Acidity, Hardness (as $CaCO_3$)	Monthly
Appropriate monitoring locations referred to in Pacific Silica's annual monitoring program	Total iron and ferrous and ferric iron, Total and dissolved aluminium, Sulfate ion, Chloride ion	Once every three (3) months

* Pond includes any pits, lakes and depressions holding greater than or equal to 50 000L ($50m^3$).

(C4) Records of water quality monitoring must include details of:

(i) the locations where extraction is occurring;

(ii) the locations where fines are being returned;

(iii) the locations where fines are being stored;

(iv) water movements (pumping, drainage etc); and

(v) rainfall.

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Drainage for Mineral Sand Extraction Projects

(C5) This environmental authority does not authorise the diversion of natural watercourses.

(C6) For the **Ningi West Mineral Sand Extraction Project only**, a Surface Water Management Plan and a Surface Water Drainage Map must be developed and implemented. The plan and map must be included in the initial and any amended or replacement *Plan of Operations* for the tenement.

(C7) For the **Ningi West Mineral Sand Extraction Project only,** prior to the commencement of each *project stage*, the environmental authority holder must review the Surface Water Management Plan and the Surface Water Drainage Map and make any revisions necessary to update the plan and map.

(C8) Prior to conducting any surface drainage works or alterations (excluding maintenance activities), the local government authority for the project site must be consulted.

(C9) For the **Ningi West Mineral Sand Extraction Project only**, natural flows across the northern boundary of the mining lease must not be restricted to any greater extent than restrictions that predate mining activities. *(This refers to stormwater that is kept separate from, or diverted around, disturbed and potentially contaminated areas on the tenement).*

(C10) No new water discharge locations shall be developed for the site and water discharge rates must not exceed existing flow rates. *(This refers to stormwater that is kept separate from, or diverted around, disturbed and potentially contaminated areas on the tenement).*

Pond conditions

(C11) All ponds used for the storage or treatment of contaminants or wastes must be installed and maintained to prevent any discharge through the bed or banks of the pond from causing environmental harm or environmental nuisance in any waters (including groundwaters) outside the mining leases.

(C12) The holder of the environmental authority must record daily rainfall levels using a rain gauge on site.

Interpretation of Surface and Groundwater Monitoring

(C13) All monitoring data that is collected in accordance with conditions and tables of this Agency Interest must be reviewed and interpreted regularly. All interpretations of the monitoring data must be:

- performed by a person or body possessing appropriate experience and qualifications to perform the required interpretation; and
- documented along with conclusions and recommendations.

END OF CONDITIONS FOR AGENCY INTEREST C

Agency Interest: Noise and vibration

(D1) a) Noise from the activity must not cause an environmental nuisance at any noise sensitive place or commercial place;

b) In the event of a complaint, the activity is only causing an environmental nuisance where noise from the activity exceeds the limits in **Table 2 – Noise Limits.**

Table 2 – Noise Limits

Noise level dB(A) measured as	Monday to Saturday			Sundays and Public Holidays		
	6am - 6pm	6pm - 10pm	10pm – 6am	9am - 6pm	6pm - 10pm	10pm - 9am
	Noise measured at a 'Noise sensitive place'					
$L_{A10, adj, 15 mins}$	Bkg + 5	Bkg + 5	Bkg + 3	Bkg + 5	Bkg + 5	Bkg + 0
$L_{Aeq, adj, 15 mins}$	Bkg + 5	Bkg + 5	Bkg + 3	Bkg + 5	Bkg + 5	Bkg + 0
	Noise measured at a 'Commercial place'					
$L_{A10, adj, 15 mins}$	Bkg + 10	Bkg + 10	Bkg + 8	Bkg + 10	Bkg + 10	Bkg + 0
$L_{Aeq, adj, 15 mins}$	Bkg + 8	Bkg + 8	Bkg + 5	Bkg + 8	Bkg + 8	Bkg + 0

Noise Monitoring.

(D2) When requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within 14 days to the administering authority.

(D3) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

(D4) The extraction of raw material must not be carried out –
a) outside the hours of 6.00 am to 6.00 pm Mondays to Saturdays; nor
b) on Sundays or Public Holidays.

(D5) Blasting is not permitted at this site.

END OF CONDITIONS FOR AGENCY INTEREST D

Agency Interest: Waste

(E1) Effective procedures must be implemented to ensure that wastes generated on the site are minimised, recycled, stored, handled and transferred in a proper and efficient manner, and so that disposal of such waste is at a facility lawfully able to do so.

END OF CONDITIONS FOR AGENCY INTEREST E

Agency Interest: Land

Release of Contaminants to Land

(F1) The environmentally relevant activity must be carried out by such practicable means necessary to prevent the release or likelihood of release of contaminants to land which may cause such land to become contaminated land.

Land rehabilitation

(F2) The authorised place must be rehabilitated (including all disturbed areas such as slopes, borrow pits, stockpile and screening areas) in a manner such that:

- (i) suitable local endemic native species of vegetation are planted and established;
- (ii) potential for erosion of the site is minimised;
- (iii) the quality of stormwater, water and seepage released from the site is such that releases of contaminants such as suspended solids, turbidity, total dissolved salts, pH, total iron, total aluminium, and total manganese are not likely to cause environmental harm;
- (iv) the likelihood of environmental nuisance being caused by release of dust is minimised;
- (v) the water quality of any residual water bodies meets criteria for subsequent uses and does not have potential to cause environmental harm;
- (vi) the final landform is stable and not subject to slumping; and
- (vii) any actual and potential acid sulfate soils in or on the site are either not disturbed; or, submerged, or treated so as to not be likely to cause environmental harm.

(F3) Rehabilitation of disturbed areas must take place progressively as works are staged and new areas of extraction are commenced.

END OF CONDITIONS FOR AGENCY INTEREST F

Agency Interest: Community

G1) All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by the administering authority on request.

END OF CONDITIONS FOR AGENCY INTEREST G

Agency Interest: Cultural Heritage

(H1) All active mine faces must be monitored daily for the occurrence of sub-surface shell deposits.

(H2) Should sub-surface shell deposits or any other material of archaeological significance be detected through the monitoring program, then:

- (i) all work in the area must cease immediately;
- (ii) the *administering authority* must be notified within 24 hours;
- (iii) work must not recommence until directed by the *administering authority*;
- (iv) further management must be in accordance with the requirements of the *administering authority*.

END OF CONDITIONS FOR AGENCY INTEREST H

Definitions

Key terms and/or phrases used in this document are defined in this section throughout this document. Applicants should note that where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

"Act" means the *Environmental Protection Act 1994*.

"administering authority" means the Department of Environment and Heritage Protection or its successor.

"appropriately qualified person" means any person who conforms to the EHP operational policy for an 'appropriately qualified person (analyst)' in accordance with Section 490(7) of the *Environmental Protection Act 1994*.

"authority" means environmental authority (mining activities) under the *Environmental Protection Act 1994*.

"Beachmere Mineral Sand Extraction Project" – comprises mining leases ML50064, ML 50088 and ML50140.

"blasting" means the use of explosive materials to fracture-

- rock, coal and other minerals for later recovery; or
- structural components or other items to facilitate removal from a site or for reuse.

"commercial place" means place used as an office for business or commercial purposes.

"competent person" means a person with the demonstrated skill and knowledge required to carry out the task to a standard necessary for the reliance upon collected data or protection of the environment.

"contaminant" means the definition stated in section 11 of the *Environmental Protection Act 1994*.

"contaminated land" has the meaning provided in Agency Interest 3 of the *Environmental Protection Act 1994*.

"contamination" has the meaning in section 10 of the *Environmental Protection Act 1994* which defines *contamination* of the environment as the release (whether by act or omission) of a *contaminant* into the environment.

"environment" Section 8 of the *Environmental Protection Act 1994* defines the environment as:

- ecosystems and their constituent parts, including people and communities; and all natural and physical resources; and the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; and the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs above.

"environmental authority" means a licence, permit or approval issued by the *administering authority* under the Environmental Protection Act 1994.

"**extraction**" means the process of removing raw material from its natural state in the earth to be used to produce a saleable product or removed for other purposes.

"financial assurance" means a security deposit, either cash or a bank guarantee, that is held by the *administering authority* to cover the potential:

- costs to rehabilitate areas disturbed by mining activities; and
- costs to restore property improvements disturbed by mining activities; and
- failure of the tenure holder to pay rents and royalties.

"land" means land excluding waters and the atmosphere.

"L_{Aeq}, adj, 15 mins" means an equivalent time averaged A-weighted sound pressure level, adjusted for tonal character, that within a 15 minute period has the same mean square sound pressure of a sound that varies with time.

"L_{A10}, adj, 15 mins" means the A-weighted sound pressure level, adjusted for tonal character or impulsiveness, that is exceeded for 10% of a 15 minute period when measured using time-weighting 'F'.

"mg/L" means milligrams per litre.

"Mine" has the meaning defined in the *Mineral Resources Act 1989.*

"mineral" means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes—

- clay if mined for use for its ceramic properties, kaolin and bentonite;
- foundry sand; hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil therefrom; limestone if mined for use for its chemical properties; marble; mineral oil or gas extracted or produced from shale or coal by in situ processes; peat; salt including brine; shale from which mineral oil may be extracted or produced;
- silica, including silica sand, if mined for use for its chemical properties; rock mined in block or slab form for building or monumental purposes; but does not include— living matter; petroleum within the meaning of the Petroleum Act 1923; soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form; water.

"minimum" means that the measured value of the quality characteristic or contaminant must not be less than the release limit stated.

"Ningi West Mineral Sand Extraction Project" comprises mining lease ML50156.

"noise sensitive place" means-

- a dwelling, mobile home or caravan park, residential marina or other residential premises; or a motel, hotel or hostel; or a kindergarten, school, university or other educational institution; or a medical centre or hospital; or a protected area; or a park or gardens.

"noxious" means harmful or injurious to health or physical well being, other than trivial harm.

"offensive" means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

"plan of operations" means a planning document required under the *Environmental Protection Act 1994* for a mining project. The plan must be submitted to the *administering authority* prior to carrying out activities on the mining lease. The plan must contain an Action Program that will demonstrate how the holder of the environmental authority will meet the conditions of the environmental authority and EMOS (Environmental Management Plan).

"protected area" means - a protected area under the *Nature Conservation Act 1992*; or a marine park under

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

"sensitive place" means;

- a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or a motel, hotel or hostel; or an educational institution; or a medical centre or hospital; or a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area; or a public park or gardens; or a place used as a workplace, an office or for business or commercial purposes which is not part of the mining activity and does not include employees accommodation or public roads.

"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea) or any part-thereof.

END OF PERMIT

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