



**Queensland
Government**

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ANNEXURE 1 - SITE MANAGEMENT PLAN

DATE OF EFFECT: 21/03/2012

LOT: 1 PLAN: RP604139
LOT: 2 PLAN: RP604319

FILE REF: BNE32580

RPD: Lot 1 on Registered Plan 604139 and Lot 2 on Registered Plan 604139

SITE MANAGEMENT PLAN (SMP) – PARKHURST PLANT, ROCKHAMPTON

1. Summary of Contamination

General

Since 1958, the site was used by an independent company for every aspect of cement manufacturing and production (ERA 41) (ie: ivory clinker/cement, grey cement, quicklime, hydrated lime and magnesite) up until its closure in 2009. Apart from cement and chemical manufacture, other Environmentally Relevant Activities (ERAs) which have occurred on the site, have included crude oil or petroleum storage (ERA 8 – Chemical storage). A review of previous annual returns dating back to 2005 for the site has revealed only a small number (less than 10) of noise and dust complaints have been generated from the site, and that the only Notifiable Environmental Incidents recorded, were related to stack emissions. Lot 2 is listed on the Environmental Management Register for Notifiable Activities 21 Lime Burning and 29 Petroleum Product or Oil Storage, and neither Lot is listed on the Contaminated Land Register.

Groundwater

Groundwater monitoring has been conducted at three locations (see **Figure 1**) across the site, on a quarterly basis for over 20 years. These have encountered groundwater at depths of between 5 to 8m, with some fluctuations during seasonal changes. Based on data recorded quarterly since 2008, sampling has highlighted the following low level contaminants:

Heavy Metals	chromium	0.001 - 0.009 µg/L
	copper	0.001 - 0.006 µg/L
	cadmium	0.0001 - 0.0009 µg/L
	mercury	0.0001 – 0.0042 µg/L
	zinc	0.005 - 0.061 µg/L
Total Petroleum Hydrocarbons	C ₁₀ -C ₁₄	< 50 - 90 µg/L
	C ₁₅ -C ₂₈	< 100 - 400 µg/L
	C ₂₉ -C ₃₆	< 50 - 240 µg/L
	Total TPH	50 - 730 µg/L
Electrical Conductivity		1096 - 8810 µS/cm

Removal and validation of UST

A 2002 remediation report for the removal of two underground fuel storage tanks identified no contamination of the soil by petroleum hydrocarbons or heavy metals present in the samples analysed.

Above ground diesel storage tanks and hydrocarbon storage

Licensing for the site includes two aboveground diesel storage tanks. No formal site contamination assessment of the ASTs has been undertaken to identify the potential for soil contamination by petroleum hydrocarbons. However, there is visual evidence of potential soil contamination by petroleum hydrocarbons around the former ASTs south of the vertical kiln (southern section of site).

Electrical transformers

The site includes electrical transformers at several locations around the site. Sampling of the oil in the transformers in 2008 indicated no polycyclic biphenyls (PCBs) were identified in the oil.

Other known or potential contaminants

An environmental due diligence audit conducted in 2002, revealed a number of issues including hazardous substances, stormwater, air emissions, waste management, noise and asbestos management. A site inspection in March 2011 also identified a number of potential contamination issues. Based on the audit and site inspection there is potential soil contamination associated with (refer **Figure 1** for locations):

- General waste material located in the former Lime Kiln Dust (LKD) stockpiles.
- Vehicle and equipment washdown area.
- Former hydrocarbon banded areas that contain evidence of spills.
- The use of pesticides/herbicides for weed control.
- Plant equipment recycling and laydown areas.
- A light vehicle workshop pit area (pit is concrete filled and sealed).
- Storage of fuel and oil drums at dedicated areas across the site.
- Product stockpiles.
- Stormwater drains collecting potentially contaminated runoff (including from off the site).
- Asbestos fibres in buildings and equipment.
- Two USTs located outside of the workshop (in 1963) which were not subject to an assessment at the time of their removal in 1999. Given the extended period since removal, it is unlikely there is any significant contamination by petroleum hydrocarbons in this area.

2. Objectives of the SMP

To manage the identified contamination and address any potential contamination on Lot 1 on RP604139 and Lot 2 on RP604139 prior to any future works occurring on the site (ie: demolition, excavation) to protect human health and the environment. These objectives will be achieved through:

- preventing migration of known or potential contamination from the site; and
- the application of controls on site excavation and demolition works.

3. Achievement and Management Objectives

Responsibility

The owner (or the owner's agent) of the land as defined in the *Environmental Protection Act 1994* is to ensure that this SMP and any variations to this SMP approved or applied by the administering authority are complied with to ensure that the plan objectives are achieved and maintained.

Site Use

Provided the conditions of this SMP are complied with, the subject land is suitable for continued use as industrial/commercial land.

Provision of SMP to appropriate persons

The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or demolition or excavation works with a copy of this SMP.

General Environmental Protection

Site works relating to the demolition of structures, and/or excavation, removal and disposal of soil from the site are to be undertaken in accordance with general environmental protection measures, to avoid any unwanted migration and deposition of soil. These measures include the control of dust, noise, stormwater runoff, sediment, erosion, disposal of wastes (ie: drums, equipment, building materials), and odour releases involving the handling or movement of contaminated material.

Workplace Health and Safety

A Workplace Health and Safety Plan which satisfies relevant obligations of the *Workplace Health and Safety Act 1995*, subordinate legislation or its equivalent is to be developed for all site work involving demolition and excavation on the site. This plan must specifically address measures to minimise dermal, ingestion and inhalation exposures to site contaminants, including asbestos.

All persons involved in onsite demolition and excavation activities, must be informed of the nature of contamination and receive training prior to commencement onsite to ensure they perform their respective tasks in a safe manner. All contamination safety and excavation processes are to be documented and records kept which demonstrate site management plan compliance.

Unexpected Contamination

If during works on the site offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, action is to be taken immediately to abate the environmental harm, works are to immediately cease, and the administering authority notified and advised of appropriate remedial action. Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994*.

Soil Excavation and Removal

Any soil or material excavated on the site, particularly in relation to those identified areas listed above in **Section 1**, must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options.

The removal of LKD is to be undertaken in accordance with the conditions of a DERM approved Beneficial Use Approval.

Representative sampling and analysis of soil from excavations across the site must be managed by a suitably qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994*. Contaminated soil must not be removed offsite without a disposal permit in accordance with Section 424 of the *Environmental Protection Act 1994*.

4. Monitoring and Reporting

A biennial review of the site including a review of inspection, excavation, soil disposal, safety records and site management plan compliance is to be undertaken by the owner and records kept for review by the administering authority from time to time.

For the period the site remains in its current condition, biennial monitoring of the groundwater bore locations must be conducted by persons with relevant qualifications and experience. The monitoring program shall include analysis of heavy metals and total petroleum hydrocarbons, and laboratory analysis will be performed by a NATA certified laboratory.

The biennial period is to commence from the effective date of this plan.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

LEGEND

	Building FT		3000' Boundary
	5000' Boundary		PLE - Public Line - Quality First
	1000' Boundary		PLE - Public Line - 1000' Zone
	500' Boundary		PLE - Public Line - 500' Zone
	200' Boundary		PLE - Public Line - 200' Zone
	100' Boundary		PLE - Public Line - 100' Zone
	50' Boundary		PLE - Public Line - 50' Zone
	25' Boundary		PLE - Public Line - 25' Zone
	12.5' Boundary		PLE - Public Line - 12.5' Zone
	6.25' Boundary		PLE - Public Line - 6.25' Zone
	3.125' Boundary		PLE - Public Line - 3.125' Zone
	1.5625' Boundary		PLE - Public Line - 1.5625' Zone
	0.78125' Boundary		PLE - Public Line - 0.78125' Zone
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	0.1953125' Boundary		PLE - Public Line - 0.1953125' Zone
	0.09765625' Boundary		PLE - Public Line - 0.09765625' Zone
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**Parkhurst Facility
Rockhampton**

Stage One Site Assessment

for
Cement Australia

Report ref: 216485-002

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Revision 3

aurecon

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Executive Summary

Background

The requirements for the eventual decommissioning of the Parkhurst cement facility in Rockhampton include the preparation of a Site Management Plan (SMP) which will form the basis of the surrender documentation submitted to the Queensland Department of Environment and Resource Management (DERM). The SMP will also inform any future owners of the site regarding the condition of the site.

This report provides the assessment and context used to develop the SMP.

Site Description and History

The site is located within the County of Livingstone, Parish of Murchinson, in the local government jurisdiction of Rockhampton Regional Council. The site is described as:

- Lot 1 on Registered Plan RP604139 – freehold.
- Lot 2 on Registered Plan RP604139 – freehold.

The subject site was originally rural and was used by the US Army as a camp site prior to 1958¹. Between 1958 and 1963 the site was used for cement bag distribution by Central Queensland Cement, and in 1963 a 100,000 t / annum cement grinding facility was built. In 1966 the plant was expanded to include additional equipment and facilities for clinker manufacture. A clay mine was also established. In 1994 the plant underwent a significant downsizing and a horizontal kiln was commissioned for lime production. Around this time three residential dwellings were removed from the site. The horizontal kiln went on to manufacture Grey Cement, Ivory Cement, Ivory Clinker, Quicklime, Hydrated Lime and Magnesite over the life of the facility. The site was mothballed in 2009.

Risk assessment and conceptual site model

Based on the site history, existing reports and data and a site inspection, there is likely to be low to moderate level contamination of some soils within the Parkhurst site. A risk review has been undertaken in the form of a conceptual site model (CSM) and a risk characterisation.

Conclusions

Conclusions for the former Parkhurst cement facility site assessment are:

- There are eighteen (18) identified areas of environmental concern relating to known or potential soil and/or groundwater contamination on this site. Of these, only seven (7) were considered to be the highest risk level identified in this assessment of low-moderate risk to human or ecological health. These risks may occur during current site use and construction works for further development. It is not possible to assess a risk where the proposed development and works is not known.
- The remaining eleven (11) areas of environmental concern are considered low risk for potential use of the site as light industrial. Only minor additional assessments may be required where a more sensitive use, such as residential, are proposed.
- Based on a review of existing data, the storage of lime kiln dust at the Parkhurst site has not in the past created any adverse environmental effects to the groundwater in the vicinity of the site. Aurecon is not aware of any other potential contaminate issues which may arise in the future from the storage of the lime kiln dust.

Recommendations

Recommendations for the former Parkhurst cement facility site assessment are:

- A Site Management Plan (SMP) is required for the subject site to address the unknown extent and concentration of potential soil contamination at specific locations and around the general process equipment areas. The SMP is aimed at protecting human and ecological health by preventing migration of known or potential contamination from the site and the application of controls on excavation and demolition works.
- For future proposed uses more sensitive than the current use, or where potentially contaminated soil is to be removed from the site, site contamination assessments, including intrusive sampling are recommended for laydown and equipment storage areas, storage sheds, kiln and oil storage areas, waste material storage areas, kiln dust stockpile area, fuel oil storage area and specific areas around the general site where the proposed sensitive use requires confirmation of potential soil contaminants.
- For the proposed industrial use, where it is understood that the kiln and associated storage and packaging infrastructure areas will continue operation for processing of magnesia, Aurecon recommends that all relevant personnel comply with the Site Management Plan (described above) at all times, along with the standard regulatory approval conditions for an operating industrial facility.

¹ The site history is largely based on Complete Workplace Solutions, *Environmental Due Diligence Audit, Pacific Lime* Rev 0, July 2002.

1. Introduction

1.1 Background and Objective

The requirements for the decommissioning of the Parkhurst cement facility in Rockhampton include the preparation of a Site Management Plan (SMP) which will form the basis of the surrender documentation submitted to the Queensland Department of Environment and Resource Management (DERM). The SMP will also inform any future owners of the site regarding the condition of the site.

The objectives of this Stage One assessment are to:

- Undertake an assessment of the site to identify the nature and extent of possible contamination associated with the site operation.
- Identify potential management strategies where contamination is identified.
- Identify information gaps and proposed approach to address (if possible).
- Ensure that the site assessment is conducted in accordance with the *(Draft) Queensland EPA Guidelines for the Management of Contaminated Land in Queensland* (1998) and the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM).

1.2 Project team

The assessment team, including backup resources, includes:

- Project Leader: [sch4p4(6) Person] Aurecon, Mackay
- Lead Field Scientist: [sch4p4(6) Person] Aurecon, Gladstone
- Senior Hydrogeologist: [sch4p4(6) Person] (Aurecon, Brisbane)
- QA/Review [sch4p4(6) Person] (Aurecon, Bne) / Stephanie Kiem (Aurecon, Mackay)

Neil Proposch is a Queensland DERM Approved Person for undertaking site contamination assessments in Queensland.

1.3 Limitations of this Report

The outcome of this report is limited to information supplied for the activities associated with the services conducted by Aurecon only.

Soil and rock formations are often variable, resulting in heterogeneous distribution of contaminants across a site. Contaminant concentrations may be estimated at chosen sample locations, however, conditions between sample sites can only be inferred on a basis of geological and hydrological conditions and the nature and the extent of the identified contamination. Boundaries between zones of variable contamination are often indistinct, and therefore interpretation is based on available information and the application of professional judgement. The accuracy with which sub-surface conditions are characterised depends on the frequency and methods of sampling and the uniformity of sub-surface conditions and is therefore limited by the scope of the works undertaken.

We note that this report has been prepared for the use of Cement Australia and is based on information provided by them. The report is intended to inform the Queensland Department of Environment and Resource Management (DERM), including any appointed Third Party Reviewer if appropriate, to assist with decision-making processes associated with the proposed development. Aurecon takes no responsibility and disclaims all liability whatsoever for any loss or damage that the Cement Australia may suffer as a result of using or relying on any such information or recommendations contained in this report, except to the extent Aurecon expressly indicates in this report that it has verified the information to its satisfaction. This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should further information become available regarding the conditions at the site, including previously unknown likely sources of contamination, Aurecon reserves the right to review the report in the context of the additional information.

2. Standards and Assessment Criteria

2.1 Soil standards

The assessment of human health risks and ecological risks of soils and groundwater associated with the Parkhurst facility has been undertaken by comparing possible levels of contaminants on the site with appropriate investigation levels. An investigation level refers to the concentration of a contaminant above, which further appropriate investigation, and evaluation is required.

Assessment of soil contamination in Queensland is based on the Queensland Government's Department of Environment (DoE the former title of the EPA and now DERM) (1998) *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (DERM Draft Guidelines)*. These guidelines include Health Based Investigation Levels (HILs) for various exposure settings, together with environmental investigation levels. DERM considers that the most sensitive land use is low density residential and uses this as the benchmark for decisions regarding the removal of land from the Environmental Management Register (EMR).

Based on the likely "light industrial" land use of this site, the acceptance criteria are:

- *DERM Draft Guidelines* HILs 'F' for Commercial/Industrial, including shops, offices, factories and industrial sites.

Should a more sensitive use be proposed, the more appropriate acceptance criteria are:

- *DERM Draft Guidelines* HILs 'A' for Residential.

The above guidelines are supplemented by the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 1999) *Schedule B(7A) Health Based Investigation Levels*. The NEPM Health based Investigation Levels were developed to protect human health and are based on risk assessments for long-term land use and can be adopted for the purposes of a preliminary screening assessment of soil contaminants. The relevant acceptance criteria for the project under NEPM are the same as the DERM guidelines. Note, the NEPM is currently being updated (2010/2011) and a revised set of HILs has been developed. Under the new *Draft NEPM*, the acceptance criteria for light industrial sites are described as HIL (D) for commercial / industrial sites.

The DERM draft guidelines are supplemented by Draft DERM investigation levels for total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (MAHs or BTEX), polycyclic aromatic hydrocarbons (PAHs), Phenol and Lead which have been formulated by the Waste Management Branch, Contaminated Land Section (EPA 1999). Levels of contaminants above these levels require site specific assessment for the particular intended future use of the land.

The *Standards Australia, (2005), AS/NZS 4482.1 –2005, Guide to the Investigation and Sampling of Sites with potentially contaminated soil – Non-volatile and semi-volatile compounds* and *Standards Australia, (1999), AS/NZS 4482.2 –1999, Guide to the Sampling and Investigation of potentially contaminated soil – Volatile Substances* documents were also utilised while undertaking this assessment.

2.2 Water quality standards

In March 2006 DERM implemented the Queensland Water Quality Guidelines (QWQG) and updated these in 2009. These guidelines complement the ANZECC Water Quality Monitoring Guidelines (ANZECC 2000), but expand them to suit the specific catchment regions within Queensland.

Guidelines are present for the Central Queensland region for all water types, except for wetlands. Wetland guidelines are from ANZECC (2000).

It is also noted that much of the data in generation of water guideline values for Central Queensland has been derived from data south of Rockhampton due to the paucity of data available for the region north of Rockhampton.

The National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 1999) *Schedule B (1) - Guideline on Investigation Levels for Soil and Groundwater* provides groundwater quality guidelines developed to protect aquatic ecosystems, drinking water and agricultural uses (eg stock watering). These guidelines may be used where there are no guidelines identified in the Queensland Water Quality Guidelines (2009).

The acceptance criteria for groundwater assessment at this site is the adjusted ANZECC Trigger Value (2000) - 95% protection of ecology based on the nearest surface water receptor (Limestone Creek) (Figure 3-1), considered to be a slightly to moderately disturbed surface water system. Adjustment is made for the hardness of the water, which can increase trigger values for some metals by a factor of 2.5 to 2.7.

An unpublished Qld EPA guideline of 500 µg/L for Total TPHs may be used for comparative purposes.

2.3 Interpretation of soil and water standards

The various guideline documents refer to 'Investigation Levels' and 'Response Levels':

- An Investigation Level for a contaminant is the concentration above which further investigation and evaluation will be required. These can be HILs or EILs.
- A Response level is the concentration above which some form of response is required to protect human health and /or the environment.

In this assessment, exceedance of the guideline concentrations is considered to indicate that the potential for contamination exists and that further investigation should be undertaken to more accurately quantify the nature and extent of the indicated contamination, or that some management response, such as remediation, is appropriate. It should be noted that HILs and EILs are not cleanup levels or response levels nor are they desirable soils quality criteria (*Schedule B(1) NEPM, 1999*). They are to be used for assessment of existing contamination only and are intended to prompt an appropriate site specific assessment where they are exceeded. The inappropriate use of investigation levels as default remediation criteria may result in unnecessary remediation adding to development costs, causing unnecessary disturbance to the site and local environment and is a potential waste of valuable landfill space. Similarly, it is an abuse of investigation levels if they are interpreted as condoning contamination to these levels.

The above documents emphasise that the "Guideline Values" are intended only as a guide and site-specific factors need to be taken into account in reaching a decision on the nature and intensity of further investigations or responses required.

In Queensland, soil EILs and HILs are default values designed to protect the environmental and human receptors respectively.

Surface and groundwater analytical results are to be assessed against the QWQG and ANZECC 2000 guidelines. Given the site location, freshwater guidelines will be used.

2.4 Data quality objectives

Data Quality Objectives (DQOs) are part of the process of investigation of potentially contaminated sites and are qualitative and quantitative criteria that are focused on:

- a) Collecting the information needed to make decisions
- b) Answering the relevant questions leading up to such decisions.

In general, DQOs provide the basis for, and general direction of, the site assessment and site management processes.

The DQOs, based on the standard 7-step approach, for the Parkhurst site are shown in Table 2-1.

Table 2-1 Data Quality Objectives for the Parkhurst Assessment

Process	Response
Step 1: State the Problem	Activities associated with the cement facility, refuelling area, above ground fuel storage tanks, parking area and chemical storage have potentially contaminated the soil and/or groundwater within the subject site.
Step 2: Identify the Decision	If identified, do the concentrations of heavy metals, TPH, BTEX, PAH and Polychlorinated biphenyls (PCBs) in the soils exceed guideline levels for commercial / industrial areas? If identified are the concentrations of the above contaminants likely to contribute to soil contamination offsite or in groundwater? If contaminated, what is the area and depth of the soil contamination?
Step 3: Identify the Inputs to the Decision	Field observations, interviews and review of existing assessments of the subject site.
Step 4: Define the Boundaries of the Study	Within the fenced area of the subject site, but not including the Main Dam
Step 5: Develop a Decision Rule	Decisions to be based on adopted site assessment criteria including Queensland DERM HILs for commercial and industrial sites (1998).
Step 6: Specify Tolerable Limits on Decision Errors	Data quality indicators are to be used to evaluate data acceptability. Data quality review is to be undertaken to assess if objectives are met.
Step 7: Optimise the Design for Obtaining Data	Review of existing information to be assessed for suitability. All reporting is deemed to be of an acceptable standard unless otherwise advised.

2.5 Proposed site use

For this assessment the nominated end use of the overall site is "commercial / industrial".

It is recognised that there may be other proposed uses and the report comments on these where appropriate.

3. Site Characteristics and History

3.1 Site Description and Planning

The site is located within the County of Livingstone, Parish of Murchinson, in the local government jurisdiction of Rockhampton Regional Council. The site is shown in Figure 3-1 and is described as:

- Lot 1 on Registered Plan RP604139 - freehold
- Lot 2 on Registered Plan RP604139 – freehold.

From the Rockhampton Regional Council Strategic Plan (May 2009), the area is zoned as an Industrial Precinct and is identified as Parkhurst High Impact Industry. The intent of future development within this area is described in the strategic Plan as:

In the event Cement Australia cease operations at their current site and abandon the use, it is intended the site be redeveloped only for a use that has the same level of impact or less. To remove any doubt however, it is intended that Cement Australia be able to continue and if it wants to, expand, their existing operations in the Precinct. The site currently provides a buffer to Yaamba Road through the provision of an expansive vegetated earth mound. Any redevelopment of the site is to retain this buffer to assist in reducing the potential for conflict between incompatible land uses, such as the Parkhurst Gardens residential community across the highway.

3.2 Climate

Climate averages² for the area are:

- Mean Daily Temperature (annual average) : 19.0 °C (Min)
: 26.4 °C (Max)
- Relative Humidity Range (annual average) : 74% (9am)
: 68% (3pm)
- Mean Rainfall (annual average) : 1567.2 mm

3.3 Geology and soils

The geology of the site is underlain by Quaternary alluvial deposits consisting of gravel, sand, silt and clays. The alluvium is likely to overlie the Rockhampton Group of Palaeozoic age that comprises mudstone, siltstone, conglomerate and limestone (Geological Survey of Queensland, 1:250 000 Series, Rockhampton).

3.4 Hydrology and hydrogeology

The headwaters of Limestone Creek are at the southern end of the site.

Historical and ongoing groundwater monitoring on the Parkhurst site indicates that the groundwater resource generally flows from northeast to southwest at an approximate depth of less than 8m below ground level.

3.5 Topography

The site is generally flat with gentle undulations at the rear of the site.

² Source: Bureau of Meteorology website <http://www.bom.gov.au/>

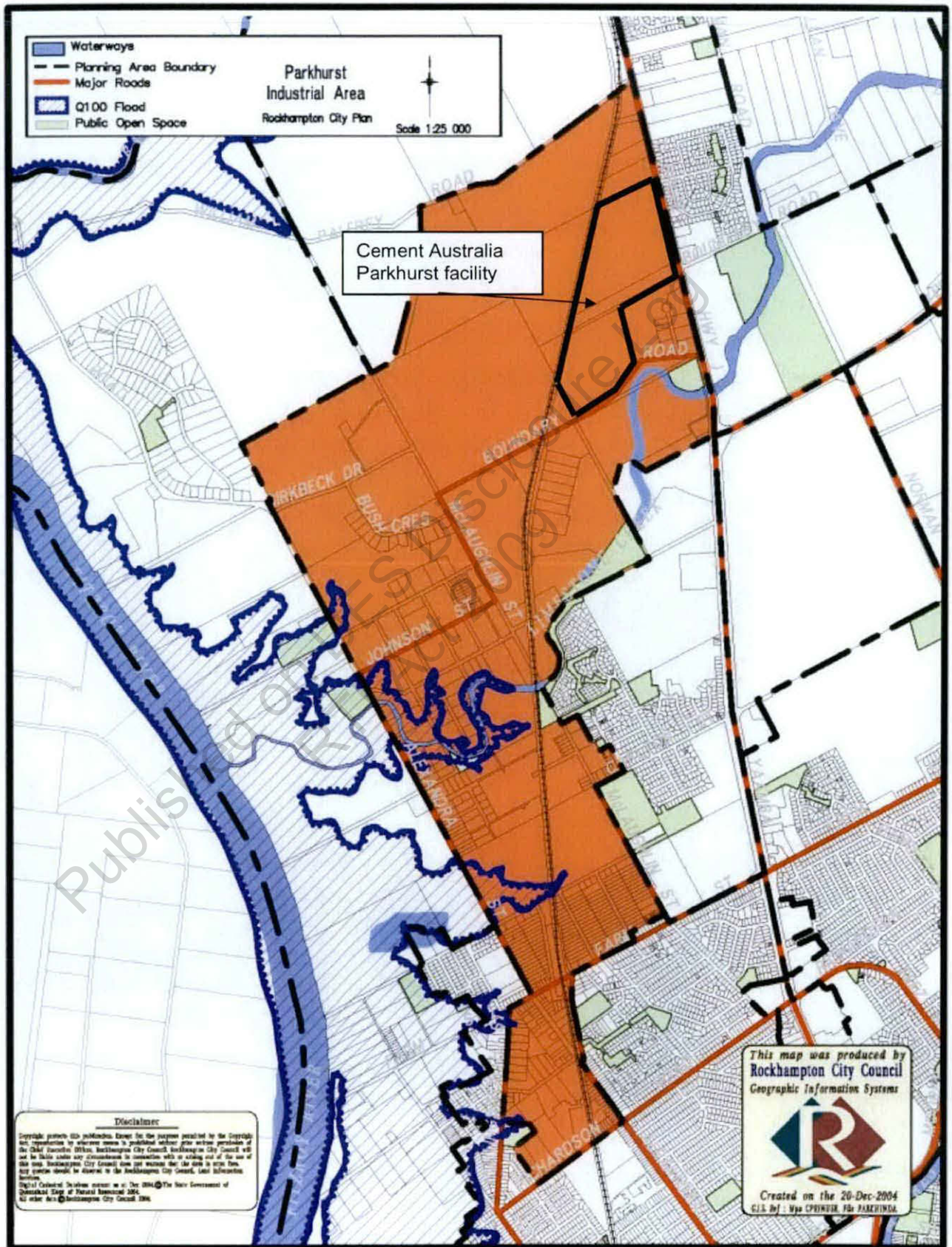


Figure 3-1 Site location and Lot on Plan

3.6 Site History

The subject site (Figure 3-2) was originally rural and was used by the US Army as a camp site prior to 1958³. Between 1958 and 1963 the site was used for cement bag distribution by Central Queensland Cement, and in 1963 a 100,000 t/annum cement grinding facility was built.

In 1966 the plant was expanded to include additional equipment and facilities for clinker manufacture. A clay mine was also established.

In 1994 the plant underwent a significant downsizing and a horizontal kiln was commissioned for lime production. Around this time three residential dwellings were removed from the site. The horizontal kiln went on to manufacture Grey Cement, Ivory Cement, Ivory Clinker, Quicklime, Hydrated Lime and Magnesite over the life of the facility.

The site was mothballed in 2009.

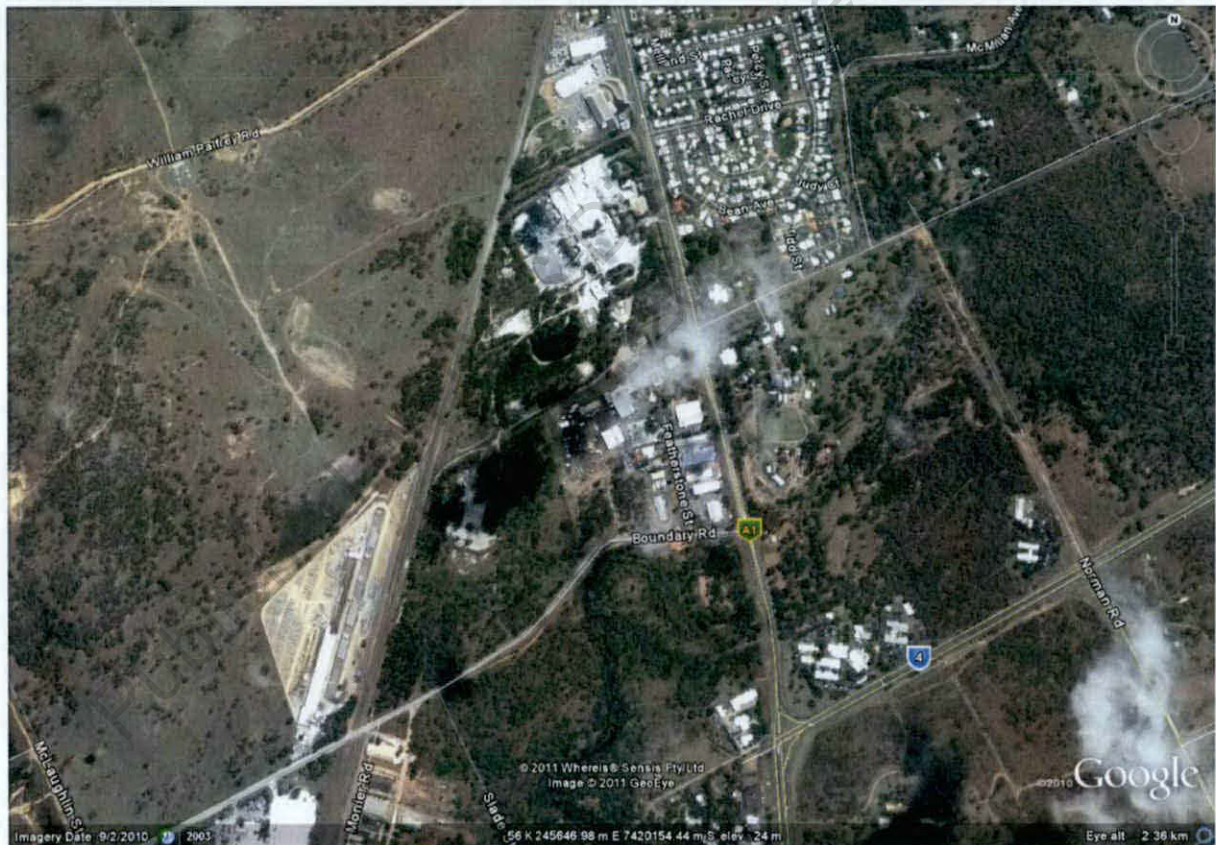


Figure 3-2 Aerial photograph of the site (2010)

3.7 Previous Studies, Assessments and Reports

3.7.1 General

The following is a summary of reports and documents reviewed in assessing the known and potential contaminants for this site. Only issues relevant to potential site contamination or the site management plan are noted.

³ The site history is largely described from Complete Workplace Solutions, *Environmental Due Diligence Audit, Pacific Lime Rev 0*, July 2002.

3.7.2 Draft Annual Return 2005

Relevant points from this report are:

- The Parkhurst facility diversified its operations over the course of 2005 with the production of Grey Cement, Magnesite, Ivory Cement, Ivory Clinker, Quicklime and Hydrated lime.
- This Annual Return reports on the plants environmental obligations under Cement Australia's Environmental Authority Number CR0020.
- ERA's operating on the site included 60 - cement manufacture, 6 - chemical manufacture (20kt - 100kt), 11 - crude oil or petroleum storage (10kL - 500 kL) and 16 - fuel burning.
- Groundwater monitoring indicates possible natural or external sources of some elevated heavy metals. No identifiable issues for the subject site.

3.7.3 Draft Annual Return 2006

Relevant points from this report are:

- The Parkhurst facility produced of Grey Cement, Magnesite, Ivory Cement, Ivory Clinker, Quicklime and Hydrated lime.
- This Annual Return reports on the plants environmental obligations under Cement Australia's Environmental Authority Number CR0020.
- ERA's operating on the site included 60 - cement manufacture, 6 - chemical manufacture (20kt - 100kt), 11 - crude oil or petroleum storage (10kL - 500 kL) and 16 - fuel burning.
- Groundwater monitoring indicates possible natural or external sources of some elevated heavy metals. Minor total petroleum hydrocarbon issues identified for the subject site, but levels noted as below acceptance criteria.

3.7.4 Draft Annual Return 2007

Relevant points from this report are:

- The Parkhurst facility focussed on Ivory and Grey Cement production and operated infrequently due to planned shuts and equipment problems.
- This Annual Return reports on the plants environmental obligations under Cement Australia's Environmental Authority Number CR0020.
- ERA's operating on the site included 60 - cement manufacture, 6 - chemical manufacture (20kt - 100kt), 11 - crude oil or petroleum storage (10kL - 500 kL) and 16 - fuel burning.
- Groundwater monitoring indicates possible natural or external sources of some elevated heavy metals (chromium, copper, mercury and zinc). No identifiable issues for the subject site.

3.7.5 Draft Annual Return 2008

Relevant points from this report are:

- The Parkhurst facility focussed on Ivory and Grey Cement production and operated infrequently due to planned shuts and equipment problems.
- This Annual Return reports on the plants environmental obligations under Cement Australia's Environmental Authority Number CR0020.
- ERA's operating on the site included 60 - cement manufacture, 6 - chemical manufacture (20kt - 100kt), 11 - crude oil or petroleum storage (10kL - 500 kL) and 16 - fuel burning.
- Groundwater monitoring indicates possible natural or external sources of some elevated heavy metals (chromium, copper, mercury and zinc). No identifiable issues for the subject site.

3.7.6 Draft Annual Return 2009

Relevant points from this report are:

- The Parkhurst facility focussed on Ivory Cement production and operated infrequently due to planned shuts and equipment problems. The Plant was mothballed in August 2009.
- This Annual Return reports on the plants environmental obligations under Cement Australia's Environmental Authority Number CR0020.
- ERA's operating on the site included 41 - cement manufacture and 8 - chemical storage.
- Groundwater monitoring indicates possible natural or external sources of some elevated heavy metals (chromium, copper, mercury and zinc). No identifiable issues for the subject site.

3.7.7 Environmental Due Diligence Audit, Pacific Lime, July 2002

The scope of the 2002 audit by Complete Workplace Solutions for this site was limited to:

- determining the legislative framework controlling the operations;
- assessing compliance against this framework;
- assessing the ability for current environmental management system documents to meet legislative requirements and good environmental practice; and
- recognition of opportunities to apply better environmental management practices where possible.

Relevant points from this report are:

- Potential issues relating to spill and stormwater management around chemical storage. The audit report discusses "contaminated stormwater", however, no evidence of contamination of the stormwater by the main chemicals of concern (heavy metals, petroleum hydrocarbons, herbicides/pesticides, PCBs) was actually identified in the report.
- PCBs were identified as being possibly contained in the site transformers, but this could not be confirmed.
- Asbestos was identified as a significant issue for this site.
- Potentially contaminating activities or equipment on the site included:
 - cement manufacturing facility.
 - coal storage and handling
 - vehicle washdown area
 - two fuel bowsers located in the roadway southwest of the Administration building
 - two diesel/unleaded petrol usts - (4,500L and 13, 600L)
 - paint storage
 - waste hydrocarbon storage adjacent to lime kiln (waste grease and two aboveground diesel tanks)
 - electrical transformers
 - 5,000L diesel tank and 37,500L vertical tank of high performance fuel oil (HPFO) near coal mill.
- Two underground storage tanks (USTs, 4,500 L petrol and 2,500 L diesel) were installed outside the workshop in 1963 when operations were expanded. These two tanks were removed in 1999 and an assessment of the tank pit for contamination was not conducted during removal.

3.7.8 Parkhurst Groundwater March 2011 (1st Quarter 2011)

The groundwater monitoring reports provide results of groundwater monitoring by Aurecon undertaken on a quarterly basis. The three bores sampled are:

- Bore GB1 – located in the southeast corner of the Parkhurst Plant Property
- Bore GB2 – located in the southwest corner of the Parkhurst Plant Property
- Bore GB3 – located at the northern boundary of the Parkhurst Plant Property

Water samples collected from the three monitoring wells at the Parkhurst Plant are analysed for heavy metals and metalloids including arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, tin and zinc. Analyses for Total Petroleum Hydrocarbons (TPH) are also undertaken.

Results for this monitoring period were compared to the adjusted ANZECC Water Quality Guidelines (2000) - 95% protection, where available, and are presented graphically. The 95% protection criteria has been assigned as the nearest surface water receptor to the site is Limestone Creek (located 500 m - 1000 m East South East of the site), which is considered to be a slightly to moderately disturbed surface water system.

The conclusions from this round of recent (2011) groundwater monitoring include:

- Groundwater flow remains in a northeast to southwest direction
- Groundwater levels have increased in all monitoring wells due to summer rains
- The pH level was below the adjusted ANZECC trigger value for 95% protection range (6.5 -8.0) for GB2 (6.38)
- The EC level recorded at GB2 (2,879 $\mu\text{S}/\text{cm}$) was above the adjusted ANZECC trigger values for 95% protection (2,200 $\mu\text{S}/\text{cm}$).
- Cadmium concentrations in the sample from GB1 (0.006 mg/L) were above the ANZECC trigger value of 0.00054 mg/L (assessed as not likely to be from activities on the subject site).
- Zinc concentrations from the sample taken from GB2 (0.022 mg/L) were above the ANZECC trigger value of 0.02 mg/L
- Copper concentrations in GB1 and GB1 (0.004 mg/L) were above the ANZECC trigger value of 0.0035 mg/L.
- All other metal and metalloid concentrations were below the respective adjusted ANZECC trigger values for 95% protection
- TPH concentrations were below LOR in the samples from all monitoring bores this quarter

The data reviewed for this SMP assessment, and included in the March groundwater report, is from 2008 to 2011.

The September 2010 groundwater assessment included an additional review in relation to the storage of lime kiln dust, and concluded:

Based on a review of existing data, the storage of lime kiln dust at the Parkhurst site has not in the past created any adverse environmental effects to the groundwater in the vicinity of the site. Aurecon is not aware of any other potential contaminate issues which may arise in the future from the storage of the lime kiln dust.

3.7.9 Pacific Lime Parkhurst Plant Rockhampton, Queensland Stage 1 Investigation & Validation Report – Underground Tank Removal 15 August 2002

In 2002 Pacific Lime commissioned Connell Wagner (now Aurecon) to conduct a limited Stage 1 level Environmental Site Investigation at the plant at Parkhurst, Rockhampton associated with removal of two underground petroleum storage tanks (USTs).

An interview was conducted with Mr Graham Underdown, a Pacific Lime employee who has been familiar with the site since 1968. Graham said that the USTs held both diesel and leaded fuels with the tank volumes of 9100L and 4550L respectively. The smaller tanks fill point was south of the other. The exact date of tank installation is unknown, however Mr Underdown does not recall any environmental incidents associated with the tanks, nor have any been documented by Pacific Lime.

The USTs appeared to be in good condition on excavation and removal with no visible holes or corrosion noted. Upon removal of the tanks, water ponded within the remaining clay void in which the backfill sands were located. Following excavation of the backfill sands it became evident that the low permeability of the underlying clay was responsible for water ponding within the void. The low permeability of the

surrounding clayey subsurface soils limited any horizontal or vertical migration of hydrocarbon or other contaminants through the soil profile.

Laboratory analyses performed on soil samples collected from the tank pit excavation indicated concentrations of TPH, BTEX and Lead below EPA EIL.

The report validated the removal of the former USTs at the Pacific Lime Parkhurst plant to EPA standards. No TPH, BTEX or Lead contamination remained as a result of this previous landuse.

3.7.10 Asbestos register

An Asbestos Register (Figure 3-3) exists for the site detailing all relevant areas where asbestos is required to be managed at the Parkhurst site.

Click Here to Search Areas
Likely Asbestos Materials and Products Identified at Cement Australia's Pacific Lime Site

Location/Room Within Building	Functional Location Number	Building Materials	Location of Building Materials	Decorative Features or Reference Material	Condition/Condition Plans	Sample ID	Sample Result	Remedial Party/RA Category	Remedial Action/Condition as at October 2008	Update/Condition as at May 2009	Asbestos Info/Notes
Win 1 Control Room		Reinforcement sheeting	Ceiling	Flat sheeting, painted	1	CQC-2	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	To be removed by Jan 2009	Site Details
Main Control Room		Reinforcement sheeting	Walls	Flat sheeting, painted	1	Same as CQC-2	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	To be removed by Jan 2009	Site Details
		Reinforcement sheeting	External Walls	Flat sheeting, painted	1	Same as CQC-2	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	To be removed by Jan 2009	Site Details
		Reinforcement sheeting	Ceiling	Flat sheeting, painted	1	Same as CQC-2	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	To be removed by Jan 2009	Site Details
Control Room Toilet		Reinforcement sheeting	Ceiling	Flat sheeting, painted	1	Same as CQC-2	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	To be removed by Jan 2009	Site Details
Coal / Kih Feed		Sub Station No. 1	External Walls			PI AD1-101			Material Removed from Site Sept 07 - Class A Recycled - Capstone Docking's Insulator		
Coal / Kih Feed		Sub Station No. 1	Upper Section of Internal Walls & ceilings			PE AD1-101 S-1				Internal walls and ceiling replaced September 2007	
Switch Room (Previously from Switch Cabinet)		Wall Sheeting	Walls			CA 010008	NAD		No Asbestos Detected		
Win 1 Living Shed											
Win Ducting		Insulation around ducting	Coal feed duct work	Sealed/unsealed - no access	NA	071785-001	NAD (SMF)	NA	None	No asbestos detected 26 March 2007 - Gateway CHS	Site Details
		Reinforcement material	Wap around coal feed ducting	After workover - likely by refect Mineral Fibre	NA	071785-002	NAD (SMF)	NA	None	No asbestos detected 26 March 2007 - Gateway CHS	Site Details
Power Ducting		Reinforced pipe	Duct pipe structure	Reinforced pipe structure at joints	6 exposed edges	CQC-7	Chrysotile asbestos detected	4	Material should be sealed with 5 mm fibre in high temperature resin sealant over exposed edges	Removed 2007	Site Details
Big House Hopper											
Top level of Hopper		Fibrous board	Washers on west side of hopper	Rid fibrous board	2	CQC-13	Chrysotile asbestos detected	2	None. Monitor at intervals not exceeding 12 months.		Site Details
Line Plant		Possible asbestos covered door	Wash on north side of hopper	Metal clad door	NA	NS	NA	NA	Possible fire door		Site Details
Control Room		Reinforcement sheet	All walls and ceiling	Flat sheet, sealed, fast	1	CQC-18	Chrysotile asbestos detected	2	None. Monitor at intervals not exceeding 12 months.	Decontaminated, no access to personnel	Site Details
Potassium Sulphate Block											
Kendrick and office		Reinforcement sheet	External walls	Conjugated sheet, not bonded, painted	1-2 minor damage	CQC-17	Chrysotile and amosite asbestos detected	4	Remove, seal or enclose-damaged and/or untreated asbestos material within 12 months.	Visual inspection undertaken, minor damage on exterior wall - Supply Chain to be contacted	Site Details
		Reinforcement sheet	Internal walls	Conjugated sheet (unbonded), painted	1-2 minor damage	CQC-17	Chrysotile and amosite asbestos detected	4	Remove, seal or enclose-damaged and/or untreated asbestos material within 12 months.	Visual inspection undertaken - Supply Chain to be contacted	Site Details
Sewerage Pump Station											
Shed		Reinforcement not sheeting	Roof cladding	Repeal of damaged sheet, painted	2	Same as CQC-24	Chrysotile and amosite asbestos detected	2	Under-seal not tested	Roof Replaced in November 2008	Site Details
		Reinforcement piping	Wet pipe	100mm Reinforcement pipe, painted and repaired	2	NS	likely to contain asbestos	2	None. Monitor at intervals not exceeding 12 months.	Roof Replaced in November 2008	Site Details
Quartz Line Plant											
Substation		Reinforcement sheeting	Small office building	Flat Reinforcement sheet, painted	1	Same as CQC-30	Chrysotile and amosite asbestos detected	3	None. Monitor at intervals not exceeding 12 months.	Removed 2007	Site Details
East Wall		Reinforcement sheet	Upper portion of wall	Flat Reinforcement sheet, painted	1-2 some damage	Same as CQC-30	Chrysotile and amosite asbestos detected	6	Remove, seal or enclose-damaged and/or untreated asbestos material within 12 months.	Visual inspection undertaken, condition has remained stable - to be replaced January 2009	Site Details
South Wall - External		Reinforcement sheet	Upper portion of wall	Flat Reinforcement sheet, painted	1-2 some damage	Same as CQC-30	Chrysotile and amosite asbestos detected	6	Remove, seal or enclose-damaged and/or untreated asbestos material within 12 months.	Visual inspection undertaken, condition has remained stable - to be replaced January 2009	Site Details
Bell Mill - Classifier Cracking											
Mill Control Room / Launch Room / Laboratory		Reinforcement sheeting	Walls and ceiling	Flat sheeting, painted	1	Same as CQC-15	Chrysotile asbestos detected	3	None. Monitor conditional intervals not exceeding 12 months.	Visual inspection undertaken, condition stable - to be derisked 2008	Site Details
Top Level between Mills		Asbestos material painted	Within transformers above hopper between mills	Flat material labeled "Carbon Asbestos"	1 Enclosed	NS	Labeled as containing asbestos	1	None. Monitor conditional intervals not exceeding 12 months.	Visual inspection undertaken, condition stable	Site Details
Electrical Room											
Switch Room		Reinforcement sheeting	External wall to east end	Flat sheet, painted	1-2 minor damage	Same as CQC-15	Chrysotile asbestos detected	2	None. Monitor conditional intervals not exceeding 12 months.	Visual inspection undertaken, condition stable - to be derisked 2008	Site Details
		Asbestos material	Within switchgear	Old style switches	NA	NS	May contain asbestos material	NA	None. Monitor conditional intervals not exceeding 12 months.	Visual inspection undertaken, condition stable - to be derisked 2008	Site Details
North West corner		Reinforcement sheeting	Small view internal and external walls and ceiling	Flat sheet, painted	1-2 minor damage	Same as CQC-15	Chrysotile asbestos detected	2	None. Monitor conditional intervals not exceeding 12 months.	Visual inspection undertaken, condition stable - to be derisked 2008	Site Details

Figure 3-3 Image of asbestos register (for document identification only)

The viewed register is not dated, however, it is understood to be current to the end of 2008 and is applicable to the current facility. A copy of the register has not been included in this report as it is considered a living document and *only the current version should be considered for actual works*.

Essentially, the register indicates that there was asbestos in many of the buildings across the site, however much has been addressed through remediation.

3.7.11 DERM Compliance Inspection, December 2009

On 11 December 2009 the Queensland Department of Environment and Resource Management (DERM) undertook a compliance audit of the premises, focussing on water management and the general management for decommissioning of the plant.

The DERM audit did not identify any non-compliance's with the Development Approval CR0020, however the following issues were noted:

- A groundwater report discussing elevated heavy metals and petroleum hydrocarbons was to be submitted. This has been addressed.
- All stormwater drains to be cleaned and maintained. This is not an issue in terms of the site contamination assessment.
- The underground fuel pipe is to be cleaned and blocked. As part of the redundant vertical kiln this pipe was removed with the vertical kiln in 2010.

3.7.12 Transformer oil test report for thirteen transformer oil samples (September 2008)

AREVA T&D Australia Limited carried out testing oil in thirteen transformers at the Parkhurst facility in September 2008. The testing was based around the operational conditions of the transformers, however each one was also tested for PCBs in the oil.

The outcome of testing of the thirteen transformers was that no PCBs were detected in the samples analysed.

3.7.13 Site inspection (March 2011)

A site inspection by [sch4p4(6) Personal] of Aurecon, assisted by [sch4p4(6) Personal] on behalf of Cement Australia, was undertaken on 1 March 2011. The aim of the inspection was to:

- Gain a familiarisation of the site and former operational activities.
- Inspect specific areas for potential contamination issues.
- Collect initial information and reports for the site assessment.

A large number of photographs were taken during the inspection to assist the desktop review and interpretation of existing reports and operational activities. General notes from the site inspection (refer Figure 4-2 to Figure 4-9) include:

- The site is generally well maintained and tidy.
- Visual assessment of areas of potential or identified soil contamination indicate likely low to medium levels of soil contamination consistent with an industrial site. No major potential soil contamination issues were visually identified.
- Oil and waste oil storage areas show indication of spills or leaks in the general areas.
- Some of the laydown or storage areas show dark or black staining on the hardstand (sometimes broken) surface. This staining is likely generally due to storage of coal, burning of waste materials or vegetation, or waste oil. None of the stained areas were considered a significant issue based on a visual assessment.
- Areas around the kiln and storage sheds areas show a green tinge to some of the spilt or waste materials. It is understood this is due to heavy metals bound in the clinker or clinker dust material.⁴
- The workshop areas on the site show indications of waste oil storage and spillage, as well as the use of degreasers and solvents. All such areas are paved, and the integrity of the paving is generally good. At least one light vehicle workshop area included a pit which had been filled in.
- The pond area near the front of the plant has been filled in.
- The former UST areas have been filled in. The oil storage area near the site entrance still exists.

⁴ Javed I. Bhatti. Effect of *Minor Elements on Clinker and Cement Performance: A Laboratory Analysis*. 2006

4. Preliminary conceptual site model assessment

4.1 Areas of environmental concern

The areas of environmental concern (AECs), and contaminants of concern (COCs) specific to this report are based on the assessment of the existing data and reports, consultation and a site inspection. The AECs and COCs are shown in Table 4-1 and broadly in Figure 4-1.

Table 4-1 Areas of environmental concern for Parkhurst (except asbestos)

Site	Area of environmental concern	Contaminants or issues of concern
1	Former pond area is now filled with unknown quality fill (may have been sourced from the clay lease area on site).	Petroleum hydrocarbons, Heavy metals
2	Vehicle washdown area (concreted).	Petroleum hydrocarbons, Heavy metals
3	Laydown and storage area. Staining noted on hardstand, and hardstand broken in areas.	Petroleum hydrocarbons, Heavy metals
4	Storage shed (Generally paved, but some areas exposed).	Petroleum hydrocarbons, Heavy metals, OC/OP pesticides, herbicides
5	Redundant Vertical Kiln area and oil and waste oil storage. Staining identified in and outside former bunded areas.	Petroleum hydrocarbons. Asbestos significant in this area.
6	Laydown area for rotating spares and process equipment.	Petroleum hydrocarbons, Heavy metals
7	Temporary waste material storage. May also have contained other waste contaminants (drums, rags, etc).	Petroleum hydrocarbons, Heavy metals, pH
8	Kiln dust stockpile area.	Heavy metals, pH
9	Electrical substation.	PCBs
10	Fuel oil storage.	Petroleum hydrocarbons
11	Fuel oil / diesel storage.	Petroleum hydrocarbons
12	Electrical substation.	PCBs
13	Coal storage.	Petroleum hydrocarbons
14	Electrical substation and waste oil storage.	PCBs, Petroleum hydrocarbons
15	Workshop area, including waste oil, pits (some filled) and grease/oil trap (interceptor). All paved.	Petroleum hydrocarbons, Heavy metals
16	Former underground fuel storage tank (removed and remediated).	Petroleum hydrocarbons
17	Oil store and former underground fuel storage tank (removed and remediated).	Petroleum hydrocarbons
18	General site – Spilt product and waste process materials.	pH, heavy metals

We have not included asbestos (generally) in this table as the asbestos register is a better and more accurate source for locating and identifying asbestos issues.

As a general comment it should be noted that the visual assessment of contamination issues, and the issues identified in existing reports, are generally of a low-risk nature (refer later discussion).

The sites are also shown in Figure 4-2 to Figure 4-9.



Indicates general area where additional site contamination assessment will be required or focussed if a more sensitive use of the site is proposed, or where excavated materials are to be removed from the site (as at January 2012).

LEGEND

	DETAIL PIT		FLS - Full Line - Safety Pond
	Storm Markers		FLS - Full Line - Rain Dam
	Storm Control		FLS - Full Line - Rain Dam Overflow
	Water Puddle		Ground Water Line
	Contiguity Line		Storm Water Run
	Fence		Storm Water Run
	Detail Pit		Storm Water Run

Figure 4-1 Areas of environmental concern
(Areas are described in Table 4-1)

Scale: 1:750
10 0 10 20 30 40
FULL SIZE - A0

Project: **PARKHURST PLANT
ROCKHAMPTON**

Client: **PACIFIC LIME
PTY LTD**

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Figure 4-2 (2) Washdown area



Figure 4-3 (3) Laydown and storage area



Figure 4-4 (4) Storage shed (paved)



Figure 4-5 (5) Kiln and oil storage area



Figure 4-6 (6) Laydown area for recycling



Figure 4-7 (10), (11), (13) Rear of site showing fuel oil and coal storage areas



Figure 4-8 (15) Workshop area showing waste oil storage and triple interceptor



Figure 4-9 (17) Former UST site and oil store.

4.2 Potential contaminants of concern

Potential contaminants of concern are shown in Table 4-2.

Table 4-2 Potential contaminants of concern

Potential contaminant	Issues, migration potential and environmental persistence
Herbicides and Pesticides	<p>Organochlorine (OC) pesticides are generally of low solubility in water and tend to bind strongly to clay. They can be persistent in the environment and can have significant toxicity to plants or animals, including humans.</p> <p>Organophosphate (OP) pesticides refers to a group of pesticides acting on the enzyme acetylcholinesterase. They degrade rapidly by hydrolysis on exposure to sunlight, air, and soil, but have a greater acute toxicity than OC pesticides.</p> <p>Herbicide compounds are generally of higher solubility in water and less persistent in the environment.</p>
Petroleum hydrocarbons	<p>Monocyclic aromatic hydrocarbons (MAHs or BTEX) are associated with solvents and light fuels, and not stored or used in extensive quantities on this site – generally only for equipment and garden maintenance. In lower concentrations they are not persistent in the environment but can have a significant toxicity to the ecology around this site. Given the low site usage and storage, it is not anticipated that this will be a significant contaminant.</p> <p>Polycyclic aromatic hydrocarbons (PAHs) are generally associated with oils and greases used in maintenance of equipment of this site. Visual evidence of potential PAH contamination was identified under a "lean-to" in the south western section of the site. There is potential for migration of PAHs from this area via surface and groundwater flow. One of the primary concerns associated with the assessment of PAHs is the carcinogenic hazard posed by benzo(a)pyrene and other heavier PAH compounds.</p> <p>Total petroleum hydrocarbons (TPHs) are generally associated with fuels, oils and greases used in maintenance of equipment of this site. Visual evidence of potential TPH contamination was identified in the Farm Shed. There is potential for migration of TPHs from this area via surface and groundwater flow.</p> <p>The development of health-based criteria for TPHs is problematic and subject to debate, given that it represents a complex mixture of compounds. Toxicity assessments usually concentrate on MAHs and PAHs rather than the broader TPHs.</p>
pH	<p>Elevated (or low) soil pH will impact on the health and growth of site vegetation. Generally pH issues are relative easy to address.</p>
Heavy metals	<p>Heavy metals (namely Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc and Vanadium) associated with plant operation, site maintenance and mechanical workshop activities.</p> <p>Heavy metals are generally bound to soils in alkaline environments, and are only mobile where there is erosion or sediment transportation. Clinker material, part of the cement</p>

Potential contaminant	Issues, migration potential and environmental persistence
	<p>manufacture process, is effective in binding heavy metals. Leaching to groundwater is a key off-site migration pathway and can result in aquatic ecosystems being exposed to contaminants under certain conditions. Therefore, the potential of contaminants to leach is an important characteristic that affects the environmental fate and impact they cause.</p> <p>Both terrestrial and aquatic ecosystems can experience harmful effects due to the toxicity of some heavy metals.</p>
PCBs	<p>Polychlorinated biphenyls (PCBs) are a group of synthetic organic compounds comprising two benzene rings joined together with between one and ten chlorine atoms attached. PCBs are both chemically and thermally stable. PCBs are relatively insoluble in water with the solubility decreasing with increasing chlorine content (ATSDR 2000).</p> <p>PCBs are highly toxic and considered a carcinogenic.</p>

4.3 Potential receptors

The potential receptors at the Parkhurst site include:

- Human receptors including residents, personnel who work on the site, visitors, contract workers and other authorised persons (local council workers) and personnel that carry out studies at the site (including consultants etc).
- Construction contractors.
- Down gradient surface water and groundwater dependent ecosystems.
- Remnant ecosystems.
- The underlying groundwater.

4.4 Migration pathways

The dispersal and migration of chemical contaminants resulting from inputs associated with the AECs identified above will generally be controlled by the site drainage, sub surface conditions (e.g. soil type and moisture content) and physico-chemical properties of individual contaminants, as well as weather.

Other factors that may impact the movement and migration of contaminants on this site include:

- Erosion of disturbed and cleared areas that contribute to sediment transport and deposition.
- The presence of naturally occurring erodible soils.
- The presence of drainage lines and buried pipes and infrastructure forming preferential migration pathways down gradient of identified AEC.
- Rainfall conditions.
- Acidic soil conditions (Potential Acid Sulfate Soils (PASS)) may result in elevated dissolved metal concentrations in surface water and groundwater if not adequately managed during disturbance.

5. Risk review and the conceptual site model

5.1 Risk review and conceptual site model

Based on the site history, existing reports and data and a site inspection, there is likely to be significant, but low to moderate level, contamination of some soils within the Parkhurst site. A risk review has been undertaken in the form of a conceptual site model (CSM) and a risk characterisation.

The CSM, including human health and environmental risk reviews, is summarised in Table 5-1.

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Table 5-1 Conceptual site model and risk assessment

Site	Area of environmental concern and site conditions	Contaminants or issues of concern	Receptor and pathway	Risk characterisation (excluding asbestos)
1	Former pond area is now filled with unknown quality fill.	Petroleum hydrocarbons, Heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to grass cover. Moderate for construction works. • Low for site use due to grass cover. Moderate for construction works. • Low for site use due to grass cover. Moderate for construction works. • Low for site use due to grass cover. Moderate for construction works. • Low. Cover limits erosion and no groundwater issues identified. • Low. Cover limits erosion and no groundwater issues identified.
2	Vehicle washdown area (concreted)	Petroleum hydrocarbons, Heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use & construction due to paving. • Low for site use & construction due to paving. • Low for site use & construction due to paving. • Low for site use & construction due to paving. • Low due to paving and site drainage. • Low due to paving and site drainage.
3	Laydown and storage area. Minor staining noted on hardstand, and hardstand broken in areas	Petroleum hydrocarbons, Heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low. Cover limits erosion and no groundwater issues identified. • Low. Cover limits erosion and no groundwater issues identified.
4	Storage shed (Generally paved, but some areas exposed).	Petroleum hydrocarbons, Heavy metals, OC/OP pesticides, herbicides	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low. Cover limits erosion and no groundwater issues identified. • Low. Cover limits erosion and no groundwater issues identified.
5	Kiln area and oil and waste oil storage. Significant staining identified in and outside former bunded areas.	Petroleum hydrocarbons. Asbestos significant in this area.	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues.
6	Laydown area for recycling (check location)	Petroleum hydrocarbons, Heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low. Cover limits erosion and no groundwater issues identified. • Low. Cover limits erosion and no groundwater issues identified.

Parkhurst Facility Stage One Site Assessment

Site	Area of environmental concern and site conditions	Contaminants or issues of concern	Receptor and pathway	Risk characterisation (excluding asbestos)
7	Waste material storage. May also have contained other waste contaminants (drums, rags, etc)	Petroleum hydrocarbons, Heavy metals, pH	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate as most material removed. • Low-moderate as most material removed. • Low-moderate as most material removed. • Low-moderate as most material removed. • Low-moderate as most material removed. • Low-moderate as most material removed.
8	Kiln dust stockpile area	Heavy metals, pH	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low for site use due to cover/paving. Low-moderate for construction works. • Low. Cover limits erosion and limited groundwater issues identified. • Low. Cover limits erosion and limited groundwater issues identified.
9	Electrical substation	PCBs	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils
10	Fuel oil storage	Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues.
11	Fuel oil / diesel storage	Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues.
12	Electrical substation	PCBs	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils • Low. No PCBs detected in the oils
13	Coal storage	Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure)	<ul style="list-style-type: none"> • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate for site use due to cover/paving. Low-moderate for construction works.

Site	Area of environmental concern and site conditions	Contaminants or issues of concern	Receptor and pathway	Risk characterisation (excluding asbestos)
			Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate for site use due to cover/paving. Low-moderate for construction works. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues. • Low-moderate due to paving/cover and minor groundwater hydrocarbon issues.
14	Electrical substation and waste oil storage	PCBs, Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low. No PCBs detected in the oils and area paved. • Low. No PCBs detected in the oils and area paved. • Low. No PCBs detected in the oils and area paved. • Low. No PCBs detected in the oils and area paved. • Low. No PCBs detected in the oils and area paved. • Low. No PCBs detected in the oils and area paved.
15	Workshop area, including waste oil, pits (some filled) and grease/oil trap (interceptor). All paved.	Petroleum hydrocarbons, Heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low for site use due to paving/drainage. Low-moderate for construction works. • Low for site use due to paving/drainage. Low-moderate for construction works. • Low for site use due to paving/drainage. Low-moderate for construction works. • Low for site use due to paving/drainage. Low-moderate for construction works. • Low-moderate due to paving and minor groundwater hydrocarbon issues. • Low-moderate due to paving and minor groundwater hydrocarbon issues.
16	Former underground fuel storage tank (removed and remediated)	Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low. Tank and material removed. • Low. Tank and material removed. • Low. Tank and material removed. • Low. Tank and material removed. • Low. Tank and material removed. • Low. Tank and material removed.
17	Oil store and former underground fuel storage tank (removed and remediated).	Petroleum hydrocarbons	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low. Tank and material removed, oil storage paved and contained. • Low. Tank and material removed, oil storage paved and contained. • Low. Tank and material removed, oil storage paved and contained. • Low. Tank and material removed, oil storage paved and contained. • Low. Tank and material removed, oil storage paved and contained. • Low. Tank and material removed, oil storage paved and contained.
18	General site – Spilt product and waste process materials	pH, heavy metals	Human ingestion (acute exposure) Human dermal contact (acute exposure) Human inhalation (acute exposure) Human indirect (eg downstream resource use) Aquatic ecology Terrestrial ecology	<ul style="list-style-type: none"> • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker. • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker. • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker. • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker. • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker. • Low-moderate. Significant exposed spilt/waste material. Metals likely bound in clinker.

5.2 Risk assessment approach

The risk characterisation relates exposure, toxicity (Section 4.2) and risk. In deriving risk-based soil acceptance criteria, decisions regarding the level of tolerable risk are combined with information from the toxicity assessment to determine a tolerable level of exposure.

For the purposes of this assessment we have rated risks between low, moderate and high rather than more detailed assessment based on the limited site activity, limited analytical data for soils on the site and the likelihood the material will be removed or covered on this area for the purposes of development as light industrial or similar activities.

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6. Gap analysis and additional requirements

6.1 General

This risk assessment and conceptual site model are based on information available in existing reports, including audits, groundwater monitoring and some site remediation works. The main data gap is that detailed soil sampling across the whole site has not been undertaken as it has not been considered necessary.

For any future use there needs to be a more detailed assessment of each area of environmental concern directly related to the proposed site use. That is, for most light industrial uses it is unlikely that any detailed site contamination would be required (except in small areas such as fuel oil storage) as the site is typical of a well maintained industrial site and there is no direct evidence of significant soil contamination in the data available at this time.

Future industrial use for processing of magnesia is not considered more sensitive than QA's operations (email 15 August 2011 from Druery Glenn) and so the above statement still applies.

6.2 Site contamination assessments

For proposed uses more sensitive than the current use, or where potentially contaminated soil is to be removed from the site, additional site contamination assessments, including intrusive sampling are suggested in Table 6-1.

Table 6-1 Additional suggested site assessments

Site	Area of environmental concern	Site contamination assessment recommended
1	Former pond area is now filled with unknown quality fill.	No, if quality of fill can be confirmed.
2	Vehicle washdown area (concreted)	Review only (paved)
3	Laydown and storage area. Staining noted on hardstand, and hardstand broken in areas	Yes
4	Storage shed (Generally paved, but some areas exposed).	Yes
5	The redundant vertical kiln area and oil and waste oil storage. Staining identified in and outside former bunded areas.	Yes
6	Laydown area for rotating spares and process equipment (check location)	Yes
7	Waste material storage. May also have contained other waste contaminants (drums, rags, etc)	Yes
8	Kiln dust stockpile area	Yes
9	Electrical substation	Review only (no PCBs identified)
10	Fuel oil storage	Yes
11	Fuel oil / diesel storage	Yes
12	Electrical substation	Review only (no PCBs identified)
13	Coal storage	Yes
14	Electrical substation and waste oil storage	Review only (no PCBs identified) and paved
15	Workshop area, including waste oil, pits (some filled) and grease/oil trap (interceptor). All paved.	Yes
16	Former underground fuel storage tank (removed and remediated)	Review only. Already completed
17	Oil store and former underground fuel storage tank (removed and remediated).	Review only. Already completed
18	General site – Spilt product and waste process materials	Yes, but specific to proposed works.

7. Conclusions and Recommendations

7.1 Conclusions

Conclusions for the former Parkhurst cement facility site assessment are:

- There are eighteen (18) identified areas of environmental concern relating to known or potential soil and/or groundwater contamination on this site. Of these, only seven (7) were considered to be the highest risk level identified in this assessment of low-moderate risk to human or ecological health. These risks may occur during current site use and construction works for further development. It is not possible to assess a risk where the proposed development and works is not known.
- The remaining eleven (11) areas of environmental concern are considered low risk for potential use of the site as light industrial. Only minor additional assessments or review may be required where a more sensitive use, such as residential, are proposed.
- Based on a review of existing data, the storage of lime kiln dust at the Parkhurst site has not in the past created any adverse environmental effects to the groundwater in the vicinity of the site. Aurecon is not aware of any other potential contaminate issues which may arise in the future from the storage of the lime kiln dust.

7.2 Recommendations

Recommendations for the former Parkhurst cement facility site assessment are:

- A Site Management Plan (SMP) is required for the subject site to address the unknown extent and concentration of potential soil contamination at specific locations and around the general process equipment areas. The SMP is aimed at protecting human and ecological health by preventing migration of known or potential contamination from the site and the application of controls on excavation and demolition works.
- For future proposed uses more sensitive than the current use, or where potentially contaminated soil is to be removed from the site, site contamination assessments, including intrusive sampling are recommended for laydown and equipment storage areas, storage sheds, kiln and oil storage areas, waste material storage areas, kiln dust stockpile area, fuel oil storage area and specific areas around the general site where the proposed sensitive use requires confirmation of potential soil contaminants.
- For the proposed industrial use, where it is understood that the kiln and associated storage and packaging infrastructure areas will continue operation for processing of magnesia, Aurecon recommends that all relevant personnel comply with the Site Management Plan (described above) at all times, along with the standard regulatory approval conditions for an operating industrial facility.

Appendix A References

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Appendix A - References

- EPA and now DERM) (1998) *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (DERM Draft Guidelines)*.
- National Environment Protection Council. 1999. *National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 1999) (including the various schedules) Draft update is dated 2010/2011*.
- Standards Australia, (2005), *AS/NZS 4482.1 –2005, Guide to the Investigation and Sampling of Sites with potentially contaminated soil – Non-volatile and semi-volatile compounds*
- Standards Australia, (1999), *AS/NZS 4482.2 –1999, Guide to the Sampling and Investigation of potentially contaminated soil – Volatile Substances*
- Queensland Department of Environment & Resource Management, 2009. *Queensland Water Quality Guidelines (QWQG)*
- ANZECC 2000. *ANZECC Water Quality Monitoring Guidelines*
- Reference: CRC Care Technical Report no. 11 (2009) *Characterisation of sites impacted by petroleum hydrocarbons: National guideline document*
- Cement Australia. *Draft Annual Returns 2005 – 2009*
- Complete Workplace Solutions. *Environmental Due Diligence Audit, Pacific Lime, July 2002*
- Aurecon Australia. *Parkhurst Groundwater Monitoring (2008-2011)*
- Aurecon Australia (formerly Connell Wagner) *Pacific Lime Parkhurst Plant Rockhampton, Queensland Stage 1 Investigation & Validation Report – Underground Tank Removal 15 August 2002*
- Cement Australia Asbestos Register
- DERM Compliance inspection letter. December 2009
- AREVA T&D Australia Limited. *Transformer oil test report for thirteen transformer oil samples (September 2008)*
- Rockhampton Regional Council. *Rockhampton Regional Council Planning Scheme (May 2009)*
- Javed I . Bhatti. *Effect of Minor Elements on Clinker and Cement Performance: A Laboratory Analysis. Research and Development Bulletin RD130. Portland Cement Association. 2006*

Notification of Contaminated Site

48169

147-0096
-0097

The following information should be supplied by people providing notification to the CHEM Unit of contaminated land or land used for a prescribed purpose under the *Contaminated Land Act 1991* and the *Contaminated Land Regulation 1991*.

Essential Information

Local Authority Area:- City of Rockhampton

Information provided by:-

Name: Rachel Grace Contact Telephone No: (079) 311 256

Organisation: Rockhampton City Council - Health Department

Address: P O Box 243
ROCKHAMPTON Postcode 4700

Name by which the property is known locally:-
CENTRAL QUEENSLAND CEMENT

Location:-

Street Address: BRUCE HWY (YAAMBA RD) PARKHURST

Town/Suburb NTH ROCKHAMPTON Postcode 4701

Lot-on-Plan Description of each parcel of land (*individual parcels of land which make up the property should be included. Please make a separate attachment if there is more than one parcel*).

L1,2 ON RP604139

Land Titles Register Volume and Folio Number for each parcel (*see also above remarks in brackets concerning multiple land parcels*).

C 242 F 154

Name and Postal Address of Owner:-

Name CENTRAL QUEENSLAND CEMENT Pty LTD

Address PO BOX 5090
ROCKHAMPTON MAIL CENTRE Postcode 4700

Description of the source of the suspected contamination or the prescribed purpose for which the land is or has been used (a short description of the land use or cause of contamination will be sufficient. A separate attachment can be made if space is insufficient).

FUEL & OIL STORAGE - U/G TANKS, A/G TANKS & PACKAGE STORE
CEMENT WORKS, LIME BURNING / EXTRACTIVE INDUSTRY

Desirable and additional Information

Area of each parcel in square metres (this information is useful as a cross-check on the land description details):-

248100 sqm.

Current local authority zoning of the land:- GENERAL INDUSTRY.

The processing of this information would be greatly assisted by the inclusion of a map or locality plan.

If further information is required please contact:

Department of Environment and
Heritage
160 Ann Street, Brisbane, QLD 4000

P.O. Box 155,
NORTH QUAY QLD 4002

Enquiries about the Register of
Contaminated Sites
Phone No. (07) 22 77369

Other Enquiries/business
Phone no. (07) 22 76640

Facsimile No. (07) 22 78341



274

176

COAST

R 806

LN 1763

1.3.41

2.3.41

71

LN 1496

80

SL 37833
1.86ha
LN 1888

212

SL 37785
404.4m²
LN 1888

86

SL 4203
4183m²
LN 2111

84

SL 45538
5999m²
LN 1989

FEATHERSTONE

92

F
1.049ha
LN 2178

78

SL 34759
6070m²
LN 1707

1

RP 17306
6156m²
2.10

2

RP 17306
7398m²

BRUCE

716

RP 5659

RAILWAY

To
Yaamba

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RTI Act 2009



ROCKHAMPTON CITY COUNCIL
P.O. BOX 243
ROCKHAMPTON QLD 4700
PHONE: (079) 311311 FAX: (079) 221700
ENVIRONMENTAL HEALTH DEPARTMENT

***Fax
Cover
Sheet***

Date Sent:	17 February 1994
Company Name:	DEH - Contaminated Land Unit
Contact Name:	Mark Paton
Fax Number:	(07) 227 8341
Sender:	Rachel Grace - Environmental Health Officer
Message:	<p>Mark,</p> <p>I have looked at our files and believe that the notification for the CQ Cement premises on Yaamba Rd, Nth Rockhampton is correct. (Lots 1 & 2 on RP604139)</p> <p>We have a Flammable & Combustible Liquids Licence for this Cement Works premise for underground fuel tanks, bulk aboveground furnace oil tanks, and a drum depot.</p> <p>CQ Cement also own the area of land mentioned - Lot 3 on RP606251, however this is a smaller property situated on Monier St (known as one of the Parkhurst Igloos No.3). This property has also been listed for two underground tanks (4500l, 2200l) and previous storage of oil in drums (500l).</p> <p>I hope this information is helpful to you. Call me if you need further clarification</p>
Number of pages (including cover): 1	
<p>If there are any problems with this transmission, please contact the person listed below immediately</p> <p>Fax Operator: Rachel Grace Contact Number: (079) 311 253</p>	

Site Id: 147-023684

Site Name: FUEL STORAGE-CENTRAL QLD. CEMENT

Official Authorisation for CSR Site: Y

Local Government: ROCKHAMPTON CITY

Entry Date: 24/07/94

Category: POS PRO

Last Altered:

Location: BRUCE HWY (YAAMBA RD)
PARKHURST
4701

Lot: 0001 on Plan RP604139

Tenure:

Owner: CENTRAL QLD CEMENT PTY LTD
P O BOX 5090
ROCKHAMPTON MAIL CENTRE
QLD
4700

Zoning: IND
Current Use: 3516
Prescribed Purpose: 3516
File: 0

Area: 248100 ha/sq metres
Past Use: 3516

UXO region:

Contaminants: UNK

Action Officer: DUMMY

Vol: C242

Comments: NOTIFICATION BY COUNCIL. 31.3.93 BKFUEL & OIL ST
ORAGE/ U/G AND A/B TANKS AND PACKAGESTORE. CEMENT W
ORKS/LIME BURNING

Status: P

Folio: 0154

* Flammable & Combustible liquids licence.
Advice from Council fax 17/2/94.

Site ID: 147-023424
Lot 2 RP 604139

5/5/95.

David,

Amend to "PRO"

& Amend comments.

** END OF REPORT **

sch4p4(6) Per

AMENDED TO 'PRO'
COMMENTS UPDATED.

sch4p4(6) 08/05/95

Rockhampton L.A.

9



Probable site
(Ref note below
& council fax)

Queensland Department of Environment and Heritage

160 Ann Street, Brisbane QLD 4000 • PO Box 155 • BRISBANE ALBERT STREET QLD 4002

21.2.94

M. Spalton

Dear landowner/occupier,

Since European settlement industry, farming, building and recreation activities have affected our land, our streams and our underground water.

We know little about how much contamination has resulted nor how serious the problem is for us. Publicised incidents such as the dumping of toxic waste at Kingston, south of Brisbane, have increased community concerns. Increasingly, there is also rejuvenation of previous industrial sites for new uses such as housing or commerce. Past practices have sometimes resulted in contamination of the ground by potentially hazardous chemicals.

To help authorities, landowners and prospective land buyers a Register of sites classes 'contaminated' is being compiled. Common sense and the need to protect our health, our lifestyle and our environment suggest that these sites be examined and assessed before any rezoning, development, subdivision or changed use.

Those activities thought most likely to contaminate a site are listed on the back of this sheet. Any local authority knowing of land that has been used for one of these activities has been required under the provisions of the Contaminated Land Act to notify the Queensland Department of Environment and Heritage so that the site can be entered onto the Register. Your council has advised this Department that the land identified on the attached form has been, or is being, used for one of the listed activities.

As the land details are possibly incomplete or inaccurate, would you please take time to check them before the land is considered for listing on the register. Any initial queries you have should be made to your local authority who may have some historical information on the land use that is not known to you. Incorrect or omitted items should be noted on this form for return to the Queensland Department of Environment and Heritage by 27 August 1993.

If you feel the property should not be listed on the register, please state your reasons in the space provided below and return it so Department officers can make further checks.

If the form is not returned, we will assume the information is correct and the property will be added to the Contaminated Sites Register. Should the entry be proved incorrect in future, changes can still be made at anytime.

Please return this information to: Reply Paid 13
Registrar, Contaminated Land
Waste Management Branch
Department of Environment and Heritage
PO Box 155
BRISBANE ALBERT STREET QLD 4002

Lot number 1
Plan number RP 604 139
Street address BRUCE HIGHWAY
PARKHURST . QLD . 4701
Owner's name CENTRAL QUEENSLAND CEMENT PTY. LTD.

Reasons for property not to be listed on the Contaminated Sites Register

THE LAND IN QUESTION IS NOT USED FOR FUEL
STORAGE PURPOSES, NOR FOR ANY OTHER PRESCRIBED
PURPOSES USE AS PER THE REVERSE HEREOF.
FOR QUEENSLAND CEMENT PTY LTD.

sch4p4(6) Personal information

26-8-93

Manager Environmental Affairs

* Fax from Rockhampton City Council 17.2.94. Current Flammable + Combustible liquids licence underground fuel tanks, bulk above ground furnace oil tank + a drum depot.

Prescribed purposes

Agricultural fertiliser manufacture
Asbestos production and manufacture
Battery manufacture and recycling
Chemical manufacture and formulation
Chemical storage in excess of a total of 10 tonnes
Commercial waste storage or treatment of chemicals
Defence establishments and training areas
Drum reconditioning wastes
Dry cleaning establishments
Electroplating
Explosives production and storage
Fuel depots and storage areas
Galvanisers
Gas works
Gun, pistol and rifle clubs
Hazardous waste landfills
Industrial cleaners
Lime burners
Metal foundries
Metal sprayers
Metal treaters and picklers
Mining and extractive industries
Paint manufacture and formulation
Pest controllers being areas where pest control
Pesticide manufacture and formulation chemicals are stored
or vehicles and tanks used in connection with pest control are washed
Petroleum and petrochemical industries
Pharmaceutical manufacture and formulation.
Printers
Railway yards
Sanitary landfill sites
Scrap yards
Service stations
Smelting and refining
Tannery or fellmongery or hide curing works
Wood treatment and preservation sites
Stock dips and spray yards
Wool scours
Grit or sand blasting
Ship and boat yards

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CENTRAL QLD CEMENT PTY LTD
P O BOX 5090
ROCKHAMPTON MAIL CENTRE
QLD
4700

LA Code: 147

Site Id: 96

Site Name: FUEL STORAGE-CENTRAL QLD. CEMENT

Lot: 1

Plan No: RP604139

Site Address: BRUCE HWY (YAAMBA RD)
PARKHURST 4701

Notification of Contaminated Site

The following information should be supplied by people providing notification to the CHEM Unit of contaminated land or land used for a prescribed purpose under the *Contaminated Land Act 1991* and the *Contaminated Land Regulation 1991*.

147-0289

Essential Information

Local Authority Area:- ROCKHAMPTON CITY COUNCIL

Information provided by:-

Name: Contact Telephone No: (07) 375 0415

Organisation: QUEENSLAND CEMENT LIMITED

Address: PO BOX 7863 WATERFRONT PLACE
BRISBANE Postcode 4001

Name by which the property is known locally:-
CQ. CEMENT PLANT

Location:-

Street Address BRUCE HIGHWAY

Town/Suburb PARKHURST Postcode 4702

Lot-on-Plan Description of each parcel of land (individual parcels of land which make up the property should be included. Please make a separate attachment if there is more than one parcel).

Lot 2 on RP 604139

Land Titles Register Volume and Folio Number for each parcel (see also above remarks in brackets concerning multiple land parcels).

VOLUME C165 Folio 135

Name and Postal Address of Owner:-

Name CENTRAL QUEENSLAND CEMENT PTY LTD (ACN 009 693 761)

Address Box 5090 ROCKHAMPTON MAIL CENTRE

Postcode 4702

Cont'd /2

Description of the source of the suspected contamination or the prescribed purpose for which the land is or has been used (a short description of the land use or cause of contamination will be sufficient. A separate attachment can be made if space is insufficient).

(REFER ATTACHMENT) Fuel Storage

Desirable and additional Information

Area of each parcel in square metres (this information is useful as a cross-check on the land description details):-

211,670 m²

Current local authority zoning of the land:- GENERAL INDUSTRY

The processing of this information would be greatly assisted by the inclusion of a map or locality plan.

If further information is required please contact:

The Clerk (Contaminated Land),
CHEM Unit,
A Division of the Bureau of Emergency Services
G.P.O. Box 1425
Brisbane, Qld 4001
Telephone (07) 227 4144
Facsimile (07) 227 4466

ATTACHMENT

DESCRIPTION OF THE SOURCE OF THE SUSPECTED CONTAMINATION OR THE PRESCRIBED PURPOSE FOR WHICH THE LAND IS BEING OR HAS BEEN USED :

* QUICKLIME AND HYDRATED LIME ARE PRODUCED ON THE PROPERTY.

* FUELS ARE STORED ON THE PROPERTY IN

• FOR LIME OPERATION :-

Two (2) 102,000 LITRE CAPACITY ABOVE GROUND TANKS (FUEL OIL)

One (1) 1200 LITRE CAPACITY ABOVE GROUND TANK (DIESEL FUEL)

• FOR CEMENT OPERATION :-

One (1) 13,600 LITRE CAPACITY UNDERGROUND TANK (DISTILLATE)

One (1) 4,500 LITRE CAPACITY UNDERGROUND TANK (PETROL)

One (1) 5,200 LITRE CAPACITY ABOVE GROUND TANK (DIESEL FUEL)

OIL STORE (Licence # 4B169, Rockhampton c.c.)

REFER

DRAWING # 19/18 B
ATTACHED.

THERE ARE TWO (2) DISUSED SMALL CAPACITY UNDERGROUND TANKS FORMERLY USED TO STORE DISTILLATE - NOW EMPTY.

* RESPECT LIME HAS BEEN STOCKPILED ON THE PROPERTY OVER MANY YEARS. HOWEVER, THIS MATERIAL HAS PROGRESSIVELY BEEN REMOVED SUCH THAT, BY YEAR END 1992, THE PILE WILL BE EXHAUSTED - REFER COVERING NOTES.

COVERING NOTES

Re: CENTRAL QUEENSLAND CEMENT PTY. LTD. - PARKHURST PLANT SITE

(i) C.Q.C. OPERATES A LIME BURNING AND HYDRATION PLANT ON ITS PARKHURST SITE.

WITH RESPECT TO THE PRESCRIBED USE "LIME BURNERS" AS APPLIES TO THIS SITE, Q.P.L. SUBMITS THAT SUCH PRESCRIPTION MAY BE ARGUED AS UNFOUNDED.

(ii) GIVEN THAT THE HANDLING AND STORAGE OF QUICKLIME AND THE DERIVED PRODUCT HYDRATED LIME IS STRICTLY CONTROLLED BOTH IN THE PURSUANCE OF QUALITY OF PRODUCT AND SAFETY AND WELL BEING OF PERSONNEL, AND THAT ALL PRODUCTS ARE STORED IN ENCLOSED SILOS, THERE IS NO HAZARD TO HUMAN HEALTH OR THE ENVIRONMENT CAUSED BY THE EFFECTS OF LIME ON LAND, WATER OR AIR.

(iii) REJECT (OFF SPECIFICATION) MATERIALS FROM THE LIME OPERATION HAVE BEEN STOCKPILED ON THE PARKHURST SITE OVER MANY YEARS, AND OF INTEREST IS THE RECENT USE OF THIS MATERIAL (IN EXCESS OF 20,000 TONNES) AS PART OF A PROGRAM TO REHABILITATE TAILINGS DAMS, AND FOR SOIL MODIFICATION AT THE DISUSED MT. MORRAN MINE.

(iv) THIS MATERIAL IS ALSO BEING USED TO STABILISE/ SEAL THE BASE OF THE ROCKHAMPTON CITY COUNCIL LANDFILL DISPOSAL AREA (SOME 4,400 TONNES TO DATE).

(v) TRIALS ARE ALSO UNDERWAY TO ESTABLISH WHETHER THIS MATERIAL CAN BE RECYCLED TO THE CEMENT MAKING PROCESS AT PACEHURST.

(vi) BY YEAR END 1992, IT IS EXPECTED THAT ALL STOCKPILED LIME REJECT WILL BE EXHAUSTED.

* (vii) ANY QUICKLIME REJECT PUT TO STOCKPILE IS RAPIDLY SUBJECT TO HYDRATION AND CARBONATION SUCH THAT ^{THE} NORMALLY ACCEPTED HAZARDOUS NATURE (BURNS, ETC) OF QUICKLIME ARE REMOVED.

sch4p4(6) Personal information

Dec. 1992



Queensland Cement Limited ACN 009 658 520

Head Office: 50 McDougall Street, Milton, 4064
P.O. Box 1328, Milton, Queensland, Australia
Phone: (07) 375 0400. Fax: (07) 376 0356
Cables: 'Cementco' Brisbane



Queensland Cement Limited A.C.N. 009 658 520

26 August 1993

The Registrar
Contaminated Land
Waste Management Branch
Department of Environment & Heritage
PO Box 155
Albert Street
BRISBANE QLD 4002

All on dummy
except where
say on real.

Janel,
Its review
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action

Dear Sir,

**RE: LOCAL AUTHORITY NOTIFICATIONS
- CONTAMINATED LAND ACT 1991**

In response to numerous advice's received at our various plants over recent days in respect of local authority notifications of land owned or leased by Queensland Cement Limited and its subsidiary companies, Central Queensland Cement Pty Ltd and North Australian Cement Limited, we attache hereto the following:

s.73 Irrelevant information

f.17

5. LA 117 A note in clarification re two (2) notifications for the same parcel of land at Parkhurst ✓
(ie Lot 2 RP 604 139) previously notified by ourselves December 1992.
CHECK DETAILS ON REGISTER - 2 Prescribed purposes + 2 letters sent ?

s.73 Irrelevant information



We trust the above explanations and enclosures serve to satisfy requirements in respect of these matters.

Should there be any further query, please contact:

sch4p4(6) Personal information
at phone 375 0415
or fax 367 0487

Yours faithfully,

sch4p4(6) Personal information

Manager - Environmental Affairs

Reference :

ATTACHED NOTIFICATIONS RE LAND AT CENTRAL
QUEENSLAND CEMENT PTY. LTD.

The two (2) attached notifications are in respect of the same parcel of land at the Parkhurst works of Central Queensland Cement Pty. Ltd., a subsidiary of Queensland Cement Limited.

The only detectable difference between the two is in the Site Id numbers — one quoted as Id 97 & the other as Id 289.

Both notifications are for fuel storage.

Attention is drawn to the notification lodged December 1992 — refer copy attached. This was in relation to the same property but listed several notified uses.

This note is tendered in clarification of this matter.

FOR QUEENSLAND CEMENT LIMITED

sch4p4(6) Personal information

Manager Environmental Affairs

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CENTRAL QUEENSLAND CEMENT PTY LTD
BOX 5090
ROCKHAMPTON MAIL CENTRE
QLD
4702

LA Code: 147

Site Id: 289

Site Name: FUEL STORAGE - CQ CEMENT PLANT

Lot: 2

Plan No: RP604139

Site Address: BRUCE HIGHWAY
PARKHURST

4702

(17)

CENTRAL QLD CEMENT PTY LTD
P O BOX 5090
ROCKHAMPTON MAIL CENTRE
QLD
4700

LA Code: 147

Site Id: 97

Site Name: FUEL STORAGE-CENTRAL QLD. CEMENT

Lot: 2

Plan No: RP604139

Site Address: BRUCE HWY (YAAMBA RD)
PARKHURST 4701

Release