6th April 2021

For the attention:
Liam Jukes
Senior Planner – Major Assessment
City Development Branch
Council of City of Gold Coast

Dear **Liam Jukes,**

Objection submission COM/2019/81 -

Dangers of introducing Cement to the Nucrush quarry site

Please accept this objection as it highlights the dangers of the introduction of cement in large quantities onto the Nucrush quarry site that does not appear to have been considered as part of the development application.

Why is cement delivered to the Nucrush quarry site?

As part of the concrete manufacturing process that is carried out on the Nucrush quarry site at '33 Maudsland Road, Oxenford , 4210', cement is a key component for the Concrete Production/Batching facility to produce concrete.

As discussed before, I do not believe the Nucrush Concrete Production/Batching Facility is a compliant use of the quarry site. This is clarified in the current approval, by way of the Rezoning agreement, dated 17th March 1992. This Rezoning agreement has areas zoned for extractive industry (extractive footprint) and ancillary purposes defined as: "Ancillary Purposes to Extractive Industry including Processing, Plant, Stockpiling, Magazines, Water Storage, Workshops, Stores, Weighbridge and Offices, Decantation Ponds, Dams, Access, Permanent Trees and Shrub Screening" (reproduced in Attachment A1). It does not, however, include the facility to operate a concrete production or batching facility or any other production facilities within the Ancillary purposes area.

The ancillary purposes area is highlighted in yellow on the 'Plan of Development 362-010' (reproduced in Attachment A2). The concrete production and batching facility is located within this area which is contra to the current approval as defined in the Rezoning agreement.

Therefore, I believe the cement, required for concrete production, has no place on this site as it bears no part of the Nucrush quarry core operation and is not part of an Extractive Industry operation.

However, as the concrete batching facility is currently operating on the site, albeit believed to be contra to the current approval, the safety implications of cement should be discussed.

About the Concrete Production/Batching Facility

The existing Concrete Production/Batching Facility within the Nucrush quarry is shown in attachment A3. It is roughly four thousand square metres area positioned near the entrance to the quarry as shown in attachment A4.

What additional products are brought into the quarry site for the on-site manufacture of concrete?

The Nucrush Material Data Sheet lists the following components for their concrete manufacture (Attachment B1):

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

All significant constituents are listed below:

Ingredient	CAS	Proportion
Portland Cement	65997-15-1	0 – 60%
(Chromium VI)	1333-82-0	2-20ppm (trace impurity in Portland cement)
Crushed Stone:	Not Required	20 – 85%
Sand:	14808-60-7	20 – 85%
Water	7732-18-5	0 – 20%
Other ingredients may be added:		
Blast Furnace Slag or Fly Ash:		0 – 20%
Pozzolands:		0 – 10%
Pigments: (metallic oxide colours):		0 – 10%
Silica Fume (amorphous silica):	7699-41-4	0 – 10%
Chemical Admixtures:		1 – 10%
Polypropylene fibres:		0 – 10%
Steel fibres:		0 – 10%

Portland cement

It is clear from the components list that Nucrush concrete can contain up to sixty percent portland cement (with Chromium VI traces.) However, I will conservatively assume fourteen percent as per normal M20 concrete standard that is believed to be the most common concrete produced in Australia (as per Attachment C1).

I will use the upper concrete production limit as per the Stormwater management plan (Attachment C2) which is claimed to be 93,309 m^3 per annum (however, I do believe this to be actually in the region of 128,000 m^3 as proven in another objection, but, I will use their claimed limit for complete transparency).

Therefore, of the 93,309 m^3 or 233,273 tonnes (based on 2.5 tonnes per cubic metre - attachment C1) of concrete produced, on-site at the Nucrush quarry an estimated 32,658 tonnes is believed to be

Portland cement. This equates to approximately 1,633 trucks of cement delivered to the site or approximately six trucks every day I believe will be required (assuming trucks carry 20 tonnes).

Thus, it can be clearly seen that the cement should be a highly significant aspect of the on-site safety precautions required.

Portland cement 'Material Data Sheet'

It is noted that there is a Nucrush Concrete safety data sheet available (Attachment D1) and quarry products safety data sheet (attachment D2). But, no safety data sheet for the cement. Given the considerably large amount being consumed at the Nucrush quarry site why is there no safety data sheet available for this product?

Other material data sheets available highlight the safety issues of this particular product. For example 'Cement Australia' highlight cement can cause organ damage (bronchitis, silicosis and pneumonia), skin problems (allergic dermatitis) and serious eye conditions (inflammation of the cornea). It also highlights the other products within Portland cement such as Gypsum, limestone and Calcium Oxide and Hexavalent Chromium (Attachment D3).

Whilst another Portland cement data sheet highlights the following Hazard statements:

- H315 - Skin irritation
- H317 - Allergic Skin reaction
- H318 - Causes serious eye damage
- H373 - May cause damage to lung and respiratory tract through prolonged or repeated exposure.

It also notes cement may contain crystalline silica and highlights the necessity to use Personal Protection Equipment (Attachment D4).

Is cement dust dangerous?

The Safety Data Sheets highlighted above prove cement is potentially an extremely harmful product (Attachments D3 and D4).

For workers exposure: "It might surprise you to know that concrete and cement dust contains silica. If you don't know much about silica, in dust form, it's deadly. Silica dust is one of the biggest killers of construction workers, second to asbestos. Silica dust kills around 800 people every year in the UK" (Attachment D5).

For residential exposure a 'National Library of Medicine' study is highly poignant (abridged from Attachment D6):

"**Purpose** - Portland cement contains carcinogens such as chromium and free silica, and hence inhalation of cement dust can cause respiratory tract cancers. The purpose of this study was to determine whether living near a cement plant increases the risk of respiratory tract cancers"

"**Methods** - The study population consisted of 341,793 people, all of whom lived in administrative districts within 3 km radius of ten cement plants in Korea"

"**Results** -Compared with the general Korean population, the incidence of lung and bronchus cancer was significantly higher in all subjects and especially in men in our study population. In addition, the incidence of larynx cancer in men and salivary gland cancer in women living near the cement plants was marginally increased".

"**Conclusions** - These results suggest the environmental exposure to Portland cement dust is a risk factor for respiratory tract cancers".

Also, the 'National Library of Medicine' report stated: "Cement dust causes lung function impairment, chronic obstructive lung disease, restrictive lung disease, pneumoconiosis and carcinoma of the lungs, stomach and colon. Other studies have shown that cement dust may enter into the systemic circulation and thereby reach the essentially all the organs of body and affects the different tissues including heart, liver, spleen, bone, muscles and hairs and ultimately affecting their micro-structure and physiological performance" (Attachment D7).

There appears to be no doubt that cement dust presents a clear health and safety issue to both workers and the general population subjected to it.

Traffic Impact Assessment

It is noted the delivery vehicles for the concrete production facility are not included in the development application's Traffic Impact Assessment.

Bearing in mind 93,309 m3 (or 233,272 tonnes) of concrete requires roughly 350 kg of concrete and 700g of sand per m^3, this means 97,974 tonnes have to be delivered (without including any silica fume, fly ash or any other additives required). This equates to approximately 4,900 trucks per annum or 17 per day (allowing the 280 working days as specified in the development application which includes Saturdays).

This means there are an estimated 17 loaded trucks every day delivering sand and cement to the site (or 34 truck movements) that appear to be completely unaccounted for in the Traffic Impact Assessment. This is an additional ten percent above the claimed "171 loaded trucks per day" entering and leaving the site (Attachment E1). I believe this is a highly culpable omission and misdirection.

Conclusion

It is clear that there was never supposed to be concrete manufacturing or production on this quarry site. However, by the applicant seemingly surreptitiously setting up and operating a concrete production facility, contra to their original approval, has meant that there are far more trucks entering and leaving the site than there should be. It has also meant hazardous materials are brought onto the site in immense quantities (e.g. cement, fly ash, silica fume, etc.). This has resulted in far more traffic, noise and dust than there should have been and the different products brought onto the site all having their own separate hazardous properties.

It would seem the applicant has failed to disclose any of this information in their development application choosing to predominately ignore the concrete production facility and claim it is not part

of the development application (Attachment F1) when clearly it is a highly important aspect of the current operation that I believe affects all the following reports that have been submitted as part of the development application:

- Traffic impact Assessment
- Stormwater management plan
- Groundwater Impact Assessment
- Noise and Dust assessment
- Visual Impact Assessment
- Rehabilitation Management Plan
- Ecological Assessment

Have all the above reports correctly included the concrete production/batching facility in their analysis? It would seem not.

What protection is provided for the cement dust to stop it escaping into the atmosphere and harming workers, local residents and the local environment? There is no acknowledgement of it even being on the site despite the immense quantities used.

A lot of highly serious issues, affecting safety, health, the environment, have not been satisfactorily addressed within the development application.

It is clear to see the that the knowledge that cement is delivered in large quantities (maybe six trucks per day) to the quarry site will be highly controversial for local residents bearing in mind the clear health and safety implications associated with it.

To bring additional large quantities of hazardous material on to this quarry site is utterly ridiculous especially considering the already highly polluting nature of the quarry operation. This coupled with the fact that the separation buffers at this quarry are currently a fraction of the 1000 metres DES guidelines require and this development application is attempting to further reduce these significantly by quarry encroachment towards the local residents in every radial direction is utterly untenable.

With such a dramatic impact on the number of trucks to deliver key components required for the concrete production process, and the associated unique hazards each of these key components raise, this aspect cannot be simply ignored by the development application as appears to be the case.

I implore the Council Planners and Decision Makers to consider these highly important aspects that would seem to be conspicuously absent from the development application when they consider if it contained sufficient information, at the time of submission, to warrant its approval or does the absence of key information, such as this, ultimately mean this development application cannot be approved?

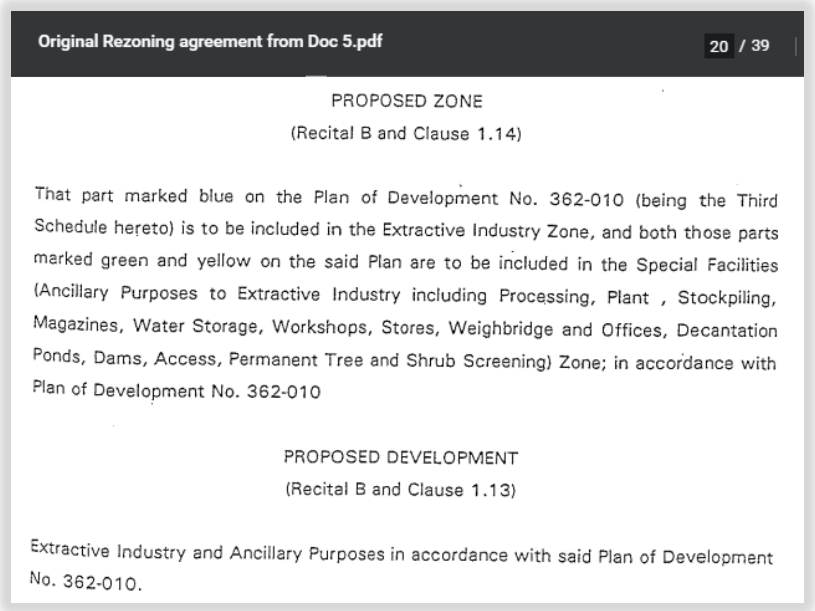
Thank you in anticipation,

Kind regards

Tony Potter

* Disclaimer. Please note my findings are believed correct and are to the best of my ability. However, there may be errors and assumptions I have made that are incorrect. I do not believe this to be the case, but, realise with the vast amounted of submitted data from the applicant, errors and assumptions on my part may occur. Hopefully this is not the case, but please accept my apologises if this is so. Thank you.

Attachment A1 - Definition of Ancillary Purposes in the current approval Rezoning Agreement



Original Rezoning agreement from Doc 5.pdf 20 / 39

PROPOSED ZONE

(Recital B and Clause 1.14)

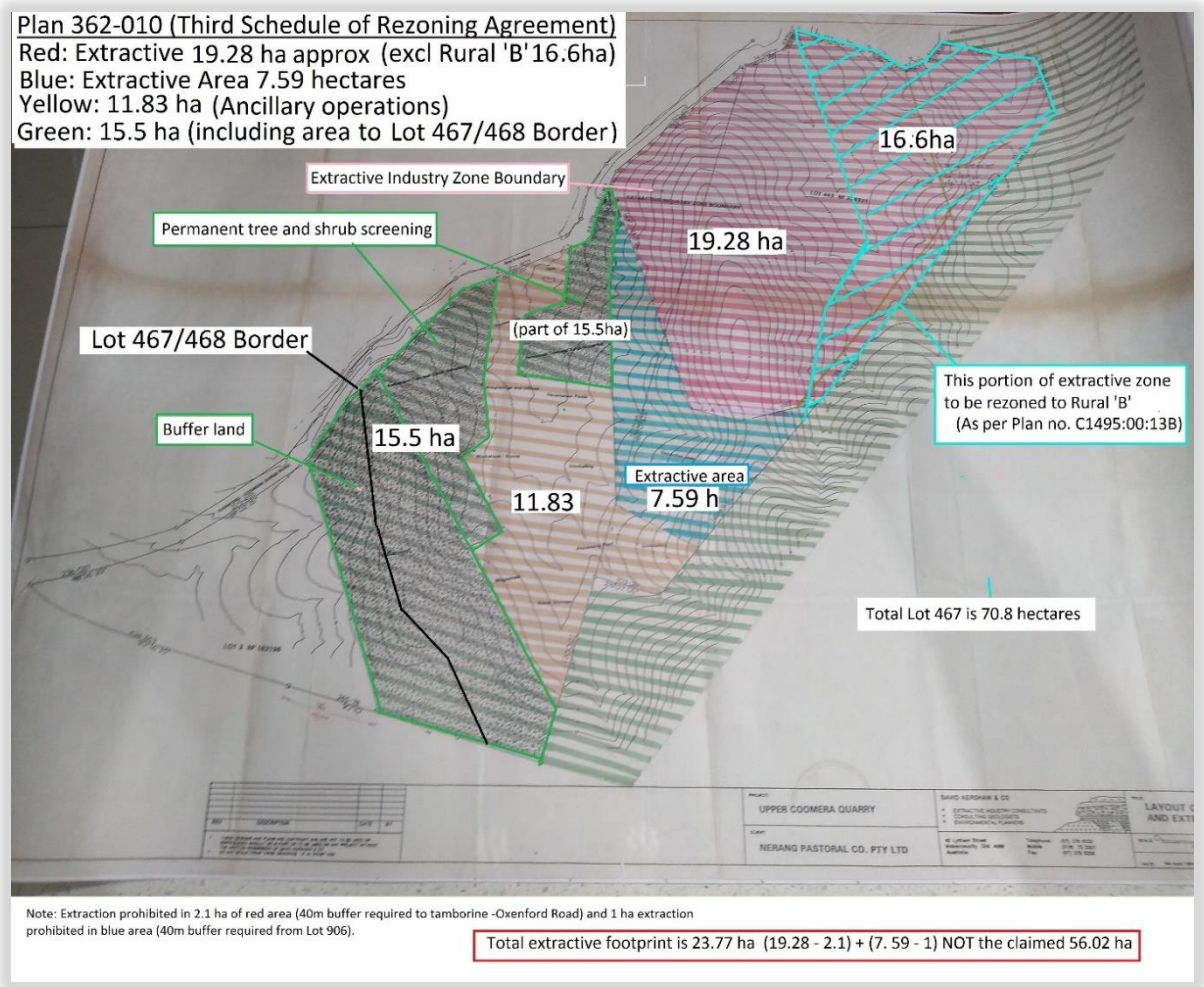
That part marked blue on the Plan of Development No. 362-010 (being the Third Schedule hereto) is to be included in the Extractive Industry Zone, and both those parts marked green and yellow on the said Plan are to be included in the Special Facilities (Ancillary Purposes to Extractive Industry including Processing, Plant , Stockpiling, Magazines, Water Storage, Workshops, Stores, Weighbridge and Offices, Decantation Ponds, Dams, Access, Permanent Tree and Shrub Screening) Zone; in accordance with Plan of Development No. 362-010

PROPOSED DEVELOPMENT

(Recital B and Clause 1.13)

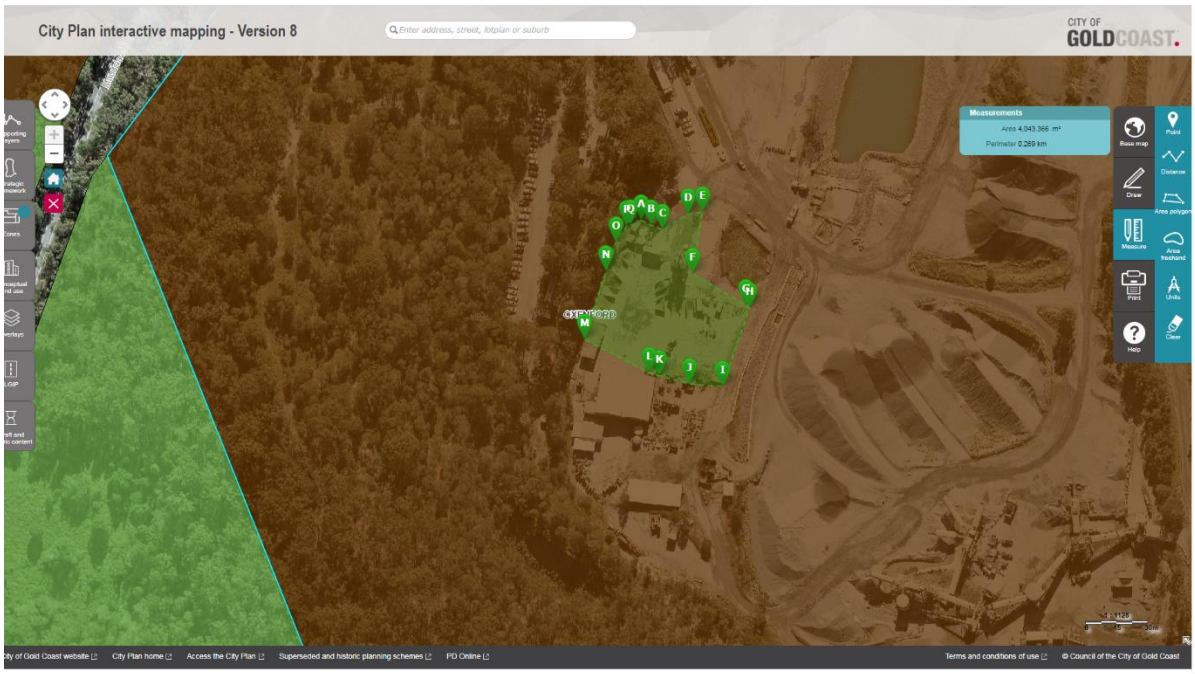
Extractive Industry and Ancillary Purposes in accordance with said Plan of Development No. 362-010.

Attachment A2 - Plan of Development 362-010 (or Third Schedule of the Rezoning Agreement) annotated



Attachment A3 - Concrete Plant at Nucrush quarry

Attachment A4 - Concrete Batching Plant location within Nucrush quarry



Attachment B1 - Nucrush Material Data Sheet - Premixed Concrete + Ingredients

NUCRUSHGROUP

SAFETY DATA SHEET

Telephone: (07) 5573 8000
Fax: (07) 5573 2908
ABN 23 010 119 981

PRODUCT: PREMIXED CONCRETE

SECTION 1: IDENTIFICATION OF MATERIAL AND SUPPLIER

Product:	**Premixed Concrete**
Other Names:	Concrete, Pool Spray
Use:	As a material used extensively in concrete for building construction and civil engineering activities.
Company Details:	**NUCON PTY LTD**
Address:	**Hart Street, Upper Coomera, QLD, 4209**
Telephone:	**07 5573 8000**

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

All significant constituents are listed below:

Ingredient	CAS	Proportion
Portland Cement	65997-15-1	0 – 60%
(Chromium VI)	1333-82-0	2-20ppm (trace impurity in Portland cement)
Crushed Stone:	Not Required	20 – 85%
Sand:	14808-60-7	20 – 85%
Water	7732-18-5	0 – 20%

Other ingredients may be added:		
Blast Furnace Slag or Fly Ash:		0 – 20%
Pozzolands:		0 – 10%
Pigments: (metallic oxide colours):		0 – 10%
Silica Fume (amorphous silica):	7699-41-4	0 – 10%
Chemical Admixtures:		1 – 10%
Polypropylene fibres:		0 – 10%
Steel fibres:		0 – 10%

Attachment C1 - Concrete Mix ingredients

planete-tp.com/en/concrete-mix-design-a221.html

Concrete mix design

Published on 30 January 2008 (updated on 14 February 2008)

Concrete is a mixture of several natural constiuents.These include:

* **A binder**: cement, which hardens in the presence of water;

* **Water**: it is required for the cement to harden and in order to lay it. However, care is necessary as too much water reduces the strength and durability of the concrete.

* **Aggregate**: it varies in size from sand to gravel, which forms the "skeleton" of the concrete.

* And, when required, **additives**: they modify the properties of the concrete depending on their nature.

To formulate a concrete, it is firstly necessary to select:

* the type of aggregate (the stones) and the size of the particles

* then the type of cement (there is a large variety of types of cement with different characteristics and performances - in general 350 Kg of cement for 1m3 of concrete)

* then the amount of water (generally between 130 and 150 Litres for 1m3 of concrete)

* and lastly, if required, the amount of additives (a few Kilograms for 1m3 of concrete).

One cubic metre of concrete weighs 2.5 Tonnes.
Typically, 1m3 of concrete is made up of 350Kg of cement, 700Kg of sand, 1,200Kg of chippings and 150 Litres of water.

The mix design process can either be conducted on the basis of charts or experimentally. These methods are based on achieving the maximum density of concrete..

Approximate proportions of constituents in a conventional concrete

Constituent	Water	Air	Aggregate	Cement
Volume (%)	14-22	1-6	7-14	60-78
Weight (%)	5-9	-	9-18	63-85

Attachment C2 - Concrete production estimates

2019-05-20 Section 4 - Noise and Dust assessment and Stormwater.pdf

Appendix C Water Cycle Management Strategy

C.1 Preamble

This appendix describes and assesses the recommended water management strategy for the site for the existing site conditions and ultimate site conditions, for the following 3 scenarios:

- *Low concrete production*: where annual concrete production is considered 'low' (with 17,616 m^3 per annum identified by Nucrush);
- *Medium concrete production*: where annual concrete production is considered 'medium' (49,000 m^3 per annum identified by Nucrush); and
- *High concrete production*: where annual concrete production is considered 'high' (93,309 m^3 per annum identified by Nucrush).

The results demonstrate that the proposed strategy for each of the two site conditions will ensure the water demands of the site operations will be satisfied. (include in here section on low, med, high production of concrete production.

Attachment D1 - Nucrush Safety Data Sheet - Concrete (Abridged)

NUCRUSHGROUP

SAFETY DATA SHEET

Telephone: (07) 5573 8000
Fax: (07) 5573 2908
ABN 23 010 119 981

PRODUCT: PREMIXED CONCRETE

Product:	**Premixed Concrete**
Company Details:	**NUCON PTY LTD**
Address:	**Hart Street, Upper Coomera, QLD, 4209**
Telephone:	**07 5573 8000**

HAZARDOUS SUBSTANCE

This product contains crystalline silica. Crystalline silica is classified as hazardous.

(Australian Safety and Compensation Commission ASCC (formerly NOHSC) Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008] 3rd Edition)

The solid product as supplied is classified as non-Hazardous.
Dust in/on the supplied product or created when the product is cut, abraded, or crushed contains crystalline silica. Some of which may be respirable (particles small enough to go into the deep parts of the lung when breathed in). A proportion of the fine dust in/on the supplied product may be respirable crystalline silica.

The following Risk and Safety phrases apply to this product:

Risk Phrases:	**R20:** Harmful by Inhalation (applies to concrete dust), **R21:** Harmful in contact with skin, **R22:** Harmful if swallowed, **R43:** May cause sensitisation by skin contact **R48:** Danger of serious damage to health by prolonged exposure through inhalation (applies to concrete dust)
Safety Phrases:	**S22:** Do not breathe dust, **S24:** Toxic in contact with skin, **S24:** Toxic if swallowed **S28:** After contact with skin wash immediately with plenty of water, **S29:** Do not empty into drains, **S36:** Wear suitable protective clothing, **S37:** Wear suitable gloves **S39:** Wear eye/face protection

Attachment D2 - Nucrush Safety Data Sheet - Quarry Products (Abridged)

NUCRUSH GROUP

MATERIAL SAFETY DATA SHEET

PRODUCT: QUARRY PRODUCTS

SECTION 1: IDENTIFICATION OF MATERIAL AND SUPPLIER

Product:	**Quarry Products**
Other Names:	Crushed Stone, Gravel, Aggregate, Road Base, Pre-Coat Aggregates, Sand, Fill
Use:	As a material used extensively in concrete for building construction and civil engineering activities.
Company Details: Address:	**NUCRUSH PTY LTD** **Hart Street, Upper Coomera, QLD, 4209**
Telephone:	**07 5573 8000**
Other Information:	N/A

SECTION 2: HAZARD IDENTIFICATION

HAZARDOUS SUBSTANCE **NON- DANGEROUS GOOD**

This product contains crystalline silica. Crystalline silica is classified as hazardous.

(Australian Safety and Compensation Commission ASCC (formerly NOHSC) Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008] 3rd Edition)

The solid product as supplied is classified as non-Hazardous.

Dust in/on the supplied product or created when the product is cut, abraded, or crushed contains crystalline silica. Some of which may be respirable (particles small enough to go into the deep parts of the lung when breathed in). A proportion of the fine dust in/on the supplied product may be respirable crystalline silica.

The following Risk and Safety phrases apply to this product:

Risk Phrases: **R20:** Harmful by Inhalation (applies to dust), &
R48: Danger of serious damage to health by prolonged exposure through inhalation (applies to dust)

Safety Phrases: S22: Harmful if swallowed

Attachment D3 - Cement Australia Safety Data Sheet (Abridged)

cementaustralia.com.au/sites/default/files/2018-09/CASDS01%20General%20Purpose%20Cement.pdf

SDS No. CASDS01 | Issue Date: 1 September 2018

SAFETY DATA SHEET

General Purpose Cement

Section 1: Identification of the Material and Supplier

Company Details

Cement Australia Pty Limited

ABN 75 104 053 474

18 Station Avenue
Darra, Queensland 4076

Tel: 1300 CEMENT (1300 236 368)
Fax: 1800 CEMENT (1800 236 368)
Website: www.cementaustralia.com.au

Hazard statement(s)

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure (skin).

Section 3: Composition/Information on Ingredients

General Purpose Cement consists of a crystalline mass manufactured from substances mined from the earth's crust. It contains trace amounts of naturally occurring, but potentially hazardous chemical entities including metals such as chromium and nickel. All significant constituents are listed below:

Chemical Entity	Proportion	CAS Number
Portland Clinker	<97%	65997-15-1
Gypsum ($CaSO_4 \cdot 2H_2O$)	2-5%	10101-41-4
Limestone ($CaCO_3$)	0-7.5%	1317-65-3
Calcium Oxide	0-1%	1305-78-8
Hexavalent Chromium Cr (VI)	<10 ppm	1333-82-0

Section 8: Exposure Controls/Personal Protection

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Calcium carbonate (Limestone, Marble, Whiting)	SWA (AUS)	--	10	--	--
Calcium oxide	SWA (AUS)	--	2	--	--
Chromium (VI) compounds (as Cr)	SWA (AUS)	--	0.05	--	--
Gypsum (Calcium sulphate)	SWA (AUS)	--	10	--	--
Magnesium oxide (fume)	SWA (AUS)	--	10	--	--
Portland Cement	SWA (AUS)	--	10	--	--

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

Eye / Face	Wear safety glasses or dust-proof goggles when handling material to avoid contact with eyes.
Hands	Wear PVC, rubber or cotton gloves when handling material to prevent skin contact.
Body	Wear long sleeved shirt and full-length trousers.
Respiratory	Where an inhalation risk exists wear a Class P1 (Particulate) respirator, dependent on a site-specific risk assessment.

Section 11: Toxicological Information

General Purpose Cements are stable substances, compatible with most other building materials, will not decompose into hazardous by-products and do not polymerise.

Short Term (Acute) Exposure

Swallowed: Unlikely under normal industrial use. Mildly abrasive and corrosive to mouth and throat if swallowed. May cause nausea, stomach cramps and constipation.

Eyes: Irritating and corrosive to the eyes and may cause alkaline burns. Cement dust is irritating to the eyes. Exposure to dust may aggravate existing eye irritations.

Skin: Dust is irritating and drying to the skin. Direct contact with wet cement may cause serious skin burns. Within 12 to 48 hours (after one- to six-hour exposures) possible first, second or third degree burns may occur. There may be no obvious pain at the time of the exposure. Chronic skin disorders may be aggravated by exposure to dust or contact with wet cement.

Inhaled: Cement dust is irritating to the nose, throat and respiratory tract causing coughing and sneezing.
Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated.

Long Term (Chronic) Exposure

Eyes: Dust may cause irritation and inflammation of the cornea.

Skin: Repeated contact causes irritation and drying of the skin and can result in skin reddening and skin rash (dermatitis). Over time this may become chronic and can also become infected. Persons who are allergic to chromium may develop an allergic dermatitis which aggravates the irritant effects and this combination can lead to chronic cement dermatitis and serious disability particularly affecting the hands.
Of the ingredients, Water soluble Hexavalent Chromium (Cr VI) is not classified as a carcinogen by the Hazardous Chemical Information System (HCIS); may trigger skin sensitisation issues in some users.

Inhaled: Repeated exposure to the dust may result in increased nasal and respiratory secretions and coughing. Inflammation of lining tissue of the respiratory system may follow repeated exposure to high levels of dust, with increased risk of bronchitis and pneumonia.
Repeated and prolonged exposure to dust levels which exceed the OES for crystalline silica (see above) may occur. This can cause bronchitis, and silicosis (scarring of the lung).

Attachment D4 - Portland Cement Safety Data Sheet (Abridged)

cockburncement.com.au/wp-content/uploads/2017/04/Portland-Cement.pdf

Safety Data Sheet

PORTLAND CEMENT

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	**PORTLAND CEMENT**
Supplier Contact	Cockburn Cement A.B.N. 50.008.673.470
Address	PO Box 38, Hamilton Hill, WA 6963
Manufacturing Plant(s)	Munster Works, Lot 242, Russell Road East, Munster WA 6166 Kwinana Works, Leath Road, Kwinana WA 6167
Telephone	08 9411 1000
Fax	08 9411 1150
Emergency	Bus Hrs 08 9411 1000 A/Hrs 08 9411 1000
Email	orders@cockburncement.com.au
Web Site	http://www.cockburn.com.au & www.swancement.com.au

GHS Classifications

Skin Corrosion/Irritation:	Category 2
Serious Eye Damage / Eye Irritation:	Category 1
Specific Target Organ Systemic Toxicity (Repeated Exposure):	Category 2

Hazard statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H373	May cause damage to lungs and respiratory tract through prolonged or repeated exposure.

Prevention statements

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	Formula	Conc.	CAS No.
PORTLAND CEMENT CLINKER	Not Available	< 90%	65997-15-1
*GYPSUM	$CaSO_4$ $2H_2O$	3 - 8%	10101-41-4
*LIMESTONE	$CaCO_3$	0 – 5%	1317-65-3
*GRANULATED BLAST FURNACE SLAG	Not Available	0 – 5%	65996-69-2
CHROMIUM (VI) HEXAVALENT	Cr^{6+}	Trace	18540-29-9

*NOTE: Ingredient may contain crystalline silica (CAS No. 14808-60-7).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation

Do not inhale dust/powder. Use with adequate ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

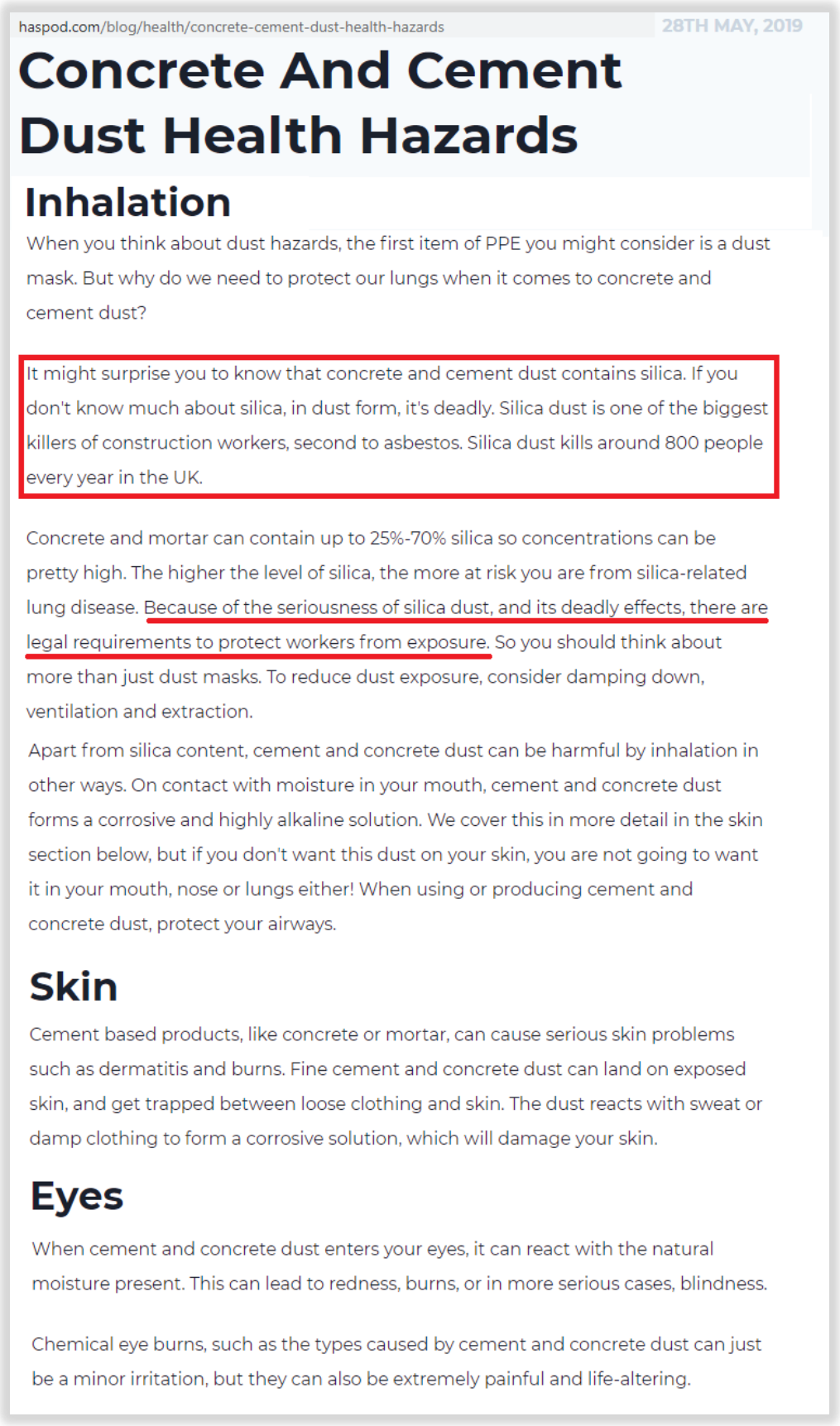
Exposure Standards

CALCIUM CARBONATE (1317-65-3)
ES-TWA: 10mg/m^3 (Respirable Dust)
CHROMIUM (VI) HEXAVALENT(18540-29-9)
ES-TWA: 0.05 mg/m^3 (Chromium VI compounds)
GYPSUM (10101-41-4)
ES-TWA: 10 mg/m^3 (Respirable Dust)
PORTLAND CEMENT (65997-15-1)
ES-TWA: 10 mg/m^3 (Respirable Dust)
SILICA, CRYSTALLINE – QUARTZ (14808-60-7)
ES-TWA: 0.1 mg/m^3 (Respirable Dust)

PPE

Wear dust-proof goggles and rubber or PVC gloves. Where an inhalation risk exists, wear a Class P2 respirator. If there is potential for prolonged and/or excessive skin contact, wear coveralls. At high dust levels, wear a Class P3 respirator or a Powered Air Purifying Respirator (PAPR) with Class P3 filter.

Attachment D5 - Concrete and Cement Dust Health Hazards



haspod.com/blog/health/concrete-cement-dust-health-hazards 28TH MAY, 2019

Concrete And Cement Dust Health Hazards

Inhalation

When you think about dust hazards, the first item of PPE you might consider is a dust mask. But why do we need to protect our lungs when it comes to concrete and cement dust?

It might surprise you to know that concrete and cement dust contains silica. If you don't know much about silica, in dust form, it's deadly. Silica dust is one of the biggest killers of construction workers, second to asbestos. Silica dust kills around 800 people every year in the UK.

Concrete and mortar can contain up to 25%-70% silica so concentrations can be pretty high. The higher the level of silica, the more at risk you are from silica-related lung disease. Because of the seriousness of silica dust, and its deadly effects, there are legal requirements to protect workers from exposure. So you should think about more than just dust masks. To reduce dust exposure, consider damping down, ventilation and extraction.

Apart from silica content, cement and concrete dust can be harmful by inhalation in other ways. On contact with moisture in your mouth, cement and concrete dust forms a corrosive and highly alkaline solution. We cover this in more detail in the skin section below, but if you don't want this dust on your skin, you are not going to want it in your mouth, nose or lungs either! When using or producing cement and concrete dust, protect your airways.

Skin

Cement based products, like concrete or mortar, can cause serious skin problems such as dermatitis and burns. Fine cement and concrete dust can land on exposed skin, and get trapped between loose clothing and skin. The dust reacts with sweat or damp clothing to form a corrosive solution, which will damage your skin.

Eyes

When cement and concrete dust enters your eyes, it can react with the natural moisture present. This can lead to redness, burns, or in more serious cases, blindness.

Chemical eye burns, such as the types caused by cement and concrete dust can just be a minor irritation, but they can also be extremely painful and life-altering.

Attachment D6 - 'National Library of Medicine' study of the effects of Portland Cement on general population

pubmed.ncbi.nlm.nih.gov/28707127/

Increased incidence of respiratory tract cancers in people living near Portland cement plants in Korea

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Affiliations + expand

PMID: 28707127 DOI: 10.1007/s00420-017-1244-9

Abstract

Purpose: Portland cement contains carcinogens such as chromium and free silica, and hence, inhalation of cement dust can cause respiratory tract cancers. The purpose of this study was to determine whether living near a cement plant increases the risk of respiratory tract cancers.

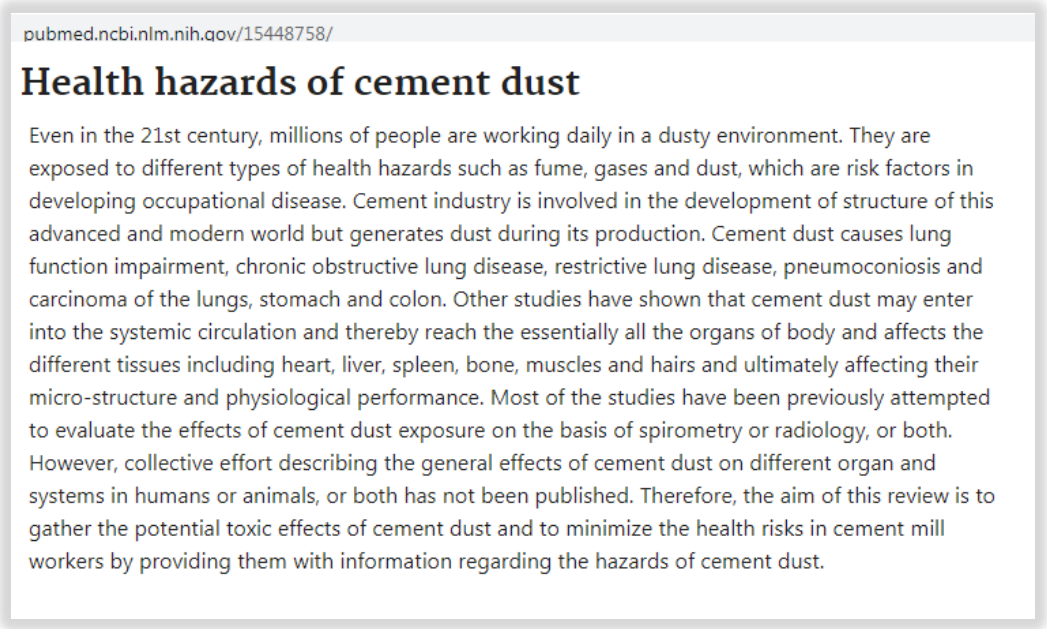
Methods: The study population consisted of 341,793 people, all of whom lived in administrative districts within 3-km radius of ten cement plants in Korea. The respiratory tract cancer incidence data (International Classification of Diseases, ten revision code C00-C14 and C30-C34) for 2008-2012 were obtained from regional cancer registries. Standardized incidence ratios (SIRs) for each cancer site in the respiratory tract were calculated using an indirect standardization method.

Results: Compared with the general Korean population, the incidence of lung and bronchus cancer (C33-C34) was significantly higher in all subjects [SIR 1.15, 95% confidence interval (CI) 1.02-1.29] and especially in the men subjects (SIR 1.47, 95% CI 1.29-1.68) in our study population. In addition, the incidence of larynx cancer in men (SIR 1.64, 95% CI 0.97-2.59) and salivary gland cancer in women (SIR 3.03, 95% CI 0.98-7.07) living near cement plants was marginally increased.

Conclusions: These results suggest that environmental exposure to Portland cement dust is a risk factor for respiratory tract cancers.

Keywords: Cement; Environmental exposure; Respiratory tract cancer; Standardized incidence ratio.

Attachment D7 - 'National Library of Medicine' health hazards of cement dust

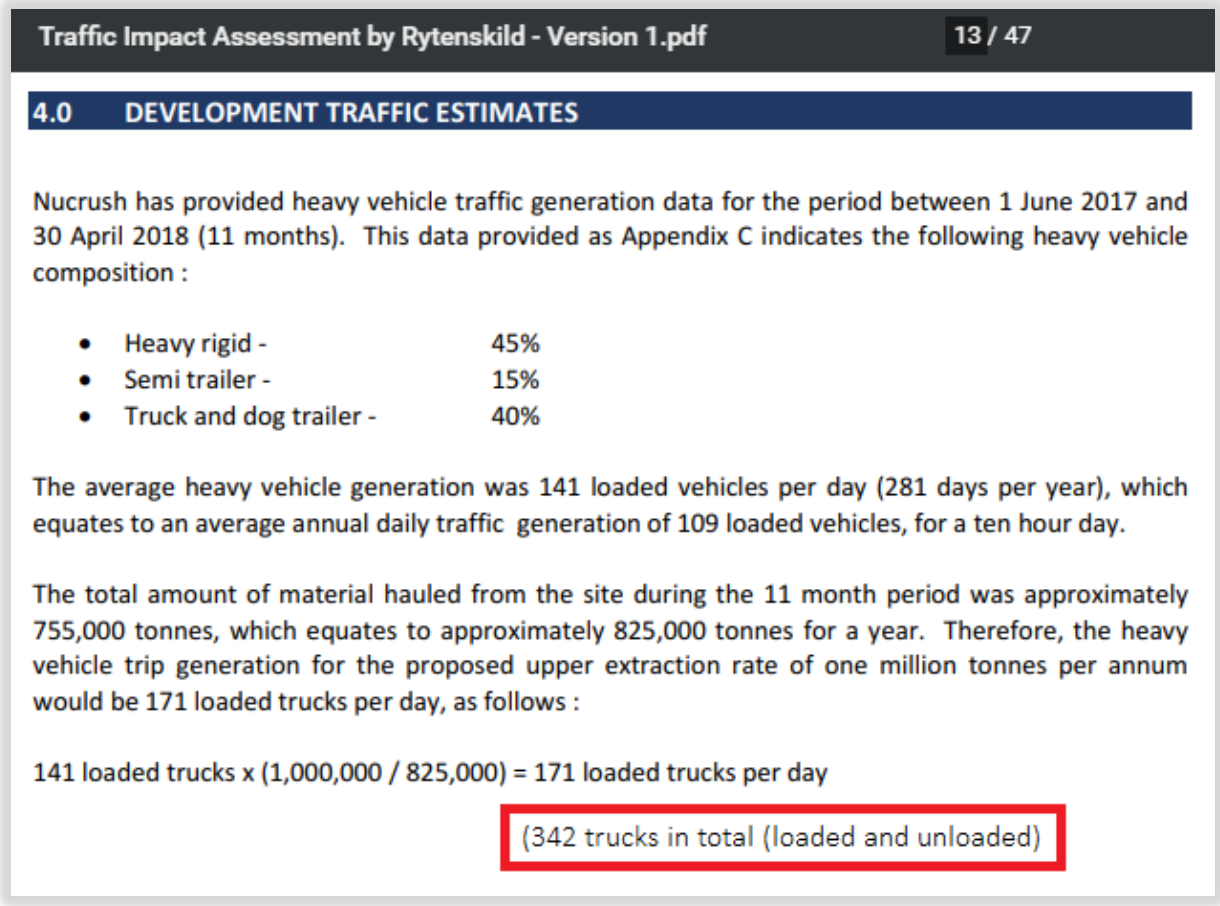


pubmed.ncbi.nlm.nih.gov/15448758/

Health hazards of cement dust

Even in the 21st century, millions of people are working daily in a dusty environment. They are exposed to different types of health hazards such as fume, gases and dust, which are risk factors in developing occupational disease. Cement industry is involved in the development of structure of this advanced and modern world but generates dust during its production. Cement dust causes lung function impairment, chronic obstructive lung disease, restrictive lung disease, pneumoconiosis and carcinoma of the lungs, stomach and colon. Other studies have shown that cement dust may enter into the systemic circulation and thereby reach the essentially all the organs of body and affects the different tissues including heart, liver, spleen, bone, muscles and hairs and ultimately affecting their micro-structure and physiological performance. Most of the studies have been previously attempted to evaluate the effects of cement dust exposure on the basis of spirometry or radiology, or both. However, collective effort describing the general effects of cement dust on different organ and systems in humans or animals, or both has not been published. Therefore, the aim of this review is to gather the potential toxic effects of cement dust and to minimize the health risks in cement mill workers by providing them with information regarding the hazards of cement dust.

Attachment E1 - Claimed 171 loaded trucks per day



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4.0 DEVELOPMENT TRAFFIC ESTIMATES

Nucrush has provided heavy vehicle traffic generation data for the period between 1 June 2017 and 30 April 2018 (11 months). This data provided as Appendix C indicates the following heavy vehicle composition :

- Heavy rigid - 45%
- Semi trailer - 15%
- Truck and dog trailer - 40%

The average heavy vehicle generation was 141 loaded vehicles per day (281 days per year), which equates to an average annual daily traffic generation of 109 loaded vehicles, for a ten hour day.

The total amount of material hauled from the site during the 11 month period was approximately 755,000 tonnes, which equates to approximately 825,000 tonnes for a year. Therefore, the heavy vehicle trip generation for the proposed upper extraction rate of one million tonnes per annum would be 171 loaded trucks per day, as follows :

141 loaded trucks x (1,000,000 / 825,000) = 171 loaded trucks per day

(342 trucks in total (loaded and unloaded)

Attachment F1 - Concrete Plant is claimed to be not part of this application

4.0 DEVELOPMENT TRAFFIC ESTIMATES

As discussed previously, the proposal will result in an extension of the life of the quarry and not an intensification of current operations. The proposal will simply allow the current level of traffic generation to continue for the foreseeable future. The extended life of the quarry depends upon market demand.

Given that the quarry has been in operation for many years, the surrounding road network has been upgraded, and the design of such works has accounted for the project. On this basis, the surveyed traffic volumes shown in Attachment B (and summarised below) include traffic generated by the quarry and such will not change as a consequence of the proposed increase in area to be extracted.

Approximately 20% of the vehicles shown below are light vehicles (cars, utes etc) with the balance typically being the following mix of heavy vehicles:

- Heavy rigid - 45%
- Semi trailer - 15%
- Truck and dog trailer - 40%

It is noted that the volumes below include traffic generated by the concrete plant, which is not part of this application.

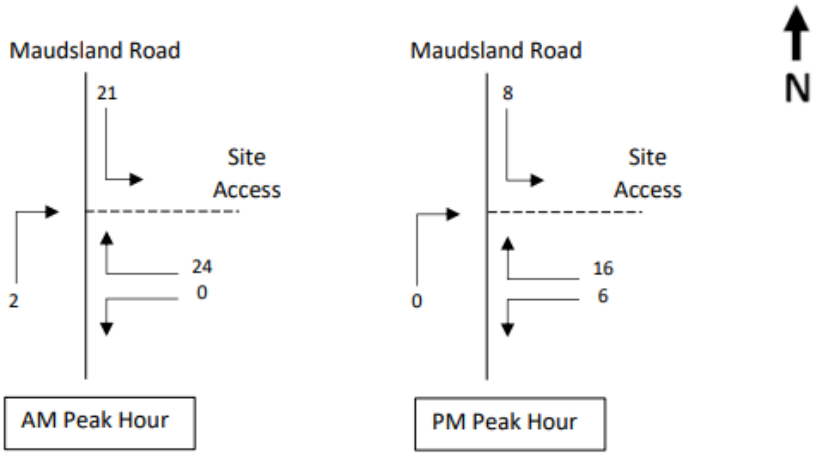

FIGURE 4.1 – SURVEYED PEAK HOUR TRAFFIC VOLUMES AT THE MAUDSLAND ROAD / SITE ACCESS ROAD INTERSECTION (AUSTRAFFIC – 2014)