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 Fly Ash to the Nucrush quarry site

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

Why is the 'Fly Ash' on 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', Fly ash appears to be used to reduce the amount of cement required to produce the concrete.

Fly ash is a by product from burning pulverized coal in electric power generating plants. During combustion, mineral impurities in the coal (clay, feldspar, quartz and shale) fuse in suspension and float out of the combustion chamber with the exhaust gases (Attachment A1).

The physical and chemical properties of fly ash are pozzolanic, meaning it reacts and hardens in the presence of water. When mixed with lime (calcium hydroxide), pozzolans combine to form cementitious compounds (Attachment A2).

As discussed before, I do not believe the Nucrush Concrete Production/Batching Facility is a compliant use of the quarry site as 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 areas which include: 'Weighbridge and offices', 'Decantation Ponds', 'Workshops/stores', 'Stockpiling', 'magazines', 'water storage', 'Processing plant', 'Buffer land' and 'Permanent tree and shrub planting' (Attachment B1). It does not, however, include the facility to operate a concrete production / batching facility or any other production facilities on this site.

Therefore, I believe the fly ash, required for concrete production, has no place on this site as it bears no part of the Nucrush quarry core operation.

However, as the concrete production / batching facility is currently operating on the site, albeit believed to be contra to the current approval, and it is it would seem (despite it would seem culpably limited references within development application to it) it is proposed to operate for the next one hundred plus years, therefore, the safety implication of fly ash should be discussed.

About the Concrete Production/Batching Facility

The existing Concrete Production/Batching Facility within the Nucrush quarry is shown in Attachment B2. It is roughly four thousand square metres area positioned near the entrance to the quarry (Attachment B3).

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

The Nucrush Material Safety Data Sheet lists the following components for their concrete manufacture (Attachment C1):

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%

Fly Ash (or blast furnace slag)

It is clear from the components list above that Nucrush concrete can contain up to twenty percent fly ash.

We will use the upper concrete production limit as per the Stormwater management plan (Attachment D1) 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 estimated 93,309 m^3 of concrete produced on-site at the Nucrush quarry per annum up to 18,660 m^3 could be fly ash or 46,650 tonnes pa (based on 2.5 tonnes per cubic metre) which equates to up to 2,332 trucks per annum of fly ash delivered to the site or eight trucks per day (assuming trucks delivery is in the region of twenty tonnes capacity).

It would seem an incredible amount of fly ash could be delivered to the site every day.

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

Is Fly Ash Dangerous?

Fly ash can have a different chemical makeup depending on where the coal was mined. Broadly speaking, fly ash is a pollutant, and it contains acidic, toxic, and radioactive matter. The ash can contain lead, arsenic, mercury, cadmium and uranium. The EPA found that significant exposure to fly ash and other components of coal ash increases a person's risk of developing cancer and other respiratory diseases. Wet ash ponds can pollute groundwater and if ingested, the arsenic contaminated water increases a person's risk of developing cancer. Inhalation or ingestion of the toxins in fly ash can have impacts on the nervous system, causing cognitive defects, development delays, and behavioural problems while also increasing a person's chance of developing lung disease, kidney disease, and gastrointestinal illness (Attachment E1)

Fly Ash particles (a major component of coal ash) can become lodged in the deepest part of your lungs, where they trigger asthma, inflammation and immunological reactions. Studies link these particles to the four leading causes of death in the U.S.: heart disease, cancer, respiratory diseases and stroke (Attachment E2).

Fly ash contains trace concentrations of heavy metals and other substances that are known to be detrimental to health. Potentially toxic trace elements include arsenic, beryllium cadmium, barium, chromium copper, lead, mercury, molybdenum, nickel, radium, selenium, thorium, uranium, vanadium and zinc. Approximately 10% of the mass of coals burned consists of un-burnable mineral material that becomes ash, so the concentration of most trace elements in coal ash is approximately ten times the concentration in the original coal (Attachment E3).

Fly ash contains crystalline silica which is known to cause lung disease, in particular silicosis, if inhaled. Crystalline silica and lime along with toxic chemicals represent exposure risks to human health and the environment. Crystalline silica is listed by the IARC (International Agency for Research on Cancer) and US National Toxicology Program as a known human carcinogen (Attachment E4).

Lime reacts with water to form calcium hydroxide, giving fly ash a pH somewhere between 10 and 12 a medium to strong base. This can also cause lung damage if present in sufficient quantities (Attachment E4).

Material Data Sheets recommend a number of safety precautions be taken when handling or working with fly ash. These include wearing protective goggles, respirators and disposable clothing and avoiding agitating the fly ash in order to minimize the amount which becomes airborne (Attachment E4).

The National Academy of sciences noted in 2007 that "the presence of high contaminant levels in many CCR (coal combustion residue) leachates may create human health and ecological concerns" (Attachment E4).

The Boral Material Data Sheet for Fly Ash (Reproduced in Attachment E5) identifies this as a hazard that causes skin irritation, eye irritation, respiratory irritation, may cause damage to organs through prolonged or repeated exposure. It also identifies that up to 5% of fly ash can be crystalline silica.

There appears to be no doubt that Fly Ash presents a clear health and safety issue.

Fly Ash effects on ecosystem

Fly dust can be deposited in top soil increasing the pH and affecting the plants and animals in the surrounding ecosystem. Trace elements such as iron, manganese, zinc, copper, lead, nickel, chromium, cobalt, arsenic, cadmium and mercury can be found at higher concentrations compared to bottom ash and the parent coal (Attachment F1).

Fly ash can leach toxic constituents that can be anywhere from one hundred to one thousand times greater than the federal standard for drinking water. Fly ash can contaminate surface water through erosion, surface runoff, airborne particles landing on the water surface, contaminated ground water moving into surface waters, flooding drainage, or discharge from a coal ash pond. Fish can be contaminated a couple of different ways. When the water is contaminated by fly ash, the fish can absorb the toxins through their gills. The sediment in the water can also become contaminated. The contaminated sediment can contaminate the food sources for the fish, the fish can then become contaminated from consuming those food sources. This can lead to contamination of organisms that consume these fish, such as birds, etc. and even humans. Once exposed to fly ash contaminating the water, aquatic organisms have had increased levels of calcium, zinc, bromine, gold, cerium, chromium, selenium, cadmium and mercury (Attachment F1).

Soils contaminated by fly ash showed an increase in bulk density and water capacity, but a decrease in hydraulic conductivity and cohesiveness. The effect of fly ash on soils and microorganisms in the soils are influenced by the pH of the ash and trace metal concentrations in the ash (Attachment F1).

There appears to be no doubt that Fly Ash presents a clear ecological risk.

Environmental Effects

When ash is disposed in dry landfills or wet ponds, there are associated environmental effects. Wet surface impoundments account for a fifth of coal ash disposal. These wet impoundments can be an issue if they do not have proper liners for the landfill or pond to prevent leaking and leaching. Both leaking and leaching lead to groundwater contamination. Leaching is a process that occurs when fly ash is wet, and it simply means that the toxic components of the ash dissolve out and percolate through water. This groundwater contamination can be harmful to human health if the groundwater is a source of drinking water [local bores]. In addition to leaching, fly ash toxics are able to travel through the environment as a result of erosion, runoff, or through the air as fine dust. The fact that the chemicals in the ash can escape and move through the environment is what makes fly ash harmful (Attachment G1).

There appears to be no doubt that Fly Ash presents a clear environmental risk.

Conclusion

What happens to concrete trucks when they return from their deliveries? Are they washed down on-site? What happens to the waste? Is it allowed to potentially seep into the groundwater? Are their settlement ponds used? Are they lined appropriately? Where are they going to move to when the extractive footprint engulfs the batching area and its associated ponds? What happens to any over production? Where is it disposed of? What protection is provided for the fly ash to stop it escaping into the atmosphere?

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

It is clear to see the that the introduction of fly ash onto the quarry site will be highly controversial for local residents bearing in mind the health and safety implications associated with it.

This coupled with the fact that this is a quarry site and was never supposed to be a concrete production site is also highly controversial.

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 DES guidelines and this development application is attempting to further reduce these significantly by quarry encroachment towards the local residents is utterly untenable.

The complete absence of any mention within the development application of the use of this controversial substance within the quarry land is, I believe, highly culpable as is the claim that the concrete batching facility is not part of the development application (Attachment H1). It would seem the Concrete Production / Batching facility has been largely omitted from the development application because it is known it should not be there.

With such a dramatic impact on the number of trucks required 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 in the development application.

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.

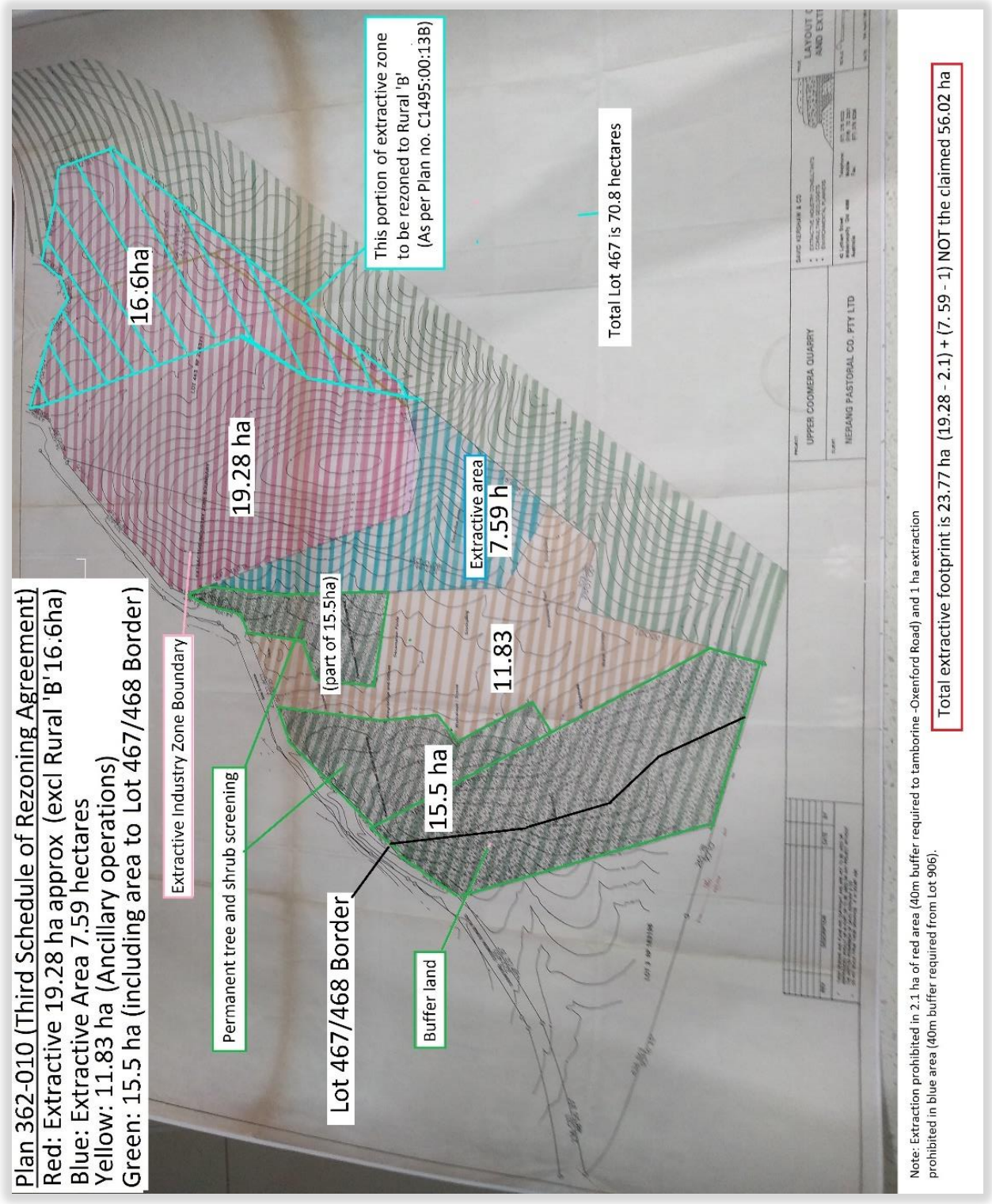
Attachment A1 - What is Fly Ash?

Fly ash is a byproduct from burning pulverized **coal** in electric power generating plants. During combustion, mineral impurities in the **coal** (clay, feldspar, quartz, and shale) fuse in suspension and float out of the combustion chamber with the exhaust gases.

Attachment A2 - What does Fly Ash do?

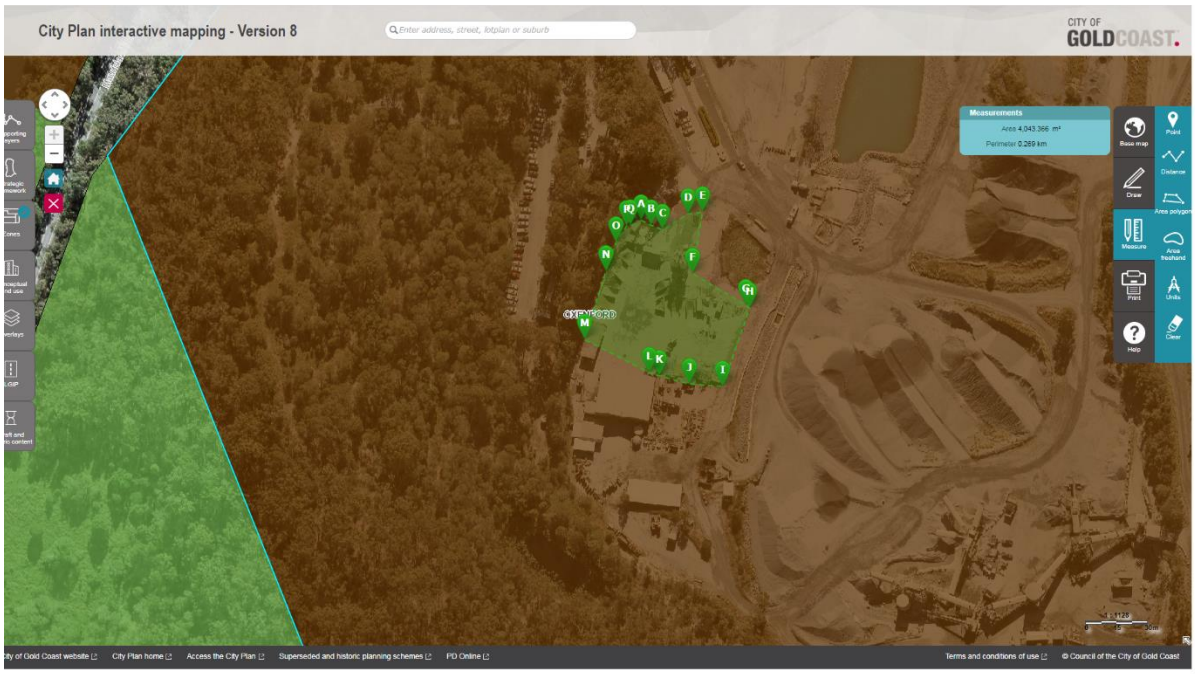
The physical and chemical properties of **fly ash** are **pozzolanic**, meaning it reacts and hardens in the presence of water. When mixed with lime (calcium hydroxide), **pozzolans** combine to form cementitious compounds.

Attachment B1 - Annotated Plan 362-010 (or Third Schedule of the Rezoning Agreement)



Attachment B2 - Concrete Plant at Nucrush quarry

Attachment B3 - Concrete Batching Plant location within Nucrush quarry



Attachment C1 - 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 D1 - Concrete production estimates

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

Appendix C Water Cycle Management Strategy

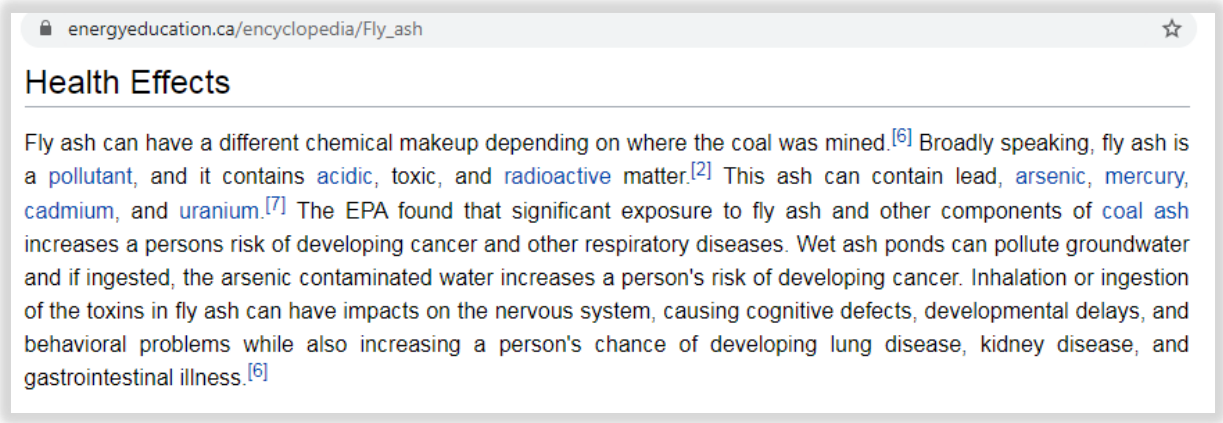
C.1 Preamble

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.

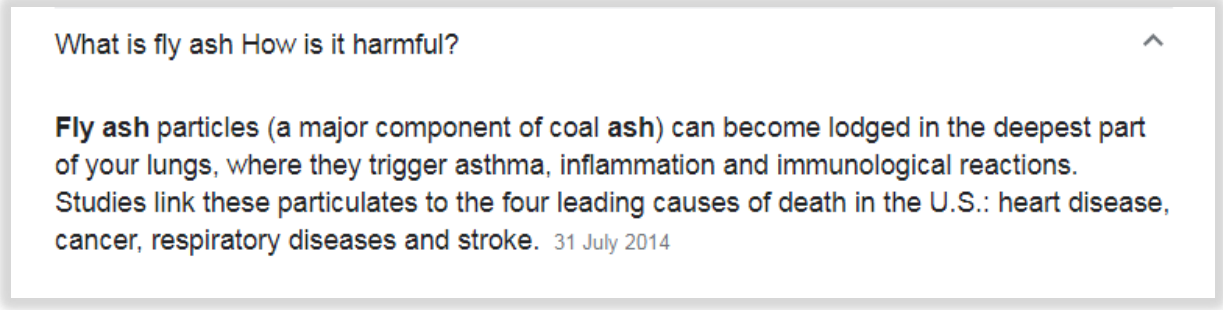
Attachment E1 - Health effects of Fly Ash


energyeducation.ca/encyclopedia/Fly_ash

Health Effects

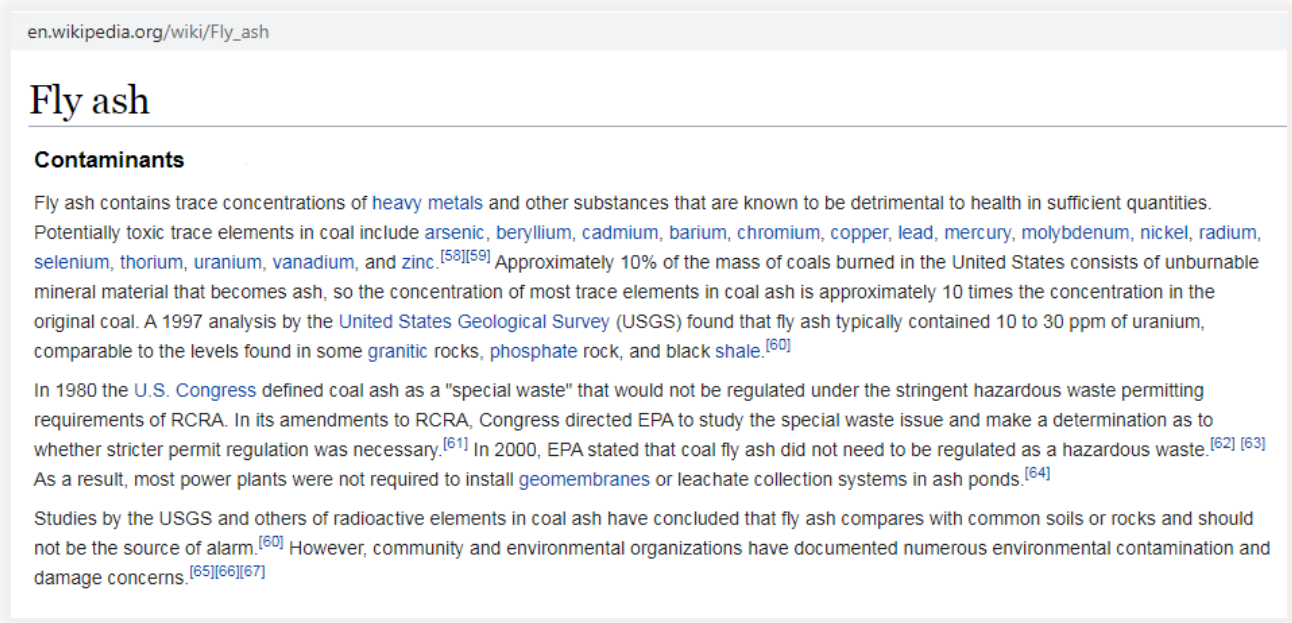
Fly ash can have a different chemical makeup depending on where the coal was mined.[6] Broadly speaking, fly ash is a pollutant, and it contains acidic, toxic, and radioactive matter.[2] This ash can contain lead, arsenic, mercury, cadmium, and uranium.[7] The EPA found that significant exposure to fly ash and other components of coal ash increases a persons risk of developing cancer and other respiratory diseases. Wet ash ponds can pollute groundwater and if ingested, the arsenic contaminated water increases a person's risk of developing cancer. Inhalation or ingestion of the toxins in fly ash can have impacts on the nervous system, causing cognitive defects, developmental delays, and behavioral problems while also increasing a person's chance of developing lung disease, kidney disease, and gastrointestinal illness.[6]

Attachment E2 - How is fly ash harmful


What is fly ash How is it harmful?

Fly ash particles (a major component of coal **ash**) can become lodged in the deepest part of your lungs, where they trigger asthma, inflammation and immunological reactions. Studies link these particulates to the four leading causes of death in the U.S.: heart disease, cancer, respiratory diseases and stroke. 31 July 2014

Attachment E3 - Fly ash contaminants


en.wikipedia.org/wiki/Fly_ash

Fly ash

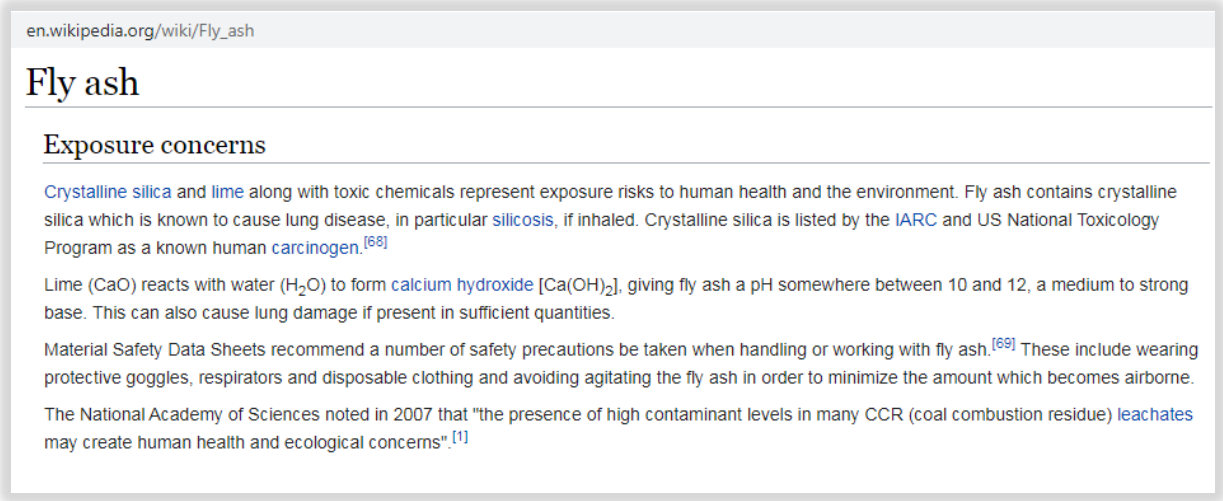
Contaminants

Fly ash contains trace concentrations of heavy metals and other substances that are known to be detrimental to health in sufficient quantities. Potentially toxic trace elements in coal include arsenic, beryllium, cadmium, barium, chromium, copper, lead, mercury, molybdenum, nickel, radium, selenium, thorium, uranium, vanadium, and zinc.[58][59] Approximately 10% of the mass of coals burned in the United States consists of unburnable mineral material that becomes ash, so the concentration of most trace elements in coal ash is approximately 10 times the concentration in the original coal. A 1997 analysis by the United States Geological Survey (USGS) found that fly ash typically contained 10 to 30 ppm of uranium, comparable to the levels found in some granitic rocks, phosphate rock, and black shale.[60]

In 1980 the U.S. Congress defined coal ash as a "special waste" that would not be regulated under the stringent hazardous waste permitting requirements of RCRA. In its amendments to RCRA, Congress directed EPA to study the special waste issue and make a determination as to whether stricter permit regulation was necessary.[61] In 2000, EPA stated that coal fly ash did not need to be regulated as a hazardous waste.[62] [63] As a result, most power plants were not required to install geomembranes or leachate collection systems in ash ponds.[64]

Studies by the USGS and others of radioactive elements in coal ash have concluded that fly ash compares with common soils or rocks and should not be the source of alarm.[60] However, community and environmental organizations have documented numerous environmental contamination and damage concerns.[65][66][67]

Attachment E4 - Fly ash Exposure Concerns



en.wikipedia.org/wiki/Fly_ash

Fly ash

Exposure concerns

Crystalline silica and lime along with toxic chemicals represent exposure risks to human health and the environment. Fly ash contains crystalline silica which is known to cause lung disease, in particular silicosis, if inhaled. Crystalline silica is listed by the IARC and US National Toxicology Program as a known human carcinogen.[68]

Lime (CaO) reacts with water (H_2O) to form calcium hydroxide [$Ca(OH)_2$], giving fly ash a pH somewhere between 10 and 12, a medium to strong base. This can also cause lung damage if present in sufficient quantities.

Material Safety Data Sheets recommend a number of safety precautions be taken when handling or working with fly ash.[69] These include wearing protective goggles, respirators and disposable clothing and avoiding agitating the fly ash in order to minimize the amount which becomes airborne.

The National Academy of Sciences noted in 2007 that "the presence of high contaminant levels in many CCR (coal combustion residue) leachates may create human health and ecological concerns".[1]

Attachment E5 - Boral Fly ash material Data Sheet

boral.com.au/sites/default/files/media/field_document/Fly%20Ash%20Safety%20Data%20Sheet.pdf

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **FLY ASH**

Synonym(s) BLUE CIRCLE FLYASH • CCP (COAL COMBUSTION BY-PRODUCTS) • FLY ASH • FLYASH

1.2 Uses and uses advised against

Use(s) ASPHALT ADDITIVE • CEMENT ADDITIVE • CONCRETE ADDITIVE • CONSTRUCTION • FILLER • INDUSTRIAL APPLICATIONS • RAW MATERIAL • SOIL STABILISATION

1.3 Details of the supplier of the product

Supplier name **BORAL CONSTRUCTION MATERIALS LTD.**

Address Level 3, 40 Mount Street, Nth Sydney, NSW, 2060, AUSTRALIA

Telephone (02) 9220 6300

Email sds@rmt.com.au

Website http://www.boral.com.au

1.4 Emergency telephone number(s)

Emergency 1800 555 477 (8am – 5pm WST)

Emergency (A/H) 13 11 26 (Poisons Information Centre)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2
Skin Corrosion/Irritation: Category 2
Serious Eye Damage / Eye Irritation: Category 2A
Specific Target Organ Systemic Toxicity (Single Exposure): Category 3

Hazard statement(s)

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314 Get medical advice/attention if you feel unwell.
P321 Specific treatment is advised - see first aid instructions.
P332 + P337 + P313 If skin or eye irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before re-use.

Storage statement(s)

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal statement(s)

P501 Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	<5%
FLY ASH	68131-74-8	268-627-4	<100%

Ingredient Notes Crystalline silica is present in fly ash as an impurity. The crystalline silica content in the respirable dust proportion depends on the crystalline silica content of the source coal.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

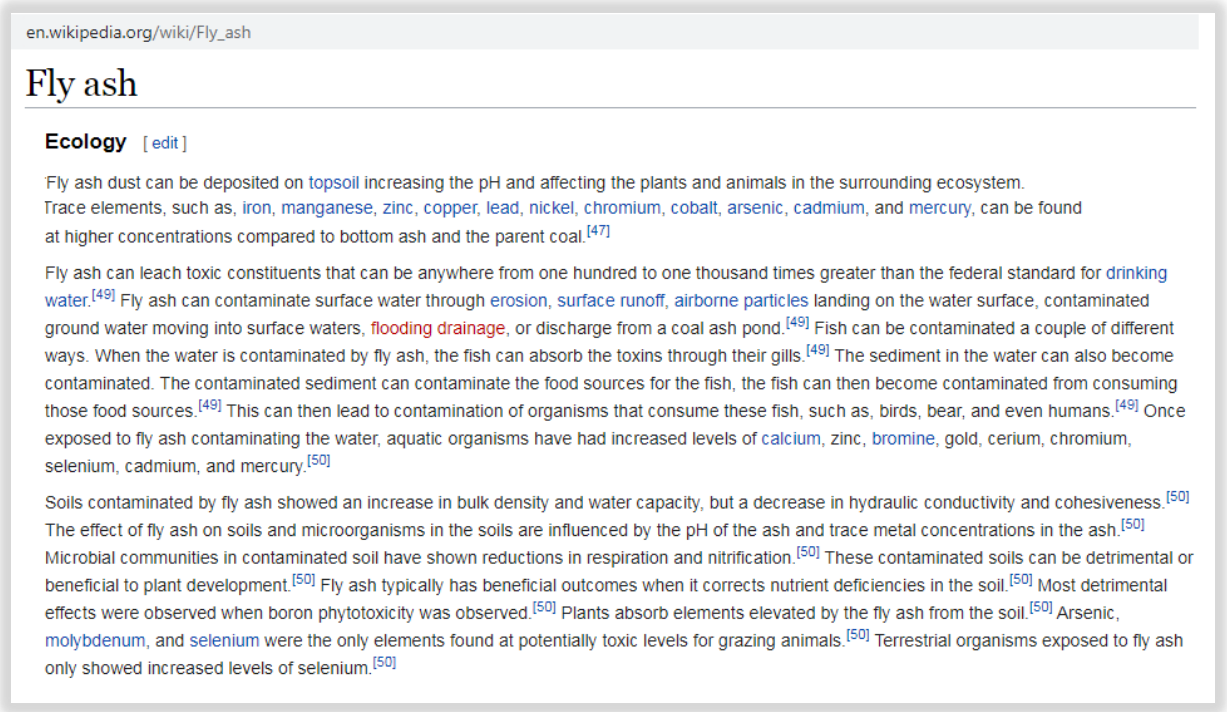
Hazard codes Xi Irritant
Xn Harmful

Risk phrases R36/37/38 Irritating to eyes, respiratory system and skin.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Safety phrases S22 Do not breathe dust.
S24/25 Avoid contact with skin and eyes.
S36/37 Wear suitable protective clothing and gloves.

SDS Date: 13 Jan 2016
Version No: 2.1

Attachment F1 - Fly ash effect on ecology



en.wikipedia.org/wiki/Fly_ash

Fly ash

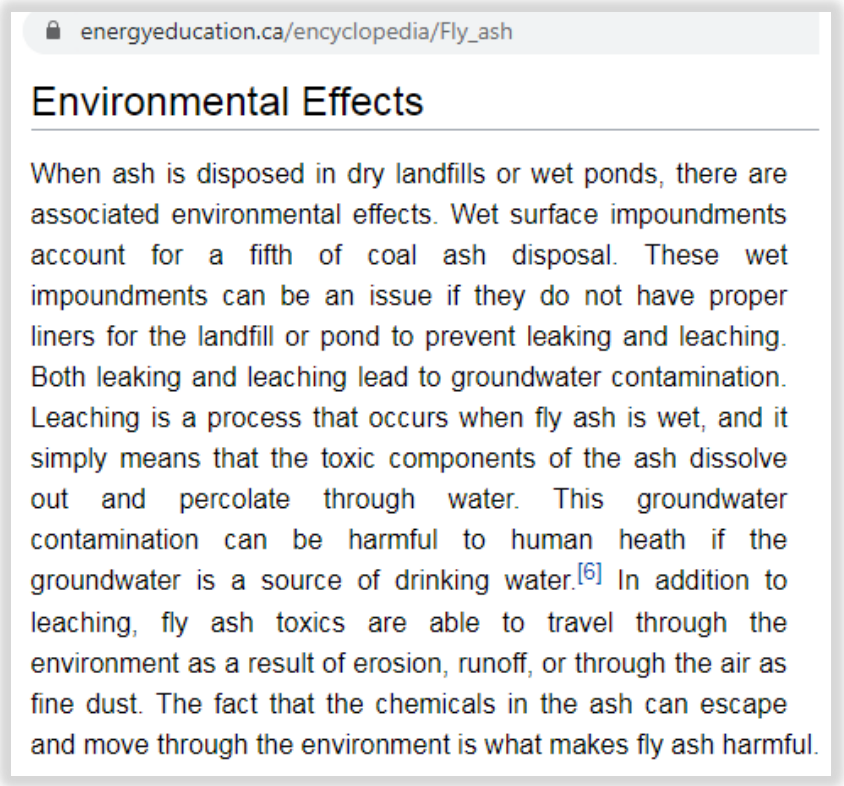
Ecology [edit]

Fly ash dust can be deposited on topsoil increasing the pH and affecting the plants and animals in the surrounding ecosystem. Trace elements, such as, iron, manganese, zinc, copper, lead, nickel, chromium, cobalt, arsenic, cadmium, and mercury, can be found at higher concentrations compared to bottom ash and the parent coal.[47]

Fly ash can leach toxic constituents that can be anywhere from one hundred to one thousand times greater than the federal standard for drinking water.[49] Fly ash can contaminate surface water through erosion, surface runoff, airborne particles landing on the water surface, contaminated ground water moving into surface waters, flooding drainage, or discharge from a coal ash pond.[49] Fish can be contaminated a couple of different ways. When the water is contaminated by fly ash, the fish can absorb the toxins through their gills.[49] The sediment in the water can also become contaminated. The contaminated sediment can contaminate the food sources for the fish, the fish can then become contaminated from consuming those food sources.[49] This can then lead to contamination of organisms that consume these fish, such as, birds, bear, and even humans.[49] Once exposed to fly ash contaminating the water, aquatic organisms have had increased levels of calcium, zinc, bromine, gold, cerium, chromium, selenium, cadmium, and mercury.[50]

Soils contaminated by fly ash showed an increase in bulk density and water capacity, but a decrease in hydraulic conductivity and cohesiveness.[50] The effect of fly ash on soils and microorganisms in the soils are influenced by the pH of the ash and trace metal concentrations in the ash.[50] Microbial communities in contaminated soil have shown reductions in respiration and nitrification.[50] These contaminated soils can be detrimental or beneficial to plant development.[50] Fly ash typically has beneficial outcomes when it corrects nutrient deficiencies in the soil.[50] Most detrimental effects were observed when boron phytotoxicity was observed.[50] Plants absorb elements elevated by the fly ash from the soil.[50] Arsenic, molybdenum, and selenium were the only elements found at potentially toxic levels for grazing animals.[50] Terrestrial organisms exposed to fly ash only showed increased levels of selenium.[50]

Attachment G1 - Fly ash effect on the environment



energyeducation.ca/encyclopedia/Fly_ash

Environmental Effects

When ash is disposed in dry landfills or wet ponds, there are associated environmental effects. Wet surface impoundments account for a fifth of coal ash disposal. These wet impoundments can be an issue if they do not have proper liners for the landfill or pond to prevent leaking and leaching. Both leaking and leaching lead to groundwater contamination. Leaching is a process that occurs when fly ash is wet, and it simply means that the toxic components of the ash dissolve out and percolate through water. This groundwater contamination can be harmful to human heath if the groundwater is a source of drinking water.[6] In addition to leaching, fly ash toxics are able to travel through the environment as a result of erosion, runoff, or through the air as fine dust. The fact that the chemicals in the ash can escape and move through the environment is what makes fly ash harmful.

Attachment H1 - 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.

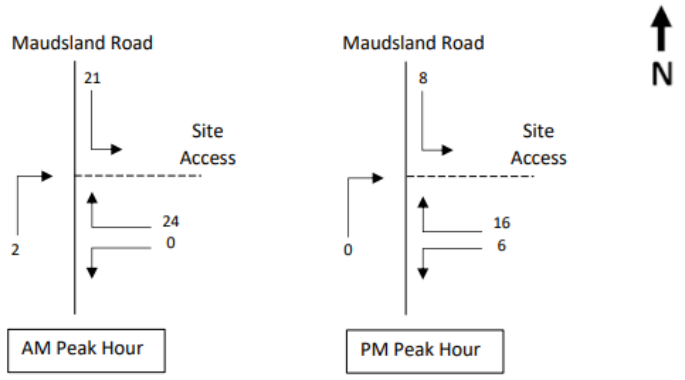


FIGURE 4.1 – SURVEYED PEAK HOUR TRAFFIC VOLUMES AT THE MAUDSLAND ROAD / SITE ACCESS ROAD INTERSECTION (AUSTRAFFIC – 2014)