Environment Protection Authority

Response to dust events from the Port Augusta power stations site

EPA Report

February 2017

EPA
South Australia

This report has been developed using the following sources of information:

- EPA Licence 13006
- Environment Compliance 'Clause 5' Agreement
- Electricity Corporations (Restructuring and Disposal) Act 1999
- EPA Licence Management Plan for Flinders Power Licence 13006
- EPA Projection Initiation Document, Port Augusta Power Stations and Leigh Creek Mine Closure
- Written records of Authorised Officers of the EPA
- Flinders Power monitoring data which is submitted monthly to the EPA in accordance with conditions of Licence 13006
- Flinders Power Partnership – Environmental Closure and Post Closure Plan – Augusta Power Stations
- Vital Bon-Matt Safety Data Sheet
- SA Health Assessment
- Advice from SA Health
- Bureau of Meteorology weather observations for Port Augusta.

For further information please contact:

Information Officer

Environment Protection Authority GPO Box 2607 Adelaide SA 5001

Telephone: (08) 8204 2004

Facsimile: (08) 8124 4670

Free call (country): 1800 623 445

Website: <www.epa.sa.gov.au>

Email: <epainfo@epa.sa.gov.au>

February 2017

CONTENTS

Executive summary

The Port Augusta Power Stations site is regulated by the EPA under the *Environment Protection Act 1993*. The site is operated by Flinders Power, which is licensed by the EPA to undertake several activities of environmental significance including fuel burning and petroleum storage.

Conditions of the EPA licence require Flinders Power to monitor ambient air emissions within the community and to implement an EPA-approved Closure Plan and Dust Management Plan for the site. In addition, Flinders Power has entered into a voluntary site contamination assessment proposal with the EPA to conduct site contamination assessment works at the site. This site contamination assessment work is being overseen by an independent Site Contamination Auditor and involves the whole Power Station site, including the ash dam.

The site is large and the environmental issues are complex. The EPA has been involved in post-closure planning with Flinders Power since 2015. This involvement has included assessment and authorisation of the closure plan, securing compliance by Flinders Power against its regulatory requirements, response to dust events including assessment of impact to the Port Augusta community, partnering with SA Health to provide the best advice to the community during closure activity, and direct engagement with interested parties including the Port Augusta City Council.

As part of its assessment and licensing roles, the EPA has worked extensively and regularly with Flinders Power from 2015 to ensure that closure, dust management, and site contamination assessment plans were targeted to minimise environmental harm, considered local conditions, and made interested parties including the Council aware of those plans.

As part of its assessment of Flinders Power's closure and dust management plans, the EPA reviewed national and international experience in closing such facilities. On this basis, the EPA approved a dust management strategy in 2015 (updated in 2016) that included the use of seawater as an interim approach to control dust, which had proven to be successful elsewhere.

Dust events in July and August 2016 prompted the EPA to review the adequacy of the use of seawater as an interim dust management approach and led the EPA to require Flinders Power to implement more effective interim dust controls.

Following a successful trial by Flinders Power in October 2016 of a dust suppressant on a section of the ash dam, the EPA approved application of this suppressant to the full surface area of the ash dam, along with additional air monitoring requirements including monitoring in the community. Flinders Power also determined to bring forward plans for a long-term solution involving capping the site with soil and revegetating the area, which would take about six months.

These changes required the dust management plan be amended by Flinders Power and re-approved by the EPA, and approval was granted in November 2016.

The dust suppressant was applied to the entire ash dam surface in November 2016 and proved successful in controlling dust until the severe weather events from 28 December 2016 to 1 January 2017. The torrential rain during this period resulted in the breaking of the suppressant layer, and the subsequent winds caused significant dust impacts to the Port Augusta community.

As a result of these impacts, the EPA immediately placed additional requirements on Flinders Power including the re-application of the suppressant, additional air quality monitoring and provision of advice to the Port Augusta community. The EPA also established an engagement program with the local community that included stationing EPA staff in Port Augusta to address residents' concerns, and regular posting of information on the EPA website. The EPA also established its own air quality monitoring and reporting to supplement monitoring required of Flinders Power.

The EPA is currently reviewing whether Flinders Power undertook all reasonable and practicable measures to prevent the impacts on the Port Augusta community while also reviewing and providing

feedback to Flinders Power on the longer-term plans. The rehabilitation of the ash dam will also require approval from native vegetation specialists and endorsement by the independent Site Contamination Auditor who is overseeing the site contamination assessment and remediation work across the whole Power Station site.

The EPA will continue to engage with the local community while it works with Flinders Power to ensure that they establishes a more effective local community engagement program.

A copy of the current EPA licence is available at Appendix 1.

1 PURPOSE

This report has been compiled by the Environment Protection Authority (EPA) in response to dust events from the Port Augusta Power Stations ash dam impacting the Port Augusta community in January 2017. It outlines the events leading up to the January dust event and actions undertaken in response.

2 BACKGROUND

The Port Augusta Power Stations site is regulated by the EPA under the *Environment Protection Act 1993* (EP Act). The site is operated by Flinders Power, which is licensed by the EPA to undertake several activities of environmental significance including fuel burning and petroleum storage.

The site is also subject to the *Electricity Corporations (Restructuring and Disposal) Act 1999*. This Act was created to enable the power stations' privatisation, and allowed for an Environment Compliance ('Clause 5') Agreement. This Agreement (dated 20 September 2000) included clauses which effectively act as exemptions from some of the requirements of the EP Act. This Agreement also contained clauses covering other matters such as environment improvement projects, monitoring and reporting, and obligations relating to the closure and remediation of the site in the event that the Clause 5 Agreement and the EP Act differed, the requirements of the Clause 5 Agreement took precedence.

In mid-2015, it was announced that the Port Augusta Power Stations would close, with a further announcement being made in October 2015 that this would occur around March 2016.

Prior to any licensee ceasing operations, the EPA must be satisfied that any potential environmental risks resulting from the site are managed prior to accepting a surrender of an EPA licence. Commonly this is managed through the requirement to prepare a Closure Plan which addresses all potential environmental risks, and actions to mitigate these. The EPA has set out requirements for developing a Closure Plan in a guideline published on the EPA website.

The closure and rehabilitation requirements for this site are complex; requiring cross-agency collaboration and co-ordination through a state government taskforce, led by the Department of State Development. The EPA is represented on the taskforce and provides advice regarding environmental issues at the site.

The EPA has also been working directly with Flinders Power, the Port Augusta City Council and other state government agencies for approximately 18 months in relation to closure of the site to ensure that Flinders Powers meets its requirements under the EP Act to manage environmental harm and mitigate risks, including remediation of an ash dam covering 220ha and estimated to be between 8m and 15m in depth.

Since the announcement that the power stations would cease operation, the EPA has required Flinders Power to develop of a Closure Plan and Post Closure Plan to address environmental issues, including the rehabilitation of the ash dam, via conditions of its EPA licence. Existing conditions prior to the closure announcement included the requirement to monitor ambient air emissions within the community, implement a Dust Management Plan for the site and maintain a register of community complaints.

Closure Plan

On 3 February 2016 the EPA imposed a condition on Flinders Power's EPA licence requiring it to prepare and submit a Closure and Post-Closure Plan to the EPA for the cessation of the activities undertaken pursuant to its EPA licence. The Closure Plan was to include actions, timeframes and

milestones for the management and rehabilitation of the site to minimise environmental harm. Matters to be considered in the Closure Plan included:

- Ash dam rehabilitation
- Surface water management
- Waste management, including asbestos and scrap metal removal
- Removal of fuels, oils, lubricants, and chemical substances from site.

Flinders Power first submitted its Closure Plan to the EPA on 1 April 2016. The EPA's water, air, waste, site contamination and regulation scientists reviewed the Plan and their feedback was provided to Flinders Power on 15 April 2016. As closure of the site progressed, the Closure Plan has been progressively reviewed and updated by Flinders Power to ensure it was taking into account updated information and any changes arising from current site activities. Since the initial plan, the EPA has received and reviewed four updates.

The most recent version of the Closure Plan was submitted on 21 October 2016 and approved by the EPA on 24 October 2016. Further updates are expected as closure activity progresses. Any revised version will be assessed by the EPA prior to any approval. The current Closure Plan is available via the EPA website and all future updates to the Plan will be published on the EPA website.

Dust Management Plan

The EPA often requires licensees via a condition of licence to develop a Dust Management Plan (DMP) to the satisfaction of the EPA to reduce the risk of off-site dust impacts. Flinders Power has managed dust during operation in a variety of ways and has had a condition of licence requiring a Dust Management Plan since 1 January 2015. When the power stations were in operation, a seawater and ash slurry was pumped into the ash dam which proved successful in managing dust.

The EPA received the first updated DMP from Flinders Powers on 1 April 2016, in light of the announcement of site closure. The EPA provided feedback on 15 April, requiring that it be amended to contain strategies to minimise dust post-closure, including long-term dust management from the ash dam. The post-closure DMP sought an interim requirement to maintain the crust by continuing to pump seawater onto the ash dam.

The EPA wrote to Flinders Power on 31 August 2016, after receiving dust complaints via the Port Augusta City Council and the community directly, requiring that Flinders Power submit a revised DMP by 15 September 2016, as the interim use of seawater for dust control was proving ineffective. A revised DMP was submitted to the EPA on 9 September 2016, and was conditionally approved subject to further prescribed amendments, including undertaking pro-active community engagement by 18 November 2016. The revised DMP also needed to incorporate changes to the Flinders Power air quality monitoring network required by the EPA. This is further outlined in the EPA's regulatory response (refer section 3 below).

On 28 November 2016, the EPA was satisfied that the DMP satisfactorily addressed all EPA requirements and it was formally approved. The approved DMP is available via the EPA website. Further updates to the DMP are expected, as closure activity progresses. Any revised version will be assessed by the EPA thoroughly prior to any approval, and will be made available on the EPA website.

Voluntary Site Contamination Assessment Proposal (VSCAP)

Dealing with the legacy of historic contamination and managing its impacts is often a complex and challenging issue. The EPA ensures responsible parties undertake appropriate testing, assessment, remediation and/or ongoing monitoring for any contamination that presents a public health or environmental concern.

In South Australia, the EP Act establishes a legislative framework for the management of site contamination. Where site contamination exists and a responsible party is defined, the EPA can enter into a voluntary site contamination assessment proposal (VSCAP) for the detailed assessment work required to inform what, if any, remediation is required. The EPA also has power, if necessary, to require this work through the issuing of site contamination assessment orders. Assessment of site contamination is normally undertaken by site contamination consultants and in complex situations is reviewed by an independent EPA-accredited site contamination auditor, who produces a final audit report. Only suitably qualified and experienced persons undertake assessment and remediation.

At privatisation, an assessment of contamination was undertaken and known to the SA Government and the power station operator. Flinders Power has accepted the responsibility for undertaking further assessment and remediation of the site and in September 2016 entered into a VSCAP defining the necessary site contamination assessment works.

An EPA-accredited site contamination auditor engaged by Flinders Power, has commenced an audit of the site to determine the nature and extent of any contamination at the site (this includes soil, groundwater and surface water). The auditor will also determine the remediation measures necessary to ensure the land used in power station operation (including the ash dam) is fit for purpose and poses minimal threat of ongoing or future harm to the environment or human health.

As part of the further assessment work at the power station site, a number of groundwater monitoring wells were installed around the site including the ash pond, coal-loading areas and railway line. More than 700 groundwater monitoring wells are located within the site and in Port Augusta to the north. More than 2,000 soil and water samples have been taken to date.

A site history, informed by all existing reports of assessment work undertaken at the site, identified two locations south of the site where asbestos may have been buried in the past (during 1950–70s). An intrusive assessment of these areas (using cut pits and trenches) in 2016 did not however identify any asbestos.

The auditor is currently undertaking a review of information collected to date and a report is due to be submitted by Flinders Power to EPA by the end of February 2017. The site contamination auditor will provide an interim audit advice pertaining to the work undertaken to date. The final audit report will include what remediation is or remains necessary for the final intended use of the site. The estimated completion date for the full audit is 31 December 2017.

The auditor's report will be publicly available.

3 DUST EVENTS – JULY AND AUGUST 2016

While the power stations were operational, dust was controlled by the ongoing pumping of an ash and seawater slurry onto the ash dam. The slurry would spread across the ash dam, settle and compact to establish a crust on top of the ash. The crust was effective in sealing the surface.

At the cessation of power generation in May 2016, it was expected that a similar strategy would be successful in managing dust, prior to a long-term solution of capping with soil and revegetating, which had been proposed by Flinders Power to begin in 2017. As such, following closure, Flinders Power commenced new pumping arrangements to flood the surface of the ash dam with sea water to maintain the crust to manage dust emissions. This required different pumping arrangements as compared to when the stations were in operation.

The EPA was notified in July and August 2016 by Port Augusta City Council and two members of the community that dust from the ash dam was being experienced in the town. Photos from Council staff were provided.

Senior EPA staff met with the Port Augusta City Council Chief Executive on 30 August 2016 to provide an update of the EPA's regulatory approach and the progress of site closure, as well as to request further information on complaint dates, times, locations and intensity in order to better understand dust impacts on the community.

EPA regulatory response

The EPA undertook two site inspections in August 2016 to assess management of the ash dam and observe dust impacts. The EPA also met with Flinders Power management. The EPA observed during site inspections that the seawater pumping was forming channels on the dam, rather than spreading evenly across the surface as had occurred previously. After several attempts to alter the pumping, it was evident that this was not working effectively across the entire 220 ha dam to suppress dust.

A total of nine site inspections to assess dust management actions and dust emissions during different weather conditions have been undertaken by the EPA since August 2016.

Given the dust events and the ineffectiveness of sea water flooding as a dust control measure, the EPA required Flinders Power to reassess its dust management strategy for the ash dam. On 26 August 2016 Flinders Power sought advice from the EPA on the trial of a new dust suppressant chemical, via aerial application, on a 15-hectare area of the ash dam. This trial proved successful and subsequently Flinders Power contacted the EPA on 6 October 2016 to advise that it proposed to apply dust suppressant via this method across the entire ash dam area.

This proposal was assessed by specialist air, water and regulatory scientists of the EPA and approved as a shorter-term measure while the longer-term closure activities were being finalised. The EPA sought advice from SA Health on any health risks that may be associated with airborne aerosols from the dust sealant; SA Health advised that the sealant was a 'good temporary solution'. The dust suppressant is called Vital Bon-Matt. The product is manufactured and supplied by Vital Chemicals, an Australian owned and operated company. The active ingredient is a styrene acrylate copolymer which is a stable, inert, non-hazardous chemical that acts as a binding agent to form a hard crust once dry. A green dye is used in the product so that the treated areas can be seen.

For more detailed information on the product specifications and chemical composition, please refer to the attached Safety Data Sheet (Appendix 2).

Aerial spraying for full coverage commenced on 7 November 2016 and was completed on 22 November 2016. The dust suppressant was designed to be effective for up to 12 months as an interim measure until longer-term rehabilitation actions are completed.

EPA observations undertaken at two site inspections in November and December in wind conditions between 30 and 35 km/h indicated that the dust suppressant was controlling dust from the ash dam. The EPA received no complaints from the community since the completion of the aerial application of dust suppression and before the January dust event.

Flinders Power acknowledged that the dust suppressant was only a temporary measure, with advice from the supplier, based on use in other applications, that the suppressant would withstand up to 12 months prior to needing reapplication. Flinders Power proposed to the EPA to bring forward its long-term plan for earthworks, topsoil and vegetation for the ash dam. The EPA gave in-principle approval

to the concept, and required that a detailed proposal be submitted. Seed collection occurred in spring 2016 with the aim of seeding before winter rains of 2017. This planned timeframe for the stages of the longer term management plan for the ash dam was received by the EPA as part of the Dust Management Plan approved in November 2016.

Composition of the dust

During operation, five off-site high volume air samplers monitored total suspended particulates (TSP), which is an assessment of total visible dust. At four of these sites, PM10 particles were also monitored (see map and Table 1) – these are the finer dust particles, that can be breathed into our lungs, with a diameter of 10 micrometres or less (1 micrometre is 1 millionth of a metre). Until recently, this network operated one day in every six days with each sampler measuring continuously for a 24-hour period. The data was then integrated to give a TSP and a PM10 reading for that 24-hour period. This network is still operating and data is publicly available via the EPA website.

Following the dust events in August, the EPA installed its own air quality monitoring equipment adjacent to the ash dam on 4 October 2016 to sample and ascertain the composition of the dust as a potential impact on the community. The EPA consulted SA Health regarding its decision to install air quality monitoring to ensure that the data was collected in a manner that would enable future health assessment if required. SA Health's advice was also sought to ensure the positioning of the monitoring station would collect data that could accurately represent what the airborne dust was in terms of composition and particle size of the airborne dust. The monitoring equipment used by the EPA is a High Volume Air Sampler (HVAS) which collects total suspended particles in the atmosphere (TSP). The HVAS draws a large volume of air. Particles are collected through a pre-weighed filter for the sampling duration. A sample was collected after two and a half weeks to ensure enough material was present on the filter for detailed chemical analysis to occur.

After sampling, the filter (sample) was re-weighed and sent to National Association of Testing Authorities (NATA) accredited laboratories for detailed analysis. The results were received by the EPA on 1 December 2016.

The EPA referred the data to SA Health to examine the analysis. On 6 December 2016, SA Health advised:

> *While there is a potential for these elements to contribute to inflammation pathways in the respiratory system, the science of contribution of specific 'toxic' substances to adverse health effects via particle in the air exposure is less than certain. The issue of adverse health effects from fine particles still remains in spite of the relatively low toxic potential of the dust emanating from the site, that is particles inherently have a toxic potential irrespective of their elemental make-up. The best protection is prevention of fugitive dust as the dam dries out.*

The analysis results and SA Health Assessment are available on the EPA website and provided in Appendix 4.

Following the January dust event, the EPA undertook a repeat of this sampling and analysis work to compare against previously collected samples. SA Health advice was again be sought on the results. The results and SA Health Assessment was consistent with that from October and is available on the EPA website and is provided in Appendix 3.

Increased monitoring by Flinders Power

As a result of the changes in ash dam management in mid-late 2016, the EPA determined that additional monitoring was needed at the site to ensure that dust controls continue to be effective for the long-term program.

In response to the August 2016 complaints, the EPA advised Flinders Power that it would be required to install equipment to carry out continuous monitoring (i.e. daily instead of one day in six) of PM10 at Lea Memorial Oval and Stirling North. This more intensive monitoring provides information on variations in dust throughout the day and picks up short-term 'spikes' in dust. The equipment was sourced from the US and since been installed. Data from these two continuous monitors within the community will be publicly available.

Flinders Power was also directed to install three optical air quality monitoring sensors at the boundary of the ash dam to provide data on the amount of dust arising from the ash dam itself or from earthmoving works that are extracting, transporting and spreading soil onto the ash dam as part of the long-term Ash Dam Rehabilitation Plan. If excessive dust is being generated due to higher wind conditions, the data from the optical sensors will trigger increased dust control measures or modifications to/shutdown of construction activity, based on a Trigger Action Response Plan.

The readings from the optical sensors will be compared to those from the continuous PM10 high volume samplers at the Lea Memorial Oval and Stirling North, and be used to fine tune the Trigger Action Response Plan, to better manage the dust generated by the construction activity that is an essential part of the ash dam rehabilitation process.

On 4 November 2016, the EPA provided feedback to Flinders Power on the details of its proposed monitoring equipment to achieve these requirements and recommended that Flinders Power proceed with purchasing the equipment.

Flinders Power advised the EPA that the optical-based continuous dust monitors surrounding the ash dam were installed and commissioned on 23 December 2016. The equipment required further validation once installed and data became available from the second week of January.

Information to the community

In response to the August dust event and due to the changing nature of activity at the site, the EPA encouraged Flinders Power to provide updated information to the community and increase communication to key stakeholders. Flinders Power invited key stakeholders, including staff from the Port Augusta City Council, to the site on a number of occasions in 2016 to provide them with updated information and practical understanding of activity. In addition, it produced community information fact sheet in October, November and December 2016 which included information on both short-term and longer-term actions at the site. Flinders Power advised that these fact sheets were letterbox dropped to the Port Augusta community and provided to key stakeholders such as the council.

4 DUST EVENT–JANUARY 2017

Observations undertaken by the EPA in November and December indicated that the temporary dust suppressant was effectively controlling dust from the ash dam. The EPA did not receive any complaints from the time of completion of the aerial application of dust suppression to the recent dust event.

Between 27 and 29 December, a significant weather event took place where rain in excess of 60mm flooded parts of Port Augusta. This washed away a significant area of the dust suppressant. The EPA contacted Flinders Power on 29 December 2016 to ascertain site conditions following the storm events of 27 to 29 December. On 30 December, Flinders Power advised the EPA that rainfall had created pooling and ponding on the ash dam and polishing pond surface, and had likely impacted the effectiveness of the dust suppressant. Monitoring of the situation would continue over coming days, with contingency actions to be taken, such as use of water carts. Flinders Power committed to the provision of further information to the EPA and other stakeholders once water pooling had subsided and a more detailed assessment was possible.

On 1 January 2017 the EPA was notified by Flinders Power that dust impacts were occurring within the Port Augusta community and the EPA also received a notification from the community via its 24-hour reporting line at approximately 3pm. The EPA asked Flinders Power at this time to immediately undertake corrective actions, including reapplying the dust suppressant material as well as notifying stakeholders, including residents. Flinders Power advised that it was considering all available options for mitigating the dust and would commence dust suppression via water cart and hand application where it could. However, it advised the mitigation of the dust could not be achieved immediately due to aircraft unavailability and the extent of the impact on the dust suppressant. Flinders Power made a commitment to keep all stakeholders informed of the intended methods for remediation over the coming days. The EPA advised Flinders Power that it needed to do 'everything it could' to minimise the dust and reminded them of their obligations to mitigate dust in accordance with the approved DMP required by licence.

Aerial photos taken before and after the storm event show the effects that the storm had on the dust suppressant barrier.

Before heavy rain event

After heavy rain event

EPA regulatory response

Immediate/short term

Consistent with a request from the Minister for Sustainability, Environment and Conservation on 2 January 2017, a meeting with Flinders Power management and senior EPA staff was arranged for 3 January. The EPA also made preparations to mobilise staff to Port Augusta.

The EPA met with Flinders Power and required the company to:

- Reapply the dust suppressant aerially, informed by aerial photography and observations on dust source areas of priority.
- Provide further advice to the community on immediate and long-term ash dam rehabilitation.
- Provide data to the EPA by continuous monitoring from the newly-installed triangulated units around the ash dam by 4 January 2017.
- Use water carts on roadways to suppress dust on edges of ash dam.
- Monitor weather conditions and take proactive measures for further localised dust suppression at the site.
- Maintain the dust suppressant layer on the ash dam before and during rehabilitation works.
- Reapply dust suppressant following any degradation in future.
- Provide daily updates to the EPA.
- Ensure that full commissioning of the two continuous monitoring stations within the community occurred by 31 January 2017.

Flinders Power committed to undertaking this work, and re-application of the dust suppressant commenced via trucks on 2 January 2017 with aerial spraying commencing on 4 January 2017. The

EPA also required Flinders Power to move its focus from progressing longer-term rehabilitation of the polishing pond – which had been given priority due to its proximity to residents – to managing the ash dam. This decision was made due to the heavy rainfall now meaning the polishing pond had a considerable depth of water in that would provide adequate dust and odour control in the immediate term. Flinders Power was directed to loosely monitor the polishing pond water levels and odour generation and ensure that application of odour suppressant was conducted when required.

Further compliance activity

The EPA attended the site on 4 January 2017 to inspect both the ash dam and immediate actions being taken by Flinders Power.

On 9 January 2017, the EPA served an Environment Protection Order on Flinders Power. This order required that Flinders Power:

- Re-apply dust suppressant to achieve full coverage of the ash dam in accordance with the Dust Management Plan dated November 2016.
- Undertake a Root Cause Analysis (RCA) of all material contributing factors to the dust event and provide a report on the RCA to the EPA's satisfaction.
- Based on the findings of the RCA, undertake a review of the Environmental Closure and Post Closure Plan – Augusta Power Stations dated October 2016 and the Dust Management Plan dated November 2016, including consideration of the plans' adequacy in respect of extreme weather events and provide revised versions of the plans to the EPA's satisfaction.
- Increase the frequency of air quality sampling conducted in accordance with licence conditions within the Port Augusta township from one in six to daily with the results of sampling provided to the EPA within one business day following receipt by Flinders Power.
- Provide a revised version of the Ash Dam Rehabilitation Plan (as required by the Environmental Closure and Post Closure Plan – Augusta Power Stations dated October 2016) to the EPA's satisfaction. This must include endorsement by the Site Contamination Auditor for the site.

The status of these compliance requirements is available via the EPA website.

The EPA is currently reviewing whether Flinders Power undertook all reasonable and practicable measures to prevent the impacts on the Port Augusta community and has commenced a formal investigation surrounding the dust event.

5 HEALTH IMPACTS FROM JANUARY 2017 EVENT

Previous advice from SA Health provided to the EPA on 6 December 2016 in relation to health risks remain relevant. The EPA is continuing to liaise with SA Health to understand the nature and potential risk to human health from exposure to ash dam dust and ensure information is provided to residents.

Particles and fine dust can cause discomfort and health impacts, particularly to those who may have existing respiratory conditions. The EPA has reiterated SA Health advice that members of the community who are concerned about health impacts or are suffering from adverse health impacts, should seek assistance from their GP or other health professional.

SA Health advice as at December 2016 can be found at Appendix 4.

While not an EPA action, SA Health established a walk in clinic for anyone in the Port Augusta area who may have been experiencing health effects from the dust event. It was also announced that all

out of pocket expenses incurred by anyone attending the clinic would be covered by the SA Government.

6 COMMUNICATION AND ENGAGEMENT

The EPA can require, and expects, licensed companies to engage with their local communities in regards to activities undertaken on the site. This is the case for many large industrial facilities in South Australia, with requirements often specified in licence conditions.

Flinders Power committed to a Stakeholder and Community Engagement Plan as part of its Closure Plan, which forms part of the EPA licence requirements.

In addition to engagement by Flinders Power, prior to the January dust event the EPA also provided information to the community via the EPA website and local media. EPA staff also communicated directly with the Port Augusta City Council throughout 2016—including three face-to-face meetings—to discuss issues associated with the power stations' site closure. Following the January dust event, EPA staff met with the Council's Chief Executive in Port Augusta on 4 January 2017 and have been in constant communication since.

Between 1 January and 29 December 2016, the EPA received and responded to four reports from Port Augusta residents regarding dust impacts from the ash dam. Following the weather event in December 2016, the EPA received approximately 140 contacts from residents. Each resident received a return phone call or email from the EPA. All of these residents have been added to a stakeholder database and have received further updates from the EPA in the form of 'Community Update' newsletters.

Due to community concern about the January dust event, the EPA initiated its own community engagement plan to provide information to the community via website, social media, telephone, email, personal visits from EPA staff and via the news media.

Throughout January, the EPA assigned community liaison personnel to Port Augusta to meet with local residents, which included doorknocking approximately 100 homes. A 'drop in' community information session was held on Monday 6 February over 12 hours from 9am to 9pm. The session was attended by 165 community members who were able to speak at length, one-on-one, with staff from the EPA, SA Health, Department of State Development, Port Augusta City Council and Flinders Power. Issues raised by the community were the long-term management of the ash dam, health impacts of ash dam dust, and odour and long-term management of the council-owned Bird Lake adjacent to the Flinders Power site.

The EPA is requiring Flinders Power to increase its community engagement activities, including requiring that it establish a face-to-face forum with residents and involve residents in advising Flinders Power on how they wish to be kept informed. This engagement model has proved successful at several other large industrial sites in South Australia. The EPA will continue to keep the community informed of its regulatory actions via the EPA website and social media channels, through local media, and through continued meetings with council and residents.

7 LONG TERM SOLUTION TO CONTROL OF ASH DAM DUST

While operational, Flinders Power was exempted from rehabilitation work on the ash dam by the privatisation legislation in place. The Environment Compliance ('Clause 5') Agreement within the legislation referenced an End of Life Plan (14 February 2000) for the ash dams, which outlined the rehabilitation of the ash dam area when operations at the Power Stations had ceased. It describes capping and revegetating the area, such that it 'must prevent wind borne dust to the reasonable satisfaction of the EPA'.

This identified that a key element of the power station closure would be the successful rehabilitation of the ash dam to ensure the community is protected from adverse impacts such as dust. Other factors, such as groundwater contamination must also be considered. This work is complex and requires careful planning by Flinders Power.

To rehabilitate the ash dam and minimise adverse impact on the community, Flinders Power provided a range of longer-term options for ash dam rehabilitation to the EPA in May 2016 for assessment. These options were assessed by the EPA against the following objectives for the long-term management of the ash dam:

- provide a long-term and stable separation layer between the ash and the final surface that protects human health and the environment.
- minimise the generation of leachate.
- safeguard the protected environmental values of surface water and groundwater in accordance with the *Environment Protection (Water Quality) Policy 2016.*
- provide land that is compatible with the intended after-use.

During scoping of rehabilitation options for the ash dam, the EPA considered removal and disposal of the ash. This was not considered to be a suitable solution as the volume of material on site requiring earthworks movement would likely result in considerable and prolonged dust, noise and amenity impacts on the local community. The timeframe for this option would have also been in the order of years, rather than months. Further work currently being conducted to minimise adverse impacts on the community does not limit future reuse options for the ash, should these prove viable.

In response, Flinders Power submitted a detailed draft long-term ash dam rehabilitation plan which included a proposal to cover the 220-hectare ash dam with soil and revegetate the area. This proposed approach is in line with the End of Life Plan referenced in the Environmental Compliance Agreement and is supported in principle by the EPA. Placing a soil layer over the ash and revegetating the area will play an important role in closure and post-closure care of the site, meeting the above objectives. This includes management of land use and amenity, management of surface water and limiting leachate generation to protect groundwater. Detailed design for the approach will be assessed against modern practices for this type of work, which have advanced considerably since 2000.

During the scoping of rehabilitation options for the ash dam in 2016, the EPA undertook research into ash dam remediation and rehabilitation in both Australia and overseas. The EPA also contacted the New South Wales Environment Protection Authority and the Queensland Department of Environment and Heritage to better understand how similar operations have been managed in their jurisdictions. This information has been useful for the EPA and will assist its assessment of the final detailed design and rehabilitation plan for the Flinders Power ash dam.

The final detailed engineering design and vegetation plan for closure is to be submitted to the EPA for formal assessment and approval by 3 March 2017, in accordance with the Environment Protection Order. Prior to submission, the plan requires approval from native vegetation experts in the Department for Environment, Water and Natural Resources, and endorsement by the site contamination auditor. It is important that this work is carefully planned to ensure the above objectives are met, and that potential environmental impacts of the work (dust, noise, materials management) are appropriately managed.

The EPA's assessment of the proposal will ensure that the design will establish a growing medium that supports vegetation to provide protection from disturbance of the underlying material, promote evapotranspiration and control erosion.

While finalisation of the detailed design is pending, early site preparation work has commenced to establish the key access points across the ash dam to enable work to occur. These actions will also

enable any further interim dust management measures, including but not limited to any necessary reapplication of dust suppressant, to be undertaken in a timely manner.

8 SUMMARY

EPA observations during inspections indicated that Flinders Powers short-term dust suppressant in place since November 2016 was controlling dust from the ash dam. The EPA did not receive any complaints or contact from the community following the application of the dust suppressant and the January dust event. The high volume of rain during the December 2016 storm that flooded parts of Port Augusta washed away significant amounts of the dust suppressant, which combined with strong winds, produced the dust events affecting the Port Augusta community in early January 2017.

In response to the dust events, the EPA's regulatory response initially focused on securing immediate remedial actions. This included directing Flinders Power to reapply dust suppression and ensuring the ongoing use of water carts on roadways and on the edges of the ash dam. The EPA attended the site on 4 January 2017 to verify implementation of immediate actions that it directed Flinders Power to undertake. Actions were required via an Environment Protection Order that was issued to Flinders Power on 9 January 2017.

The EPA has also commenced a formal investigation, which was under way at the time of completing this report, to ascertain whether Flinders Power took all reasonable and practicable measures to minimise dust/complied with its licence conditions.

The EPA is continuing to require Flinders Power to manage dust and engage effectively with the Port Augusta community. This is being secured through ongoing implementation of the Closure Plan and Dust Management Plan required by EPA licence.

The long term rehabilitation plan for the ash dam will be published via the EPA website, once approved. Planned works for the longer-term solution are currently on track and preliminary planned infrastructure work has commenced.

The EPA will continuously monitor Flinders Power closure progress and ensure the Port Augusta community has access to data, information and health advice, as well as provide updates to the community itself.

EPA
South Australia

Licence No. 13006

ISSUED:
01 Jan 2015

EXPIRY:
31 Dec 2019

ACN:

FLINDERS POWER HOLDINGS GMBH, FLINDERS LABUAN (NO 1) LTD, FLINDERS LABUAN (NO 2) LTD

Northern Power Station and Playford Power Station,
Power Station Road, PORT AUGUSTA SA 5700

Environmental Authorisation under Part 6 of the *Environment Protection Act 1993*

South Australian Environment Protection Authority
GPO Box 2607
Adelaide SA 5001
Tel: 08 8204 2004

Environment Protection Authority

LICENCE NUMBER: 13006

LICENSEE DETAILS

Licence Holder: FLINDERS POWER HOLDINGS GMBH, FLINDERS LABUAN (NO 1) LTD, FLINDERS LABUAN (NO 2) LTD

Premises Address(es): Northern Power Station and Playford Power Station, Power Station Road, PORT AUGUSTA SA 5700

LICENSED ACTIVITIES

The Licensee is authorised to undertake, at the location(s) shown above, the following prescribed activities of environmental significance under Schedule 1 Part A of the Act, subject to the conditions in this Licence set out below:

1(5)(a)	Petroleum storage
2(1)	Abrasive blasting
7(3)(c)	Crushing, grinding or milling works (rock, ores or minerals)
7(5)	Coal handling and storage
8(2)(a)	Fuel burning coal or wood
8(7)	Discharges to marine or inland waters (heat, or antibiotic or chemical water treatments)—
8(6a)(a)	Desalination plant that discharges wastewater to the marine environment

TERMS OF LICENCE

Commencement Date: 01 Jan 2015

Expiry Date: 31 Dec 2019

Amended Date: 18 Apr 2016

Table of Contents

What is an EPA licence?

The EPA imposes conditions through a licence to regulate activities that have the potential to harm the environment. Any person or company undertaking these types of activities may need an EPA licence, as required by the *Environment Protection Act 1993*. The term of a licence is generally five years, but can vary from one to 10 years based on the EPA's assessment of the risk or duration of the activity.

What is the purpose of a licence?

A licence is an enforceable agreement between the EPA and the licensee that sets out the minimum acceptable environmental standards to which the licensee must perform. We consider how high the environmental risk is likely to be from the licensed activities, when setting conditions of the licence. Subsequently, environmental licences are unique and may be developed to focus on any or all of the following objectives:

- **documentation of the requirements of a licensee under existing regulations**
- **facilitating the attainment of environmental performance standards of the licensee**
- **facilitating the alignment of the behaviour of the licensee with the core environmental objectives required under the Environment *Protection Act 1993* and related policies**

The Act also requires that all reasonable and practical measures are taken to protect, restore and enhance the quality of the environment, including requiring persons engaged in polluting activities to progressively make environmental improvements. This will affect how the minimum acceptable standards are determined and reflected in licences.

Compliance with the licence

It is serious offence to breach an EPA licence and could result in a maximum fine of $120,000 for bodies corporate. It is also an offence to provide false or misleading information and can result in a maximum fine of $60,000 for bodies corporate.

The EPA also uses a number of enforcement tools to manage non compliance with licence conditions in accordance with the Compliance and Enforcement Guideline. The EPA can vary the conditions of this licence in accordance with section 45 of the Act. This licence can be suspended, cancelled or surrendered during the term of the licence in accordance with sections 55 and 56 of the Act.

Incident notification

The Licensee must report to the EPA (on EPA emergency phone number 1800 100 833) all incidents causing or threatening serious or material environmental harm, upon becoming aware of the incident, in accordance with section 83 of the Act. In the event that the primary emergency phone number is out of order, the Licensee should phone (08) 8204 2004.

Responsibilities under Environment Protection Legislation

The Licensee must be aware of and comply with their obligations under;

- The *Environment Protection Act 1993*
- The *Environment Protection Regulations 2009*
- The Environment Protection Policies made under the *Environment Protection Act 1993*
- The requirements of any National Environment Protection Measure which operates as an Environment Protection Policy under the *Environment Protection Act 1993*

Public Register Information

The EPA maintains a Public Register that is available to the public. Information maintained includes issued Environmental Authorisations (Licences, Exemptions & Works Approvals), Emergency Authorisations and various submitted Applications. Should the conditions of an Environmental Authorisation require that the Holder submit a report or other information to the EPA, then that submitted information is made available on the Public Register subject to commercial confidentiality. Endorsed Public Register information may be available on the EPA website.

Definitions

Unless the contrary intention appears, terms used in this licence that are defined in the Act (including any regulations or environment protection policies made pursuant to the Act) have the respective meanings assigned to those terms by the Act.

THE ACT: The *Environment Protection Act 1993*

PREMISES: The whole of the land comprised in Titles Register - Certificate of Title, Crown Lease and Crown Record:

CT5843/691
CT5843/692
CT6134/241
CT6134/240

AUTHORISATION FEE PAYMENT DATE: means the anniversary of the grant or renewal of this authorisation.

EMERGENCY SPILL KIT: means a kit containing materials that when used would prevent and/or minimise listed waste from entering the stormwater or groundwater system in the event of a spill.

ENVIRONMENTAL HARM: means the same as is defined in section 5 of the Environment Protection Act 1993.

POLLUTION CONTROL EQUIPMENT: means 'control equipment' as defined in the Environment Protection (Air Quality) Policy: any device that controls, limits, measures, records or indicates air pollution.

WASTE: As defined under the Environment Protection Act 1993, Waste means -

(a) any discarded, rejected, abandoned, unwanted or surplus matter, whether or not intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the matter; or

(b) anything declared by regulation (after consultation under section 5A) or by an environment protection policy to be a waste, whether of value or not.

Acronyms

EPA: means Environment Protection Authority

STP: means standard temperature and pressure (zero degrees Celsius and 101.3 kiloPascals absolute).

TSP: means Total Suspended Particles.

Conditions of Licence

The Licensee is authorised to conduct the prescribed activities as described in this Licence at the Premises nominated, subject to the following conditions:

1 CONTROL OF EMISSIONS

1.1 DUST PREVENTION (S - 9)

The Licensee must:

1.1.1 take all reasonable and practicable measures to prevent dust from leaving the Premises.

1.1.2 develop a Dust Management Plan to the satisfaction of the EPA; and

1.1.3 implement the Dust Management Plan approved in writing by the EPA (or any revised plan approved in writing by the EPA).

2 OPERATIONAL MANAGEMENT

2.1 BUNDING (T - 21)

The Licensee must ensure that any substances that by their nature or amount have the potential to cause environmental harm to surface water or groundwater including but not limited to:

- Used Lead Acid Batteries;
- Oils (including waste oils);
- Coolant;
- Fuels; and
- Lubricants,

are stored in an appropriately bunded area.

2.1.1

NOTES

The EPA will assess the appropriateness of any bund against the EPA's 'Bunding and Spill Management' Guidelines.

2.2 COMPLAINTS REGISTER (S - 1)

The Licensee must:

2.2.1 prepare and maintain a register of all complaints concerning environmental issues;

2.2.2 ensure the register includes:

a the date and time that the complaint was made; and

b details of the complaint including the likely cause of events giving rise to the complaint; and

c the contact details of the complainant (if permitted by the complainant); and

d details of any action taken in response to the complaint by the Licensee.

2.3 DEVELOP AND IMPLEMENT CLOSURE AND POST-CLOSURE PLAN (U - 251)

The Licensee must:

2.3.1 Prepare and submit to the EPA by 22 April 2016 a Closure and Post-Closure Plan (the Plan) to the satisfaction of the EPA, for the cessation of the activities undertaken pursuant to the Licence;

2.3.2 Ensure the Plan outlines actions, timeframes and milestones for all closure and post-closure activities in order to prevent or minimise environmental harm, including, but not limited to, the following specified requirements:

a decommissioning of coal burning plant and equipment/prescribed electricity assets;

b decommissioning and decontamination of fuel and chemical storage areas;

c removal of fuels, oils, lubricants, chemical substances and waste from the site, including but not limited to materials within above and below ground storage tanks, storage areas, pipe lines, sumps, refuelling points, transfer points and other equipment;

d removal of coal from the coal stockpile area and other coal storage and handling areas, silos, bins, conveyors, mills and burners;

e decommissioning and rehabilitation of the ash dams;

f decommissioning and rehabilitation of the polishing pond including removal of cenospheres;

g surface water management, including minimisation of ponded stormwater, prevention of contamination of stormwater and discharge of waters offsite;

h removal of waste (including asbestos and scrap metal) from the site generated by decommissioning activities.

2.3.3 Ensure the Plan outlines actions to prevent or minimise off-site environmental impacts during the closure and post-closure phase, including when daily reclamation from the coal stockpile and decommissioning works are occurring.

2.3.4 Ensure the Plan includes a schedule for progress assessment and reporting to the EPA, including, as a minimum, quarterly reporting of the status of all requirements listed in paragraph 2.(a)-(h) of this condition.

2.3.5 Comply with the Plan (or any revised Plan approved in writing by the EPA) forthwith upon approval in writing by the EPA until all actions and milestones specified in paragraph 2.(a)-(h) of this condition, have occurred.

2.4 DRY ABRASIVE BLASTING (S - 60)

The Licensee must ensure:

2.4.1 that all dry abrasive blasting is undertaken within a blast chamber (subject to paragraph 2 below), that:

a is appropriately sealed so that all blast material is contained; and

b incorporates pollution control equipment that is used during dry abrasive blasting to ensure that dust emissions are minimised; and

2.4.2 where it is not practicable to undertake dry abrasive blasting of an object or structure within a blast chamber due to the size and/or weight of the object or structure, ensure that:

a all reasonable and practicable measures are taken (including use of an appropriately enclosed area) to ensure that dust emissions are minimised; and

b appropriate signs are in place warning that abrasive blasting is being conducted; and

c only silica-free abrasive is used; and

d all blast material is removed after blasting

NOTES

The EPA will assess the appropriateness of any blast chamber against the EPA's "Abrasive Blast Cleaning Guidelines".

The EPA will assess the appropriateness of any blast chamber against the EPA's 'Abrasive Blast Cleaning Guidelines'.

2.5 EMERGENCY SPILL KIT (S - 21)

The Licensee must ensure that an appropriate emergency spill kit is kept on the Premises at all times and is used in the event of a spill.

2.6 GENERIC CONTINGENCY PLAN (S - 120)

The Licensee must prepare an appropriate contingency plan for the Premises to address any spillages, equipment or plant failure that has the potential to increase the risk of harm to the environment.

2.7 POLLUTION CONTROL EQUIPMENT REGISTER (S - 2)

The Licensee must:

2.7.1 maintain all pollution control equipment to ensure that pollution is minimised; and

2.7.2 keep a written record of all inspections of pollution control equipment, which includes:

a the name of the recording officer; and

b the date of each inspection of the equipment; and

c details of the equipment that was inspected; and

d an assessment of whether the equipment was working effectively; and

e the action taken (if required) to rectify any faults or failures.

3 MONITORING AND REPORTING

3.1 AMBIENT MONITORING AND REPORTING (U - 124)

The Licensee must:

3.1.1 continuously monitor ambient sulphur dioxide and ambient nitrogen dioxide at a location (or locations) within the Port Augusta township approved in writing by the EPA;

3.1.2 monitor ambient particulate concentrations (TSP and PM10) one day in six at a location (or locations) within the Port Augusta township approved in writing by the EPA;

3.1.3 undertake an investigation to determine the source of any exceedence(s), and provide to the EPA the outcomes of the investigation if following levels are exceeded at any monitoring location(s):

a Sulphur dioxide: 571 micrograms per cubic metre (determined as a one hour average);

b Nitrogen Dioxide: 246 micrograms per cubic metre (determined as a one hour average); and

c Particles (PM10): 50 micrograms per cubic metre (determined as a 24 hour average); and

3.1.4 notify the EPA within seven days of any sulphur dioxide exceedence, as measured at the monitoring location(s) referred to in sub-condition 1; and

3.1.5 submit to the EPA on a monthly basis a summary of monitoring results for ambient particles (TSP and PM10), ambient nitrogen dioxide and ambient sulphur dioxide.

3.2 COOLING WATER MONITORING AND REPORTING (U - 125)

The Licensee must:

3.2.1 continuously monitor the temperature rise of cooling water across all operating units at the condensers;

3.2.2 ensure that the average weekly temperature rise across all operating units measured at the condensers under normal operating conditions with two pumps operating does not exceed eight degrees Celsius; and

3.2.3 submit to the EPA on a monthly basis a written summary of monitoring results for cooling water discharged to the marine environment.

3.3 STACK EMISSIONS MONITORING AND REPORTING (U - 126)

The Licensee must:

3.3.1 Continuously monitor exhaust gasses emitted from the Northern Power Station for oxides of nitrogen, sulphur dioxide and particles; and

3.3.2 submit to the EPA on a monthly basis a written summary of levels of oxides of nitrogen, sulphur dioxide and particles emitted from the Northern Power Station which contains:

a the average oxides of nitrogen concentration in milligrams per cubic metre at STP, dry basis, referenced to an oxygen content of 7% by volume for each one hour period;

b the average oxides of nitrogen mass emission rate in grams per second for each one hour period;

c the average sulphur dioxide concentration in milligrams per cubic metre at STP, dry basis, for each one hour period;

d the average sulphur dioxide mass emission rate in grams per second for each one hour period;

e the average particle concentration in milligrams per cubic metre at STP, dry basis, referenced to a carbon dioxide oxygen content of 12% by volume for each one hour period; and

f the particle mass emission rate in grams per second for each one hour period; and

3.3.3 submit the emission summary reports for the above pollutants to the EPA in electronic form.

NOTES

The Authority's preferred format is a Microsoft Excel spreadsheet.

4 ADMINISTRATION

4.1 ANNUAL RETURN AND PAYMENT OF ANNUAL FEES (A - 4)

For the purposes of section 48(2)(a) of the Act, the date in each year for the lodgement of the Annual Return is no later than 90 days before the anniversary of the grant or renewal of the Licence; and

4.1.1 For the purposes of section 48(2)(b) of the Act, the date in each year for the payment of Annual Authorisation Fee is the anniversary of the grant of the Licence.

4.2 APPROVAL OF OPERATING PROCESSES (A - 6)

The Licensee must not undertake changes to operating processes conducted pursuant to the Licence at the Premises without written approval from the EPA, where such changes:

4.2.1 have the potential to increase emissions or alter the nature of pollutants or waste currently generated by, or from the licensed activity; or

4.2.2 have the potential to increase the risk of environmental harm; or

4.2.3 would relocate the point of discharge of pollution or waste at the Premises.

4.3 APPROVAL OF WORKS (A - 5)

The Licensee must not construct or alter a building or structure, or install or alter any plant or equipment, for use of an activity undertaken pursuant to the Licence at the Premises without written approval from the EPA, where such changes:

4.3.1 have the potential to increase the emissions or alter the nature of pollutants or waste currently generated by, or from the licensed activity; or

4.3.2 have the potential to increase the risk of environmental harm; or

4.3.3 would relocate the point of discharge of pollution or waste at the Premises.

4.4 CHANGE OF LICENSEE DETAILS (A - 3)

If the Licensee's name or postal address (or both) changes, the Licensee must inform the EPA within 28 days of the change occurring.

4.5 IMPOSE OR VARY CONDITIONS (U - 127)

The EPA may during the term of the Licence, pursuant to section 45(3)(b)(iii) of the Act, impose or vary conditions on the basis of testing results provided to the EPA pursuant to conditions U-124 (Ambient Monitoring and Reporting), U-125 (Cooling Water Monitoring and Reporting) and U-126 (Stack Emissions Monitoring and Reporting) of this licence, if it is determined by the EPA that the Northern Power Station is the source of the emissions leading to any exceedences.

4.6 LICENCE RENEWAL (A - 2)

For the purposes of section 43(3) of the Act, an application for Renewal of the Licence must be made no later than 90 days before the expiry date of the Licence.

4.7 OBLIGATIONS TO EMPLOYEES, AGENTS AND CONTRACTORS (A - 1)

The Licensee must ensure that every employee, agent or contractor responsible for undertaking any activity regulated by the Licence, is informed as to the conditions of the Licence.

Attachments

There are no documents attached to this licence.

Vital Chemical Pty Ltd

SAFETY DATA SHEET

Product Name VITAL BON-MATT STONEWALL (IGD)

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier name	**VITAL CHEMICAL PTY LTD**
Address	304 Brisbane Terrace, Goodna, QLD, 4300, AUSTRALIA
Telephone	(07) 3288 3500
Fax	(07) 3288 2100
Emergency	0413 659 956
Email	enquiries@vitalindustries.com.au
Web site	http://www.vitalindustries.com.au
Synonym(s)	BON-MATT STONEWALL
Use(s)	DUST SUPPRESSANT • EROSION CONTROL AGENT
SDS date	14 November 2013

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

None allocated

SAFETY PHRASES

None allocated

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN number	None Allocated	**DG class**	None Allocated
Packing group	None Allocated	**Subsidiary risk(s)**	None Allocated
Hazchem code	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
ACRYLATE COPOLYMER(S)	Not Available	Not Available	<60%
GREEN PIGMENT	Not Available	Not Available	<3%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	Remainder

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
Advice to doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability	Non flammable. May evolve carbon oxides and hydrocarbons when heated to decomposition.
Fire and explosion	Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.
Extinguishing	Use an extinguishing agent suitable for the surrounding fire.
Hazchem code	None Allocated

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Wear Personal Protective Equipment (PPE) as detailed in Section 8 of this SDS.
Environmental precautions	Prevent product from entering drains and waterways.
Methods of cleaning up	Contain spillage, then cover/absorb spill with non-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal.
References	See Sections 8 and 13 for exposure controls and disposal.

7. STORAGE AND HANDLING

Storage	Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.
Handling	Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards	No exposure standard(s) allocated.
Biological limits	No Biological Limit Value allocated.
Engineering controls	Avoid inhalation. Use in well ventilated areas.

PPE

Eye / Face	Wear splash-proof goggles.
Hands	Wear PVC or rubber gloves.
Body	When using large quantities or where heavy contamination is likely, wear coveralls.
Respiratory	Not required under normal conditions of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	GREEN LIQUID
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	7.0 - 9.5
Vapour density	NOT AVAILABLE
Specific gravity	1.04 (Approximately)

Solubility (water)	SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE
% Volatiles	NOT AVAILABLE

10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended conditions of storage.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to avoid	Incompatible with oxidising agents (eg. hypochlorites) and acids (eg. nitric acid).
Hazardous Decomposition Products	May evolve carbon oxides and hydrocarbons when heated to decomposition.
Hazardous Reactions	Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Low toxicity - low irritant. Use safe work practices to avoid eye or skin contact and inhalation. Due to the low vapour pressure of this product, an inhalation hazard is not anticipated with normal use.
Eye	Low irritant. Contact may result in irritation, lacrimation and redness.
Inhalation	Low to moderate irritant. Over exposure to vapours may result in irritation of the nose and throat, with coughing. High level exposure may result in dizziness, nausea and headache. Due to the low vapour pressure, an inhalation hazard is not anticipated with normal use.
Skin	Low irritant. Prolonged or repeated contact may result in mild irritation, rash and dermatitis.
Ingestion	Low toxicity. Ingestion of large quantities may result in nausea, vomiting and gastrointestinal irritation.
Toxicity data	No LD50 data available for this product.

12. ECOLOGICAL INFORMATION

Toxicity	No information provided.
Persistence and degradability	No information provided.
Bioaccumulative potential	No information provided.
Mobility in soil	No information provided.
Other adverse effects	No information provided.

13. DISPOSAL CONSIDERATIONS

Waste disposal	For small amounts absorb with sand, vermiculite or similar and dispose of to an approved landfill site. Contact the manufacturer for additional information if larger amounts are involved.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)

UN number	None Allocated	None Allocated	None Allocated
Proper shipping name	None Allocated	None Allocated	None Allocated
DG class/ Division	None Allocated	None Allocated	None Allocated
Subsidiary risk(s)	None Allocated	None Allocated	None Allocated
Packing group	None Allocated	None Allocated	None Allocated
Hazchem code	None Allocated		

15. REGULATORY INFORMATION

Poison schedule
A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Inventory Listing(s)
AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selectior of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Revision history

Revision	Description
1.0	Initial SDS Creation.

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmt.com.au.

Revision: 1
SDS Date: 14 November 2013

End of SDS

Port Augusta Alinta Ash Dam sampling results: SA Health assessment

1. *High Volume Sampler (TSP) 50-70 microns and below*

   Qualitative analysis for metals, metalloids (sampling occurred over 2 1/2 weeks under certain wind conditions related to the wind directions from the Alinta Ash Dam. The sampling discontinued when the wind came from a different direction. The results represent the difference in weight between the blank and the sampling filter.

As the analytic composition is specific for the Alinta Ash dam site, it is not possible to compare to other sites. Considering that the concentrations of potential toxic metals are very low, there seems to be no increased adverse health potential from the Alinta dam site.

2. *Qualitative XRD Results (mineral abundance)*

   The results indicate that the wave length phases are consistent with salt (NaCl) and Silicate (SiO2); both, clearly abundant anywhere near coastal areas.

3. *Semi-quantitative XRD and Sem (scanning electron microscopy) analysis of one dust sample*

   Bulk analysis and spot analysis was conducted.

Bulk analysis did not indicate any toxic substances, while spot analysis specified some weight percentages associated with S, Fe, Ba and Pb. The images also give some indication of the size of the particles. The spots are probably PM10 or smaller, while the fibres are mostly larger than 20 micrometres.

Conclusion

The results indicate that the dust air sample contains minimal toxic metals and substances. Spot analysis showed that some small particles were collected which were consistent with the coal combustion process (S, Fe, Ba, Pb). While there is a potential for these elements to contribute to inflammation pathways in the respiratory system, the science of contribution of specific 'toxic' substances to adverse health effects via particle in the air exposure is less than certain.

The issue of adverse health effects from fine particles still remains in spite of the relatively low toxic potential of the dust emanating from the site - that is particles inherently have a toxic potential irrespective of their elemental make-up. The best protection is prevention of fugitive dust as the dam dries out.

Fact Sheet

Dust and your health

Everyone is exposed to dust in some form or other. The human body has various defence mechanisms to deal with the dust we breathe in, but in some cases it can become overwhelmed if dust particles are small enough or in sufficient numbers. This fact sheet includes general advice about the dust in Port Augusta and a summary of health effects from dust.

What's in Port Augusta dust?

Dust in Port Augusta comes from a range of sources mostly from bare soil, including the ash dam. Analysis of dust that has come from the Flinders Power ash dam has shown it to be very similar to dusts from the desert. The levels of metals are low. However dust particles themselves are well known for their potential to cause respiratory and cardiovascular health problems. They can also irritate eyes, throat and skin.

The Environment Protection Authority (EPA) website has details on what is in the dust: http://www.epa.sa.gov.au/business_and_industry/industry-updates/flinders-power-port-augusta

General advice

- Stay indoors, and close windows and doors where possible
- Avoid exposure to outdoor dust clouds
- Seek medical advice if experiencing increased symptoms
- Avoid prolonged or heavy exertion in areas of high dust pollution
- Air conditioners are safe to use because of their filter systems
- The dust in Port Augusta will not reduce the safety of rainwater collected from roof catchments
- The dust will not reduce the safety of water in swimming pools and recreational pools are safe to use

Summary of health effects

Human health effects of dust relate mainly to the size of dust particles. Dust may contain microscopic solids or liquid droplets that are small enough to get deep into the lungs and cause serious health problems. Large particles may irritate the nose, throat and eyes. The particle size is a major determinant of how serious the health effect will be, especially for lung diseases and the effects on the heart.

Small particles less than 2.5 micrometres in aerodynamic diameter (called PM2.5) pose the greatest problem because they can get deep into the lungs and some may get into the bloodstream. The particles can come from industry such as foundries, and diesel engines. Those that are smaller than 10 micrometres in aerodynamic diameter (called PM10) can also cause serious health effects in susceptible individuals if the concentration is high enough. The EPA monitors these particles in the air as part of their air quality monitoring service.

Naturally occurring particles may also cause health issues. These include microorganisms, such as pollen, fungi and in certain circumstances bacteria and viruses (such as from wastewater or someone sneezing). Dust from soil can irritate the respiratory tract.

Government of South Australia
SA Health

What do I do if I have symptoms from the dust

If you are having difficulty in breathing, seek medical attention - either from your local GP or the local emergency department.

People (adults and children) with asthma should follow their asthma plan and if prescribed a preventer, keep taking it according to their doctor's instructions.

People with Chronic Obstructive Pulmonary Disease (COPD - emphysema and/or chronic bronchitis) or other chronic lung condition should follow their action plan and continue their regular medications.

If dust is causing itchy eyes, nose and skin - wash well with water and if symptoms persist seek medical attention.

Health effects from various dusts can include:

- Irritation of the airways, coughing, wheezing and difficulty breathing
- Reduced lung function
- Aggravate asthma, COPD and other chronic lung conditions: wheezing, coughing, shortness of breath and increased frequency and severity of attacks
- Particles may also increase the risk of heart attacks and stroke in susceptible people.

For more information

Scientific Services Branch
Public Health Services
11 Hindmarsh Square
Adelaide 5000
Telephone: 82267100
www.sahealth.sa.gov.au

Public I1 A1