

INTERIM SITE MANAGEMENT PLAN

December 18
J155958

Department of
EDUCATION
Cringila Public School

C107471 : MB

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Document Control

Document Quality Management Details		
Report Name:	Interim Site Management Plan	
Site Details:	Cringila Public School	
Project Number:	J155958	
Client Name:	Department of Education	
Client Number:	C107471	
Signatures:	Co-Author:  Eustace Vance Senior Environmental Consultant	Authorised By:  Gary Bagwell Regional Practice Manager - Environmental (NSW)
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Issue Status

Version No.	Date	Creator	Reviewer
1	27/07/2018	Eustace Vance	Matthew Barberson
2	26/10/2018	Matthew Barberson	Gary Bagwell
3	13/12/2018	Matthew Barberson	Eustace Vance

Document Circulation

No of Copies	Type	Customer Name	Position & Company
1	Electronic	Greg Mott	Senior Group Leader, Department of Education

Interim Site Management Plan

Department of Education

Cringila Public School

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1 Introduction

Greencap Pty Ltd (Greencap) was engaged by Department of Education (DoE) to prepare this Interim Site Management Plan (ISMP) for Cringila Public School ('the site'). The site location is indicated on **Figure 1**.

2 Background

The site has been used as a public school since the late 1970s. Historical information indicates western and southern sections of the site were levelled with fill containing coal wash around late 1960s and early 1970s¹, before the school buildings were developed.

The site has a history of sub-surface fires associated with the fill material containing coal wash. These events were first observed on-site in 1994 along the southern border of the school (New Environment 2001). In 2002, the areas along the western ridge of the school property were also found to exhibit elevated temperatures. Historical records show a series of investigations and remediation actions were undertaken at these areas during the period 1994-2017.

On 19 September 2017, NSW Environmental Protection Authority (EPA) was notified by Fire and Rescue NSW regarding a sub-surface fire at the west of the site. As a result of this event, NSW EPA has issued a Clean-Up Notice (Notice No. 1557944, dated 25 October 2017, which listed a number of directions to take Clean-Up actions. One of the requirements of this notice was the development of a Conceptual Site Model (CSM) for the site to assess actual or potential risks to human health and the environment, through a contaminant source, pathway and receptor analysis.

The Clean Up Notice also required the site to be subject to a Section B Statutory Site Audit. Consequently, NSW EPA Accredited Site Auditor Chris Jewell (C.M. Jewell & Associates Pty Ltd) has been engaged by the Department of Education to conduct the Site Audit. A Preliminary Site Investigation (PSI) and a Phase 2 Environmental Site Assessment (ESA) were conducted for the site by Greencap in June and July 2018 respectively.

The Phase 2 Environmental Site Assessment has demonstrated that trigger levels for CO₂ in soil gas have been exceeded, and that further assessment and management of the site are required. This Interim Site Management Plan (ISMP) has been prepared in order to establish appropriate controls for managing and protecting environmental issues over the site.

3 Objective

The purpose of this plan is to ensure the site is properly managed until remedial actions are undertaken and/or a long term Environmental Management Plan (EMP) for the site has been established.

This will be undertaken by establishing response procedures, addressing management controls at the site and setting up appropriate monitoring programs to ensure there is no health risk to the students and staff of the Cringila Public School due to the on-going subsurface fire on the North West corner of the site. A figure of the site layout with relevant management areas is presented in **Figure 2**.

4 Scope

This ISMP establishes the requirements associated with:

- Regular monitoring of indoor air concentrations within the School building;
- Regular monitoring of ground gas;

¹ A former development application approved by Wollongong City Council (D67/144) indicated Australian Iron and Steel Pty Ltd (BHP), a former site owner, had received authorization to import fill material to the site in 1968 (New Environment 2001).

- Regular monitoring of utility pits;
- Regular site inspections;
- Maintenance of the school fence boundary;
- Maintenance of the exclusion zone pertaining to the north western hotspot;
- Emergency actions (inc. evacuation triggers and response procedures); and
- Stakeholder management and consultation.

5 Legislative Framework

Legislation and guidelines relevant to the implementation of the ISMP includes but not limited to the following:

- Environmental Planning and Assessment Act 1979;
- Protection of the Environment Operations Act 1997;
- Contaminated Land Management Act 1997;
- NSW EPA – Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017;
- NEPC NEPM 1999 National Environment Protection (Assessment of Site Contamination) Amendment Measure (2013 amendment);
- NSW EPA – Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases;
- Guidelines for the Assessment of On-site Containment of Contaminated Soil (ANZECC 1999);
- SEPP 55: Remediation of Land (notification of consent authority regarding proposed intrusive works requiring reinstatement of containment cell); and
- NSW EPA – Guideline for the Preparation of Environmental Management Plans, 2004.

6 Exclusion Zone Requirements

The exclusion zone surrounding the North-West Hot Spot will be maintained. This area is displayed in **Figure 2** and referred to as the “Fenceline of the North-West hotspot”. During previous inspections it was noted that no fencing was available between some of the northern residential premises and the north-west corner of the site. Further fencing will be applied to restrict the access of the residents of the properties to the north-west corner of the site.

7 Ongoing Monitoring Requirements

This section details the requirements for ongoing gas monitoring that is carried out under this ISMP.

7.1 Indoor Air Monitoring at the School

Indoor air quality monitoring will be carried out within school buildings on a weekly basis. In this scope, RAE Systems Multi RAE Gas Detectors will be used with a specific sensor configuration to target CO₂. Measured concentrations will be assessed against the criteria presented in Section 8.1.2, Table 4. This equipment can measure CO₂ concentration in the 400 to 4000 ppm range accurately.

Multi RAE Gas Detectors are set to take readings in 1 minute intervals for 8 hour periods. These readings are recorded by the data logger embedded into the equipment.

Monitoring will continue until the range of concentrations and any dependence on weather conditions can be clearly established.

The room that is targeted for indoor monitoring will be changed in the end of every four week of monitoring. In addition to this monitoring routine, targeted monitoring will be done in case of any concerns by the school staff or other stakeholders.

7.2 Ground Gas Wells

Ground gas monitoring will take place at the ground gas monitoring well locations identified in **Figure 3**. Monitoring will be done on a monthly basis. A calibrated landfill gas meter (GA5000 or equivalent) will be used in monitoring and following parameters will be measured:

- Methane (%v/v);
- Carbon Dioxide (%v/v);
- Oxygen (%v/v);
- Carbon Monoxide (ppm);
- Hydrogen Sulfide (ppm);
- Flow rate (L/hr);
- Relative pressure (mbar); and
- Atmospheric pressure (mbar).

7.3 Service Pits

Service pit monitoring will be undertaken on a monthly basis. Service pits deemed accessible at the time of the preparation of this ISMP are presented on **Figure 3**. If additional pits are found or become accessible, these should also be added to the monitoring regime. Pits will be monitored with a calibrated landfill gas meter (GA5000). Threshold concentrations presented in Section 8 will be used to assess the results. The outcomes of the monitoring will be incorporated into the assessment of the ongoing effectiveness of the existing management controls and inform the preparation of a long term EMP.

7.3.1 Ambient air above service pits

Monitoring of ambient air gas concentrations, 5 cm and 1m above on-site service pits will be undertaken monthly with a calibrated landfill gas meter (GA5000) at surface locations. The outcomes of the monitoring will be incorporated into the assessment of the ongoing effectiveness of the existing management controls and inform the preparation of a long term EMP.

7.4 Air and Temperature Monitoring at the North West Hotspot

Weekly surface gas, ambient air and temperature monitoring at the North West hotspot will continue until the sub-surface fire at this location is extinguished. Temperature is monitored from the thermocouples installed at and near the North West hotspot.

7.5 Site Inspections

A program of monthly inspections of the coal embankment areas (refer to **Figure 2**) will be implemented for early detection of deterioration. A site inspection checklist template is presented in **Appendix A**. This template will be filled up during each monthly inspection.

An inspection report describing the conditions recorded and highlighting any deterioration of the surface layer soils in a coal embankment area will be provided to the Site Manager and Owner within 2 weeks of each inspection. In case of finding of any deterioration a photo will be taken and sent to the Site Manager within 24 hours with the location description.

In addition to monthly inspections, which will be conducted for the entire site, weekly visual inspections will be undertaken to target the North-West hotspot area. In case of finding of any deterioration during weekly inspections at the North-West hotspot, a photo will be taken and sent to the Site Manager within 24 hours with the location description.

7.5.1 Unscheduled Inspections

In addition to the scheduled inspections, event based inspections by qualified on-site staff or their consultants will be carried out to ensure early detection of soil erosion, integrity of the boundaries and exclusion zone and evidence of olfactory odours. These may be based on observations or weather events such as peak rainfall/stormwater flows (erosion potential) or with drought conditions and die back of vegetation.

7.5.2 Maintenance and Rectification Work

Maintenance work should be carried out whenever inspections identify degraded conditions within the boundaries and exclusion area.

7.6 Frequency of Reporting

Frequency of Reporting for the above defined monitoring program is presented in Table 1. The reports will be provided to DoE by the due dates specified in Table 1.

Regular Monitoring Activity	Reporting Frequency	Report Due
Indoor Air Monitoring at the School	Weekly	Within one (1) week after monitoring
Ground Gas Wells	Monthly	Within two (2) weeks after monitoring
Service Pits	Monthly	Within two (2) weeks after monitoring
Ambient air above service pits	Monthly	Within two (2) weeks after monitoring
Air and Temperature Monitoring at the North West Hotspot	Weekly	Within one (1) week after monitoring
Site Inspections	Monthly	Within two (2) weeks after inspection

8 Trigger Levels for Further Investigation

This section establishes the trigger levels for further investigation and/or corrective action. Trigger levels for evacuation are presented in Section 9.2 (under the Emergency Action Plan) with associated response procedures.

8.1 Gas Monitoring Threshold Criteria

8.1.1 Criteria for Ground Gases

Criteria for ground gases in gas monitoring wells is selected based on the threshold levels presented in *Solid Waste Landfills Guideline* (NSW EPA 2016) and presented in Table 2.

Analyte	Threshold level reference	Unit	Threshold Level	Comments
Methane (CH ₄)	NSW EPA 2016 ⁽¹⁾	% (volume/volume)	1.0	The threshold level for further investigation and corrective action
Carbon Dioxide (CO ₂)			1.5	

Note:

1. The threshold levels for further investigation and corrective action are detection of methane at concentrations above 1% (volume/volume) carbon dioxide at concentrations of 1.5% (volume/volume) above established natural background levels.

When above levels are exceeded further characterisation through the calculation of gas screening values (GSV) will be made. The method of deriving a GSV and thus ground gas risk will be based on the *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases* (NSW EPA 2012).

GSV is the concentration of gas measured in a monitoring well multiplied by the measured borehole flow rate. The GSV is used to calculate the Characteristic Gas Situation (CS) which provides a site ranking system of 1 to 6 based upon which different levels of gas protection are required (1 being the lowest risk level and 6 being the highest). Table 3 presents a summary of the GSV and CS as well as risk classification in accordance with the guideline.

Gas Screening Value Threshold (L/hr)	Characteristic Gas Situation	Risk Classification	Additional Factors
<0.07	1	Very low risk	Typically methane <1% v/v and/or carbon dioxide <5% v/v, otherwise consider increase to Situation 2
<0.7	2	Low risk	Borehole flow rate not to exceed 70L/hr otherwise consider increase to Situation 3
<3.5	3	Moderate risk	-
<15	4	Moderate to high risk	Consider need for Level 3 risk assessment
<70	5	High risk	Level 3 risk assessment required
>70	6	Very high risk	

8.1.2 Assessment Criteria for Ambient Air

As demonstrated in Table 4 below, the assessment criteria referenced as part of this project is based on several sources as this monitoring assessment had to consider numerous factors including outside air exposure, indoor air quality exposure and personal worker exposure. These reference sources included *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (NSW EPA 2016), *Workplace Exposure Standards for Airborne Contaminants* (SWA, 2013), *ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality* (2016), or equivalent publications as a point of reference.

For the purpose of this assessment, the criteria values highlighted in **bold** in Table 4 will be referenced in the air monitoring reports as they are deemed to be the most conservative levels based on the multifaceted monitoring works undertaken. It is however important to note that WES do not apply to children. Reference to WES is purely for guidance purposes only.

Pollutant	Averaging Period	Criteria	Source
Carbon monoxide (CO)	8-hours	9 ppm	NSW EPA 2016 ^a
			ASHRAE Standard 62.1-2016
		30 ppm	SWA 2013 ^b
Carbon dioxide (CO ₂)	8-hours	5000 ppm (30,000 ppm STEL)	SWA 2013 ^b
		1000 ppm (Not greater than 700 ppm above local outdoor concentration levels)	ASHRAE Standard 62.1-2016
		In general teaching and learning spaces: An average daily concentration of 1000 ppm and a maximum of 1500 ppm.	UK Department for Education (DFE) standard
Sulphur dioxide (SO ₂)	24-hours	8 ppm	NSW EPA 2016 ^a
	8-hours	2 ppm (5 ppm STEL)^d	SWA 2013 ^b
Hydrogen sulphide (H ₂ S)	8-hour	10 ppm (15 ppm STEL)^d	SWA 2013
Nitric oxide (NO)	8-hour	25 ppm	SWA 2013
Nitrogen dioxide (NO ₂)	1-hour	12 ppm	NSW EPA 2016 ^a
	8-hours	3 ppm (5 ppm STEL)^d	SWA 2013 ^b
Oxygen (O ₂)	-	19.5-23.5%	SWA 2011 ^c

Pollutant	Averaging Period	Criteria	Source
Volatile organic compounds (VOC)	-	Contaminant specific	-
Methane (as LEL)	-	<5%	SWA 2011 ^c

Notes:

a - NSW EPA 2016, Approved methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW Environment Protection Authority.

b - SWA 2013, Workplace Exposure Standards for Airborne Contaminants, Safe Work Australia. These concentrations are based on Time Weighted Averages (TWA) for an 8-hour shift.

c - SWA 2011, Confined Spaces Code of Practice, Safe Work Australia. These concentrations are based on conditions that do not pose an immediate risk to human health.

d - Short term exposure limit (STEL) means the average airborne concentration of a substance calculated over a 15-minute period. The STEL should not be exceeded at any time during a normal eight hour working day.

8.2 Notification and Response Plan of Exceedances of Further Investigation Trigger Levels

If an Air Quality Monitoring detection exceeds further investigation and/ or corrective action trigger levels mentioned above but is below the trigger level for evacuation (see Section 9.2, the Emergency Action Plan) the following procedure will be applied:

- Non-emergency detections: Detections that exceed the trigger level for further investigation and/ or corrective action less than 100% (e.g. detection of 1500 ppm daily average for CO₂) and lower than the trigger level for evacuation (see Section 9.2, the Emergency Action Plan) will be reported in the next regular monitoring report with recommendations for further investigation and/ or corrective action.
 - For non-emergency detections following responses will be undertaken:
 - Open windows, and
 - Notify Cringila Public School for the provision and maintenance of appropriate ventilation.
- Detections that may indicate an emergency situation: Detections that are 100% greater than the trigger level for further investigation and/ or corrective action but lower than the trigger level for evacuation (see Section 9.2, the Emergency Action Plan) will be notified to Cringila Public School, DoE, and Greencap (Sydney and Wollongong) via phone immediately and email within 24 hours.
 - For detections that may indicate an emergency situation following responses will be undertaken:
 - Open windows,
 - Notify Cringila Public School for the provision and maintenance of appropriate ventilation, and
 - Seek/ obtain advice for potential additional measures from Greencap project managers (Sydney and Wollongong) via phone immediately and via email within 24 hours.

For critical incidents and emergency detections refer to Section 9 with associated response procedures. It must be noted that evacuation trigger level for CO (9 ppm, peak) is conservatively equal to the trigger level for further investigation/ corrective action. In case of exceedance of 9 ppm for CO, evacuation procedures and critical incident communication protocol shall be implemented.

Ground gas exceedances will be discussed in regular monitoring reports provided with associated further investigation and/ or corrective action requirements.

8.3 Properties of the Bulk Gases of Concern

Relevant properties of the bulk gases of concern are presented on Table 5. The information presented on this table are taken into consideration to establish the evacuation triggers presented in Section 9.2 (under the Emergency Action Plan). This information can also be used to supplement risk communication (when required) with the stakeholders.

Table 5: Properties of the Gases of Concern					
Analyte	Explosive range		Toxicity		Buoyancy in air
	Lower explosive limit (LEL) (% volume/volume)	Upper explosive limit (UEL) (% volume/volume)	Concentration of Exposure	Symptoms	
Methane (CH ₄)	5	15	NT ⁽¹⁾	NT	+ve
Carbon Dioxide (CO ₂)	NC ⁽²⁾	NC	3% v/v	Headaches and shortness of breath	-ve
			5% v/v	Severe headache and shortness of breath	
			10% v/v	Loss of consciousness	
			22% v/v	Fatal	
Hydrogen Sulphide (H ₂ S)	4.5	45.5	20-150 ppm	Watering eyes, blurred vision, shortness of breath, sore throat.	-ve
			400–500 ppm	Pulmonary oedema, headache, dizziness, coma, asphyxiation	
Carbon Monoxide (CO)	12.5	74.2	Symptoms are correlated with both concentration and duration of exposure. Symptoms of mild poisoning include: headaches and flu-like effects (e.g. 2-3 hours of exposure to 100 ppm CO). Greater exposure can lead to loss of consciousness and death (e.g. 20 min to 1 hour of exposure to 1600 ppm).		-ve (near neutral)

Note:

1. NT: Not toxic
2. NC: Non-combustible
3. +ve: positive pressure (tends to move upward), -ve: negative pressure (tends to settle down)
4. Source: NSW EPA Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gasses (2012)

9 Emergency Action Plan

9.1 Critical Incident Communication Protocol

A Critical Incident Communication Protocol has been prepared for incidents within the meaning of section 148 of the Protection of the Environment Operations Act 1997 (“critical incident”) and presented in **Appendix B**. This protocol will be triggered when a person (e.g. school staff, field consultants, contractors, workers, visitors or similar) associated with any of the responsible parties (DoE, Cringila Public School, and Greencap) becomes aware of a critical incident. Critical incidents may include but not limited to the following:

- Visual observation of fumes coming out of ground surface or any asset (e.g a service pit);
- Measurement of indoor CO₂ concentration (at the school building) at a level greater than or equal to 5000 ppm (8 hour average) and/ or 30,000 ppm (peak reading);
- Measurement of indoor CO concentration (at the school building) at a level greater than or equal to 9 ppm);
- Fire incidents; and
- Measurement or sensation of unusually high temperatures (> 60 °C) in School’s infrastructure (e.g. fences, utility pipes, floors, etc.) where those temperatures are not expected to be encountered. This excludes structures or items where high temperatures are expected (e.g. hot water pipes) and the temperatures measured during days when extreme temperatures are observed (e.g. > 45 - 50 °C).

9.2 Evacuation Trigger Levels for Indoor Air at School Buildings and Response Procedures

Evacuation trigger levels (refer to Table 6) are conservatively established for CO and CO₂ by taking into account their properties (refer to Table 5 presented in Section 0) and the criteria specified in Section 8.1.2. It should be noted the evacuation trigger levels are highly conservative and well below the levels that may cause human health impacts (refer to Table 5 presented in Section 0).

Gases of Concern	Criteria (indoor air)	Criteria Based On	Responses
Carbon monoxide (CO)	9 ppm (peak)	100% of the 8 hour average threshold established by NSW EPA 2016 ^a – a conservative approach for the protection of the school peak values will be used instead of TWA	<ul style="list-style-type: none"> • Open windows; • Evacuate all the staff & students from the room of measurement; • Further investigate by taking additional measurements to detect pathways; • Starting from adjacent rooms, measure ambient air levels in the rest of the school; • Establish an exclusion zone based the results of additional measurements; and • Prohibit access until further investigations, corrective actions and their validation are completed.
Carbon dioxide (CO ₂)	5,000 ppm (8 hour average)	100% of the 8 hour average threshold established by SWA 2013 ^b	<ul style="list-style-type: none"> • Open windows; • Evacuate all the staff & students from the room of measurement;

Gases of Concern	Criteria (indoor air)	Criteria Based On	Responses
	30,000 (peak)	100% of the STEL established by SWA 2013 ^b	<ul style="list-style-type: none"> • Further investigate by taking additional measurements to detect pathways; • Starting from adjacent rooms, measure ambient air levels in the rest of the school; • Establish an exclusion zone based the results of additional measurements; and • Prohibit access until further investigations, corrective actions, and validation are completed.

a - NSW EPA 2016, Approved methods for the Modelling and Assessment of Air Pollutants in New South Wales, NSW Environment Protection Authority.

b - SWA 2013, Workplace Exposure Standards for Airborne Contaminants, Safe Work Australia. These concentrations are based on Time Weighted Averages (TWA) for an 8-hour shift.

c - SWA 2011, Confined Spaces Code of Practice, Safe Work Australia. These concentrations are based on conditions that do not pose an immediate risk to human health.

d - Short term exposure limit (STEL) means the average airborne concentration of a substance calculated over a 15-minute period. The STEL should not be exceeded at any time during a normal eight hour working day.

For other gases listed in Table 4 (Section 8.1.2) evacuation procedure will be triggered when the assessment criteria is exceeded. In this case the following responses will be taken:

- Open windows;
- Evacuate all the staff & students from the room of measurement;
- Further investigate by taking additional measurements to detect pathways;
- Starting from adjacent rooms, measure ambient air levels in the rest of the school;
- Establish an exclusion zone based the results of additional measurements; and
- Prohibit access until further investigations, corrective actions, and validation are completed.

Note: The Greencap Consultant who conducts the Air Quality Monitoring is responsible for continuously tracking the gas levels measured by the devices used (by setting up an appropriate alarm system) and initiating (in coordination with School's Staff and Principal) the above-mentioned responses immediately after an evacuation trigger level is measured.

10 Stakeholder Consultation Plan

10.1 Stakeholders

The key stakeholders as part of this ISMP are presented in Table 7.

Stakeholder	Primary Contact		Copy of Correspondence	
	Name	Contact Details	Name	Contact Details
NSW EPA (Regulator)	Craig Patterson – Senior Operations Officer	E: craig.patterson@epa.nsw.gov.au T: 02 4224 4100	-	-
NSW Health – ISLHD Public Health Unit (Regulator)	Glendon Lee – Senior Environmental Health Officer	E: glendon.lee@health.nsw.gov.au T: 02 4221 6700	-	-
Site Auditor	Chris Jewel	E: chris@cm-jewel.com.au T: 02 4759 3251	-	-
Department of Education (Site Owner)	Greg Mott – Senior Group Leader	E: Greg.Mott@det.nsw.edu.au M: 0477 323 689 T: 02 4224 9071	Scott Buscombe	E: Scott.Buscombe2@det.nsw.edu.au
			Alan Smith	E: Alan.I.smith@det.nsw.edu.au
			Nicole Bates	E: Nicole.L.Bates@det.nsw.edu.au
			Terry Stevens	E: Terry.stevens7@det.nsw.edu.au
			Tony Stavely	E: Tony.Stavely@det.nsw.edu.au
Cringila Public School (Site User)	Amanda Giles – Principal	E: AMANDA.GILES@det.nsw.edu.au T: 02 4274 1768	-	-
Greencap Sydney (Consultant)	Matthew Barberson – Project Manager	E: Matthew.Barberson@greencap.com.au M: 0438 862 838 emergency calls only) P: 02 8879 8276	Gary Bagwell – Regional Practice Manager NSW	E: Gary.Bagwell@greencap.com.au M: 0417 791 749
Greencap Wollongong (Consultant)	Rowan Clark – Project Manager	E: Rowan.Clark@greencap.com.au M: 0448 145 951	Scott Mcilwain – Regional Manager ACT, Illawarra & Southern NSW	E: Scott.Mcilwain@greencap.com.au M: 0403 709 190
Wollongong City Council	Glen Isbester	E: Glsbester@wollongong.nsw.gov.au	-	-

Identified community groups are as follows:

- School staff;
- Children and their parents;
- Residents of the adjacent properties; and
- Cringila community.

10.2 Complaint Handling

- Cringila Public School will establish and operate a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to visual or olfactory evidences of potential sub-surface combustion.
- The number of the complaint line will be displayed in the entrance of the school.
- Cringila Public School administration will keep a legible record of all complaints in a register that have been received in relation to the potential pollution incidents.
- At the time of complaint the following details will be recorded:
 - Date and time of complaint;
 - The method by which the complaint was made;
 - Any personal details of the complainant which were provided by the complainant (name, address, contact phone number of complainant) or, if no such details were provided, a note to that effect;
 - Nature of complaint;
 - The action taken (if necessary) by the School in response to the complaint, including follow up contact with the complainant and date; and
 - If no action was taken by the School, the reason why no action was necessary.
- The complaint records will be forwarded by email to the following recipients for technical consideration
 - DoE: Greg Mott Greg.Mott@det.nsw.edu.au
 - Greencap Sydney: Matthew Barberson Matthew.Barberson@greencap.com.au
 - Greencap Wollongong: Rowan Clark Rowan.Clark@greencap.com.au
 - Greencap Sydney: Gary Bagwell Gary.Bagwell@greencap.com.au
 - Greencap Wollongong: Scott Mcilwain Scott.Mcilwain@greencap.com.au
- Greencap will advise when a notification to NSW EPA or other stakeholders is necessary.
- The records will be kept for the duration of the works and be produced to any Authorised Officer under the POEO Act 1997 who asks to see them.

10.3 Stakeholder Consultation

When there is a demand by the School for an information session, DoE may engage Greencap to communicate the findings of the environmental investigations to the School's staff. The aim of these sessions will be to equip the staff with site specific information, which can help them to answer questions related with the coal wash fill and sub-surface combustion at the North-West hotspot. The outline of such an information session may include:

- Site history;
- Investigations completed;
- Ongoing monitoring network and results;
- Conceptual site model;
- Understanding the risks and how they are managed; and
- Plan for future management of the site.

Interim Site Management Plan
Department of Education
Cringila Public School

Figures



Legend:

- Site Boundary
- Drainage

Metres

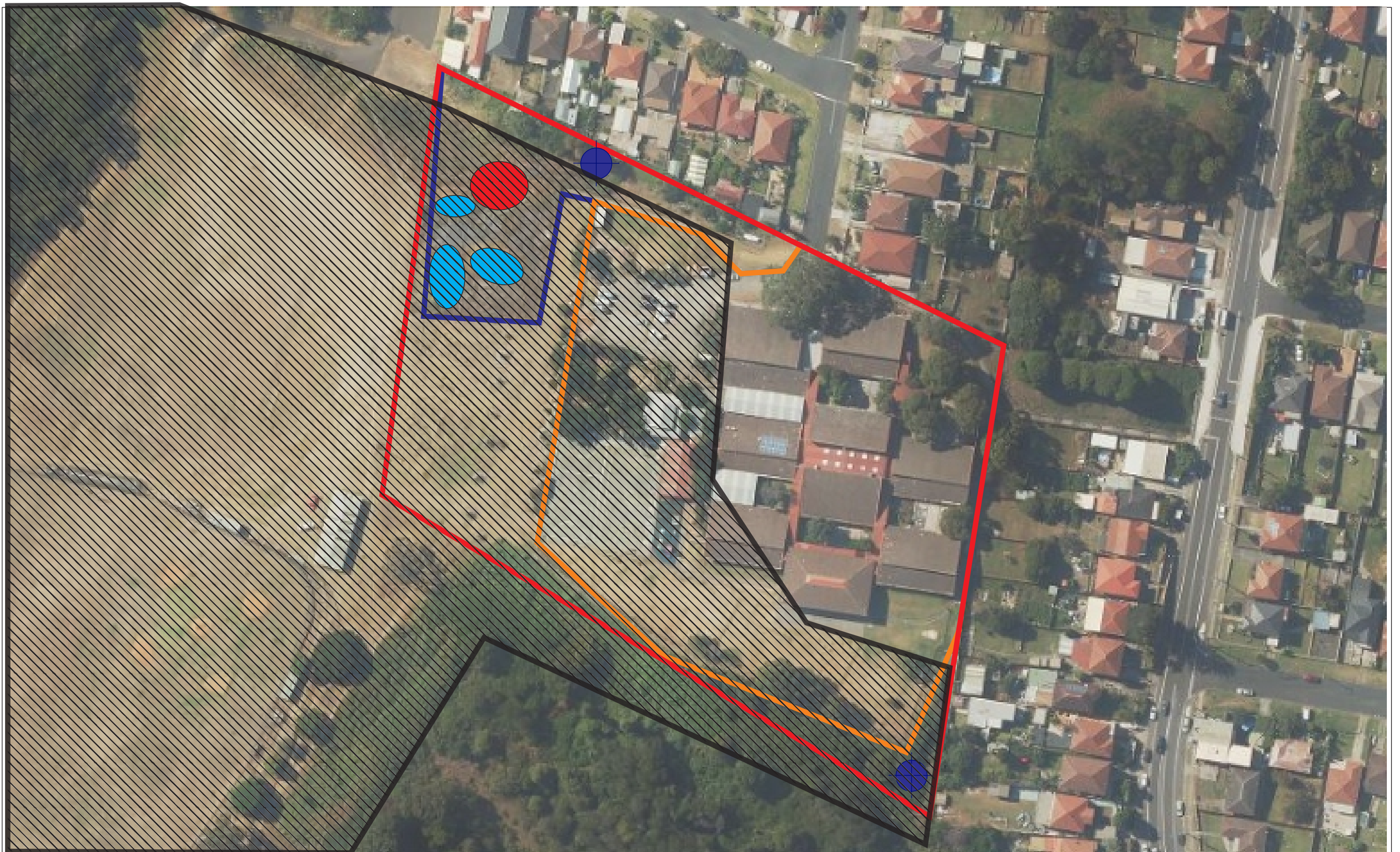
0 10 20 30 40 50 60 70 80

▲

GREENCAP
Going Further in Managing Risk

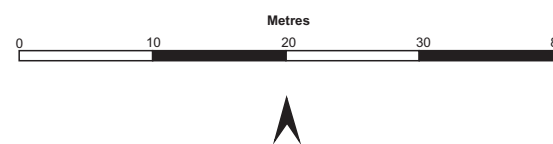
Client Name:		Department of Education		
Client Number:		C107471	Project Number: J155958	
Project Description: Phase 2 ESA - Cringila Public School				
Address:		Cringila Public School		
Prepared:	AMW	Reviewed:	MB	Date: 1/11/2018
Figure 1		Site Location and Regional Context		

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Legend:

- Site Boundary
- School Boundary Fencing
- Fenceline of the North-western Hotspot
- Potentially Asbestos Containing Material
- Coal Embankment (inferred extent, see Section 10.7)
- North-Western Hot Spot
- Stockpile



Level 2, 11-17 Khartoum Road
 North Ryde, NSW 2113
 Ph: 02-9889-1800
 Fx: 02-9889-1811

Client Name:		Department of Education			
Client Number:		C107471	Project Number: J155958		
Project Description:		Phase 2 ESA - Cringila Public School			
Address:		Cringila Public School			
Prepared:	AMW	Reviewed:	MB	Date:	1/11/2018
Figure 2	Site Layout				

Disclaimer: Greencap Pty Ltd has produced this map for the purpose of presenting a summary of relevant spatial information and gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability (including without limitation liability for negligence) for any loss, damage or costs (including consequential damage) relating to any use of or reliance upon the data. Data must not be used for direct marketing or be used in breach of privacy laws. Service Layer Credits: © 2016 NSW Land and Property Information (Six Maps)



Legend:

- Site Boundary
- Groundwater Monitoring Well
- Ground Gas Monitoring Well
- Service Pit Location
- ⊕ Delineation Borehole

Metres

0 10 20 30 40

▲

<p>GREENCAP <i>Going Further in Managing Risk</i></p>		Client Name: Department of Education	
		Client Number: C107471	Project Number: J155958
Level 2, 11-17 Khartoum Road North Ryde, NSW 2113 Ph: 02-9889-1800 Fx: 02-9889-1811		Project Description: Phase 2 ESA - Cringila Public School	
Address: Cringila Public School		Prepared: AMW	Reviewed: MB
Figure 3		Date: 1/11/2018	Groundwater Well, Gas Well and Service Pit Locations

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Cringila Public School

Appendix A – Site Inspection Checklist

SITE INSPECTION CHECKLIST

Date: _____

Personnel on site: _____

Weather: _____

Inspection Item	Yes	No	Comment/ Notes	Actions required
Were all sections of the site inspected?— Please tick a box below after inspection. <ul style="list-style-type: none"> <input type="checkbox"/> North west hotspot area <input type="checkbox"/> Western batter <input type="checkbox"/> Southern playground <input type="checkbox"/> Basketball courts <input type="checkbox"/> Car park <input type="checkbox"/> Remaining open spaces <input type="checkbox"/> Site boundary fences 			Note inaccessible areas (if any):	Take temperature readings on the schools fencing by an infrared temperature gun. Record temperatures below (mark locations on the site layout provided on the next page). Western fence (one point): Northern fence (two points): Eastern fence (one point): Southern fence (two points): Exclusion zone fencing (three points):
Was there any evidence of subsidence? (e.g. cracks, depressions, slumping)				If Yes: Take photo, mark location, indicate observations on the site layout provided on the next page, take (note on left) surface gas readings for (CO and CO ₂), and inform Greencap Project Managers (Wollongong <u>and</u> Sydney).
Was there any evidence of slope failure?				If Yes: Take photo, mark location, indicate observations on the site layout provided on the next page, and inform Greencap Project Managers (Wollongong <u>and</u> Sydney).
Was there any evidence of deteriorating vegetation?				If Yes: Take photo, mark location, and indicate observation areas on the site layout provided on the next page.
Was there any visual or olfactory evidences of combustion (e.g. fumes, burning smell, smoke)				If Yes: Take photo, mark location, indicate observations on the site layout provided on the next page, take (note on left) surface gas readings for (CO and CO ₂), and inform Greencap Project Managers (Wollongong <u>and</u> Sydney).
Was exclusion zone fencing intact?				If No: Take photo, mark location, and indicate observation areas on the site layout provided on the next page, and inform School Principal.



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**Appendix B – Critical Incident Communication
Protocol**

Critical Incident Communication Protocol

Critical Incident Communication Protocol (“the protocol”) will be triggered when a person (e.g. school staff, field consultants, contractors, workers, visitors or similar) associated with any of the responsible parties (Department of Education (DoE), Cringila Public School (“the School”), and Grencap) becomes aware of a pollution incident at or near the site within the meaning of section 148 of the Protection of the Environment Operations Act 1997 (“critical incident”). The protocol includes the following steps:

1. The member of the party who observed the critical incident (“the witness”) will seize work, take a photograph of the incident (if possible), and immediately notify the Principal of the School, Amanda Giles (“the Principal”). The notifications will be made through the reception of the School, where a written incident report will also be prepared.
 - a) Immediately after being aware of a critical incident, the Principal of the school (or her delegate to be authorised in her absence) will ensure:
 - The area of the incident is evacuated and isolated from student/staff and public access;
 - All students, school staff, and public are at a safe distance from the area of incident;
 - For Air Quality Monitoring detections exceeding evacuation trigger levels, responses presented in Table 6 are immediately implemented;
 - Grencap Sydney and Wollongong offices are notified through phone calls from numbers provided in Table 7; and
 - Initial immediate recommendations provided by Grencap are implemented.
2. Incident reports will be in the form of an email and include the following details about the recorded incident:
 - Time and date of the incident.
 - Name of the person who observed the incident.
 - Location of the incident (to be marked on a Site Layout Map)—*Site Layout Maps will be available at the reception of the School.*
 - Description of the incident.
 - Type of contaminant and its concentration (if recorded/ applicable).
 - Definition of the associated trigger level (guideline criteria) that is comparable with the contaminant concentration (if recorded/ applicable).
 - Observed potential or existing hazards associated with the incident.
 - Immediate contingency measures undertaken (if any).
 - Photo evidence of the incident.
 - Other relevant details.
3. The incident reports will be forwarded by the Principal (AMANDA.GILES@det.nsw.edu.au) to the following recipients in email form:

To:

- DoE: Greg Mott Greg.Mott@det.nsw.edu.au
- NSW EPA: Craig Patterson Craig.Patterson@epa.nsw.gov.au
- NSW Health: Glendon Lee Glendon.Lee@health.nsw.gov.au
- Wollongong City Council: Glen Isbester Glsbester@wollongong.nsw.gov.au

- Greencap Sydney: Matthew Barberson Matthew.Barberson@greencap.com.au
- Greencap Wollongong: Rowan Clark Rowan.Clark@greencap.com.au

Copy of correspondence:

- DoE: Scott Buscombe Scott.Buscombe2@det.nsw.edu.au, Alan Smith alan.l.smith@det.nsw.edu.au, Nicole Bates Nicole.L.Bates@det.nsw.edu.au, Terry Stevens terry.stevens7@det.nsw.edu.au, Tony Stavelly Tony.Stavelly@det.nsw.edu.au
 - Greencap Sydney: Gary Bagwell Gary.Bagwell@greencap.com.au
 - Greencap Wollongong: Scott Mcilwain Scott.Mcilwain@greencap.com.au
4. Within 24 hours of this notification, Greencap (on behalf of DoE) will advise if any additional immediate contingency measures are required. Specific responses for detections exceeding evacuation trigger levels are presented in Table 6. These responses will immediately be implemented (without waiting for Greencap's inputs).
 5. Within 7 days of this notification, Greencap (on behalf of DoE) will submit a plan for further investigation and/ or remediation of the potential environmental and human health impacts of the reported incident.
 6. All reports, external correspondences, and/ or actions for further investigation and/ or remediation will be done within the knowledge and/ or approval of the Site Auditor.
 7. If the critical incident was observed during afterhours or a weekend, the witness will email the items listed in Step 2 to the Principal (AMANDA.GILES@det.nsw.edu.au) within 24 hours following the observation.

Definitions

Critical Incident: Pollution incidents causing or threatening material harm to the environment within the meaning of section 148 of the Protection of the Environment Operations Act 1997. Critical incidents may include but not limited to the following:

- Visual observation of fumes coming out of ground surface or any asset (e.g a service pit),
- Measurement of indoor CO₂ concentration (at the school building) at a level greater than or equal to 5000 ppm (8 hour average) and/ or 30,000 ppm (peak reading),
- Measurement of indoor CO concentration (at the school building) at a level greater than or equal to 9 ppm),
- Fire incidents,
- Measurement or sensation of unusually high temperatures (> 60 °C) in School's infrastructure (e.g. fences, utility pipes, floors, etc.) where those temperatures are not expected to be encountered. This excludes structures or items where high temperatures are expected (e.g. hot water pipes) and the temperatures measured during days when extreme temperatures are observed (e.g. > 45 - 50 °C).

Responsible parties: DoE, the School, and Greencap

Witness: School staff, field consultants, contractors, workers, visitors or similar.

Duty to report

As stated in the NSW EPA Solid waste landfills guidelines 2016; "the landfill occupier must notify the EPA of pollution incidents causing or threatening material harm to the environment within the meaning of section 148 of the Protection of the Environment Operations Act 1997."

Notes:

- i. This protocol does not replace the need to contact **000** in case of an emergency (e.g. fire). In case of an emergency, **000** must be called before initiating this protocol.
- ii. Minor incidents or observations that are not causing and threatening material harm to the environment (e.g. encountering coal particles on surface, declined vegetation, observations made within exclusion zones, measurements taken within ground gas wells etc.) do not trigger duty to notify the EPA; therefore, are outside the scope of this protocol.