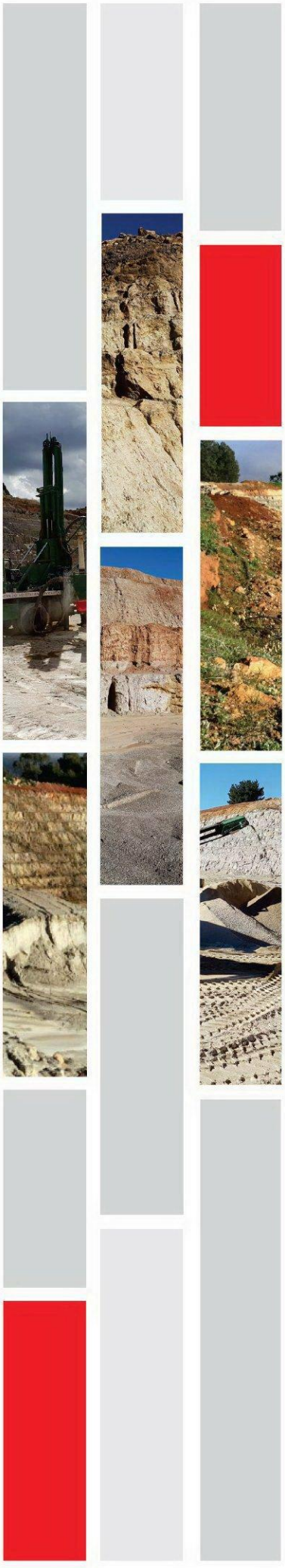

APPENDIX K

Hazards & Waste Assessment

DOC18/188732

PGH BRICKS & PAVERS

PGH Bricks & Pavers Ltd

Hazards and Waste Assessment for: Andersons Clay Mine Environmental Impact Statement

November 2018

Prepared by:

VGT Environmental Compliance Solutions Pty Ltd

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PGH Bricks & Pavers Ltd

Hazards and Waste Assessment for: Andersons Clay Mine Environmental Impact Statement

November 2018

Prepared by:	
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Report Date:	27/11/2018	
Report Number:	3618_AN_EIS_HW_F0	
Report Authorised by:	Tara O'Brien	27/11/2018
	Joe Gauci	27/11/2018
Checked by:	Rich Mason	27/11/2018

Revision Table

Date	
2/08/2018	3618_AN_EIS_HW_D0
3/10/2018	3618_AN_EIS_HW_D1
27/11/2018	3618_AN_EIS_HW_F0

Disclaimer

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List of Tables

Section 1.Introduction

1.1. Background

The subject land is described as Lot 2, DP 856969, 253 Shaw Road, Springdale Heights, located in the suburb of Springdale Heights, approximately 7km north east of Albury, see *Figure One.*

The land contains a functioning mine known as Anderson's Clay Mine.

The property is owned by PGH Bricks and Pavers Pty Ltd under freehold title.

A development application is being sought for the proposed expansion of an existing clay mine located at 253 Shaw Street, Springdale Heights. The proposed development is deemed to be a Designated Development in Schedule 3 of the Environmental Planning and Assessment Regulation 2000 and a request for the Secretary's Environmental Assessment Requirements (SEARs) was made in April 2017. The SEARs were issued by the Secretary on the 18th of May 2017.

The aim of this report is to provide additional information, as guided by the SEARs to assist the Department and relevant authorities in determining the development application.

1.2. Secretary's Requirements

1.2.1. SEARs

The SEARs require that the EIS, which will include this report, shall address the following issues relating to Hazards and Waste.

Table 1. SEARs Hazard and Waste Issues to be Addressed

Key Issue	Where Addressed in this Document
Waste – including estimates of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams;	Section 4.1 and Section 5.1
Hazards – including an assessment of the likely risks to public safety, paying particular attention to potential bushfire risks and the transport, storage, handling and use of any hazardous or dangerous goods;	Section 4, Section 5 and Section 6

1.2.2. Council Requirements

Table 2. Albury City Council Hazards and Waste Issues to be Addressed

Key Issue	Where Addressed in this Document
The EIS should include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts where relevant and appropriate).	-
• Waste management including storage	Section 4.1 & Section 5.1
• Chemical Storage	Section 4.2 & Section 5.2
• Potential site hazards- activities, materials or storage	Section 4 and Section 5
Particular attention and reference is requested in regard to management of risks and activities on the site. This would likely include the development and promulgation of an Environmental Management Plan (EMP). The EMP should accurately define and detail expected actions and activities proposed to occur on the site and mitigating measures required to manage any potential impacts.	Section 5

1.2.3. NSW EPA Requirements

Table 3. NSW EPA Hazards and Waste Issues to be Addressed

Key Issue	Where Addressed in this Document
Then objectives of the proposal should be clearly stated and refer to and include the following: • The size of the operation, the nature of the production process and the products, by-products and **wastes** produced.	Section 4
• Mitigation and management options that will be used to prevent, control, abate or mitigate identified potential environmental impacts associated with the project and **to reduce risks to human health** and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measure and any residual impacts after these measure are implemented.	Section 5

Key Issue	Where Addressed in this Document
Waste and Chemicals The goals of the project should address the following; • It is in accordance with the principles of the waste hierarchy and cleaner production; • Where potential impacts associated with the handling, processing and storage of all materials used at the premises are identified, these be mitigated by the development; • The beneficial reuse of all wastes generated at the premises are maximised where it is safe and practical to do so; and • No waste disposal occurs on-site.	Section 4 and Section 5

Table 4. NSW Rural Fire Service Hazards and Waste Issues to be Addressed

Key Issue	Where Addressed in this Document
The NSW Rural Fire Service advises that the EIS will need to address any bushfire protection measures adopted to ensure compliance with the Aims and Objectives identified in Clause 1.2 of "Planning for Bush Fire Protection 2006". The RFS acknowledges that the site will not be used for habitable purposes.	Section 6
The NSW Rural Fire Service advises that the EIS will need to address any fire mitigation measures adopted to ensure that a fire occurring within the site cannot escape the site.	Section 6

Section 2.Statutory Requirements and Guidelines

2.1. Environmental Planning and Assessment Act 1979

The clay extraction activities will continue to be subject to the provisions of the EP&A Act for any subsequent changes or modifications to the operations. Additionally the operations will need to be able to demonstrate compliance against the current Conditions of Approval issued under the provisions of the EP&A Act.

2.1.1. Current Council Consent Conditions

In August 1983, the Albury -Wodonga Development Corporation granted a permit (number N72), which approved the mining of clay brick within the north-eastern portion of the subject land. The activity involved an area of 7.975 hectares. The permit did not include an end date to the approval.

Council consent conditions that pertain to the management of Hazards and Waste are reproduced below.

***Condition 4**- The permit holder shall ensure that all mobile plant and vehicles and engine-powered equipment are fitted with effective silencers and **spark arrestors,** which shall be so maintained as to be fully effective at all times.*

Condition 13 i)*- the permit holder shall ensure that not extraction takes place within 15 metres of the boundary of the permit area…….*

Condition 14 i)*- The permit holder shall ensure that all working faces are maintained on a slope not steeper than 1 vertical in 2 horizontal. Existing faces are to be reclaimed by battering or back filling to form a slope not steeper than 1 vertical in 2 horizontal.*

Condition 14 ii)*-When extraction has ceased, and not later that one month before expiry of the permit, terminal faces are to be battered from natural ground level into the pit at a slope of not steeper than 1 vertical in 5 horizontal for a minimum horizontal distance of 10 metres……*

2.1.2. Waste Avoidance and Resource Recovery Act 2001

Waste management shall be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001.* The objectives of this Act are:

(a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,

(b) to ensure that resource management options are considered against a hierarchy of the following order:

(i) avoidance of unnecessary resource consumption,

(ii) resource recovery (including reuse, reprocessing, recycling and energy recovery),

(iii) disposal,

(c) to provide for the continual reduction in waste generation,

(d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,

(e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste,

(f) to ensure the efficient funding of waste and resource management planning, programs and service delivery,

(g) to achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis,

(h) to assist in the achievement of the objectives of the Protection of the Environment Operations Act 1997.

The proposed development will endeavour to uphold the objectives of the Act.

2.1.3. State Environmental Planning Policy No 33- Hazardous and Offensive Development

The objectives of the Policy are to;

(a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments, and

(b) to render ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy, and

(c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division, and

(d) to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account, and

(e) to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact, and

(f) to require the advertising of applications to carry out any such development.

In this Policy:

***Potentially hazardous industry** means a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:*

(a) to human health, life or property, or

(b) to the biophysical environment,

and includes a hazardous industry and a hazardous storage establishment.

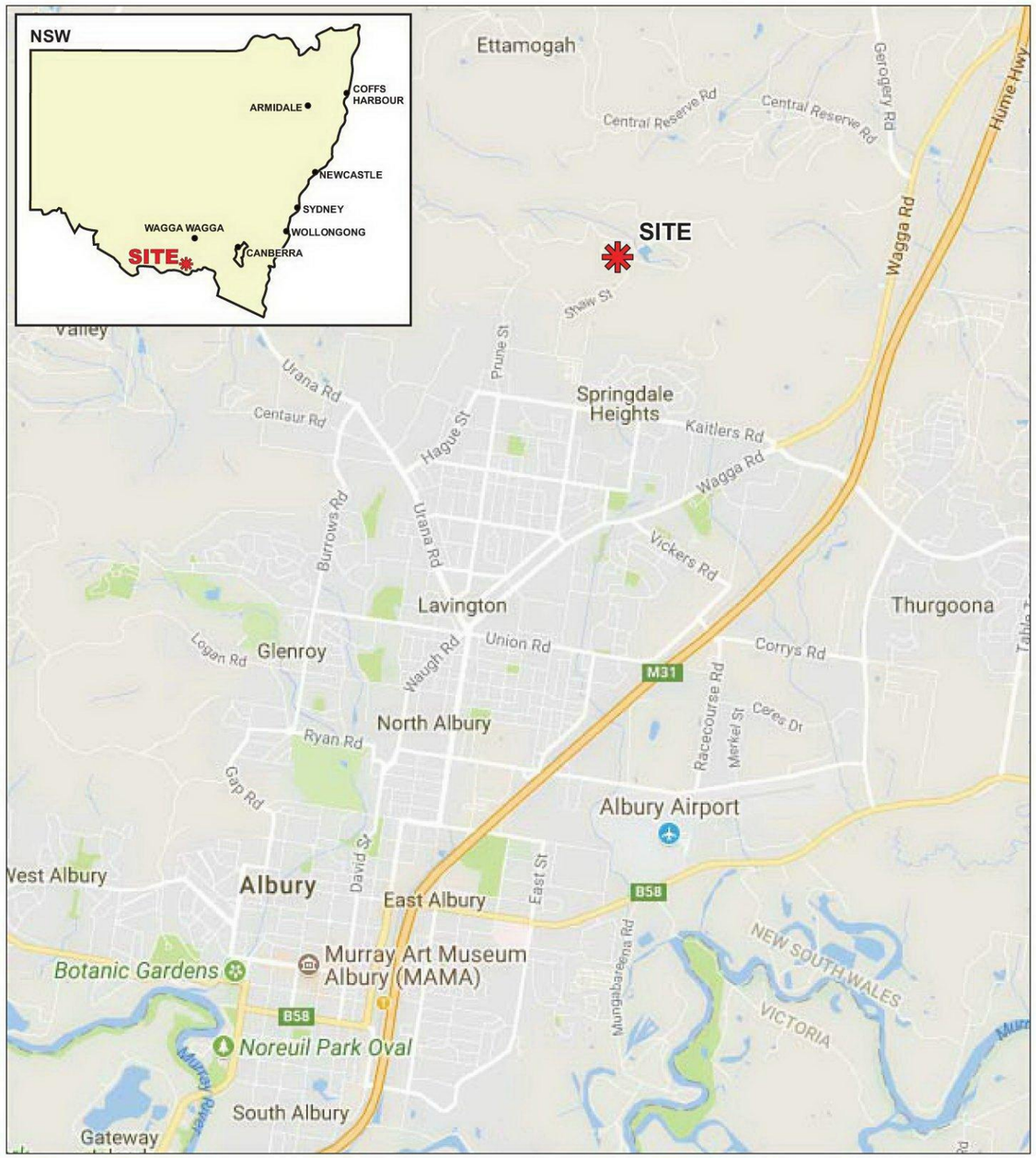
***Potentially offensive industry** means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.*

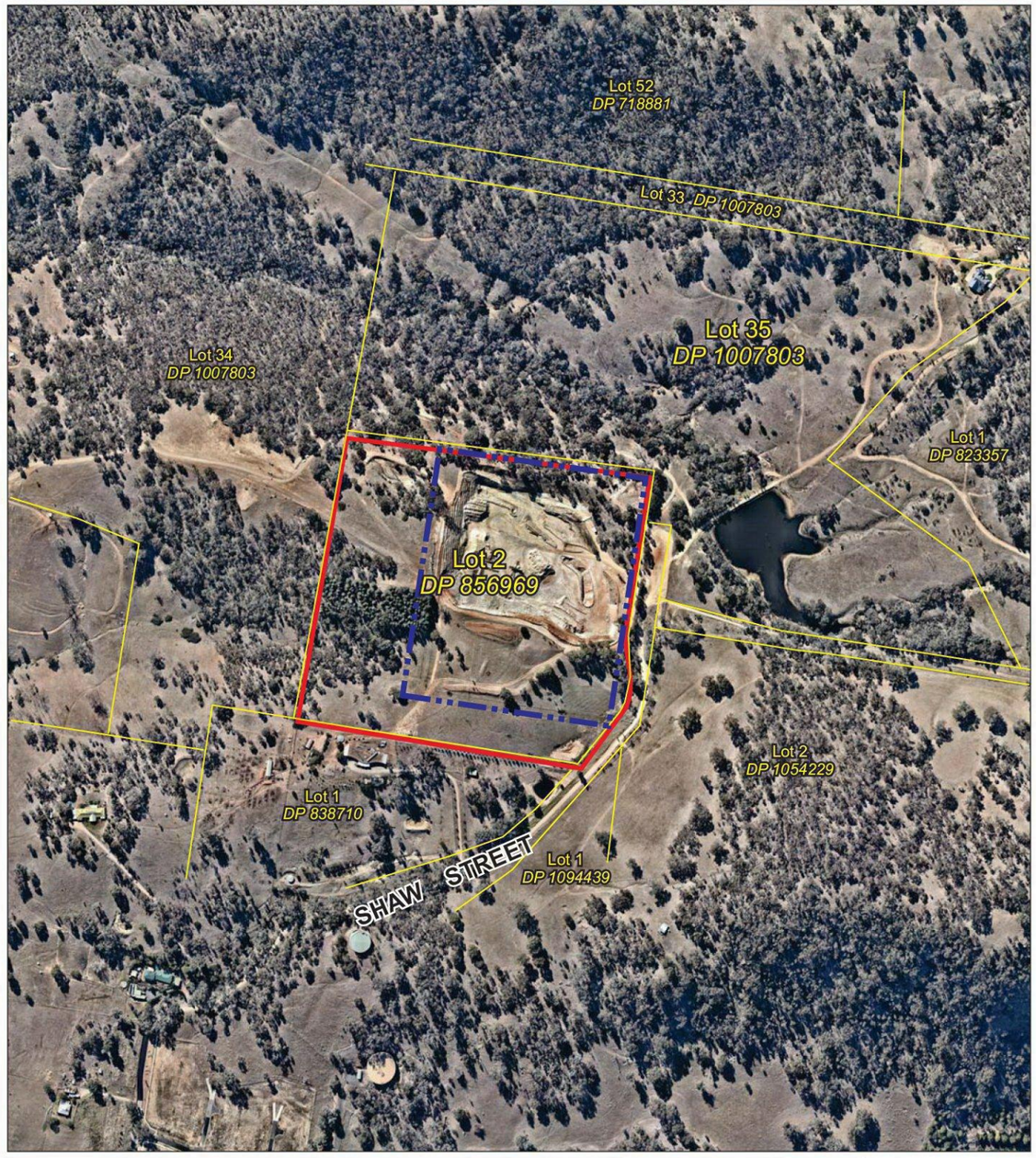
The proposal would be considered potentially hazardous and offensive industry and under the policy, a preliminary hazard analysis must be prepared and submitted with the development application. The risk assessment has been undertaken (see *Section 7.1*) mitigation measures developed.

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Site Location	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	nearmap - Image Date 01/05/2018 & Google Maps 2018	***Our Ref:***	3618_BAN_HW_DA17_C001_V1_F1.cdr
Figure:	ONE	***Council:***	Albury Wodonga Shire Council	***Survey:***	N/A	***Plan By:***	JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	N/A	***Project Manager:***	TO
Version/Date:	V1 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

N

vgt Environmental Compliance Solutions Pty Ltd





Approx Scale: 0 1 2km

Approx Scale: 0 150m

Legend

- Site *(Lot 2 DP 856969)*
- N72 Consent Boundary
- Lot Boundary

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
Signed:
Date: 27/11/2018

Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Site Layout	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	nearmap - Image Date 01/05/2018 & Landair Surveys	***Our Ref:***	3618_BAN_HW_DA17_C002_V1_F2.cdr
Figure:	TWO	***Council:***	Albury - Wodonga Shire Council	***Survey:***	Landair Surveys - Image Flown 08/02/2017	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	MGA	***Project Manager:***	TO
Version/Date:	V1 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

N

0 50m

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6014000 N

495000 E

Humbug Gully

Dam 2

In-pit Sedimentation Dam

Stockpile

Haul Road

Humbug Gully Catchment

Site Access

Stockpile

6013750 N

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
Signed:
Date: 27/11/2018

Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

Dam

Nearest Residence

SHAW STREET

495250 E

495500 E

LEGEND	
Feature/Domain	
	Property Boundary
	Consent Boundary *(N72)*
	Water Management Area
	River/Major Drainage Line
	Road
290	Contour
	Area of Disturbance

VGT Environmental Compliance Solutions Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 email: mail@vgt.com.au www.vgt.com.au ABN: 26 621 943 888

Section 3.Proposed Development

The proposal is for the extension of an existing mine to extract and process a maximum of 50,000 tonnes of clay/shale in any year for a period of up to 20 to 30 years.

Mining campaigns are undertaken approximately three times each year, with each campaign lasting around four weeks. Up to 50,000 tonnes (approx. 25,000m^3) is currently mined per annum. Mining is undertaken using a combination of a dozer, dump truck and excavator which rip the shale and push the raw material up into one or more internal stockpiles within the mine floor. The stockpile is managed by a front end loader which is also used to load trucks when transporting the clay/shale to the Jindera brickworks. As the material can be quite hard, screening of the material will be undertaken within the pit floor so as to reduce the volume of oversize material transported to the brickworks and make more efficient use of the material won.

The extension of the mine will increase the footprint of the mine from 4.7Ha to approximately 11Ha (see *Figure Three)*. There will be no change to the consented extraction depth of 50 metres. Operating hours will also remain identical.

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Proposed Extension Area	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	nearmap - Image Date 01/05/2018 & Landair Surveys	***Our Ref:***	3618_BAN_CAQ_DA17_C008_V1_F3.cdr
Figure:	THREE	***Council:***	Albury - Wodonga Shire Council	***Survey:***	Landair Surveys - Image Flown 08/02/2017	***Plan By:***	SK/JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	MGA	***Project Manager:***	TO
Version/Date:	V1 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

N

0 50m

vgt Environmental Compliance Solutions Pty Ltd

6014000 N

495000 E

Humbug Gully

Dam 2

In-pit Sedimentation Dam

Stockpile

Haul Road

Humbug Gully Catchment

Site Access

Stockpile

6013750 N

Dam

Nearest Residence

SHAW STREET

495250 E

495500 E

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci

Signed:

Date: 27/11/2018

Project Manager VGT: Tara O'Brien

Signed:

Date: 27/11/2018

LEGEND

Feature/Domain	
	Property Boundary
	Consent Boundary *(N72)*
	Water Management Area
	Proposed Extension Area
	River/Major Drainage Line
	Road
290	Contour
	Area of Disturbance

Section 4.Existing Environment

4.1. Waste

There is no processing of waste on the site and no waste is generated. General domestic waste is collected in rubbish bins located at the site office and disposed of via a licensed waste disposal facility. During mining campaigns, portable amenities are brought onto the site for the duration of the works and then removed.

No waste, including Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) or other fill material has been imported onto the site to date.

4.2. Chemicals and Dangerous Goods

There are no chemicals or dangerous goods held on the site.

4.3. Hydrocarbons

Outside of mining campaigns and hauling activities there are no fuels or oils stored on the site. During mining, contractors may refuel on the site using a portable storage tank. The total volumes of fuel held on-site is restricted to that within the plant and equipment and the portable storage tank. Similarly, the only oils and greases held on-site are within the plant and equipment. Plant and equipment are not serviced on the site.

All contractors hold spill kits in case of an emergency hydrocarbon spill. A spill kit is also retained within the office.

4.4. Public Safety

Trespassing is not common; however the site is fenced around the perimeter with rural style fencing to deter unauthorised access. Access is gained via a locked gate at the entrance.

Visitors onto the site must report to the site supervisor. All visitors must be accompanied by The Proponent's personnel at all times. Contractors must undertake a site induction which includes safety hazards and emergency procedures.

Signage is posted on the gate and around the site to dissuade trespassers and to warn staff of site hazards such steep slopes and drowning hazards. The office also holds a first aid kit in case of emergencies.

The site has developed a Traffic Management Plan and a 15km/hr speed limit is enforced.

Photography 1: Locked Entrance Gate with Signage

Photography 2: Site Office and Visitor Parking Signage

Photography 3: Speed Limits and PPE Signage

Photography 4: Perimeter Fencing

4.5. Bushfire

The Albury Bush Fire Prone Land Map identifies all land across the Albury Local Government Area that can support a bushfire, or is likely to be subject to, bushfire attack. The Bush Fire Prone Land Map is prepared by Council in conjunction with the NSW Rural Fire Service (RFS) and is certified by the Commissioner of the NSW RFS. The following extract from the map indicates the bushfire prone land on the site.

Bush fire prone land is classified as follows:

- Vegetation Category 1 (coloured orange on the map): This is the most hazardous vegetation category and contains the most dense vegetation;
- Vegetation Category 2 (coloured yellow on the map): Within Albury, these are smaller, isolated and less-dense pockets of vegetation that are of a lesser hazard than Vegetation Category 1; and
- Vegetation Buffer (coloured red on the map): These areas adjoin either Vegetation category 1 (with a 100m buffer) or Vegetation Category 2 (with a 30m buffer).

A property is therefore bush fire prone if it is wholly or partly located in the red, orange or yellow area on the Albury Bush Fire Prone Land Map.

The site is bush fire prone, Vegetation Category 1 to the north and west of the site with a vegetation buffer of 100m.

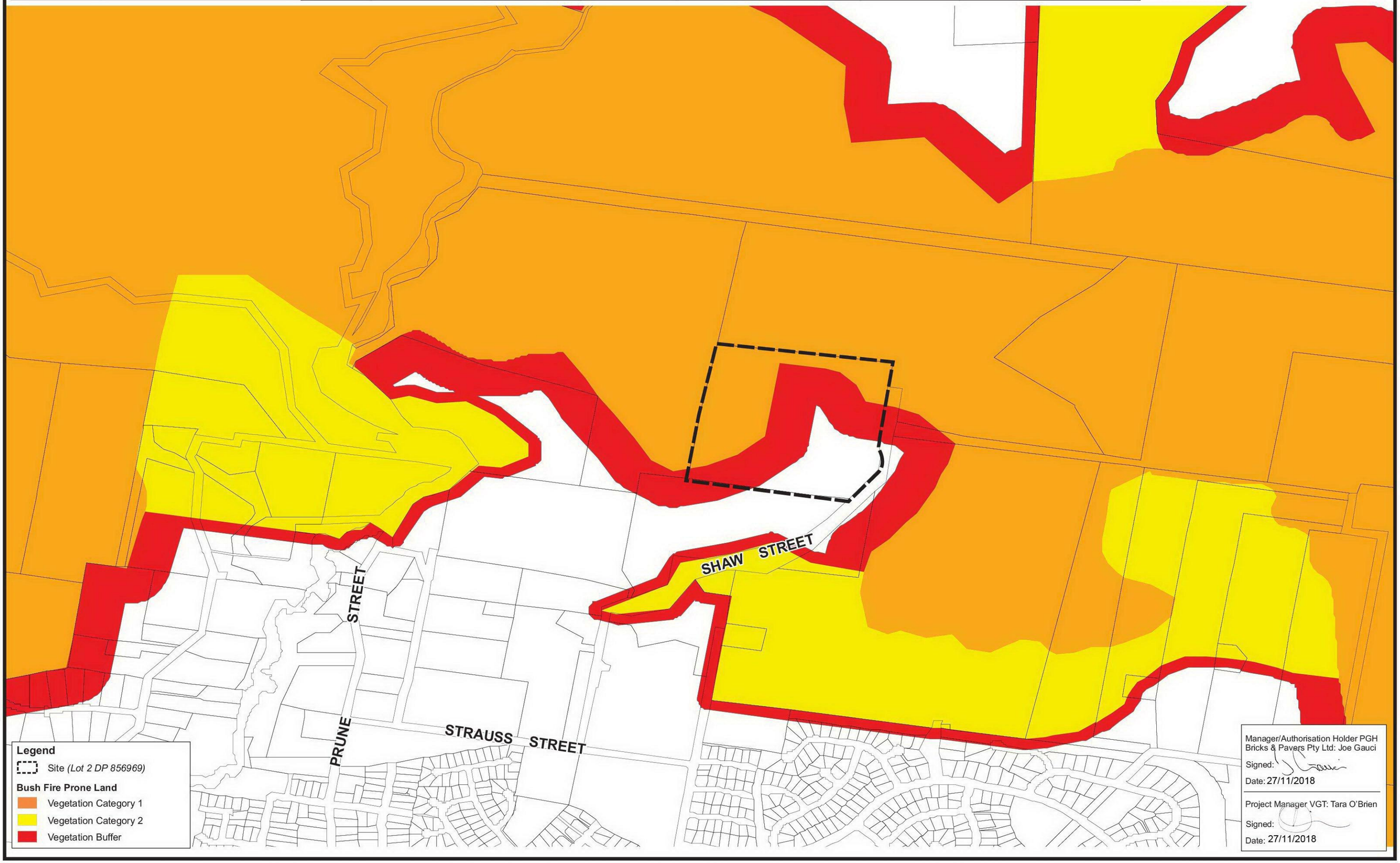
The closest residence located to the south of the site also lies within bush fire prone land.

Plan of:	Environmental Impact Statement 2018 for Andersons Clay Mine - Albury Bush Fire Prone Land Map Extract	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	Albury City Council LGA - Bush Fire Prone Land Map 03/10/2014	***Our Ref:***	3618_BAN_HW_DA17_C009_V1_F4.cdr
Figure:	FOUR	***Council:***	Albury - Wodonga Shire Council	***Survey:***	N/A	***Plan By:***	JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	N/A	***Project Manager:***	TO
Version/Date:	V1 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	N/A	***Office:***	Thornton

N

0 200m

vgt Environmental Compliance Solutions Pty Ltd



Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
Signed:
Date: 27/11/2018

Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

4.6. Drillholes, Shafts and Excavations

The site does not lie within a mine subsidence area and there are no known underground workings in the area. Drilling is undertaken on the site as required. All drill holes are backfilled and sealed appropriately by the drilling contractors.

4.7. Consultation

PGH has conducted a letter drop in May 2018 to nearby residents to outline the proposed mine extension and provided contact details should residents require more information. To date no responses have been received.

No complaints regarding hazards or waste have ever been received during PGH's ownership of the site.

Section 5.Impacts and Mitigation

Site hazards are currently managed via the Mine Operation Plan (MOP), the Mine Safety Management Plan (MSMP) and the Principle Hazard Management Plan (PHMP) all required by the DPE. These plans are audited and reviewed regularly to ensure compliance with current legislation and site conditions and are available on request.

The following describes the impacts and mitigation of hazards and wastes in order for Council to assess the development application.

5.1. Waste

Low impacts are expected from the site with respect to waste generation and removal of domestic waste from the site. The removal of domestic waste from the site by a licenced contractor will continue.

No other waste will be imported onto the site with the exception of VENM for rehabilitation purposes, if required. All VENM material will be certified before receival to the site and logged as per EPA requirements.

5.2. Chemicals and Dangerous Goods

As there are no chemicals or dangerous goods held on the site no impacts or mitigation measures are required.

5.3. Hydrocarbons

The volumes of fuels and oils held on the site are minimal and restricted to that held within the vehicles, plant and equipment and these are not serviced on the site. Refuelling is conducted on the hardstand areas within the pit floor or off-site. As the in situ clay material is fairly impervious, any fuel or oil spilled on the site in unlikely to dissipate and enter the groundwater or spread into the surface water system. This, combined with the small volumes of fuels and oils used, will enable any spills to be contained quickly and easily.

All contractors hold spill kits in case of an emergency hydrocarbon spill. A spill kit is also retained within the office. Staff and contractors are inducted prior to entering and working on the site. The induction includes safety and environmental aspects of which the location and use of spill kits is included. No additional control measures are envisaged.

5.4. Public Safety

The risk to the public regarding unauthorised access to the site is considered minimal. The site is securely fenced and access limited by a locked gate outside of operating periods. All visitors are accompanied by staff at all times. The site is well signposted along the perimeter, warning of the dangers of steep slopes and water bodies. As stated previously a first aid kit is held on-site which is accessible to staff when on-site.

No additional safety measures are anticipated to be required, however regular safety audits and reviews of the Mine Operation Plan (MOP), the Mine Safety Management Plan (MSMP) and the Principle Hazard Management Plan (PHMP) will be undertaken as per DPE requirements.

Section 6.Bushfire Assessment Report

The Planning for Bush Fire Protection (2006) (PBFP), a NSW Rural Fire Service (RFS) publication, outlines the bush fire protection measures to be included when planning or modifying development in a bush fire prone area. The publication recommends that a Bush Fire Assessment Report (BAR) is submitted to the RFS for integrated developments. The following provides the information required in the BAR. It should be noted that no habitable buildings or other assets will be constructed on the site and that the disturbed area will be revegetated in the final landform.

6.1. Site Description

6.1.1. Bushfire Hazard

6.1.1.1. Vegetation Classification

According to the PBFP, structural description of vegetation out to 140 metres from the development must be provided along with any past disturbance factors and future intended land uses that could alter the vegetation classification in the future.

For the purposes of the assessment the current footprint of the development is taken to be the footprint of the active mining area. As the mine progresses, the disturbed footprint will extend to the boundaries of the site in the south and the extension area. Concurrently, rehabilitation will be undertaken on finished faces which is envisaged to be pasture/grassland with some tree lots for stock shelter. As such the vegetation boundary is variable as will be the vegetation type within the 140 metre buffer. The classification has been undertaken for the current footprint, disturbance to the full extent of the consent and the rehabilitated site. In general the site can be best described as a Grassy Woodland interspersed with Grasslands with some areas of Open Forest as shown in *Figure Four, Figure Five* and *Figure Six*. These areas will decrease as the mine proceeds and then increase as the final landform is achieved.

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Current Vegetation Classification	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	Landair Surveys - Image Flown 08/02/2017 & Photomapping March 2015	***Our Ref:***	3618_BAN_HW_DA17_C003_V2_F5.cdr
Figure:	FIVE	***Council:***	Albury - Wodonga Shire Council	***Survey:***	Landair Surveys - Image Flown 08/02/2017	***Plan By:***	JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	MGA	***Project Manager:***	TO
Version/Date:	V2 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

vgt Environmental Compliance Solutions Pty Ltd

N

0 100m

Slope 15%

Slope 15%

Slope 4%

Slope 12%

Slope 5%

Slope 12%

Humbug Gully Catchment

SHAW STREET

LEGEND

	Property Boundary *(Lot 2 DP 856969)*
	Extent of Vegetation Classification Area *(150m)*
	Slope
	Current Mining Extent
1m 5m	Contour
VEGETATION CLASSIFICATION	
	Open Forest *(Shrub/Grass Sub Formation)*
	Grassy Woodland
	Grassland

Note:
Slopes approximated from nearmap.

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
Signed:
Date: 27/11/2018

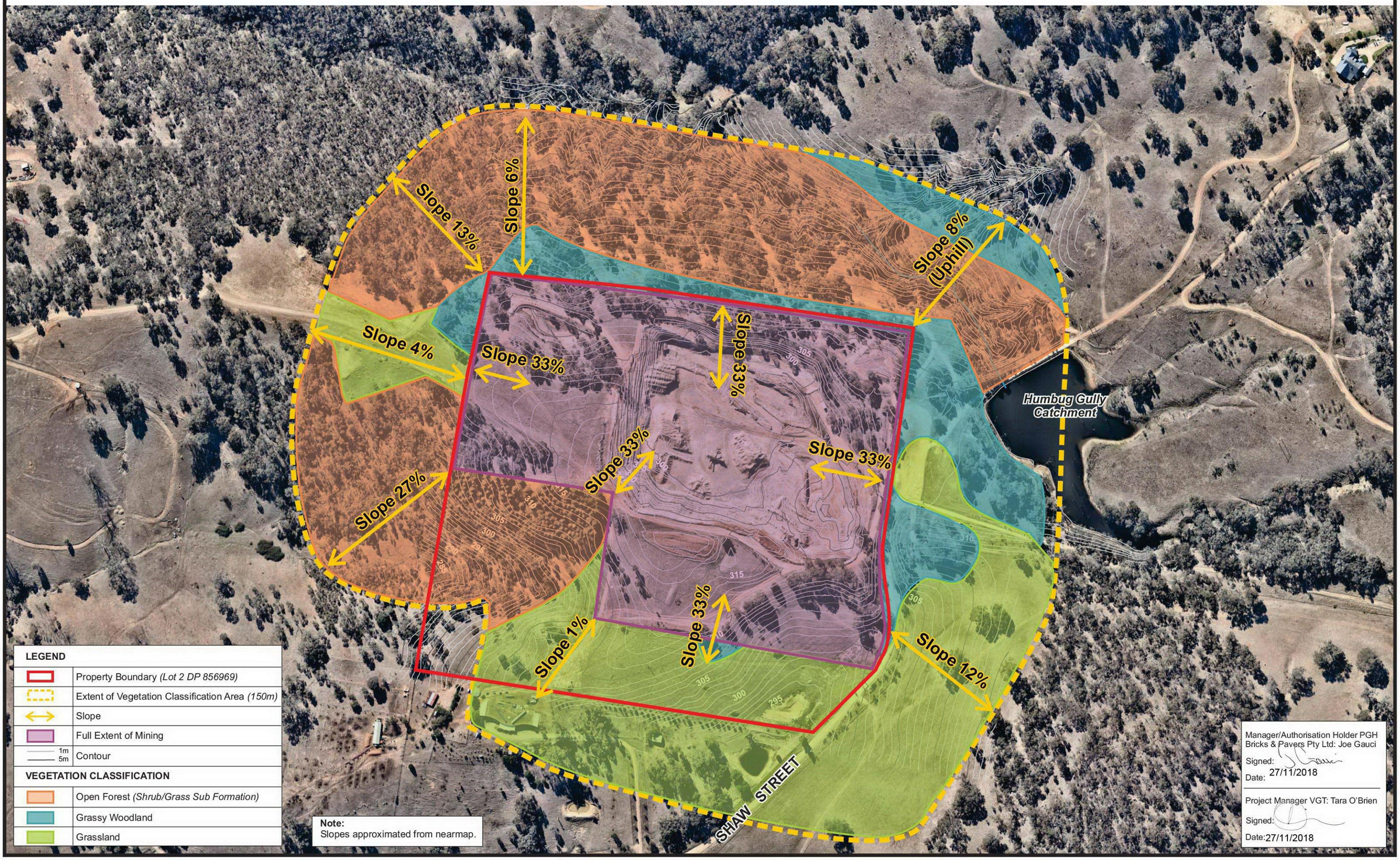
Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Full Extent of Mining - Vegetation Classification	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	Landair Surveys - Image Flown 08/02/2017 & Photomapping March 2015	***Our Ref:***	3618_BAN_HW_DA17_C004_V2_F6.cdr
Figure:	SIX	***Council:***	Albury - Wodonga Shire Council	***Survey:***	Landair Surveys - Image Flown 08/02/2017	***Plan By:***	JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	MGA	***Project Manager:***	TO
Version/Date:	V2 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

N

0 100m

vgt Environmental Compliance Solutions Pty Ltd



LEGEND

	Property Boundary *(Lot 2 DP 856969)*
	Extent of Vegetation Classification Area *(150m)*
↔	Slope
	Full Extent of Mining
1m / 5m	Contour
VEGETATION CLASSIFICATION	
	Open Forest *(Shrub/Grass Sub Formation)*
	Grassy Woodland
	Grassland

Note:
Slopes approximated from nearmap.

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
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Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Rehabilitated Site Vegetation Classification	***Location:***	253 Shaw Street, Springdale Heights, NSW	***Source:***	Landair Surveys - Image Flown 08/02/2017 & Photomapping March 2015	***Our Ref:***	3618_BAN_HW_DA17_C005_V2_F7.cdr
Figure:	SEVEN	***Council:***	Albury - Wodonga Shire Council	***Survey:***	Landair Surveys - Image Flown 08/02/2017	***Plan By:***	JD
Sheet:	1 of 1	***Tenure:***	Permit Number N72	***Projection:***	MGA	***Project Manager:***	TO
Version/Date:	V2 03/10/2018	***Client:***	PGH Bricks & Pavers Pty Ltd	***Contour Interval:***	1m	***Office:***	Thornton

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N

0 100m

Slope 13%
Slope 6%
Slope 8% (Uphill)
Slope 4%
Slope 33%
Slope 33%
Slope 27%
Slope 33%
Slope 33%
Slope 33%
Slope 1%
Slope 12%
Humbug Gully Catchment
SHAW STREET

LEGEND	
	Property Boundary *(Lot 2 DP 856969)*
	Extent of Vegetation Classification Area *(150m)*
	Slope
1m 5m	Contour
VEGETATION CLASSIFICATION	
	Open Forest *(Shrub/Grass Sub Formation)*
	Grassy Woodland
	Grassland

Note:
Slopes approximated from nearmap.

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gauci
Signed:
Date: 27/11/2018

Project Manager VGT: Tara O'Brien
Signed:
Date: 27/11/2018

6.1.1.2. Effective Slopes

The slopes surrounding the current site and the developed and rehabilitated site have been estimated and are shown in *Figure Four, Figure Five* and *Figure Six*. As the mine is located upon a ridgeline, all slopes are currently downslope from the development. Slopes on the existing site range from 4% to 15%, with the steeper slopes found within the Open Forest and Grassy Woodland areas.

As the development envelope increases as the mine proceeds, further slopes must be considered. These slopes range from 1% in the grassland area to the south of the site to 27% to the south west following a natural gully line. Within the pit, slopes may be much steeper on active faces. Rehabilitation will be undertaken resulting in finished faces on the pit perimeter of up to 4H:1V and a gently sloping floor of up to 5% slope. These slopes will be vegetated with grassland/pasture species.

The closest resident in the south is downslope of the development and will be some 120m from the extent of the mine at its full extent.

6.1.1.3. Fire (Weather) Area

The Albury region is within the Eastern Riverina fire weather area with a Forest Fire Danger Index of (FFDI) of 80.

6.1.2. Ignition Sources

6.1.2.1. Mining and Associated Activities

The most common form of ignition in the area would be sparks generated from plant/equipment used in mining activities (e.g. exhausts and sparks of vehicles, exploration drilling). Actions of employees and contractors, and malfunctioning equipment and motors may also result in fire ignition.

6.1.2.2. External Sources

Bushfire may enter the subject site from adjoining properties and transport corridors adjacent to the site, and from management works on neighbouring farmlands. Any local or neighbouring hazard reduction operations should also be considered for potential ignition, particularly under conditions of hot, dry summer winds. Legal burning off in rural areas is mainly undertaken in autumn through to spring. Arson is also a potential ignition source, however is likely to be limited to the road areas.

6.1.2.3. Electricity Transmission Lines

Electricity transmission lines are located to the north east of the site and are approximately 80 metres proximate at the closest location. Under hot and windy conditions, electricity transmission lines may sag, come in contact with each other and arc. This can generate sparks which have the potential to cause fire. Powerline easement management is the responsibility of the service provider. Any significant hazard reduction requirements should be made in consultation with the electricity provider.

6.1.2.4. Lightning

Lightning strikes are a common cause of fire ignition. The potential for lighting strike is not predictable, however if the conditions are suitable (dry vegetation, hot and windy) the risk is significant.

6.1.3. Assets

Assets are considered as life, economic, cultural heritage and environment.

6.1.3.1. Environment and Cultural Heritage

The site is located within an Environmental Management Zone (Zone E3) according to the Albury City Council LEP 2010, however the development has specific exemption to

operate within this zone. There are no National Parks, State Forests or other reserves within the development area nor any other environmental protection zones.

A biodiversity assessment was conducted on the site in May 2016 and in spring 2018. No listed threatened flora or fauna species were observed during the field survey. The site was also not considered a core Koala habitat.

White Box - Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes Bioregion vegetation community has been identified on the site (see *Figure Seven*). This vegetation community is listed as an endangered ecological community (EEC) under the TSC Act. Ecological assets are generally resilient to small bushfires.

As mining proceeds, trees within the extension area would be removed. The Woodland EEC to the south would remain. The removal of any EEC Woodland and mitigation of the impacts of its removal is discussed separately to this report within the EIS. The vegetation removal will reduce the fire hazard until such time as revegetation works are undertaken on the final landform. It is envisaged that the rehabilitation vegetation will consist of grassland/pasture species with some tree lots provided for stock shelter.

Results of archaeological study found that no aboriginal objects were detected in the test pits and one isolated artefact (white quartz flake) was recovered. No scarred trees were identified on the site. The site was found to be highly disturbed and it is unlikely that further items of archaeological significance will be found. The risk of harm to heritage items is therefore considered to be very low.

6.1.3.2. Public and Human Life

Outside of mining and hauling activities the site is unattended and therefore the risk to personnel is low. During mining campaigns there may be up to six personnel on site and hauling operations may require up to two personnel on site. Adjacent residents may also be impacted by bushfires on the site or in the locality. Access to the site is recognised as a potential hazard, being a long rural type road through pockets of bushland.

Exploration drilling will have potential to locate contractors in bushland areas where there is limited access provisions and APZ clearance for fire protection. This task requires specific risk assessment and control measures which are developed in conjunction with the contractor.

Emergency services personnel would be likely to attend any emergency at these sites. As indicated above, no public access is available to the site and subsequently no direct risk to the public is expected.

6.1.3.3. Infrastructure and Economic

Permanent and temporary infrastructure on the site and adjacent to the site are shown in Figure Eight and includes:

- Temporary site office;
- Access and haul roads;
- Water pump;
- Dwelling to the south of the site (not within the site boundary);
- Power lines to the north east of the site (not within the site boundary);
- Exploration drilling rigs;
- Mining and hauling plant and equipment.

Figure Eight. Vegetation Communities and Threatened Species

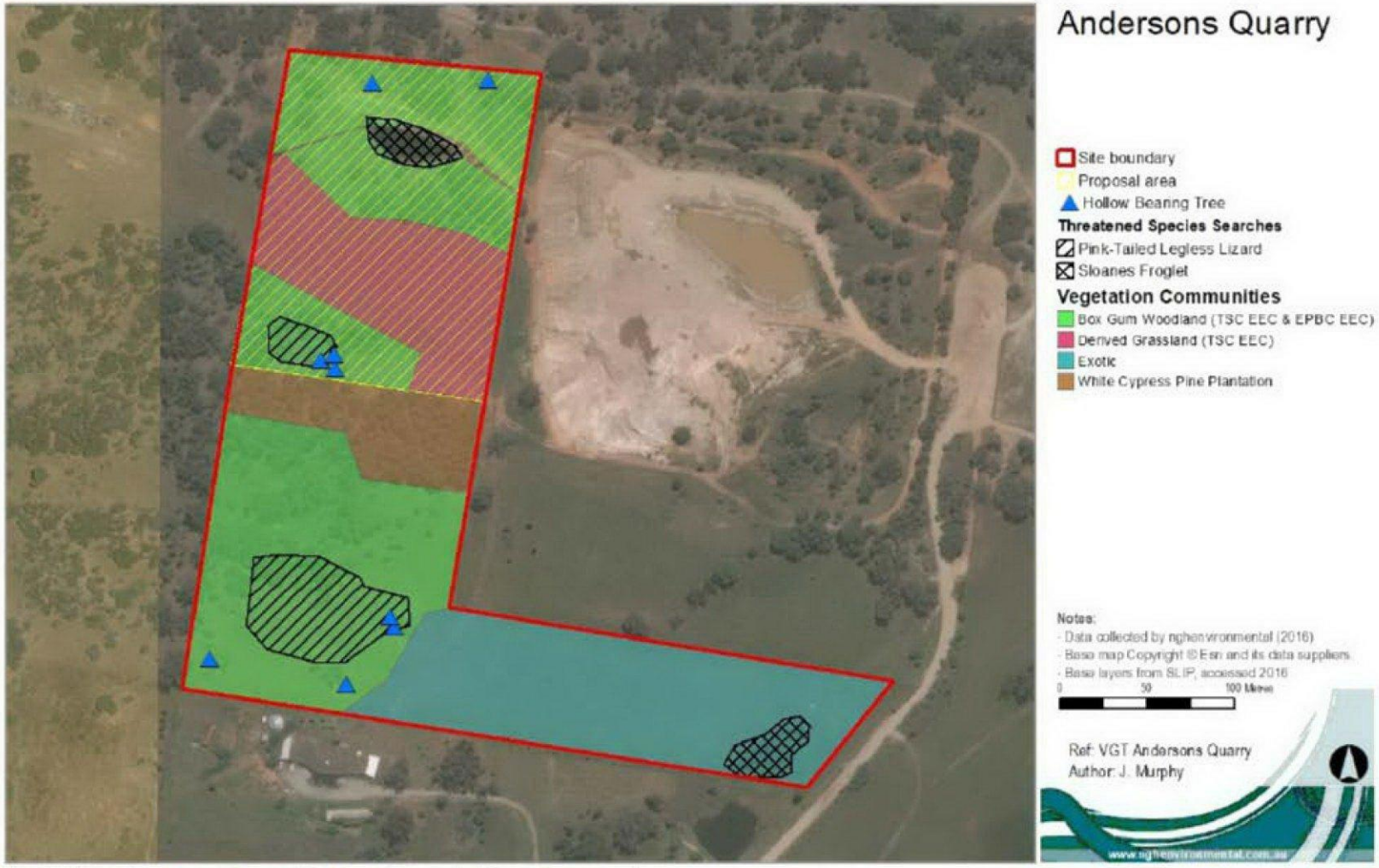

Figure 2 Vegetation communities and threatened species habitat in the proposal area.

6.2. Risk Assessment

The potential bushfire risks to and from this Project are:

- Danger to lives and damage to property from radiant heat, flame, smoke and embers;
- Stalling production and damage to infrastructure assets, financially impacting PGH and local brickmaking operations;
- Negative impact to ecology and native vegetation.

6.2.1.1. Environmental and Cultural Heritage

Threatened flora and fauna and the White Box - Blakely's Red Gum - Yellow Box grassy woodland EEC have some resilience to bushfire impact, however, a high intensity and widespread fire would have significant impact.

No heritage items are listed within the study area that would be impacted significantly from bushfire.

6.2.1.2. Public Safety and Human Life

The bushfire risk to public safety is significant with regards to awareness and evacuation provisions. It should be noted that the public does not have access to the site, therefore the risk to the public is very low. The dwelling in the south of the site as well as other surrounding dwellings is required to maintain its own APZ and the occupants are expected to have their own Bushfire Survival Plan independently of PGH.

Early detection and emergency evacuation is a key mitigation strategy to protect life of employees and contractors. The Mine Safety Management Plan (MSMP), as required by the DPE, outlines bushfire awareness and evacuation procedures.

The provision of bushfire treatments, including APZ and landscape management, suitable access and water supplies, will assist in protection of life.

Exploration drilling will refer to a unique set of work procedures as agreed by the drilling contractor and PGH, as APZ and access provisions are likely to be limited.

6.2.1.3. Infrastructure and Economic

Table 5 below lists the primary assets at the site and a designated priority for each. The priority levels have been determined on the basis of distance from the hazard (direct impact) and consequences if infrastructure is damaged and non-functional (lost production).

Table 5. Risk Assessment of Infrastructure Assets Associated with Site

Asset	Human Risk	Economic Risk	Environmental and Cultural Risk	Priority*	Comments
Access/Haul Road	High	Moderate	Low	3	The risk to personnel caught in a bushfire on the access/haul roads is significant. The disruption to the business from the loss of access to the road would be temporary. There are no cultural or environmental considerations on the roads
Temporary Site Office	High	Moderate	Low	2	The risk to personnel caught in a bushfire within the office is significant. The disruption to the business from the loss of the office would be temporary. There are no cultural or environmental considerations regarding the office.
Dwelling to the south of the site (not within the site boundary)	High	Low	Low	3	The risk to the public caught in a bushfire originating on or off the site within the dwelling is significant however, the protection of this asset is not PGH's responsibility. Notwithstanding this, the development will not impact the APZ of this dwelling. There will be no disruption to the business from the loss of the dwelling. There are no cultural or environmental considerations regarding the dwelling.
Power lines to the north east of the site (not within the site boundary)	Low	High	Low	1	The risk to PGH staff and contractors is low as the power lines are not located on site. The risk to Energy contractors working in and around this asset are assumed to be handled by the Energy Company. Whilst the disruption of the electrical supply from harm to the power lines would be significant to users, PGH does not use this supply and there would be no disruption to PGH business. There are no cultural or environmental considerations regarding the power lines.

Asset	Human Risk	Economic Risk	Environmental and Cultural Risk	Priority*	Comments
Exploration drilling rigs	High	Moderate	Low	2	The risk to exploration drilling personnel is high should a bushfire occur. There would be a significant disruption to the exploration drilling contractor however there would be no long term impacts to the operation of the mine. There are no cultural or environmental considerations regarding the exploration drilling rigs.
Mining and hauling plant and equipment.	High	Moderate	Low	2	The risk to mining and hauling personnel is high should a bushfire occur. There would be a significant disruption to the mining and hauling operations however these would be long in duration. There are no cultural or environmental considerations regarding the exploration drilling rigs.

*Note:

Priority 1 – Critical infrastructure or high financial impact if function is compromised.

Priority 2 – Lower impact, partially resilient or easy to replace.

Priority 3 – Resilient, lowest priority.

Plan of:	Hazards & Waste Assessment for Andersons Clay Mine Environmental Impact Statement 2018 - Asset Protection Zones	Location:	253 Shaw Street, Springdale Heights, NSW	Source:	nearmap - Image Date 01/05/2018 & Landair Surveys	Our Ref:	3618_BAN_HW_DA17_C007_V2_F9.cdr
Figure:	NINE	Council:	Albury - Wodonga Shire Council	Survey:	Landair Surveys - Image Flown 08/02/2017	Plan By:	SK/JD
Sheet:	1 of 1	Tenure:	Permit Number N72	Projection:	MGA	Project Manager:	TO
Version/Date:	V2 03/10/2018	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	1m	Office:	Thornton

This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.

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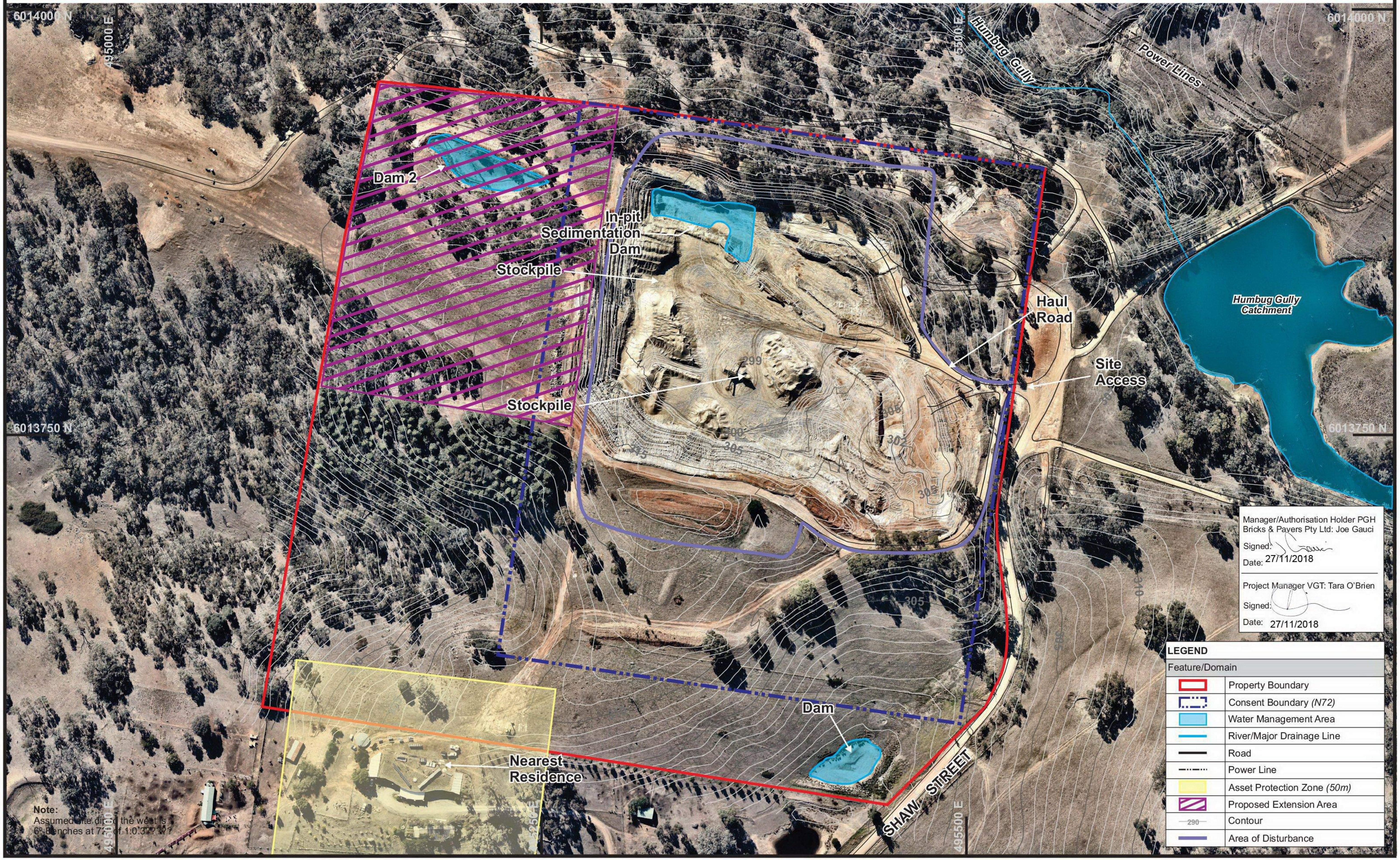

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6.3. Mitigation

This section details to mitigation options that would minimise the risk to the identified assets.

6.3.1. Asset Protection Zones

Asset Protection Zones (APZ) are set back distances that provide for;

- minimal separation for safe firefighting (access to fire front);
- reduced radiant heat;
- reduced influence of convection driven winds;
- reduced ember viability thereby limiting the impact of ember attack; and
- dispersal of smoke which would otherwise severely impact on residents affected by reduced mobility or health issues.

An APZ comprises of an Inner Protection Area (IPA) and an Outer Protection Area (OPA) between the asset and the fire hazard. The IPA is critical to providing a defendable space and managing heat intensities at the building or asset surface. The OPA serves to reduce the potential length of fames by slowing the rate of spread, filtering embers and reducing the likelihood of crown fire.

It should be noted that there is no 'Asset' in the form of dwellings or other permanent buildings or structures within the site that require protection. Therefore the calculation of an APZ is not required. APZ's are not necessary for temporary infrastructure such as the site office, pumps, mining plant and equipment. These items are generally found within the excavation area which is devoid of vegetation and provides some protection from bushfires.

It has been noted from Council correspondence however, that the development is adjacent to an existing APZ with a 40 metre IPA and a 10 metre OPA. It is assumed that this refers to the closest resident to the south of the development and is illustrated in *Figure Eight*. As can be seen from the figure, the proposed development will not impact the APZ of the existing residence during either the extraction, rehabilitation or final landuse. Although the APZ falls within the mine site boundaries, there will be no vegetation clearing or planting within the resident's dwelling APZ on the proponents land.

Similarly the power lines some 80 metres to the north east of the site are managed by the electricity provider and the proposed development will have no impact on any APZ around this infrastructure.

6.3.2. Emergency Management

In the case of a bushfire, the optimal bushfire mitigation response to protect human life is evacuation. Emergency evacuation needs to clarify a safe route and an understanding of the extent/spread of local fires before allowing the evacuating persons to leave the site.

Further to evacuation, emergency management includes access for emergency services to assets and bushfire control lines via access road and fire trails. All roads that are identified as crucial to evacuation and emergency services access must be visually inspected annually and management actions undertaken if tracks are determined as unsuitable for emergency vehicles passage (i.e. inaccessible due to erosion, fallen timber, locked gates, dead end tracks).

Exploration drilling has potential to expose contractors to bushfire in isolated or rough terrain, with limited access provisions, and potentially hindering a safe evacuation.

Specific risk treatment actions are required to offer contractors a safer workplace in respect to bushfire protection:

- No drilling will be conducted on total fire ban days; and
- Firefighting equipment will be kept on active sites at all times;

The MSMP should be updated to include specific bushfire awareness and evacuation response procedures for bushfire events and all staff and contractors are required to be familiar with the MSMP and emergency procedures.

The recognition of Very High or greater Fire Danger Days will trigger a requirement to view the Current Fires and Incidents page on the RFS' website. Should bushfires be present within the local area, no mining or hauling activities will be undertaken on the site.

Site activities will not be undertaken when the local fire danger is Extreme or Catastrophic and staff will not be permitted onto the site.

The following except from the RFS website, although focused on homeowners, illustrates the actions that should be taken during these risk periods.

Table 6. Bushfire Danger Rating

FIRE DANGER RATING	WHAT YOU SHOULD DO
CATASTROPHIC	For your survival, leaving early is the only option. Leave bush fire prone areas the night before or early in the day – do not just wait and see what happens. Make a decision about when you will leave, where you will go, how you will get there and when you will return. Homes are not designed to withstand fires in catastrophic conditions so you should leave early.
EXTREME	Leaving early is the safest option for your survival. If you are not prepared to the highest level, leave early in the day. Only consider staying if you are prepared to the highest level – such as your home is specially designed, constructed or modified, and situated to withstand a fire, you are well prepared and can actively defend it if a fire starts.
SEVERE	Leaving early is the safest option for your survival. Well prepared homes that are actively defended can provide safety – but only stay if you are physically and mentally prepared to defend in these conditions. If you're not prepared, leave early in the day.
VERY HIGH HIGH LOW MODERATE	Review your bush fire survival plan with your family. Keep yourself informed and monitor conditions. Be ready to act if necessary.

Should a bushfire occur and evacuation is not possible, the pit void may be used as emergency shelter due to the absence of vegetation and lower topography.

6.3.3. Infrastructure Protection

There is very little infrastructure on the site that requires protection. The temporary site office is located adjacent to revegetated land and away from the pit floor to allow safe light vehicle and pedestrian access. This does increase the risk of impacts from bushfire however, this is considered acceptable. Plant and equipment may be at risk if stranded onsite during a bushfire, in which case it is preferable to move them to the centre of the pit void if there is no risk to human life, prior to evacuation.

Both the temporary office and plant and equipment carry extinguishers for small fires. Larger fires, particularly bushfires will not be handled by staff and contractors, who will follow the site emergency procedures which require evacuation and the contacting of emergency services via phoning 000.

6.3.4. Land and Vegetation Management

Options for land and vegetation management are outlined below.

- Fuel loads will be reduced within grassland areas by either slashing or controlled grazing where appropriate, particularly within the APZ of the nearest dwelling that lies within the PGH boundaries. This area will not be planted with additional vegetation such as tree lots.
- Hazard reduction burns may be undertaken in selected areas in consultation the NSW RFS.

6.3.5. Road Access

All internal roads and access racks will be maintained in good condition to allow for safe evacuation and emergency vehicle access. This will include regular maintenance of the road surface as well as trimming of vegetation overhanging the tracks. The evacuation routes will be detailed on emergency plans and will include an alternate egress if possible.

At present the main access to the site is via a publically maintained road (Shaw Street). Should this road be impassable in an emergency, the alternative egress route is via a private road to the west of the pit which ultimately joins Prune Street and then Springvale Heights.

6.3.6. Water Supply

Water is generally available within the main pit dam for firefighting purposes where safe to do so. There is currently no sprinkler system in place for the purpose of asset protection.

6.3.7. Safe Place

In the event that staff or contractors become trapped on the site and are unable to evacuate, a safe place should be provided in a location with the lowest bushfire exposure possible. The site office should be resilient under minor bushfire attack and this shall be the safe place in an emergency. However, should the office succumb to ember attack, personnel should proceed to the pit floor, preferably adjacent to the main pit dam.

6.3.8. Communication and Training

Training will be a key form of communication. All staff and contractors will require an induction prior to entering the site. The induction includes the all safety and evacuation procedures. Suitable training, education and refreshing of necessary skills will be provided to staff as appropriate.

The RFS will be consulted on a frequency not exceeding twelve months and preferably prior to and during the typical bushfire season. Consultation should include:

- Identification of any previous bushfire impacts within the locality;
- Description of emergency procedures relating to access and evacuation vehicles and persons during a bushfire emergency;
- Suitability of access roads, APZ areas, water resources and location of any designated safe areas; and
- Exploration drilling programs and associated access provisions.

Section 7.Cumulative Impacts

There are no cumulative impacts expected with regards to waste, chemicals and dangerous goods as these are not held on the site. Similarly the volume of hydrocarbons held on the site are minor and no cumulative impacts from potential spills are expected.

The impact of bushfires on neighbouring properties may increase once mining has ceased and rehabilitation has commenced or nears completion. This is primarily due to the increased fuel load the revegetation presents. The increase in bushfire hazard is considered an acceptable consequence of rehabilitation and the final land use is in keeping with surrounding land uses.

Section 8.Monitoring and Maintenance

Monitoring of Waste and Hazards will be undertaken on a regular basis according to the site MSMP, MOP, PHMP and any other management and safety plans developed for the site. When mining and hauling operations are undertaken, the Site Supervisor will;

- Undertake daily site inspections to ensure waste is stored and disposed of correctly;
- Ensure all plant and equipment on-site is equipped with an appropriate fire extinguisher;
- Ensure a spill kit is available in the office as well as ensuring the contractors have their own spill kit when on-site;
- Ensure that plant and equipment are fitted with spark arrestors or other appropriate equipment to reduce the incidence of a bushfire igniting;
- Ensure access by the public is restricted and that all gates are locked outside of working hours; and
- Review the bushfire danger rating and alerts daily.

At other times the Site Supervisor shall ensure;

- Access by the public is prevented via maintenance of adequate fencing and ensuring the gates are locked;
- Ensure grassland areas are slashed or utilise controlled grazing to reduce fuel loads as required;
- Ensure access tracks and roads are maintained a trafficable condition and that overhanging vegetation is trimmed;
- Review the MSMP and PHMP and any other safety plans at least annually and update as required;

- Liaise with neighbours to discuss management of APZs and any works required within common boundaries; and
- Liaise with the RFS at least annually to review site bushfire management and maintenance.

Section 9.References

Ref. 1. New South Wales Department of Trade & Investment – Resources and Energy (September 2013) *ESG3: Mining Operations Plan (MOP) Guidelines*

Ref. 2. New South Wales Rural Fire Service (2006) *Planning for Bush Fire Protection*

VGT Environmental Compliance Solutions Pty Ltd
- Environmental & Geological Assessments
- Environmental Monitoring & Management
- Quarry/Mine Plans & Rehabilitation Plans
- CPESC Endorsed Sediment & Erosion Plans
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