



## **DENDROBIUM MINE AND CORDEAUX COLLIERY ANNUAL REVIEW FY20**



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**Table 1: Annual Review Title Block**

<b>Name of operations</b>	Dendrobium Mine
	Cordeaux Colliery
<b>Name of operator</b>	South32 Illawarra Metallurgical Coal (IMC)
<b>Development consent / project approval #</b>	DA 60-03-2001
<b>Name of holder of development consent / project approval</b>	Dendrobium Coal Pty Ltd
<b>Mining lease #</b>	CCL768, ML1510, ML1566 (Dendrobium)
	CCL768 (Cordeaux)
<b>Name of holder of mining lease</b>	Dendrobium Coal Pty Ltd (ML1510 and ML1566) and Illawarra Coal Holdings Pty Ltd (CCL768).
<b>Water approval #</b>	10WA118772
<b>Name of holder of water approval</b>	Illawarra Coal Holdings Pty Ltd
<b>Water access licence #</b>	37465
	36473
	42385
	42386
<b>Name of holder of water access licence</b>	Illawarra Coal Holdings Pty Ltd (37465, 42385, 42386)
	Dendrobium Coal Pty Ltd (36473)
<b>MOP/RMP start date</b>	01 October 2015
<b>MOP/RMP end date</b>	01 July 2022
<b>Annual Review start date</b>	01 July 2019
<b>Annual Review end date</b>	30 June 2020




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**I, Chris Schultz, certify that this audit report is a true and accurate record of the compliance status of Dendrobium Mine and Cordeaux Colliery for the period 1 July 2019 – 30 June 2020 and that I am authorised to make this statement on behalf of Illawarra Coal Holdings Pty Ltd and Dendrobium Coal Pty Ltd.**

*Note.*

- a) *The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000.*
- b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).*

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<b>Name of authorised reporting officer</b>	Chris Schultz
<b>Title of authorised reporting officer</b>	Lead Environment (under Power of Attorney issued June 2020)
<b>Signature of authorised reporting officer</b>	
<b>Date</b>	30 September 2020

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## 1. STATEMENT OF COMPLIANCE

**Table 2: Statement of Compliance**

<b>Development Consent</b>	<b>Purpose</b>	<b>Issue Date</b>	<b>Expiry date</b>	<b>Compliant?</b>
DA 60-03-2001	Dendrobium Underground Coal Mine and associated surface facilities and infrastructure	20 Nov 2001	21 Dec 2023	No
MOD-11-2-2002	Permitting the access of construction traffic to the Bradford Breaker Emplacement Area	28 Feb 2002	21 Dec 2023	
MOD-36-5-2002-I	Application for commencement of vehicles accessing Benjamin Road.	15 Aug 2002	21 Dec 2023	
60-03-2001 MOD3	Modification to Development Consent (Dept. Planning)	28 Aug 2003	21 Dec 2023	
60-03-2001 MOD4	Modification to Development Consent (Dept. Planning)	05 Apr 2006	21 Dec 2023	
60-03-2001 MOD5	Modification to Development Consent (Dept. Planning)	30 Nov 2006	21 Dec 2023	
60-03-2001 MOD6	Area 3 Consent Modification	08 Dec 2008	31 Dec 2030	
60-03-2001 MOD7	Strategic Biodiversity Offset	02 Apr 2015	31 Dec 2030	
60-03-2001 MOD8	Surface Supply Upgrade	13 Jul 2018	31 Dec 2030	
<b>Mining Lease</b>	<b>Number</b>			
Mining lease	1510	24 Apr 2002	24 Apr 2023	Yes
Consolidated Coal Lease	768	05 Dec 2014	07 Oct 2029	Yes
Mining Lease	1566	07 Sep 2005	07 Sep 2026	Yes
<b>Environment Protection Licence</b>				
EPL 3241	Dendrobium	Aug 2000	n/a	No
EPL 611	Cordeaux	01 Dec 1999	n/a	Yes
<b>Water Approval</b>				
Water Supply Works	10WA118772	01 Jul 2013	27 Jun 2028	Yes
<b>Ground Water Access Licences</b>				
37465	10AL119249	N/A		Yes
36473	10AL118771	N/A		Yes
42385	10AL123125	N/A		Yes
42386	10AL123124	N/A		Yes



**Table 3: Non-compliances against relevant approvals**

Relevant approval	Condition #	Condition description (summary)	Compliance status	Comment	Where addressed in Annual Review
DA 60-03-2001	Condition 2 of Schedule 4	Noise not to exceed the noise impact assessment criteria	Non-compliant	One non-compliance and three exceedances of criteria recorded	Section 11 of this report
DA 60-03-2001	Condition 11 of Schedule 8	Information to be publicly available on website	Non-compliant	LA <sub>1min</sub> were not made available in 14-day report.	
EPL 3241	Condition M6.1	Continuous flow monitoring is required at LDP 24	Non-compliant	Continuous accurate flow monitoring was not undertaken for a period at LDP 24	
EPL 3241	Condition M2	Dust deposition gauges to be collected within 30+-2 days	Non-compliant	Samples collected outside of this period.	

Compliance status key for Table 3.

RISK LEVEL	COLOUR CODE	DESCRIPTION
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for serious environmental consequences, but is unlikely to occur; or</li> <li>potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>potential for low environmental consequences, but is likely to occur</li> </ul>
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)





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Refer to Section 11 for more detail regarding the non-compliances listed in Table 3.

The predictions and Statement of Commitments from the Dendrobium Environmental Assessment (EA) are incorporated into the Dendrobium Development Consent DA 60-03-2001. An assessment of compliance with the conditions of DA 60-03-2001 is considered to be an assessment of compliance against the predictions in the EA. Compliance against the Development Consent is assessed in Appendix C: Dendrobium Mine Consent Condition Compliance.



## 2. INTRODUCTION

### 2.1 Background

This Annual Review for Dendrobium Mine and Cordeaux Colliery details the environment and community performance for the 12-month period ending 30 June 2020 and meets the requirements set out in the *Post approval requirements for State significant mining developments - Annual Review Guideline* (NSW DPIE, October 2015).

The Annual Review has been prepared to meet the requirements of Condition 5 of Schedule 8 of the Dendrobium Development Consent DA 60-03-2001 (the Consent) and the NSW Resources Regulator requirement to submit an Annual Environmental Management Report (AEMR) (Condition 3) and Compliance Report (Condition 4) under Consolidated Coal Lease (CCL) 768 for Dendrobium Mine and Cordeaux Colliery.

A copy of the report is publicly available via the South32 website under Dendrobium Mine:

<https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

### 2.2 Overview of Operations

#### 2.2.1 Dendrobium Mine

Dendrobium Mine is an underground mining operation approved in November 2001 by the Minister of Department of Urban Affairs and Planning. The mine is owned and operated by Dendrobium Coal Pty Ltd, a subsidiary company of Illawarra Coal Holdings Pty Ltd (ICHPL), a wholly owned subsidiary of South32 Limited. It is operated on a continuous basis, 24 hours a day and 7 days a week.

The mining operations are located immediately adjacent to Mt Kembla, approximately 8 km west of Wollongong, NSW, on the Woronora Plateau. Mt Kembla village is located within 500 m of the Pit Top site and has close historical links with coal mining.

Dendrobium Mine extracts coal from the Wongawilli Seam of the Southern Coalfield. Three mining areas make up the approved mine plan for Dendrobium and are named Areas 1, 2 and 3 (including 3A, 3B and 3C). Longwall mining is currently being undertaken in Area 3B (refer to Plan 1A and B). The mine primarily produces hard coking coal and is approved to produce up to 5.2 million tonnes per annum until 31 December 2030. Dendrobium Mine is comprised of a number of sites as detailed below.

##### 2.2.1.1 Dendrobium Pit Top

The Pit Top consists of:

- Administration buildings.
- Workshop, machinery and equipment storage areas.
- People and materials access to the underground workings via the Dendrobium tunnel.
- A sediment pond.
- A grey water treatment and oily water separation facility.

The Pit Top layout is shown in Plan 2.



#### **2.2.1.2 Kemira Valley Coal Loading Facility (KVCLF) (ML1510)**

Coal is transported from the underground workings to KVCLF via a conveyor network, reaching the surface via the Kemira Valley Tunnel. The coal is then fed through a coal sizer, into a rill tower and deposited onto a 140,000-tonne capacity stockpile. Coal is loaded onto trains via an enclosed rail-loading chute. The KVCLF layout is shown in Plan 3.

#### **2.2.1.3 Kemira Valley Rail Line**

The private Kemira Valley Rail Line (KVRL) is used to transport the coal from KVCLF to the Dendrobium Coal Preparation Plant (DCPP).

#### **2.2.1.4 Ventilation Shaft 1**

The fan housings associated with Ventilation Shaft 1 were decommissioned in October 2008 and relocated to Ventilation Shaft 3. This shaft now provides intake air to the underground workings. The Ventilation Shaft 1 site layout is outlined in Plan 4.

#### **2.2.1.5 Ventilation Shaft 2/3 Site (ML 1566)**

Construction of Ventilation Shafts 2 and 3 commenced during 2006 and was completed in 2008. Ventilation Shaft 2 (downcast) and Shaft 3 (upcast) provide ventilation to the current and future underground workings in Area 3. The Ventilation Shaft 2/3 site layout is outlined in Plan 5.

#### **2.2.1.6 Dendrobium Coal Preparation Plant (DCPP)**

The DCPP is located within the Port Kembla Steelworks. The plant provides washing facilities for Dendrobium coal product prior to being blended with Bulli Seam coal in the coke making process at the Port Kembla Steelworks.

#### **2.2.1.7 Dendrobium Next Domain Project (DND)**

IMC has submitted an application to the Department of Planning, Industry and Environment (DPIE) for the Dendrobium Mine – Plan for the Future: Coal for Steelmaking (the Project). The Environmental Impact Statement (EIS) was submitted to DPIE on 22 July 2019.

In October 2019, the Independent Expert Panel for Mining in the Catchment (the Panel) published its second report on the impacts of coal mining in the Special Areas of the Greater Sydney Drinking Water Catchment. As Dendrobium Mine and the Project area is located within the Metropolitan Special Area, many of the Panel's recommendations are relevant to the Project. Following the publishing of the report, the NSW Government announced a freeze on mining approvals in Special Areas until a review of the Panel's recommendations had been undertaken.

In April 2020, the NSW Government accepted all fifty of the Panel's recommendations.

The Response to Submissions report was submitted to DPIE in February 2020. This report comprehensively responded to the comments raised by Government agencies, organisations and members of the public, during and following the public display period. The main comments received were regarding the positive socio-economic benefits, and the Project's potential impacts to water and the environment.

In consideration of the Independent Expert Panel's recommendations, and comments raised in submissions during the public display of the EIS, the Response report clarified South32's



commitment to implement or fund works to offset or replace the volume of surface water impacted by Project subsidence, such that the Project results in a net gain for the metropolitan water supply.

The Project is seeking approval for the continuation of mining activities in two additional Dendrobium Mine underground mining areas (Area 5 and Area 6), within the existing mining lease. The Project would provide an ongoing and essential local supply of metallurgical coal to the BlueScope Port Kembla Steelworks ('BlueScope Steel').

More information on the project can be located at: <https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

## **2.2.2 Cordeaux Colliery**

Cordeaux Colliery is owned and operated by Endeavour Coal Pty Ltd, a wholly owned subsidiary of ICHPL. Coal production ceased in March 2001 and recovery of longwall mining equipment was completed on 12 April 2001. Following cessation of mining, the Colliery was placed on care and maintenance. Throughout this reporting period, Cordeaux Colliery maintained this status.

The Cordeaux Colliery Pit Top functions as office space and a storage facility. The Pit Top is used as a base for exploration activity across the Dendrobium and Appin mining leases and exploration tenements, and also for access into the catchment.

Dendrobium Mine's future underground mining operations consider Cordeaux Colliery Pit Top and the Corrimal No. 3 shaft site to be of potential significant strategic value.

As part of the Project, IMC will be seeking a contemporary Development Consent for the site. The Project would include adaptive reuse of the Cordeaux Pit Top to reduce travel time for men and materials while development and mining operations occur in Area 6. More information on the Project can be located at: <https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

The Cordeaux Colliery Pit Top is wholly contained within an area of approximately 11.9 ha located within WaterNSW Special Areas (Plan 11 and 12). Cordeaux Colliery was serviced by four vertical shafts consisting of:

- People and Materials access shaft.
- Bulk Coal Winder shaft. The shaft was also the second means of egress and contained the mine's two main ventilation fans.
- Corrimal No.3 Shaft – mine ventilation fan shaft (ex-Corrimal Mine). This fan was used to complement ventilation flow through Cordeaux Colliery.
- Corrimal No.2 Shaft - mine ventilation fan shaft (ex-Corrimal Mine). This fan was used to complement ventilation flow through Cordeaux Colliery.

Cordeaux Colliery is considered a "zero discharge site", prohibiting liquid discharge directly to the surface lands of the WaterNSW Special Areas. Cordeaux Colliery Pit Top has approximately 40% of its area dedicated to surface water management (Plan 13).

As Cordeaux Colliery is currently deemed to be under care and maintenance, there were limited activities associated with the site and as a result, limited potential for environmental impacts.



## 2.3 Mine Contacts

The site contacts for Dendrobium Mine and Cordeaux Colliery are provided in Table 4.

**Table 4: Site Contacts**

Position	Name	Number
General Manager Dendrobium Mine	Neville McAlary	(02) 4255 4874
Superintendent Exploration Cordeaux	Richard Walsh	(02) 4224 6202
Lead Environment	Chris Schultz	(02) 4286 3384
Specialist Environment – Dendrobium	Tom McMahon	(02) 4255 4463



### 3. APPROVALS

Current development consent approvals, leases and licences for Dendrobium Mine and Cordeaux Colliery are included in Table 5, Table 6, Table 7, Table 8 and Table 9.

#### 3.1.1 Dendrobium Mine

**Table 5: Development Consent and Modifications associated with Dendrobium Mine**

Development Approval	Purpose	Issue Date	Expiry date
DA 60-03-2001	Dendrobium Underground Coal Mine and associated surface facilities and infrastructure	20 Nov 2002	21 Dec 2023
MOD-11-2-2002	Permitting the access of construction traffic to the Bradford Breaker Emplacement Area (Drift Spoil Emplacement Area 1) via Cordeaux Road and Benjamin Road, Mt Kembla.	28 Feb 2002	21 Dec 2023
MOD-36-5-2002-I	Application for commencement of vehicles accessing Benjamin Road.	15 Aug 2002	21 Dec 2023
60-03-2001 MOD3	Modification to Development Consent (Dept. Planning)	28 Aug 2003	21/ Dec 2023
60-03-2001 MOD4	Modification to Development Consent (Dept. Planning)	05 Apr 2006	21 Dec 2023
60-03-2001 MOD5	Modification to Development Consent (Dept. Planning)	30 Nov 2006	21 Dec 2023
60-03-2001 MOD6	Area 3 Consent Modification	08 Dec 2008	31 Dec 2030
60-03-2001 MOD7	Strategic Biodiversity Offset	02 Apr 2015	31 Dec 2030
60-03-2001 MOD8	Surface Supply Upgrade	13 Jul 2018	31 Dec 2030





**Table 6: Mining Leases associated with Dendrobium Mine**

<b>Mining Lease / Sub-Lease</b>	<b>Number</b>	<b>Issue Date</b>	<b>Expiry Date</b>	<b>Mine Site</b>
Mining Lease	1510	24 Apr 2002	23 Apr 2023	Dendrobium
Consolidated Coal Lease	768	29 Oct 1991	07 Oct 2029	Dendrobium
Mining Lease	1566	07 Sep 2005	06 Sep 2026	Dendrobium

**Table 7: Licences associated with Dendrobium Mine**

<b>Licences/Consents</b>	<b>Number</b>	<b>Issue Date</b>	<b>Expiry Date</b>
Licence to Store – Explosives (SafeWork NSW)	XSTR100152	05 Mar 2018	10 Jan 2023
Radiation Licence (EPA)	5061173	27 Jul 2019	27 Jul 2021
Radiation Licence (EPA) <sup>1</sup>	5096770	26 Feb 2020	26 Feb 2021
Environment Protection Licence	3241	Aug 2000	n/a
Water Approval (Natural Resource Access Regulator)	10WA118772	01 Jul 2013	27 Jun 2028
Groundwater Access Licence	37465	N/A	
Groundwater Access Licence	36473	N/A	
Groundwater Access Licence	42385	N/A	
Groundwater Access Licence	42386	N/A	
Exploration Licence	A143	28 Jul 1979	07 Nov 2023
Exploration Licence	A374	24 Oct 1986	24 Oct 2022
WaterNSW Access Consent	F2020/1545	14 Mar 2020	13 Mar 2025

**Table 8: Current Mining Approvals for Dendrobium Mine**

<b>Licences/Consents</b>	<b>Number</b>	<b>Issue Date</b>
Area 3B SMP Approval	N/A	11 Jul 2019
Area 3C SMP Approval		19 Dec 2019
Mining Operations Plan	DOC19/681058	19 Aug 2019

<sup>1</sup> DCPD radiation licence.



### 3.1.2 Cordeaux Colliery

Cordeaux Colliery is held under CCL768. The relevant consents, leases, and licences for Cordeaux Colliery are presented in Table 9.

**Table 9: Consents Leases and Licences for Cordeaux Colliery**

Facility/Document	Number	Issue Date	Expiry Date
Environment Protection Licence	611	27 Jul 2000	N/A
Development Consent (Wollongong City Council)	D74/134	20 Dec 1974	N/A
Exploration Licence	A338	08 Oct 1984	08 Oct 2019 <sup>2</sup>
WaterNSW Access Consent	F2020/1545	14 Mar 2020	13 Mar 2025
Consolidated Coal Lease	768	29 Oct 1991	07 Oct 2029
Mining Lease	ML25	31 Oct 1975	As per CCL768
Mining Lease	ML28	31 Oct 1975	As per CCL768
Mining Lease	ML23	02 Sep 1981	As per CCL768
Mining Lease	ML24	02 Feb 1976	As per CCL768
Mining Lease	ML30	18 Oct 1976	As per CCL768
Mining Lease	Lease No. 66 portion D1106	18 Oct 1976	As per CCL768
Mining Purposes Lease	MPL205	29 Sep 1982	As per CCL768

<sup>2</sup> An application to renew A338 was applied for on 8 October 2019. The granting of this renewal is still pending and as per the ML, A338 continues until the department grants the renewal.

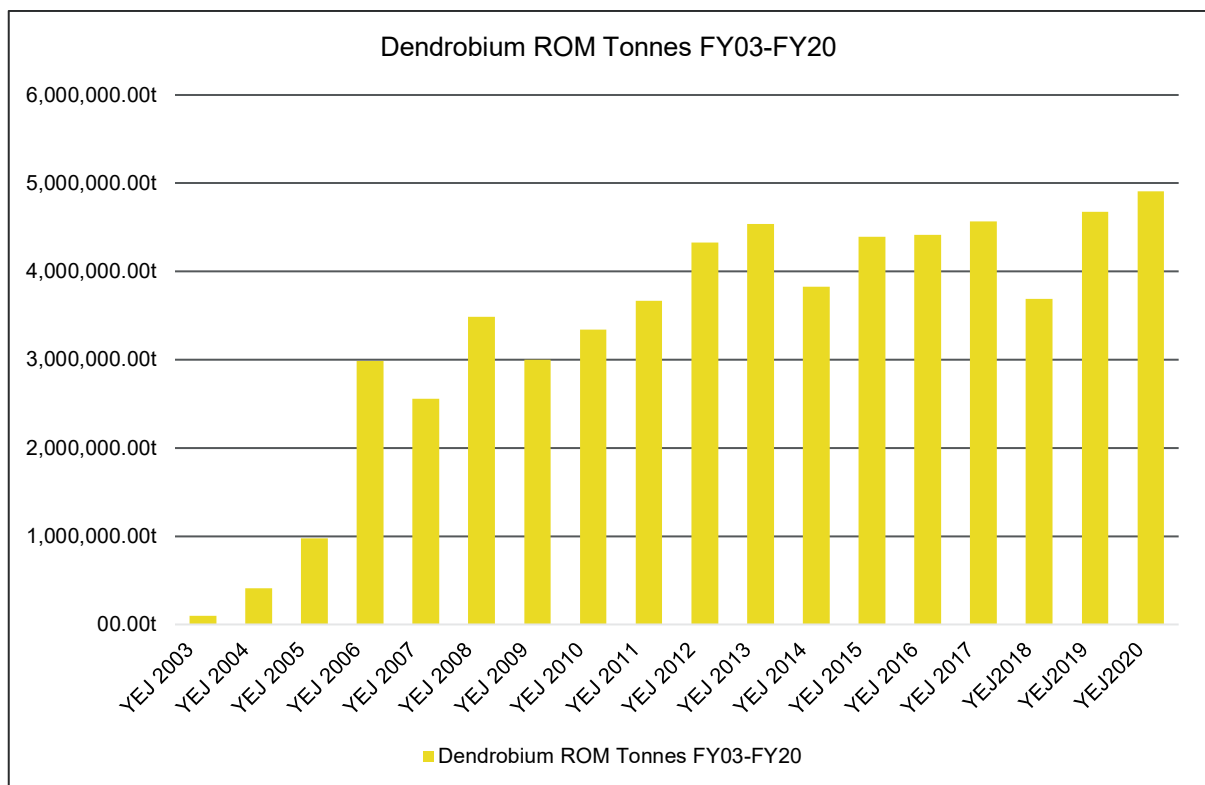


## 4. OPERATIONS SUMMARY

### 4.1 Mining

#### 4.1.1 Dendrobium Mine

The Run of Mine (ROM) product for the reporting period was 4.91 million tonnes with a saleable product yield of 78%. A comparison showing the ROM production at Dendrobium Mine for past reporting periods is provided in Figure 1. During this reporting period, Dendrobium continued longwall mining in Area 3B. Development will continue in Area 3B.



**Figure 1: ROM Production for Dendrobium Mine.**

The start and finish dates for longwalls in the current Dendrobium mining domain are provided in Table 10.



**Table 10: Area 3 Longwall Start and Finish Dates**

Longwall Number	Start Date	Finish Date
7	04 May 2011	23 Jan 2012
8	24 Feb 2012	29 Dec 2012
9	09 Feb 2013	02 Jun 2014
10	20 Jan 2014	20 Jan 2015
11	18 Feb 2015	26 Jan 2016
12	22 Feb 2016	31 Jan 2017
13	04 Mar 2017	19 Apr 2018
14	22 May 2018	26 Feb 2019
15	09 Apr 2019	22 Jan 2020
16	25 Feb 2020	Estimated Q2 FY21

## 4.2 Mineral Processing

### 4.2.1 *Dendrobium Mine*

Mineral processing of the ROM coal produced at Dendrobium Mine is undertaken at the DCP. Coal wash is emplaced at the Appin Mine Coal Wash Emplacement Area (CWEA). Additional information on the emplacement operations is provided in the Appin Mine Annual Review. The production and waste summary for Dendrobium Mine is outlined in Table 11.

**Table 11: Production Summary**

Material	Approved limit	Previous Reporting Period	This Reporting Period	End of Next Reporting Period <sup>3</sup>
Waste Rock/ Overburden (tonnes)	N/A	0	0	0
ROM Coal/Ore (tonnes)	5,200,000	4,679,517	4,906,074	4,835,539
Coarse reject (Coal Wash tonnes)	N/A	1,199,303	1,308,998	1,201,789
Saleable product (tonnes)	N/A	3,610,034	3,767,563	3,778,816

<sup>3</sup> Estimate.



## 4.3 Ore and Product Stockpiles

### 4.3.1 *Dendrobium Mine*

A 140,000-tonne capacity stockpile, located at KVCLF, is used to store ROM coal prior to it being loaded into trains for transport to the DCP. Train movements are limited to between 6 am and 11 pm as required by the Consent. During the reporting period, 2,985 trains were loaded at KVCLF, transporting 4,925,585 tonnes of coal. A summary of train movements for FY20 is included in Table 12.

**Table 12. Summary of KVCLF train movements for FY20**

Month	Tonnes	Train Movements	Average Train Movements
Jul-19	527,125	319	10.31
Aug-19	433,729	263	8.48
Sep-19	498,611	302	10.07
Oct-19	508,156	308	9.93
Nov-19	369,373	224	7.46
Dec-19	397,282	241	7.77
Jan-20	152,669	93	2.98
Feb-20	96,053	58	2.08
Mar-20	470,328	285	9.20
Apr-20	509,831	309	10.30
May-20	438,447	266	8.57
Jun-20	523,981	318	10.59
<b>TOTAL</b>	<b>4,925,585</b>	<b>2985</b>	<b>AVERAGE = 8.14</b>



## 4.4 Construction

### 4.4.1 Dendrobium Mine

#### 4.4.1.1 Site Security and Fatigue Management Project

IMC commenced works to construct site entry control points to manage the risk of unauthorised entry to the Dendrobium sites and portals and effectively manage fatigue amongst the workforce.

The works were approved by the IMC Investment Committee in December 2018 and commenced shortly thereafter. The construction work has been performed across all IMC sites, including Cordeaux Colliery, using sub-contractors specialising in the different fields of work.

The work included the installation of approximately 6,000 m of fencing, 17 turnstiles, 6 swinging gates, 15 boom gates and trenching for power and comms to the various installations. A large pine tree was removed at the Dendrobium Pit Top adjacent to the warehouse.

Site security activities were completed and commissioned at Dendrobium Mine in May 2020, and are currently in use.

In response to COVID-19, IMC implemented further security measures to prevent the spread of COVID-19. In March 2020, IMC implemented a staggered shift pattern (Monday to Thursday and Friday to Sunday) and revised rosters to ensure that segregation is achieved. All personnel accessing IMC's operational sites are subjected to temperature checks at all access points prior to entry at the turnstiles. Anyone exhibiting a temperature above 37.3 degrees and/or COVID-19 symptoms are excluded from the workplace.



**Plate 1: Controlled entry point at Dendrobium Pit Top**

#### 4.4.1.2 Sediment Pond Car Park

Construction commenced during the reporting period on the sediment pond car park upgrade. This included the replacement of the pipeline from the sediment pond to the grey water treatment plant, the sealing of the surface and the construction of stairs to the main car parking area.

The project was completed in FY20 and the car park is currently in use.





**Plate 2: Sediment pond carpark and stairs to main parking area.**

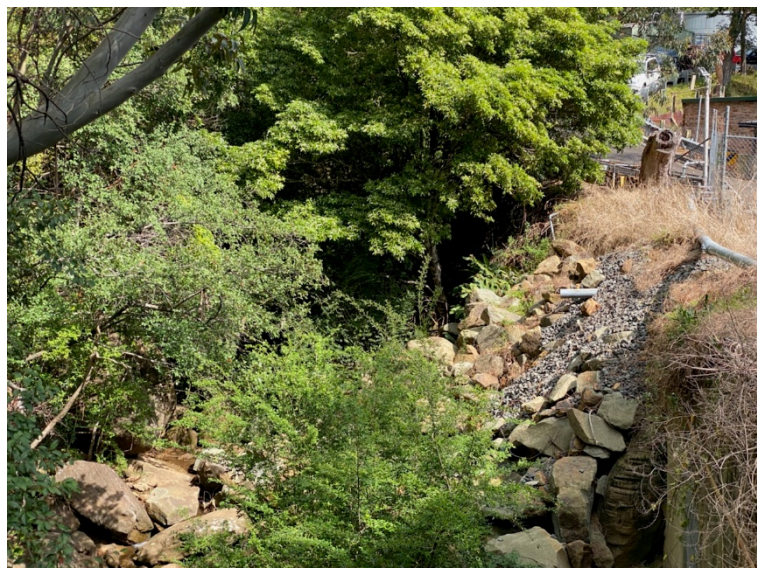
#### **4.4.1.3 Compressor Upgrades**

Preliminary planning work to upgrade existing compressors on site commenced in FY19 whereby possible locations for the upgrades were assessed.

The project moved into execution in FY20, with upgrades planned for the compressors located at the Kemira Valley Tunnel Portal. The two existing compressors are planned to be replaced in FY21. The project will also involve installation of a third compressor at the same location, also planned for FY21.

#### **4.4.1.4 Remediation of the Embankment (Bike Shed)**

Embankment stabilisation works behind the bike shed located on the Dendrobium Pit Top were initiated during the previous reporting period and were completed in early FY20.



**Plate 3: Embankment behind bike shed where stabilisation work have been completed.**



#### **4.4.1.5 Electrical Infrastructure**

Electricity for Dendrobium Mine is currently supplied by Endeavour Energy with point of connection opposite the entry to the mine. The former 33KV powerline that was fed from BlueScope Steel has been demolished and rehabilitated by the Legacy Sites and Rehabilitation Program. Refer to Section 8.1.1.

#### **4.4.1.6 Minor Improvement Projects**

Other improvement projects completed throughout the FY include;

- Repurposing of a building at Marley Place to include shower and bathroom facilities, office space and parking.
- Improvements to the drainage and greywater treatment systems.
- Continued sealing of unsealed areas.
- Completion of repairs of erosion on the bank of American Creek near the bridge at the entrance of Dendrobium Pit top site.

Preliminary assessment of old kerosene mine workings to rectify land stability issues was not progressed in the reporting period. As of August 2020, there is no work planned for the next reporting period.

#### **4.4.2 DCPP**

No major construction activities were undertaken at the DCPD during the reporting period or are planned for the next reporting period. Structural maintenance and restoration work is undertaken at the DCPD routinely.

### **4.5 Exploration**

#### **4.5.1 Drilling Program**

Prior to commencing any exploration within CCL768, a Review of Environmental Factors (REF) is prepared and submitted to WaterNSW and DPIE – Division of Resources & Geoscience for approval. A total of 33 exploration boreholes (coal quality/resource definition) were completed in FY20. Standard exploration holes typically targeted the Bulli and Wongawilli coal seams extending to the American Creek Coal Member. The purpose of these exploration boreholes was to assess coal thickness, depth of seam, coal quality, gas content, and to assist in determining possible future mining conditions by conducting geotechnical tests on the core samples. These 33 boreholes also included:

- Nine large diameter (8C) coal quality sampling boreholes across four sites.
- Three surface-to-inseam boreholes defining the extent of dyke intrusions in the Dendrobium Next Domain project area.
- Five fully cored and tested shaft and drift investigation holes for the same project.

Furthermore, exploration was involved in the drilling of a series of 15 environmental/approval holes in CCL768 for the purpose of groundwater and/or swamp monitoring and the investigation of possible effects of planned mining on the Elouera fault and Avon Reservoir. Two further Elouera fault investigation holes were drilled just south of the CCL768 southern border, on the Elouera lease, held by Wollongong Coal. This was approved with an agreement between Wollongong Coal, South32, and the Department.



Figure 2 provides an overview of the locations of the exploration and environmental/approvals boreholes drilled.

#### **4.5.2 Seismic Program**

Seismic reflection surveys involve the use of artificially-generated sound ('seismic') waves to image sub-surface geological conditions. The sound reflects off the coal seam and receiving devices (geophones) are placed in a line on the surface to detect the seismic signal that is reflected back from subsurface geological features, such as changes in rock type or faults. The sound wave is generated by the initiation of a 500-gram charge, placed into a shot hole. Shot holes are 14 m deep so the sound wave is not affected by any subsurface weathering and to ensure the safety of the seismic team. Shot holes are drilled every 15 m to ensure high quality of data for the detection of seam displacement faults, with geophones placed every 7.5 m.

In FY20, two seismic lines were acquired. Figure 2 shows the location of these lines.

#### **4.5.3 Rehabilitation / Remediation**

All of the exploration boreholes that were completed during the reporting period have been, or are in the process of being, rehabilitated. A small selection of these holes contain a piezometer string, used for groundwater monitoring. The piezometers are embedded in the sealing cement, attached to surface head-works or an in-ground pit with a data logger. Once monitoring is no longer required the sites are remediated and then rehabilitated. Remediation includes the removal of any monitoring headwork/standpipes and cutting off the surface casing to below ground level. During rehabilitation, erosion control works and re-vegetation is undertaken as required. In the rehabilitation cost estimation model (CCL768) the following items are covered:

- Removal of all material associated with the drilling activities from the site.
- Removal of above ground tanks.
- Filling in of any sumps and re-contouring/stabilising the site (if required) to prevent erosion.
- Returning topsoil, rocks and logs, set aside from the site during initial setup, to arrest water flow over disturbed ground and provide structure for emergent seedlings.

#### **4.5.4 Cordeaux Colliery**

No land preparation works occurred at the Cordeaux site as it is under care and maintenance.



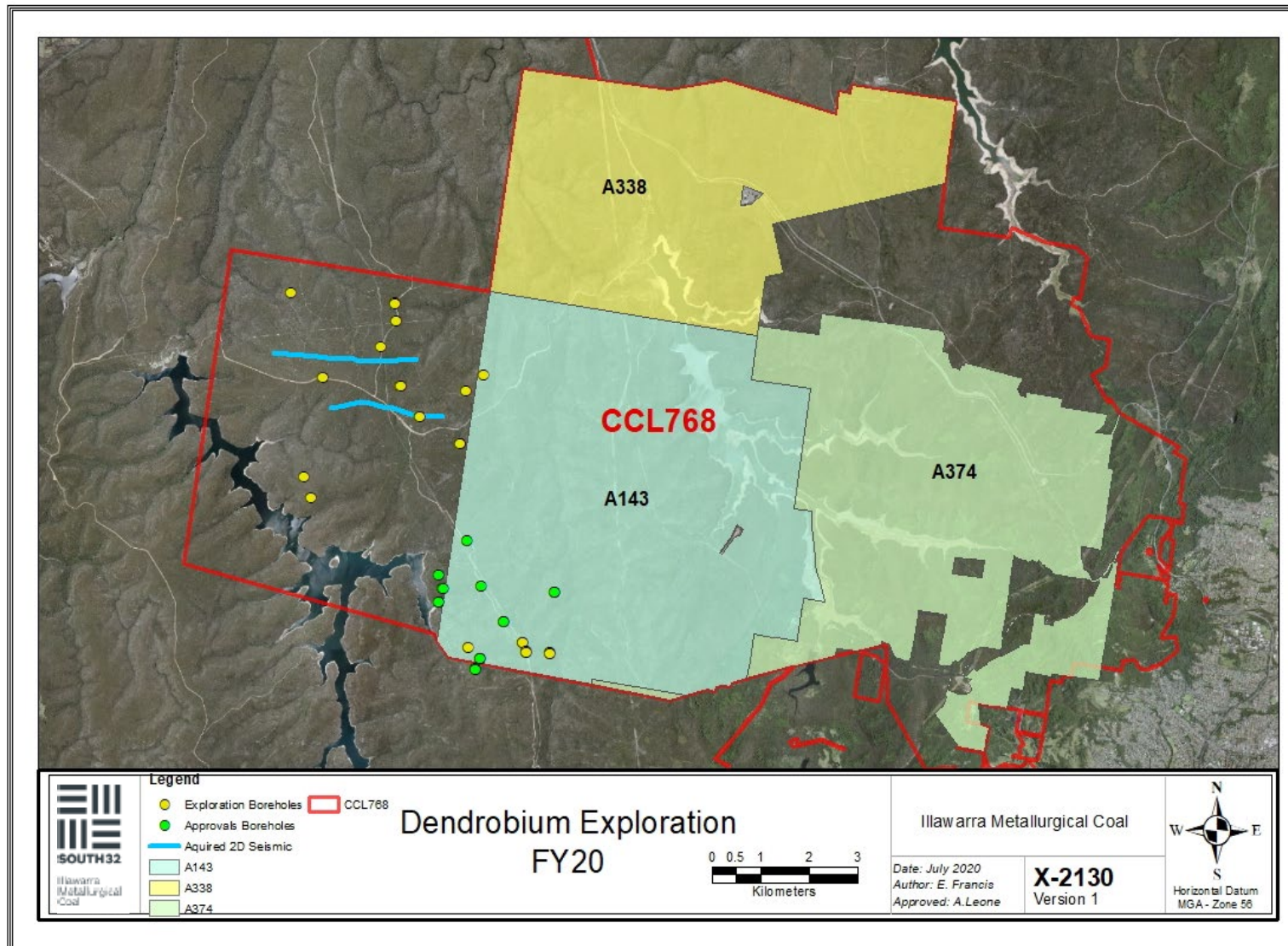


Figure 2: Exploration Locations, Dendrobium Mining Area



## 5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The actions arising from the previous Annual Review are detailed in Table 13. One recommendation was received from NSW DPIE (Resources Regulator) regarding the FY19 Annual Review.

**Table 13: Actions arising from previous Annual Review**

Action Required	Requested by	Where covered in this Report
Progress and commence construction of the upgrade of electrical infrastructure to draw the Pit Top power supply from the Endeavour Energy network.	IMC	Section 4.4
Progress the project to upgrade the existing compressor on site. Possible locations for the upgrade include the existing compressor shed at Dendrobium Pit Top, Kemira Valley and also Ventilation Shaft 1.	IMC	Section 4.4 and Section 12
Completion of works to construct site entry control points to manage the risk of unauthorized entry to the Dendrobium sites and portals, and effectively manage fatigue amongst the workforce.	IMC	Section 4.4
Completion of sediment pond car park upgrade.	IMC	Section 4.4
Repurposing of a building at Marley Place to include shower and bathroom facilities, office space and parking.	IMC	Section 4.4
Preliminary assessment of old kerosene mine workings to be scoped to rectify land stability issues.	IMC	Section 4.4
Improvements to the drainage and greywater treatment systems.	IMC	Section 4.4
Continued sealing of unsealed areas.	IMC	Section 4.4
Completion of repairs of erosion on the bank of American Creek near the bridge at the entrance of Dendrobium Pit top site.	IMC	Section 4.4
Additional monitoring to be implemented using real-time and handheld noise monitoring units to identify feasible noise reduction initiatives.	IMC	Section 6.8
Implement a new Trigger Action Response Plan for minimising dust emissions at the Dendrobium Pit Top.	IMC	Section 6.1
Replace bulk diesel tank and bulk solcenic tanks with self-bunded tanks.	IMC	Section 12.4
Continue to maintain the environmental management system in accordance with ISO 14001.	IMC	Section 10.1
Update Environmental Management Plans as needed.	IMC	Section 10.1
Progress the rehabilitation activities for redundant sites, including; demolition of redundant sites.	IMC	Section 4.4
Progress conversion of Dendrobium Mining Operations Plan to a Rehabilitation Management Plan.	IMC	Section 8.1.1.1
Include additional detail regarding the status of identified rehabilitation areas (currently 7.97 ha), including progress towards meeting applicable Completion Criteria.	DPIE – Resources Regulator	Section 8



## 6. ENVIRONMENTAL PERFORMANCE

### 6.1 Air Pollution

#### 6.1.1 *Dendrobium Mine*

Air quality management is an environment aspect within the Environmental Management System for the Dendrobium operation. At the Dendrobium Pit Top, the following dust controls were utilised during the reporting period:

- The use of a vacuum sweeper truck which operates on a regular basis.
- Hose downs of the yard.
- The use of an automatic dust suppression spray system along the portal road.

During the reporting period, a Trigger Action Response Plan (TARP) was implemented to manage dust at the Dendrobium Pit Top. The TARP details triggers levels and associated management actions in response to dust related events.

At the Kemira Valley site, the following dust controls were utilised during the reporting period:

- Automatic dust suppression system on the stockpile. Eight sprays are located around the base of the stockpile whilst a further two sprays are located at the top of the rill tower. The spray system is programmed to activate if wind velocities exceed 10 m/s and/or when the coal moisture level drops below the trigger level of 8%. The sprays can also be activated by site personnel via a dial up system when required.
- Dust suppression system in the train loading chamber. This system ensures that the moisture level of the coal is adequate to minimise the potential for fugitive dust emissions whilst being transported from the Kemira Valley site to the DCPD via the KVRL.
- Enclosed train loading facility that enables coal to be loaded into the train without fugitive emissions.
- Doors on the rill tower to minimise the fugitive emissions from the rill tower. A program to replace damaged doors was implemented during the reporting period.
- Dust suppression system on the Kemira Valley conveyor (including sprays at the top and bottom of the Sizer, the jib pulley, and also around the Nebo Mains transfer point) that ensures that the coal moisture content is adequate to prevent dust emissions from the conveyor.
- Wind protection on conveyor gantries.

The dust suppression system at the Pit Top and sprays at Kemira Valley both use recycled water.

##### 6.1.1.1 **Air Quality Monitoring System**

During the reporting period, Dendrobium's air quality monitoring program consisted of five dust deposition gauge (DDG) sites and two High Volume Air Samplers (HVAS) as required by the approved Air Quality Management Plan and Environment Protection Licence (EPL).

The DDGs (shown in Plan 7) are:

- Located around the site to monitor control effectiveness and throughout the community to determine amenity impacts.
- Measured on a monthly basis for ash content, combustible matter, total insoluble matter and total solids (analysis is performed at a NATA [National Association of Testing Authorities] accredited laboratory).





The results from the DDGs are compared to the amenity goal of 4 g/m<sup>2</sup>/month for total insoluble solids as outlined in Table 14 and visually analysed to determine the percentage contribution of dirt, coal, fibrous material, metallics, foam/rubber, vegetation and insect matter.

Additional DDGs may be deployed around the operations and throughout the community for investigative purposes.

Two HVAS measure total suspended particulates (TSP) and particulate matter less than 10 micrometres (PM<sub>10</sub>). The HVAS (shown on Plan 7) are:

- Located on site (Pit Top and Kemira Valley).
- Analysed for TSP and PM<sub>10</sub> on a monthly basis over a 24-hour period in accordance with the approved Air Quality Management Plan and EPL requirements (samples are analysed by a NATA accredited laboratory).
- Compared to the air quality standards (from the Consent) outlined in Table 14.

Results from the air quality monitoring program are reported:

- Via the South32 website in the 14-day report.
- Annually in the EPL Annual Return and Annual Review.

**Table 14: Relevant Standard for Air Quality**

Pollutant	Goal	Averaging Period
Particulate matter < 10 mm (PM <sub>10</sub> )	50 mg/m <sup>3</sup>	24-hour
	30 mg/m <sup>3</sup>	Annual
Total Suspended Particulates (TSP)	90 mg/m <sup>3</sup>	Annual
Deposited Dust (insoluble solids)	4 g/m <sup>2</sup>	Annual

#### **6.1.1.2 Dust Deposition Gauge Results**

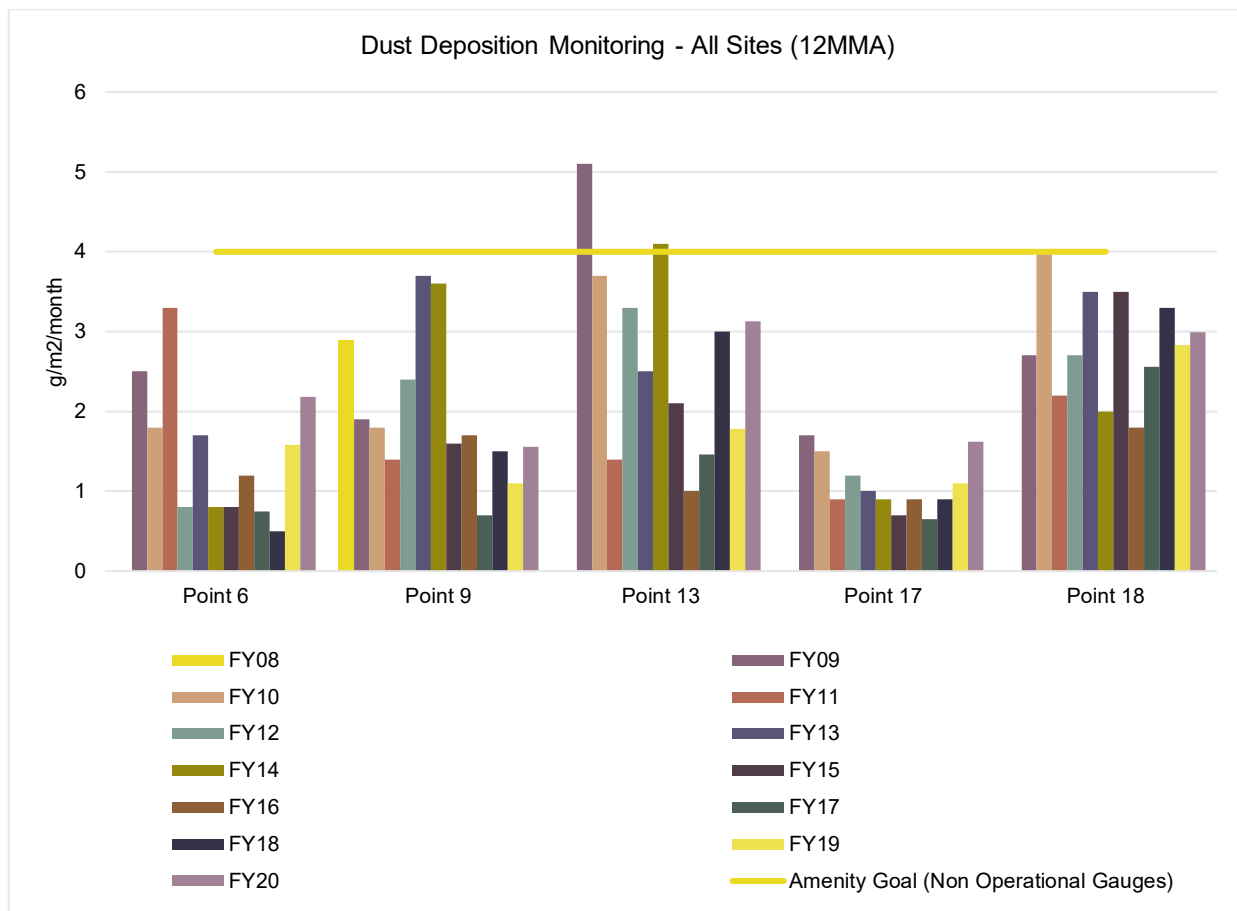
Dust levels measured in the DDGs located within the community (Point 13 and 18 are operational control gauges) were below the amenity goal of 4 g/m<sup>2</sup>/month (Insoluble Solids). Dust levels varied over the reporting period, however the 12-month moving averages have remained below the amenity goal for all sites. The results have increased over the past year.

Figure 3 shows the 12-month averages for each of the sites monitored since FY08.

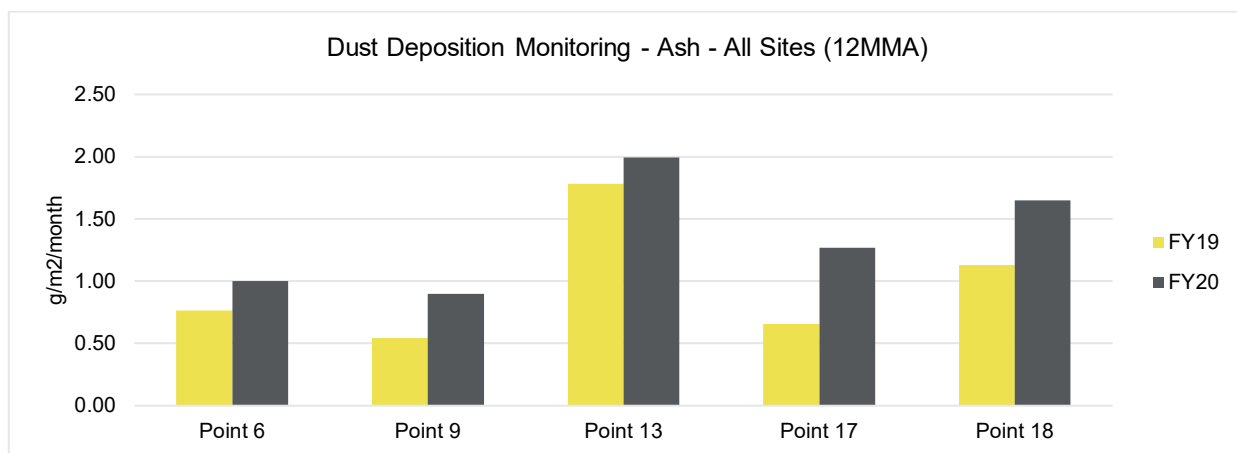
Major fire events and hazard reduction burns were experienced across NSW from October 2019 to February 2020. Areas affected include Wollemi National Park, Wollondilly, Braidwood and the Shoalhaven.

The fire events correspond with high dust deposition results was recorded at site DDGs in November to February (Figure 3). The results are attributed to below average rainfall and bushfires experienced during the period, resulting in drier conditions and high dust loading.

The impact of the bushfires is also evident from an increase of approximately 40% in average ash deposition across all sites when compared to the previous reporting period. The average ash content for all sites for FY20 was 1.37 g/m<sup>2</sup>/month, compared to 0.84 g/m<sup>2</sup>/month for FY19. Figure 4 shows the average ash deposition compared to the previous reporting period.



**Figure 3: Dust Deposition Gauge results**



**Figure 4: Ash deposition comparison for FY19 - FY20**

### 6.1.1.3 HVAS Results

While dust levels from HVAS increased during the reporting period, results remained within the compliance criteria (Table 14). Samples taken between November 2019 and February 2020 were higher than average due to major bushfire activity in the region. Figure 5 and Figure 6 show the PM<sub>10</sub> and TSP 24-hour average results for Points 20 (Kemira Valley) and 21 respectively (Pit Top).

Figure 7 shows annual averages for PM<sub>10</sub> and TSP for these monitoring sites.

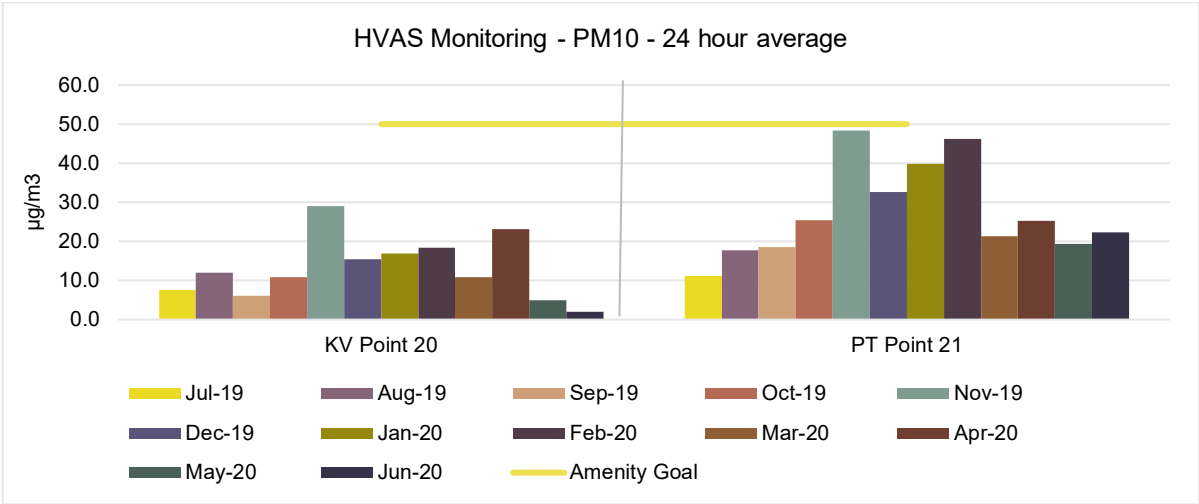


Figure 5: 24-hour average HVAS Results (PM<sub>10</sub>)

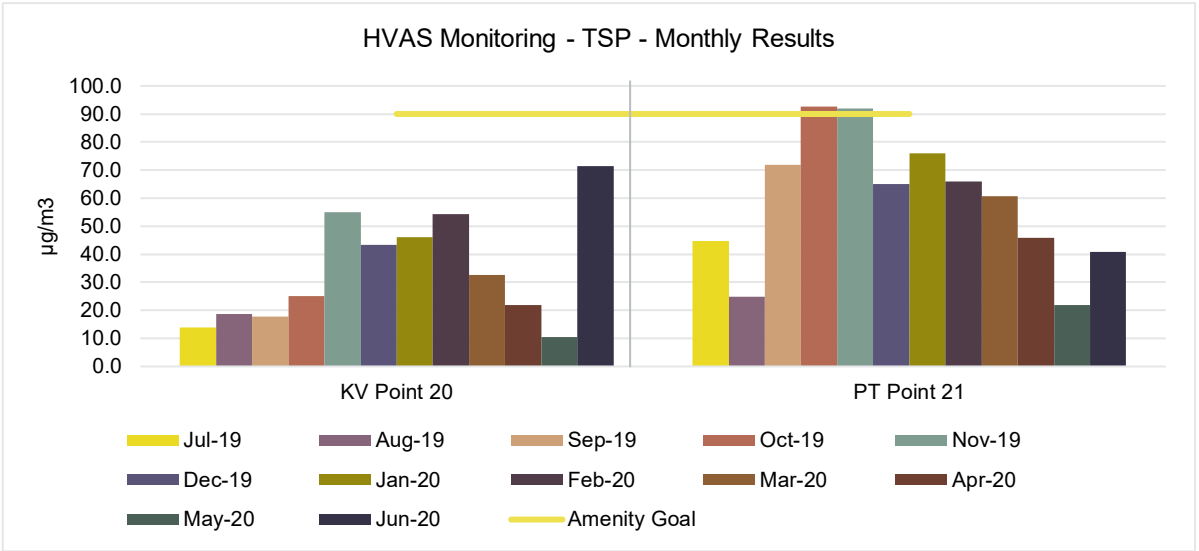


Figure 6: Monthly HVAS Results (TSP)

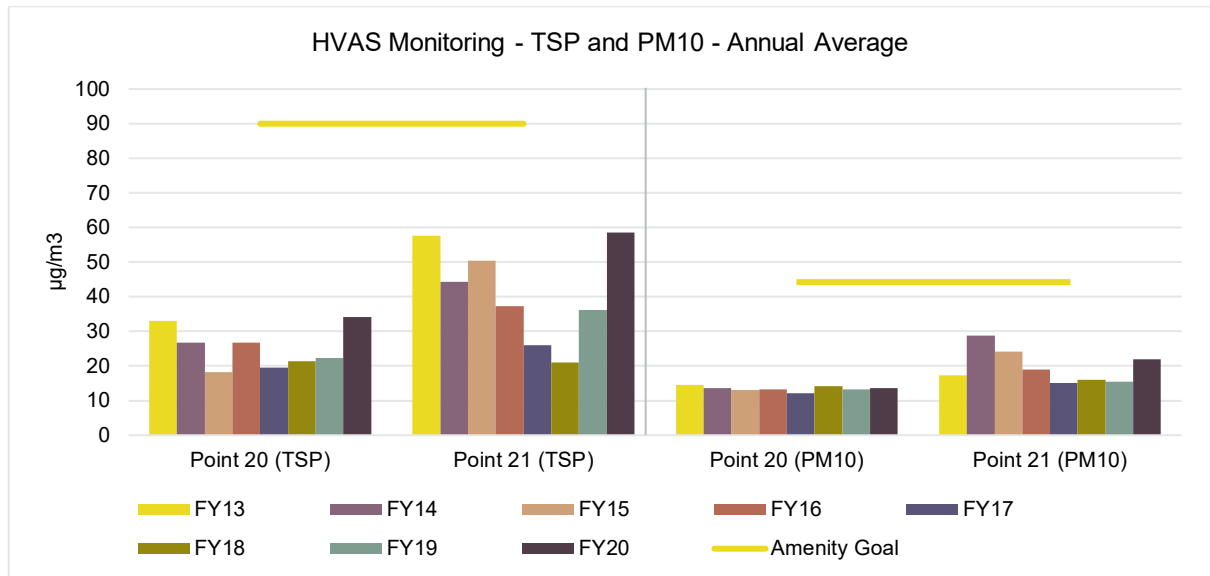


Figure 7: Annual average HVAS Results (TSP and PM<sub>10</sub>)

### 6.1.2 Cordeaux Colliery

Air quality is not monitored at Cordeaux Colliery as there is no coal handling or coal transport from the site. Trafficable and storage areas are sealed.

### 6.1.3 Ventilation Shaft 1

No air quality issues are considered relevant for the Ventilation Shaft 1 as the site has been rehabilitated or is covered with gravel. Ventilation Shaft 1 is an intake shaft and therefore there are no emissions.

### 6.1.4 Ventilation Shaft 2/3

No air quality issues are considered relevant for the Ventilation Shaft 2/3 as the site has been rehabilitated or is covered with gravel. Odour levels are low, and the site is in a remote location. No complaints have been received.

### 6.1.5 DCP

Air quality at the DCP is managed under the BlueScope Steel EPL 6092 with quarterly reporting to BlueScope Steel undertaken.

## 6.2 Erosion and Sediment

### 6.2.1 Dendrobium Mine

Erosion and sediment control at Dendrobium is managed in accordance with the approved Water Management Plan and Landscape Management Plan. These plans address erosion and sediment controls for the Dendrobium Pit Top, KVCLF, Ventilation Shaft 1 and 2/3 sites and the KVRL.

#### 6.2.1.1 Erosion Control

Both the Dendrobium Mine Pit Top and KVCLF predominantly consist of sealed surfaces and vegetated areas. As limited soil is exposed, the potential for erosion is low.



#### **6.2.1.2 Sediment Control**

Sediment control structures are inspected and maintained on a regular basis. Sediment is removed from drainage pits along the dirty water drainage system and the grey water treatment plant (GWTP) by an industrial vacuum tanker as required. The sediment pond assists in settling out suspended solids before surface water enters the GWTP.

#### **6.2.2 Ventilation Shaft 1 and 2/3**

Erosion is not a significant issue at the ventilation shaft sites as disturbed areas have been rehabilitated or stabilised with gravel.

#### **6.2.3 Cordeaux Colliery**

Erosion is not a significant issue at the Cordeaux Colliery Pit Top site as the majority of the mine surface is sealed with stormwater run-off directed to appropriate holding dams and filter systems. There are minimal exposed earthen areas.

#### **6.2.4 DCPP**

Erosion and sediment at the DCP is managed under the BlueScope Steel EPL 6092.

### **6.3 Surface Water**

#### **6.3.1 Dendrobium Mine**

##### **6.3.1.1 Mine Subsidence**

The surface water monitoring program enables Dendrobium to maintain a database of regional water quality and to determine any changes to surrounding water quality. Potential water quality impacts as a result of mining are described in Section 6.14.

##### **6.3.1.2 Mine Site Surface Facilities**

The surface water monitoring network for surface facilities consists of five regular sites (see Plan 7) which include sites upstream and downstream of both the Pit Top and Kemira Valley, as well as the mine dewatering Licence Discharge Point (LDP) 5, located at Marley Place.

The monitoring program includes:

- Recording of field observations.
- Analysis of the water by a NATA accredited laboratory covering pH, conductivity, total suspended solids (TSS), metals (specified for Point 5) and oil and grease.

##### **6.3.1.3 Monitoring and Results**

The majority of the monitoring sites are located in natural watercourses that flow through the Dendrobium Pit Top and Kemira Valley sites, in particular Brandy and Water Creek and American Creek respectively. Upstream and downstream sites are sampled every two months, while LDP 5 is sampled monthly. Variations in water quality in response to local geology and rainfall were within expectations during the reporting period. Results from the downstream sites are compared to the results from upstream sites at each location. These comparisons are discussed in detail below. Rainfall data for the year is provided in Section 7.2.1.



#### 6.3.1.4 **Kemira Valley Coal Loading Facility**

During the reporting period, there has been no significant difference between the upstream and downstream results for points Dend 7 (upstream of the KVCLF) and Dend 10 (downstream of the KVCLF). Results indicate that the water management system in operation at the Kemira Valley site is effective with minimal influence on the surrounding Brandy and Water Creek. The results are summarised in Table 15 and Table 16. There was natural variation in sample results throughout the reporting period. However, trends for Dend 7 and Dend 10 remained relatively consistent for FY20. pH, electrical conductivity (EC) and Total Suspended Solids (TSS) for the reporting period are shown in Figure 8, Figure 9 and Figure 10 respectively. Overall trends show water quality has been stable in relation to the Kemira Valley site. Graphs depicting long-term trends in water quality are provided in Appendix E: Dendrobium Long-Term Environmental Monitoring Data.

**Table 15: Summary of Water Quality Results – Dend 7 (Upstream of KVCLF)**

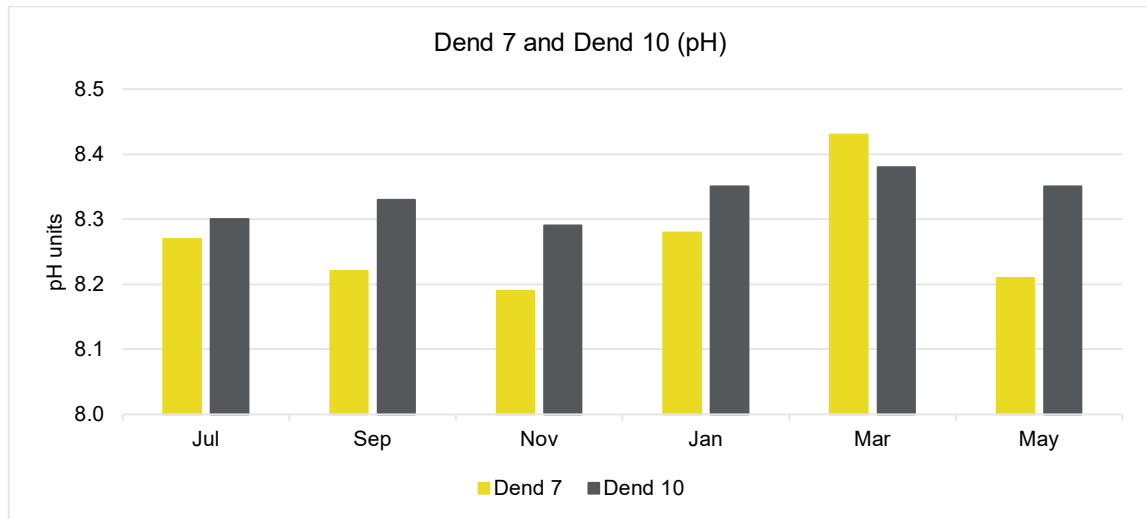
Parameter	Units	Min	Max	FY Average
pH	pH units	8.0	8.4	8.3
Total Suspended Solids	mg/L	<5	<5	<5
Oil and Grease	mg/L	<5	35 <sup>4</sup>	9.3
Conductivity	µS/cm	467	816	632

**Table 16: Summary of Water Quality Results – Dend 10 (Downstream of KVCLF)**

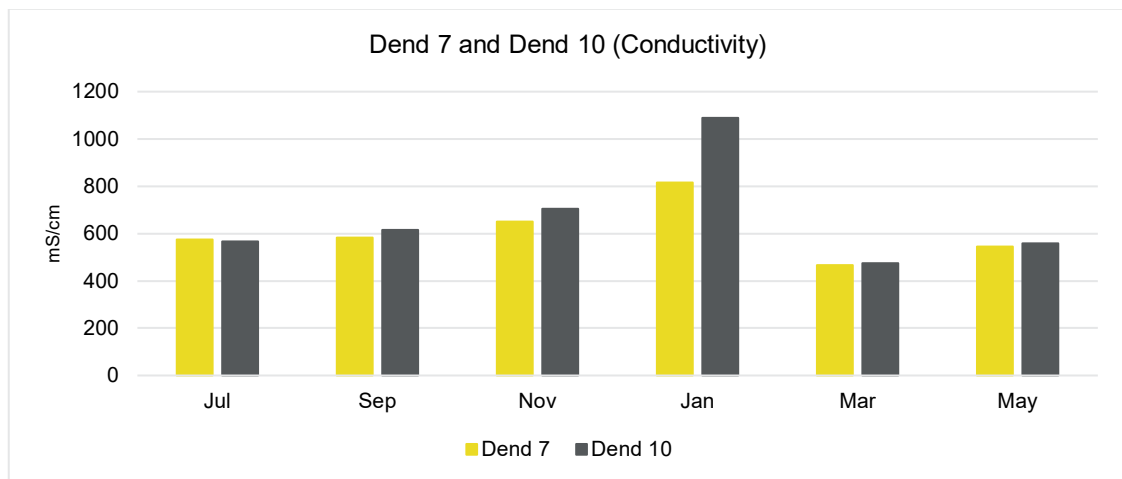
Parameter	Units	Min	Max	FY Average
pH	pH units	8.2	8.4	8.3
Total Suspended Solids	mg/L	<5	25	14.43 <sup>5</sup>
Oil and Grease	mg/L	<5	<5	<5
Conductivity	µS/cm	476	1090	707

<sup>4</sup> High oil and grease result cause unknown. Additional sampling was undertaken, returning a result of <5 mg/L.

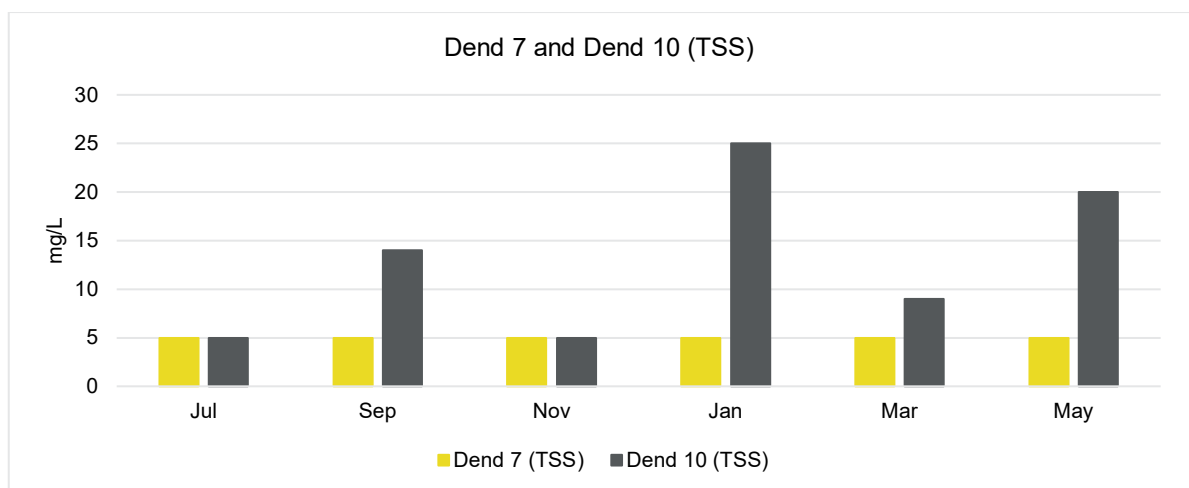
<sup>5</sup> Resampled for Dend 7 consistency.



**Figure 8: Dend 7 (upstream KVCLF) and Dend 10 (downstream KVCLF) - pH**



**Figure 9: Dend 7 (upstream KVCLF) and Dend 10 (downstream KVCLF) – Conductivity**



**Figure 10: Dend 7 (upstream KVCLF) and Dend 10 (downstream KVCLF) – TSS**



#### 6.3.1.5 **Dendrobium Pit Top**

A comparison of the water quality results from Dend 12 (upstream of Pit Top) and Dend 13 (downstream of Pit Top) indicate that there is no significant variation in total suspended solids, oil and grease levels, or pH. The results are summarised in Table 17 and Table 18. Trends for pH, conductivity and TSS for FY20 are shown in Figure 11, Figure 12 and Figure 13 respectively. Average water quality remained below the default trigger values from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 for slightly disturbed ecosystems in south-east Australia. Overall trends show water quality has been stable in relation to the Dendrobium Pit Top site. Graphs depicting long-term trends in water quality are provided in Appendix E: Dendrobium Long-Term Environmental Monitoring Data.

**Table 17: Summary of Water Quality Results – Dend 12 (Upstream of Pit Top)**

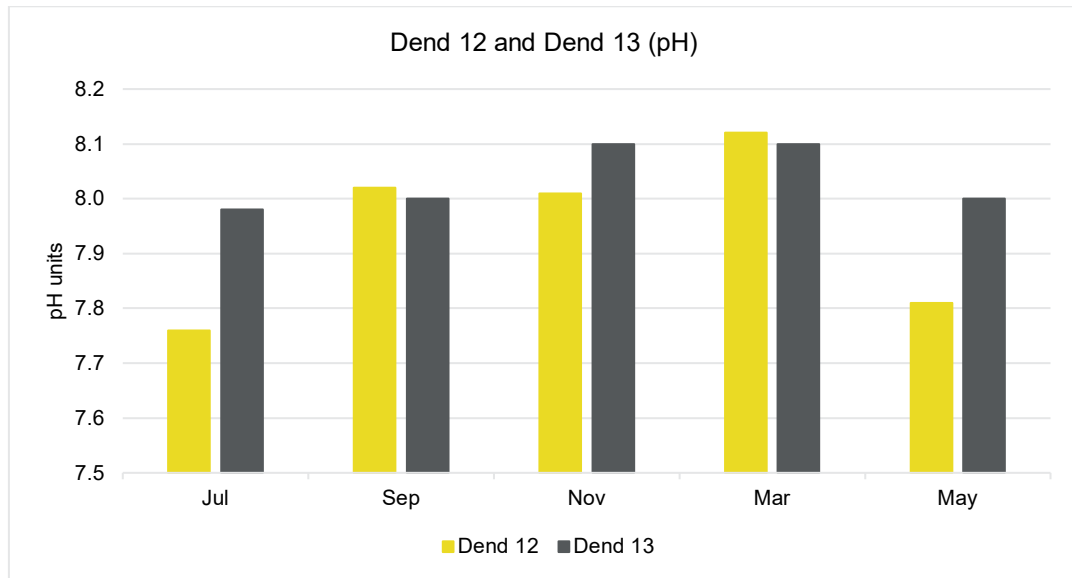
Parameter	Units	Min	Max	Average
pH	pH units	7.8	8.1	8.0 <sup>6</sup>
Total Suspended Solids	mg/L	<5	7	5.4
Oil and Grease	mg/L	<5	<5	<5
Conductivity	μS/cm	266	323	288

**Table 18: Summary of Water Quality Results – Dend 13 (Downstream of Pit Top)**

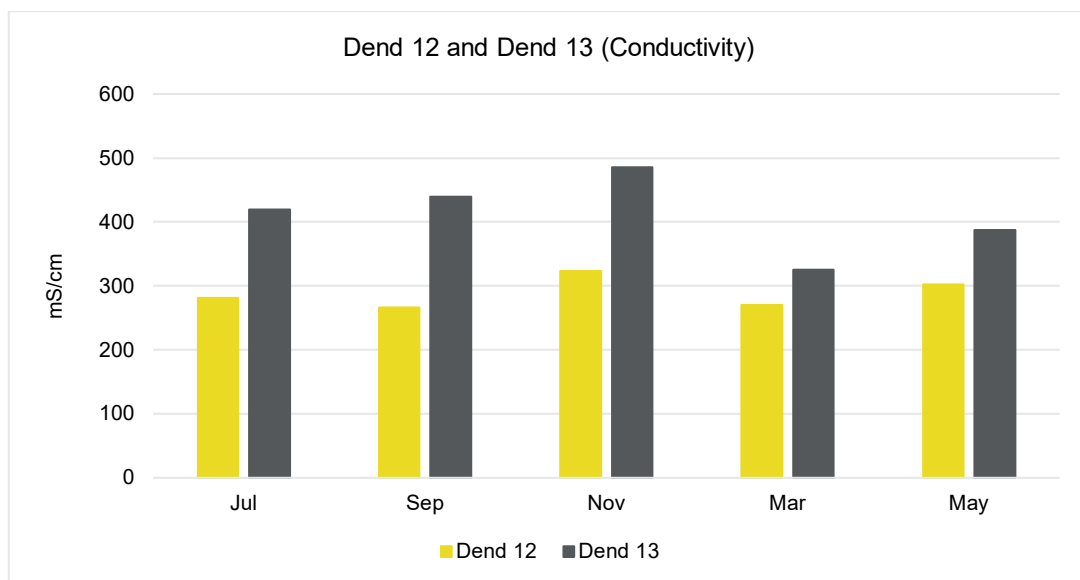
Parameter	Units	Min	Max	Average
pH	pH units	8.0	8.1	8.0
Total Suspended Solids	mg/L	<5	6	6.3
Oil and Grease	mg/L	<5	<5	<5
Conductivity	μS/cm	325	485	409

<sup>6</sup> No water in pool for January 2020 due to drought conditions (no sample for Dend 12 or Dend 13).



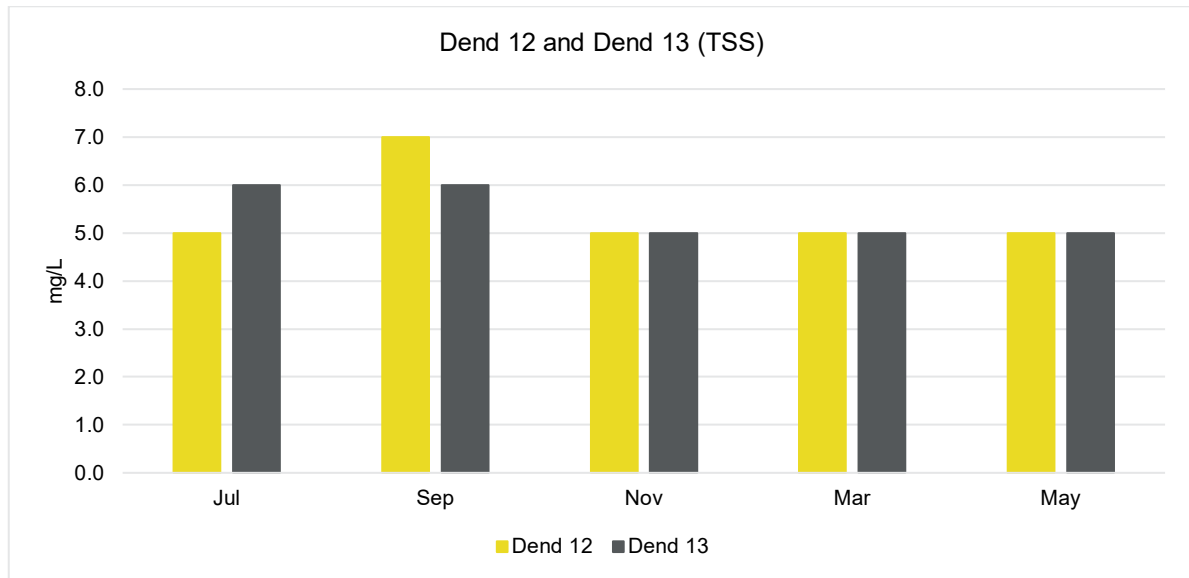


**Figure 11: Dend 12 (upstream of Pit Top) and Dend 13 (downstream of Pit Top) – pH <sup>7</sup>**



**Figure 12: Dend 12 (upstream of Pit Top) and Dend 13 (downstream of Pit Top) – Conductivity**

<sup>7</sup> No water in pool for January 2020 due to drought conditions (no sample for Dend 12 or Dend 13).



**Figure 13: Dend 12 (upstream of Pit Top) and Dend 13 (downstream of Pit Top) – TSS**

#### 6.3.1.6 **Monitoring and Results – Licenced Discharge Point LDP 5**

Water from the old Kemira Mine workings and KVCLF sediment ponds (during and after rain events) is discharged through LDP 5, located at Marley Place (refer to Plan 7). Brine from the IMC Appin West Water Treatment Plant is transported by truck to Marley Place and discharged through LDP 5. A total volume of 1,969.03 ML (including 123 ML of brine from Appin West Water Filtration Plant) was discharged in this reporting period. A summary of the monitoring requirements and limits for the reporting period for LDP 5 are provided in Table 19. There was natural variation in sample results throughout the reporting period. However, trends for LDP 5 remained relatively consistent for FY20 as shown in Figure 14 and Figure 15. Long-term average trends have shown stable results within limits. Graphs depicting trends in water quality over previous years is provided in Appendix E: Dendrobium Long-Term Environmental Monitoring Data.

**Table 19: Monitoring Requirements and Prescribed Limits for LDP 5**

Parameter	Units	Frequency	Sampling Method	Licence Limit
Arsenic	mg/L	Monthly	Grab sample	1.3
Conductivity	µS/cm	Monthly	Grab sample	—
Copper	mg/L	Monthly	Grab sample	0.08
Nickel	mg/L	Monthly	Grab sample	5
Oil and Grease	mg/L	Monthly	Grab sample	10
TSS	mg/L	Monthly	Grab sample	30
Zinc	mg/L	Monthly	Grab sample	0.4
pH	pH	Monthly	Grab sample	6.5 - 9.0



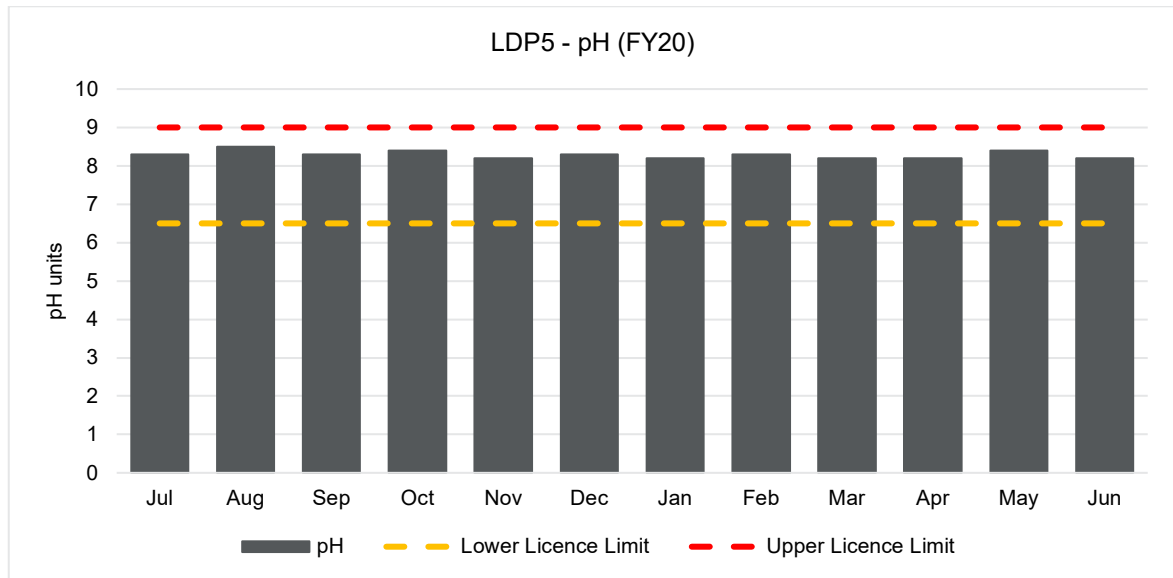
The monitoring results from the LDP 5 sampling program are reviewed monthly. The monitoring results are reported to the relevant external stakeholders via the:

- EPL Annual Return (see Appendix A: EPA Annual Return);
- Annual Review; and
- South32 website (14-day report).

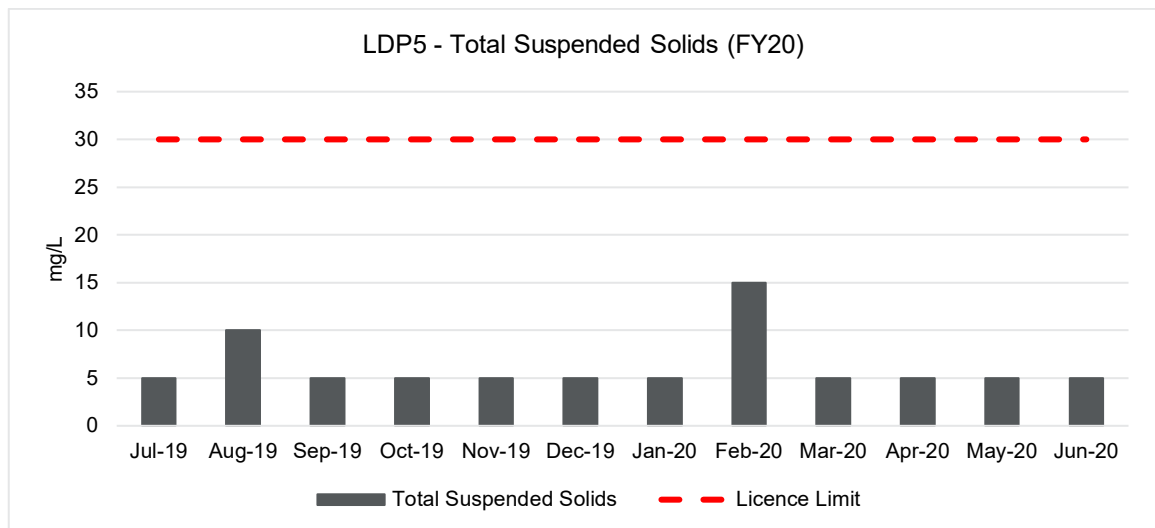
A summary of monitoring results for the reporting period is provided in Table 20. The reporting period saw 100% of samples below the EPL limit. This is in-line with long-term trends. Graphs depicting long-term trends in water quality are provided in Appendix E: Dendrobium Long-Term Environmental Monitoring Data.

Table 20: EPL Annual Monitoring Summary for LDP 5					
Parameter	Units	Min	Average	Max	EPL Limit
Arsenic	mg/L	0.010	0.012	0.014	1.3
Conductivity	µS/cm	1710	1886	1980	NA
Copper	mg/L	<0.001	<0.001	<0.001	0.08
Nickel	mg/L	0.010	0.014	0.024	5
Oil and Grease	mg/L	5	5	5	10
pH	pH	8.2	8.3	8.5	6.5 - 9.0
Total suspended solids	mg/L	5	6	15	30
Zinc	mg/L	0.023	0.035	0.054	0.4

A copy of the 2019/2020 EPA Annual Return has been provided as Appendix A: EPA Annual Return.



**Figure 14: LDP 5 (discharge at Marley Place) - pH (FY20)**



**Figure 15: LDP 5 (discharge at Marley Place) - TSS (FY20)**

#### 6.3.1.7 Pollution Reduction Programs

No pollution reduction programs were required to be carried out during the reporting period.

#### 6.3.2 **Cordeaux Colliery**

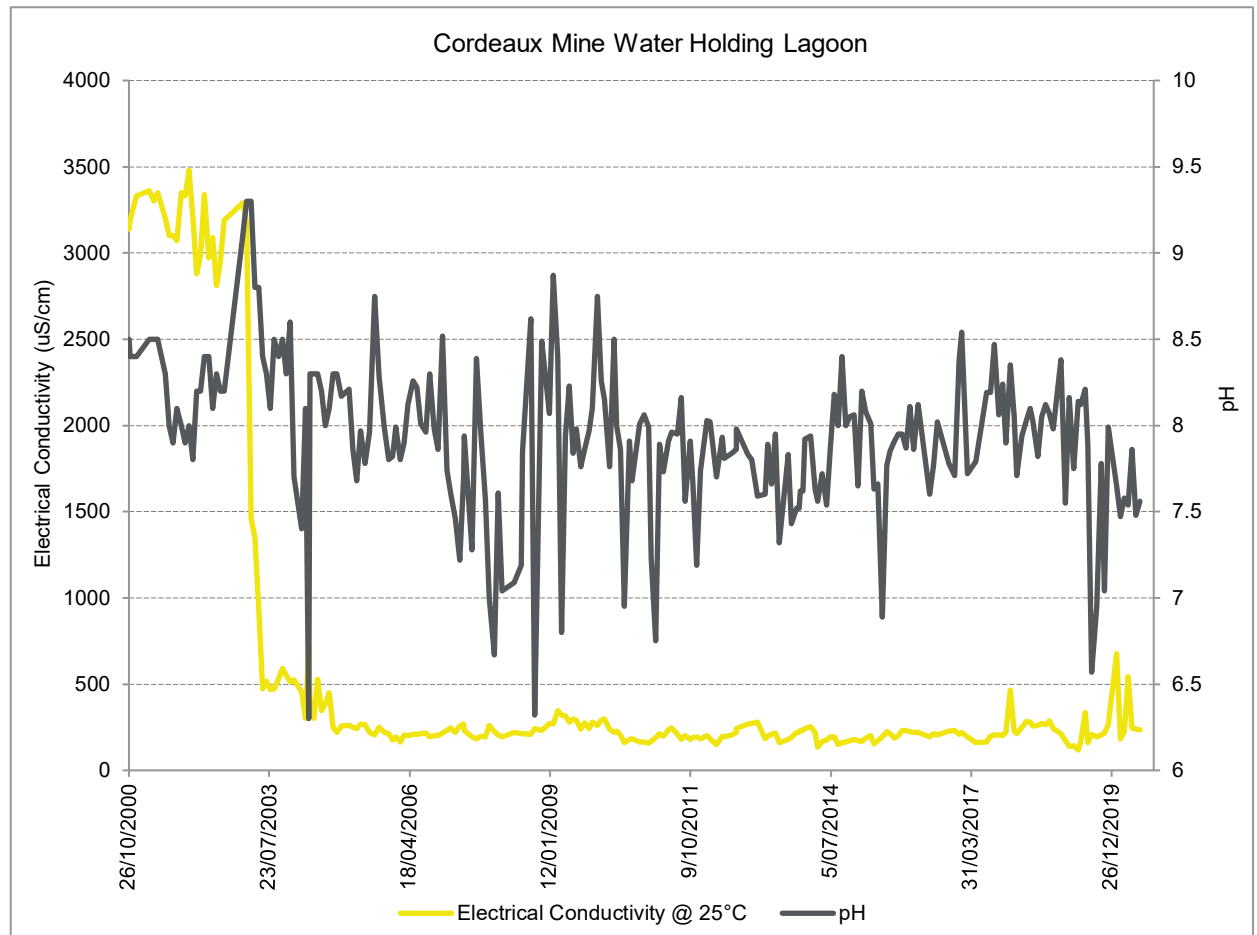
Due to the cessation of coal mining, the amount of dirty water generated at the surface of the mine has significantly reduced. Water from the surface areas is captured in the dirty water lagoon then transferred using a pump to the upper level mine water holding lagoons for settlement. This water is then transferred to underground mine workings via a gravity fed pipeline, negating the need for surface discharge. The water returned to the mine is of good quality containing no contaminants.

During the reporting period approximately 0.7 ML of water was discharged from the mine water holding lagoons to the underground workings.

Figure 16 shows the trends for water quality results for pH and conductivity of water within the mine holding lagoons from 2000 to 2020. Since cessation of underground pumping operations in 2002, water quality in the mine water holding lagoon has greatly improved (particularly in relation to

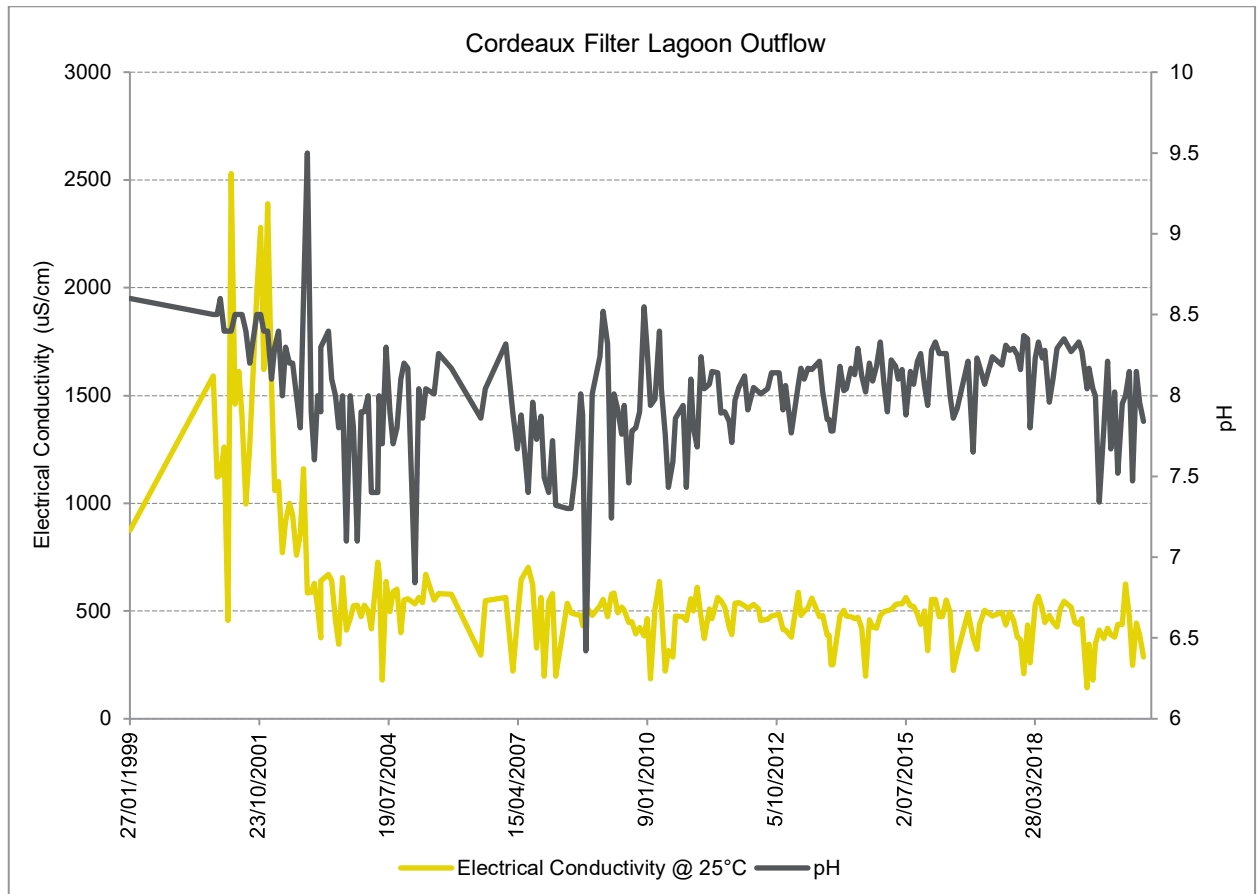


conductivity) and remained generally stable. During the reporting period, monitoring results within the mine water holding lagoons continue to reflect good water quality. The pH ranged between 6.57 and 7.99 and conductivity ranged between 161 and 676  $\mu\text{S}/\text{cm}$ . Oil and grease results were below the limit of reporting in all FY20 sampling events.



**Figure 16: Water Quality Data from the Mine Water Holding Lagoon**

The clean area catchment run-off from the Cordeaux Pit Top site (including the sealed employee car parking area) reports to the sand filter lagoon and leaves site to the local environment via the sand filter underflow. Water quality from this point is analysed on a nominal monthly basis. Water quality analysis for this reporting period shows the discharge water quality was between pH 7.38 and 8.21, with conductivity ranging between 248 and 626  $\mu\text{S}/\text{cm}$ . Oil and grease results were below the limit of reporting in all FY20 sampling events. Results from the Cordeaux Filter Lagoon underflow for the period 2000 to 2020 are shown on Figure 17.



**Figure 17: pH and Conductivity at the Cordeaux Filter Lagoon Underflow.**

Water quality from the Cordeaux Filter Lagoon Outflow improved following cessation of operations in 2002. Since then water quality has remained generally stable.

The long-term data suggests that the existing storage capacity and water management is adequate in managing the current activities and rainfall events.

### 6.3.3 DCPD

Surface water quality at the DCPD is managed under the BlueScope Steel EPL 6092.

## 6.4 Contaminated Land

### 6.4.1 Dendrobium Mine

No significant land pollution events occurred during the reporting period at Dendrobium Mine. Basix Environmental Solutions (BES, 2010) completed a preliminary contamination assessment of the Dendrobium Mine Pit Top and KVCLF in March 2010. The results from subsequent soil sampling were provided in previous Annual Reviews and indicated that:

- Polycyclic aromatic hydrocarbon levels were below the National Environment Protection Measure health investigation level criteria for parks, recreation open space and playing fields.
- Total petroleum hydrocarbon levels were below the Dutch Intervention Value of 5,000 mg/kg.
- Minor oil staining of sealed surfaces occurred. For the majority of the Pit Top, it is likely that any potential contamination (existing under sealed surfaces or on unsealed road verges storage areas) is minor and not likely to export off site.



#### **6.4.2 Cordeaux Colliery**

Cordeaux Colliery has a small localised area which has been affected by leaching from the slag base at the surface switch yard. This was first noted in 2005 as vegetation in the localised area appeared to have been adversely affected. No further impact has been observed in this reporting period.

Rehabilitation planning for sites will include investigations to identify land contamination. If areas of contamination are identified that require remedial works, this will then be completed in an appropriate manner in accordance with the requirement/agreement of stakeholders and relevant Government agencies.

#### **6.4.3 Corrimal No.3 Shaft**

On 4 April 2017, IMC identified that two transformers had been vandalised at the Corrimal No. 3 Ventilation Shaft which resulted in the spilling of oil at the site. The site is located north of Picton Road in proximity to Fire Trail No. 8, Cataract NSW. The spill was reported to relevant Government agencies. A clean up notice was issued by WaterNSW and a Remedial Action Plan (RAP) was submitted. The works included the removal of above ground structures, transformer bunds, footings and impacted soils and sediments. Validation works associated with the RAP were completed in the transformer yard and associated areas of the site and the report submitted to WaterNSW, who advised that they consider the requirements under the Clean Up Notice 4/2017 to be fully discharged.

The implementation of the Corrimal No. 3 Water Quality Monitoring Program (WQMP) has demonstrated that the remediation activities at Corrimal No. 3 have been effective in mitigating impacts to the environment. The Trigger Action Response Plan (TARP) was updated in FY20 to reflect a reduced monitoring program. The final WQMP report was completed in March 2020 and recommended no further environmental monitoring related to the remediation of the transformer vandalism spill is warranted. This will be implemented during FY21 following endorsement by an independent auditor.

#### **6.4.4 DCP**

Contaminated land at the DCP is managed under the BlueScope Steel EPL 6092.

### **6.5 Threatened Fauna and Flora**

#### **6.5.1 Dendrobium Mine**

No threatened species were identified on the Dendrobium Pit Top site, KVCLF or Ventilation Shaft 1 or 2/3 sites during this reporting period. Results from the flora and fauna monitoring undertaken via the Subsidence Management Plan (SMP) process are detailed in Section 6.14 of this report.

#### **6.5.2 Cordeaux Colliery**

No activities have occurred at Cordeaux Colliery that would affect threatened flora or fauna species.

### **6.6 Weeds**

#### **6.6.1 Dendrobium Mine**

Weeds are managed in accordance with the Landscape Management Plan. Regular maintenance was carried out during the reporting period that included weed control.

Within the Dendrobium Pit Top area, some of the more accessible areas were targeted for weed species removal. This included the removal and/or treatment of Crofton Weed, Lantana, Privet,





Ginger Lily and other woody and herbaceous weeds. Kemira Valley operations targeted accessible areas for Mysore thorn removal and/or treatment. Weed treatment was also undertaken along the KVRL.

#### **6.6.2 Cordeaux Colliery**

Weeds are controlled on a routine basis by the site contract gardener through targeted spray activities. Weed growth within the area of the boundary fire break zone is addressed as required.

#### **6.6.3 Ventilation Shafts 1, 2 and 3**

Weed management is conducted at Ventilation Shaft 1 and Ventilation Shaft 2/3 in accordance with the Landscape Management Plan.

### **6.7 Blasting**

#### **6.7.1 Dendrobium Mine**

No surface blasting activities were undertaken during the reporting period. Minor blasting activities underground are undertaken using approved management plans.

#### **6.7.2 Cordeaux Colliery**

Cordeaux Colliery is under care and maintenance and no blasting was undertaken.

### **6.8 Operational Noise**

#### **6.8.1 Dendrobium Mine**

##### **6.8.1.1 Noise Management Strategies**

Noise management is an important aspect of the Dendrobium operations as the Pit Top and Kemira Valley sites are located adjacent to residences in Mount Kembla and Kembla Heights. Quarterly noise monitoring is conducted to satisfy requirements of the Consent and the approved Noise Management Plan.

Noise management strategies in place include:

- Low frequency reversing alarms installed on most underground and surface-based vehicles.
- Rail track related noise management program.
- Noise monitors installed on the KVRL.
- Steel rollers replaced with polyurethane coated rollers on the Kemira Valley conveyor.
- Steel belt clips removed at Kemira Valley Tunnel.
- Self-imposed night time noise curfew limiting mobile equipment and ballast movements around the Dendrobium Pit Top (from 10 pm to 6.15 am).
- Employee/contractor environment and community awareness training.
- Old compressor units replaced with quieter noise attenuated units.

Noise from the rail operations on the KVRL has been a community concern since the commencement of operations under the Consent.

The rail line is located within 200 m of more than 500 receivers within the Mount Kembla, Cordeaux Heights and Unanderra communities. The track geometry consists of relatively tight curves which can increase the likelihood of squeal events caused by the wheel/track interface and/or brake related



issues. Noise issues have been addressed by the Rail Noise Working Group (RNWG) through the below objectives:

- Review noise results and identify rail noise mitigation options.
- Improve targeted track maintenance.
- Develop strategies for positive proactive community engagement.

During previous reporting periods, the RNWG has undertaken numerous rail trials and noise monitoring campaigns to identify noise sources and minimise the rail noise generated in the local area. The work undertaken has been documented in previous Annual Reviews.

During FY19, issues were identified with wheel squeal on a corner of track near William James Drive, particularly on the train movement towards Kemira Valley. The issues were ongoing in FY20. They were discussed at the RNWG and the following actions were taken:

- Review and trialling of different train speeds.
- Track adjustment.
- Track tamping.
- Installation and trial of a new greasing unit.
- Installation of additional noise monitor.

An additional trackside rail noise monitor was installed and commissioned adjacent to the corner of track near William James Drive in FY20. The monitor will be utilised to trial different train speeds to see whether this has an influence on noise generated for trains travelling uphill, and for curves near Bushels Hill and the bridge over American Creek.

#### 6.8.1.2 **Noise Monitoring Program**

The program includes noise monitoring of the Pit Top site, the KVCLF and the rail operations. Attended noise monitoring is carried out quarterly at three locations as shown on Plan 7.

The rail haulage noise measurements are completed annually. This monitoring has been undertaken as per the approved Noise Management Plan. Rail noise is also monitored using two fixed noise monitors along the KVRL.

The results from the attended noise monitoring are compared to the noise criteria for Dendrobium Mine and KVCLF for daytime, evening, and night time periods as set out in the Consent. The  $LA_{eq}$  noise criteria are shown in Table 21.

**Table 21: Monitoring Requirements and Prescribed Limits**

Location	Noise Criteria $LA_{eq,15min}$ (dBA)			Noise Criteria for Dendrobium Operations, $LA_{1,1min}$ (dBA)
	Daytime (7 am - 6 pm)	Evening (6 pm - 10 pm)	Night time (10 pm - 7 am)	
R1	40	40	39	49
R6A	40	40	37	47
R39A	37	35	35	45

Attended noise monitoring was conducted on a quarterly basis throughout the reporting period.

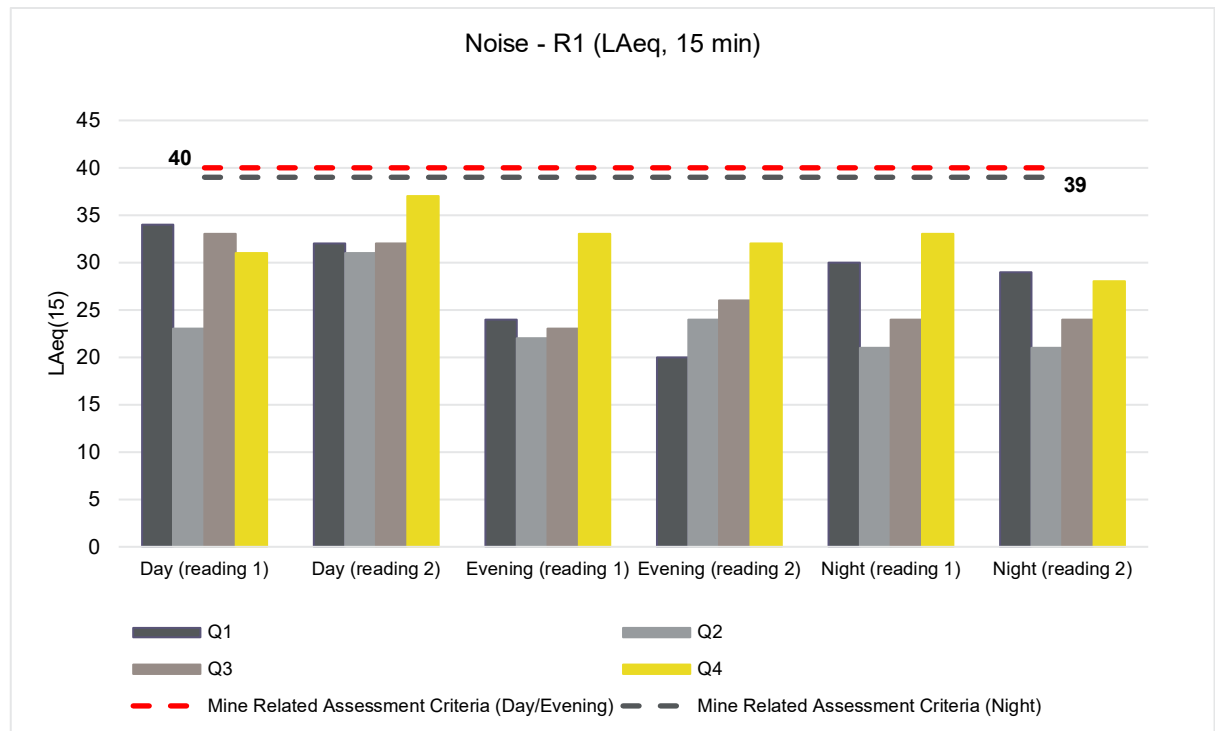
During the reporting period, Dendrobium was generally compliant against the  $LA_{eq,15min}$  criterion, with the exception of one non-compliance against the  $LA_{eq,15min}$  criterion at location R6A on Cordeaux



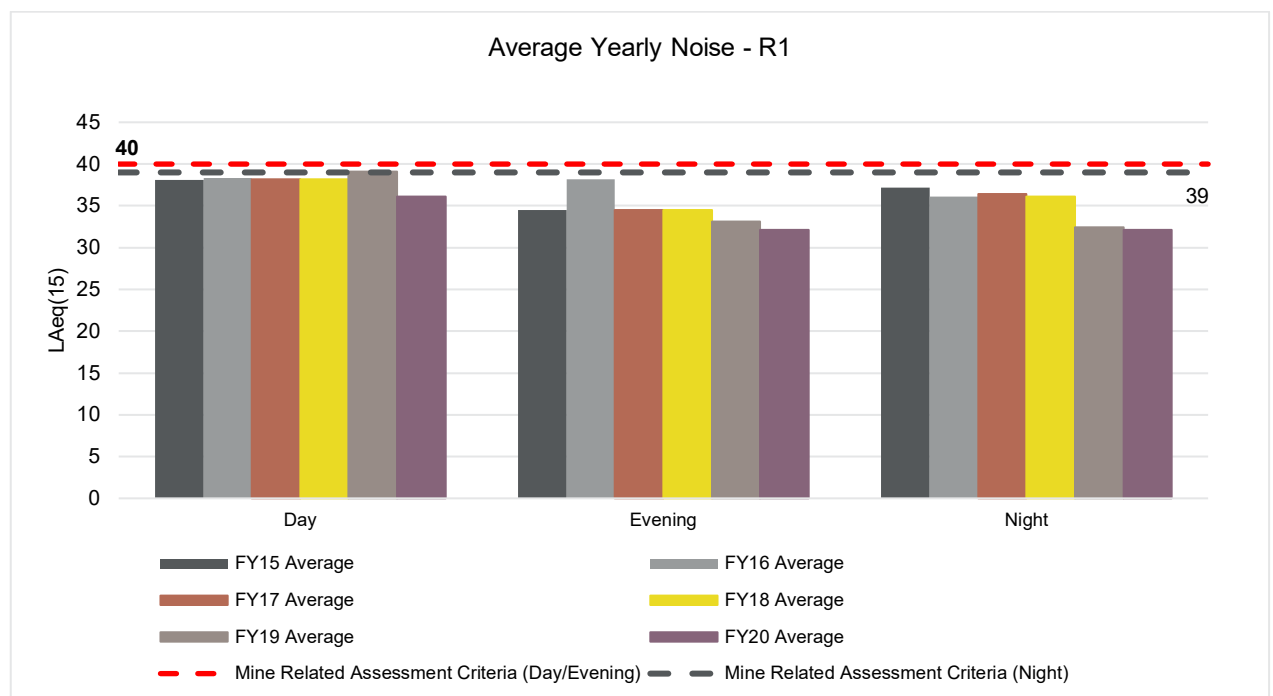
Road. Three exceedances of noise impact assessment criteria were also recorded at R6A. These are discussed in Section 11.

### Location R1 (17 High Street)

R1 is located to the north of the Pit Top. There were no exceedances of the noise criteria. The  $LA_{eq,15\text{ min}}$  results for R1 for FY20 are provided in Figure 18 and annual averages are provided in Figure 19.



**Figure 18: Site R1 Noise Compliance ( $LA_{eq,15 \text{ min}}$ ) – FY20**



**Figure 19: Site R1 Noise Compliance ( $LA_{eq,15 \text{ min}}$ ) – FY15 to FY20**



### Location R6A (374 Cordeaux Road)

R6A is located to the east of the Dendrobium Pit Top. There was one non-compliance on 11 September 2019 of the  $LA_{eq,15\text{ min}}$  criterion in Condition 1 of Schedule 4 of the Consent. A result of 43 dBA was recorded and the limit is 40 dBA.

Three exceedances against the  $LA_{eq,15\text{ min}}$  criterion were recorded. These occurred on 27 November 2019, 24 February 2020 and 20 May 2020. These exceedances are discussed in Section 11.  $LA_{eq,15\text{ min}}$  results for R6A for FY20 are provided in Figure 20 and annual averages are provided in Figure 21.

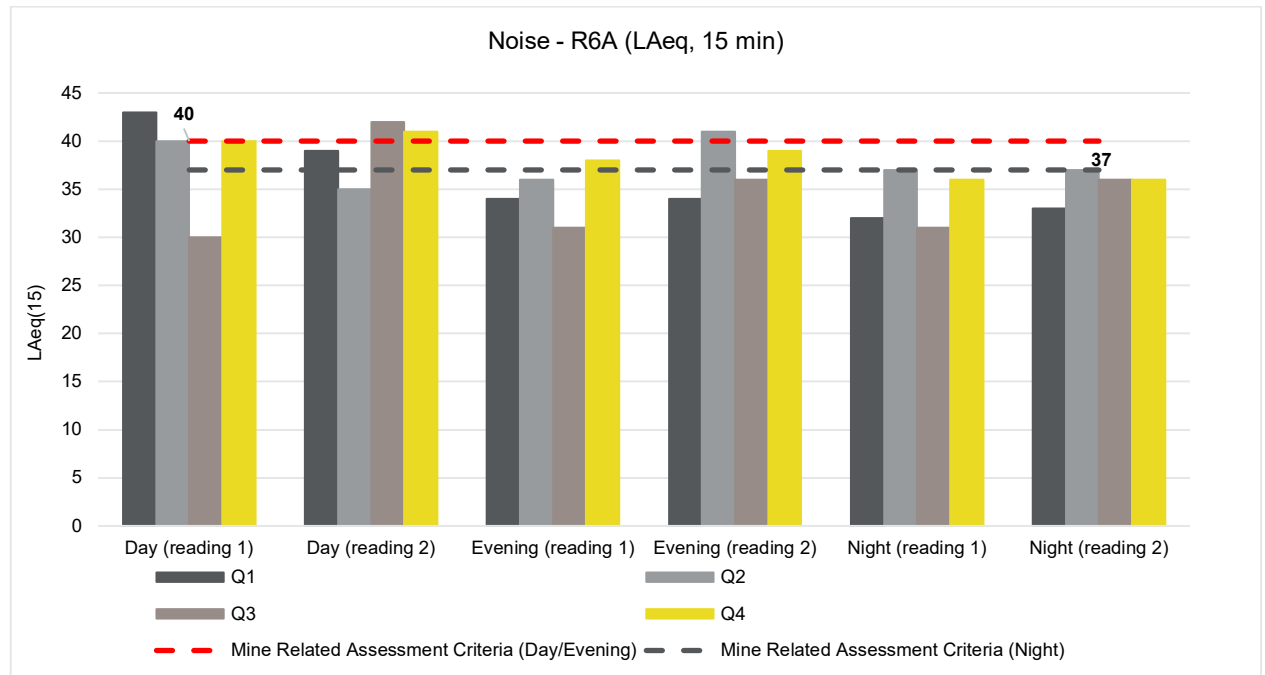


Figure 20: Site R6A Noise Compliance ( $LA_{eq,15\text{ min}}$ ) – FY20

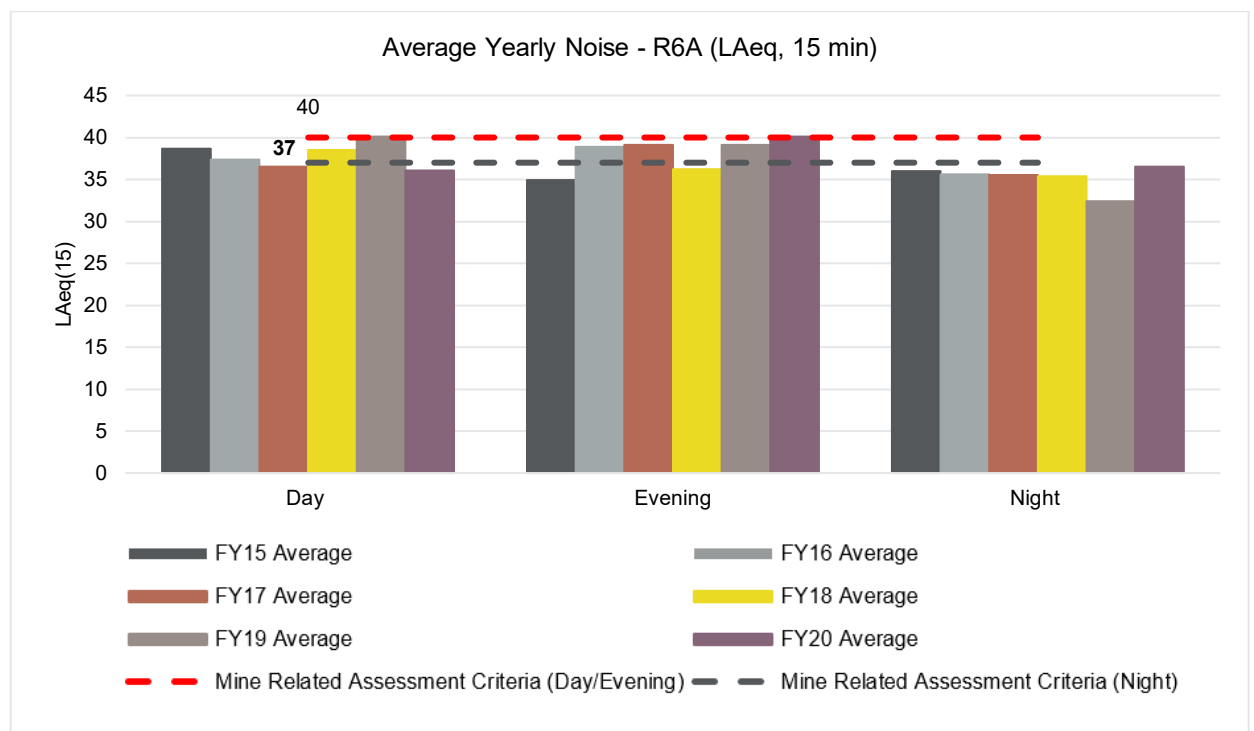
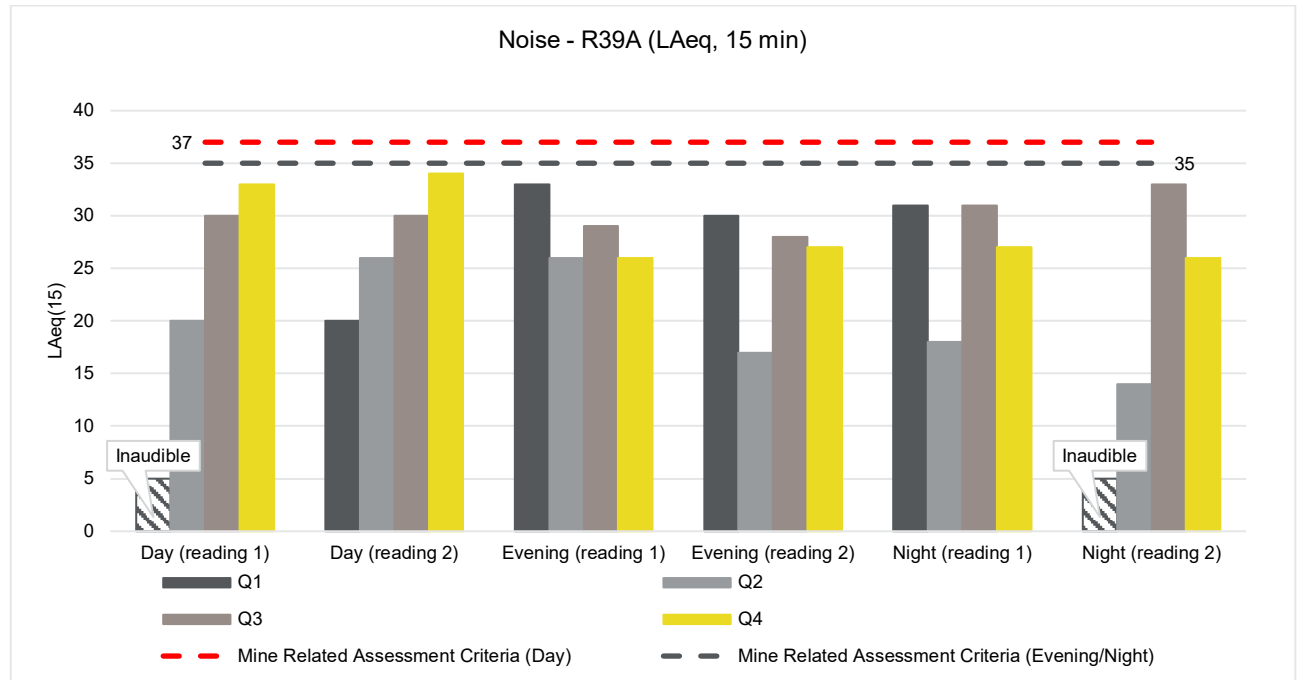


Figure 21: Site R6A Noise Compliance ( $LA_{eq,15\text{ min}}$ )

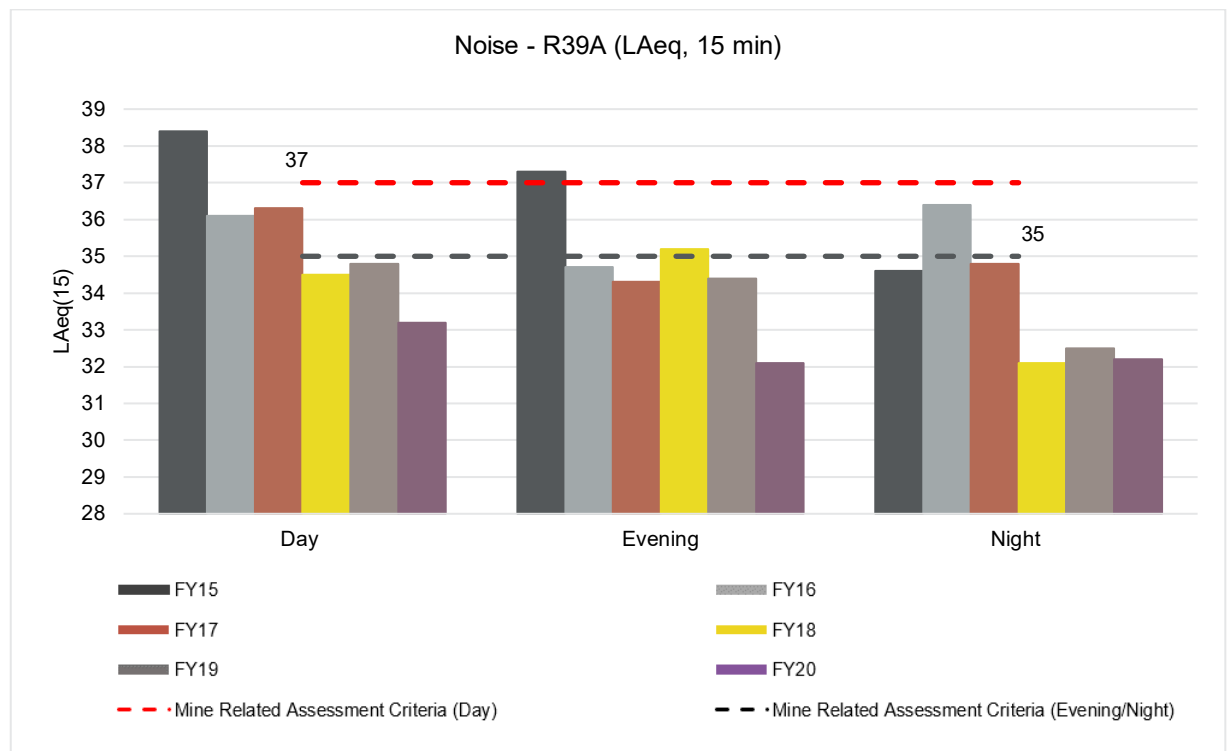


### Location R39A

R39A is located to the south-east of KVCLF at Figtree Farm. There were no exceedances of the noise criteria. The LAeq 15-minute results for R39A are provided in Figure 22 and annual averages are provided in Figure 23.



**Figure 22: Site R39a Noise Compliance (LAeq,15 min) – FY20**

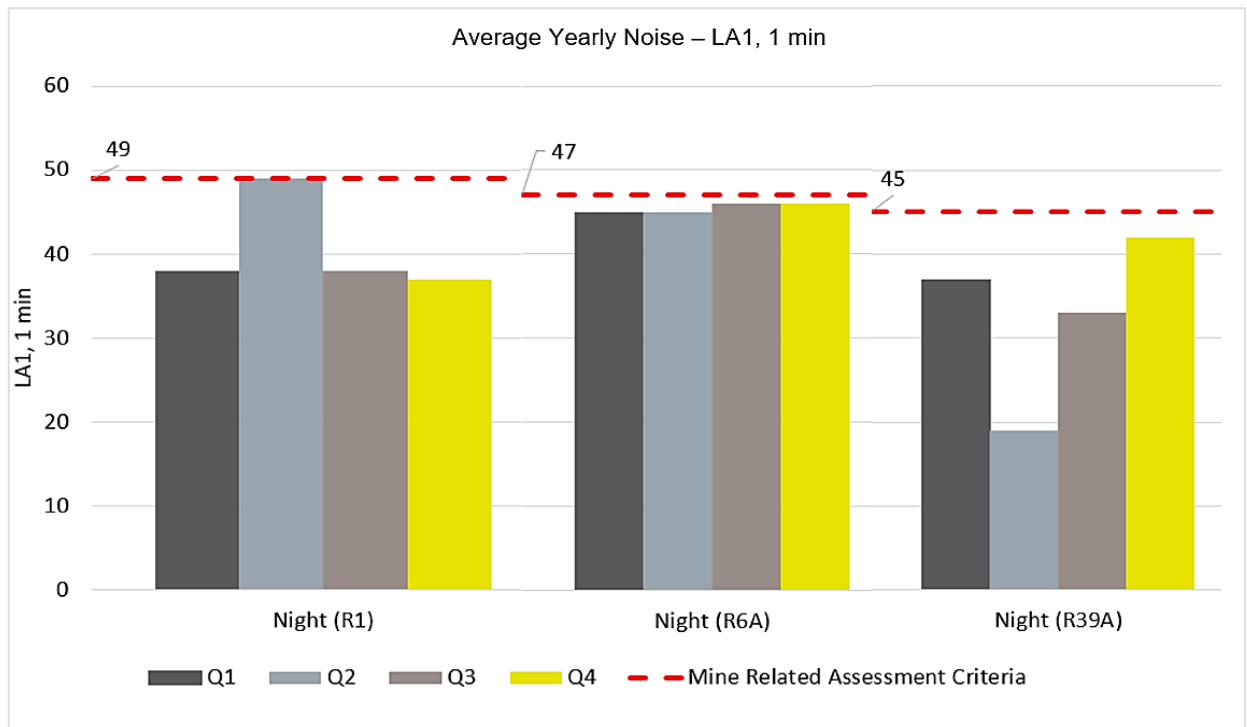


**Figure 23: Site R39A Noise Compliance (LAeq,15 min)**



### **LA<sub>1,1 min</sub>**

There were no exceedances or non-compliances recorded for the LA<sub>1,1 min</sub> criteria at any of the monitoring locations. LA<sub>1,1 min</sub> results for sites R1, R6A and R39A are shown in Figure 24.



**Figure 24. Site Noise Compliance (LA<sub>1,1 min</sub>) for R1, R6A and R39A**

#### **6.8.1.3 Rail Haulage**

A summary of the rail haulage noise criteria is presented in Table 22. The noise levels from all locomotives in use on the KVRL are governed by these specific noise limits.

**Table 22: Rail Haulage Noise Criteria**

Operating Conditions	Speed and Location of Measurement	Noise Limits LA <sub>1,1 min</sub> (dBA)
Idle with compressor radiator fans and air conditioning operating at maximum load occurring at idle	Stationary 15 m contour	70 dBA
All other throttle settings under self-load with compressor radiator fans and air conditioning operating	Stationary 15 m contour	87 dBA 95 dBLin
All service conditions	0-50 km/h 15 m from centreline of track	87 dBA 95 dBLin

Attended rail haulage noise measurements for the 82-class locomotive was conducted in September 2019. No exceedances or non-compliances were recorded for LA<sub>1,1 min</sub>.

During the reporting period, one new noise monitor was installed along the KVRL.



### **6.8.2 Cordeaux Colliery**

Noise is not considered an issue at Cordeaux Colliery as the site is in care and maintenance.

### **6.8.3 DCPP**

As the DCPP is within the BlueScope Steel premises, noise monitoring and management actions are not undertaken by IMC.

## **6.9 Visual, Stray Light**

### **6.9.1 Dendrobium Mine**

Lighting at Dendrobium is managed in accordance with the Lighting Management Plan. The Dendrobium Pit Top site is shielded by established vegetation with minimal stray light leaving the site.

The Kemira Valley site is shielded within the valley with a majority of lighting turned off during night-time operations unless work is being carried out on site. No complaints regarding lighting at Kemira Valley were received during the reporting period.

### **6.9.2 Cordeaux Colliery**

Cordeaux Colliery is located in bushland with no immediate residential receivers. No complaints regarding lighting were received during the reporting period.

### **6.9.3 DCPP**

As the DCPP is within the BlueScope Steel premises there were no lighting issues identified.

## **6.10 Aboriginal Heritage**

### **6.10.1 Dendrobium Mine**

The Dendrobium Area 3B Longwalls 9-18: Heritage Impact Assessment sets out the requirements to satisfy the Consent Conditions for Aboriginal Heritage management in Dendrobium Area 3. Aboriginal Heritage Impact Permit (AHIP) No: 1132005 was issued to ICHPL on 18 December 2012. AHIP No: 1132005 allows for potential impacts (associated with subsidence movements from longwall mining) to Aboriginal archaeological sites within Dendrobium Area 3B. The management measures described in this Aboriginal Heritage Plan are the same as those to be implemented for AHIP No: 1132005. Details on subsidence impacts to Aboriginal Heritage sites over DA3B are included in Section 6.14.

### **6.10.2 Cordeaux Colliery**

Sites of archaeological and natural significance were identified and assessed as part of previous longwall extraction approval processes. The assessments concluded that no significant effects would occur to the identified features as a result of longwall mining at Cordeaux Colliery.

Archaeological assessments and surveys were conducted in 2003 in relation to surface rehabilitation works planned for the Cordeaux sites. The assessments and surveys identified no items of aboriginal significance that will be disturbed by the potential rehabilitation activities.





## **6.11 Natural Heritage**

### **6.11.1 Dendrobium Mine**

Items of natural heritage are identified in the SMP process. Details regarding natural heritage and European heritage are reported in Section 6.14 of this report.

### **6.11.2 Cordeaux Colliery**

Natural heritage is not considered a significant issue at Cordeaux Colliery as the site is in care and maintenance.

## **6.12 Spontaneous Combustion**

### **6.12.1 Dendrobium Mine**

Spontaneous combustion has not been an issue at Dendrobium Mine. The coal and overburden characteristics at Dendrobium Mine are unlikely to lead to spontaneous combustion.

### **6.12.2 Cordeaux Colliery**

Spontaneous combustion has not been an issue at Cordeaux Colliery.

## **6.13 Bushfire**

### **6.13.1 Dendrobium Mine**

During the reporting period, bushfire mitigation works were carried out in accordance with the Bushfire Management Plan.

Asset Protection Zones maintained around surface facilities include:

- 28-38 Harry Graham Drive – Kembla Heights;
- Northern Side of Cordeaux Road – Mount Kembla; and
- Dendrobium 1, 2 and 3 ventilation shafts.

Fire Trail maintenance around surface facilities include:

- Containment Line southern side of Dendrobium Mine Pit Top;
- Benjamin Road Fire Trail – Kembla Heights;
- Stones Road Fire Trail – Kembla Heights; and
- Access to Dendrobium 1, 2 and 3 ventilation shafts.

Bushfire suppression sprays were installed at the Dendrobium Pit Top during the reporting period to improve asset protection.

### **6.13.2 Cordeaux Colliery**

Bushfire management at the Cordeaux Pit Top is achieved through the formation of a fire break around the site boundary, and the establishment of an extensive firefighting water pipeline (with booster pump facility) around the site. A tanker filling station for charging the fire line has been installed in proximity to the fire pump (Note: the fire line is not maintained in a charged state). Maintenance of fire line pressure was previously automated by a pressure-controlled jockey pump.



Clearing of excessive vegetation from within the pit-top boundary fire break zone is completed as required, determined by annual inspections. To prevent the possibility of bush fires produced by contact with live power lines, line clearing is undertaken to selectively clear vegetation with the potential to encroach on power lines.

Prior to the onset of the summer months each year, IMC undertakes inspections of its property boundaries to determine appropriate bush fire mitigation and hazard reduction works to be undertaken prior to the hotter drier summer months of the bushfire season.

The Rural Fire Service radio repeater is located in the personnel and materials tower at the Cordeaux Pit Top site.

## **6.14 Mine Subsidence**

### **6.14.1 Dendrobium Mine**

Mining using the longwall method results in subsidence (lowering) of the land surface. Dendrobium Mine has an approved SMP for each of its mining areas (1, 2, 3A, 3B and 3C) which describes the ongoing program of subsidence monitoring and management at the mine. These SMPs were developed in accordance with Condition 7, Schedule 3 of the Consent.

The management of subsidence is undertaken in consultation with the Dendrobium Community Consultative Committee (DCCC), WaterNSW, Dams Safety NSW, Resources Regulator, DPIE, including the Water Division and Biodiversity and Conservation. The implementation of the plan relates to monitoring and management of natural features, including:

- Surface and groundwater.
- Landscapes, including steep slopes, cliffs, land suitability and areas prone to erosion or flooding.
- Terrestrial and aquatic ecology.
- Aboriginal and European heritage.
- Infrastructure (man-made features).

During the reporting period Longwall 15 extraction was completed on 22 January 2020. Longwall 16 extraction commenced on 25 February 2020, and, as of 30 June 2020, had extracted approximately 960 metres. Mine subsidence monitoring and reporting was carried out in accordance with the approved SMP for Area 3B and supporting management plans.

The monitoring program for Longwalls 15 and 16 is defined by the Area 3B SMP and supporting management plans which include:

- Dendrobium Area 3B Asset Protection Plan.
- Dendrobium Area 3B Groundwater Management Plan.
- Dendrobium Area 3B Swamp Impact, Monitoring, Management and Contingency Plan (SIMMCP).
- Dendrobium Area 3B Watercourse Impact, Monitoring, Management and Contingency Plan (WIMMCP).

A summary of monitoring commitments for this reporting period are provided in Table 23. Additional information is provided in the Longwall 15 End of Panel report, Area 3B SMP and supporting management plans, which can be accessed from the South32 Website:

<https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents>.



**Table 23: Subsidence monitoring program for Dendrobium Mine**

SMP Commitments for the Reporting Period	Monitoring Frequency	Monitoring Undertaken
<b>Subsidence Monitoring</b>		
Airborne Laser Scanning (ALS) over Areas 3A and 3B – including 3D Digital Terrain Model (DTM)	ALS to be undertaken at conclusion of each longwall and 12 months after extraction is complete in each area	As per SMP commitments
Area 3B 2D monitoring lines	Monthly during mining for key features during active subsidence	As per SMP commitments
Swamps and Trib X Lines	Every 500 m Extraction of Longwall	Tributary surveys complete 7/2019, 8/2019, 9/2019, 10/2019, 11/2019, 12/2019, 1/2020, 3/2020, 4/2020, 5/2020, 6/2020.
Avon Dam (+ LA4 Trib)		Swamp surveys complete 5/2019, 6/2019, 7/2019, 8/2019, 9/2019, 10/2019, 3/2020, 6/2020.
		Avon Dam and LA4 surveys complete 5/2019, 8/2019, 11/2019, 2/2020, 5/2020.
3D control survey	Conclusion of each longwall and 12 months after the completion of each area	As per SMP commitments
<b>Water Courses</b>		
<b>Observational, Photo Point and Water Monitoring</b>		
Avon Dam, Native Dog Creek, Wongawilli Creek, Donalds Castle Creek, WC6, WC7 WC8, WC9, WC12, WC15, WC16, WC18. WC21, LA2, LA3, LA4, LA4A, LA4B, LA5, ND1.	Monthly two years pre and post mining, weekly when longwall is within 400 m of monitoring site	As per SMP commitments
Swamps 1a, 1b, 3, 4, 5, 8, 10, 11, 13, 14, 23, 35a, 35b.		



## Water Quality

### Wongawilli Creek and associated tributaries

WWU1, WWU4, WC\_Pool 49, WC\_Pool 46, WWM2, WC\_Pool 43b, Wongawilli Ck (FR6), WC21\_Pool 5, WC21\_Pool 30, WC21\_Pool 53, WC12\_Pool 1, WC15\_Pool 2, WC15\_Pool 9, WC15\_Pool 28, WC7\_Pool 1, WC\_S1, WC\_Rockbar 39,

Monthly monitoring during and post mining for two years or until required

As per SMP commitments

### Lake Avon and associated tributaries

LA4\_S1, LA4\_S2, LA5\_S1, LA5\_S2, LA3\_Pool 4, LA2\_Pool 5, LA1, LA\_1.

### Donalds Castle Creek

Donalds Castle Ck (FR6), DCL3, DC\_Pool 22, DC13\_Pool 2b

### Sandy Creek and associated tributaries

SCK\_Rockbar 5, Sandy Creek Arm, SC10C\_Pool 1, SC10\_Rockbar 3

### Native Dog and associated tributaries

NDC\_Pool 1, ND1\_Pool 2, NDC1

### Reference

LC5\_S1, CR36\_S1, Swamp 24\_Pool 10 (D10),

## Flow

### Wongawilli Creek and associated tributaries

WWU, WWL, WC21S1 and WC15S1, WC12S1

Continuous one-hour logging intervals As per SMP commitments

### Donalds Castle Creek and associated tributaries

DCU, DC13S1 and DCS2

### Lake Avon and associated tributaries

LA2S1, LA3S1, LA4S1

### Native Dog Creek and associated tributaries

NDT1S1

### Sandy Creek and associated tributaries

SCL2, SC10S1, SC10CS1



## Reference

O'Hares Creek at Wedderburn, LC5S1, CR36S1

## Aquatic Ecology

- |  |   |                               |
|--|---|-------------------------------|
| <ul style="list-style-type: none"> <li>• Macroinvertebrate sampling and assessment using the AUSRIVAS protocol and quantitative sampling using artificial collectors</li> <li>• Individuals of the genus Austrocorduliidae and Gomphomacromiidae are identified to species level if possible</li> <li>• Fish are sampled using back-pack electrofisher and baited traps</li> </ul> | <ul style="list-style-type: none"> <li>• Two baseline monitoring campaigns prior to mining during autumn and spring</li> <li>• Monitoring during mining in autumn and spring</li> <li>• Monitoring post-mining for two years or as otherwise required</li> <li>• Monitoring target sites as mining progresses through the domain</li> </ul> | <p>As per SMP commitments</p> |
|--|---|-------------------------------|

## Terrestrial Fauna – Threatened Frog Species

- |  |  |                               |
|--|--|-------------------------------|
| <ul style="list-style-type: none"> <li>• Surveys are conducted along creeks with a focus on features susceptible to impacts</li> <li>• Potential breeding habitat for Littlejohn's Tree Frog and Giant Burrowing Frog will be targeted</li> <li>• Standardized transects to record numbers of individuals between surveys for each site</li> </ul> | <p>Surveys are undertaken in optimal periods over the season</p> | <p>As per SMP commitments</p> |
|--|--|-------------------------------|

## Swamps

### Observational, Photo Point and Water Monitoring

- |   |  |                               |
|---|--|-------------------------------|
| <p>Impact Sites:</p> <ul style="list-style-type: none"> <li>• Swamps 1a, 1b, 3, 4, 5, 8, 10, 11, 13, 14, 23, 35A and 35B</li> </ul> <p>Reference Sites:</p> <ul style="list-style-type: none"> <li>• Swamps 2, 7, 15a, 22, 24, 25, 33, 84, 85, 86, 87 and 88</li> </ul> | <p>Monthly two years pre and post mining, weekly when longwall is within 400 m of monitoring site</p> <p>Reference sites six-monthly</p> | <p>As per SMP commitments</p> |
|---|--|-------------------------------|

## Erosion Monitoring

- |   |  |                               |
|---|--|-------------------------------|
| <p>Impact Sites:</p> <ul style="list-style-type: none"> <li>• Swamps 1A, 1B, 3, 4, 5, 8, 10, 11, 13, 14, 23, 35A and 35B</li> </ul> <p>Reference Sites:</p> <ul style="list-style-type: none"> <li>• Swamps 2, 7, 15A, 22, 24, 25, 33, 84, 85, 86, 87 and 88</li> </ul> | <p>Ground based surveys to be completed for each longwall after each longwall or to define any new erosions identified by ALS survey</p> | <p>As per SMP commitments</p> |
|---|--|-------------------------------|



### Shallow Groundwater Level

#### Impact Sites:

- Swamps 1a, 1b, 3, 4, 5, 8, 10, 11, 13, 14, 23, 35A and 35B

#### Reference Sites

- Swamps 2, 7, 15A, 22, 25, 33, 84, 85, 86, 87 and 88

#### For open hole sites:

- Monthly baseline monitoring
- Weekly monitoring during active subsidence
- Monthly monitoring post mining for two years to be reviewed annually

As per SMP commitments

#### For instrumented sites:

- Automatic groundwater level monitoring (four-hour interval or similar)
- Monitoring post mining for five years to be reviewed annually

### Soil Moisture

#### Impact Sites:

- Swamps 1a, 1b, 3, 4, 5, 8, 10, 11, 13, 14, 23, 35A and 35B

#### Reference sites:

- Swamps 2, 7, 15A, 22, 24, 25, 33, 84, 85, 86, 87 and 88

- Monthly baseline for two years prior to mining
- Weekly monitoring when longwall is within 400 m of swamp
- Six-monthly monitoring for two years post mining

As per SMP commitments

#### For instrumented sites:

- Logged soil moisture level monitoring (four-hour intervals or similar)
- Monitoring post mining for five years to be reviewed annually

### Terrestrial Flora – Composition and Distribution of Species

15 m transects consisting of 30 0.5 m X 0.5 m quadrats. The monitoring records:

- Presence of all species within each quadrat
- Percentage foliage cover and vegetation height
- Observations of dieback or changes in community structure
- Photo point monitoring at each transect

Surveys are undertaken in spring and autumn each year As per SMP commitments



### Terrestrial Flora – Swamp Size and Ecosystem Function

Detailed mapping including use of LiDAR data to indicate the location and extent of upland swamp boundaries followed by ground-truthing of these boundaries and vegetation sub-communities

- Baseline mapping prior to mining
  - Annual repeat mapping or as determined by observational monitoring
- As per SMP commitments

### Terrestrial Fauna – Threatened Frog Species

Surveys are conducted along creeks with a focus on features susceptible to impacts:

- Potential breeding habitat for Littlejohn's Tree Frog and Giant Burrowing Frog will be targeted
- Standardized transects to record numbers of individuals between surveys for each site
- Tadpole counts to be undertaken as part of the breeding habitat monitoring transects

Surveys are undertaken in optimal periods over the season

As per SMP commitments

### Landscape

#### Targeted Sites

- Cliffs  
No targeted cliff lines/Steep slopes associated with Longwall 15 and Longwall 16
- Watercourses / Swamps
  - Refer to Dendrobium Area 3 Watercourse and Swamp Monitoring TARP's
- Fire Trails  
Fire Roads 6A, 6N and 6P

- Baseline monitoring campaign prior to mining
  - Monthly monitoring during subsidence
  - Monitoring to continue six-monthly for two years following the completion of mining
- As per SMP commitments

### Inspection of Active Mining Area – Landscape Features, Vegetation, Watercourses

- All mapped cliff, steep slopes, and watercourse, swamp and fire trail sites in subsidence area. Refer to Dendrobium Area 3B SMP
- General observation of active mining areas.
- During mining recording includes impacts to:
  - Drainage
  - Disturbance of site erosion
  - Aggradations
  - Inundation
  - Rock fracturing
  - Changes in runoff
  - Changes in vegetation

- Weekly monitoring when longwall extraction is within 400 m
- As per SMP commitments





- Impacts to fauna / fish
- Rockfalls
- Soil cracking
- Slumping

#### Terrestrial Fauna

- |  |   |                        |
|--|---|------------------------|
| <ul style="list-style-type: none"> <li>• A number of sites located across and around Areas 2, 3A and 3B. Refer to Dendrobium Area 3A SMP</li> <li>• Monitoring parameters include: <ul style="list-style-type: none"> <li>- Vegetation communities</li> <li>- Vegetation condition</li> <li>- Changes in vegetation</li> <li>- Tree health</li> <li>- Swamp vegetation</li> <li>- Threatened species</li> </ul> </li> <li>• Control sites</li> </ul> | <ul style="list-style-type: none"> <li>• Two baseline monitoring campaigns one year prior to mining during autumn and spring</li> <li>• Six-monthly monitoring during mining in autumn and spring</li> <li>• Six-monthly monitoring post mining for two years or as otherwise required</li> </ul> | As per SMP commitments |
| <ul style="list-style-type: none"> <li>• A number of sites located across and around Areas 2, 3A and 3B. Refer to Dendrobium Area 3A SMP</li> <li>• Monitoring parameters include: <ul style="list-style-type: none"> <li>- Species and habitat characteristics</li> </ul> </li> <li>• Targeted surveys and monitoring of known populations of threatened frog species</li> </ul>  | <ul style="list-style-type: none"> <li>• Two baseline monitoring campaigns one year prior to mining</li> <li>• Six-monthly monitoring during mining</li> <li>• Six-monthly monitoring post mining for two years or as otherwise required</li> </ul>   | As per SMP commitments |

#### Cultural Heritage

- |   |  |                        |
|---|--|------------------------|
| <ul style="list-style-type: none"> <li>• Re-recording of the principal components identified by Sefton (Sefton 2000)</li> <li>• Macro and micro recording using digital photography (Navin Officer 2003)</li> <li>• Detailed elevation plans of shelter walls recording structural and surface features including but not limited to the art, graffiti, joints, bedding planes, exfoliation scars, cracks, mineral and microorganism growth, drip line and water seepage locations</li> </ul> | <ul style="list-style-type: none"> <li>• Baseline archival recording: prior to longwall mining</li> <li>• First impact assessment recording: following initial subsidence movement of the site</li> <li>• Sandstone shelter aboriginal sites will be monitored during mining</li> <li>• Further impact assessment recording: 12 months after undermining or final subsidence movement of the site</li> </ul> | As per SMP commitments |
|---|--|------------------------|



#### **6.14.1.1 Subsidence Movements**

Subsidence movements resulting from the extraction of Longwall 15 were measured at the following survey points and lines:

- Avon Dam Closure Lines.
- Wongawilli Creek Closure Lines.
- Dendrobium Area 3B 3D monitoring points.
- Wongawilli Creek and Avon Dam Tributary Cross Lines.
- Swamp Cross Lines.
- ALS of the area.

Subsidence parameters measured during the extraction and at the completion of Longwall 15 were generally similar to or less than what was predicted within the Area 3B SMP. For further detail on the subsidence movements measured for Longwall 15, refer to the Longwall 15 End of Panel Report. This report can be accessed via the South32 website:

<https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

#### **6.14.1.2 Landscape Features**

The IMC Environmental Field Team (IMCEFT) have conducted detailed monitoring and inspections on landscape features including swamps, watercourses, rock outcrops and the general area within Dendrobium Area 3B. This monitoring was conducted in accordance with the Dendrobium Area 3B SMP, WIMMCP (versions dated December 2013, June 2015, October 2015, October 2017 and March 2019, February 2020) and the SIMMCP (versions dated December 2013, June 2015, October 2015, October 2017 and March 2019, February 2020). During the period of extraction updated TARPs for the WIMMCP were developed in consultation with relevant government agencies.

Monitoring of water levels, water flow, water quality and key landscape features were also conducted by specialist consultants.

Forty-six new surface impacts were identified by the IMCEFT during the FY20 reporting period. Impacts were observed within watercourses and landscape features such as access tracks, cliff lines and steep slopes. For further information refer to the Longwall 15 End of Panel Report and Table 24.

#### **6.14.1.3 Surface Water and Shallow Groundwater**

HGEO (hydrogeologist consultants) completed an assessment of pre-, during and post-mining data after the completion of Longwall 15.

During Longwall 15, Wongawilli Creek (FR6) recorded a Level 2 trigger for both EC and dissolved oxygen (DO).

Donalds Castle Creek (FR6) recorded a Level 3 trigger for EC during both the extraction of Longwalls 15 and 16. Continued monitoring and additional quarterly surveys have been undertaken along the watercourse to confirm the source of the elevated EC readings. Further monitoring is required to make an assessment of potential mining related effects.

The effects of mining subsidence on surface water hydrology was assessed using a newly introduced TARP. TARP triggers for surface water hydrology were identified at Donalds Castle Creek (DCS2, DCU), DC13 (DC13S1), WC21 (WC21S1), WC15 (WC15S1), LA4 (LA4S1) and LA3 (LA3S1). Water flow performance measures were met for Longwall 15.



#### **6.14.1.4 Wongawilli Creek**

Towards the end of 2017, the water level in Pool 43a on Wongawilli Creek fell below baseline levels (impact number DA3B\_LW13\_015, dated 28/11/2017). The observation triggered a TARP Level 3 because a previously reported fracture (first observed on 18/12/2013) is present in the sandstone forming the pool base. The water level returned to baseline levels during FY19 and was sustained during FY20.

#### **6.14.1.5 Upland Swamps – Shallow Groundwater and Soil Moisture**

Longwall 15 and Longwall 16 mined beneath and/or passed within 400 m of shallow groundwater and soil moisture sites within four swamps: Swamps 11, 13, 14 and 23.

Shallow groundwater TARP triggers were identified in Swamps 11, 13, 14 and 23 following the analysis of shallow groundwater data.

Soil moisture TARP triggers were identified in Swamps 14 and 23 following the analysis of shallow groundwater data. TARPs for Swamp 13 were previously recorded with a mining influence becoming apparent during FY20.

For further information, refer to the End of Panel Surface Water and Shallow Groundwater Assessment: Longwall 15 (Area 3B). For more information please refer to the Longwall 15 End of Panel Report on the IMC website:

<https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

#### **6.14.1.6 Aquatic Ecology**

The aquatic ecology monitoring program is based on a Before, After, Control, Impact (BACI) design that provides a measure of variability at Potential Impact and Control Sites before, during and after extraction. This enables changes in the key indicators associated with mining-related impacts to be distinguished from natural variability.

Monitoring is undertaken in Wongawilli Creek, Donalds Castle Creek, tributaries WC21, WC15 and LA4 and comparable control sites.

Reductions in aquatic habitat for over two years at WC21 and Donalds Castle Creek constitute a Level 3 TARP trigger. No TARPs have been triggered with respect to Wongawilli Creek as there has not been a loss in aquatic habitat for longer than one year.

The relatively minor changes in water quality that have been observed at Wongawilli Creek (FR6) and Donalds Castle Creek (FR6) are not expected to have significant impacts on aquatic biota.

Fracturing of bedrock and potential diversion of flows in Avon Dam drainage line LA4A and Wongawilli Creek drainage lines WC15 and WC21 is likely to have resulted in some further minor reduction in quantity and connectivity of aquatic habitat in these drainage lines. Given the abundance of comparable first and second order stream habitat in the upper Avon and Cordeaux Catchments, associated impacts to aquatic biota would also be expected to be minor.

#### **6.14.1.7 Terrestrial Ecology and Swamps**

An annual terrestrial ecology report was prepared for 2019 and forms the basis of assessment for the Longwall 15 End of Panel Report.

The results of the total species richness (TSR) analysis demonstrate the response to mining at individual swamps is complex, with Swamp 15B generally showing a decline in TSR following mining



and changes in shallow groundwater. Swamp 15A, Swamp 1A, Swamp 1B and Swamp 5 displayed no statistically significant decline in TSR despite observed changes in shallow groundwater availability.

When accounting for yearly effects, a statistically significant change in species composition post-mining was found at Swamp 15B and Swamp 1B. Swamp 1A, Swamp 15A and Swamp 5 displayed no statistically significant decline in species composition.

The analysis of the most recent LiDAR data used to assess the extent of upland swamps and their composite vegetation communities, has identified that the extent of all upland swamps (impact and control swamps) within the study area have decreased substantially from the 2014 baseline.

A reduction in habitat of the Littlejohn's Tree Frog was observed within streams impacted by subsidence.

For more information refer to the Longwall 15 End of Panel Report on the IMC website: <https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

#### **6.14.1.8 Cultural Heritage**

The assessment of cultural heritage and archaeological sites potentially impacted by Longwall 15 was conducted by Niche Environment and Heritage. Six Aboriginal archaeological sites were inspected as part of the assessment. These sites were inspected because they were within the zone of possible subsidence associated with Longwall 15. Two out of the six Aboriginal cultural heritage sites had observable impacts from subsidence movements related to the extraction of Longwall 15. Impacts reported at Site 1 - DB1 during Longwall 14 End of Panel Report (EoP) have since been identified as naturally occurring and not caused by mining. There were no European heritage sites identified as being potentially affected by the extraction of Longwall 15.

For more information refer to the Longwall 15 End of Panel Report on the IMC website: <https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

#### **6.14.1.9 Summary of Impacts**

The observed impacts were generally less than or consistent with those predicted in the assessments undertaken prior to mining. A summary of the observed impacts during the reporting period is provided in Table 24 below. For further detail on impacts associated with Longwall 15, refer to the Longwall 15 End of Panel Report. The locations of the impacts are shown in Figure 25.

### **6.14.2 Cordeaux**

In consideration of the time elapsed since the last longwall panels were extracted at Cordeaux Colliery, the continued effects of subsidence will be negligible to nil and pose no threat to the safety of infrastructure or the public.



**Table 24: Impacts Identified during the Reporting Period**

Site ID	Impact Type	Feature Affected	Identification Date	Trigger		Refer to Impact Report/s Dated
				Level	Description	
DA3B_LW15_004	Soil Cracking	Fire Road 6A	09/07/2019	2	Soil cracking along Fire Road 6A.	11/07/2019
DA3B_LW15_005	Soil Cracking	Fire Road 6A	09/07/2019	1	Soil cracking and uplift across Fire Road 6A.	11/07/2019
DA3B_LW15_006	Soil Cracking and Rock Fracturing	Access Track & Sandstone Outcrop	09/07/2019	1	Soil cracking to a closed access track and fracturing to adjacent rock outcrop.	11/07/2019
DA3B_LW15_007	Rock Fracturing	Steep Slope	09/07/2019	1	Fracturing to sandstone step, north of Swamp 23.	11/07/2019
DA3B_LW15_008	Soil Cracking and Uplift	Fire Road 6A	29/07/2019	1	Soil cracking and uplift across Fire Road 6A.	30/07/2019
DA3B_LW15_009	Rockfall	Steep Slope	29/07/2019	1	Small rockfall to ledge adjacent to Swamp 23.	30/07/2019
DA3B_LW15_010	Soil Cracking and Uplift	Closed Access Track	13/08/2019	1	Soil cracking and uplift to a closed access track adjacent to Swamp 23.	23/08/2019
DA3B_LW15_011	Soil Cracking	Fire Road 6P and Ballast	28/08/2019	2	Soil cracking to railway ballast and entrance to Fire Road 6P.	30/08/2019
DA3B_LW15_012	Soil Cracking	Access Track	28/08/2019	1	Soil cracking to access track connecting Fire Road 6A and railway ballast, near Swamp 23.	30/08/2019
DA3B_LW15_013	Rock Fracturing and Fragmentation	Steep Slope	05/09/2019	1	Rock fracturing and fragmentation near SLMMP site A3b-SS11.	06/09/2019



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW15_014	Rockfall, Rock Fracturing and Fragmentation	LA4A	11/10/2019	2	Rockfall, rock fracturing and fragmentation to LA4A_Step 3B and LA4A_Channel 3A.	15/10/2019
DA3B_LW15_015	Rock Fracturing	LA4A	11/10/2019	2	Rock fracturing to LA4A_Rockbar 2.	15/10/2019
DA3B_LW15_016	Rock Displacement	Steep Slope	25/10/2019	1	Rock displacement at a steep slope between Fire Road 6P and Swamp 14.	28/10/2019
DA3B_LW15_017	Rockfall	Steep Slope	25/10/2019	1	Small rockfall at a steep slope between Fire Road 6P and Swamp 14.	28/10/2019
DA3B_LW15_018	Rock Fracturing	Steep Slope	25/10/2019	1	Rock fracturing at a steep slope between Fire Road 6P and WC15.	28/10/2019
DA3B_LW15_019	Rock Fracturing	Steep Slope	25/10/2019	1	Rock fracturing at a steep slope between Fire Road 6P and WC15.	28/10/2019
DA3B_LW15_020	Rockfall	Steep Slope	25/10/2019	1	Small rockfall at a steep slope between Fire Road 6P and WC15.	28/10/2019
DA3B_LW15_021	Rockfall	Steep Slope	25/10/2019	1	Small rockfall at SLMMP site A3b-SS9-Pt1.	28/10/2019
DA3B_LW15_022	Rock Fracturing	Steep Slope	25/10/2019	1	Rock fracturing at a steep slope between Fire Road 6P and WC15.	28/10/2019
DA3B_LW15_023	Rock Fracturing	Steep Slope	25/10/2019	2	Rock fracturing at a steep slope between Fire Road 6P and WC15.	28/10/2019



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW15_024	Rock Fracturing and Soil Uplift	Steep Slope	21/01/2020	1	Rock fracturing and soil uplift at a steep slope between Swamp 14 and WC15.	23/01/2020
DA3B_LW15_025	Rockfall	Steep Slope	21/01/2020	1	Rockfall at a steep slope between Swamp 14 and WC15.	23/01/2020
DA3B_LW15_026	Soil Cracking and Displacement	Steep Slope	21/01/2020	1	Soil cracking and displacement at SLMMP site A3B-SS13.	23/01/2020
DA3B_LW15_027	Rock Fracturing	WC15	21/01/2020	1	Rock fracturing to WC15_Rockbar 18.	23/01/2020
DA3B_LW15_028	Rock Fracturing	Rock Outcrop	30/01/2020	1	Rock fracturing to sandstone outcrop between Fire Road 6P and WC15.	07/02/2020
DA3B_LW13_010 (Update)	Rockfall	WC21	21/08/2019	2	Rockfall to a step at WC21_Pool 53.	23/08/2019
DA3B_LW13_035 (Update)	Rock Fracturing	WC15	21/01/2020	2	Additional rock fracturing to WC15_Rockbar 21.	23/01/2020
DA3B_LW13_046 (Update)	Rock Fracturing and Displacement	WC15	1/04/2020	1	Additional rock fracturing and displacement to WC15_Pool 2.	3/04/2019
DA3B_LW14_015 (Update)	Rockfall	Cliff line	5/12/2019 and 11/06/2019	2	Rockfall on Avon Reservoir cliff edge.	6/12/2018 and 12/06/2019
DA3B_LW14_016 (Update)	Rock Fracturing	WC15	21/01/2020	2	Additional rock fracturing to WC15_Rockbar 25.	23/01/2020
DA3B_LW16_001	Soil Cracking	Access Track	16/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	17/04/2020





Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW16_002	Soil Cracking	Access Track	16/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	17/04/2020
DA3B_LW16_003	Soil Cracking	Access Track	16/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	17/04/2020
DA3B_LW16_004	Rock Fracturing and Soil Cracking	Access Track	16/04/2020	1	Rock fracturing and soil cracking on access track between Lake Avon and Fire Road 6A.	17/04/2020
DA3B_LW16_003 (Update)	Soil Cracking and Rock Fracturing	Access Track	16/04/2020 and 21/04/2020	1	Rock fracturing identified adjacent to previously identified soil cracking on access track between Lake Avon and Fire Road 6A.	22/04/2020
DA3B_LW16_005	Soil Cracking	Access Track	21/04/2020	2	Soil cracking on access track between Lake Avon and Fire Road 6A.	22/04/2020
DA3B_LW16_006	Soil Cracking	Access Track	21/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	22/04/2020
DA3B_LW16_007	Soil Cracking	Access Track	21/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	22/04/2020
DA3B_LW16_008	Soil Cracking	Access Track	27/04/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	30/04//2020
DA3B_LW16_009	Soil Cracking	Seismic Track	27/04/2020	1	Soil cracking on rehabilitated seismic track between Lake Avon and Fire Road 6A.	30/04//2020



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW16_010	Rock Fracturing	Rock Outcrop	27/04/2020	2	Rock fracturing to rock outcrop between Lake Avon and Fire Road 6A.	30/04//2020
DA3B_LW16_011	Rockfall	Steep Slope	27/04/2020	1	Small rock fall at steep slope/step between Lake Avon and Fire Road 6A.	30/04//2020
DA3B_LW16_012	Rock Fracturing	Steep Slope	28/04/2020	1	Rock fracturing at a steep slope/step between Fire Road 6P and Swamp 14.	30/04//2020
DA3B_LW16_013	Soil Cracking	Access Track	12/05/2020	2	Soil cracking on access track between Lake Avon and Fire Road 6A.	18/05/2020
DA3B_LW16_014	Soil Cracking	Access Track	12/05/2020	1	Soil cracking on access track between Lake Avon and Fire Road 6A.	18/05/2020
DA3B_LW15_002 (Update)	Rock Fracturing and Rockfall	Steep Slope	05/05/2020	1	Rock fracturing and rockfall at step adjacent to Swamp 23.	18/05/2020
DA3B_LW15_008 (Update)	Soil Cracking and Uplift	Fire Road	12/05/2020	1	Soil cracking and uplift across Fire Road 6A.	18/05/2020
DA3B_LW16_015	Rock Fracturing	Steep Slope	15/05/2020	1	Rock fracturing at a steep slope/step between Lake Avon and Fire Road 6A.	18/05/2020
DA3B_LW16_016	Rock Fracturing and Rockfall	Steep Slope	15/05/2020	1	Rock fracturing and rockfall at a steep slope/step between Lake Avon and Fire Road 6A.	18/05/2020
DA3B_LW16_013 (Update)	Soil Cracking	Access Track	12/05/2020 and 28/05/2020	2	Soil cracking on access track between Lake Avon and Fire Road 6A.	29/05/2020



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW16_017	Rock Fracturing	Rock Outcrop	16/06/2020	1	Rock fracturing to outcrop between Swamp 23 and LA2.	19/06/2020
DA3B_LW16_018	Rock Fracturing	Steep Slope	16/06/2020	1	Rock fracturing to SLMMP site A3b-SS16.	19/06/2020
DA3B_LW16_013 (Update)	Soil Cracking	Access Track	11/06/2020	2	Soil cracking on access track between Lake Avon and Fire Road 6A.	19/06/2020
DA3B_LW16_019	Soil Cracking	Fire Road	19/06/2020	2	Soil cracking across Fire Road 6A.	24/06/2020
DA3B_LW16_019 (Update)	Soil Cracking	Fire Road	25/06/2020	2	Soil cracking across Fire Road 6A (now remediated).	29/06/2020
DA3B_LW16_020	Soil Cracking	Fire Road	30/06/2020	1	Soil cracking across Fire Road 6A.	2/07/2020
DA3B_LW16_021	Rock Fracturing	Steep Slope	30/06/2020	2	Rock fracturing to step with small rockfall	2/07/2020
14_02 (IMCEFT)	Shallow Groundwater Trigger	Swamp 14	01/11/2019	2	Rate of recession greater than baseline.	08/11/2019
S14_02 (IMCEFT)	Soil Moisture Trigger	Swamp 14	13/12/2019	3	Soil moisture level lower than baseline.	17/12/2019
14_01 (IMCEFT)	Shallow Groundwater Trigger	Swamp 14	15/01/2020	2	Groundwater level lower than baseline.	16/01/2020
S14_01	Soil Moisture Trigger	Swamp 14	15/01/2020	3	Soil Moisture level lower than baseline.	16/01/2020



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
(IMCEFT)						
23_02 (IMCEFT)	Shallow Groundwater Trigger	Swamp 23	27/04/2020	3	Near-surface groundwater trigger in Swamp 23 (recession rate)	30/04//2020
11_H2	Shallow Groundwater Trigger	Swamp 11	13/05/2020	2	Near-surface groundwater trigger in Swamp 11.	18/05/2020
Swamp 13 (HGEO)	Shallow Groundwater Trigger	Swamp 13	N/A	3	Evidence for impact to swamp groundwater levels at 13_01.	HGEO (May 2020)
Swamp 14 (HGEO)	Shallow Groundwater Trigger	Swamp 14	N/A	2	Evidence for impact to swamp groundwater levels at 14_02.	HGEO (May 2020)
Swamp 23 (HGEO)	Shallow Groundwater Trigger	Swamp 23	N/A	2	Evidence for impact to swamp groundwater levels at 23_01.	HGEO (May 2020)
Swamp 14 (HGEO)	Soil Moisture	Swamp 14	N/A	3	Soil moisture level lower than baseline at 14_S01 and 14_S02.	HGEO (May 2020)
Swamp 23 (HGEO)	Soil Moisture	Swamp 23	N/A	2	Soil moisture level lower than baseline at 23_S02	HGEO (May 2020)
Wongawilli Creek (FR6)	Water Quality	Wongawilli Creek	29/01/2020	2	Dissolved oxygen trigger	7/02/2020
Wongawilli Creek (FR6)	Water Quality	Wongawilli Creek	29/01/2020	2	Electrical conductivity trigger	7/02/2020



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
Donalds Castle Ck (FR6)	Water Quality Trigger	Donalds Castle Creek	30/06/2020	3	Trigger for electrical conductivity.	2/07/2020
(Update)						
DCS2	Surface Water Hydrology	Donalds Castle Creek	N/A	3	General hydrological behaviour.	HGEO (May 2020)
				3	The frequency and duration of ecologically-significant cease-to-flow events.	
				3	Changes to median flow.	
DCU	Surface Water Hydrology	Donalds Castle Creek	N/A	1	Frequency and duration of ecologically-significant cease-to-flow events.	HGEO (May 2020)
DC13S1	Surface Water Hydrology	DC13	N/A	3	General hydrological behaviour.	HGEO (May 2020)
				3	Frequency and duration of ecologically-significant cease-to-flow events.	
				3	Changes to median flow.	
WC21S1	Surface Water Hydrology	WC21	N/A	3	General hydrological behaviour.	HGEO (May 2020)
				3	Frequency and duration of ecologically-significant cease-to-flow events.	
				3	Changes to median flow.	
WC15S1	Surface Water Hydrology	WC15	N/A	3	General hydrological behaviour.	HGEO (May 2020)
				2	Frequency and duration of ecologically-significant cease-to-flow events.	



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
				3	Changes to median flow.	
LA4S1	Surface Water Hydrology	LA4	N/A	1	General hydrological behaviour.	HGEO (May 2020)
				3	Changes to median flow.	
LA3S1	Surface Water Hydrology	LA3	N/A	1	General hydrological behaviour.	HGEO (May 2020)
				2	Frequency and duration of ecologically-significant cease-to-flow events.	
				3	Changes to median flow.	
Swamp 15B	Terrestrial Ecology (Flora)	Swamp 15B	N/A	3	A statistically significant difference in Total species richness and species composition.	Biosis (May 2020)
Swamp 1A	Swamp Size	Swamp 1A	N/A	1	Two years of decline in total swamp extent greater than the mean ( $\pm$ SE) decline of the control group.	Biosis (May 2020)
Swamp 1A	Ecosystem Function	Swamp 1A	N/A	2	Trending decline in the extent of subcommunities for three consecutive monitoring periods greater than the mean ( $\pm$ SE) decline in the control group.	Biosis (May 2020)
Swamp 1B	Terrestrial Ecology (Flora)	Swamp 1B	N/A	1	A statistically significant change in and species composition.	Biosis (May 2020)
Swamp 1B	Swamp Size	Swamp 1B	N/A	1	Two years of decline in total swamp extent greater than the mean ( $\pm$ SE) decline of the control group.	Biosis (May 2020)



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
Swamp 1B	Ecosystem Function	Swamp 1B	N/A	1	Trending decline in the extent of subcommunities for two consecutive monitoring periods greater than the mean ( $\pm$ SE) decline in the control group.	Biosis (May 2020)
Swamp 5	Ecosystem Function	Swamp 5	N/A	2	Trending decline in the extent of subcommunity MU43 for three consecutive monitoring periods greater than the mean ( $\pm$ SE) decline in the control group.	Biosis (May 2020)
SC10C	Terrestrial Ecology (Fauna)	SC10C	N/A	1	Significant impacts to local populations of Littlejohn's Tree Frog.	Biosis (May 2020)
DC(1)	Terrestrial Ecology (Fauna)	Donalds Castle Creek	N/A	2	Reduction in habitat for 2 years following the active subsidence period.	Biosis (May 2020)
DC13	Terrestrial Ecology (Fauna)	DC13	N/A	3	Reduction in habitat for >2 years or complete loss of habitat following the active subsidence period.	Biosis (May 2020)
WC21	Terrestrial Ecology (Fauna)	WC21	N/A	3	Reduction in habitat for >2 years or complete loss of habitat following the active subsidence period.	Biosis (May 2020)
Donalds Castle Creek	Aquatic Ecology	Donalds Castle Creek	N/A	3	Reduction in aquatic habitat for >2 years or complete loss of habitat following the active subsidence period.	Cardno (May 2020)



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
WC21	Aquatic Ecology	WC21	N/A	3	Reduction in aquatic habitat for >2 years or complete loss of habitat following the active subsidence period.	Cardno (May 2020)
Browns Road Site 11.	Cultural Heritage	Sandstone Shelter	15/03/2020	1	Additional fracturing, block fall, joint opening and fissuring. Art Panels have not been impacted.	Niche (May 2020)
DM21	Cultural Heritage	Sandstone Shelter	15/03/2020	1	The northern exterior of the shelter has experienced fracturing. Art Panels have not been impacted.	Niche (May 2020)



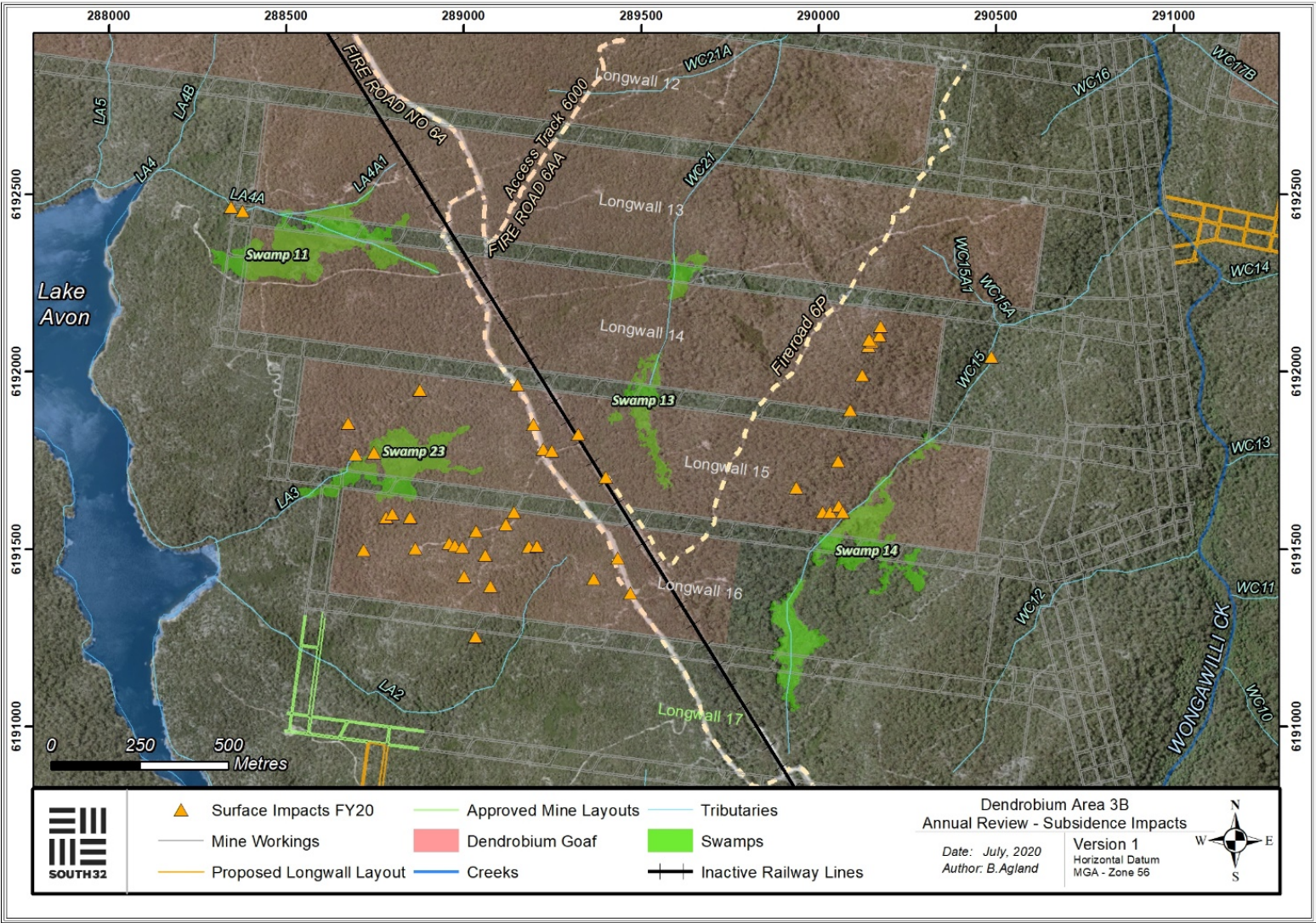


Figure 25: Dendrobium Mine subsidence impacts observed during the reporting period



## **6.15 Hydrocarbon Contamination**

### **6.15.1 Dendrobium Mine**

Hydrocarbon bunded areas utilised during the reporting period were located as follows:

- Along the Pit Top Portal Road.
- At the rear of the workshop.
- At the diesel refuelling area.

Bunds are in place for all hydrocarbon facilities. Bunded areas are checked weekly and are pumped out when required to maintain sufficient capacity. In addition to the permanent bunded areas, portable bunds are used for transient storage or transportation of oils and fuels around the site. Spill kits and/or bins containing absorbent material are located around the site in areas where there is a higher potential for spillage. Surface personnel are made aware of the locations of these spill kits and absorbent material bins in their work area. The contents of the spill kits and the oil absorbent material bins are checked on a regular basis.

There were no externally reportable incidents of hydrocarbon contamination in the reporting period associated with Dendrobium Mine.

### **6.15.2 Cordeaux Colliery**

IMC has implemented and actioned a RAP following a transformer oil spill as a result of vandalism at the Corrimall No 3 Ventilation Shaft. See more detail in Section 6.4.3.

## **6.16 Hazardous Material Management**

### **6.16.1 Dendrobium Mine**

#### **6.16.1.1 Explosives**

A Licence to Store Explosives is in place for the Dendrobium premises. Limited quantities of explosives were stored at Dendrobium over the reporting period.

#### **6.16.1.2 Radiation Gauges**

There is one radiation gauge located at the Kemira Valley site. The gauge is not currently being utilised and may be decommissioned in FY21. It is licenced and maintained as per the legal requirements. The gauge is housed in an appropriate container and inspected and tested in accordance with legislative requirements.

#### **6.16.1.3 Dangerous Goods**

The dangerous goods kept at Dendrobium Mine include compressed gases, flammable and combustible liquids and corrosive substances. Volumes stored are below the manifest quantities to require a Dangerous Goods Licence to be issued by SafeWork NSW.

A Site Emergency Information Container is installed adjacent to the front gate in accordance with legislative requirements. This information box includes the site manifest along with Safety Data Sheets (SDSs) for each of the dangerous goods kept on site.



#### **6.16.1.4 Combustible Liquids**

Dendrobium Pit Top has two bulk combustible liquid storage containers, one for diesel and one for hydraulic oil (~16100 L). These materials are delivered to site by tanker. These are stored in accordance with the requirements of AS 1940-2017: *The storage and handling of flammable and combustible liquids*.

#### **6.16.1.5 Other Substances**

IMC assesses new substances before their use on site by completing a Substance Evaluation Form and a risk assessment. SDSs and substance evaluations are available electronically from ChemAlert. Regular inspections of the storage sites are undertaken to ensure compliance with relevant standards.

### **6.16.2 Cordeaux Colliery**

Cordeaux has one bulk storage tank (underground diesel tank 42,000 L holding capacity) and minor volumes of gas cylinders, and transient stores of oils/lubricants. The diesel fuel is brought to site by fuel tankers. A bulk diesel fuel system has been installed utilising underground tank storage with locked bowser delivery. The majority of fuel used is for exploration equipment and field vehicles. In 2019 the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019* was released. The Regulation aims to minimise the risk to human health and the environment by requiring best practice design, installation, maintenance, and monitoring of UPSS in NSW. To comply with the new Regulation Cordeaux Colliery now has a Fuel System Operations Plan (FSOP) for the underground diesel tank. The FSOP replaces the previous Environmental Protection Plan (EPP) for the tank. Tank integrity testing and an analysis of the surrounding groundwater has been completed as required. The results confirm the absence of any leaks/contamination. A new digital monitoring system has been installed on the diesel tank to better account for fuel-in and fuel-out of the system. This will also assist in monitoring any fuel loss that could be attributed to tank leakage.

### **6.16.3 DCP**

Hazardous waste management at DCP is consistent with the standards practiced at Dendrobium Mine and Cordeaux Colliery. SDSs and substance evaluations are available electronically from ChemAlert. Waste oil is collected on site and transported to a recovery waste management service.

There are ten fixed radiation licences located in the DCP that contain low emission radioactive isotopes. The gauges are licenced and maintained as per the legal requirements. All gauges are housed in appropriate containers and are inspected and tested in accordance with legislative requirements.

## **6.17 Methane Ventilation**

### **6.17.1 Dendrobium Mine**

During the reporting period, the underground mine workings were ventilated by drawing fresh air into the mine (intake air) via the Dendrobium Mine Portal Tunnel, Kemira Valley Portal Tunnel, and air intake Shafts No.1 and 2. The ventilation air drawn through the mine was extracted via the No.3 Shaft Main Mine Ventilation Fans.

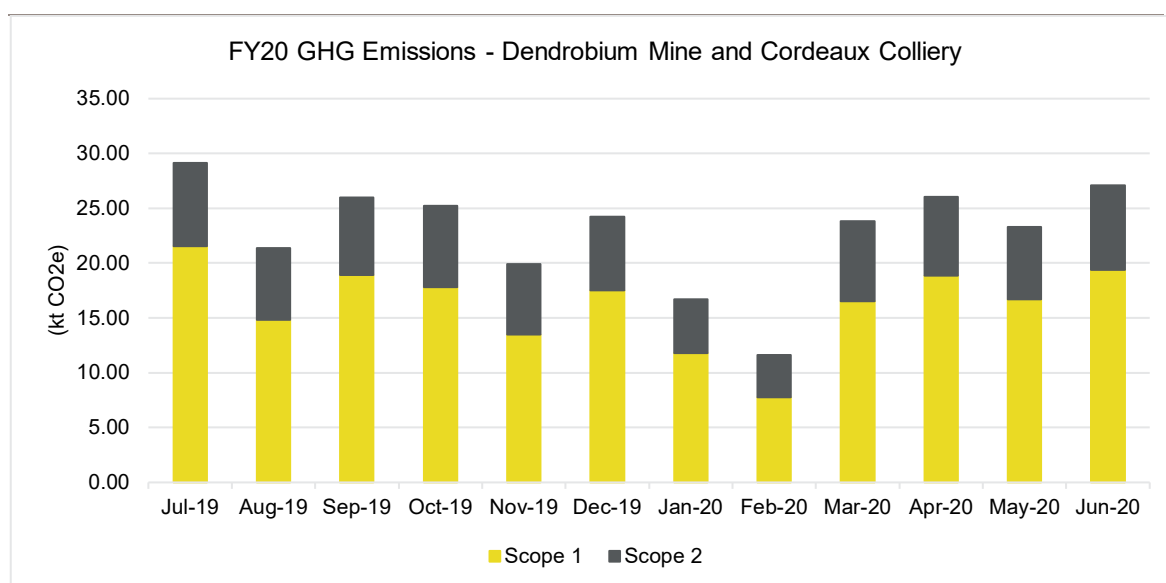
Three mine ventilation fans are installed at the No.3 Shaft site with two fans operating at any one time. Mine ventilation air was drawn through the mine at an average rate of 95 m<sup>3</sup>/s with the discharge air (mine vent air) having an average concentration of methane (CH<sub>4</sub>) of 0.07% and an average concentration of carbon dioxide (CO<sub>2</sub>) of 0.08%.



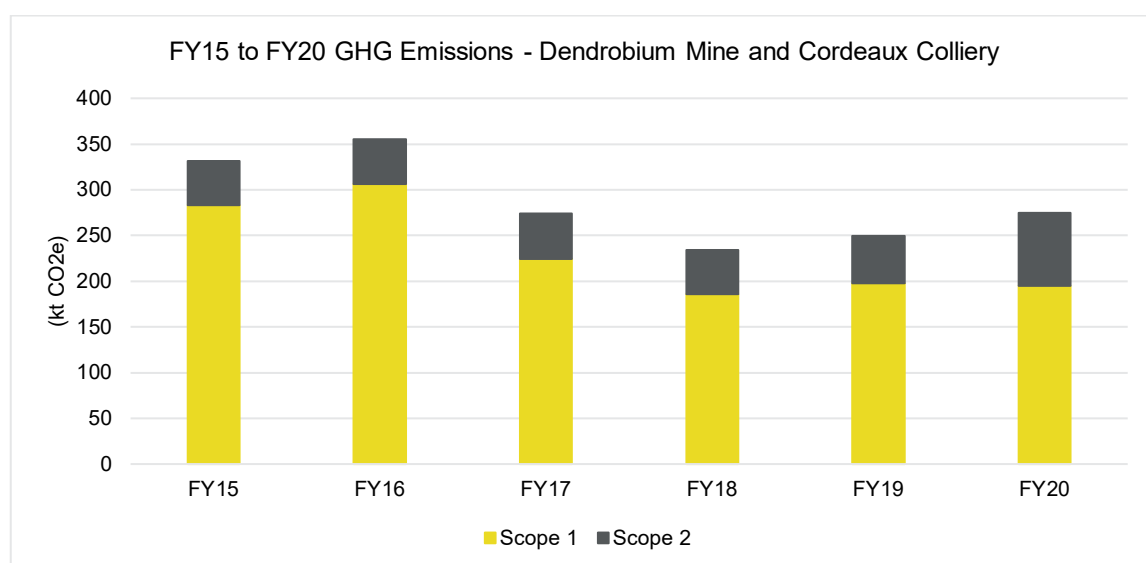
A summary of Scope 1 and Scope 2 greenhouse gas (GHG) emissions during the reporting period for Dendrobium and Cordeaux Colliery is contained in Table 25 and Figure 26. GHG emissions between FY15 and FY20 are shown in Figure 27.

**Table 25: FY20 GHG Emissions – Dendrobium Mine**

Pollutant	Units	FY20 Total
Scope 1 emissions	kt CO <sub>2e</sub>	195.15
Scope 2 emissions	kt CO <sub>2e</sub>	79.30



**Figure 26: Dendrobium Mine and Cordeaux Colliery GHG emissions for FY20**



**Figure 27: Dendrobium Mine and Cordeaux Colliery GHG emissions for FY15 to FY20**





### **6.17.2 Sand Stimulation Trial**

Exploration in parts of Area 3C has identified high levels of gas. A sand stimulation trial, which opens joints and cleats in the coal seam and creates paths for the migration of gas from the seam, occurred in FY20 to remove gas from the coal seam.

The sand stimulation trial will be ongoing in FY21 and aims to enable safe mining operations in Area 3C, subject to all necessary approvals being in place. The trial is incidental to the extraction of coal and permitted under the Consent. During the reporting period, gas management in the current mining domain (Area 3B) did not change, and gas liberated during mining currently continues to be extracted via the ventilation system.

### **6.17.3 Decarbonisation Strategies**

Currently there are no mine methane abatement technologies or opportunities available which are viable due to the low methane concentration of the mine vent air. IMC's primary focus for methane abatement is at Appin Mine as higher concentrations of methane are present.

IMC has set relatively aggressive greenhouse gas emission targets, with a short-term target of maintaining Scope 1 emissions at FY15 levels through to the end of FY21, and then to progressively reduce emissions, such that the business is carbon neutral by 2050. The goal of carbon neutrality by 2050 aligns South32 with the Paris Agreement, as well as the NSW aspirational target for 2050.

During FY19, IMC completed a concept level study that proposed a phased roadmap of projects with the aim of delivering the goal of carbon neutrality by 2050 through a combination of increased gas capture, treatment of ventilation air methane (VAM), and offsetting. During FY20, work towards delivering key projects associated with the roadmap to carbon neutrality began. This work has been in the areas of increasing longwall gas capture, projects to address emissions from legacy goaf areas, and work on the implementation of VAM treatment technology.

Study work relating to the introduction of VAM abatement technology was also begun during FY20. This work has focussed on four areas, representing different time frames that will be required to implement increasing greenhouse gas emission reductions associated with the decarbonisation roadmap. This involves:

- Recommissioning MEGTEC Vocsidizer at Appin North (the former 'WestVAMP' facility) – this will involve reconfiguration of the existing equipment to operate at lower methane concentrations in ventilation air or moving the existing equipment to a different shaft within IMC.
- Consideration of the feasibility of full scale VAM unit using existing commercial scale VAMMIT (CSIRO's VAM Mitigation Technology) equipment.
- Consideration of the feasibility of existing commercial scale Regenerative Thermal Oxidisers on new and existing IMC shafts.
- Engagement with prominent tertiary institutes regarding development of future VAM technology.

All study work relating to the introduction of VAM abatement technology has been placed on hold ahead of commencing pre-feasibility studies due to capital constraints.

### **6.17.4 Cordeaux Colliery**

Cordeaux Colliery had no methane drainage extraction plant to support its underground gas management activities. Following cessation of mining (the site is in care and maintenance), the emissions to the atmosphere via the main mine ventilation fans significantly decreased. The mine ventilation fans were shut down and the shafts temporarily sealed in December 2003.



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## **6.18 Public Safety**

### **6.18.1 *Public Safety around Operational Areas***

Public and workplace safety is a major consideration for IMC. Site safety risks and control mechanisms associated with the Dendrobium and Cordeaux operations are provided in Table 26.



**Table 26: Site Safety Risks and Control Mechanisms**

Potential Safety Risk	Control Mechanism
Safety on site	<p>The Dendrobium facilities and the Pit Top site has 24-hour surveillance of the front car park and entry areas. Fencing of the sediment ponds at both the Pit Top and Kemira Valley sites minimises the potential for injury to the public. Workers are required to undertake a site induction which outlines the accountabilities and responsibilities in regard to safety whilst working on site, which enables them to gain access to site via the swipe card system. Prior to visitors entering the Pit Top area they are required to contact the Illawarra Access Controller (IAC) at the turnstile or their site contact to gain access to the site. From this point the visitor is accompanied by their site contact. Once on-site additional safety information is shared via:</p> <ul style="list-style-type: none"> <li>• safety training and awareness sessions are held for all personnel working on site which allow for two-way communication between management and the workforce;</li> <li>• pre-shift safety discussions and Toolbox Talks;</li> <li>• posters, and TV screens presenting safety information located around the site;</li> <li>• periodic business updates including email and newsletter material distributed to workers; and</li> <li>• various meeting forums include safety as an agenda item in addition to a dedicated site HSE Committee meeting.</li> </ul> <p>Cordeaux Colliery Pit Top area is enclosed by a chain wire security fence around the perimeter of the site. The main site access gates are locked at all times so that IMC personnel are not in attendance. Visitors must contact the IAC or their site contact at the turnstile to gain access to the site. From this point the visitor is accompanied by their site contact. At risk infrastructure on site has been maintained to ensure no threat to the general public. The site is currently under care and maintenance. When closure of the site occurs (at a time not yet determined), the site will be left in a permanently safe condition to the satisfaction of relevant authorities. Remote sites (including Corrimal #3 shaft) have remained fenced and locked during this reporting period. There were additional site security upgrades completed in FY20 across IMC sites. This included boom gates and turnstiles which further restrict site access to authorised personnel only.</p>
Road Safety	<p>A Drivers' Code of Conduct is in place at Dendrobium to ensure appropriate driver behaviour by all those who drive through the village to the mine including employees, contractors and truck transports, as required by the Consent and Traffic Management Plan. The Code of Conduct is communicated to all employees and contractors during the site induction and copies are periodically distributed to major suppliers and transport companies. Compliance with the Code of Conduct is strictly enforced. Lane alignment and roadway markings have been upgraded at the Cordeaux Colliery entrance on Picton Road to provide for safer traffic movements when entering and exiting the site.</p>
Rail Safety	<p>Rail facilities are fenced, with the main sites patrolled on a regular basis by a contracted security firm. Signage and security cameras are in place. Site inspections are undertaken to maintain safety systems. Community announcements, newsletters and letter box drops are used to communicate relevant safety information to the public.</p>



### 6.18.2 Public Safety around mining areas

The current Dendrobium longwall mining activities are occurring within WaterNSW land. IMC has developed procedures for working around and accessing potentially unstable ground. The controls are outlined in the document “Working around rock falls, cliff lines and unstable areas” (ICAP0145). The controls currently in place are listed in Table 27.

**Table 27: Site Safety Risks and Control Mechanisms – WaterNSW land**

Potential Safety Risk	Control Mechanism
Rock falls	Signs installed around potentially unstable areas that may be impacted by mining. IMC employees and contractors working around potentially unstable areas (Site Induction, Emergency Response Training, 4WD training, active communications, sign-in and sign-out process).

## 6.19 Waste Management

### 6.19.1 Dendrobium Mine

#### 6.19.1.1 General Waste

General waste bins are transported from Dendrobium Pit Top to Cleanaway’s depot at Charcoal Place, Unanderra. The waste is then tipped onto a sorting pad and is directed into its correct waste stream for recycling or disposal. Dendrobium Mine’s main solid waste streams and volumes are listed in Table 28. The volume of waste recycled and disposed of, and the recycling efficiency for Dendrobium Pit Top is listed in Table 29.

**Table 28: Waste Streams and Total Volumes**

Waste Stream	Treatment / Disposal	Volume (tonnes)
Timber	Recycled off site	141.21
Cardboard and paper	Recycled off site	5.32
Steel and Scrap Metal	Recycled off site	243.32
Commingle	Recycled off site	5.00
General Waste (ResourceCo)	Recycled off site	689.42
Particulate (diesel) filters	Off-site treatment and disposal	191.00
General Waste	Landfill	73.59
Electronic waste	Recycled off site	0.026 <sup>8</sup>

<sup>8</sup> Recorded e-waste disposed at the ROC via the UOW e-waste bin. The e-waste is recycled by an external recycling vendor.





**Table 29: Recycling Efficiency for Reporting Period**

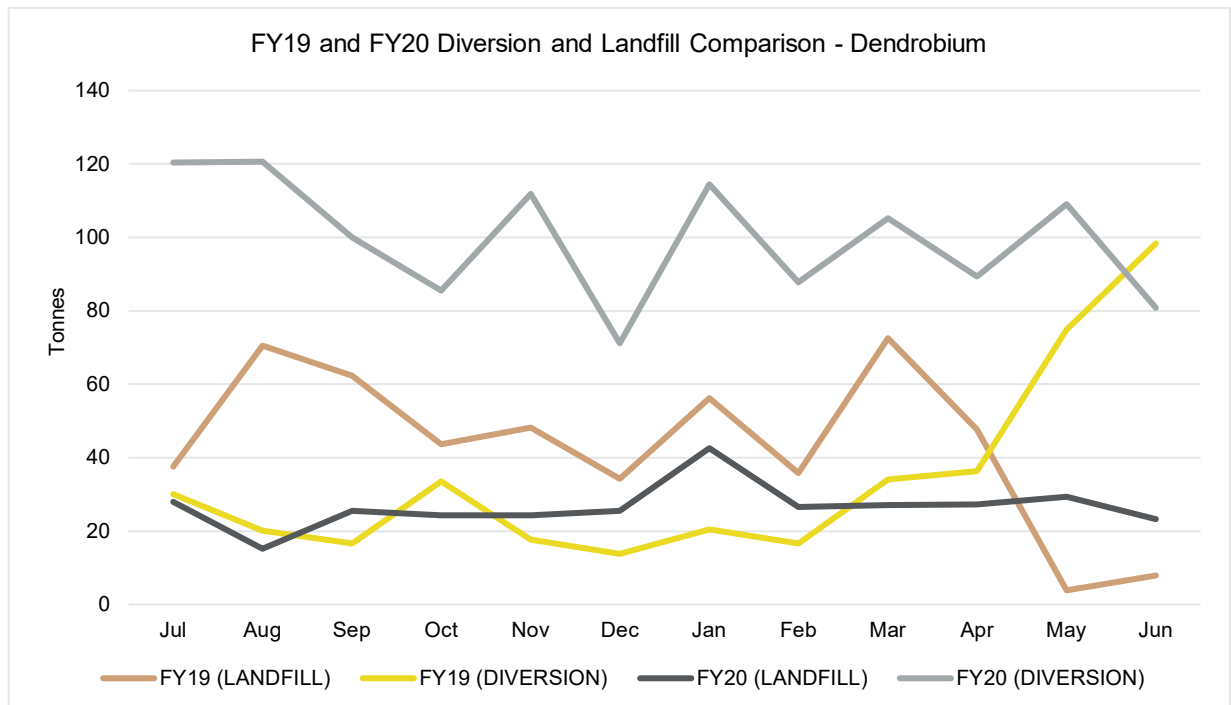
Total Recycled (tonnes)	Total Removed from Site (tonnes)	% Recycled
1,084.30	1,348.87	80%

#### 6.19.1.2 Waste Reduction and Recycling

In FY19, IMC and its main waste contractor began redirecting wastes from landfill in an attempt to reduce the waste footprint of IMC. A Cleanaway and ResourceCo joint venture Resource Recovery Facility, located in Wetherill Park, processes dry non-recyclable waste. Combustible materials are turned into Processed Engineered Fuel (PEF), diverting approximately 94% of waste material from landfill. The processed engineered fuels, Low Calorific Value (CV) and High CV, comply with the requirement of the Clean Energy Regulator under the Emissions Reduction Fund.

FY20 achieved better yields and higher volumes redirected to the recovery facility as segregation and acceptance standards are better understood and implemented on a site-based level.

Of the 1,348.87 tonnes of waste generated on site in FY20, 763.01 tonnes was general waste. From this 763.01 tonnes of general waste, 689.42 tonnes was diverted for recycling at ResourceCo and the remaining 73.59 tonnes was disposed as landfill. Redirecting this general waste to the recycling facility is an alternative end-of-life treatment and final disposal of products opportunity. Approximately 80% total waste was recycled off-site during the reporting period. Recent trends have shown an increase of recycling with a relative decrease in landfill (Figure 28).



**Figure 28: Recycled and landfill waste streams for FY19 and FY20**

#### 6.19.1.3 Oil and Grease Containment and Disposal

Oil and grease produced on-site is transported from the Pit Top for processing by a licenced contractor off-site. Oil sumps and traps are in place and are periodically inspected by site personnel



and emptied as required by a licenced contractor. Oil and grease volumes removed from site during the reporting period are included in Table 30.

**Table 30: Oil and Grease Volumes – Dendrobium Mine**

<b>Waste Stream</b>	<b>Volume (tonnes)</b>
Oil	45
Oily Water/Sludge/Grease	118.42
Hydraulic Oil	6.56

#### **6.19.1.4 Coal Wash Management**

During the reporting period, IMC diverted approximately 1.3 Mt of coal wash for beneficial uses (i.e. as an engineered fill in housing developments and Roads and Maritime Services (RMS) road infrastructure projects, for the development of arterial and agricultural roads, and under an Operational Purpose Deduction (OPD) to improve a stockpile design at WCCPP), with nearly 5 Mt diverted since 2009. IMC has a long-term agreement with Lend Lease at Calderwood, Western Earth Moving at Tullimbar, and with the RMS on the Albion Park Bypass project, that should continue to see a large volume of coal wash diverted for beneficial uses in FY21 and beyond. IMC has also developed a pipeline of major projects that will require engineered fill for the next five years.

IMC is continuing with its Coal Wash Road Base Project, which utilises coal wash with other recycled materials such as fly ash to produce a material suitable for a variety of applications. IMC has aligned itself with three universities (University of Wollongong, University of Sydney and University of Newcastle) and two other industry partners (RMS and Douglas Partners) and has been successful in securing an Australian Research Council (ARC) Linkage Project grant of \$590k to conduct research into the long-term performance of this material in roads and railways. The three-year project will be finalised by end of 2020.

IMC will continue to research, develop and implement alternative uses for coal wash in order to minimise the volume emplaced at the Appin Mine CWEA in future. IMC is currently supporting an Australian Coal Association Research Program (ACARP) funded project with the University of Wollongong and Commonwealth Scientific and Industrial Research Organisation (CSIRO), identifying opportunities to utilise coal wash in value added products (i.e. used for underground strata support or as a geopolymer binder in bricks and pavements).

IMC has previously conducted considerable work on the alternative uses of coal wash. Areas of research have included ongoing monitoring of potential contaminants from coal wash when it is used as landfill or emplacement material.

The economics, environmental and social factors of finding alternative uses for coal wash has changed. From initial discussions with users of coal wash and, in particular, fine tailings in previous and current trials, the major concerns and barriers to other potential uses include:

- Meeting the standards/legislation for the use of industrial wastes. In some cases, standards don't exist and there is a need to develop standards that will have widespread application.
- Testing of coal wash to ensure it is fit-for-purpose.
- Finding suitable low-cost economic binders and components for pasting and blending.
- Transport costs for moving coal wash to alternative processing sites.



Previous and current research carried out by the Faculty of Engineering and Information Science at the University of Wollongong, has delivered the below research projects:

- Brickmaking using coal wash - research in the 1990s, shown to be technically viable, but not economic at that time.
- Polymer linings for roadways - developed a strong understanding of the surface binding properties of coal wash and stone.
- Pasting trials at Peabody's Metropolitan mine to produce pillars, reducing the transport of fine coal wash over public roads with the inherent environmental issues.
- Pasting of Glencore's Liddell fine tailings to produce a cemented product that can be Dry Stacked in the mine void, potentially eliminating the need for future tailings dams, as well as reducing acid mine drainage and heavy metal leaching, so that the quality of groundwater is significantly improved.
- Producing manufactured soils by blending fine coal wash and green waste, carried out by SOILCO with technical support from the University of Wollongong and TAFE NSW Illawarra Institute.
- The Utilization of Washery Tailings: presentation to the Mining Engineers association of India, Ahmedabad, June 2017.
- A previous ARC project that blended fine coal wash with steelmaking BOS slag, to produce a "concrete", used successfully in extending the breakwaters at Port Kembla harbour.
- A current ARC project aimed at blending fine coal wash with bottom ash from power stations and bitumen, to produce a product suitable for road surfaces.
- Development of a novel hybrid fibre reinforced polymer tubular standing roof supports for longwall mining, which can use unscreened coal wash as a component of the fill material.

IMC will continue to be involved in research, the development of, and implementation of alternative uses for coal wash in order to minimise the volume emplaced at the CWEA in future.

IMC have also developed a trial for a new coal product destined for Vietnam that is a blend of high ash coal product constituted of coal wash that has been subjected to additional processing and Illawarra High Ash Coking Coal which is commonly referred to as Illawarra Energy Coal.

Two trial shipments totalling 119,000 tonnes have been exported and further shipments are planned pending the successful trial of this new coal product. There is potential for the development of a continuing new market for the new blended product of coal wash and Illawarra Energy Coal.

#### **6.19.2 Ventilation Shafts 1, 2 and 3**

During the reporting period, any waste generated at the Ventilation Shaft 2/3 site was taken off site and disposed of through the Dendrobium Mine processes. No activities are undertaken at Ventilation Shaft 1 and therefore there was no waste generated.

#### **6.19.3 DCP**

Waste at the DCP is managed under the BlueScope Steel contract with Veolia Waste Management.



#### **6.19.4 Cordeaux Colliery**

##### **6.19.4.1 General Waste**

General waste produced at Cordeaux Colliery was negligible throughout the reporting period as the site is on care and maintenance and the waste generated is predominantly from personnel utilising offices on site. Periodically, Cleanaway Waste Management Services attend site to remove general waste from the bins. The amount of waste from Cordeaux Colliery is shown in Table 31. Waste such as cardboard, paper and batteries are set aside for recycling or reuse. As the site has been on care and maintenance since 2001, the volume of waste generated has been consistent over this period.

**Table 31: General Waste Volumes for Reporting Period – Cordeaux Colliery**

<b>Waste Stream</b>	<b>Treatment / Disposal</b>	<b>Volume (tonnes)</b>
Commingle	Recycled off site	2.34
General Waste	Landfill	22.7
Oily Water/Sludge	Treated off site	0
Timber	Recycled off site	3.66
Steel	Recycled off site	0

##### **6.19.4.2 Sewage Treatment / Disposal**

All sewage effluent is contained on site. The sewage is transported off site by a licenced contractor for treatment and disposal.

##### **6.19.4.3 Oil and Grease Containment and Disposal**

No bulk oils or greases are stored on site. Oil sumps and traps remain in place and are periodically inspected by site personnel and emptied as required by a licenced contractor.

## **7. WATER MANAGEMENT**

### **7.1 Groundwater**

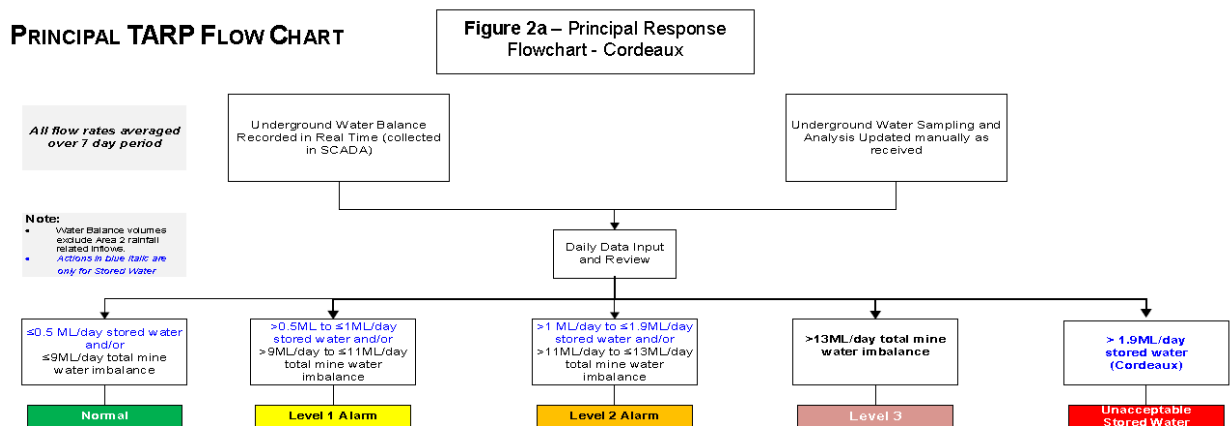
#### **7.1.1 *Dendrobium Mine***

The Dendrobium groundwater monitoring program was undertaken during the reporting period as defined in the approved Water Management Plan and Groundwater Monitoring Plan. The purpose of the program is to analyse the water quality and quantity within the mine and mining area to satisfy health, safety and environmental aspects of the Consent and South32 Policies and Standards. The Plans were developed in consultation with Dam Safety NSW (DS NSW), Department of Planning and Environment (now DPIE), WaterNSW, and the Department of Resources and Energy (now Resources Regulator).

Monthly water sampling is performed underground with samples analysed on-site and at NATA accredited laboratories. Mine water usage, water flows and volumes within the mine are analysed and reported regularly (i.e. on a monthly basis). Surface and underground vibrating wire piezometers are utilised to monitor groundwater response to mining. Monthly reports are prepared and submitted to DS NSW, WaterNSW and DPIE summarising water quality and the water balance at Dendrobium. During the reporting period, Dendrobium operated under a Principal TARP as outlined in the “Avon

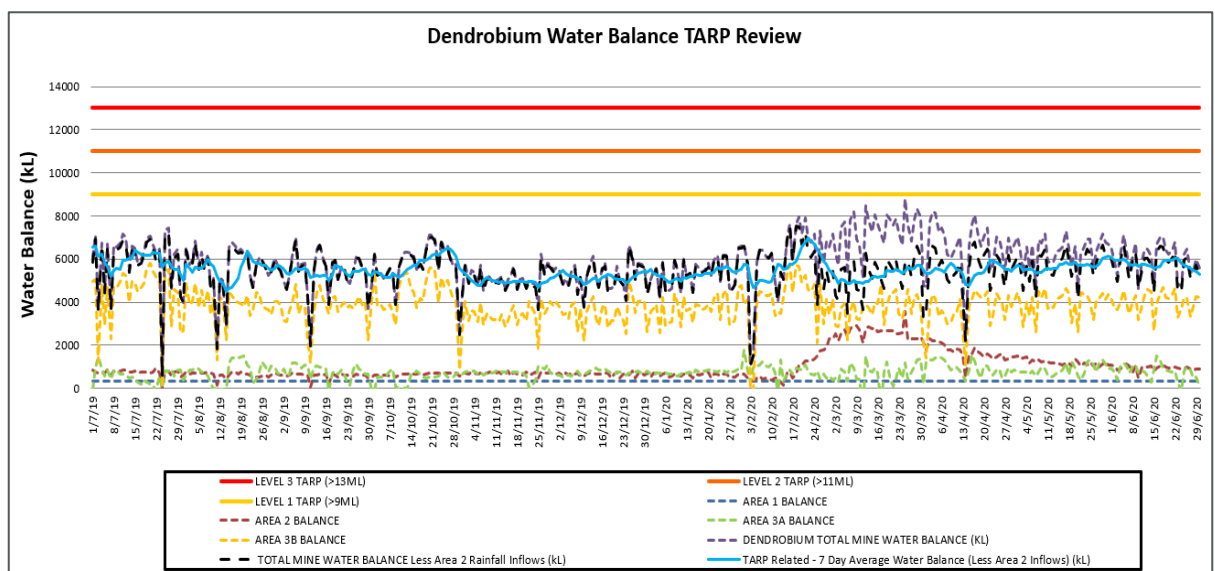


and Cordeaux Reservoir DS NSW Notification Area Management Plan". During this period the mine operated at 'Normal' in the Principal Response Flowchart (Figure 29).



**Figure 29: Principal Response Flowchart in "Cordeaux Reservoir DS NSW Notification Area Management Plan".**

A summary of the mine water balance for the reporting period is provided in Figure 30.



**Figure 30: Dendrobium Mine Water Balance**

The groundwater reporting to the mine workings during normal conditions is characteristic of coal measure water. This water is higher in salinity and age based on water chemistry and isotope analysis. Water samples from inflow events have been typical of near seam coal and shale water. Geochemistry, and isotope analysis is conducted monthly to determine probabilistic proportions of any modern rain or dam water entering the workings. Fluctuations in the water balance were as a result of rainfall events. The water balance for the reporting period is shown in Table 32.



**Table 32: Water Balance Statistics for the reporting period**

<b>Statistic</b>	<b>Total Water Balance</b>	<b>7 Day average Water Balance Less Area 2 Inflows (TARP related)</b>	<b>Units</b>
Mean	5886.8	5484.0	kL/day
Maximum	8815.2	6948.3	kL/day
Minimum	497.0	4492.4	kL/day
Total	2154586.1	2007149.3	kL

Mining of Longwall 15 resulted in continued depressurisation of the target coal seam and overlying strata. The observed changes in groundwater levels are in line with (or less than) numerical model predictions that support mining approvals.

As expected, the greatest depressurisation is within the Wongawilli Coal Seam, and decreases with height above the seam. Incremental drawdown in the Scarborough, Bulgo and Hawkesbury Sandstones is also apparent.

Observations at monitoring bores installed above mined longwalls indicate that the Hawkesbury Sandstone undergoes fracturing to the ground surface, accompanied by depressurisation of most shallow strata. There is evidence that drainage of the Hawkesbury Sandstone above goafs is not complete in all areas and some perched groundwater horizons remain.

Between 2015 and 2020, a series of monitoring bores were installed along the barrier zone between Lake Avon reservoir and Area 3B. Observations at those bores indicate depressurisation of the upper Colo Vale Sandstone in response to longwall extraction, and variable drawdown in the Hawkesbury Sandstone. A hydraulic gradient towards the lake is preserved in the Hawkesbury Sandstone at S2313, whereas at S2314 and S2376 the hydraulic gradient is locally reversed towards the mine, implying movement of groundwater from the lake toward the mine.

The HGEO local seepage model (HGEO 2020) was updated to reflect the observations at the post-mining bore hole S2378C at location AD4 and S2436D at AD8. Each of the ten model layers were updated by interpolating the permeability at corresponding depths in each test bore.

The current model update assesses the seepage rate from the shoreline adjacent to Longwall 12 to Longwall 16, utilising data from holes S2378C and S2436D which are adjacent to Longwall 16. The average seepage rate for the 1.55 km of shoreline adjacent to Longwalls 12-16 is 0.33 ML/day/km.

When extrapolated over the length of shoreline adjacent to Area 3B:

- Adjacent to Longwalls 12-17 (1.93 km), the total seepage rate is 0.64 ML/day.
- Adjacent to Longwalls 12-18 (2.5 km), the total seepage rate is 0.83 ML/day.

The estimated seepage rate of 0.33 ML/day/km is slightly less than the previously reported rate of 0.37 ML/day/km, despite the high permeability measured in the shallow strata at site AD8. This is largely due to the relatively low permeability observed in bores near the longwalls (e.g. AD3, AD4) and small variations in repeated packer tests. The modelled flux is within the 1ML/day tolerable limit set by Dams Safety NSW.



### **7.1.2 Cordeaux Colliery**

A total of 0.701 ML was pumped from the surface to Cordeaux underground workings during the reporting period. This was down from the previous reporting period (3.280 ML). The decrease was caused by less frequent rainfall in FY20, resulting in irregular flow to Cordeaux underground workings when compared to the previous reporting period which experienced more frequent rainfall.

## **7.2 Surface Water**

### **7.2.1 Dendrobium Mine**

Underground and surface operations at Dendrobium utilise a combination of potable and recycled mine water.

#### **7.2.1.1 Potable Water use**

Potable mains water (supplied by Sydney Water), is currently used for the longwall hydraulic roof supports (emulsions used underground require high quality water for batching) and surface amenities such as the kitchen and bathhouse facilities. Potable water is also used for fire suppression sprays installed in FY20, which are connected to the fire tank. Potable water usage for the reporting period was 14.90 ML, which is a decrease compared to the previous reporting period.

#### **7.2.1.2 Recycled Water use**

Recycled water is sourced from the Nebo Workings and used for various purposes on the surface and for underground operations. These include:

- Surface Operations:
  - Dust suppression along the Portal Road.
  - Cleaning of vehicles and equipment in the wash down bay.
  - General hose down.
  - Cleaning and firefighting.
- Underground Operations:
  - Secondary support activities.
  - Development and production units.
  - Dust suppression and firefighting supply.

#### **7.2.1.3 Surface Water Management**

Surface water runoff is separated into three streams at the Pit Top site. The three runoff streams include:

- Clean water – This system collects runoff originating from the surrounding undisturbed land on the upstream (western) side of the site. This water is piped via sealed drains through the site into American Creek.
- Oily Water – This system captures potentially contaminated water runoff from the workshop area and diesel fuel dispensing area. This is diverted into the oily water separator and then into the grey water treatment plant. Treated water is then pumped into the old Nebo Mine workings.
- Dirty Water – This system captures general site runoff from site roads and the car park. This runoff is directed into the Pit Top sediment pond via a series of drains and pits that are cleaned out on a regular basis using an industrial vacuum truck. Settled water is pumped from the



sediment pond into the grey water treatment plant based on pond level. The treated water is then pumped into the old Nebo Mine Workings.

At the Kemira Valley site, surface water is separated into two streams, which include:

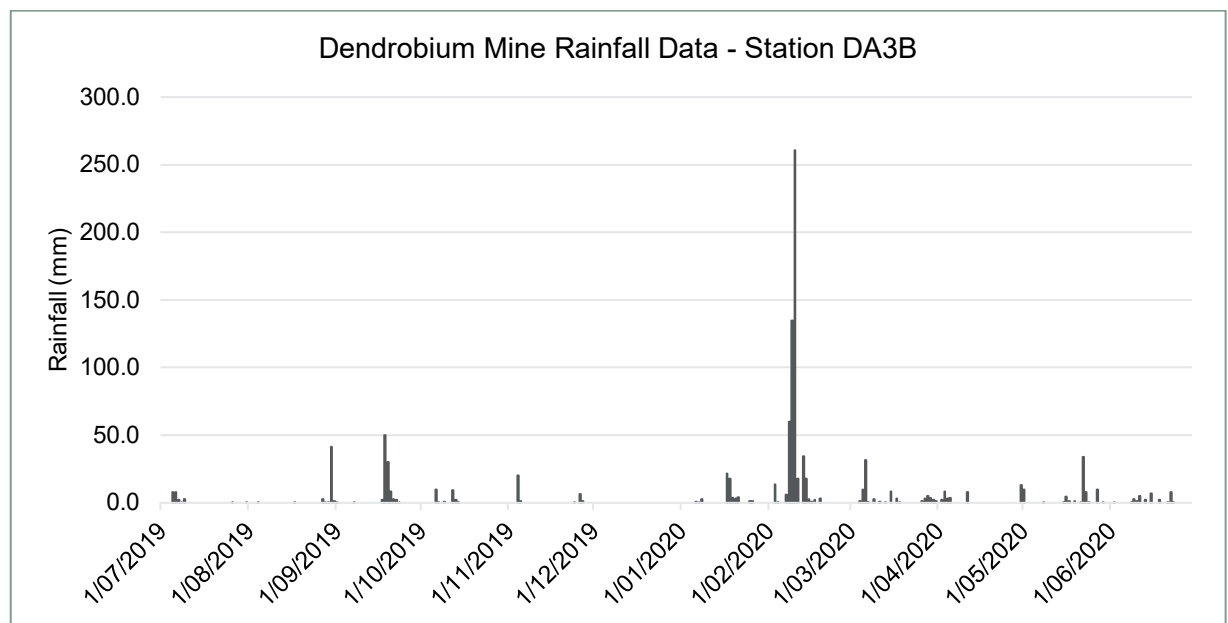
- **Clean Water** – This system captures clean runoff originating from the upstream side of the site. The runoff is diverted around the western side of the site and through a culvert beneath the rail line and into Brandy and Water Creek.
- **Dirty Water** – This system captures all site runoff from the roads and stockpile area. The runoff is treated and reused in the site dust suppression system and/or the firefighting system. If there is excess water in the sediment ponds, water may be disposed via the mine water discharge pipeline into Allans Creek via LDP 5.

The Pit Top Sediment Pond and Kemira Valley Sediment Ponds are managed in accordance with the Water Management Plan.

Runoff from the Corrimal shaft sites and O'Brien's drift is classified as clean storm water runoff therefore runoff is diverted into the natural drainage systems.

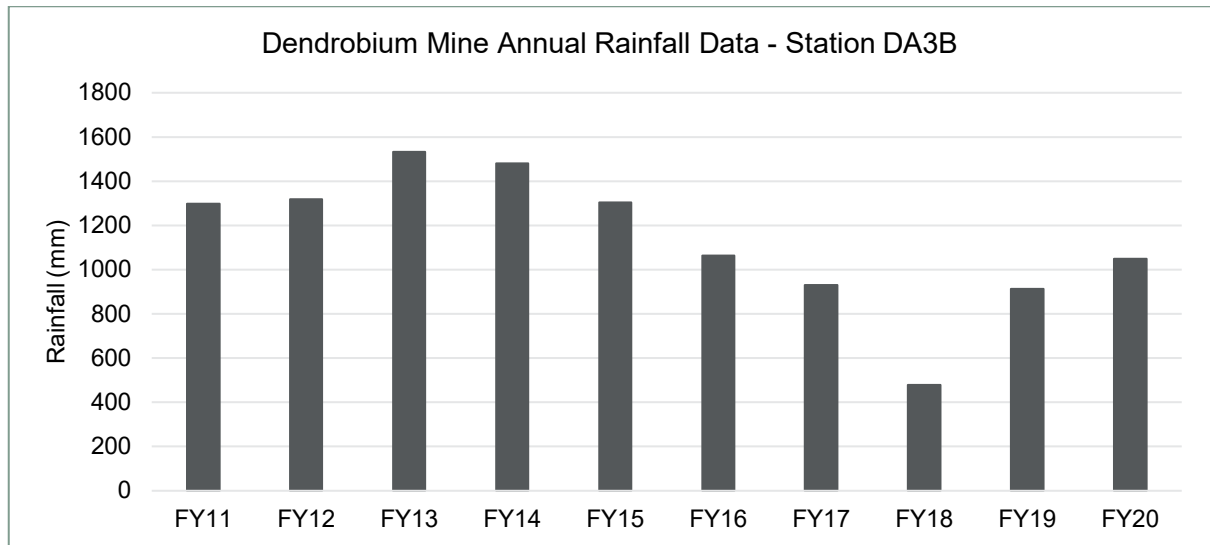
#### 7.2.1.4 **Rainfall**

Dendrobium rainfall recorded during the reporting period was 1048 mm, an increase when compared to the previous reporting period in which 914 mm rainfall was recorded. Annual rainfall for weather station DA3B located within the Dendrobium Mining Area is displayed in Figure 31. Rainfall data for FY11 to FY20 is displayed in Figure 32.



**Figure 31: Dendrobium rainfall data for FY20**





**Figure 32: Annual rainfall data for Dendrobium - FY11 to FY20**

## 7.2.2 Cordeaux Colliery

### 7.2.2.1 Water Supply and Use

Potable water use at Cordeaux Colliery is generally for personal consumption, showering and toilet facilities. Potable water is brought to site by road tanker as required. During the reporting period the potable water used by site was 0.22 ML.

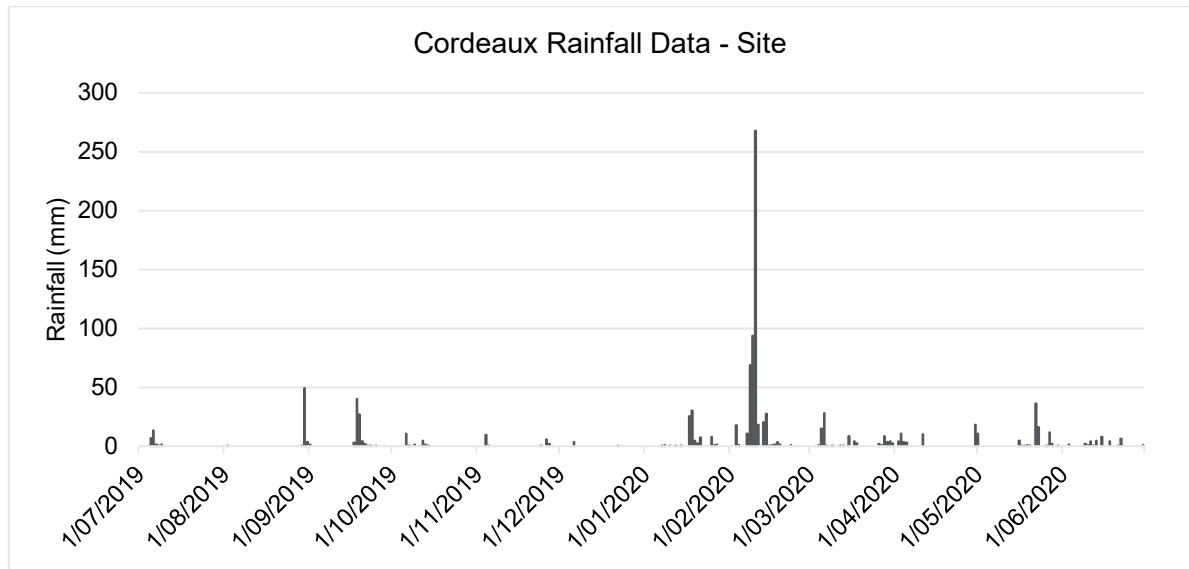
### 7.2.2.2 Surface Water Management

The surface facilities at Cordeaux Colliery have been designed to prevent dirty water run-off from the site entering WaterNSW land. The design ensures effective treatment of run-off from potentially dirty areas such as the coal bins, workshop area and machinery hard-stand areas. Drainage from these areas is still directed to a dirty water holding lagoon. The clean and dirty water surface drainage circuits of the site remain in place.

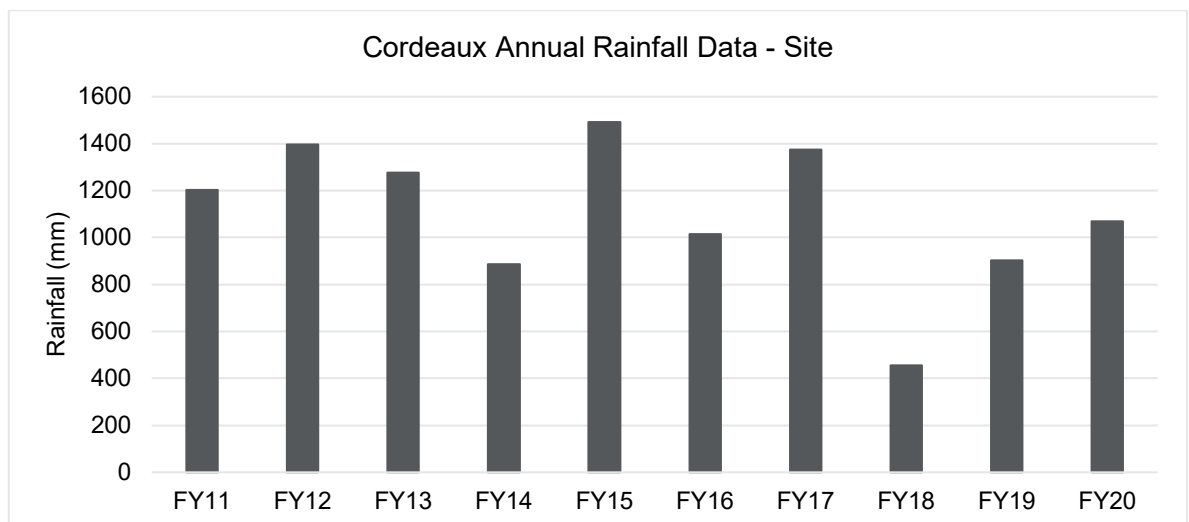
As the site is on care and maintenance, the amount of dirty water generated from the surface areas has significantly reduced. Water from hardstand areas is captured in the dirty water lagoon then transferred by pump to the upper level mine water holding lagoons for settlement. The water is then transferred to underground mine workings via a gravity fed pipeline. This arrangement negates any surface discharge. The water returned to the mine is essentially of good quality, containing no contaminants. Details of the monitoring and pumping volumes are provided in Section 7.1 of this report.

### 7.2.2.3 Rainfall

Rainfall for the Cordeaux surface facilities is recorded on a daily basis from a rainfall gauge located at Cordeaux Mine. The Cordeaux site received a total of 1069.5 mm of rainfall during the reporting period, which was an increase from the previous reporting period (904 mm). Annual rainfall for the rain gauge located at Cordeaux Colliery is displayed in Figure 33. Figure 34 shows the total recorded rainfall for past reporting periods.



**Figure 33: Cordeaux FY20 rainfall - site rain gauge**



**Figure 34: Cordeaux annual rainfall - site rain gauge**

### 7.2.3 Ventilation Shafts 1, 2 and 3

No water usage occurs on the Ventilation Shaft 1 or Ventilation Shaft 2/3 site. Due to their location within WaterNSW Special Areas, the surface facilities at the Ventilation shafts have been designed to control sediment entering the surrounding WaterNSW land by capturing stormwater from disturbed areas and directing this water to sediment ponds. Rehabilitation of disturbed areas has been undertaken.

### 7.2.4 DCP

Water produced from the DCP is managed through the BlueScope Steel EPL. IMC advises BlueScope Steel if discharges of water from the DCP occur.



### 7.3 Water Licences

Dendrobium Mine has a Water Supply Works Approval and four water access licences. Water take at Dendrobium Mine for FY20 is shown in Table 33.

Note: 1 unit = 1 ML.

**Table 33: Water Take – Dendrobium Mine**

<b>Water Licence No.</b>	<b>Water Sharing Plan, Source and Management Zone</b>	<b>Entitlement (units)</b>	<b>Total (ML)</b>
10AL118771	Greater Metropolitan Region Groundwater Sources Sydney Basin South Groundwater Source Nepean Management Zone 3	75	48.72
10AL119249	Greater Metropolitan Region Groundwater Sources Sydney Basin South Groundwater Source Nepean Management Zone 2	3962	1920.31
10AL123125	Greater Metropolitan Region Groundwater Sources Sydney Basin Nepean Groundwater Source Nepean Management Zone 2	3653	0 <sup>9</sup>
10AL123124	Greater Metropolitan Region Groundwater Sources Sydney Basin Nepean Groundwater Source Nepean Management Zone 2	1840	0

No compensatory water was supplied to other users during the reporting period.

<sup>9</sup> New licences for DND for 10AL123125 and 10AL123124



## 8. REHABILITATION

### 8.1 Rehabilitation for the Reporting Period

#### 8.1.1 Dendrobium Mine

The rehabilitation security cost estimate for the Dendrobium operations was reviewed during the reporting period. No major changes to the existing security estimate were identified. A copy of the latest security cost estimate is provided as Appendix B. A rehabilitation summary associated with the Dendrobium operation is provided in Table 34.

Due to the 25-year life of mine expectancy, there is currently no plan to rehabilitate current infrastructure relating to Dendrobium Mine Site.

Table 34: Dendrobium Mine and Cordeaux Colliery Rehabilitation Summary					
Location	Area Affected/Rehabilitation (ha)				Reason for Variation
	To date	FY19	FY20	FY21 <sup>10</sup>	
A: Total Mine Footprint	18,816	18,816	18,816	18,816	N/A
B: Total Active Disturbance	29.46	29.46	29.46	29.46	N/A
C: Land being prepared for rehabilitation	0	0	0	0	N/A
D: Land under active rehabilitation	0	0	0	0	N/A
E: Completed rehabilitated area (Areas previously completed, currently include Corrimal No. 1 and 2 Shafts, <sup>11</sup> Ventilation Shaft 2/3, <sup>12</sup> Dendrobium Subsidence Event, <sup>13</sup> Bradford Breaker <sup>14</sup> , and Stage 2 Pathway <sup>15</sup> ).	7.97	7.97	7.97	7.97	N/A

The integrity of sediment and erosion control structures is regularly inspected. Adequate sediment control structures are in place to reduce the risk of off-site contamination. A clean water diversion channel has been constructed to divert clean water around the site, and drainage channels have been established within the site to divert seepage around infrastructure areas.

Weed species in the Ventilation Shaft 1 and 2/3 areas remain at very low densities and are generally located in disturbed areas or highly trafficked such as roadways. Inspections will continue to monitor the presence of weed species.

<sup>10</sup> Estimate.

<sup>11</sup> Corrimal No. 1 and 2 Shaft sites have been decommissioned.

<sup>12</sup> Vent Shaft 2/3 site is currently active. Temporary rehabilitation has been successfully established at the site.

<sup>13</sup> Rehabilitation works were completed in response to identified impacts in November 2013.

<sup>14</sup> Rehabilitation has been undertaken at the Bradford Breaker site however some additional works may be required.

<sup>15</sup> Dendrobium Coal Pty Ltd no longer owns land between Stones Road and Benjamin Road, Mount Kembla. As part of Stage 2 of the pathway project this land was sold, subsequent to a 4 Lot Subdivision or transferred to neighbours through boundary adjustments.



The agreed post rehabilitation land use is native bushland. Further rehabilitation will be undertaken at mine closure following decommissioning of site infrastructure.

No site buildings were renovated or removed during the reporting period

#### **8.1.1.1 Mining Operations Plan**

The following Mining Operations Plan amendments were submitted to the Department of Planning, Industry and Environment, Resources Regulator in FY20:

- Addendum to Mining Operation Plan, Dendrobium Mine and Cordeaux Colliery, 6-19, 6-10, 6-20 and 6-15 Powerline and Substation Rehabilitation (Approved 19 August 2020).
  - Appendix A - Location Plans.
  - Appendix B - Summary of Power poles.
  - Appendix C - Heritage Assessment of the 6-19 Powerline Greenhills to Wongawilli.
  - Appendix D - Aboriginal Heritage Due Diligence Assessment.
  - Appendix E - Heritage Assessment of the 6-20, 6-10 and 6-15 Powerline.
  - Appendix F - 6-19 Hazmat Report.
- Addendum to Mining Operation Plan, Dendrobium Mine and Cordeaux Colliery, Area 3C and Area 5 Surface Exploration 2019 (undated, received 30 September 2019).
- Addendum to Mining Operation Plan, Dendrobium Mine and Cordeaux Colliery, Area 5 Surface Exploration 2020 (Approved 24 July 2020).
- Addendum to Mining Operation Plan, Dendrobium Mine and Cordeaux Colliery, 6-67 Powerline Rehabilitation (Approved 24 July 2020).
  - Appendix A - Location Plans.
  - Appendix B - Historical Heritage Constraints Assessment.
  - Appendix C - Due Diligence Assessment, NSW Minerals Industry Code of Practice for the Protection of Aboriginal Objects, Removal of 6-67 Power poles from Dombarton/Wongawilli.

As reported in FY19, the Mining Operations Plan (MOP) was planned to be converted to a Rehabilitation Management Plan (RMP) in FY20. The Appin Mine MOP was converted to an RMP in FY20. Conversion of the Dendrobium MOP is planned for FY21, pending the release of the RMP Guideline by the Resources Regulator.

#### **8.1.1.2 Further Development of the Final Rehabilitation Plan**

A Landscape Management Plan has been developed to meet the requirements of the Consent. This document outlines rehabilitation and closure requirements for the sites associated with Dendrobium Mine. As referenced in the Landscape Management Plan, the Dendrobium Mine Conceptual Closure Plan has been developed in line with regulatory and internal South32 requirements. The Conceptual Closure Plan document outlines areas that are required to be rehabilitated after the closure of the mine. A review of the Dendrobium Mine Conceptual Closure Plan was undertaken in FY20 and will continue into FY21.

#### **8.1.1.3 Legacy Sites and Rehabilitation Program**

The Legacy Sites and Rehabilitation Program in the reporting period consisted of the following projects that had physical work undertaken and completed:

- Demolition and rehabilitation of three redundant switchyards including Summit Park – Mt Keira, O'Brien's Gap, and the O'Brien's Drift switchyard.
- Demolition and rehabilitation of powerline circuits within residential areas including:
  - Greenhills substation, Figtree.



- 6-19 Circuit from Figtree to Wongawilli.
- 6-20 Circuit from Figtree to Mount Kembla (Dendrobium).
- 6-10/15 Circuit from BlueScope Steel to Figtree.

Electricity for Dendrobium Mine is currently supplied by Endeavour Energy with point of connection opposite the entry to the mine. The former 33KV powerline that was fed from BlueScope Steel has been demolished and rehabilitated by the Legacy Sites and Rehabilitation Program.

The following activities are planned for FY21:

- Completion reporting on projects undertaken during the FY20 period.
- Site investigations and planning approvals for the rehabilitation of the O'Brien's Gap Pumphouse will be progressed, including negotiating a development approval with Council to undertake this work.
- Demolition and rehabilitation of a section of the 6-67 powerline circuit (Wongawilli to Wongawilli Air Shaft) that is within rural residential areas.

#### **8.1.1.4 Exploration**

Disturbance associated with exploration activities is progressively rehabilitated following completion of the activity.

#### **8.1.2 *Cordeaux Colliery***

No rehabilitation was undertaken at the Cordeaux Colliery Pit Top site during the reporting period.

Cordeaux is to remain on Care and Maintenance in the immediate future, until longer-term options can be fully developed and approved.

Rehabilitation works have been previously undertaken and completed at Corrimal No. 1 and 2 Shaft sites, Cataract Weir Pump Facility, Cordeaux Re-injection Borehole, and Wilton Spray Irrigation site. These have been decommissioned and rehabilitated to the relevant guidelines.

The electrical substation on the Corrimal No. 3 site remains active. See Section 6.4.3 for more information on the Corrimal No 3 Shaft rehabilitation.

### **8.2 Biodiversity Offsets**

#### **8.2.1 *Maddens Plains***

IMC provided an offset for mining impacts from the Dendrobium Coal Mine and Bulli Seam Operations Project through the conservation of a 598-hectare site at Maddens Plains near Helensburgh.

The area of land met the offset requirements for any impacts on:

- The upland swamps at the Dendrobium Coal Mine.
- The vegetation communities at the Bulli Seam Operations Project.

The land also had additional offsetting values as it would:

- Secure land with significant ecological value in perpetuity within the National Park estate.
- Improve habitat corridors between the Illawarra Escarpment State Conservation Area, the Dharawal Nature Reserve and the WaterNSW Special Areas.

In April 2015, the Dendrobium Mine Development Consent was modified by adding Condition 15 of Schedule 2 to enable the provision of Strategic Biodiversity Offsets (SBO), whereby IMC could



provide land that has conservation values which exceed the conservation values required to meet relevant offsetting requirements prescribed in a condition of an approval, and that the excess conservation values could be relied upon to meet future offsetting requirements under the Consent and the Bulli Seam Operations Project Approval (08\_0150).

A Biodiversity Offset Strategy was required in accordance with Condition 6 of the Dendrobium Mine Area 3B SMP approval, which was granted by the Director - General of the Department of Planning and Infrastructure on 6 February 2013. IMC has provided SBO to satisfy offsetting requirements under DA 60-03-2001 (and subordinate approvals granted under this consent) by transferring Maddens Plains to the NSW Government to transfer the land to the National Parks Estate.

The ownership of Maddens Plains was transferred from IMC to NSW National Parks and Wildlife Service in 2018.

Since the lodgement of the Dendrobium Extension Project EIS, IMC has secured an additional landholding, which will be established as a Stewardship site to address biodiversity offset requirements for the Project.

The Offset Property is located north-east of the Project underground mining area and is bordered by the Dharawal Reserves, which include the Dharawal Nature Reserve and Dharawal National Park (Figure 35). Preliminary habitat assessment has determined that the Offset Property is comprised of a majority of Upland Swamp TEC (totalling 51.3 ha).

IMC will prepare a Biodiversity Stewardship Site Management Plan specific to the offset property. The Biodiversity Stewardship Site Management Plan would detail a number of management and remediation measures that would be implemented to improve the quality of vegetation and species habitat that the offset property provides.

IMC would continue to consult with DPIE-BCD and the DoEE as available credits at the offset property are refined, to confirm how the offset property contributes to addressing both the NSW and Commonwealth offset liability.





**Figure 35: Location of Biodiversity Offset Property**

Reference: Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Submissions Report (2020)





## 9. COMMUNITY

### 9.1 Community Complaints

#### 9.1.1 *Dendrobium Mine*

IMC operates a 24hr Community Call Line (free call 1800 102 210) and a general email address [illawarracommunity@south32.net](mailto:illawarracommunity@south32.net). The call line and email address enable the community to request and provide feedback about operational activities and lodge complaints on any aspect of the Dendrobium operations. The call line number and email address have been advertised throughout the reporting period in all correspondence distributed to the community.

A complaint received by IMC in whatever format will be investigated and resolved by the Community Team. The appropriate team member will investigate the complaint and seek assistance from the relevant site or operational personnel. Where required, additional details will be sought from the complainant where there is insufficient information for investigation.

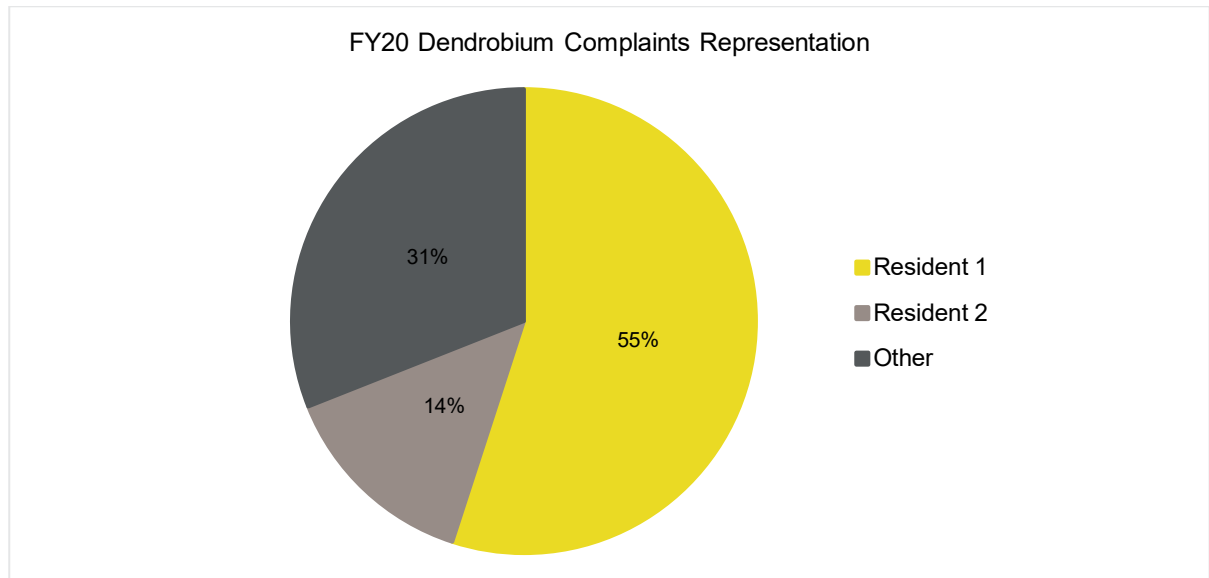
Community complaints must be responded to within 24 hours of the complaint being received. (Note: this timeframe relates to contact with the complainant, not resolution/investigation of the matter). Some complaints require ongoing investigation and remedial action to address the nature of the complaint.

Complaint information is provided publicly on the South32 Regulatory page, and to the DCCC, IMC management, and government agencies on a regular basis.

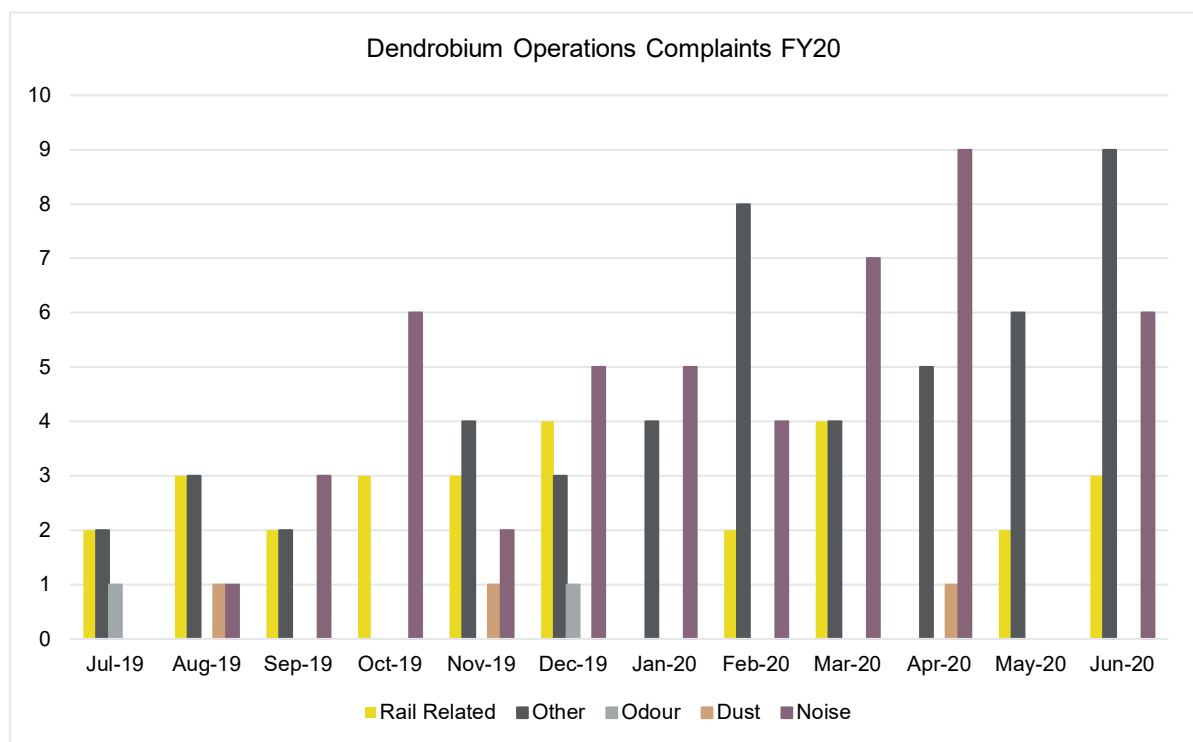
A total of 131 community complaints were received during the reporting period (compared to 44 received in FY19). As shown in Figure 36, the majority of complaints made during the reporting period were from two residents. Complaints made, and the resolutions to these complaints, are reported each month on the South32 Regulatory website. A summary of the complaints recorded is provided in Appendix D: Community Complaints Report. Figure 37 displays the complaints for the reporting period. Figure 38 shows the complaints received since FY17.

As discussed in Section 6.8, the RNWG has undertaken numerous rail trials and noise monitoring campaigns to identify noise sources and minimise the rail noise generated in the local area.

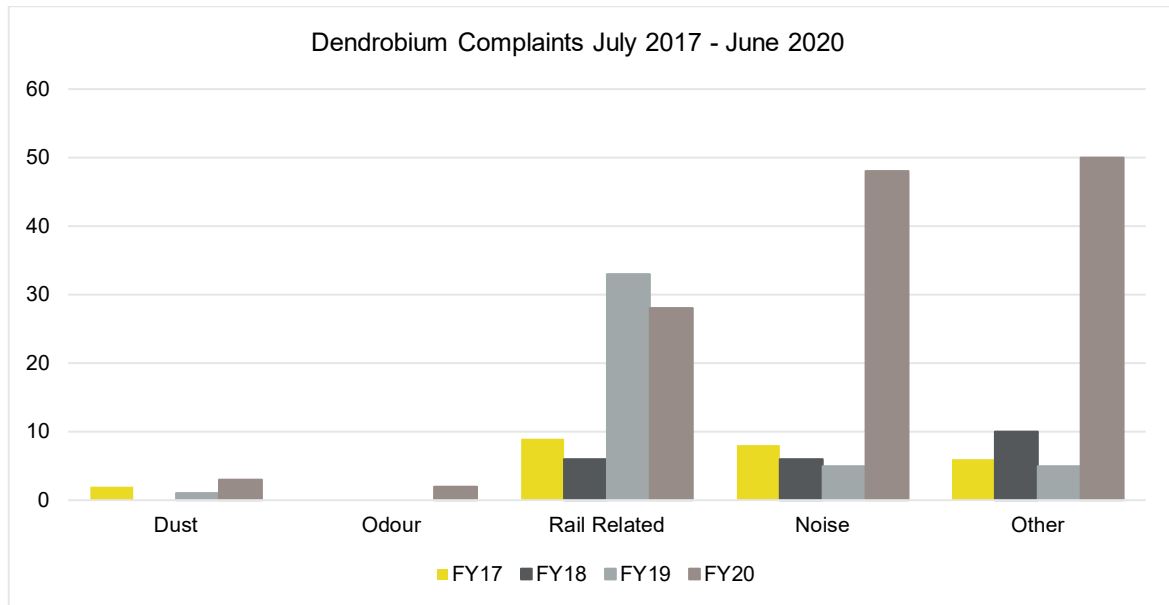
Additional noise investigations have been undertaken during this reporting period to identify feasible initiatives to further reduce noise emissions from the rail line and pit top to minimise the likelihood of community complaints. An overview of the identified initiatives is provided in Section 6.8.



**Figure 36: Contributors of complaints received FY20**



**Figure 37: Dendrobium Community Complaints FY20**



**Figure 38: Dendrobium Community Complaints FY17 – FY20**

### 9.1.2 Cordeaux Colliery

There were no community complaints for Cordeaux Colliery received during the reporting period.

## 9.2 Community Liaison

### 9.2.1 Dendrobium Mine

#### 9.2.1.1 Community Consultation

Due to the location of the Dendrobium Pit Top facilities and Kemira Valley Coal Loading Facility, it is essential that frequent and effective communication occurs between the mine personnel and the residents of Mount Kembla and surrounding areas. IMC takes a proactive approach to community consultation by advising residents of issues in advance, including scheduled construction activities or unusual traffic movements. The consultation occurs using a variety of methods including:

- Community newsletters and other letterbox drops.
- DCCC meetings.
- Plan for the Future working group meetings.
- Dendrobium Community Enhancement Committee meetings.
- Dendrobium section on the South32 Regulatory Information webpage.
- Participation in community events and activities.
- Community Perception Surveys.
- Individual landholder visits/meetings.

#### 9.2.1.2 Dendrobium Community Consultative Committee

The DCCC was established in January 2002 in accordance with the Consent. The committee provides a mechanism to bring the community, environmental groups, local councils and IMC together:

- To establish good working relationships between the company, the community and other stakeholders in relation to Dendrobium Mine.



- For the ongoing communication of information and discussion of mining operations and the environmental performance of the mine.
- To discuss community concerns and review the resolution of community complaints.
- To discuss communication of relevant information on the mine and its environmental performance to the wider community, including results of environmental monitoring, environmental management reports and the results of audits.
- To work together towards outcomes of benefit to the mine, immediate neighbours and the local and regional community.

The committee is comprised of an Independent Chairperson, local community members, environmental group representatives, representatives from Wollongong City Council and Wollondilly Shire Council and IMC representatives as outlined in Table 35.

**Table 35: Membership of the DCCC as at 30 June 2020**

<b>Name</b>	<b>Member Category</b>
Mike Archer	Independent Chairperson
Alex Beccari	Community Representative
Phil Diamond	Community Representative
Phil Grant	Community Representative
Vivien Twyford	Community Representative
Phill Clunas	Community Representative
Jennifer Evans	Community Representative
Cr Noel Lowry	Wollondilly Shire Council
Ron Zwicker	Wollongong City Council
Neville McAlary	IMC
Chris Schultz	IMC
Ben Fitzsimmons	IMC

The Independent Chairperson Mike Archer was appointed to the role of Chair in October 2013 and has continued in the role since that date.

DCCC meetings cover discussions on the longwall and development activities, Subsidence Management Plans/Extraction Plans, approval processes, environmental compliance, End of Panel Reports, community complaints and community programs.

#### **9.2.1.3 Newsletters and Information Sheets**

During the reporting period, IMC distributed community newsletters to the local community (Mount Kembla, Kembla Heights and communities located along the KVRL) covering a range of topics including:

- Operations updates, including longwall and development progress.
- Environmental improvement works.
- Events and organisations supported by Dendrobium Mine.
- DCCC and Dendrobium Community Enhancement Committee (DCEC) activities, including information on inspections and projects supported.



#### **9.2.1.4 Dendrobium Community Enhancement Program**

The Dendrobium Community Enhancement Program (DCEP) was established in 2002 to facilitate funding for community projects with a vision to create a strong community and positive environment for the residents in the zone of influence of Dendrobium Mine. Since inception, IMC has contributed over \$1.9 million to the fund and continues to contribute three cents per saleable tonne of coal from the Dendrobium operations (adjusted for CPI).

The program is administered by the DCEC which comprises of an independent Chairperson, community representatives and IMC representatives. The committee met regularly during the reporting period, with extraordinary meetings also convened to conduct business planning and review of operations.

Some local not-for-profit groups to benefit from program funding in 2019/20 included:

- Figtree Community Carols;
- Kembla Heights Fishing Club;
- Mount Kembla Fire Brigade;
- Mount Kembla Mining Heritage Inc;
- Mount Kembla Pathway Group; and
- Mount Kembla Public School.

Individuals and organisations in the local community are encouraged to apply for funding. Applications for funding under the DCEP are assessed against a range of selection criteria, which can be viewed at:

<https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents>.

#### **9.2.2 Cordeaux**

No specific community liaison was undertaken for Cordeaux Colliery during the reporting period.



## 10. INDEPENDENT AUDITS

### 10.1 Environmental Audits

During this reporting period the performance of Dendrobium's Environmental Management System was assessed in a comprehensive series of audits (shown in Table 36). SAI Global has endorsed a "governance check" process as a part of the ISO 14001 certification. This process involves reviewing relevant environmental management plans in accordance with the schedule and incorporates both a desktop review and in-field verification. If non-conformances are identified during audits, they are recorded and tracked via the action tracking system utilised by IMC.

**Table 36: Environmental Audits Undertaken During Reporting Period**

Date	Type	Internal	External	Comments
April 2020	Annual ISO 14001		X	Certification (Desktop)
June 2020	Annual ISO 14001		X	Certification (Site Inspection)
June 2020	Self-Assessment	X		Self-assessment of compliance with the South32 Environment Standard
June 2020	Reasonable Assurance Audit	X	X	Review of externally reported greenhouse gas and water data
Ongoing	Management plan governance checks	X		Governance checks are conducted internally as a part of ISO 14001 certification. A schedule has been developed and checks are undertaken as per the schedule.

#### 10.1.1 ISO 14001

The IMC Environmental Management System has been certified to the International Standard ISO 14001 since May 2003. ISO 14001 Certification for Dendrobium operations was maintained following an external audit in April (desktop due to COVID-19 restrictions) and June 2020 (site inspections). No non-conformances were identified.

Dendrobium Mine and the DCPD are included in IMC's schedule of certified ISO 14001:2015 sites. Each of these operational sites has been regularly audited for compliance against this standard.

The auditing process requires demonstration of adequacy of systems to manage environmental aspects and impacts related to site activities. The systems audited include legal compliance, document control, records, corrective action, monitoring and control, training and management of risks.

All ISO 14001 Actions from 2019 were completed, as confirmed by the 2020 audit.

#### 10.1.2 Environment Standard Self Assessment

This Environment Self Assessment in this reporting period was conducted by the IMC Environmental Team. It was found that the requirements of the Environment Standard are largely in place with some opportunities to update existing processes. All corrective actions were raised in the action tracking system utilised by IMC and will be closed out as required.



### **10.1.3 Governance Reviews**

The below Governance Reviews were conducted for Dendrobium during the reporting period:

- Greenhouse Gas and Energy Efficiency Management Plan
- Bushfire Management Plan
- Pollution Incident Response Management Plan
- Air Quality Management Plan
- Water Management Plan
- Noise Management Plan
- Landscape Management Plan
- Lighting Management Plan

From these, the majority of corrective actions raised were administrative. All corrective actions were raised in the action tracking system utilised by IMC and closed out as required.

### **10.1.4 Independent Environmental Audit**

Environmental Resources Management Australia Pty Ltd (ERM) completed an independent environmental audit (IEA) of the Consent in May 2018. The primary purpose of the audit was to satisfy Condition 6 of Schedule 8 of the Consent, which requires the commissioning of an independent audit every 3 years, unless the Secretary directs otherwise.

All actions from the 2017/2018 IEA were completed in the previous reporting period.

The next IEA is scheduled to be completed before 31 December 2020.

### **10.1.5 KPMG**

KPMG undertook a reasonable assurance audit for NGER (National Greenhouse and Energy Reporting) and water data for the reporting period. This audit commenced in June and was completed in July 2020.

## **10.2 Environmental Risk Register**

Environmental risks associated with the site operations are recorded in the Environmental Aspects and Impacts Register. The Environmental Aspects and Impacts Register is reviewed regularly and is the basis of the Environmental Improvement Plan.



## 11. INCIDENTS, NON-COMPLIANCES AND EXCEEDANCES DURING THE REPORTING PERIOD

### 11.1 Site Compliance – Dendrobium

During the reporting period, Dendrobium Mine was generally compliant with legislation and approvals as listed in Section 3. Non-compliances and exceedances of criteria recorded during the reporting period are listed in Table 37 and Table 38 respectively. It is noted that an exceedance of criteria is not necessarily classified as a non-compliance. Non-compliance against legislation has also been included in this section.

No regulatory action occurred in the reporting period (see Table 39).

The Dendrobium Mine Compliance Report, which reports compliance against the conditions in DA 60-03-2001, is attached as Appendix C: Dendrobium Mine Consent Condition Compliance.

**Table 37: Non-compliances during the reporting period**

<b>NC1</b>	
Non-compliance	Failure to collect dust deposition gauge (DDG) samples in accordance with AS/NZS 3580.10.1:2016. This is a non-compliance with Condition M2 of EPL 3241.
Date	2 September 2019
Details of non-compliance	DDG samples were not collected within the 30+-2 day period as required by AS/NZS 3580.10.1:2016. They were collected one day outside of this period.
Location	Dendrobium Pit Top and Kemira Valley and community locations.
Cause of non-compliance	Miscalculation of days that the DDGs had been in the field and when they needed to be collected.
Actions taken to mitigate adverse effects of non-compliance	The calculation for days in the field was reviewed.
Actions taken to prevent reoccurrence	No further action required.
<b>NC2</b>	
Non-compliance	Exceedance of noise impact assessment criteria at receiver R6A. This is a non-compliance with Condition 1 of Schedule 4 of the Dendrobium Development Consent DA 60-03-2001.
Date	11 September 2019





Details of non-compliance	A noise level of 43 dBA was recorded at 12.54 pm on 11 September 2019. This was an exceedance of the noise impact assessment criteria of 40 dBA.
Location	Receiver R6A, 374 Cordeaux Road, Mt Kembla
Cause of non-compliance	Operational activities at the Dendrobium Pit Top, including mine vehicles and materials handling.
Actions taken to mitigate adverse effects of non-compliance	Operational controls that are in place to mitigate noise impacts on the community include: <ul style="list-style-type: none"> <li>- the installation of low frequency alarms on most surface mobile equipment;</li> <li>- the use of rubber tyred equipment to transport personnel and materials along the portal road and into the mine;</li> <li>- a self-imposed night time curfew from 10 pm to 6.15 am, where vehicle movements are minimised, where possible, except where required for safety, emergency reasons or change of shifts;</li> <li>- the strategic placement of plant and equipment to minimise noise escaping from the site or containment within suitably designed noise mitigation structures;</li> <li>- sourcing low noise emission mine site equipment to assist in meeting site noise limits or as a noise mitigation measure; and</li> <li>- the installation of a mechanical ventilation system at 374 Cordeaux Road.</li> </ul>
Actions taken to prevent reoccurrence	<p>The installation of a directional noise monitoring system is being progressed and is planned to be implemented in FY21. This system will provide noise data that can be utilised for proactive management of site activities to reduce exceedances of noise impact assessment criteria.</p> <p>Quarterly attended monitoring has continued over FY20.</p> <p>Additional actions that have been undertaken include:</p> <ul style="list-style-type: none"> <li>- Weekly (and extraordinary if required) planning meetings that include a dedicated discussion identifying potentially 'noisy' activity at the site in advance of it occurring that is raised at the site Operations Team meeting. The Operations Team in conjunction with the Environment Team work to mitigate the activity to an acceptable level, and in some cases the activity may be prevented from occurring. If after mitigation strategies are put in place and it is deemed that the activity may still generate noise that warrants notification via the IMC Communications Team to our affected community members, the Community Team will arrange proactive notification to inform residents, including what the activity is and how long it is expected to occur.</li> <li>- An e-learning Environmental Awareness Training has been rolled out to surface personnel.</li> <li>- Start of Shift briefs are disseminated to the workforce (all shifts) reminding the workforce to be aware of noise impacts associated with the work they are undertaking and minimising any impact they may have on our local community.</li> <li>- Communications briefings to staff from Dendrobium Mine General Manager include discussions on our past interactions with community (including complaints received) and reiterate key steps to follow when undertaking work at the Mine to minimise any impact on the local community.</li> </ul>



<b>NC3</b>	
Non-compliance	LA <sub>1min</sub> noise results were not being published on the IMC website. This is a non-compliance with Condition 11 of Schedule 8 of the Dendrobium Mine Consent 60-03-2001.
Date	28 October 2019
Details of non-compliance	Monitoring for LA <sub>1min</sub> noise levels is a requirement of Condition 1 of Schedule 4 of the consent. The monitoring was being undertaken, however the results were not being recorded in the 14-day report, that is published on the website, or reported in the Annual Review.
Location	N/A
Cause of non-compliance	It had not been identified that these results were not being published.
Actions taken to mitigate adverse effects of non-compliance	The historical results were included in the 14-day report.
Actions taken to prevent reoccurrence	A review of monitoring requirements was undertaken to identify whether there was any other data that was required to be uploaded to the website.
<b>NC4</b>	
Non-compliance	The flow meter at LDP 24 was not continuously and correctly recording water discharge volumes as required by Condition M6.1 of EPL 3241.
Date	30/10/2019
Details of non-compliance	The flow meter was not continuously or accurately recording flows at LDP 24 as required by Condition M6.1 for a period of two months.
Location	LDP 24, located at the Kemira Valley Tunnel.
Cause of non-compliance	The flow meter failed and was sent off site for repair, re-calibration and certification. Issues were experienced with the spare flow meter installed with inaccurate and unstable flow readings being recorded. Issues continued to be experienced when the repaired flow meter was reinstalled.
Actions taken to mitigate adverse effects of non-compliance	As noted, action was taken to repair/replace the flow meter.  Volumes discharged over this period were estimated based on previous flows.



Actions taken to prevent reoccurrence	Flow meters will be removed and replaced as required.
<b>NC5</b>	
Non-compliance	Disturbance of two <i>Acacia bynoeana</i> plants occurred during track maintenance of a Fire Road. This activity was not carried out in accordance with the terms of WaterNSW Determination & Activity Approvals D2019/84873, D2019/83844 or D2018/136053.
Date	January/February 2020
Details of non-compliance	On 4 May 2020, WaterNSW advised IMC that during track maintenance of Fire Road 6A (that occurred in January and February 2020), four specimens of a threatened plant ( <i>Acacia bynoeana</i> ) were disturbed. Prior to the track maintenance, WaterNSW had commissioned an inspection of the area by independent ecologists. The threatened plants identified were not notified to IMC. Fire Road 6A is a highly disturbed track, and grading of the track occurs on a regular basis. The road verge has historically been cleared of all vegetation and has some small shrub re-growth at or near to ground level. Grading of the road took place, pushing sand towards the edge of the road. Both IMC and the contractor undertaking track maintenance were unaware of the presence of the threatened species at the time of track maintenance. The disturbance was first observed during a follow up inspection undertaken by ecologists commissioned by WaterNSW. The event was reported to WaterNSW on 30 April 2020, when plants from the previous ecological inspection could not be found. It has been established that two specimens were unknowingly covered in sand.
Location	Fire Road 6A
Cause of non-compliance	The threatened plants had not been flagged by the consultants undertaking the inspection for WaterNSW.
Actions taken to mitigate adverse effects of non-compliance	This incident remains under investigation by WaterNSW.
Actions taken to prevent reoccurrence	This incident remains under investigation by WaterNSW.



**Table 38: Exceedances of criteria during the reporting period**

<b>EX1</b>	
Exceedance	Exceedance of noise impact assessment criteria at R6A in Condition 1 of Schedule 4 of DA 60-03-2001.
Date	27 November 2019, 24 February 2020 and 20 May 2020
Details of exceedance	<p>Exceedance of noise impact assessment criteria were recorded as follows:</p> <ul style="list-style-type: none"> <li>On 27/11/2019, a measurement of 41 dBA was recorded on 8:25 pm (an exceedance of the 40 dBA (evening) criteria by 1 dBA).</li> <li>On 27/02/2020, a measurement of 42 dBA was recorded on 1:53 pm (an exceedance of the 40 dBA (day) criteria by 2 dBA).</li> <li>On 20/05/2020, a measurement of 41 dBA was recorded on 3:20 pm (an exceedance of the 40 dBA (day) criteria by 1 dBA).</li> </ul> <p>Note that for the determination of compliance, the NSW Industrial Noise Policy states in Section 11.1.3:</p> <p><i>A development will be deemed to be in non-compliance with noise consent or licence condition of the monitored noise level is more than 2dB above the statutory noise limit specified in the consent or licence condition.</i></p>
Location	Receiver R6A, 374 Cordeaux Road, Mt Kembla
Cause of exceedance	Operational activities at the Dendrobium Pit Top, including mine vehicles and materials handling.
Actions taken to mitigate adverse effects of the exceedance	<p>Operational controls that are in place to mitigate noise impacts on the community include:</p> <ul style="list-style-type: none"> <li>the installation of low frequency alarms on most surface mobile equipment;</li> <li>the use of rubber tyred equipment to transport personnel and materials along the portal road and into the mine;</li> <li>a self-imposed night time curfew from 10 pm to 6.15 am, where vehicle movements are minimised, where possible, except where required for safety, emergency reasons or change of shifts;</li> <li>the strategic placement of plant and equipment to minimise noise escaping from the site or containment within suitably designed noise mitigation structures; and</li> <li>sourcing low noise emission mine site equipment to assist in meeting site noise limits or as a noise mitigation measure.</li> </ul>
Actions taken to prevent reoccurrence	<p>The installation of a directional noise monitoring system is being progressed and is planned to be implemented in FY21. This system will provide noise data that can be utilised for proactive management of site activities to reduce exceedances of noise impact assessment criteria.</p> <p>Quarterly attended monitoring has continued over FY20.</p> <p>Additional actions that have been undertaken include:</p>



	<ul style="list-style-type: none"> <li>- Weekly (and extraordinary if required) planning meetings that include a dedicated discussion identifying potentially 'noisy' activity at the site in advance of it occurring that is raised at the site Operations Team meeting. The Operations Team in conjunction with the Environment Team work to mitigate the activity to an acceptable level, and in some cases the activity may be prevented from occurring. If after mitigation strategies are put in place and it is deemed that the activity may still generate noise that warrants notification via the IMC Communications Team to our affected community members, the Community Team will arrange proactive notification to inform residents, including what the activity is and how long it is expected to occur.</li> <li>- An e-learning Environmental Awareness Training has been rolled out to surface personnel.</li> <li>- Start of Shift briefs are disseminated to the workforce (all shifts) reminding the workforce to be aware of noise impacts associated with the work they are undertaking and minimising any impact they may have on our local community.</li> <li>- Communications briefings to staff from Dendrobium Mine General Manager include discussions on our past interactions with community (including complaints received) and reiterate key steps to follow when undertaking work at the Mine to minimise any impact on the local community.</li> </ul>
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**Table 39: Regulatory action during the reporting period**

<b>Regulatory Action</b>	<b>Detail</b>
Official Caution	None issued
Warning Letters	A Warning Letter was issued on 1 November 2019 for the failure to make LA <sub>1min</sub> noise monitoring data publicly available on the IMC website (See NC3 in Table 38).
Penalty Notices	None issued
Prosecution Proceedings	None commenced

## 11.2 Site Compliance – Cordeaux

During the reporting period, Cordeaux Colliery was compliant with legislation and approvals as listed in Section 3.



## 12. ACTIVITIES PROPOSED IN THE NEXT REPORTING PERIOD

### 12.1 Dendrobium Mine

#### 12.1.1 Mine Operations

During the next reporting period, Dendrobium will continue longwall mining in Area 3B. Development will continue in Area 3B Main Gates and Wonga Mains. Development will also be undertaken towards the future mining domains of Area 3C and Area 5, subject to all necessary approvals being in place.

#### 12.1.2 Exploration

The planned activities for FY21 include a continuation of exploration in Areas 3B and 5 in support of the current mining domain (pre/post-mining monitoring hole and resource definition) as well as future mining domains (geological/geotechnical investigation and resource definition). It is also proposed to explore in Area 3C to increase geological and gas reservoir understanding. In summary, the exploration plan in FY21 includes:

- Area 5:
  - Completing the surface-to-inseam dyke definition drilling.
  - Continuation of exploration drilling (JORC resource improvement and modelling forecast).
  - Geotechnical investigations.
  - 2D seismic data acquisition.
- Area 3A/B:
  - Pre/post-mining monitoring boreholes.
  - Exploration boreholes in advance of the longwall.
  - A variety of approval boreholes at the request of various Government agencies.
- Area 3C:
  - Re-commencement of exploration drilling to improve the resource definition and geological understanding of this area.

The location of exploration boreholes planned for FY21 are shown in Figure 39.



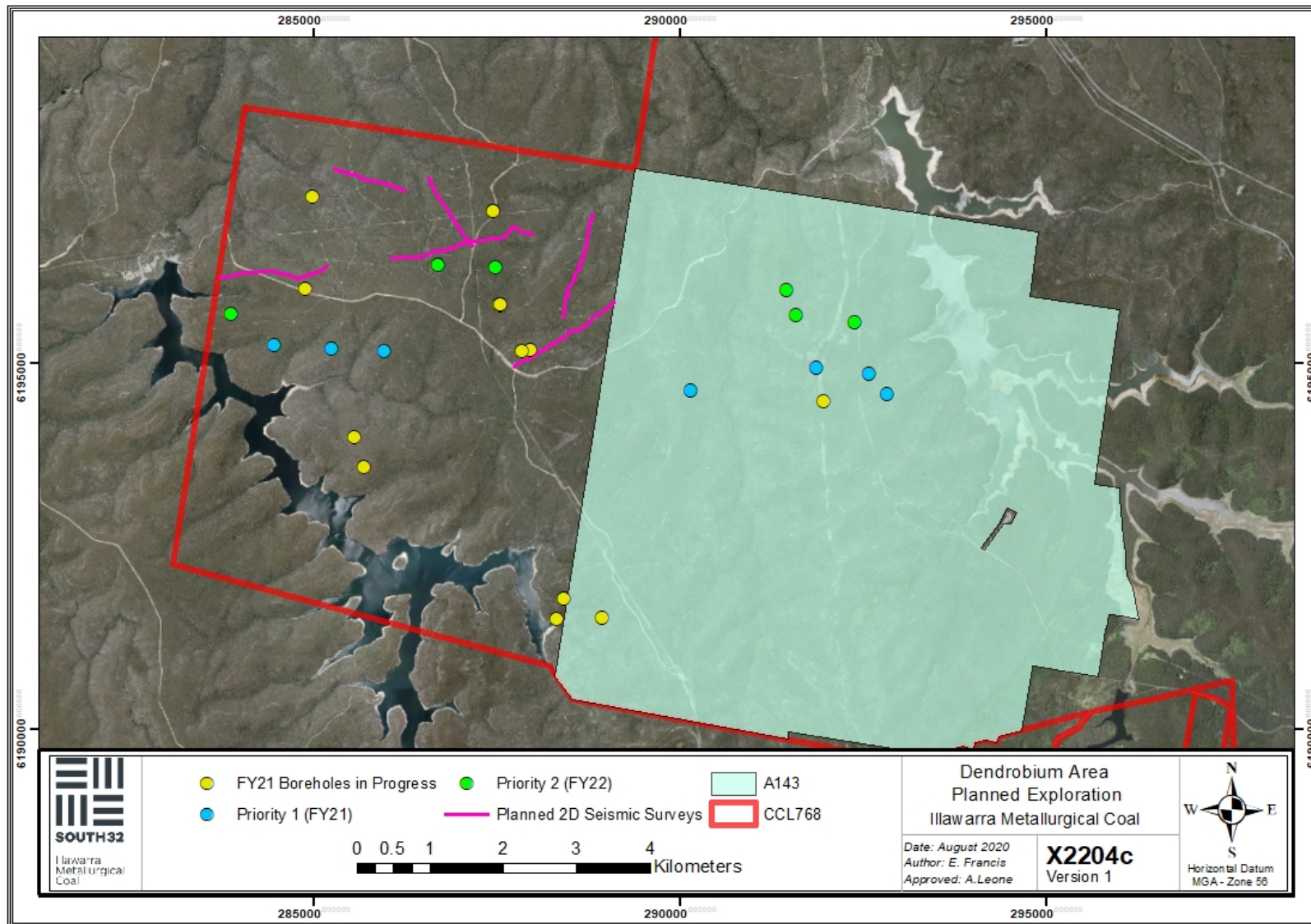


Figure 39: Planned Exploration for Dendrobium Mine, FY20.



### **12.1.3 Construction Activities**

The following projects will be progressed in the next reporting period:

- Commencement of work to upgrade the existing compressors located at the Kemira Valley Tunnel. The two existing compressors are planned to be replaced in FY21. A third compressor is also planned to be installed at the same location.

### **12.1.4 Environmental Management**

#### **12.1.4.1 Erosion and Sediment Control**

Erosion and sediment control improvements planned to be undertaken during the next reporting period at the Dendrobium Pit Top include:

- Improvements and ongoing maintenance to drainage and greywater treatment systems.
- Continued sealing of unsealed areas.
- Completion of repairs of erosion on the bank of American Creek near the bridge at the entrance of Dendrobium Pit top site.

#### **12.1.4.2 Kemira Valley Sediment Pond**

Rectification works will be undertaken at the Kemira Valley sediment pond to reinstate the pond functionality following an event in August 2020 that resulted in the uncontrolled release of water from the pond.<sup>16</sup>

#### **12.1.4.3 Noise Management**

An additional trackside rail noise monitor was installed and commissioned adjacent to the corner of track near William James Drive in FY20. During the next reporting period it will be used to validate and identify feasible noise reduction initiatives.

It is planned for a directional noise monitoring system to be installed at the Pit Top in FY21.

#### **12.1.4.4 Bulk Diesel and Solcenic Management**

It is planned to replace the bulk diesel tank and bulk solcenic tanks with self-bunded tanks in FY21.

#### **12.1.4.5 Environmental Management System**

Dendrobium Mine is planning to continue environmental management in accordance with ISO 14001. Environmental Management Plans will be updated as needed during the next reporting period.

### **12.1.5 Rehabilitation**

The following activities under the Legacy Sites and Rehabilitation Program are planned for FY21:

- Completion reporting on projects undertaken during the FY20 period.
- Site investigations and planning approvals for the rehabilitation of the O'Brien's Gap Pumphouse will be progressed, including negotiating a development approval with Council to undertake this work.

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<sup>16</sup> This event did not occur in this reporting period and details of the event will be included in the FY21 Annual Review.





- Demolition and rehabilitation of a section of the 6-67 powerline circuit (Wongawilli to Wongawilli Air Shaft) that is within rural residential areas.

The Dendrobium Conceptual Closure Plan was reviewed during the reporting period and is ongoing in FY21. The MOP is also being reviewed in FY21.

## **12.2 Cordeaux Colliery**

During the next reporting period, Cordeaux Colliery will remain on care and maintenance.



### 13. REFERENCES AND ASSOCIATED DOCUMENTS

Dendrobium Mine Development Consent DA 60-03-2001.

Biosis, Dendrobium Areas 2, 3A and 3B: Terrestrial Ecology Monitoring Program Annual Report 2019 (2020).

IMC, Air Quality Management Plan.

IMC, Bushfire Management Plan.

Cardno, Longwall 15 End Of Panel Report Aquatic Flora And Fauna Review (2020).

IMC, Landscape Management Plan.

IMC, Lighting Management Plan.

IMC, Noise Management Plan.

IMC, Waste Management Plan.

IMC, Water Management Plan.

HGEO, Dendrobium Mine Assessment of strata permeability adjacent to Avon Dam following extraction of Longwall 16, Area 3B (2020).

HGEO, Dendrobium Mine End of Panel Surface Water and Shallow Groundwater Assessment: Longwall 15, Area 3B (2020).

Niche, Dendrobium Colliery Longwall 15 End of Panel Report - Aboriginal Heritage Assessment (2020).

Avon and Cordeaux Reservoir DS NSW Notification Area Management Plan.

Rail Refuse Bin Demolition Management Plan.

Environment Protection Licence 3241.

Australian and New Zealand Guidelines for Fresh and Marine Water Quality- Volume 1, Chapter 3 (2000).

IMC, Watercourse Impact Monitoring, Management and Contingency Plan, Dendrobium Area 3B.

IMC, Swamp Impact, Monitoring, Management and Contingency Plan.

IMC, Dendrobium 3B Longwall 15 End of Panel report.

Dendrobium Mine – Plan for the Future: Coal for Steelmaking – Submissions Report (2020).

Biosis Research, Dendrobium Area 3B Longwalls 9-18: Heritage Impact Assessment.

JBS&G, Remedial Action Plan - Corrimall No 3 Ventilation Shaft Picton Road, NSW (Rev 3).

IMC – Corrimall No 3 Monitoring TARP\_2018.

IMC – Dendrobium Pit Top Yard Dust TARP\_2019.



## 13.1 Acronyms used in Annual Review

**Table 40: Acronyms used in Annual Review**

Acronym	Definition	Acronym	Definition
ACARP	Australian Coal Association Research Program	KVRL	Kemira Valley Rail Line
ARC	Australian Research Council	LDP	Licensed Discharge Point
CCL	Consolidated Coal Lease	LW	Longwall
CPI	Consumer Price Index	MOP	Mining Operations Plan
CSIRO	Commonwealth Scientific and Industrial Research Organisation	NATA	National Association of Testing Authorities
CV	Calorific Value	NEPM	National Environment Protection Measure
CWEA	Coal Wash Emplacement Area	NOW	NSW Office of Water
DCCC	Dendrobium Community Consultative Committee	OEH	Office of Environment and Heritage (now DPIE)
DCEC	Dendrobium Community Enhancement Committee	OPD	Operational Purpose Deduction
DCEP	Dendrobium Community Enhancement Program	PEF	Processed engineered fuel
DCPP	Dendrobium Coal Preparation Plant	PM <sub>10</sub>	Particulate matter 10 microns
DDG	Dust Deposition Gauge	RAP	Remedial Action Plan
DND	Dendrobium Next Domain Project	RMP	Rehabilitation Management Plan
DO	Dissolved Oxygen	RMS	Roads and Maritime Services
DPIE	Department of Planning, Industry and Environment <sup>17</sup>	ROM	Run of Mine
DS NSW	Dams Safety NSW	RNWG	Rail Noise Working Group
EC	Electrical conductivity	IMC	South32 Illawarra Metallurgical Coal
EFT	IMC Environmental Field Team	SBO	Strategic Biodiversity Offsets
EPL	Environment Protection Licence	SIMMCP	Swamp Impact, Monitoring, Management and Contingency Plan



EP	Extraction Plan	SMP	Subsidence Management Plan
EPA	Environment Protection Authority	TARP	Trigger Action Response Plan
EPP	Environmental Protection Plan	TSP	Total Suspended Particulate
FY	Financial Year	TSS	Total Suspended Solid
HVAS	High Volume Air Sampler	UoW	University of Wollongong
KVCLF	Kemira Valley Coal Loading Facility	VAM	Ventilation Air Methane
		WIMMCP	Watercourse Impact, Monitoring, Management and Contingency Plan

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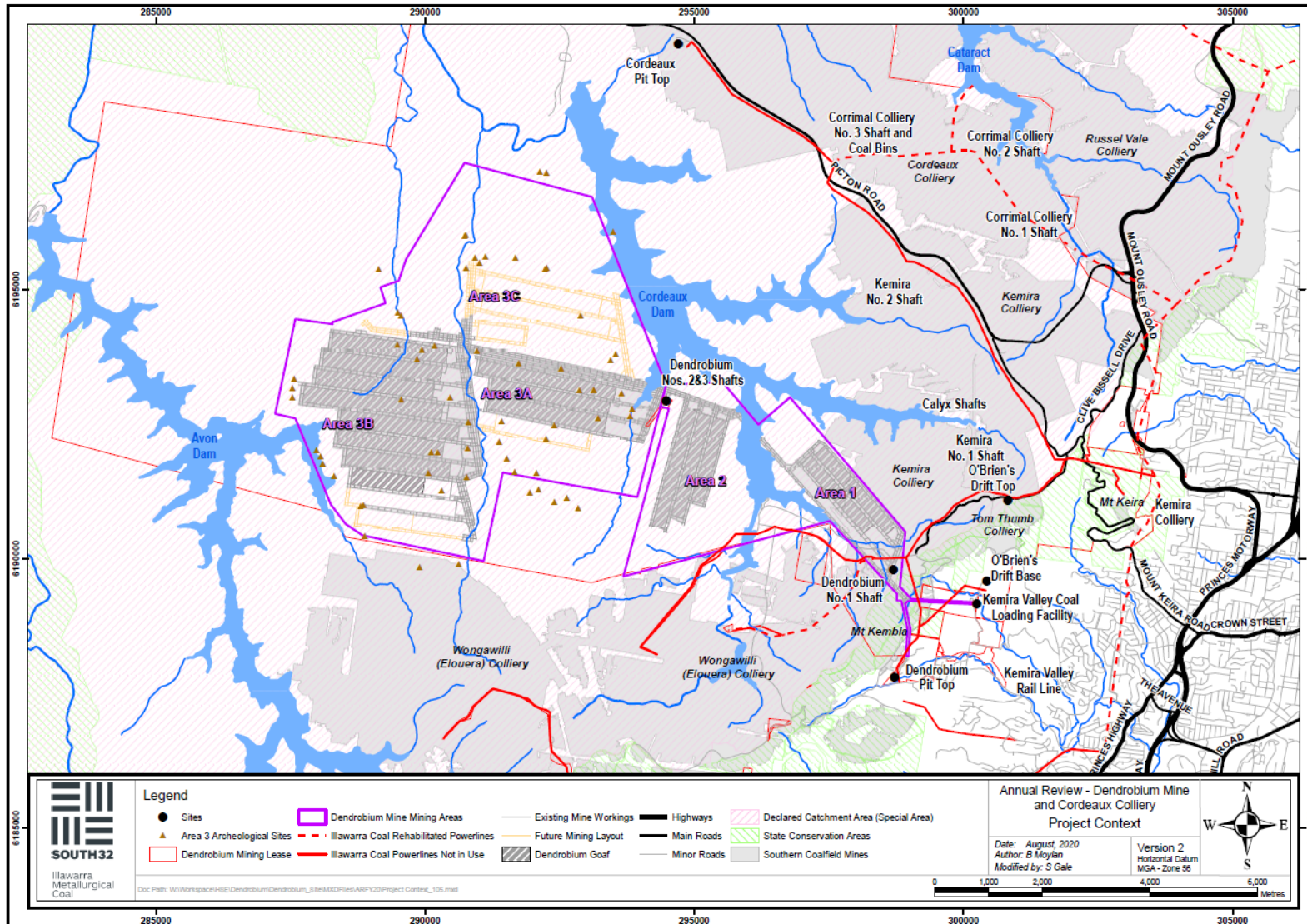
<sup>17</sup> Previously Department of Planning and Environment, Department of Planning, Department of Urban Affairs and Planning



**14. PLANS**



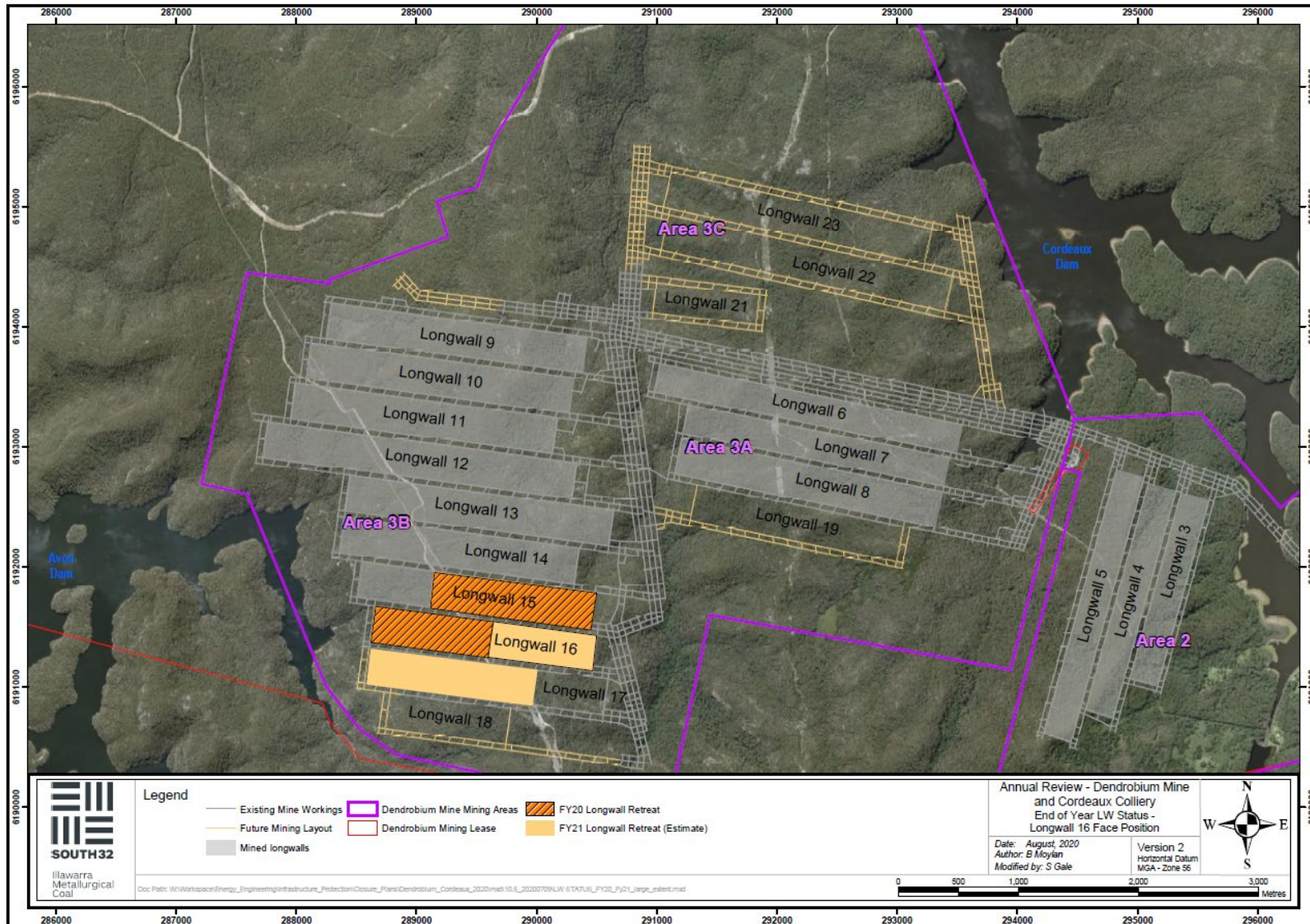
## Plan 1A - Location of Mining Domain







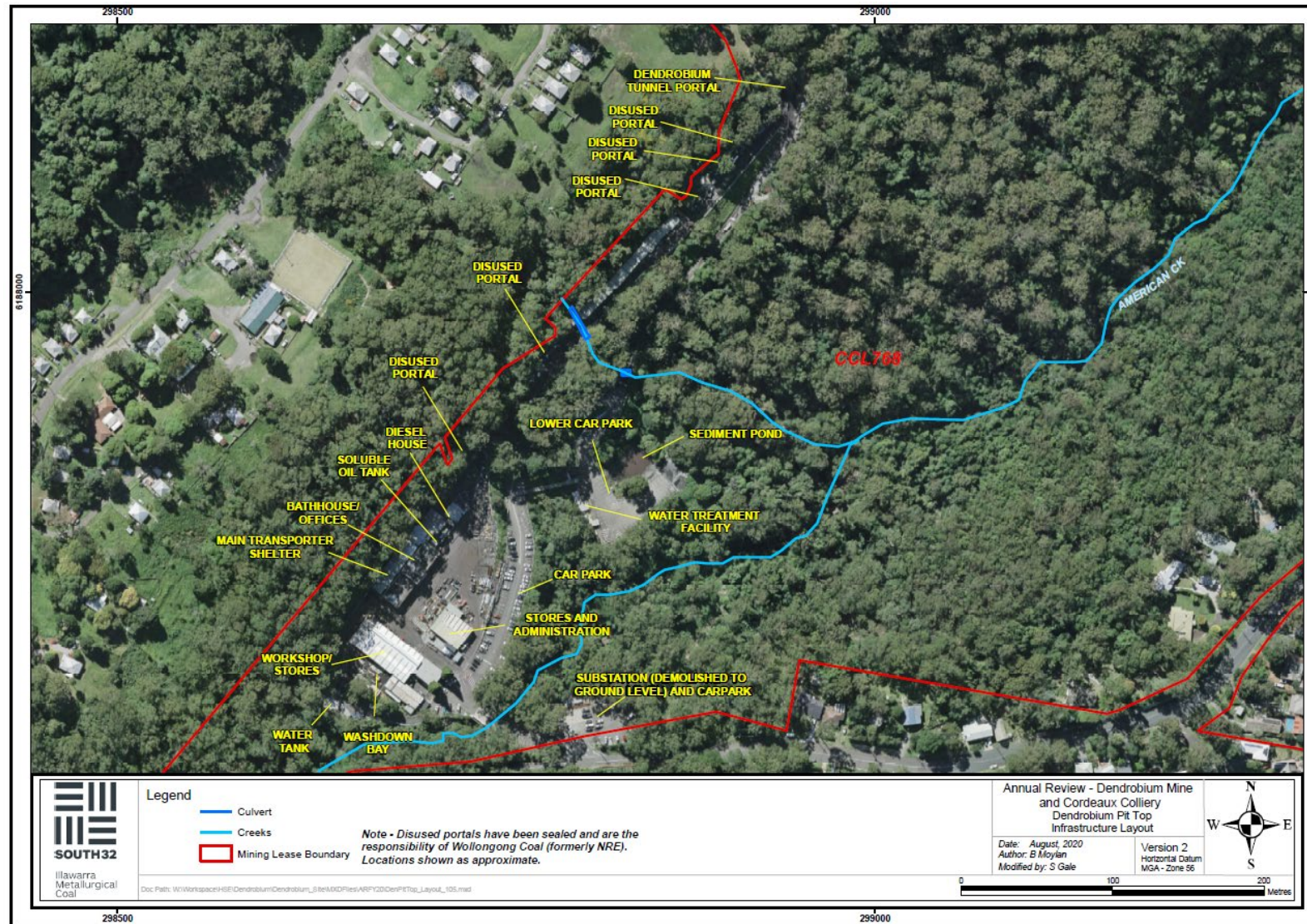
## Plan 1B - LW Status as at end of Financial Year







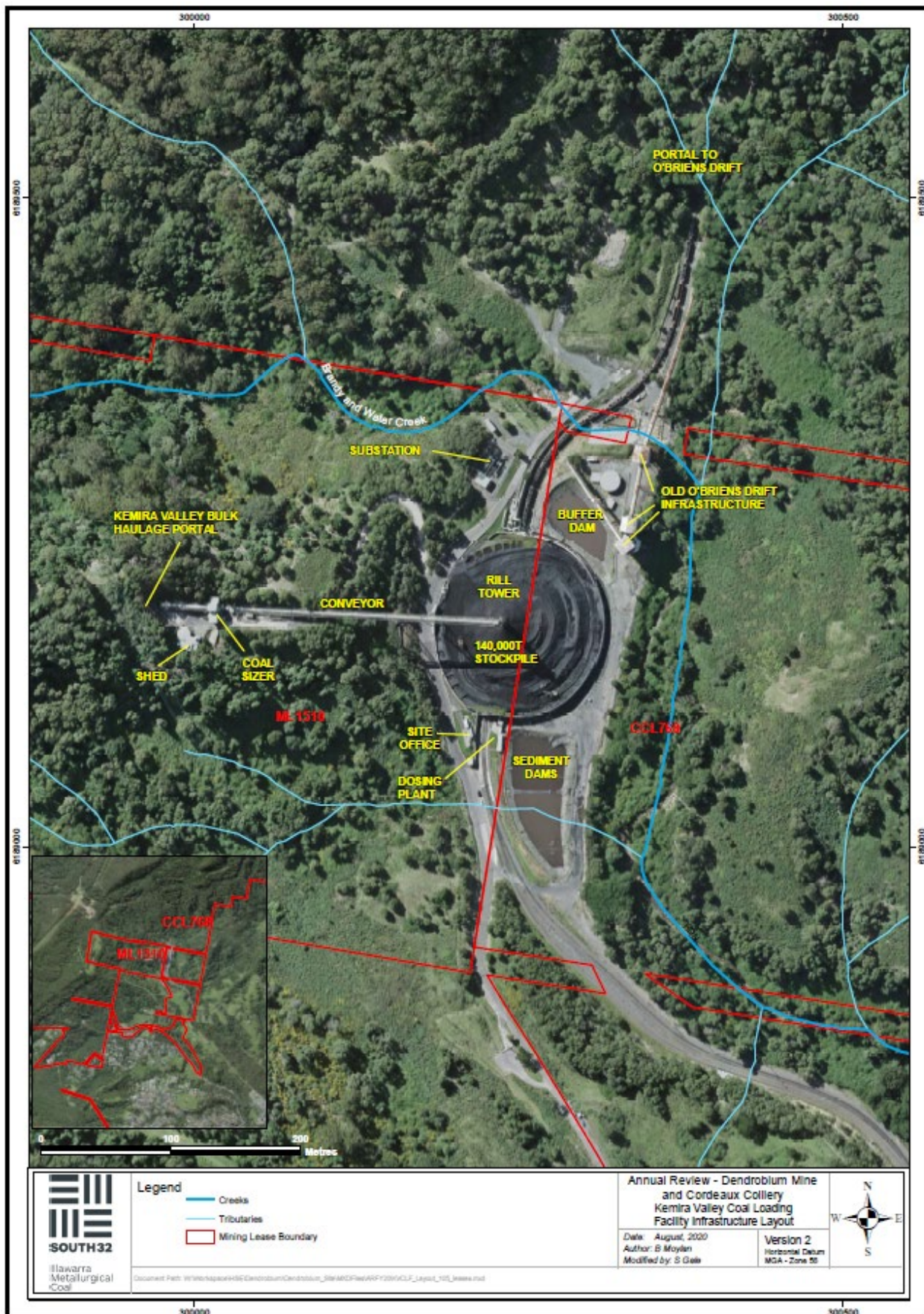
## Plan 2 – Dendrobium Mine Site







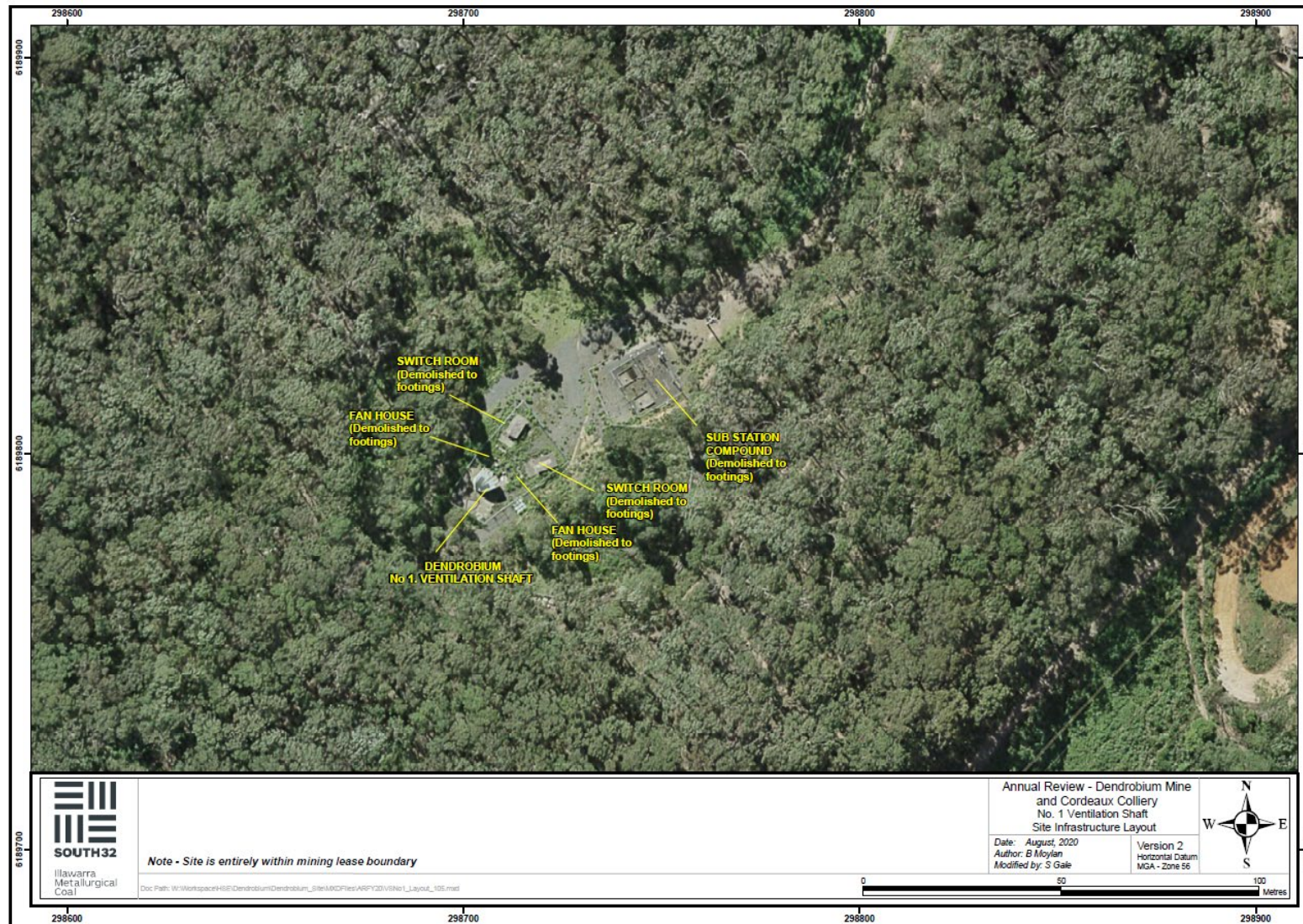
### Plan 3 – Site Layout – Kemira Valley







## Plan 4 – No. 1 Ventilation Shaft Site Layout







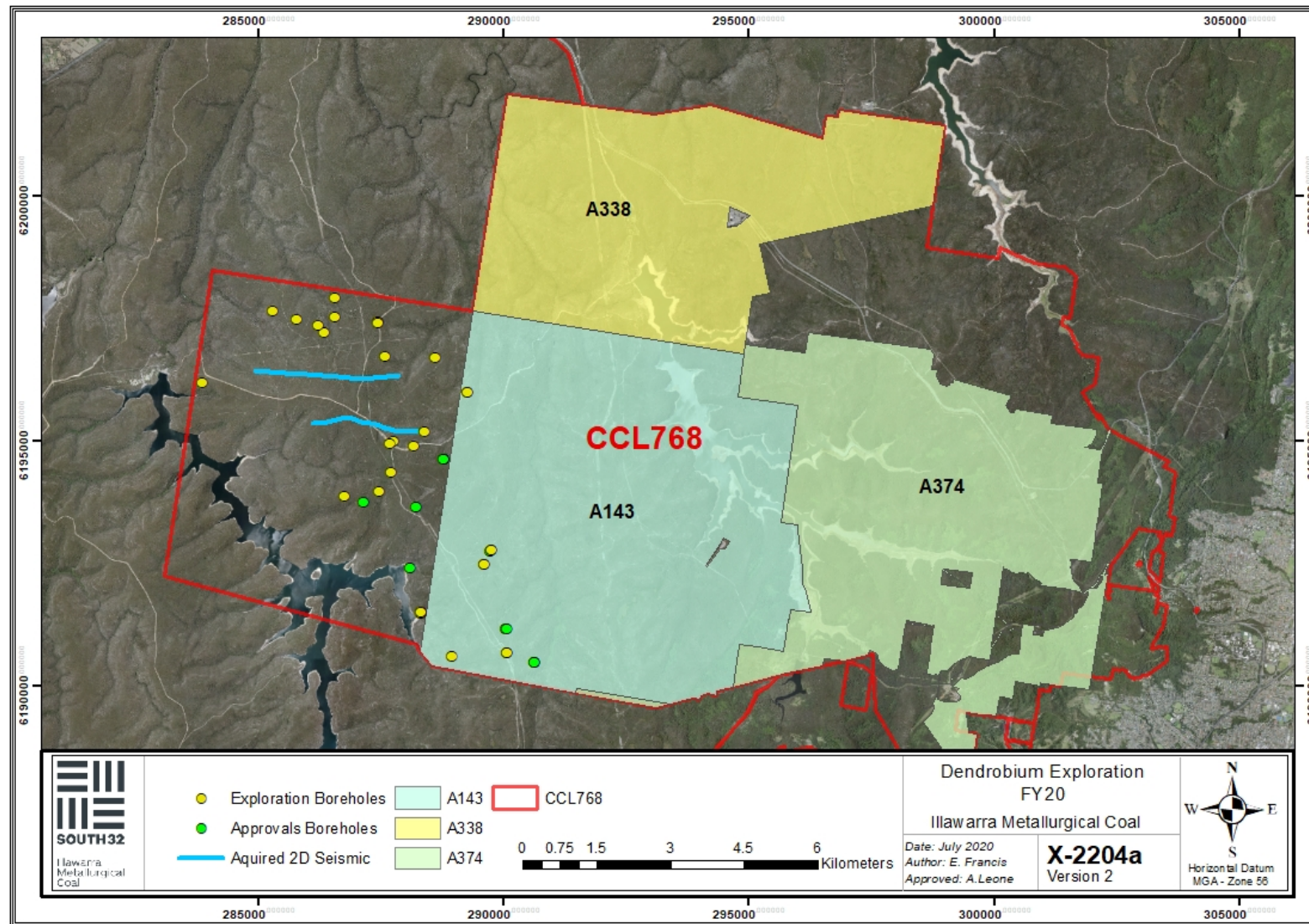
Plan 5 – No. 2 and 3 Ventilation Shaft Site Layout







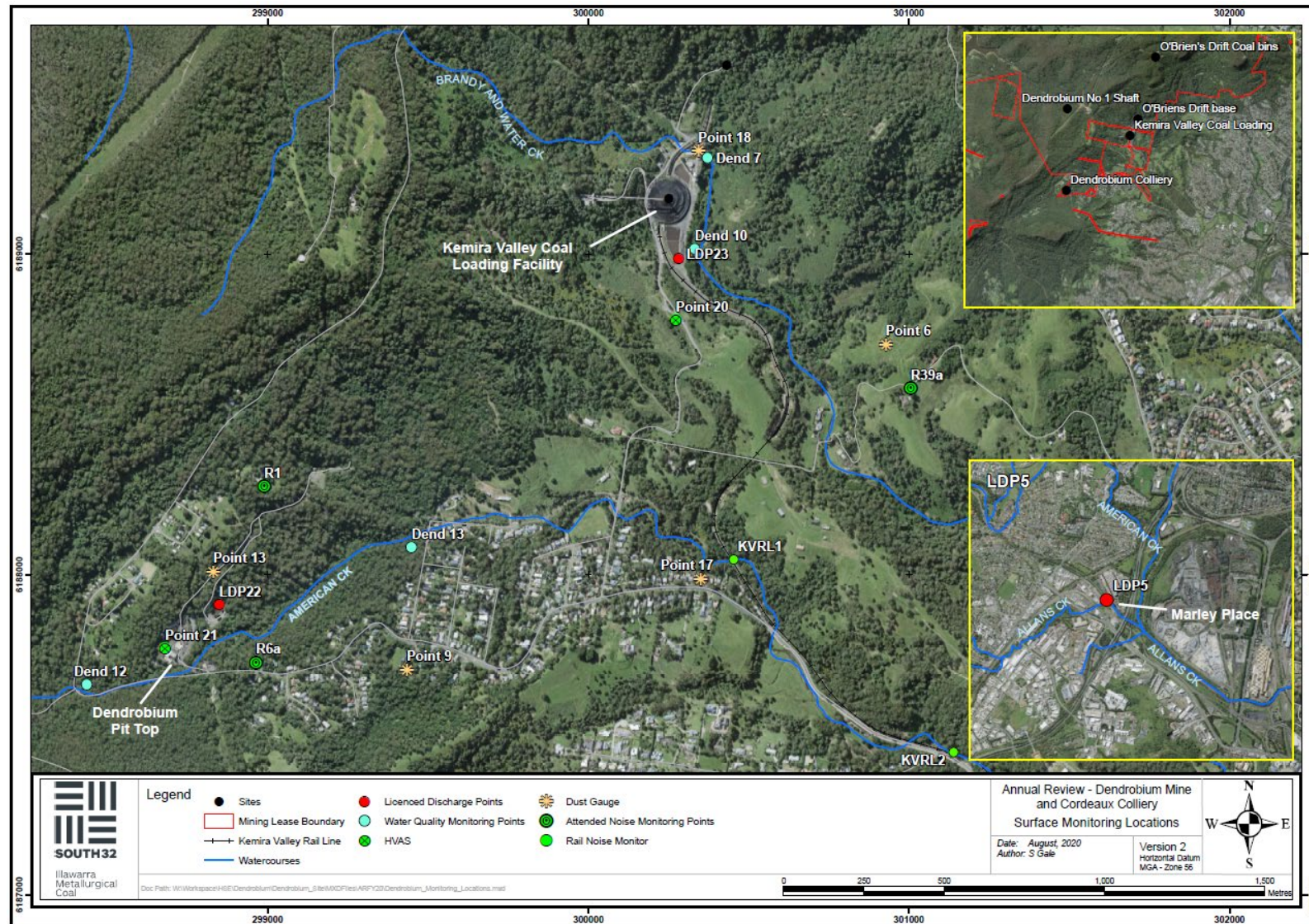
## Plan 6 – Exploration Activities – Dendrobium Mine







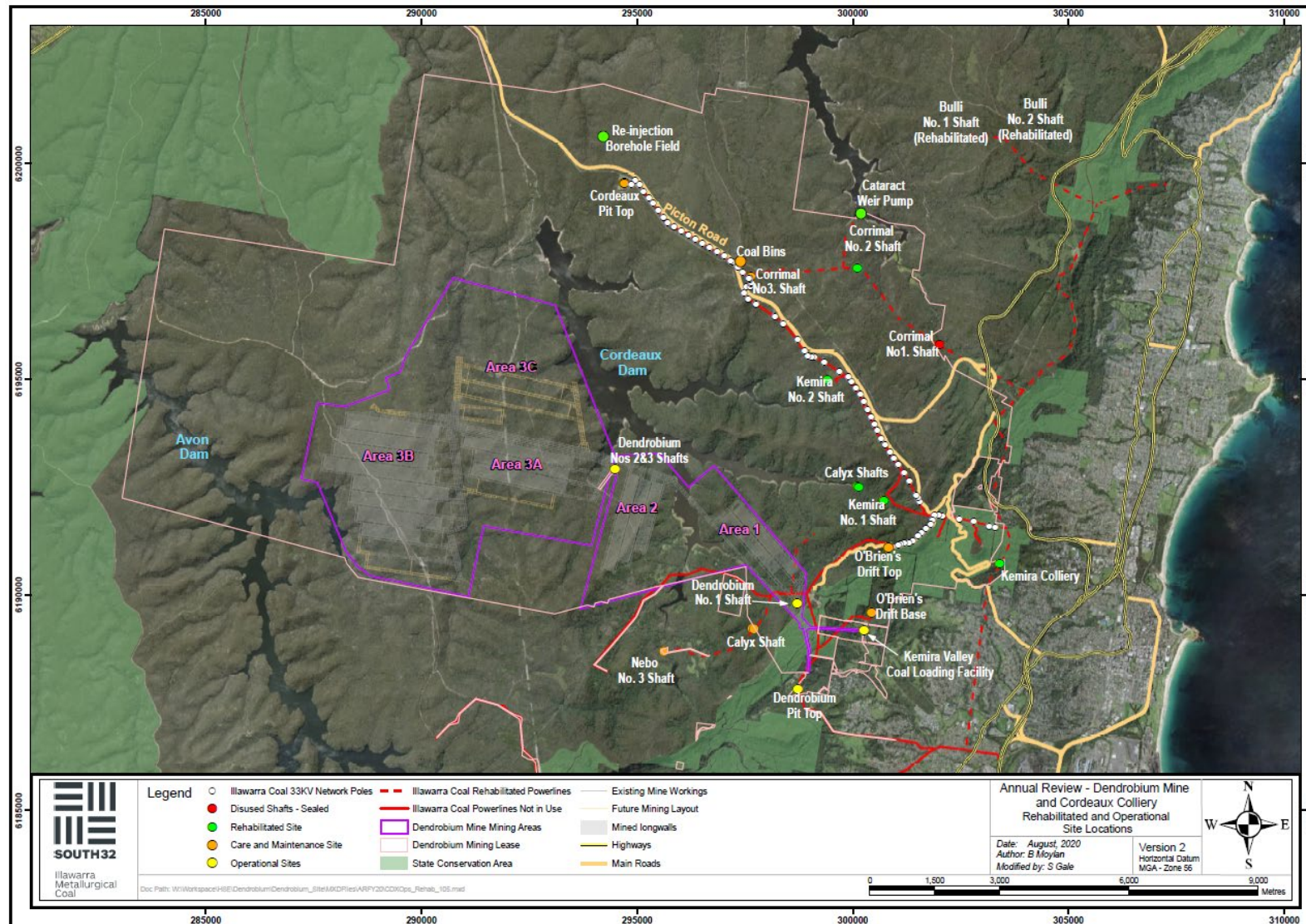
## Plan 7 – Dendrobium Monitoring Locations







## Plan 8 – Operational and Rehabilitation Areas







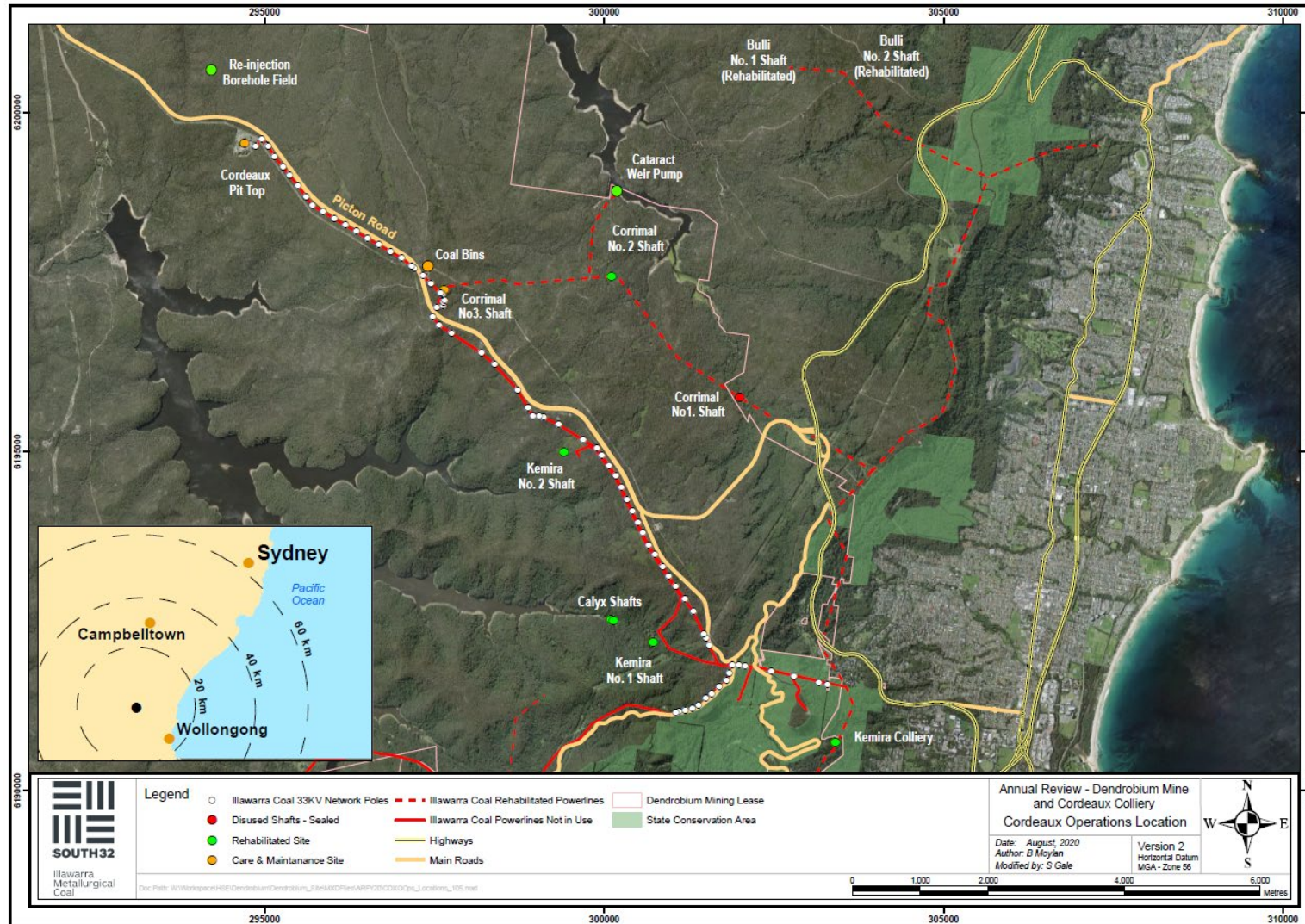
## Plan 9 – Cordeaux Colliery – Corrimal No. 3 Shaft Remediation







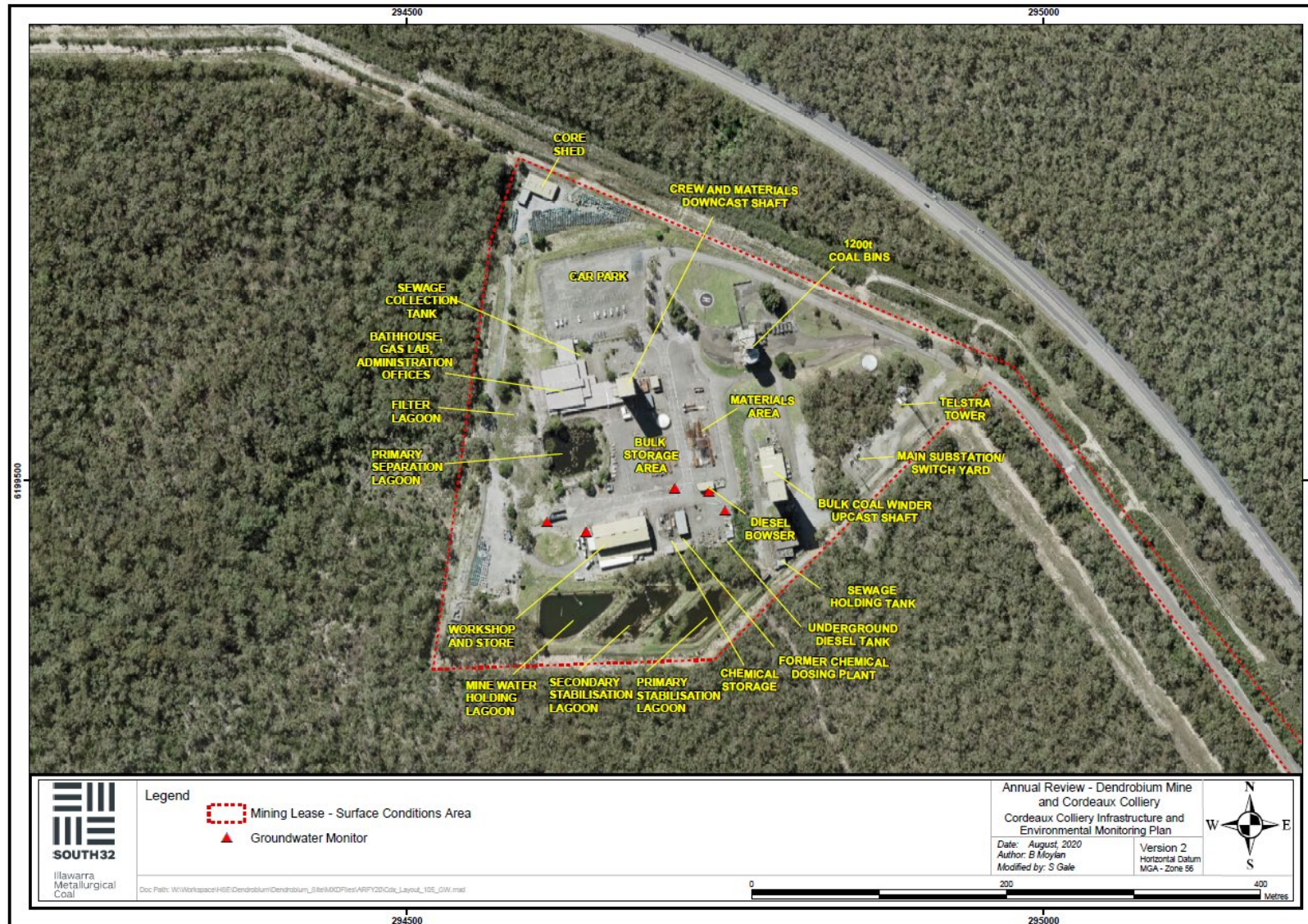
## Plan 10 – Cordeaux Colliery Locality Plan







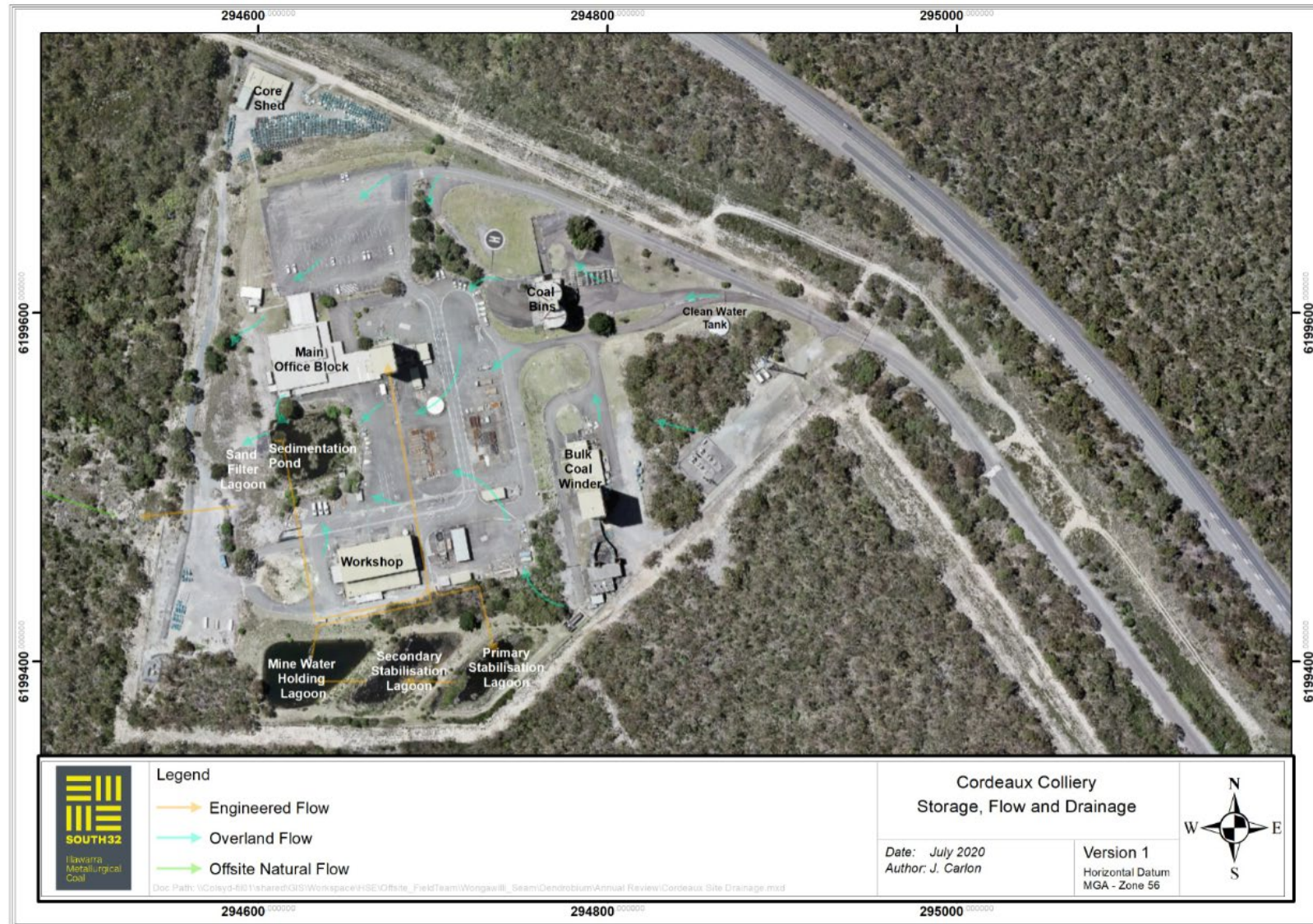
## Plan 11 – Cordeaux Colliery Pit Top Infrastructure







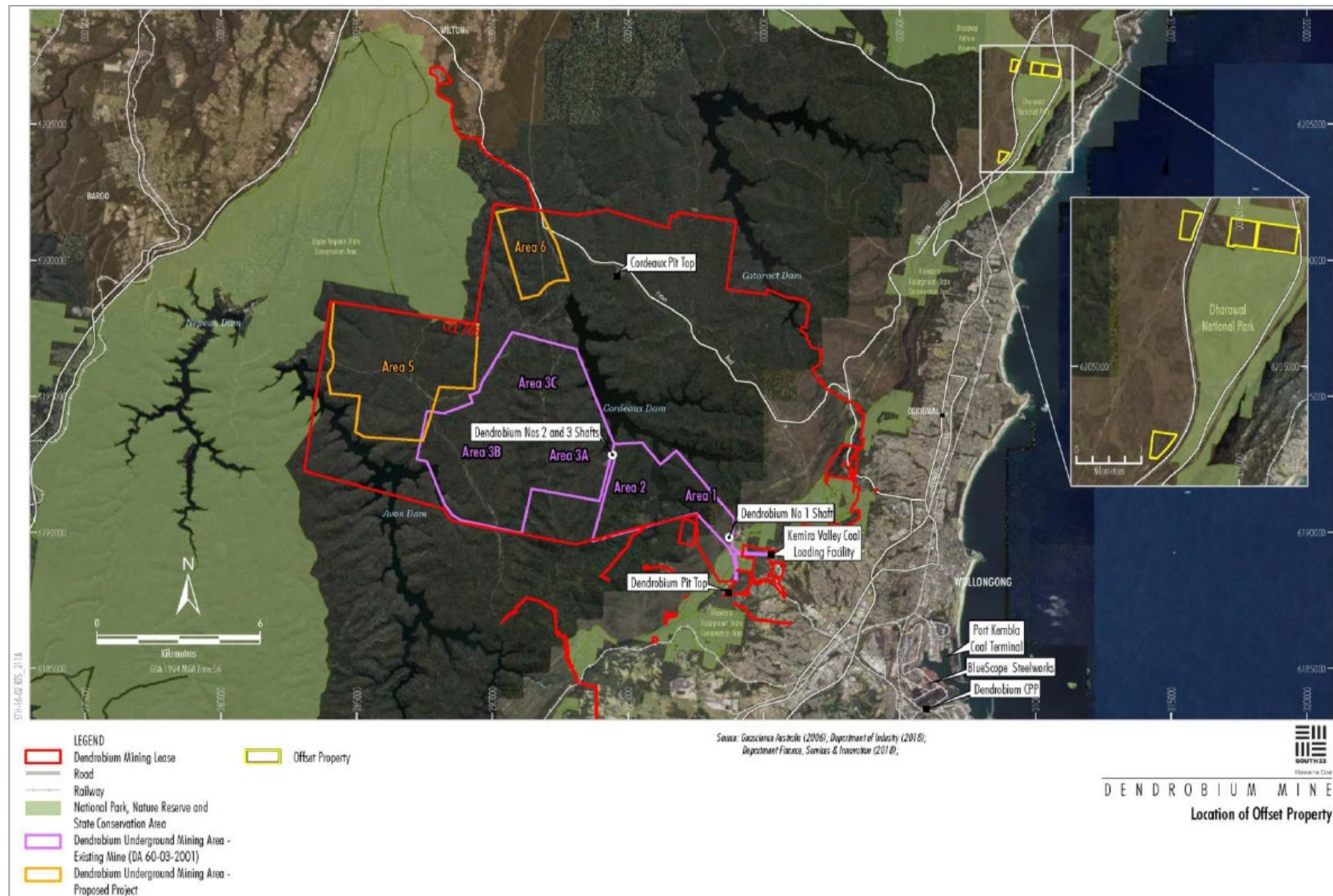
## Plan 12 – Cordeaux Colliery Pit Top Surface Water Management







## Plan 13 – Biodiversity Offset – Lloyd Property (Maddens Plains)





## **15. APPENDICES**

### **Appendix A: EPA Annual Return**

## A. Statement of Compliance - Licence Details

**ALL Licence holders must check that the Licence details in Section A are correct.**

If there are changes to any of these details, **you must advise Environment Protection Authority (EPA) and apply as soon as possible for a variation to your Licence or for a Licence transfer.**

Licence variation and transfer application forms are available on the EPA website at:  
<http://www.epa.nsw.gov.au/licensing-and-regulation/licensing> or from regional offices of the EPA, or by contacting by telephone 02 9995 5700.

If you are applying to vary or transfer your Licence, you must still complete and submit this Annual Return.

### A1. Licence holder

**Licence number** : 3241  
**Licence holder** : DENDROBIUM COAL PTY LTD  
**Trading name (if applicable)** :  
**ABN** : 85 098 744 088  
**ACN** :  
**Reporting period** : From: 1-7-2018 To: 30-6-2019

### A2. Premises to which Licence Applies (if applicable)

**Common name (if any)** : DENDROBIUM MINE  
**Premises** : CORDEAUX ROAD MOUNT KEMBLA 2526 NSW

### A3. Activities to which Licence Applies

Mining for coal  
 Coal works

### A4. Other Activities (if applicable)

### A5. Fee-Based Activity Classifications

**Note** that the fee based activity classification is used to calculate the administrative fee.

Fee-based activity	Activity scale	Unit of measure
Coal works	> 2,000,000.00 - 5,000,000.00	T annual handling capacity
Mining for coal	> 3,500,000.00 - 5,000,000.00	T annual production capacity

## A6. Assessable Pollutants (if applicable)

**Note** that the identification of assessable pollutants is used to calculate the **load-based fee**.  
The following assessable pollutants are identified for the fee-based activity classifications in the licence:

## B. Monitoring and Complaints Summary

### B1. Number of Pollution Complaints

Pollution Complaint Category	Complaints
Air	2
Water	0
Noise	36
Waste	0
Other	6
<b>Total complaints recorded by the licensee during the reporting period</b>	<b>44</b>

### B2. Concentration Monitoring Summary

For each concentration monitoring point identified in your licence, details are displayed below. If concentration monitoring is not required by your licence, **no data** will appear below.

If data was provided from an uploaded file, the file name will be displayed below instead of any data.

**Note** that this does not exclude the need to conduct appropriate concentration monitoring of assessable pollutants as required by load-based licensing (if applicable).

#### Discharge Point 5

Stormwater and minewater discharge from Dendrobium mine. Brine discharge from Appin West mine. Discharge quality monitoring, Pipeline discharging to Allan's Creek labelled as "Discharge Point" on map titled "Dendrobium Mine Water Disposal Pipeline" dated 8 November 2002.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Arsenic	milligrams per litre	12	13	0.009	0.011	0.014
Conductivity	microsiemens per centimetre	12	13	1800	2005	2400
Copper	milligrams per litre	12	13	<0.001	<0.001	<0.002
Nickel	milligrams per litre	12	13	0.011	0.014	0.021
Oil and Grease	milligrams per litre	12	13	<5	<5	<5
pH	pH	12	13	8.1	8.3	8.9

Total suspended solids	milligrams per litre	12	13	<5	6	11
Zinc	milligrams per litre	12	13	0.032	0.038	0.050

## Monitoring Point 6

Dust Monitoring, Dust gauge located at Figtree Farm, O'Briens Road Figtree, labelled as "Point 6" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.1	0.8	3.6
Combustible solids	grams per square metre per month	12	12	<0.1	0.4	1.3
Insoluble solids	grams per square metre per month	12	12	0.2	1.2	4.9

## Monitoring Point 9

Dust Monitoring, Dust gauge located at Mt Kembla Primary School labelled as "Point 9" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.2	0.5	1.0
Combustible solids	grams per square metre per month	12	12	0.1	0.5	1.2
Insoluble solids	grams per square metre per month	12	12	0.3	1.1	2.1

## Monitoring Point 13

Dust Monitoring, Dust gauge located at Dendrobium Colliery Surface, labelled as "Point 13" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.4	1.1	1.8
Combustible solids	grams per square metre per month	12	12	0.4	0.7	1.2
Insoluble solids	grams per square metre per month	12	12	0.8	1.8	3

## Monitoring Point 17

Dust Monitoring, Dust gauge located at 206 Cordeaux Road, Mt Kembla, labelled as "Point 17" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.1	0.7	1.7
Combustible solids	grams per square metre per month	12	12	0.1	0.5	0.9
Insoluble solids	grams per square metre per month	12	12	0.2	1.1	2.3

## Monitoring Point 18

Dust Monitoring, Dust gauge located at Kemira Valley Coal Loading Facility at the bins, labelled as "Point 18" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.3	1.1	2.1
Combustible solids	grams per square metre per month	12	12	0.3	1.7	4.5



Insoluble solids	grams per square metre per month	12	12	0.6	2.8	6
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## Monitoring Point 20

Ambient Air Monitoring, Hi-Vol sampler located at Kemira Valley Coal Loading Facility labelled as "Point 20" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
PM10	micrograms per cubic metre	12	12	5.2	13.3	20.6
Total suspended particles	micrograms per cubic metre	12	12	6.6	22.3	51.0

## Monitoring Point 21

Ambient Air Monitoring, Hi-Vol sampler located at Dendrobium Surface, labelled as "Point 21" in the map titled "Figure 1 - Air Quality Monitoring Sites" submitted to the EPA on 15/9/09.

Pollutant	Unit of measure	No. of samples required	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
PM10	micrograms per cubic metre	12	12	6.1	15.5	25.8
Total suspended particles	micrograms per cubic metre	12	12	15.6	36.1	74.4

## B3. Volume or Mass Monitoring Summary

For each volume or mass monitoring point identified in your licence, details are displayed below. If volume or mass monitoring is not required by your licence, **no data** will appear below.

If data was provided from an uploaded file, the file name will be displayed below instead of any data.

**Note** that this does not exclude the need to conduct appropriate volume or mass monitoring of assessable pollutants are required by load-based licensing (if applicable).

## Monitoring Point 24

Volume Monitoring, Pipeline dewatering underground water storage area.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	Highest result
megalitres per day	Continuous	Continuous	2.45	5.53	7.21

## Monitoring Point 25

Volume Monitoring, Pipeline discharge for Kemira Valley sedimentation ponds.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	Highest result
megalitres per day	Continuous	Continuous	0.00	0.13	1.99

## C. Statement of Compliance - Licence Conditions

### C1. Compliance with Licence Conditions

Were all conditions of the licence complied with (including monitoring and reporting requirements)?	Yes
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## D. Statement of Compliance - Load Based Fee Calculation

If you are not required to monitor assessable pollutants by your licence, **no data** will appear below.

If assessable pollutants have been identified on your licence, the following worksheets for each assessable pollutant will determine your load based fee for the licence fee period to which this Annual Return relates.

**Loads of assessable pollutants must be calculated using any of the methods provided in EPA's Load Calculation Protocol for the relevant activity.** A Load Calculation Protocol would have been already sent to you with your licence. If you require additional copies, you can download the Protocol from the EPA's website or you can contact us on telephone 02 9995 5700.

You are required to keep all records used to calculate licence fees for four years after the licence fee was paid or became payable, whichever is the later date.

## E. Statement of Compliance - Requirement to Prepare PIRMP

Have you prepared a Pollution Incident Response Management Plan (PIRMP) as required under section 153A of the Protection of the Environment Operations (POEO) Act 1997?	Yes
Is the PIRMP available at the premises?	Yes

Is the PIRMP available in a prominent position on a publicly accessible website?	<b>Yes</b>
Address of the web page where the PIRMP can be accessed ▼	
<a href="https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents">https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents</a>	
Has the PIRMP been tested?	<b>Yes</b>
The PIRMP was last tested on	<b>3-7-2019</b>
Has the PIRMP been updated?	<b>Yes</b>
The PIRMP was last updated on	<b>5-7-2019</b>
Number of times the PIRMP was activated in this reporting period?	<b>0</b>
The PIRMP was activated on	<b>N/A</b>

## F. Statement of Compliance - Requirement to Publish Pollution Monitoring Data

Are there any conditions attached to your licence that require pollution monitoring to be undertaken as required under section 66(6) of the Protection of the Environment Operations (POEO) Act 1997?	<b>Yes</b>
Do you operate a website?	<b>Yes</b>
Is the pollution monitoring data published on your website in accordance with the EPA's written requirements for publishing pollution monitoring data?	<b>Yes</b>
Address of the web page where the pollution monitoring data can be accessed ▼	
<a href="https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents">https://www.south32.net/what-we-do/places-we-work/illawarra-metallurgical-coal/documents</a>	

## G. Statement of Compliance - Environment Management System and Practices

Do you have an ISO 14001 certified Environmental Management System (EMS) OR any other system that EPA considers is equivalent to the accountability, procedures, documentation and record keeping requirements of an ISO 14001 certified EMS?	<b>Yes</b>
When was the last check (As per ISO 14001) of the EMS completed?	<b>3-6-2019</b>
Were there any non-conformances related to environmental issues identified in the last check of the EMS?	<b>Yes</b>
If there were non-conformances identified, were these non-conformances rectified?	<b>Yes</b>

## H. Signature and Certification

This Annual Return may only be signed by person(s) with legal authority to sign it as set out in following categories: an Individual, a Company, a Public authority or a Local council.

It is an offence to supply any information in this form that is false or misleading in a material respect, or to certify a statement that is false or misleading in a material respect. There is a maximum penalty of \$250,000 for a corporation and \$120,000 for an individual.

I/We

- declare that the information in the Monitoring and Complaints Summary in Section B of this Annual Return application is correct and not false or misleading in a material respect, and
- certify that the information in the Statement and Compliance in sections A, C, D, E, F, G and H and any other pages attached to Section C is correct and not false or misleading in a material respect.

## Signed by: Director

<b>Name</b>	Jason Economidis
<b>Position</b>	Vice President Operations Mining, Illawarra Coal Holdings
<b>Email Address</b>	Jason.Economidis@south32.net
<b>Phone Number</b>	02 4286 3320

## Signed by: Director

<b>Name</b>	Robin Lees
<b>Position</b>	Principal Company Secretariat, South32 Group Ops Pty Ltd
<b>Email Address</b>	Robin.Lees@south32.net
<b>Phone Number</b>	08 9324 9519

<b>Signature</b>		<b>Signature</b>	
<b>Name</b>		<b>Name</b>	
<b>Position</b>		<b>Position</b>	
<b>Date</b>	/ /	<b>Date</b>	/ /

## Declaration

I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and

I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.

## Declaration

I declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and

I certify that the information in the Statement of Compliance in section A,C,D,E,F and G and any pages attached to Section C is correct and not false or misleading in a material respect.



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## **Appendix B: Rehabilitation Security Cost Estimate**

Rehabilitation cost estimate provided only for Department of Regional NSW (Resources Regulator). The Rehabilitation Cost estimate is commercial in nature.

Please contact the Department or IMC representative for further information.





**Appendix C: Dendrobium Mine Consent Condition Compliance**



# **Dendrobium Mine Compliance Report**

*A report of compliance against the  
Development Consent 60-03-2001  
(as modified)*

**1 July 2019 – 30 June 2020**

<b>CONDITION OF CONSENT</b>	<b>STATUS</b>	<b>COMMENTS</b>
<b>SCHEDULE 2: ADMINISTRATIVE CONDITIONS</b>		
<b>Obligation to Minimise Harm to the Environment</b>		
1. The Applicant must implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.	Compliant	No harm to the environment occurred through construction, operation or rehabilitation activities during the reporting period.
<b>Terms of Approval</b>		
2. The Applicant must carry out the development generally in accordance with the: (a) Development Application (DA 60-03-2001), EIS and associated submissions to the Dendrobium Underground Coal Mine Project Commission of Inquiry, and in particular its: • Primary Submission (the Dendrobium Project, dated 30 July 2001); • Submission in Reply (the Dendrobium Project, undated); and • Environmental Effects of Subsidence Associated with the Dendrobium Project, prepared by National Environmental Consulting Services and dated August 2001; (b) Modification Application dated 12 February 2002 and supporting information dated 27 January 2002; (c) Modification Application and supporting information dated 24 May 2002 and additional supporting information dated 14 June 2002; (d) Modification Application and Statement of Environmental Effects for the Dendrobium Coal Sizer, prepared by Olsen Environmental Consulting and dated March 2005; (e) Application for Further Approval of West Cliff Emplacement Area Stage 3, Vol 2 (including Appendices), prepared by Cardno Forbes Rigby and dated July 2007, associated Response to Submissions dated 1 November 2007 and associated Statement of Commitments dated 28 November 2007 (see Appendix 3); (f) Modification Application – Modification of Area 3 Footprint and Review of Conditions of Consent dated 27 November 2007, EA and associated Statement of Commitments (see Appendix 4); (g) EA (MOD 7); and (h) EA (MOD 8)	Compliant	The listed documentation reflects changes to the development as a result of consultation with Authorities and the community. Management Plans and associated documentation reflect these changes and requirements.
<b>2A.</b> The Applicant must carry out the development in accordance with the conditions of this consent.	Not compliant	See Condition 1 of Schedule 4 and Condition 11 of Schedule 8
<b>3.</b> If there is any inconsistency between the above documents, the most recent document must prevail to the extent of the inconsistency. However, the conditions of this consent must	Compliant	Document precedence is applied where required.

**Dendrobium Mine Development Consent Compliance Report – FY20**

<b>CONDITION OF CONSENT</b>	<b>STATUS</b>	<b>COMMENTS</b>
prevail to the extent of any inconsistency.		
<p><b>4.</b> The Applicant must comply with any reasonable and feasible requirement/s of the Secretary arising from the Department's assessment of:</p> <p>(a) any reports, strategies, plans, programs, reviews, audits or correspondence that are submitted in accordance with the conditions of this consent;</p> <p>(b) any reviews, reports or audits undertaken or commissioned by the Department regarding compliance with the conditions of this consent; and</p> <p>(c) the implementation of any actions or measures contained in these documents.</p>	Compliant	Requirements have been complied with where reasonable and feasible.
<b>Limits on Approval</b>		
<p><b>5.</b> Mining operations may take place in the mining area until 31 December 2030.</p> <p><i>Note: Under this consent, the Applicant is required to rehabilitate the site to the satisfaction of the Secretary and DRG. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.</i></p>	Compliant	Recognised in Environmental Management Strategy. This date is in the future.
<b>6.</b> The Applicant must not extract more than 5.2 million tonnes of ROM coal a year from the mining area.	Compliant	Less than 5.2 million tonnes was extracted during the reporting period. Mining plans and production forecasts are developed on this basis.
<b>7.</b> The Applicant must only transport coal from the surface facilities by rail.	Compliant	Coal extracted from Dendrobium Mine was only transported via the Kemira Valley Rail Line during the reporting period.
<b>Staged Submission of Management Plans/Monitoring Programs</b>		
<b>8.</b> With the approval of the Secretary, the Applicant may submit any management plan or monitoring program required by this consent on a progressive basis.	Compliant	Plans required under the consent are submitted as required.
<b>9.</b> The Applicant must ensure that monitoring programs, management plans and the Environmental Management Strategy, as in existence at the date of modification of consent in November 2008, continue to be implemented (to the satisfaction of the Secretary) until replaced by monitoring programs and management plans approved in accordance with the conditions of this consent.	Compliant	All required management plans have been updated and approved by the Department.

**Dendrobium Mine Development Consent Compliance Report – FY20**

CONDITION OF CONSENT	STATUS	COMMENTS
<b>Structural Adequacy</b>		
<p><b>10.</b> The Applicant must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> <li>• Under Part 4A of the EP&amp;A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.</li> <li>• Part 8 of the EP&amp;A Regulation sets out the requirements for the certification of the development.</li> </ul>	Compliant	All construction activities have been undertaken in accordance with the requirements of the BCA where applicable.
<b>Demolition</b>		
<p><b>11.</b> The Applicant must ensure that all demolition work is carried out in accordance with <i>Australian Standard AS 2601-2001: The Demolition of Structures</i>, or its latest version.</p>	Compliant	Demolition during the reporting period has been undertaken generally in accordance with AS 2601-2001.
<b>Operation of Plant and Equipment</b>		
<p><b>12.</b> The Applicant must ensure that all plant and equipment used on site is:</p> <p>(a) maintained in a proper and efficient condition; and</p> <p>(b) operated in a proper and efficient manner.</p>	Compliant	A maintenance management system is used to ensure that all plant and equipment used on site is maintained in a proper and efficient condition. Operators are trained and assessed as competent. The site entry process ensures that there is a maintenance strategy and operating procedure for equipment prior to going underground.
<b>Community Enhancement</b>		
<p><b>13.</b> The Applicant must contribute \$0.03 per tonne of saleable coal production each financial year to fund the provision of significant present and future benefits to local communities directly affected by the development. These funds must be:</p> <p>(a) administered and expended in accordance with procedures which are to the satisfaction of WCC and the Secretary;</p> <p>(b) provided by 30 September each year over the life of the consent;</p> <p>(c) based on saleable coal production in the previous financial year; and</p>	Compliant	Payment was made for FY20 in accordance with requirements.

CONDITION OF CONSENT	STATUS	COMMENTS
<p>(d) indexed in accordance with the CPI, with April 2005 used as the commencement date for indexation calculations.</p> <p>Any dispute over the operation of this fund must be referred to the Secretary for resolution.</p>		
<b>Costs of Management Measures</b>		
<p><b>14.</b> The Applicant must be responsible for the costs of all management measures (including measures to minimise, mitigate, offset or remediate impacts of the development which are not recoverable by a third party through the Coal Mine Subsidence Compensation Act 2017 or the Mining Act 1992) including but not limited to remediation of natural features, rehabilitation of ecological systems, the provision of supplementary waters and monitoring of the effectiveness of the works, as determined by the Secretary.</p>	Compliant	Management measures will be undertaken as required and at the cost of IMC where not recoverable by a third party.
<b>Strategic Biodiversity Offsets</b>		
<p><b>15.</b> If the Applicant is required to provide a biodiversity offset pursuant to this consent (including any biodiversity offset that is required under the conditions of a subordinate approval issued in accordance with this consent), the Secretary, in consultation with OEH, may accept in satisfaction of the requirement for the biodiversity offset, the provision of land that has conservation values which exceed the conservation values required to meet the relevant offsetting requirement. If the Secretary accepts such an offset under this condition, the Secretary must issue a written statement to the Applicant advising:</p> <ul style="list-style-type: none"> <li>(a) the details of the proposed offset land;</li> <li>(b) the offset requirements that are being met;</li> <li>(c) the conservation values that have been relied upon to meet the offsetting requirements; and</li> <li>(d) that in the opinion of the Secretary: <ul style="list-style-type: none"> <li>(i) the land has offsetting values in addition to those that have been relied upon to meet the offsetting requirement in condition 15(b); or</li> <li>(ii) if the land has been subject to a previous statement from the Secretary under this condition, confirmation that the land continues to have conservation values in addition to those that have been relied upon to meet the previous offsetting requirement, or that there are no further conservation values available in respect of the land.</li> </ul> </li> </ul> <p>If the Secretary has issued a statement under this condition, the Applicant can rely on that statement and the residual conservation values that the land subject to the statement may hold, to meet further offsetting requirement(s) that may be required under this consent or the project approval for the Bulli Seam Operations Project (08_0150).</p> <p>The Secretary's statement under this condition can be relied on a number of times in respect of the same land until all of the conservation values of the land the subject of the Secretary's statement have been relied upon to meet offsetting requirements</p>	Compliant	A biodiversity offset area has been established and approved by the Secretary.



CONDITION OF CONSENT	STATUS	COMMENTS
<p>under this consent or the approval for the Bulli Seam Operations Project (08_0150).</p> <p>The Applicant must make suitable arrangements to provide appropriate long-term security for the biodiversity offset area(s) accepted under this condition, within 2 years of the date of the Secretary's statement in respect of that land, unless otherwise agreed with the Secretary</p>		
<b>SCHEDULE 3: SPECIFIC ENVIRONMENTAL CONDITIONS – MINING AREA</b>		
<b>SUBSIDENCE</b>		
<i>Note: These conditions should be read in conjunction with the Statement of Commitments.</i>		
<b>Watercourse Impact Management</b>		
<p><b>1.</b> The Applicant must ensure that, as a result of the development:</p> <p>(a) no rock fall occurs at Sandy Creek Waterfall or from its overhang;</p> <p>(b) the structural integrity of the waterfall, its overhang and its pool are not impacted;</p> <p>(c) cracking in Sandy Creek within 30 m of the waterfall is of negligible environmental and hydrological consequence; and</p> <p>(d) negligible diversion of water occurs from the lip of the waterfall to the satisfaction of the Secretary.</p>	Compliant	A SMP for Area 3A was approved that meets these requirements.
<p><b>2.</b> The Applicant must ensure that underground mining operations do not cause subsidence impacts at Sandy Creek and Wongawilli Creek other than “minor impacts” (such as minor fracturing, gas release, iron staining and minor impacts on water flows, water levels and water quality) to the satisfaction of the Secretary.</p> <p><i>Note: In this condition, “minor impacts” are those defined as minor triggers in Table 23.2 of the draft SMP submitted by the Applicant for Dendrobium Area 3A.</i></p>	Compliant	A SMP for Area 3A was approved that meets these requirements. The approved SMP for Area 3B also addresses potential impacts on Wongawilli Creek. Longwall panels are aligned, where possible, to minimise impacts to watercourses.
<p><b>3.</b> The Applicant must ensure the development does not result in reduction (other than negligible reduction) in the quality or quantity of surface water or groundwater inflows to Lake Cordeaux or Lake Avon or surface water inflow to the Cordeaux River at its confluence with Wongawilli Creek, to the satisfaction of the Secretary.</p>	Compliant	Potential subsidence impacts are covered in the relevant SMP.
<p><b>4.</b> Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, Area 3B or Area 3C, the Applicant must prepare a Watercourse Impact Monitoring, Management and Contingency Plan to the satisfaction of the Secretary. Each such Plan must:</p> <p>(a) demonstrate how the subsidence impact limits in conditions 1 - 3 are to be met;</p> <p>(b) include a monitoring program and reporting mechanisms to enable close and ongoing review by the Department and DPI of</p>	Compliant	The Watercourse Impact Monitoring, Management and Contingency Plan has been incorporated into the Area 3B SMP and is also available on the South32 website.

CONDITION OF CONSENT	STATUS	COMMENTS
<p>the subsidence effects and impacts (individual and cumulative) on Wongawilli Creek, Sandy Creek and Sandy Creek Waterfall;</p> <p>(c) include a general monitoring and reporting program addressing surface water levels, water flows, water quality, surface slope and gradient, erodibility, aquatic flora and fauna (including Macquarie Perch, any other threatened aquatic species and their habitats) and ecosystem function;</p> <p>(d) include a management plan for avoiding, minimising, mitigating and remediating impacts on watercourses, which includes a tabular contingency plan (based on the Trigger Action Response Plan structure) focusing on measures for remediating both predicted and unpredicted impacts;</p> <p>(e) address third and higher order streams individually but address first and second order streams collectively;</p> <p>(f) be prepared in consultation with EPA, SCA and DPI;</p> <p>(g) incorporate means of updating the plan based on experience gained as mining progresses;</p> <p>(h) be approved prior to the carrying out of any underground mining operations that could cause subsidence impacts on watercourses in the relevant Area; and</p> <p>(i) be implemented to the satisfaction of the Secretary.</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• <i>Should review by the Department of reports by the Applicant under paragraph (b) indicate that subsidence impacts have exceeded or threaten to limits imposed in conditions 1-3, then under condition 4 of Schedule 2 the Secretary may instruct the Applicant to implement reasonable and feasible requirements, which may include to cease mining within the operative longwall, shorten the length of that longwall or shorten the length and/or width of future longwalls.</i></li> <li>• <i>Requirements under paragraphs (a) and (b) in respect of Sandy Creek and Sandy Creek Waterfall relate only to the Watercourse Impact Monitoring, Management and Contingency Plan for Area 3A.</i></li> </ul>		
<b>Swamp Impact Management</b>		
<p><b>5.</b> The Applicant must ensure that subsidence does not cause erosion of the surface or changes in ecosystem functionality of Swamp 15a and that the structural integrity of its controlling rockbar is maintained or restored, to the satisfaction of the Secretary.</p>	Compliant	Subsidence management measures for Swamp 15a are included in the SMP for Area 3A.
<p><b>6.</b> Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, Area 3B or Area 3C, the Applicant must prepare a Swamp Impact Monitoring, Management and Contingency Plan to the satisfaction of the Secretary. Each such Plan must:</p> <p>(a) demonstrate how the subsidence impact limits in condition 5 are to be met;</p> <p>(b) include a monitoring program and reporting mechanisms to enable close and ongoing review by the Department and DRG of the subsidence effects and impacts (individual and cumulative) of each Area 3A longwall on Swamp 15a;</p> <p>(c) include a general monitoring and reporting program addressing</p>	Compliant	The Swamp Impact Monitoring, Management and Contingency Plan has been incorporated into the Area 3A and 3B SMPs. The Swamp Impact Monitoring, Management and Contingency Plan and the Watercourse Impact Monitoring, Management and Contingency Plan

CONDITION OF CONSENT	STATUS	COMMENTS
<p>surface water levels, near surface groundwater levels, water quality, surface slope and gradient, erodibility, flora and ecosystem function;</p> <p>(d) include a management plan for avoiding, minimising, mitigating and remediating impacts on swamps, which includes a tabular contingency plan (based on the Trigger Action Response Plan structure) focusing on measures for remediating both predicted and unpredicted impacts;</p> <p>(e) address headwater and valley infill swamps separately and address each swamp individually;</p> <p>(f) be prepared in consultation with OEH, Water NSW and DRG;</p> <p>(g) incorporate means of updating the plan based on experience gained as mining progresses;</p> <p>(h) be approved prior to the carrying out of any underground mining operations that could cause subsidence impacts on swamps in the relevant Area; and</p> <p>(i) be implemented to the satisfaction of the Secretary.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> <li><i>Should review by the Department of reports by the Applicant under paragraph (b) indicate that subsidence impacts have exceeded or threaten to exceed limits imposed in condition 5, then under condition 4 of Schedule 2 the Secretary may instruct the Applicant to implement reasonable and feasible requirements, which may include to cease mining within the operative longwall, shorten the length of that longwall or shorten the length and/or width of future longwalls.</i></li> <li><i>Requirements under paragraphs (a) and (b) relate only to the Swamp Impact Monitoring, Management and Contingency Plan for Area 3A.</i></li> </ul>		<p>documents were revised to take into account the SMP Approval Conditions and submissions from regulatory agencies.</p>
Subsidence Management Plans		
<p><b>7.</b> Prior to carrying out any underground mining operations that could cause subsidence in either Area 3A, 3B or 3C, the Applicant must prepare a Subsidence Management Plan (SMP) to the satisfaction of the Secretary and the Secretary of DRG. Each such SMP must:</p> <p>(a) integrate ongoing management of Areas 1 and 2;</p> <p>(b) integrate the Watercourse and Swamp Impact Monitoring, Management and Contingency Plans required under conditions 4 and 6;</p> <p>(c) include monitoring of subsidence effects;</p> <p>(d) include a WaterNSW Assets Protection Plan;</p> <p>(e) include monitoring, management, and contingency plans for all other significant natural features and all significant man made features which may be impacted by subsidence, including:</p> <ul style="list-style-type: none"> <li>landscape (including cliffs and steep slopes);</li> <li>groundwater (see condition 13);</li> <li>terrestrial flora and fauna and ecology (including all threatened species assessed as being likely to be significantly affected by the development and their habitats);</li> <li>Aboriginal and other cultural heritage (see condition 12); and electrical, communications and other infrastructure;</li> </ul> <p>(f) be prepared in consultation with OEH, WaterNSW and DRG;</p> <p>(g) be approved prior to the carrying out of any underground mining operations that could cause subsidence in the relevant</p>	<p>Compliant</p>	<p>SMPs that meet these requirements have been and will be submitted as required. These SMPs are available on the South32 website.</p>

CONDITION OF CONSENT	STATUS	COMMENTS
<p>Area; and (h) be implemented to the satisfaction of the Secretary and the Secretary of DRG.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> <li><i>The WaterNSW Assets Protection Plan required under this condition must also be prepared and implemented to the satisfaction of the WaterNSW.</i></li> <li><i>The contingency plans required under paragraph (e) must address remediation (as appropriate) and be based on a TARP structure.</i></li> </ul>		
<p><b>8.</b> The SMPs prepared under condition 7 for Areas 3B and 3C must:</p> <p>(a) include a mine plan for the relevant Area;</p> <p>(b) include a detailed subsidence impact assessment, clearly setting out all predicted subsidence effects, subsidence impacts and environmental consequences;</p> <p>(c) include a minimum of 2 years of baseline data, collected at appropriate frequency and scale, for all significant natural features;</p> <p>(d) identify and assess the significance of all natural features located within 600 m of the edge of secondary extraction;</p> <p>(e) distinguish between, clearly describe and adequately quantify all subsidence effects, subsidence impacts and environmental consequences;</p> <p>(f) propose limits on subsidence impacts and environmental consequences to be applied within the relevant Area;</p> <p>(g) be otherwise prepared in accordance with any guidelines for SMPs developed by the Department and/or DRG;</p> <p>(h) be approved prior to the carrying out of any underground mining operations that could cause subsidence in the relevant Area; and</p> <p>(i) be implemented to the satisfaction of the Secretary and the Secretary of DRG.</p> <p><i>Note: In approving an SMP, the Secretary may impose conditions containing subsidence impact limits (similar to conditions 1- 3 &amp; 5), subsidence management mechanisms (similar to conditions 4 &amp; 6) or other conditions.</i></p>	Compliant	The SMPs prepared are in line with this condition.
<b>End of Panel Reporting</b>		
<p><b>9.</b> Within 4 months of the completion of each longwall panel, or as otherwise permitted by the Secretary, the Applicant must:</p> <p>(a) prepare an end-of-panel report:</p> <ul style="list-style-type: none"> <li>reporting all subsidence effects (both individual and cumulative) for the panel and comparing subsidence effects with predictions;</li> <li>describing in detail all subsidence impacts (both individual and cumulative) for the panel;</li> <li>discussing the environmental consequences for watercourses, swamps, water yield, water quality, aquatic ecology, terrestrial ecology, groundwater, cliffs and steep slopes; and</li> </ul>	Compliant	End of Panel Reports for Longwalls 6, 7, 8, 9, 10, 11,12, 13, 14 and 15 have been submitted in accordance with the timing of this condition.

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<ul style="list-style-type: none"> <li>comparing subsidence impacts and environmental consequences with predictions; and</li> <li>(b) submit the report to the Department, DPI, SCA, EPA, DWE and any other relevant agency to the satisfaction of the Secretary.</li> </ul>		
<p><b>10.</b> The Applicant must include a comprehensive summary, analysis and discussion of the results of monitoring of subsidence effects, subsidence impacts and environmental consequences in each Annual Review.</p> <p><i>Note: Conditions 9 and 10 apply to Area 2, as well as to Areas 3A, 3B and 3C.</i></p>	Compliant	A summary of subsidence effects, impacts and environmental consequences is included in the Annual Review.
<b>Subsidence Expert Assessments</b>		
<p><b>11.</b> The Applicant must pay the reasonable costs of the Department in engaging independent experts to advise it when it assesses SMPs prepared under condition 7 for Areas 3B and 3C.</p>	N/A	No such request has been received from the Department.
<b>ABORIGINAL HERITAGE</b>		
<p><b>12.</b> The SMPs prepared under condition 7 must include an Aboriginal Heritage Plan, which must include a:</p> <p>(a) description of known Aboriginal heritage sites;</p> <p>(b) protocol for the ongoing consultation and involvement of the Aboriginal community in the conservation and management of Aboriginal heritage;</p> <p>(c) description of the measures that would be implemented to protect Aboriginal sites generally, including measures that would be implemented to secure, analyse and record sites at risk of subsidence;</p> <p>(d) description of the measures that would be implemented to protect Aboriginal site 52-2-1646, including:</p> <ul style="list-style-type: none"> <li>a full recording and assessment of the site's rock art;</li> <li>a more detailed subsidence assessment for the site;</li> <li>measures which seek to avoid any significant impact on the site and any necessary contingency plans to protect the site against collapse or substantial impact on its rock art; and</li> </ul> <p>(e) description of the measures that would be implemented if any new Aboriginal objects or skeletal remains are discovered during the development.</p>	Compliant	The Aboriginal Heritage Plan has been incorporated into the Area 3A and 3B SMPs.
<b>GROUNDWATER MONITORING PROGRAM</b>		
<p><b>13.</b> The SMPs prepared under condition 7 must include a Groundwater Monitoring Program, which must include:</p> <p>(a) proposals to develop a detailed regional and local groundwater model, with special reference to flows to and from nearby water storages;</p> <p>(b) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality;</p> <p>(c) groundwater impact assessment criteria;</p> <p>(d) a program to monitor the impact of the development on:</p>	Compliant	<p>The Groundwater Monitoring Program has been incorporated into the Area 3A and 3B SMPs.</p> <p>A Groundwater Monitoring and Modelling Plan is also in</p>

CONDITION OF CONSENT	STATUS	COMMENTS																																																		
<ul style="list-style-type: none"><li>groundwater levels, yield and quality (particularly any potential loss of flow to, or flow from, WaterNSW water storages);</li><li>coal seam aquifers and overlying aquifers; and</li><li>groundwater springs and seeps; and</li></ul> <p>(e) consideration of the requirements of the latest version (or subsequent replacement) of WaterNSW's <i>The Design of a Hydrological and Hydrogeological Monitoring Program to Access the Impacts of Longwall Mining in SCA Catchment</i>.</p>		place.																																																		
ENVIRONMENTAL OFFSETS																																																				
<p><b>14.</b> The Applicant must provide suitable offsets for loss of water quality or loss of water flows to WaterNSW storages, clearing and other ground disturbance (including cliff falls) caused by its mining operations and/or surface activities within the mining area, unless otherwise addressed by the conditions of this consent, to the satisfaction of the Secretary. These offsets must:</p> <p>(a) be submitted to the Secretary for approval by 30 April 2009;</p> <p>(b) be prepared in consultation with WaterNSW;</p> <p>(c) provide measures that result in a beneficial effect on water quality, water quantity, aquatic ecosystems and/or ecological integrity of WaterNSW's special areas or water catchments.</p>	Compliant	This offset was accepted by WaterNSW on 10 February 2009.																																																		
SCHEDULE 4: SPECIFIC ENVIRONMENTAL CONDITIONS – SURFACE FACILITIES																																																				
NOISE																																																				
Noise Impact Assessment Criteria																																																				
<p><b>1.</b> The Applicant must ensure that the noise generated at the surface facilities does not exceed the noise impact assessment criteria in Table 1 at any residence on privately-owned land, or on more than 25% of any privately-owned land. The applicable criteria for any residence not listed in Table 1 must be the criteria applying at the nearest listed residence.</p> <p><i>Table 1: Noise impact assessment criteria dB(A)</i></p> <table><tr><th>Day L<sub>Aeq</sub>(15 min)</th><th>Evening L<sub>Aeq</sub>(15 min)</th><th>Night L<sub>Aeq</sub>(15 min)</th><th>L<sub>A1</sub>(1 min)</th><th>Residence (as shown in the Noise Monitoring Program)</th></tr><tr><td>42</td><td>42</td><td>38</td><td>48</td><td>R2</td></tr><tr><td>41</td><td>41</td><td>40</td><td>50</td><td>R22</td></tr><tr><td>40</td><td>40</td><td>39</td><td>49</td><td>R1</td></tr><tr><td></td><td></td><td></td><td></td><td>R9</td></tr><tr><td></td><td></td><td></td><td></td><td>R15a</td></tr><tr><td>40</td><td>40</td><td>37</td><td>47</td><td>R3a</td></tr><tr><td></td><td></td><td></td><td></td><td>R5a</td></tr><tr><td></td><td></td><td></td><td></td><td>R6a&amp;b</td></tr><tr><td>37</td><td>35</td><td>35</td><td>45</td><td>R39a</td></tr></table> <p>Notes:</p> <ul style="list-style-type: none"><li>To determine compliance with the L<sub>Aeq</sub>(15 minute) limit, noise from the development is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the development is impractical, DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.</li><li>To determine compliance with the L<sub>A1</sub>(1 minute) limit, noise from the development is to be measured at 1 metre from the dwelling facade. Where it can be demonstrated that direct measurement of noise from the development is impractical, DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).</li><li>The noise emission limits identified in the above table apply under meteorological conditions of:<ul style="list-style-type: none"><li>wind speeds of up to 3 m/s at 10 metres above ground level; or</li><li>up to 3°C/100 m temperature inversion strength for all receivers, plus a 2 m/s source-to-receiver component drainage flow wind at 10 metres above ground level for those receivers where applicable.</li></ul></li><li>These limits do not apply if the Applicant has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Applicant has advised the Department and DECC in writing of the terms of this agreement.</li></ul>	Day L <sub>Aeq</sub> (15 min)	Evening L <sub>Aeq</sub> (15 min)	Night L <sub>Aeq</sub> (15 min)	L <sub>A1</sub> (1 min)	Residence (as shown in the Noise Monitoring Program)	42	42	38	48	R2	41	41	40	50	R22	40	40	39	49	R1					R9					R15a	40	40	37	47	R3a					R5a					R6a&b	37	35	35	45	R39a	Non-compliant	<p>Noise monitoring is undertaken in accordance with the approved Noise Management Plan. A summary of results is provided via the Dendrobium Mine Annual Review and in the 14-day report published on the South32 website.</p> <p>There was one non-compliance recorded at R6a at 12:54 pm on 11/09/2019. A noise level of 43 dBA (L<sub>Aeq</sub>) was recorded, which was 3 dBA above the noise impact assessment criteria.</p> <p>There were also three exceedances of the</p>
Day L <sub>Aeq</sub> (15 min)	Evening L <sub>Aeq</sub> (15 min)	Night L <sub>Aeq</sub> (15 min)	L <sub>A1</sub> (1 min)	Residence (as shown in the Noise Monitoring Program)																																																
42	42	38	48	R2																																																
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				R6a&b																																																
37	35	35	45	R39a																																																



CONDITION OF CONSENT	STATUS	COMMENTS																																								
		LA <sub>eq</sub> , 15-minute noise criteria at monitoring location R6a during the reporting period <sup>1</sup> .																																								
Land Acquisition Criteria																																										
<p>2. If the noise generated at the surface facilities exceeds the relevant criteria in Table 2 at any residence on privately-owned land or on more than 25% of any privately-owned land, the Applicant must, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8 - 10 of schedule 4. The applicable criteria for any residence not listed in Table 2 must be the criteria applying at the nearest listed residence.</p> <p>Table 2: Noise acquisition criteria dB(A)</p> <table><tr><th>Day L<sub>Aeq</sub>(15 min)</th><th>Evening L<sub>Aeq</sub>(15 min)</th><th>Night L<sub>Aeq</sub>(15 min)</th><th>Residence (as shown in the Noise Monitoring Program)</th></tr><tr><td>47</td><td>47</td><td>43</td><td>R2</td></tr><tr><td>46</td><td>46</td><td>45</td><td>R22</td></tr><tr><td>45</td><td>45</td><td>44</td><td>R1</td></tr><tr><td></td><td></td><td></td><td>R9</td></tr><tr><td></td><td></td><td></td><td>R15a</td></tr><tr><td>45</td><td>45</td><td>42</td><td>R3a</td></tr><tr><td></td><td></td><td></td><td>R5a</td></tr><tr><td></td><td></td><td></td><td>R6a&amp;b</td></tr><tr><td>42</td><td>40</td><td>40</td><td>R39a</td></tr></table> <p>Note: Noise generated by the development is to be measured in accordance with the notes to Table 1.</p>	Day L <sub>Aeq</sub> (15 min)	Evening L <sub>Aeq</sub> (15 min)	Night L <sub>Aeq</sub> (15 min)	Residence (as shown in the Noise Monitoring Program)	47	47	43	R2	46	46	45	R22	45	45	44	R1				R9				R15a	45	45	42	R3a				R5a				R6a&b	42	40	40	R39a	N/A	<p>Noise levels recorded from operational activities have not exceeded the criteria in Table 2.</p> <p>No written requests have been received from landholders for land acquisition due to noise in the reporting period.</p>
Day L <sub>Aeq</sub> (15 min)	Evening L <sub>Aeq</sub> (15 min)	Night L <sub>Aeq</sub> (15 min)	Residence (as shown in the Noise Monitoring Program)																																							
47	47	43	R2																																							
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			R9																																							
			R15a																																							
45	45	42	R3a																																							
			R5a																																							
			R6a&b																																							
42	40	40	R39a																																							
Rail Haulage Impact Assessment Criteria																																										
<p>3. The Applicant must ensure that noise generated by locomotives using the Kemira Valley rail line does not exceed the rail noise impact assessment criteria in Table 3.</p> <p>Table 3: Rail noise impact assessment criteria</p> <table><tr><th>Operating Condition</th><th>Measurement Conditions</th><th>Criteria L<sub>A1</sub>(1 min)</th></tr><tr><td rowspan="3">Locomotive at idle, with compressor radiator fans and air conditioning operating at maximum load All other throttle settings under self-load, with compressor radiator fans and air conditioning operating at maximum load All service conditions</td><td>Stationary 15 metre contour</td><td>70 dB(A)</td></tr><tr><td>Stationary 15 metre contour</td><td>87 dB(A) 95 dB(Lin)</td></tr><tr><td>Up to 50 kilometres per hour, 15 metres from centreline of rail track</td><td>87 dB(A) 95 dB(Lin) Must be non-tonal Linear noise levels must not exceed A-weighted noise levels by more than 15 dB</td></tr></table> <p>Note: All measured noise levels must be assessed for tonality in accordance with the NSW Industrial Noise Policy, unless otherwise specified.</p>	Operating Condition	Measurement Conditions	Criteria L <sub>A1</sub> (1 min)	Locomotive at idle, with compressor radiator fans and air conditioning operating at maximum load All other throttle settings under self-load, with compressor radiator fans and air conditioning operating at maximum load All service conditions	Stationary 15 metre contour	70 dB(A)	Stationary 15 metre contour	87 dB(A) 95 dB(Lin)	Up to 50 kilometres per hour, 15 metres from centreline of rail track	87 dB(A) 95 dB(Lin) Must be non-tonal Linear noise levels must not exceed A-weighted noise levels by more than 15 dB	Compliant	<p>Rail noise monitoring was undertaken during the reporting period. Overall noise levels (LA<sub>eq</sub> and L<sub>eq</sub>) were compliant.</p>																														
Operating Condition	Measurement Conditions	Criteria L <sub>A1</sub> (1 min)																																								
Locomotive at idle, with compressor radiator fans and air conditioning operating at maximum load All other throttle settings under self-load, with compressor radiator fans and air conditioning operating at maximum load All service conditions	Stationary 15 metre contour	70 dB(A)																																								
	Stationary 15 metre contour	87 dB(A) 95 dB(Lin)																																								
	Up to 50 kilometres per hour, 15 metres from centreline of rail track	87 dB(A) 95 dB(Lin) Must be non-tonal Linear noise levels must not exceed A-weighted noise levels by more than 15 dB																																								
Continuous Improvement																																										
<p>4. The Applicant must:</p> <p>(a) continue to investigate ways to reduce the noise generated by the development (including off-site road noise, noise and vibration impacts from the operation of the Kemira Valley rail line and</p>	Compliant	<p>Details of noise investigations undertaken and mitigation improvements</p>																																								

<sup>1</sup> Note that for the determination of compliance, the NSW Industrial Noise Policy states in Section 11.1.3:

*A development will be deemed to be in non-compliance with noise consent or licence condition of the monitored noise level is more than 2dB above the statutory noise limit specified in the consent or licence condition.*

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maximum noise levels which may result in sleep disturbance); (b) continue to implement all reasonable and feasible best practice noise mitigation measures; and (c) report on these investigations and the implementation and effectiveness of these measures in the Annual Review, to the satisfaction of the Secretary.		implemented are noted in the Annual Review.
<b>5.</b> The Applicant must use its best endeavours to minimise wheel squeal, brake squeal and locomotive wheel slippage arising from rail haulage on the Kemira Valley rail line.	Compliant	Details regarding noise investigations undertaken and mitigation improvements implemented are detailed in the Annual Review.
<b>Additional Noise Mitigation Measures</b>		
<b>6.</b> Upon receiving a written request from the owner of any residence where subsequent noise monitoring shows the noise generated by the development is 3 dB(A) greater than the noise impact assessment criteria in Table 1 (except where a negotiated noise agreement is in place) the Applicant must implement reasonable and feasible noise mitigation measures (such as double glazing, insulation and/or air conditioning) at any residence on the land in consultation with the landowner. If within 3 months of receiving this request from the landowner, the Applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.	Compliant	A request for noise mitigation was received from a resident during the reporting period. An offer was provided and accepted by the resident.
<b>Monitoring</b>		
<p><b>7.</b> The Applicant must prepare a Noise Monitoring Program for the development to the satisfaction of the Secretary. This program must:</p> <ul style="list-style-type: none"> <li>(a) be submitted to the Secretary for approval by 30 April 2009;</li> <li>(b) be prepared in consultation with EPA;</li> <li>(c) provide for quarterly attended noise monitoring and real-time noise monitoring (where appropriate) to monitor the performance of the development, especially in residential areas close to the surface facilities; and</li> <li>(d) include a noise monitoring protocol for evaluating compliance with the noise impact and land acquisition criteria in this consent.</li> </ul> <p>The Applicant must implement the Noise Monitoring Program as approved by the Secretary.</p> <p><i>Note: This program must expressly monitor the modifying factors referred to in the NSW Industrial Noise Policy (such as intermittency, tonality and low frequency)</i></p>	Compliant	An approved Noise Management Plan (Monitoring Program) is in place.

CONDITION OF CONSENT	STATUS	COMMENTS																							
BLASTING AND VIBRATION																									
8. The Applicant is not permitted to undertake blasting operations at the surface facilities except with the prior written approval of EPA and subject to any conditions which EPA may impose.	Compliant	No blasting activities were undertaken.																							
AIR QUALITY																									
Impact Assessment Criteria																									
<p>9. The Applicant must ensure that dust generated by the development does not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.</p> <p><i>Table 4: Long term impact assessment criteria for particulate matter</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>90 µg/m<sup>3</sup></td></tr><tr><td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td><td>Annual</td><td>30 µg/m<sup>3</sup></td></tr></table> <p><i>Table 5: Short term impact assessment criteria for particulate matter</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Criterion</th></tr><tr><td>Particulate matter &lt; 10 µm (PM<sub>10</sub>)</td><td>24 hour</td><td>50 µg/m<sup>3</sup></td></tr></table> <p><i>Table 6: Long term impact assessment criteria for deposited dust</i></p> <table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>Deposited dust</td><td>Annual</td><td>2 g/m<sup>2</sup>/month</td><td>4 g/m<sup>2</sup>/month</td></tr></table> <p><small>Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.</small></p>	Pollutant	Averaging period	Criterion	Total suspended particulate (TSP) matter	Annual	90 µg/m <sup>3</sup>	Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	30 µg/m <sup>3</sup>	Pollutant	Averaging period	Criterion	Particulate matter < 10 µm (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>	Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level	Deposited dust	Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month	Compliant	Air quality monitoring is undertaken in accordance with the Air Quality Management Plan. Results are provided in the Annual Review and published in the 14-day report on the South32 website. No exceedances of criteria recorded for this reporting period. It is noted that bushfire smoke heavily influenced results over the November 2019 to February 2020 period.
Pollutant	Averaging period	Criterion																							
Total suspended particulate (TSP) matter	Annual	90 µg/m <sup>3</sup>																							
Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	30 µg/m <sup>3</sup>																							
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Particulate matter < 10 µm (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>																							
Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level																						
Deposited dust	Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month																						
Monitoring																									
<p>10. The Applicant must prepare and implement an Air Quality Monitoring Program for the surface facilities (excepting those surface facilities within the mining area) to the satisfaction of the Secretary. This program must:</p> <p>(a) be submitted to the Secretary for approval by 30 April 2009;</p> <p>(b) be prepared in consultation with EPA;</p> <p>(c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the development; and</p> <p>(d) include an air quality monitoring protocol for evaluating compliance with the air quality impact assessment criteria in this consent.</p> <p>The Applicant must implement the Air Quality Monitoring Program as approved by the Secretary.</p>	Compliant	An approved Air Quality Management Plan (Monitoring Program) is in place and has been implemented																							
METEOROLOGICAL MONITORING																									
11. During the development, the Applicant must ensure that it has a suitable meteorological station in the vicinity of the site that is generally in accordance with the requirements in the guideline <i>Approved Methods for Sampling of Air Pollutants in New South Wales</i> .	Compliant	Weather stations are located at the Kemira Valley Coal Loading Facility, Dendrobium Pit Top and Ventilation Shaft 2/3 site that																							

CONDITION OF CONSENT	STATUS	COMMENTS
		generally meet these requirements.
<b>WATER MANAGEMENT</b>		
<b>Discharges</b>		
<p><b>12.</b> The Applicant must ensure all surface water discharges from the surface facilities:</p> <p>(a) meet the relevant ANZECC water quality objectives for the protection of aquatic ecosystems and water quality of existing receiving waters; and</p> <p>(b) comply with the discharge limits (both volume and quality) set for the development in any EPL.</p>	Compliant	<p>Water quality monitoring is undertaken as per the Water Management Plan.</p> <p>Water quality was within EPL limits during the reporting period.</p>
<b>Water Management Plan</b>		
<p><b>13.</b> The Applicant must prepare a Water Management Plan for the surface facilities to the satisfaction of the Secretary. This plan must:</p> <p>(a) be submitted to the Secretary for approval by 30 April 2009;</p> <p>(b) be prepared in consultation with EPA, WaterNSW and DoI by suitably qualified expert/s whose appointment/s have been approved by the Secretary; and</p> <p>(c) include a:</p> <ul style="list-style-type: none"> <li>• Site Water Balance;</li> <li>• Erosion and Sediment Control Plan;</li> <li>• Surface Water Monitoring Program; and</li> <li>• Surface and Ground Water Response Plan.</li> </ul> <p>The Applicant must implement the Water Management Plan as approved by the Secretary.</p>	Compliant	<p>An approved Water Management Plan is in place and has been implemented.</p>
<b>Site Water Balance</b>		
<p><b>14.</b> The Site Water Balance must:</p> <p>(a) include details of:</p> <ul style="list-style-type: none"> <li>• sources and security of water supply;</li> <li>• water use on site;</li> <li>• water intercepted by mining operations;</li> <li>• water management on site;</li> <li>• off-site water transfers and water stored or disposed of underground;</li> <li>• reporting procedures; and</li> </ul> <p>(b) describe measures to minimise water use by the development.</p>	Compliant	<p>The Site Water Balance has been incorporated in the Water Management Plan to meet these requirements.</p>
<b>Erosion and Sediment Control</b>		
<p><b>15.</b> The Erosion and Sediment Control Plan must:</p> <p>(a) be consistent with the requirements of the <i>Managing Urban Stormwater: Soils and Construction Manual</i> (Landcom 2004, or its latest version);</p> <p>(b) identify activities that could cause soil erosion and generate sediment;</p>	Compliant	<p>The Erosion and Sediment Control Plan has been incorporated in the Water Management Plan (refer to Element II) to meet these</p>

<b>CONDITION OF CONSENT</b>	<b>STATUS</b>	<b>COMMENTS</b>
(c) describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters; (d) describe the location, function, and capacity of erosion and sediment control structures; and (e) describe what measures would be implemented to monitor and maintain the structures over time.		requirements.
<b>Surface Water Monitoring Program</b>		
<b>16.</b> The Surface Water Monitoring Plan must include: (a) baseline data on surface water flows and quality in streams and other waterbodies that have been or could be affected by the surface facilities; (b) surface water quality and stream health assessment criteria, including trigger levels for investigating any potentially adverse surface water impacts; (c) a program to monitor the impact of the surface facilities on surface water flows and quality, stream health and channel stability; and (d) procedures for reporting the results of this monitoring.	Compliant	The Surface Water Monitoring Plan has been incorporated in the Water Management Plan to meet these requirements. A summary of the results from the monitoring program is provided in the Annual Review and published in the 14-day report on the South32 website.
<b>Surface and Ground Water Response Plan</b>		
<b>17.</b> The Surface and Ground Water Response Plan must describe what measures and/or procedures would be implemented to: (a) respond to any exceedances of the surface water, stream health, and groundwater assessment criteria; and (b) mitigate and/or offset any adverse impacts on groundwater dependent ecosystems, aquatic ecosystems or riparian vegetation.	Compliant	The Surface and Ground Water Response Plan has been incorporated in the Water Management Plan to meet these requirements.
<b>LANDSCAPE MANAGEMENT</b>		
<b>Rehabilitation</b>		
<b>18.</b> The Applicant must rehabilitate the surface facilities sites to the satisfaction of DRG. For rehabilitation works within the Metropolitan Special Area, the Applicant must also ensure that these works are carried out to the satisfaction of WaterNSW.	Compliant	A Mining Operations Plan and Conceptual Site Closure Plan have been developed. Closure and/or rehabilitation activities, when undertaken, will meet the requirements of the relevant regulatory agencies. Rehabilitation undertaken during each financial year is reported in the Annual Review.
<b>Landscape Management Plan</b>		
<b>19.</b> The Applicant must prepare and implement a Landscape Management Plan for the surface facilities to the satisfaction of the Secretary and the DRG. This plan must:	Compliant	An approved Landscape Management Plan is in place and is being

CONDITION OF CONSENT	STATUS	COMMENTS
<p>(a) be submitted for approval by 30 April 2009;</p> <p>(b) be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Secretary;</p> <p>(c) be prepared in consultation with OEH and WaterNSW; and</p> <p>(d) include a:</p> <ul style="list-style-type: none"> <li>• Rehabilitation Management Plan; and</li> <li>• Mine Closure Plan.</li> </ul> <p>The Applicant must implement the Landscape Management Plan as approved by the Secretary.</p> <p><i>Note: The Mine Closure Plan may be submitted at a date agreed by the Secretary, provided that this date is at least 2 years prior to the planned cessation of mining at the site.</i></p>		<p>progressively implemented.</p>
<b>Rehabilitation Management Plan</b>		
<p><b>20.</b> The Rehabilitation Management Plan must include:</p> <p>(a) the rehabilitation objectives for the surface facilities sites;</p> <p>(b) a general description of the short, medium and long term measures that would be implemented to rehabilitate these sites;</p> <p>(c) performance and completion criteria for the rehabilitation of these sites;</p> <p>(d) a description of how the performance of the rehabilitation works would be monitored over time to achieve the stated objectives and against the relevant performance and completion criteria;</p> <p>(e) any measures necessary to ensure that abandoned mine workings do not impact on stored waters or dams; and</p> <p>(f) details of who is responsible for monitoring, reviewing and implementing the plan.</p>	<p>Compliant</p>	<p>The Rehabilitation Management Plan has been incorporated in the Landscape Management Plan.</p>
<b>Mine Closure Plan</b>		
<p><b>21.</b> The Mine Closure Plan must:</p> <p>(a) be prepared in consultation with the affected councils and CCC;</p> <p>(b) define the objectives and criteria for mine closure;</p> <p>(c) investigate options for the future use of the surface facilities sites;</p> <p>(d) include the proposed management and use of any heritage-listed buildings;</p> <p>(e) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment;</p> <p>(f) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the development; and</p> <p>(g) describe how the performance of these measures would be monitored over time.</p>	<p>Compliant</p>	<p>A summary of the Conceptual Mine Closure Plan is provided in the Landscape Management Plan.</p> <p>A Conceptual Site Closure Plan (as a separate document) has been developed that generally meets these requirements and all requirements will be met closer to mine closure. Site Closure is not planned within the next two years.</p>



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<b>Bushfire Management Plan</b>		
<b>22.</b> The Applicant must prepare and implement a Bushfire Management Plan for the site, with particular reference to the mining area, in consultation with WaterNSW and to the satisfaction of the Rural Fire Service.	Compliant	An approved Bushfire Management Plan is in place.
<b>Photographic Archival Recording</b>		
<b>22A.</b> The Applicant must undertake photographic archival recording of significant built and landscape elements affected by Modification 8 prior to the commencement, during the works and after the completion of works, in accordance with the NSW Heritage Division publications 'How to prepare archival records of heritage items and Photographic Recording of Heritage Items using Film or Digital Capture'. A copy of these archival recordings must be provided to the Heritage Council of NSW and WCC.	Compliant	Archival recording was undertaken prior to, during and after the completion of works. The report dated 30 March 2020 has been submitted to the Wollongong City Council and Heritage Council of NSW.
<b>Unexpected Historical Archaeological Relics</b>		
<b>22B.</b> In the event that unexpected archaeological artefacts are uncovered during ground disturbing works, the Applicant must ensure work ceases in the subject area and a suitably trained archaeologist should attend the site to inspect the find. Should archaeological material be identified as having heritage significance, the Applicant must obtain any necessary further approvals before works can proceed.	Compliant	No unexpected archaeological artefacts were identified during ground disturbing works
<b>TRANSPORT</b>		
<b>Rail Transport of Coal</b>		
<b>23.</b> The Applicant must ensure that trains do not travel on the Kemira Valley rail line: (a) between 12 midnight and 6 am, until 29 April 2010; and (b) between 11 pm and 6 am, from 30 April 2010 unless written approval is obtained from EPA for emergency use of the rail line.	Compliant	The rail curfew has been adhered to during the reporting period.  No emergency use was required.
<b>24.</b> The Applicant must record the: (a) date and time of each train movement on the Kemira Valley rail line; and (b) amount of coal transported from the KVCLF each year and include a comprehensive summary and discussion of the results of this monitoring in each Annual Review.	Compliant	This data is recorded via the Logistics KPI Report and also on Pacific National Run Sheets. The data is summarised and reported in the Annual Review.
<b>Road Transport</b>		
<b>25.</b> The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Secretary. This plan must:	Compliant	An approved Traffic Management Plan is in place and has been

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<p>(a) be submitted to the Secretary for approval by 30 April 2009;</p> <p>(b) be prepared in consultation with the WCC, Mt Kembla Primary School and the CCC;</p> <p>(c) include traffic control measures for truck movements through residential areas, including Stones Road and its intersection with Cordeaux Road;</p> <p>(d) provide that mine shift changeover times and deliveries by heavy vehicle to the pit top facilities and KVCLF do not conflict with pick-up and drop-off times for Mt Kembla Primary School students;</p> <p>(e) provide heavy vehicle speed limits;</p> <p>(f) include a Driver's Code of Conduct to be applied to the applicant's employees and contractors working at the development and measures for the enforcement of this code; and</p> <p>(g) include procedures for regular monitoring of compliance with this plan.</p> <p>The Applicant must implement the Traffic Management Plan as approved by the Secretary.</p>		<p>implemented.</p> <p>The Dendrobium Drivers' Code of Conduct was refreshed in 2020.</p>
<b>Road Maintenance</b>		
<p><b>26.</b> The Applicant must enter into an agreement with WaterNSW, to the satisfaction of the Secretary, to share the reasonable costs of maintenance of all access roads, bridges and creek crossings located on land controlled by WaterNSW and used by the Applicant.</p>	Compliant	An agreement has been developed with WaterNSW.
<p><b>27.</b> The Applicant must establish an agreement with WCC to share the reasonable costs of maintenance of Stones Road for the life of the development. Prior to decommissioning of the mine, Stones Road must be inspected, to the satisfaction of WCC, and the road restored by the Applicant to a standard not less than its condition prior to the development's approval. If roadworks are not carried out by the Applicant within one month of being informed by WCC that these works are required under the maintenance agreement, WCC must be entitled to carry out such maintenance work at the Applicant's cost. Any dispute over implementation of this condition is to be referred to the Secretary for resolution.</p>	Non-Compliant	A Maintenance Agreement for Stones Road is in place, dated 28 August 2019.
<b>VISUAL</b>		
<b>Visual Amenity</b>		
<p><b>28.</b> The Applicant must minimise the visual impacts of the surface facilities to the satisfaction of the Secretary.</p>	Compliant	A vegetative screen is maintained around the operation.
<b>Lighting Emissions</b>		
<p><b>29.</b> The Applicant must:</p> <p>(a) ensure that all external lighting associated with the surface facilities complies with <i>Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting</i>;</p>	Compliant	An approved Lighting Management Plan is in place.

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(b) take all practicable measures to mitigate off-site lighting impacts from the surface facilities; (c) ensure that light emitted from headlights of locomotives operating on the Kemira Valley rail line are screened from residences; and (d) report on the effectiveness of lighting emission controls in the Annual Review to the satisfaction of the Secretary.		New lighting has been reviewed and modified where possible to minimise offsite impacts.
<b>WASTE</b>		
<b>30.</b> The Applicant must: (a) monitor the amount of waste generated by the development; (b) investigate ways to reuse, recycle, or minimise this waste; (c) implement reasonable and feasible measures to minimise this waste; and (d) report on waste management and minimisation in the Annual Review to the satisfaction of the Secretary.	Compliant	Waste volumes are monitored. A summary of waste management activities associated with Dendrobium Mine is reported via the Annual Review.
<b>SCHEDULE 5: SPECIFIC ENVIRONMENTAL CONDITIONS - OTHER SITE COMPONENTS</b>		
<b>COAL WASHERY</b>		
<b>Hot Gas Exhaust Stack Discharges</b>		
<b>1.</b> The Applicant must: (a) ensure that the concentration of pollutants discharged from the coal dryer hot gas exhaust complies with discharge limits set for the development in any EPL; (b) regularly monitor the concentration of pollutants discharged from the coal dryer hot gas exhaust; and (c) report on waste management and minimisation in the Annual Review to the satisfaction of the Secretary.	N/A	The Coal Dryer is not in operation.
<b>Fuel Source</b>		
<b>2.</b> The Applicant must ensure the coal drying plant only uses blast furnace offgas or natural gas as fuel for the drier.	N/A	The Coal Dryer is not in operation.
<b>WEST CLIFF COAL WASH EMPLACEMENT</b>		
<b>Coal Washery Reject</b>		
<b>3.</b> The Applicant must: (a) monitor the amount of coal washery reject emplaced in the West Cliff Coal Wash Emplacement; (b) investigate ways to reduce emplacement of coal washery reject at West Cliff, including beneficial use or improved disposal options; and (c) report on these matters in the West Cliff AEMR to the satisfaction of the Secretary.	N/A	Project Approval 08_0150 for the Bulli Seam Operations Project has been granted and as such takes precedence. Refer to Schedule 5: Condition 8.  <i>These requirements are reported in the Appin Mine Annual Review.</i>

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<b>Pollution Reduction Program</b>		
<p><b>4.</b> The Applicant must develop with EPA a new Pollution Reduction Program (PRP) to be incorporated into the West Cliff Colliery's EPL. Subject to the satisfaction of EPA, the PRP must:</p> <p>(a) include investigation, trial and implementation of appropriate strategies, technologies or works to achieve agreed water quality discharge criteria for licensed discharges from the West Cliff Colliery site with particular reference to salinity; and</p> <p>(b) cover a period of not less than five years.</p>	N/A	<p>Project Approval 08_0150 has been granted and as such takes precedence. Refer to Schedule 5: Condition 8</p> <p><i>Condition 8 has been included in EPL 2504 that covers the construction/modification of water treatment plants, revised water quality limits and aquatic health monitoring.</i></p>
<b>Water Quality Monitoring Program</b>		
<p><b>5.</b> The Applicant must review its water quality monitoring program for the West Cliff Mine in consultation with EPA and DWE and to the satisfaction of the Secretary.</p>	N/A	<p>Project Approval 08_0150 has been granted and as such takes precedence. Refer to Schedule 5: Condition 8.</p> <p><i>A Water Management Plan is in place for Appin Mine. Consultation will be undertaken as required.</i></p>
<b>Brennans Creek Diversion Bypass Rehabilitation Plan</b>		
<p><b>6.</b> The Applicant must, by 30 June 2009, develop a Brennans Creek Diversion Bypass Rehabilitation Plan in consultation with OEH, Dol and DRG and to the satisfaction of the Secretary.</p>	Compliant	<p>Project Approval 08_0150 has been granted and as such takes precedence. Refer to Schedule 5: Condition 8.</p> <p><i>Brennans Creek Diversion Bypass Rehabilitation Plan was submitted to DoP in December 2008. The plan was approved on 9 September 2009.</i></p>
<b>General Management of the Emplacement</b>		
<p><b>7.</b> Subject to condition 2 of schedule 2 and conditions 3- 6 above, the Applicant must monitor and manage the West Cliff Coal Wash Emplacement as part of the Environmental Management Plan for the West Cliff Mine. Monitoring and management of the</p>	Compliant	<p>Project Approval 08_0150 has been granted and as such takes precedence. Refer</p>

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<p>Emplacement must be reported within the West Cliff AEMR, rather than the Annual Review for this development.</p>		<p>to Schedule 5: Condition 8.</p> <p><i>Emplacement operations are managed in accordance with the Appin Mine Coal Wash Emplacement Area Management Plan. Details of the emplacement operations, including the rehabilitation aspects, are included in the Appin Mine Annual Review.</i></p>
<p>8. All references in this consent (including conditions 3 – 7 of this schedule and Appendix 3) that have direct application to the West Cliff Coal Wash Emplacement must cease to have force and effect subsequent to the grant of any project approval under Part 3A of the Environmental Planning &amp; Assessment Act 1979 which includes the West Cliff Colliery and the West Cliff Coal Wash Emplacement Area.</p>	<p>Compliant</p>	<p>Project Approval 08_0150 has been granted.</p>
SCHEDULE 6: SPECIFIC ENVIRONMENTAL CONDITIONS – EXTENDED SITE		
GREENHOUSE GASES & ENERGY EFFICIENCY		
<p>1. The Applicant must prepare a Greenhouse and Energy Efficiency Plan for the development. This plan must:</p> <p>(a) be prepared in consultation with EPA and generally in accordance with the Guidelines for Energy Savings Action Plans (DEUS 2005, or its latest version);</p> <p>(b) be submitted to the Secretary by 30 April 2009 for approval;</p> <p>(c) include a program to monitor greenhouse gas emissions and energy use generated by the development;</p> <p>(d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the development;</p> <p>(e) include a research program to inform the continuous improvement of the greenhouse gas minimisation measures at the development;</p> <p>(f) describe how the performance of these measures would be monitored over time; and</p> <p>(g) report on the development's greenhouse gas emissions and minimisation measures in the AEMR to the satisfaction of the Secretary.</p> <p><i>Note: The Applicant may consider the Dendrobium Mine's greenhouse gas minimisation measures within its overall greenhouse gas minimisation measures across its Southern Coalfield mines and related operations.</i></p> <p>The Applicant must implement the Greenhouse and Energy Efficiency Plan as approved by the Secretary.</p>	<p>Compliant</p>	<p>The following documents were originally submitted to the DoP by 30 April 2009 to meet these requirements and approved in December 2009:</p> <ul style="list-style-type: none"> <li>• Illawarra Coal Greenhouse Gas and Energy Management Plan</li> <li>• Dendrobium Mine GHG and Energy Efficiency Plan</li> <li>• Dendrobium Coal Preparation Plant GHG and Energy Efficiency Plan</li> <li>• West Cliff Coal Wash Emplacement GHG and Energy Efficiency Plan</li> </ul> <p>A Decarbonisation Strategy for IMC is being developed.</p>

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2. The Applicant must implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the development to the satisfaction of the Secretary.	Compliant	Measures being undertaken are reported in the Annual Review.
<b>SCHEDULE 7: ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT</b>		
<b>NOTIFICATION OF LANDOWNERS</b>		
1. If the results of monitoring required in Schedule 4 identify that the impacts generated by the development are greater than the relevant impact assessment criteria in Schedule 4, except where this is predicted in the documents listed in condition 2 of schedule 2 or where a negotiated agreement has been entered into in relation to that impact, then the Applicant must notify the Secretary and the affected landowners and/or existing or future tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the development is complying with the criteria in Schedule 4.	Compliant	Results are reported in the Annual Review which is publicly available on the South32 website. Monitoring results are provided in the 14-day report that is available on the South32 website.  Exceedances of noise impact assessment criteria recorded during the reporting period have been reported to an adjacent landowner as required.
<b>INDEPENDENT REVIEW</b>		
2. If a landowner considers the development to be exceeding the impact assessment criteria in schedule 4, except where this is predicted in the EA, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land. If the Secretary is satisfied that an independent review is warranted, the Applicant must within 2 months of the Secretary's decision: (a) consult with the landowner to determine his/her concerns; (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to conduct monitoring on the land, to: <ul style="list-style-type: none"> <li>determine whether the development is complying with the relevant impact assessment criteria in schedule 4; and</li> <li>identify the source(s) and scale of any impact on the land, and the development's contribution to this impact; and</li> </ul> (c) give the Secretary and landowner a copy of the independent review.	N/A	IMC is not aware of any requests for an Independent Review in this reporting period.  An Independent Review was requested in FY19 however this was not endorsed by DPIE.
3. If the independent review determines that the development is complying with the relevant impact assessment criteria in schedule 4, then the Applicant may discontinue the independent review with the approval of the Secretary. If the landowner disputes the results of the independent review then either the Applicant or the landowner may refer the matter to the Secretary	N/A	No independent review has been undertaken.



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for resolution. Where matters referred to the Secretary under this condition cannot be resolved by the Director- General within 28 days, the Secretary must refer the matter to an Independent Dispute Resolution Process.		
<p><b>4.</b> If the independent review determines that the development is not complying with the relevant impact assessment criteria in Schedule 4, and that the development is primarily responsible for this non compliance, then the Applicant must: (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant criteria and conduct further monitoring to determine whether these measures ensure compliance; or (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria; or (c) offer to acquire all or part of the landowner's land in accordance with the procedures in conditions 6-8 below to the satisfaction of the Secretary.</p>	N/A	No independent review has been undertaken.
<p><b>5.</b> If further monitoring under condition 4(a) determines that the development is complying with the relevant impact assessment criteria, then the Applicant may discontinue the independent review with the approval of the Secretary. If further monitoring under condition 4(a) determines that measures implemented under that condition have not achieved compliance with the impact assessment criteria in schedule 4, and the Applicant cannot secure a written agreement with the landowner under condition 4(b) to allow these exceedances, then the Applicant must, upon receiving a written request from the landowner, acquire all or part of the landowner's land in accordance with the procedures in conditions 6-8 below.</p>	N/A	No independent review has been undertaken.
<b>LAND ACQUISITION</b>		
<p><b>6.</b> Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant must make a binding written offer to the landowner based on:</p> <p>(a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the development the subject of the development application, having regard to the:</p> <ul style="list-style-type: none"> <li>existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and</li> <li>presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the 'additional noise mitigation measures' in condition 6 of schedule 4;</li> </ul> <p>(b) the reasonable costs associated with:</p> <ul style="list-style-type: none"> <li>relocating within the local government areas of the</li> </ul>	N/A	No written requests have been received by landowners for acquisition.

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<p>affected Councils, or to any other local government area determined by the Secretary;</p> <ul style="list-style-type: none"> <li>obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and</li> <li>(c) reasonable compensation for any disturbance caused by the land acquisition process.</li> </ul> <p>If, within 28 days of the Applicant making this offer, the Applicant and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Secretary for resolution. Upon receiving such a referral, the Secretary must request the President of the NSW Division of the Australian Property Institute (the API) to appoint a qualified independent valuer to:</p> <ul style="list-style-type: none"> <li>consider submissions from both parties;</li> <li>establish a fair market valuation for the land and determine reasonable costs and compensation for the acquisition, in accordance with paragraphs (a)-(c) above and any guidance or guidelines that the Secretary may prepare relating to this condition; and</li> <li>propose any appropriate fair and reasonable terms of acquisition.</li> </ul> <p>The appointed valuer is to provide a full report and explanation of their valuation, determinations and proposed terms of acquisition to the Secretary, the Applicant and the landowner. The Secretary must consider the report and decide whether the valuation, determinations and any proposed terms of acquisition are fair and reasonable and advise the parties accordingly. Within 14 days of receiving the Secretary's decision that the independent valuer's report is fair and reasonable, the Applicant must make a written offer to purchase the land at a price and according to terms not less than set out in the independent valuer's report. If the Secretary is of the opinion that the valuation and/or determination is not fair and/or reasonable, they must give notice to the parties that a further independent valuation and determination will be undertaken in accordance with this condition and duly request a further appointment by the API. If the landowner refuses to accept within 6 months a written offer duly made by the Applicant under this condition, then the Applicant's obligations to acquire the land must cease, unless otherwise agreed by the Secretary.</p>		
<p><b>7.</b> The Applicant must bear the full costs of any independent valuer's valuation, determination and report.</p>	N/A	No written requests have been received by landowners for acquisition.
<p><b>8.</b> If the Applicant and landowner agree that only part of the land must be acquired, then the Applicant must pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the</p>	N/A	No written requests have been received by landowners for acquisition.

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Registrar-General.		
<b>SCHEDULE 8: ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING</b>		
<b>ENVIRONMENTAL MANAGEMENT STRATEGY</b>		
<p>1. The Applicant must prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must be submitted to the Secretary for approval by 30 April 2009, and:</p> <p>(a) provide the strategic framework for environmental management of the development;</p> <p>(b) identify the statutory requirements that apply to the development;</p> <p>(c) describe in general how the environmental performance of the development would be monitored and managed for the:</p> <ul style="list-style-type: none"> <li>• mining area;</li> <li>• surface facilities;</li> <li>• other site components; and</li> <li>• extended site;</li> </ul> <p>(d) describe the procedures that would be implemented to:</p> <ul style="list-style-type: none"> <li>• keep the local community and relevant agencies informed about the operation and environmental performance of the development;</li> <li>• receive, handle, respond to, and record complaints;</li> <li>• resolve any disputes that may arise during the course of the development;</li> <li>• respond to any non-compliance;</li> <li>• manage cumulative impacts; and</li> <li>• respond to emergencies; and</li> </ul> <p>(e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development; and</p> <p>(f) include:</p> <ul style="list-style-type: none"> <li>• references to any strategies, plans and programs approved under the conditions of this consent; and</li> <li>• a clear plan depicting all the monitoring to be carried out under the conditions of this consent.</li> </ul> <p>The Environmental Management Strategy approved by the Secretary must be implemented.</p>	Compliant	An approved Environmental Management Strategy is in place and has been implemented.
<b>MANAGEMENT PLAN REQUIREMENTS</b>		
<p>2. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</p> <p>(a) a summary of relevant background or baseline data;</p> <p>(b) details of:</p> <p>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</p> <p>(ii) any relevant limits or performance measures and criteria; and</p> <p>(iii) the specific performance indicators that are proposed to be</p>	Compliant	<p>Management Plans were submitted to the Department of Planning by 30 April 2009 to meet these requirements.</p> <p>The Environmental Monitoring Program was</p>

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<p>used to judge the performance of, or guide the implementation of, the development or any management measures;</p> <p>(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;</p> <p>(d) a program to monitor and report on the:</p> <p>(i) impacts and environmental performance of the development; and</p> <p>(ii) effectiveness of the management measures set out pursuant to condition 2(c);</p> <p>(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;</p> <p>(f) a program to investigate and implement ways to improve the environmental performance of the development over time; (g) a protocol for managing and reporting any:</p> <p>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</p> <p>(ii) complaint;</p> <p>(iii) failure to comply with statutory requirements; and</p> <p>(h) a protocol for periodic review of the plan.</p> <p>Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</p>		<p>approved in December 2009.</p>
<p><b>2A.</b> Within three months of the:</p> <p>(a) submission of an incident report under condition 4 of Schedule 8;</p> <p>(b) submission of an Annual Review under condition 5 of Schedule 8;</p> <p>(c) submission of an Independent Environmental Audit under condition 6 of Schedule 8; or</p> <p>(d) approval of any modification of the conditions of this consent, the suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.</p> <p>If necessary, to either improve the environmental performance of the development or cater for a modification, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Secretary and submitted to the Secretary for approval within six weeks of the review.</p> <p><i>Note: This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.</i></p>	<p>Compliant</p>	<p>Management Plans have been reviewed as required.</p> <p>No Management Plans were submitted for approval during this reporting period.</p>
<b>REPORTING</b>		
<b>Incident Reporting</b>		
<p><b>3.</b> Within 24 hours of detecting the occurrence of an incident that causes (or may cause) material harm to the environment, the Applicant must notify the Department and other relevant agencies</p>	<p>Compliant</p>	<p>No incidents causing or with the potential to cause material</p>

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of the incident.		environmental harm have occurred during the reporting period and therefore no incident reports as required by this condition have been notified to the Department or other agencies.
<p><b>4.</b> Within 7 days of notifying the Department and other relevant agencies of such an incident, the Applicant must provide the Department and these agencies with a written report that:</p> <ul style="list-style-type: none"> <li>(a) describes the date, time, and nature of the incident;</li> <li>(b) identifies the cause (or likely cause) of the incident;</li> <li>(c) describes what action has been taken to date; and</li> <li>(d) describes the proposed measures to address the incident.</li> </ul>	Compliant	No written reports were provided as no incidents causing or with the potential to cause material environmental harm have occurred during the reporting period.
<b>Annual Review</b>		
<p><b>5.</b> By the end of September each year (or other such timing as may be agreed by the Secretary), and for at least 3 years following the cessation of mining at the development, the Applicant must submit an Annual Review to the Secretary, CCC and all relevant agencies reviewing the environmental performance of the development to the satisfaction of the Secretary.</p> <p>This report must relate to the previous financial year and:</p> <ul style="list-style-type: none"> <li>(a) identify the standards and performance measures that apply to the development;</li> <li>(b) describe the development (including any rehabilitation) that was carried out in the previous financial year;</li> <li>(c) describe the development (including any rehabilitation) that is proposed to be carried out over the current financial year;</li> <li>(d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;</li> <li>(e) include a summary of the monitoring results for the development during the past year;</li> <li>(f) a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, including a comparison of these results against the: <ul style="list-style-type: none"> <li>(i) relevant statutory requirements, limits or performance measures/criteria;</li> <li>(ii) requirements of any plan or program required under this consent;</li> <li>(iii) monitoring results of previous years; and (iv) relevant predictions in the documents listed in condition 2 of Schedule 2.</li> </ul> </li> <li>(g) identify any non-compliance or incident which occurred in the previous financial year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;</li> <li>(h) evaluate and report on: <ul style="list-style-type: none"> <li>(i) the effectiveness of the noise and air quality management</li> </ul> </li> </ul>	Compliant	<p>The Annual Review is submitted to the relevant stakeholders annually as per the requirements.</p> <p>The Annual Review is made available on the South32 website.</p>

CONDITION OF CONSENT	STATUS	COMMENTS
<p>systems; and</p> <p>(ii) compliance with the performance measures, criteria and operating conditions in this consent;</p> <p>(i) identify any trends in the monitoring data over the life of the development;</p> <p>(j) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and</p> <p>(k) describe what measures will be implemented over the next financial year to improve the environmental performance of the development.</p> <p>Copies of the Annual Review must be submitted to the affected Councils and made available to the CCC and any interested person upon request.</p>		
<p><b>6.</b> By 31 December 2011, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:</p> <p>(a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;</p> <p>(b) include consultation with the relevant agencies and the CCC;</p> <p>(c) assess the environmental performance of the development and assess whether it is complying with the relevant requirements in this consent and any relevant EPL or mining lease (including any strategy, plan or program required under these approvals);</p> <p>(d) review the adequacy of strategies, plans or programs required under these approvals;</p> <p>(e) recommend measures or actions to improve the environmental performance of the development, and/or any strategy, plan or program required under these approvals; and (f) be conducted and reported to the satisfaction of the Secretary.</p> <p><i>Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of a) mine subsidence impacts and remediation and b) stream hydrology and water quality.</i></p>	Compliant	<p>The last Independent Environmental Audit was undertaken by ERM Pty Ltd in FY18.</p> <p>The next IEA will be undertaken by 31 December 2020.</p>
<p><b>7.</b> Within three months of commencing an Independent Environmental Audit, or within another timeframe agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Secretary.</p> <p><i>Note: The audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.</i></p>	N/A	No IEA was undertaken in this reporting period.
<b>Monitoring and Environmental Audits</b>		
<b>8.</b> Any condition of this consent that requires the carrying out of	Compliant	Noted.



CONDITION OF CONSENT	STATUS	COMMENTS
<p>monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&amp;A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.</p> <p>Note: For the purposes of this condition, as set out in the EP&amp;A Act, “monitoring” is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an “environmental audit” is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.</p>		
<b>COMMUNITY CONSULTATIVE COMMITTEE</b>		
<p><b>9.</b> The Applicant must maintain a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in general accordance with the Department’s Community Consultative Committee Guidelines: State Significant Projects (2016) to the satisfaction of the Secretary.</p> <p><i>Notes:</i></p> <ul style="list-style-type: none"> <li>• <i>The CCC is an advisory committee only.</i></li> <li>• <i>In accordance with the guidelines, the committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.</i></li> </ul>	Compliant	The Dendrobium Community Consultative Committee is in place. Meetings are held every two months.
<p><b>10.</b> If required by the CCC, the Applicant must establish and maintain a trust fund, or other funding arrangement that may be agreed between the Applicant and the CCC. This fund must be:</p> <p>(a) managed by the Chair of the CCC to facilitate the functioning of the CCC;</p> <p>(b) used only if required for the engagement of consultants to interpret technical information and the like;</p> <p>(c) provided with \$8,000 per annum (indexed according to the CPI) by the Applicant for the duration of mining operations and other activities under the consent, or as otherwise directed by the Secretary;</p> <p>(d) managed so that any monies unspent during each year are returned to the Applicant;</p> <p>(e) managed so that the Chair of the CCC causes a record of the finances of the fund to be kept and provided to the Applicant and the Secretary at the end of each year the fund is used.</p>	Compliant	Funds are released as required when requested by the CCC.
<b>ACCESS TO INFORMATION</b>		
<p><b>11.</b> Before the commencement of Modification 8 until the completion of all rehabilitation required under this consent, the Applicant must:</p> <p>(a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website:</p> <p>(i) the documents referred to in condition 2 of Schedule 2 of this consent;</p>	Non-compliant	<p>Approvals, strategies, plans, programs and other documentation is updated on the web site as they become available.</p> <p>Monitoring data is</p>

**Dendrobium Mine Development Consent Compliance Report – FY20**

CONDITION OF CONSENT	STATUS	COMMENTS
<p>(ii) all current statutory approvals for the development;</p> <p>(iii) all approved strategies, plans and programs required under the conditions of this consent;</p> <p>(iv) minutes of CCC meetings;</p> <p>(v) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;</p> <p>(vi) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;</p> <p>(vii) a summary of the current stage and progress of the development;</p> <p>(viii) contact details to enquire about the development or to make a complaint;</p> <p>(ix) a complaints register, updated monthly;</p> <p>(x) the Annual Reviews of the development;</p> <p>(xi) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report;</p> <p>(xii) any other matter required by the Secretary; and</p> <p>(b) keep such information up to date, to the satisfaction of the Secretary.</p>		<p>provided in the 14-day report.</p> <p>It was identified during the reporting period that LA<sub>1min</sub> noise monitoring data had not been reported on the South32 website. This was corrected following identification on the issue. A Formal Warning was issued by DPIE.</p>



**Appendix D: Community Complaints Report**

Operation/Project	Month	Date	Nature of Complaint	Actions / Follow Up
Community	June	22/06/2020	Resident contacted the Community Team via email at 1:44 pm regarding acknowledging the Traditional Owners at Illawarra Metallurgical Coal community meetings.	The Community Team responded to the resident the same day to advise an investigation had commenced. A letter was provided to the resident responding to the concern, noting that the Community Consultative Committee meetings operate in line with the NSW Community Consultative Committee Guidelines, State Significant Projects January 2019, which do not require an Acknowledgement of Country at the meetings. The feedback will be noted at the July meetings with a suggestion it is included as part of all future community meetings relevant to both our Appin and Dendrobium operations. No further feedback was received from the resident.
Dendrobium Mine Pit Top	June	22/06/2020	Resident contacted the Community Team via email at 1:36 pm requesting Real Time Noise Monitoring being installed on his property.	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was provided to the resident outlining reasons why Illawarra Metallurgical Coal will not be progressing with real time noise monitoring on the residents' property at this time. No further feedback was received by the resident.
Dendrobium Mine Pit Top	June	22/06/2020	Resident contacted the Community Team via email at 12:45 pm regarding a Cleanaway Truck speeding on Cordeaux Road at 12:44 pm.	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was then provided to the resident advising the vehicle tracking data in the Cleanaway truck indicated the speed of the truck was exceeding the nominated speed limit in the area. Dendrobium Mine contacted Cleanaway to reiterate the Dendrobium Drivers' Code of Conduct and requested to further training be provided to their drivers. No further feedback was received by the resident.

Dendrobium Mine Pit Top	June	22/06/2020	Resident contacted the Community Team via email at 12:23 pm and 12:52 pm regarding reversing alarms being heard on site.	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was then provided to the resident confirming that an external visitor had visited the site and parked their ute at the Pit Top carpark. The vehicle was fitted with an industrial style reverse alarm and was confirmed to be cause of the complaint. No further feedback was received by the resident.
Dendrobium Mine Pit Top	June	22/06/2020	Resident contacted the Community Team via email at 12:18 pm regarding a truck leaving site with two skip bins uncovered.	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was then provided to the resident confirming a truck had left site with an uncovered load. Illawarra Metallurgical Coal have developed further controls to mitigate this issue, including the requirement for the compulsory tarping of skip bins prior to exiting site. No further feedback was received by the resident.
Dendrobium Mine Pit Top	June	22/06/2020	Resident contacted the Community Team via email at 12:15 pm, 12:16 pm and 12:28 pm regarding excessive noise	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was then provided to the resident responding to their concern. No specific time was provided in relation to each noise occurrence. However, the investigation determined the likely cause of the noise was a Load, Haul, Dump (LHD) vehicle. No further feedback was received by the resident.
Dendrobium Mine	June	22/06/2020	Resident contacted the Community Team via email at 12:14 pm in relation to concerns surrounding Illawarra Metallurgical Coal's (IMC) ability to minimise noise and access mitigation options.	The Community Team responded to the resident the same day to advise an investigation was occurring. A letter was then provided to the resident outlining that IMC had implemented several controls to minimise noise in the area. No further feedback was received from the resident.

Infrastructure	June	18/06/2020	Resident contacted the Community Team through the community email at 9:00 am regarding the removal of redundant power poles and tree removal on their property.	The Community Team contacted the resident the same day by phone to advise that a notification regarding the works was provided to residents in the area on 16 June. The works taking place were to be undertaken on Council land w. The property in question was bordering on Council land. The resident was advised that any damage to grass or other areas associated with the works would be rehabilitated to the former condition. The work was completed on 20 June with positive feedback received from the resident regarding the rehabilitation of the site.
Dendrobium Mine	June	16/06/2020	Resident contacted the Community Team via email at 9:39 am regarding rubbish around American Creek.	The Community Team contacted the resident the same day by phone to advise that a plan for American Creek rubbish clean-up is currently being developed. A follow up email was provided to the resident to confirm an update will be provided once the plan has been developed. Resident requested feedback when available.
Logistics	June	14/06/2020	Resident contacted the Community Team via email at 10.55 am regarding rail squeal at 10.52 am near William James Drive.	The Community Team shared the concern with the Logistics Team at 9.42 am the following business day (15 June). The resident was advised by return email at 9.53 am on 15 June that an investigation had commenced. The investigation confirmed there was squeal at the reported time, however no issues with the train or wagons were identified. The issue was closely monitored for the remainder of the week. On 16 April the resident was emailed further detail regarding the investigation. No further feedback was received.



Logistics	June	13/06/2020	Resident contacted the Community Team via email at 10.18 pm regarding rail squeal at 9.02 pm near William James Drive.	The Community Team shared the concern with the Logistics Team at 9.42 am the following business day (15 June). The resident was advised by return email at 9.53 am on 15 June that an investigation had commenced. The investigation confirmed there was squeal at the reported time, however no issues with the train or wagons were identified. The issue was closely monitored for the remainder of the week. On 16 April the resident was emailed further detail regarding the investigation. No further feedback was received.
Community	June	12/06/2020	Resident contacted the Community Team via email at 7:38 am regarding the amended monthly complaints report not being available on the website.	The Community Team contacted the resident the same day to advise that an updated version of the report has been made available on the website. No further feedback was received.
Dendrobium Mine Pit Top	June	12/06/2020	Resident contacted the Community Team via email at 6:15 am regarding excessive noise.	The Community Team contacted the resident the same day to advise that an investigation has commenced. An investigation confirmed the noise was associated to two Load, Haul, Dump (LHD) vehicles collecting material during shift change over. Notice was provided to the site to keep noise to a minimum. Additional controls were also put in place by the General Manager. No further response was received from the resident.

Dendrobium Mine Pit Top	June	12/06/2020	Resident contacted the Community Team via email at 6:11 am concerning the use of a vehicle horn at 6:08 am.	The Community Team contacted the resident the same day to advise that an investigation has commenced. The resident was advised that following an investigation into the matter, site was unable to identify where the noise came from. A reminder was provided to staff regarding keeping noise to a minimum. No further response was received from the resident.
Dendrobium Mine Pit Top	June	10/06/2020	Resident contacted the Community Team via email at 12:28 pm regarding excessive noise and request for noise monitoring.	The Community Team contacted the resident the same day to advise that an investigation has commenced. Upon further investigation the resident was informed the noise was associated to a Load, Haul, Dump (LHD) vehicle. A notice to staff was provided to keep noise to a minimum and to keep the warehouse doors closed at all times. The resident was also advised the noise monitoring was scheduled to commence in October 2020 and that an offsite noise monitor was not being considered. The resident requested additional information on noise management. A further response was provided the resident regarding the noise monitor installation and other noise mitigations and controls currently taking place at Dendrobium Mine. No further feedback was received by the resident.
Community Complaints Handling	June	9/06/2020	Resident contacted the Community Team via email at 8:21 am regarding an error in the monthly complaints report.	The Community Team contacted the resident the same day to advise that an error had occurred in the reporting of the monthly complaints report that it had been updated and re-published to the website. No further feedback was received.

Logistics	June	5/06/2020	A contractor was approached by a disgruntled community member while undertaking trackside rail noise monitoring. The time of the approach was unclear from the description of the events provided. The community member questioned the activities of the contractor and was agitated by the rail noise.	The contractor advised the community member they were observing and recording noise as part of the ongoing rail noise investigations. The community member noted he would email the Community Team about the noise and the discussion. No subsequent email was received by the Community Team.
Dendrobium Mine Pit Top	June	4/06/2020	Resident contacted the community team via email at 7:51 am regarding a loud noise coming from the Pit Top at 5:35 am.	The Community Team contacted the resident the same day to advise that an investigation has commenced. Upon further investigation the resident was informed the noise was associated to two Load, Haul, Dump (LHD) vehicles collecting material during shift change over. Notice was provided to the site to keep noise to a minimum. The resident provided feedback that the noise curfew was not being followed and it was confirmed the movement was due to shift change which can occur before the noise curfew. No additional feedback was received by the resident.

Logistics	May	31/05/2020	Resident emailed the Community Team direct to advise of rail squeal at 11.48 am near William James Drive.	The Community Team advised the logistics team of the concern on 1 June (the next business day). Noise readings at the time of concern were reviewed 1 June and the squeal was audible. A rolling stock review was completed, and no unusual details were identified. The Community Team responded to the resident on 1 June by return email noting that investigations into rail squeal in the area were continuing and the noise reading was reviewed from the time of concern. The resident was advised to email <a href="mailto:illawarracommunity@south32.net">illawarracommunity@south32.net</a> in future to ensure concerns were investigated in a timely manner. No further response was received from the resident.
Logistics	May	30/05/2020	Resident emailed the Community Team direct to advise of rail squeal at 7.55 am and 1.40 pm near William James Drive. The resident advised at 1.42 pm a squealing noise could be heard further up the track toward Mount Kembla. The resident requested each of the complaints to be logged separately.	The Community Team advised the Logistics Team of the concern on 1 June (the next business day). The Logistics Team noted a noise monitor had recently been installed along the rail track. Noise recordings from the times of concern were reviewed and a rolling stock review was planned for 1 June to determine if anything unusual contributed to the squeal. The Community Team responded to the resident 1 June by return email with this update. The three rail noise concerns received are recorded as one complaint given they were received on the same day and logged by the same person (as per the Illawarra Metallurgical Coal Complaints Procedure). The resident was advised to email <a href="mailto:illawarracommunity@south32.net">illawarracommunity@south32.net</a> in future to ensure concerns were investigated in a timely manner. No further response was received from the resident.

Dendrobium Mine Pit Top	May	22/05/2020	Resident contacted the Community Team through the community email at 2:15 pm. The complaint was received in the form of a letter outlining details of the noise monitoring that occurred at Dendrobium Mine. The resident requested feedback on monitoring times and further noise monitoring opportunities.	The Community Team responded to the resident via email the same day to advise an investigation had commenced. Further advice was provided to the resident to confirm that noise monitoring had been arranged for Quarter 3 to take place in the morning between 8 am – 12 pm. It was also confirmed that noise monitoring in the daytime period (7 am – 6 pm) will be conducted at various times of the day moving forward. No further feedback was received from the resident.
Logistics	May	20/05/2020	Resident contacted the Community Call Line at 10:50 am regarding a Cleanaway truck that left the pit top at 10.48 am uncovered.	The Community team responded to the resident to advise this was being investigated. Upon further investigation the resident was contacted again via email to advise the driver of the truck at the time deemed the load safe to transport without a tarp, which is compliant with Cleanaway protocols. It was noted though, that we have reminded the company about following safe operations and will continue to work with their drivers in the future. No further feedback was received.

Logistics	May	19/05/2020	Resident contacted the Community Call Line at 12:25 pm regarding a Semi Trailer travelling on Cordeaux Road The resident advised the driver was allegedly speeding.	The Community Team responded to the resident via phone the same day to advise an investigation had commenced and a reminder would be issued to the contractors regarding the Dendrobium Drivers Code of Conduct. The resident was happy with the feedback and didn't request a follow up. Further findings indicated that the internal speed monitoring of the truck showed it was travelling within speed limits along Cordeaux Road. This information was provided to the resident via email. The resident was happy with the information provided and there was no further feedback.
Dendrobium Project	May	15/05/2020	Resident contacted the Community Call Line at 2:25 pm regarding concerns relating to the proposed carpark extension at Dendrobium Mine. The resident required a response regarding previous issues raised.	The Community Team responded to the resident the same day to advise an investigation had commenced. Feedback to the resident was provided via email detailing that the concerns raised would be discussed at the next Dendrobium Community Consultative Committee (DCCC) meeting on 14 May 2020. After the DCCC meeting, the resident was provided further information on 1 June by email addressing all questions raised.

Dendrobium Mine Pit Top	May	12/05/2020	Resident contacted the Community Call Line at 9:20 am regarding a vehicle parked outside their residence requesting that it be moved.	The Community Team responded to the resident the same morning advising that the owner of the vehicle couldn't be found at the mine site. However, the vehicle was moved within the hour of the complaint being received. It is unsure if the owner of the vehicle was an employee or visitor to the site. A reminder was issued to all employees advising not to park outside the entrance/along Cordeaux Road. There was no feedback from the resident.
Community Complaints Handling	May	4/05/2020	Resident contacted the Community Team via email at 9:21 am regarding complaint from 3 May not being responded to within the 24-hour window in line with the complaint management procedure.	The Community Team responded to the resident immediately to confirm the email was sent the same day, however, it was incorrectly sent back to the Community Team inbox unintentionally. The email was forwarded to the resident with the time stamp of the previous day. No further feedback was received from the resident.
Dendrobium Mine Pit Top	May	3/05/2020	Resident contacted the Community Team via email at 9:12 am regarding an Inland Petroleum tanker entering the pit top via Cordeaux Road which was travelling outside of curfew, in line with Dendrobium Drivers Code of Conduct.	The Community Team responded to the resident the same day to advise that the concern had been investigated. It was confirmed the delivery occurred outside of the allowable travel times noted in the Dendrobium Drivers Code of Conduct. The notification from site was received late the day and meant advance notification to residents was not shared prior to the tanker's delivery. Internal departments were contacted and advise corrective action to be taken in the future. This included ensuring all relevant stakeholders are notified prior to the delivery occurring. There was no further feedback from the resident.



Dendrobium Drivers Code of Conduct	April	30/04/2020	<p>Resident contacted a member of the Community Team at 9:30 am via email to advise they believe the Dendrobium Drivers Code of Conduct should be amended prior to review date. It was noted that the document is not specific on public holiday details and details around the speed limit for trucks in between sections is ambiguous. The resident also provided advice on the way in which emails were signed off, suggesting they be done by the individual rather than signed off from a team.</p>	<p>The Community Team responded to the resident the same day to advise this will be investigated. Advice was provided to the resident to suggest a review of the Dendrobium Drivers Code of Conduct will be reviewed ahead of time and moved to 2021. This would be an amendment to the Traffic Management Plan and loaded onto the website. All points mentioned by resident have now been reviewed and amended in the document. The final internal review was shared with the resident; this was well received and no further feedback was raised.</p>
Dendrobium Mine Pit Top	April	29/04/2020	<p>Resident contacted the Community Call Line at 7:31 am about a very loud machine that was operating at the pit top.</p>	<p>The Community Team contacted the resident the same day to advise that an investigation had commenced. The investigation determined the noise was due to a Load, Haul, Dump (LHD) machine, which was broken down near the warehouse building and required maintenance to restart. This information was provided to the resident and no further feedback was received.</p>

Dendrobium Mine Pit Top	April	29/04/2020	Resident contacted the Community Call Line at 7.13 am to advise there was a very loud banging/clanging noise that occurred on 28 April at approx. 10:46 pm. After this there continued to be other loud noises.	The Community Team contacted the resident the same day to advise that an investigation had commenced. There were several machines operating at the time. A machine towing a trailer toward the portal was expected to be the cause of the noise. This was communicated to the resident on the same day. No further feedback was received.
Dendrobium Mine Pit Top	April	20/04/2020	Resident contacted the Community Team via email at 5:15 pm regarding loud beeping noise from the mine noting to have occurred previously, lasting for approximately 20 seconds.	The Community Team contacted the resident the same day to advise that an investigation had commenced. The investigation determined the noise to be attributed to a Special Mining Vehicles' (SMVs) that were operating/reversing at the time of the call. An audit of the SMV fleet was completed to ascertain which vehicles have a similar reversing alarm. As a result of the audit, identified SMVs that were modified to reduce the noise. Further details were provided to the resident in regard to the outcome of the audit. The resident was satisfied with the outcome.

Dendrobium Mine Pit Top	April	20/04/2020	Resident contacted the Community Team via email at 2:26 pm regarding the Noise Management Plan and their concerns that South32 is not meeting compliance for noise levels at the pit top.	The Community Team contacted the resident the same day to advise that an investigation had commenced and that the Company would be in contact to discuss their concerns. Further details were supplied outlining the measures in place which have been followed in line with the Noise Management Plan and that the Company will continue to strive for address all community concerns including implementing additional noise mitigation methods, as required. No further feedback was received.
Dendrobium Mine Pit Top	April	17/04/2020	Resident contacted the Community Team directly by email at 9.40 am regarding a breach of the Dendrobium Drivers' Code of Conduct. A truck delivery occurred outside of the allowable travel times.	The Community Team contacted the resident the same day and advised the truck delivery time had been rescheduled to fit in to allowable travel times the following day. The resident was informed of the mix up in schedule and confirmed that without approval and notice, trucks will not travel outside curfew. No further feedback was received.
Dendrobium Mine Pit Top	April	15/04/2020	Resident contacted the Community Call Line at 12.50 pm to advise of a loud mechanical noise coming from the mine.	The Community Team contacted the site to investigate. It was determined daily routine activities were occurring at the time of concern, including the loading/unloading of items using a forklift and some machinery operating. The outcome was emailed to the resident at 3.57 pm the same day. No further feedback was received.

Dendrobium Mine Pit Top	April	14/04/2020	Resident contacted the Community Team on 17 April at 9.40 am via email regarding potential breach of the Dendrobium Drivers Code of Conduct due to a truck delivery occurring outside of allowable travel times. (The delivery in question occurred 14 April 2020).	The Community Team contacted the resident the same day the complaint was received (17 April 2020) at 1.08 pm to advise the resident that truck delivery was outside of the allowable travel times. A notification was emailed to resident the day prior to advise this would be occurring. The resident was also advised that the Dendrobium Drivers Code of Conduct does allow for truck deliveries outside of allowable times if it is business critical (impacting safety or production) upon which the Company will endeavour to provide notice in advance to key stakeholders. No further feedback was received.
Logistics	April	14/04/2020	Resident emailed the Community Team at 5.04 pm with concerns about dust from the trains, the monitoring of the dust and the diesel-powered locomotives.	The Community Team contacted the relevant teams to investigate and provide comment the same day. Coal dust is limited from loaded wagons by using water in the coal loading process. Dust monitoring has occurred since 2008 along the rail with results published fortnightly on the South32 website. Since 2008 the dust readings have been within criteria with the exception of January 2020 which was impacted by bushfires and ash in the air. It was noted that diesel locomotives are used widely in freight rail movements in Australia and that upgrading infrastructure to suit electrical powered trains was not financially viable at this time. Feedback was provided to the resident by return email at 9 am the next day. No further feedback was received.

Dendrobium Mine Pit Top	April	11/04/2020	Resident contacted the Community Call Line at 9.47 am to advise a clunking and mechanical noise was audible from the mine.	The Community Team contacted the site to investigate immediately. A Cleanaway bin was being loaded at the time of concern and was believed to be the cause of the mechanical noise. The outcome of the investigation was shared with the resident by email at 11.24 am the same day. No further feedback was received.
Dendrobium Mine Pit Top	April	10/04/2020	Resident contacted the Community Call Line at 1.25 pm to advise of a noise complaint regarding the Mine's Pit Top activities.	The Community Team contacted the resident at 1.30 pm to request further details re the noise, and it was established there was clanging and machinery noise from about 12 noon-1 pm. The site was contacted with this information to commence investigation. It was determined the loading of the bolting pods (a daily activity) caused the noise; where steel slabs are loaded into a pod to be taken underground. The employees will take care when completing this activity moving forward. The resident was provided this advice the same day at 2.30 pm and was appreciative of the feedback.
Dendrobium Mine Pit Top	April	10/04/2020	Resident called the Community Call Line at 7:41 am regarding noise from Dendrobium Pit Top and mentioned there was excessive vehicle noise at 5 am for 20 minutes, including lengthy periods of loud clattering.	The Community Team contacted the site immediately to commence investigation. A machine pulling a trailer at the time of the incident was determined to be the source of the noise. It was escalated to the General Manager and shift leaders to prevent from occurring again. The resident was advised of the investigation outcome by return email at 8.51 am the same day. No further feedback was received.

Community Complaints Handling	April	4/04/2020	Resident emailed the Community Team directly at 2:18 pm regarding an error in the March 2020 Dendrobium Community Complaints Report published on the South32 website.	The Community Team responded to the resident by return email at 8.28 pm on the same day to acknowledge that a complaint was missed from the monthly report. It had since been rectified with the correct data updated to the South32 website the same day. No further feedback was received.
Dendrobium Mine Pit Top	April	3/04/2020	Resident contacted the Community Call Line at 12.52 pm to advise noise is being heard from Dendrobium Mine Pit Top. The resident also advised trucks were lined up at the pit top gate idling and exhaust fumes could be smelt at the property.	The Community Team contacted the site immediately to investigate the concern. An unexpected freight delivery arrived at site which resulted in a line-up of trucks within and outside the entrance. All usual freight providers follow correct procedures to book a delivery time to ensure interactions are limited. In future all unexpected deliveries will be turned away immediately to not interrupt the flow of traffic. Site will be implementing a real time noise monitoring system which will assist to proactively manage noise. The investigation outcome was shared with the resident the same day. No further feedback was received.

Dendrobium Mine	April	3/04/2020	Resident contacted the Community Call Line at 10:32 am to advise that they recently requested all correspondence to be made via email after a letter was received following the request being made.	The Community Team contacted the resident by return email at 1.35 pm the same day. The resident was advised that there was a mistake in the hand delivery process, and as such a letter ended up being placed in the resident's mailbox. Relevant departments were reminded of the requirement to share all information by email only with the resident. No further feedback was received.
Dendrobium Mine Pit Top	March	30/03/2020	Resident called the Community Call Line at 4.47 pm regarding a loud humming coming from an area near the sediment pond. Resident asked why this is occurring and when it will stop.	The Community Team contacted the operation immediately to commence investigation. An electrician inspected the area and switched the sediment pond pump off for the evening. The resident was advised of this action by email at 7.42 pm the same day. The resident responded with further questions on the pump. Further investigation was completed the next day and on 1 April the pump was replaced with a submersible pump that will reduce the noise in the area. The resident was provided this information by further email at 8.40 am on 2 April. No further feedback was received.



Logistics	March	28/03/2020	Resident emailed the Community Team directly at 2.46 pm to advise of squealing trains that are continuing to occur throughout the day.	The Community Team shared the concern with the logistics team for investigation the same day. The resident was provided a return email at 8.52 am on 30 March (following business day) advising that investigations into wheel squeal are continuing. To date actions implemented include the lowering of the train speed in the areas where squeal occurs, realignment of the track and an internal review of the rolling stock. A noise and weather monitor is due to be installed trackside to assist with investigations. No further feedback was received.
Dendrobium Mine Pit Top	March	25/03/2020	Resident called the Community Call Line at 4.29 pm concerned that there was a loud clunking noise coming from Dendrobium. The resident did not wish to have a call back.	The Community Team contacted the operation when the complaint was received. A crane had been operating at the Pit Top for most of the day. No other pit tip movements were reported at the time of the complaint. No further feedback was received from the resident.
Dendrobium Mine Pit Top	March	25/03/2020	Resident called the Community Call Line at 1:10 pm concerning he had not received a response from the Community Team yet regarding the Manatou driving on Cordeaux Road.	The Community Team contacted the resident by return email at 1.44 pm explaining that all complaints lodged 25 March were being investigated by the operation. A response would be provided by the end of the day.

Logistics	March	25/03/2020	Resident called the Community Call Line at 8.47 am concerning a Manatou driving on Cordeaux Road outside of the allowable travel times and during peak school drop off time. Resident sent photographs to the IC Enquiries email.	The Community Team contacted the operation when the complaint was received. An investigation commenced. The resident was contacted the same day and advised that there was a breach and that the Manatou is not normally driven on the road. Drivers were issued a warning and reminded of the Driving Code of Conduct.
Logistics	March	25/03/2020	Resident called the Community Call Line at 7.35 am concerned about a Linfox flatbed truck that was exceeding the 40 km speed limit by a significant amount.	The Community Team contacted the operation when the complaint was received. An investigation commenced. The resident was contacted by email at 1.44 pm the same day and advised the vehicle was travelling at 33 kms at the time it passed his residency. The resident was provided evidence from the vehicles internal data records by email. The resident noted this information by return email.
Dendrobium Mine Pit Top	March	25/03/2020	Resident called the Community Call Line at 7.00 am concerned about the repeated use of vehicle horns this morning. They are occurring repeatedly, loudly and are highly intrusive.	The Community Team contacted the operation when the complaint was received. An investigation commenced and the resident was advised of this status at 8.03 am the same day by email. The resident was contacted later in the day and advised horn use may have increased with the introduction of staggered workforce start times implemented to support the Covid-19 social distancing requirements.

Dendrobium Mine Pit Top	March	24/03/2020	Resident called the Community Call Line at 6.47 pm concerned about the ongoing loud reversing alarm. Resident would like a call regarding why this is happening and why they are not low frequency alarms as per the noise management plan.	The Community Team contacted the operation when the complaint was received. An investigation commenced. The resident was contacted the same day and advised there is no new reverse beeper alarms at site – all beepers are the low frequency reverse beepers (duck quack noise) as per then noise management plan. This includes the forklift in use from 6.25 pm.
Dendrobium Mine Pit Top	March	19/03/2020	Resident called the Community Call Line at 9.35 am concerned that the quarterly noise monitoring results for the Mine Pit Top have been greater than the limit set in Conditions of Consent for 4 consecutive quarters. The resident would like a detailed explanation of why the business is exceeding limits and what it is doing to mitigate noise. A meeting in person was requested.	The Community Team contacted the operation when the complaint was received. An investigation commenced. The resident was contacted the same day and advised a detailed response to the questions would be prepared and a meeting arranged in the next fortnight. A response was provided 27 March and the offer of meeting by teleconference or virtually was offered to the resident given Covid-19 restrictions.
Community Complaints Handling	March	05/03/2020	Resident called the Community Call Line noting the latest complaint report on the South32 website was not accurate. It was missing complaints logged 21 and 22 February 2020.	The Community Team contacted the resident the same day and confirmed the complaints from 21 and 22 February 2020 were missed on the February 2020 complaints report. The amended report was updated on the South32 website the same day.

Logistics	March	03/03/2020	Resident called the Community Call Line at 1.37 pm to advise of excessive squealing from the trains over the past day.	The Community Team requested an update from the logistics team regarding the investigations that were underway, and responded to the resident the same day. Trackside monitoring to identify the source of the noise is continuing.
Dendrobium Mine Pit Top	March	02/03/2020	Resident called the Community Call Line at 10.45 am to advise of excessive noise coming from Dendrobium Mine Pit To and to request details of the Mine's real time noise monitoring during the noisy period.	The Community Team responded to the resident at approximately 11.45 pm following an investigation with site personnel to identify the noise source. It was confirmed the noise was due to a vacuum truck that was brought on site for cleaning purposes. The works ceased at approximately midday. The Community Team apologised for the inconvenience caused and advised no further surface work was planned to occur that day. The complainant was advised no real-time monitoring data is available.
Logistics	March	02/03/2020	Resident called the Community Call Line at 8.40 am noting excessive squealing from the trains over the past 2 days.	The Community Team responded to the resident the same morning advising the logistics team are undertaking trackside monitoring to identify the source of the noise. The team also planned to undertake noise monitoring in the areas where excessive squeal has been identified.

Logistics	March	02/03/2020	Resident called the Community Call Line at 7.33 am noting excessive squealing from the trains at approximately 6.10 am.	The Community Team sought extra information from the resident the same morning. The logistics team were continuing to monitor trackside to identify the source of the noise. The team would also complete trackside noise monitoring in the areas where excessive squeal has been identified.
Logistics	March	01/03/2020	Resident called the Community Call Line at 10.10 am noting excessive squealing from the trains earlier in the day.	The logistics team responded to the complaint at 11 am the same day. A meeting was held at the track to inspect the next passing train to identify the potential issue. Minimal noise was identified from the next train however the logistics team agreed to continue monitoring the track and wagons to identify a possible cause for the excessive brake squeal.
Logistics	February	29/02/2020	Resident called the Community Call Line at 8.43 pm noting the trains were very noisy travelling toward Dendrobium Mine.	The logistics team investigated the complaint overnight, including recording the weather conditions trackside at the time. The team contacted the resident the next day and arranged a trackside meeting to determine the source of the noise.
Dendrobium Mine Pit Top	February	25/02/2020	Resident called the Community Call Line at 9:29 pm noting a loud noise sounding like machinery coming from the pit top. It was occurring whilst making the call. The resident requested an email back.	The community officer contacted the operation at 9:35 pm to advise of the concern. The operation confirmed the loud noise which lasted approximately 10 mins (9:26 pm - 9:36 pm). The noise was due to a breakdown of 2 coal trams at the portal and engine revving whilst the trams were being dragged out. The resident was provided feedback by email.

Redundant infrastructure	February	24/02/2020	Resident called Illawarra Metallurgical Coal reception regarding work on the power pole at the bottom of his driveway. A truck appears to have driven on his grass and left a mess.	The community officer discussed the issue with the resident. Ground scanning for services and subsequent pot holing was completed in preparation for the pole removal. As the pole is on Council property we did not advise the resident of this activity, and entry onto his property was not planned. The community officer committed to advising the resident by phone when the pole was to be removed. It was confirmed no equipment would be setup on the resident's property for the pole removal.
Dendrobium Mine Pit Top	February	22/02/2020	Resident called the Community Call Line at 1.40 pm querying the humming and whining sound that was coming from the mine for most of the day. The resident requested a call back.	The community officer contacted the operation to investigate the cause of the noise. The noise was the diesel compressor which was operating during a planned power outage. It was due to be switched off within the next hour. The resident was advised by phone call as requested the same day.

Dendrobium Mine Pit Top	February	21/02/2020	<p>Resident called the Community Call Line at 6.35 pm regarding the use of a diesel compressor during an unplanned power outage as per a proactive notification he received. The resident was concerned the diesel compressor would continue to operate when the power was restored. The resident also queried the regular use of a diesel compressor on Saturday evenings and nights - verbally advised by the staff delivering the notification. The resident requested a response by email.</p>	<p>The community officer provided feedback to the resident by email as requested at 7.40 pm. The compressor would only operate during the unplanned power outage and was turned off at 6 pm soon after the power supply was restored. The regular use of a diesel compressor on Saturday's was investigated and determined that they are used during the daytime only during planned power outage/maintenance periods. This was clarified by phone the following day with the resident. The resident was dissatisfied that the planned outage occurred on the weekend and not through the week.</p>
Logistics	February	20/02/2020	<p>Resident called the Community Call Line at 4.57 pm to advise of a Kelly's Transport truck that was exceeding the 40 km/h speed limit on Cordeaux Road. The resident did not wish for a call back.</p>	<p>The community officer notified the operation the following day at 8.00 am. The event was investigated by Kelly's Transport that noted its GPS monitoring provided two time stamps – 4 km/h when the truck was turning out of the mine and another at the bottom of Cordeaux Road outside of the speed restricted area. Kelly's Transport has reiterated the speed limit restrictions to all drivers.</p>
Redundant infrastructure	February	20/02/2020	<p>Resident called the Community Call Line at 8.40 am regarding the power pole removal at Marcelle Road, Figtree. Requested a call back.</p>	<p>The community officer contacted the resident at 8.45am who was concerned of noise associated with the activities as it would interfere with night shift sleeping patterns. The activities would continue as planned. The resident was unhappy with the outcome.</p>



Dendrobium Mine Pit Top	February	17/02/2020	Resident called the Community Call Line at 7.30 am concerned about the vehicle parked out the front of his property on Cordeaux Road. They wanted to know why this continues to happen and what the business is doing about it.	The community officer contacted the operation at 8.15 am to advise of the concern. The operation gathered vehicle details. Longwall changeout was occurring in February resulting in additional contractor staff at the site. Site had planned for the additional vehicles and enough parking is available. The business is continuing to bus employees to site and arranged for staff to work offsite where possible. A pre-shift communication was issued again to serve as a reminder to all staff, with individual cases followed up as necessary. A phone message was left with the resident to return the call for an update on the outcome.
Logistics	February	14/02/2020	Resident called the Community Call Line at 10.34 am to notify of an alleged speeding ballast truck on Cordeaux Road. The truck exited the mine at about 10.30 am. The resident requested feedback by email.	The community officer contacted the operation at 10.45 am to advise of the concern. The contractor addressed the truck drivers the following week re their driving behaviour on Cordeaux Road. The resident was provided this update by email as requested.
Dendrobium Mine Pit Top	February	12/02/2020	Resident called the Community Call Line at 7.45 am to notify of an employee vehicle parked on Cordeaux Road. Requested the vehicle be moved. The resident did not request feedback.	The community officer contacted the operation at 8 am to advise of the concern. The vehicle was moved later the same day. The resident did not request a call back.

Logistics	February	10/02/2020	Resident called the Community Call Line at 11.38 am to notify of a noisy train in the area. The resident did not request a call back. The resident called the Community Call Line once more at 1.53 pm to advise of the same issue. The resident did not request a call back.	The logistics team was notified immediately. There was a build up of rust on the rail tracks following the severe wet weather. With no frequent rail movement for about a week it was expected the first few trains of the day would be louder than usual as the rust wore away. While the resident did not request a call back, a call was made to explain why the rail wagons were louder than usual.
Logistics	February	6/02/2020	Resident called the Community Call Line at 8.13 am concerned non-personnel vehicles were travelling on Cordeaux Road with the curfew time of 8 am-9.30 am. They were branded light vehicles. The resident requested feedback by email.	The community officer contacted the operation at 8.45 am to advise of concern. The branded light vehicles were personnel vehicles transporting contractors to work and therefore able to travel on Cordeaux Road within 8 am-930 am as per the Dendrobium Driver Code of Conduct. Deliveries in marked vans, utes or trucks are not accepted on Cordeaux Road within this time period. The resident was emailed feedback the same day.
Dendrobium Mine Pit Top	February	4/02/2020	Resident called the Community Call Line at 6.50 pm noting a loud humming noise coming from the sediment pond area. It had been continuing for some time. The resident requested an email back.	The community officer contacted the operation at 7.30pm to advise of the concern. The electrical supervisor immediately inspected the sediment pond pump with no issues found. Further investigation did not return any results. The resident was provided feedback by email.

Dendrobium Mine Pit Top	February	4/02/2020	Resident called the Community Call Line at 4.40 pm to advise of employee vehicles parked on Cordeaux Road. Images of the vehicles were shared by email. The resident requested feedback by return email.	The community officer notified the operation of the parked vehicles the following morning. The resident was advised by return email that the operation would follow up.
Logistics	January	28/01/2020	Resident called the Community Call Line at 4.00 pm concerned about the lack of communication regarding activities in the rail corridor.	The community officer spoke with the resident on 30 January 2020. The resident advised they did not receive letters regarding rail works at Central Road 18 - 20 January 2020. The community officer confirmed the property was doorknocked and 2 letters were left in the letterbox. It was agreed in future for letters to be left at the front door. Other concerns regarding the rail included communication about planned maintenance on the rail in general, property security, boom gate noise and rail movement times. The community officer was to follow up on concerns and provide an emailed response to the resident.
Dendrobium Mine Pit Top	January	16/01/2020	Resident called the Community Call Line at 7.04 pm to advise of a loud humming coming from the operations. The humming could be heard over the heavy rain and had been occurring for a few hours. The resident did not request feedback.	The community officer contacted the operations at 8.00 pm. A diesel generator was operating to provide power to surface facilities at the mine after unplanned power outages throughout the afternoon. The generator was switched off at approximately 7.30 pm. The resident did not request feedback.

Logistics	January	15/01/2020	Resident called the Community Call Line at 11.52 am to advise a Cleanaway skip bin filled to the rim was uncovered when it left the operation. The resident requested feedback by email.	The community officer contacted the operation at 11.54 am. The operation confirmed one of two skip bins left site uncovered. The contractor was contacted and confirmed the uncovered as the load exceeded the top rim. The truck driver deemed the load safe to transport without a cover. The contractor briefed all drivers that all loads must be covered, and operations will ensure bins are filled to an appropriate level that enables them to be covered. The resident was provided written feedback at 2.30 pm (the same day) as requested.
Logistics	January	15/01/2020	Resident called the Community Call Line at 11.23 am to advise a white ballast truck was significantly exceeding the truck and bus speed limit on Cordeaux Road. The resident requested feedback by email.	The community officer contacted the operation at 11.30 am to commence the investigation. The operation confirmed a ballast truck exited site at 11.17 am. The driver did not believe he was speeding however we are unable to confirm or deny this. The contractor arranged for escort vehicles to take the trucks through the 40 km/h zone the following business day to ensure speed limits are adhered to. The resident was provided feedback by email as requested on 16 January 2020.

Logistics	January	13/01/2020	Resident called the Community Call Line twice at 8.10 am to advise of loud train engine noise and smoke coming from the train engine. The resident did not request a call back.	The community officer contacted the logistics team at 8.28 am. The investigation concluded that the train engine had not moved for more than 30 hours prior to making the trip and the excessive smoke was produced to clear out the engine's system when it was under power. A visual inspection of the engine was completed with no issues found. The engine was removed from the track for a full inspection as a precaution. The resident did not request a call back.
Dendrobium Mine Pit Top	January	07/01/2020	Resident called the Community Call Line at 4.28 pm to advise of continuous horn usage throughout the day. The resident did not request a call back.	The community officer contacted the operations at 4.30 pm to investigate. There was no known issue with the traffic light system at Portal Road, however staff reported using horns when entering/exiting the mine. All staff were reminded to use all other methods of communication and limit horn use to only when necessary. The resident did not request a call back.
Dendrobium Mine Pit Top	January	02/01/2020	Resident called the Community Call Line at 9.21 pm to report loud engine noise and crashing sounds from the Dendrobium Mine Pit Top. The resident did not request a call back.	The community officer contacted the operations to investigate. There were no movements outside the normal operations at the time of concern. The resident did not request a call back.

Dendrobium Mine Pit Top	January	01/01/2020	Resident called the Community Call Line at 7:00 pm to report 'excessive noise ongoing for 30 minutes at the Dendrobium pit top that would not meet IMC consent criteria'. The resident requested the outcome of the investigation be provided by email.	The community officer contacted the operations. A bin was being emptied on the surface at the time of the complaint which was likely the source of noise. The community officer acknowledged receipt of the complaint by email and informed that a formal response will be provided the week commencing 6 Jan, also addressing a previous complaint.
Dendrobium Mine Pit Top	December	29/12/2019	Resident called the Community Call Line at 8:52 am to report a loud engine noise occurring for the last 30 min at the Dendrobium Mine. The resident requested a response to the complaint by email.	The community officer contacted the operations who advised there were no machine movements or other sources that could have contributed to noise levels above normal daily operations. The community officer emailed the resident acknowledging receipt of the complaint and advised there were machine movements as part of daily operations.
Dendrobium Mine Pit Top	December	27/12/2019	Resident called the Community Call Line at 10:49 am to report ongoing noise coming from the Dendrobium Mine. The noise was a constant clunking and engine noises. The resident did not wish for a call back.	The community officer contacted the operations who advised they were not aware of any noises from the pit top at the time of the complaint.

Logistics	December	26/12/2019	Resident called the Community Call Line at 3.30 pm to advise of a loud train. It produced a very loud squeal. The resident did not request a call back.	The community officer advised the logistics team. The weather data observed shortly after the complaint was logged as part of ongoing investigations into the rail noise. To date the train speed has been reduced, the rail realigned, and the rolling stock checked for differences. The investigation is now focusing on the impact of the atmosphere to the condition of the rail tracks. The resident did not request a call back.
Dendrobium Mine Pit Top	December	22/12/2019	Resident called the Community Call Line at 9:51 am to report a 'loud squealing coming from the pit top and has been going on for a significant amount of time'. Resident called the Community Call Line again at 4:51 pm after they sent some information on noise level compliance to Amanda Blunt.	The community officer contacted the operations. They were not aware of any noise at the time of the complaint. The community officer took an action to follow up with the resident the week commencing 6 January to provide information on consent criteria, noise monitoring and mitigation in place/ underway. The community officer acknowledged receipt of the complaint and informed the resident we would respond formally in the week commencing 6 January 2020.
Dendrobium Mine Pit Top	December	18/12/2019	Resident called the Community Call Line at 9.46 pm to advise of engine noise and clunking coming from the pit top. It was audible for the last 15 minutes.	The operations investigated movements at the time of concern - the site was completing daily activities to prepare for shift change. Vehicle movements were in line with the curfew that 'surface vehicle movements are minimised where possible except where required for safety, emergency reasons or change of shifts'. The resident did not request a call back.



Logistics	December	15/12/2019	Resident called the Community Call Line at 8.57 am to advise of a squealing train travelling uphill toward Dendrobium Mine.	The logistics team investigated the complaint, observing weather data at the squeal location at 9.31 am. The investigation into the squeal at the corner is continuing. To date the train speed has been reduced, the rail re-aligned, and the rolling stock checked for differences. The investigation is now focusing on the impact of the atmosphere to the condition of the rail tracks.
Miscellaneous	December	13/12/2019	Resident called the Community Call Line at 3.15 pm to request branches that overhang their property be removed as promised 457 days ago. It is a bushfire risk to the resident. The resident requested the branches be removed on 16 or 17 December 2019.	The land management officer contacted the contractor engaged to complete the fire preparation work and shared the concern that the work was incomplete. The contractor contacted the resident directly on the same day to arrange removal of the overhanging branch on 16 or 17 December 2019 as requested.
Logistics	December	13/12/2019	Resident called the Community Call Line at 8.57 am to advise of a squealing train travelling uphill toward Dendrobium Mine.	The logistics team investigated the complaint. At 9.30 am the weather and atmospheric conditions was recorded. The engine and wagons of the train in question were identified and inspected later in the day. Nothing out of ordinary was found. Investigations into rail noise in the area are continuing. To date the rail speed has been reduced and track realigned.

Logistics	December	12/12/2019	Resident called the Community Call Line at 6.15 pm to advise of loud train engine noise.	The community officer reviewed the complaint detail and shared it with logistics. The address provided by the resident appeared to be incorrect (either recorded incorrectly or provided incorrectly) as it is not in proximity to the rail line. No call back details for the resident were provided to check the details. The investigation was ended.
Logistics	December	9/12/2019	Resident called the Community Call Line at 1.20 pm to advise a delivery truck was observed to be exceeding the 40 km/h on Cordeaux Road. It was also travelling with an uncovered empty tray leaving dust.	Logistics completed an investigation with the contracted company. Drivers have been reminded to travel within the 40 km/h posted speed limit between the humps on Cordeaux Road. In future trucks will travel with a covered tray irrespective of whether they are loaded or not.
Miscellaneous	December	1/12/2019	Resident text the community officer at 2.21 pm to advise the powerline cables left attached to a power pole were not secured well. This was part of the project to remove inactive powerline cables.	The concern was reported with the contractor responsible for the activities. By 4.21 pm the contractor had visited the site and secured the cables.

Dendrobium Mine Pit Top	December	1/12/2019	Resident called the Community Call Line at 10.22 am to advise of loud machinery coming from the mine.	Operations investigated the noise concern, including looking at cameras for vehicles movements at the site. No machinery was operating at the time of concern, however one trailer travelled underground about the time the concern was reported. The operations are progressing real-time noise monitoring for the pit top.
Logistics	December	1/12/2019	Resident called the Community Call Line at 7.52 am to report the bus transporting staff to the Mine Pit Top was travelling greater than 40 km/h.	Operations issued a reminder about the 40 km/h speed limit in Mount Kembla to the bus company and deliveries. The bus company advised the breaking system on the bus does limit the bus speed to 40 km/h down hills. Operations confirmed it is in the induction to site for all employees, and it will be covered as a reminder in upcoming environmental awareness training for all staff.
Logistics	November	30/11/2019	Resident called the Community Call Line at 12.14 pm. White dump trucks travelling to and from the mine were exceeding the 40 km/h speed limit in Mount Kembla and had uncovered rear trays - dust was left on Cordeaux Road. Resident requested a call back - not today.	The community officer contacted the operations at 12.19 pm. Operations instigated an investigation which confirmed the truck movements. The trucks were delivering ballast to the site and ceased activities at 12.30 pm. The trays were covered when loaded with ballast. The truck company was reminded of the 40 km/h speed limit in Mount Kembla. The resident was contacted 2 and 4 December.

Dendrobium Mine Pit Top	November	29/11/2019	Resident called the Community Call Line at 10.22 am to report engine noise and clunking from machinery coming from the mine.	The community officer contacted the operations at 10.25 am. The Operations Manager advised two cranes were unloading a delivery at the time of the concern. Noise from this activity aligns with the noises reported. No other machines were operating at the pit top while this was occurring. The resident did not request a call back.
Logistics	November	28/11/2019	Resident called the Community Call Line at 7.22 am to advise a vehicle that entered the mine was observed to travel greater than the 40 km/h speed limit between the speed humps on Cordeaux Road.	The complaint was noted. The resident did not request a call back.

Miscellaneous	November	27/11/2019	<p>Resident called the Community Call Line at 7.38 am to report poor customer service from the Call Centre used to manage the Illawarra Metallurgical Coal Community Call Line. Resident believed he did not need to provide full name and contact details to the operator if no call back is requested, and the call centre officer remained insistent that it be provided.</p>	<p>The community officer contacted the Call Centre at 11.30 am to investigate. The Call Centre manager advised the officer that managed the call was no longer on shift, however the officers are required to follow script requesting name, address and number. The resident was contacted the same day with this information. The resident noted the attitude of the operator was of concern and it was not the first occurrence of poor customer service.</p>
Dendrobium Mine Pit Top	November	27/11/2019	<p>Resident called the Community Call Line at 7.32 am to advise an employee vehicle was parked on Cordeaux Road near the heritage site.</p>	<p>The community officer forwarded the complaint to the operations at 7.35 am. The operations copied the vehicle registration at 7.45 am and issued a site wide communication for the vehicle to be moved. By 9.00 am the vehicle had been moved. The resident did not request a call back with details of the investigation.</p>

Projects	November	18/11/2019	Resident contacted Dendrobium Mine at about 2 pm 18 November 2019 regarding the powerline removal that occurred earlier in the day. The mine contact forwarded the call to the community team.	The community officer contacted the resident at 3.30 pm 18 November to understand the concern - the resident was unaware of the powerline removal and unhappy about the line left in the yard. The community officer explained doorknocking and letterbox drops had occurred in the area of residences impacted by the powerline removal, of which the resident indicated they had not received.
Logistics	November	17/11/2019	Resident called the Community Call Line at 10.48 am to advise of train noise. The resident believed the noise to have been louder than usual over the last 2 months, but every train has squeal louder than usual over the weekend.	Pacific National representatives attend the area of concern to investigate within an hour of receiving complaint. Confirmed it was louder however nothing unusual was found. A track isolation and track walkover was planned the following day – nothing unusual was found from the walkover. The resident was contacted at about 12 noon 17 November 2019 to advise Pacific National representatives were attending to the area and nothing out of the ordinary was detected.
Logistics	November	16/11/2019	Resident emailed the Community Officer directly on 16 November 2019 to advise of rail squeal at 2.57 pm.	Community Officer informed the logistics team of the reported squeal on 18 November 2019; the next business day. Investigation into limiting rail squeal in the area is underway. The resident was advised by return email 18 November the squeal events were noted.

Dendrobium Mine Pit Top	November	09/11/2019	Resident called the Community Call Line at 11 am to report high noise levels from the Dendrobium Mine Pit Top. The resident believes the noise could be reduced. They are also concerned about the possibility of deer entering her back fence.	The community officer informed the operations of the concern in the afternoon of the same day. The resident was contacted the same day to request more information about the type of noise that could be heard - the resident was unable to recall. The operations completed an investigation however with the type of noise the investigation was inconclusive to the noise source. The community officer contacted the resident 25 November to advise of the investigation outcome and arrange a meeting to discuss noise and the concern of deer entering her property. The resident would contact South32 again if she heard the noise. The resident was satisfied with this approach.
Logistics	November	03/11/2019	Resident emailed the Community Officer directly on 3 November 2019 to advise of rail squeal at 9.25 am.	Community Officer informed the logistics team of the reported squeal times on 4 November 2019; the next business day. Investigation into limiting rail squeal in the area is underway. The resident was advised by return email 4 November the squeal events were noted.



Dendrobium Mine Pit Top	October	30/10/2019	Resident called the Community Call Line at 10.22 pm to advise of vehicle movements beyond curfew of 10.00 pm. Resident requested a call back the following business day.	Community Officer informed the operation of the complaint at 8 am on 31 October 2019. The vehicle movements are in line with the curfew which states 'surface vehicle movements are minimised where possible except where required for safety, emergency reasons or change of shifts'. Vehicle movements are expected until about 10.45 pm to allow for the 10 pm shift change. Vehicle movements are also expected from 11.45 pm to about midnight as afternoon shift finishes. The resident was contacted at 12 noon on 31 October 2019 with this information.
Dendrobium Mine Pit Top	October	21/10/2019	Resident called the Community Call Line at 10.00 am to advise horns could be heard from the pit top - thought they were being used to communicate between vehicles. Would like it to stop.	Community Officer informed the operations of the complaint at 10.46 am on 21 October 2019. The operations investigated. No vehicle movements at the workshop occurred around the time of the complaint. The only vehicle movement at the pit top was a Ledacon tipper delivering ballast next to the underground portal. It was thought it may have been the reversing alarm from the tipper. The resident did not wish for a call back.

Dendrobium Mine Pit Top	October	21/10/2019	Resident called the Community Call Line at 10.31 pm to advise of vehicles movements beyond curfew of 10.00 pm.	Community Officer informed the operation of the complaint at 6.46 am on 16 October 2019. The operations conducted a prompt investigation and noted 3 Load Haul Dump machines entered the mine with run of supplies for the 10.00 pm start of shift. This is in line with the curfew. The curfew referred to states 'surface vehicle movements are minimised where possible except where required for safety, emergency reasons or change of shifts'. The resident did not request a call back.
Dendrobium Mine Pit Top	October	15/10/2019	Resident called the Community Call Line at 10.40 am to advise horns could be heard from the pit top. Would like it to stop.	Community Officer informed the operations of the complaint at 10.50 am. The site investigated and confirmed a heavy lift loader entered the workshop and did sound the horn. The horn sound is deep like a truck. This is standard procedure for this piece of equipment. No other equipment was found to be using horns. The resident did not request a call back.
Dendrobium Mine Pit Top	October	13/10/2019	Resident called the Community Call Line at 4.52 pm to advise horns could be heard from the pit top. Would like it to stop.	Community Officer informed the operation of the complaint at 6.00 pm. The site investigated and confirmed no one had used horns in the last two hours. The resident did not request a call back.

Logistics	October	12/10/2019	Resident emailed the Community Officer directly on 12 October 2019 to advise of rail squeal at 3.44 pm, 6.40 pm and 9.49 pm.	Community Officer informed the logistics team of the reported squeal times on 13 October 2019. Investigation into limiting rail squeal in the area is underway. The resident was advised by return email 14 October 2019 the squeal events were noted.
Dendrobium Mine Pit Top	October	10/10/2019	Resident called the Community Call Line at 11.31 pm to advise of vehicles movements beyond curfew of 10.00 pm.	Community Officer informed the operation of the complaint at 9.04 am on 11 October 2019. The operations investigated, and some vehicles movements occurred around the time of the complaint. Night shift and afternoon shift Under Managers addressed crews in relation to limiting noise and vehicle movements during the night. The curfew referred to states 'surface vehicle movements are minimised where possible except where required for safety, emergency reasons or change of shifts'. The resident did not request a call back.
Logistics	October	10/10/2019	Resident called the Community Call Line at 3.00 pm on 10 October 2019 to advise of excessive rail noise and track bouncing.	Community Officer called the resident at 3:20 pm on 10 October 2019 for more information. The resident noted there was excessive noise and track bouncing at the railway line near his parents' house. Investigation was completed and included a meeting with the resident on 11 October 2019 to detail the steps to mitigate the issue. On 16 and 18 October 2019 work to replace a section of rail was completed. The resident was satisfied with the outcome.

Logistics	October	07/10/2019	Resident emailed the Community Officer directly on 7 October 2019 to advise of rail squeal at 1.30 pm, 6.10 pm and 8.44 pm. It was a public holiday.	Community Officer informed logistics of the reported squeal on 9 October 2019; the following working day of the Community Officer. Investigation into limiting rail squeal in the area is underway. To date train speed has been reduced and the track realigned to specifications which have reduced the squeal. The resident was advised by return email 9 October the squeal events were noted.
Logistics	September	21/09/2019	Resident emailed the Community Officer directly on 21 August 2019 to advise of rail squeal at 8.34 pm.	Community Officer shared the details with the logistics team on the next business day (23 September 2019). Investigation into limiting rail squeal in the area is underway. To date train speed has been reduced and the track realigned to specifications which have reduced the squeal. The resident was advised by return email the next business day the squeal event was noted.
Dendrobium Mine Pit Top	September	13/09/2019	Anonymous resident called the Community Call Line at 7.24 am on 13 September 2019 to advise a Kelly's truck crossed to the other side of the road on Cordeaux Road near the mine entrance.	Community Officer informed logistics of the concern at 7.30 am. Investigation commenced. Kelly's advised the trailer was a 3.5 metre float which has a larger turning circle and may have crossed the road to make the turn out of the mine. Kelly's passed on apologies for inconvenience caused. Feedback was not provided to the resident as no contact details or name was left.

Logistics	September	12/09/2019	At 5:40 am on 12.09.19 a complainant reported a lot of banging and clanging coming from the mine site.	Community Officer contacted mine site the same day to request that they investigate the cause of the noise. Community Officer then called the resident to advise him an investigation was underway - the call was not answered so Community Officer left a voicemail. On 13.09.19 at 3:17 pm site advised Community Officer that a pre-shift communication had been sent out regarding the need to minimise noise at site. Community Officer called complainant and left a voicemail message.
Dendrobium Mine Pit Top	September	11/09/2019	Resident texted Community Officer on 11 September 2019 at 7:38 am to complain of vehicle parked in a location near mine site where parking is not allowed. Resident did not request call back.	Community Officer contacted site on the same day and they investigated the matter, but no one was forthcoming regarding the breach. Site believes it may have been a visitor to site. A reminder was sent out to all employees regarding restricted parking areas. Site informed Community Officer that upcoming changes to transportation arrangements for workers would ease demand for parking spaces around the mine site from 20 September.

Dendrobium Mine Pit Top	September	10/09/2019	Anonymous resident called Community Call Line on 10 September 2019 at 2:08 pm regarding a white ute parked illegally in front of mine entrance on heritage site.	Anonymous resident did not request a call back and did not provide contact details. Community Officer contacted site the same day to investigate if the vehicle was an employee and to request its removal. However, vehicle was gone before numberplate could be recorded. A reminder was sent out to all employees regarding restricted parking areas. Site informed Community Officer that upcoming changes to transportation arrangements for workers would ease demand for parking spaces around the mine site from September 20. No request was made for a call back and no contact details were provided by the complainant.
Logistics	September	04/09/2019	Resident emailed the community officer directly on 4 September 2019 at 7.51 pm to advise of rail squeal at 6.10 pm on the same day.	The rail squeal event was reported to the logistics team the following business day. Investigation into limiting rail squeal in the area are underway. To date train speed has been reduced and the track realigned to specifications which have reduced the squeal. The resident was advised by return email the next business day that the squeal event was noted.
Logistics	September	01/09/2019	Resident contacted the Community Call Line at 9.58 am to advise of loud noise from the mine.	The Community Officer contacted the staff at the site to investigate at 11 am. The investigation determined the noise was likely from the warehouse where 3 loads of pipe being loaded on to a truck was dropped. Staff were reminded of the need to reduce noise at the pit top. The resident did not request a call back.

Dendrobium Mine Pit Top	August	28/08/2019	<p>Mount Kembla resident contacted Team Assistant, Dendrobium Mine at 2:27 pm on 28.8.19 about noisy motorbikes near the mine site.</p> <p>On 28.8.19 Team Assistant contacted subject matter experts on site and was advised that no motorbikes were parked on site that night, although a review of camera footage from night of the 27.8.19 showed a motorbike had entered the site at 9:38 pm, although the rider could not be identified. At shift changeover all staff were reminded of the Driver's Code of Conduct and reminded of the speed limit and the need for safety and minimising noise impacts on the local community. Complainant did not wish to be contacted with a resolution.</p>
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Legacy Infrastructure	August	22/08/2019	Community Lead received an email from an internal stakeholder regarding a community complaint. The complainant was reportedly upset about not being contacted prior to tree-trimming being conducted on one of the large trees in his yard.	Community Lead called complainant for more information on Friday 23.8.19, then began investigation. On Monday 26.8.19 Community Lead spoke to subject matter experts and services on the ground and requested that all relevant stakeholders be made aware of the complainant's address and contact details and that they not enter his property or trim his tree without calling him first. Community Lead called complainant on 26.8.19 and explained that there had been a change in contracted services; but that the tree needed to be trimmed the way it was because new shoots would have been too weak if only smaller limbs were removed, so it was healthier to remove a main section, as it would grow back stronger. Complainant still not happy that he was not notified and said it reflected badly on South32.
Logistics	August	17/08/2019	Resident emailed the community officer directly on 17 August 2019 at 7.56 am to advise of rail squeal at that time.	The rail squeal event was reported to the logistics team the next business day (19 August 2019). Investigation into limiting rail squeal in the area is underway. To date train speed has been reduced and the track realigned to specifications which have reduced the squeal. The resident was advised by return email the next business day that the squeal event was noted.



Logistics	August	15/08/2019	Resident emailed the community officer directly on 15 August 2019 at 9.38 pm to advise of rail squeal at that time.	The rail squeal event was reported to the logistics team the following business day. Investigation into limiting rail squeal in the area are underway. To date train speed has been reduced and the track realigned to specifications which have reduced the squeal. The resident was advised by return email the next business day that the squeal event was noted
Dendrobium Mine Pit Top	August	13/08/2019	Resident text the Community Officer directly with a photo of a car parked on Cordeaux Road outside his side access (grass area) at 4.31 pm. The car arrived around 2 pm.	The Community Officer advised the Operations Manager immediately and the owner of the car was found. The car was moved within 2 hours of receiving the complaint. The Operations Manager committed to reviewing parking procedures to prevent this occurring again. The Community Officer advised the resident of the investigation and outcome before the car was moved.
Logistics	August	1/08/2019	Resident emailed the community officer directly on 1 August 2019 at 7.06 pm to advise of rail squeal. The resident received an out of office reply from the community officer.	The community officer forwarded the complaint to logistics 6 August 2019 and returned an email to the resident advising the note had been received.

Logistics	July	30/07/2019	Resident emailed the Community Officer directly on 30 July 2019 at 6.25 pm and 6.53 pm to advise of rail squeal events at 8.00 am and 6.50 pm. The resident also requested the train schedule showing train sets allocated to times so he could analyse the noise.	The Community Officer forwarded the rail squeal times to logistics for logging as part of the investigation on 31 July 2019. A return email to the resident was sent 31 July 2019 noting the squeal times had been recorded and mitigation methods implemented to date had successfully reduced the frequency and noise of the squeals. Investigations into the train stock were now a focus and the outcome would be shared when it was completed.
Logistics	July	24/07/2019	Resident emailed the Community Officer directly on 24 July at 8.15 pm The email noted rail squeal on the same day at 8.18 am and 5.50 pm.	Community Officer forwarded rail squeal times to logistics for logging as part of investigations on 25/07/19. Return email to resident sent 25 July 2019 advised the rail squeal events had been noted and investigations continuing.
Dendrobium Mine Pit Top	July	24/07/2019	The control room received a direct call from a resident in the night advising he could feel vibrations from the mine. The resident indicated he had heard them before. The control room forwarded this message to the Community Call Line.	The Community Officer contacted the mine team for comment and investigation, and attempted to call the resident at 11 am and 11.15 am to gather more information. The investigation determined a machine loading a hydraulic pipe trailer was the cause of the noise. The machine engine has a low loud hum. This activity will be limited on afternoon shift. The resident was satisfied with the result.

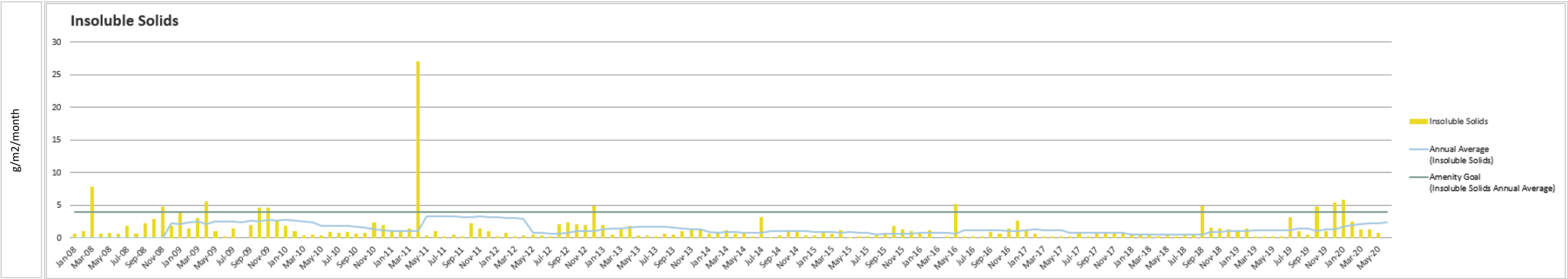
Dendrobium Mine Pit Top	July	02/07/2019	Resident contacted the Community Call Line at 1.45 pm on 2 July, noting smoke and an awful smell coming from the car park area of the mine.	Community Officer contacted projects team immediately to investigate. The asphaltting of the new car park was under way and the smoke would be the visible heat the process often gives off. The asphaltting was delayed a week. Resident advised the asphaltting was the cause of the smoke and smell. The resident was unhappy as he was not advised of the activity beforehand, as is usually the case.
Dendrobium Mine Pit Top	July	01/07/2019	Resident text the Community Officer directly on 1 July 2019 at 3.30 pm to advise of employees parking on Cordeaux Road.	Community Officer contacted mine site and advised of the complaint. A pre-shift communication was prepared and shared the same day. Management were advised and investigated the owner of the vehicle. Outcome was shared with resident at 3.40 pm and they were thankful for the information.



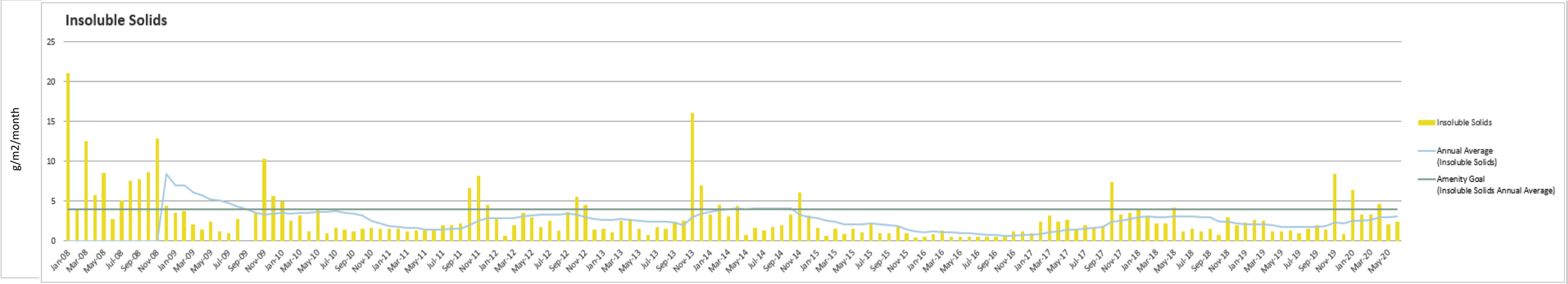
**Appendix E: Dendrobium Long-Term Environmental Monitoring Data**

Appendix E – Long-term Environmental Monitoring Graphs

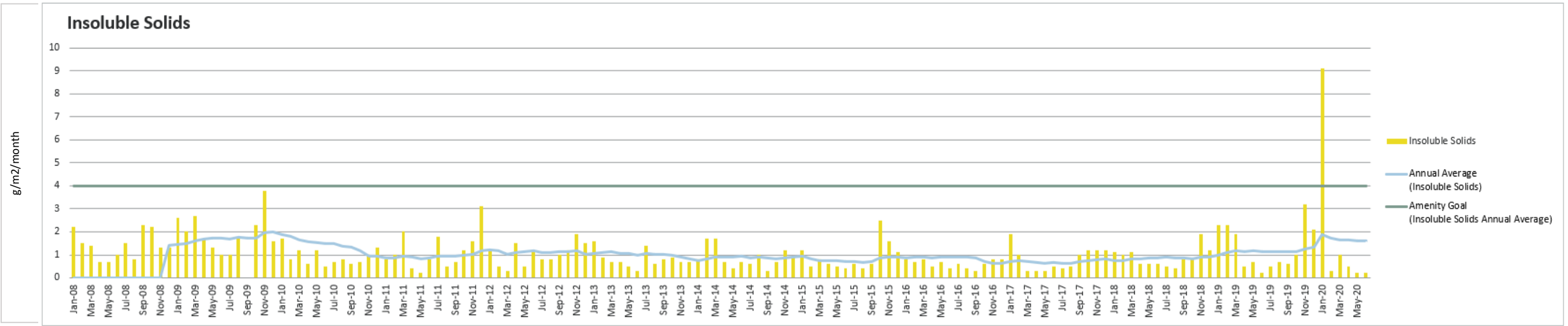
Dust Deposition Results - Point 6 - 12MMA



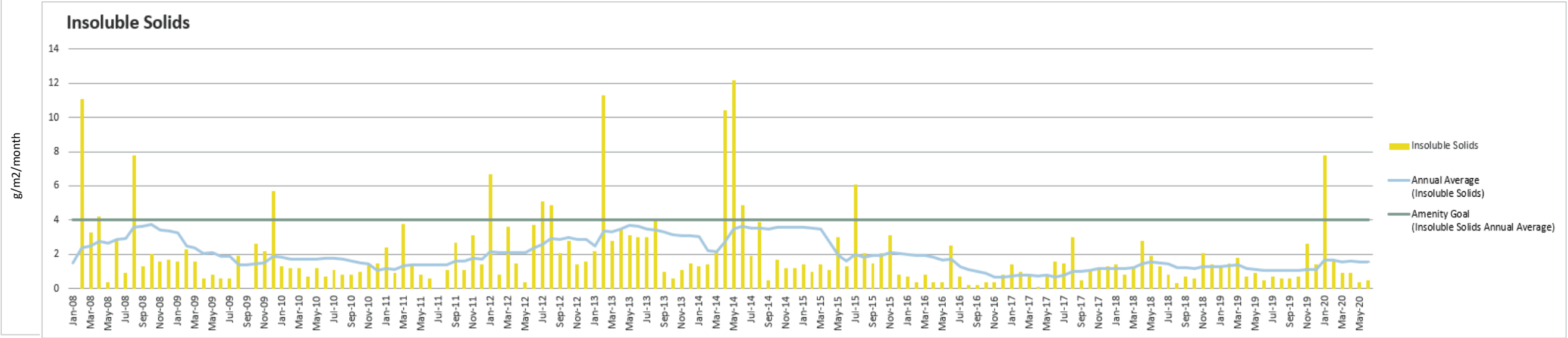
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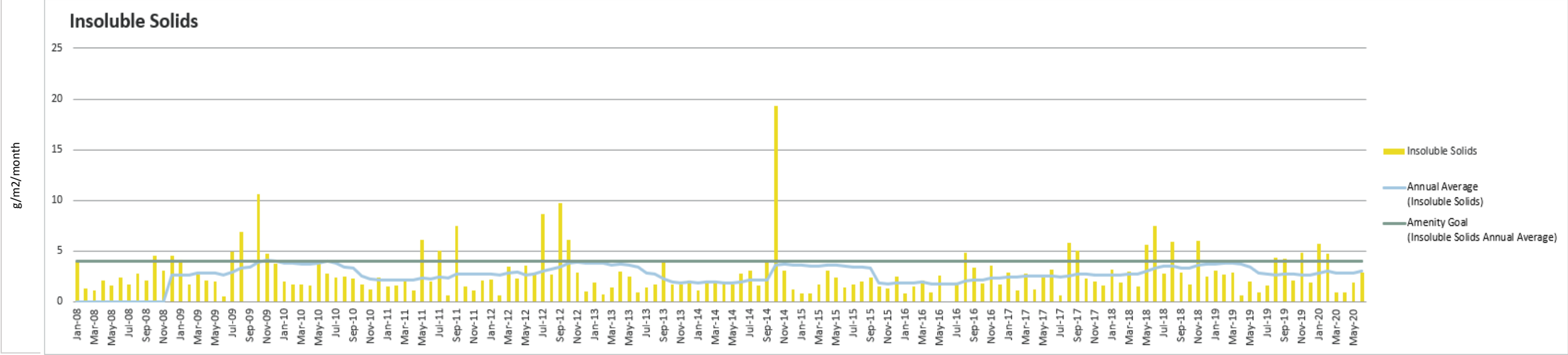
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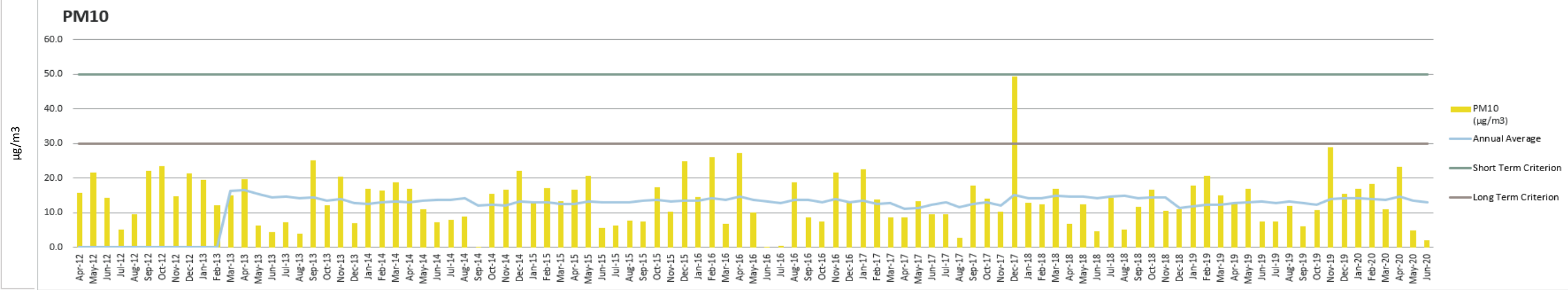
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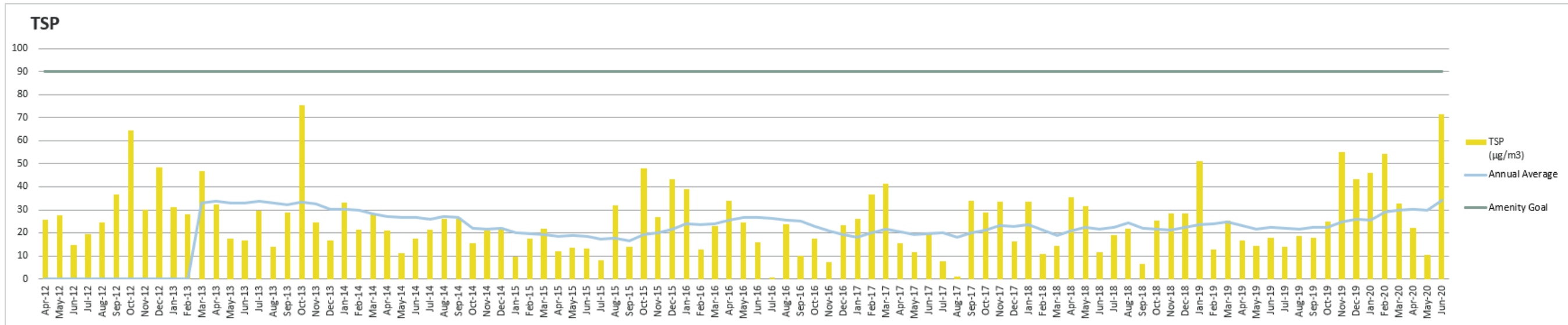
Dust Deposition Results - Point 18 - 12MMA



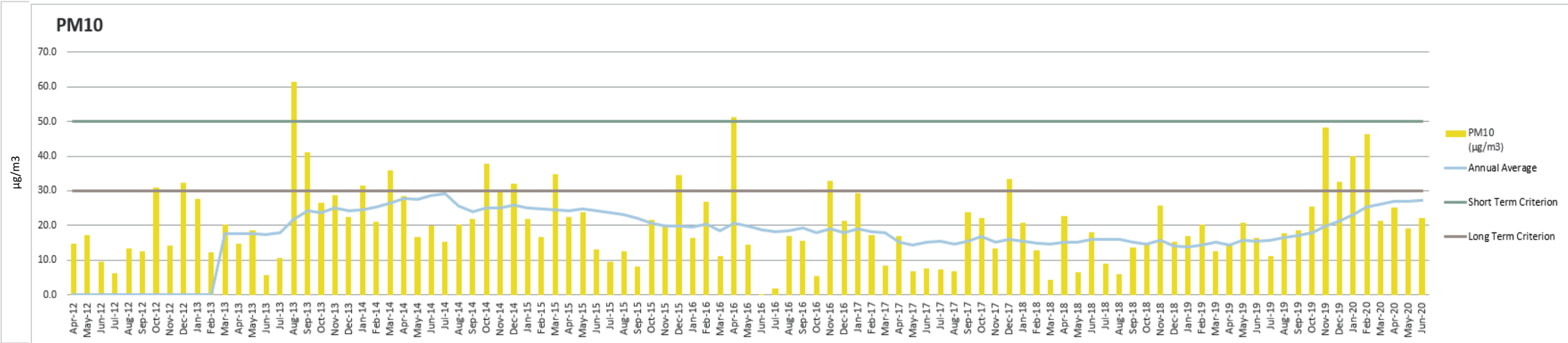
HVAS Results - Point 20 – PM10



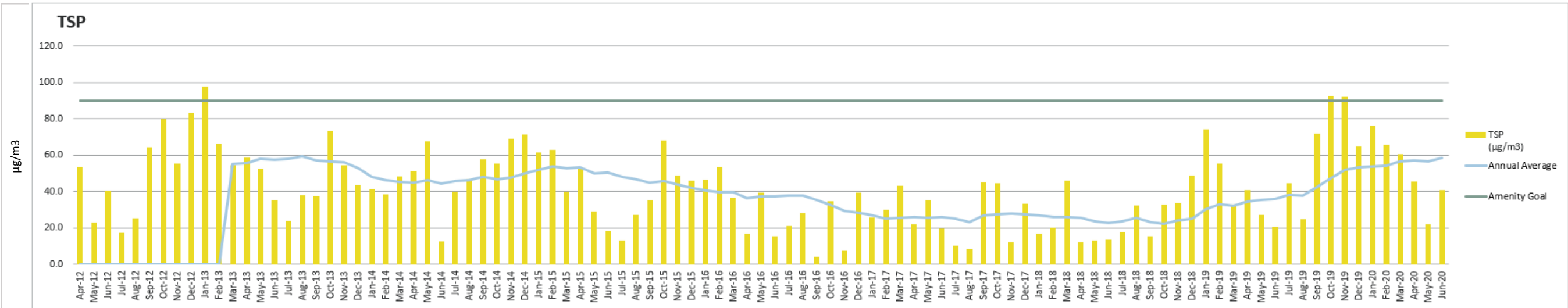
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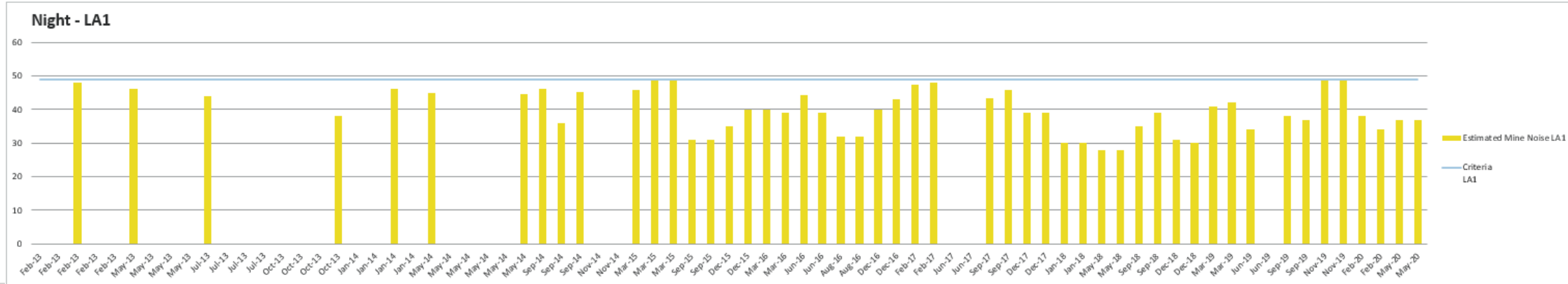
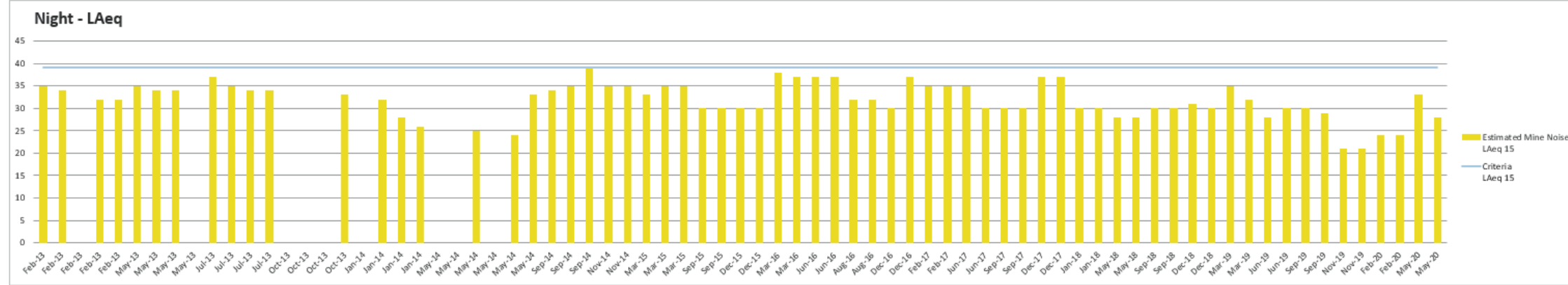
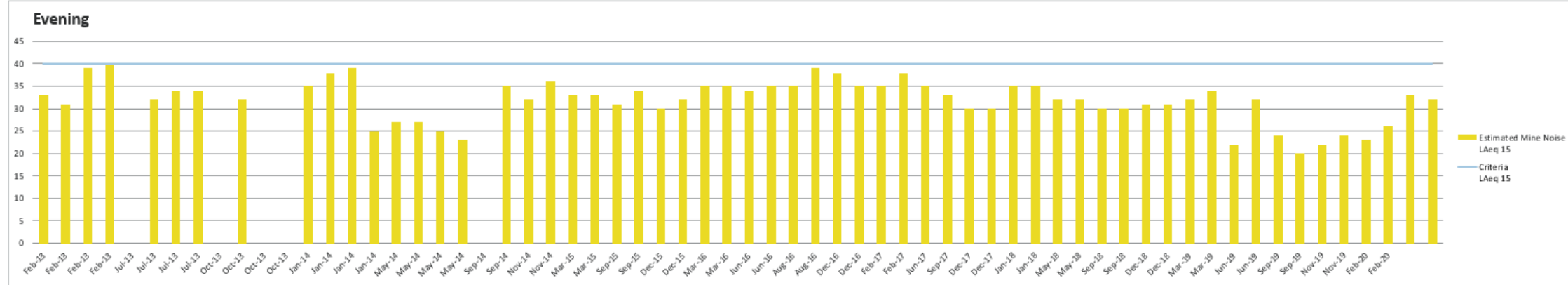
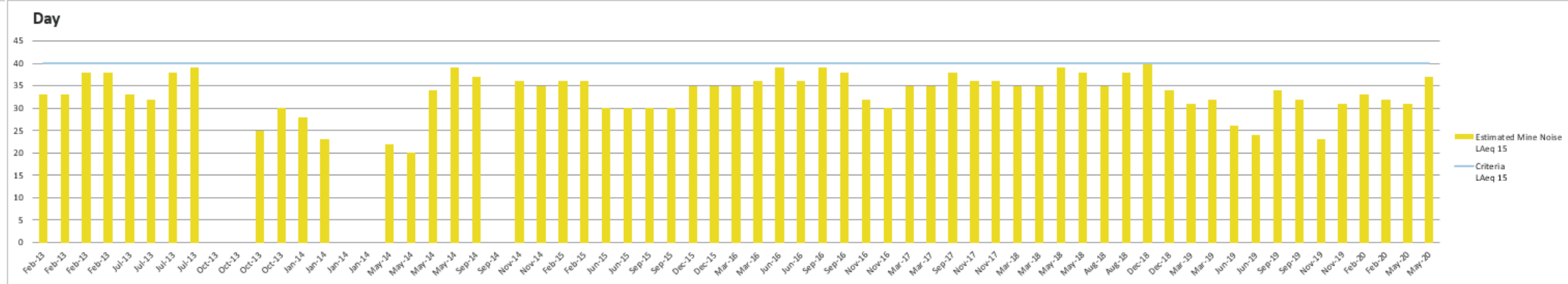
HVAS Results - Point 21 – PM10



HVAS Results - Point 21 – TSP



## Noise Monitoring Results – R1





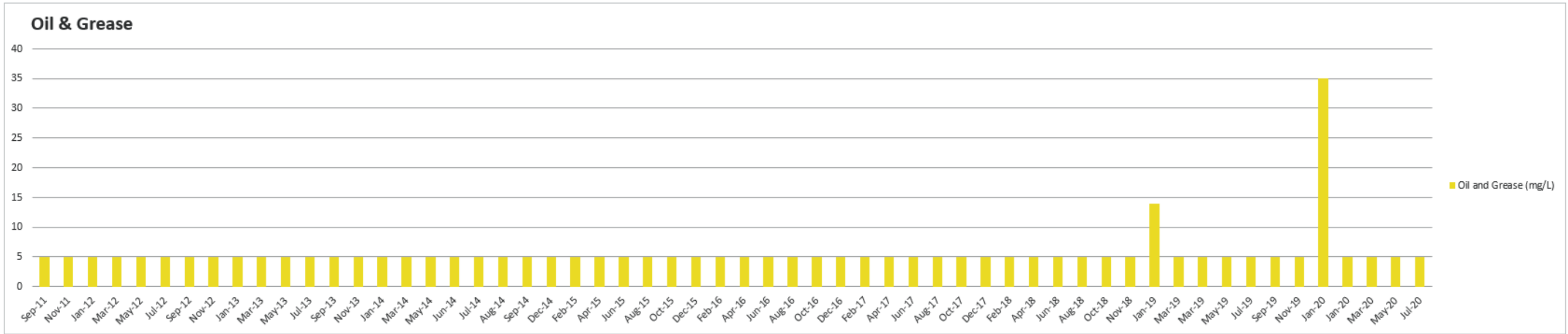
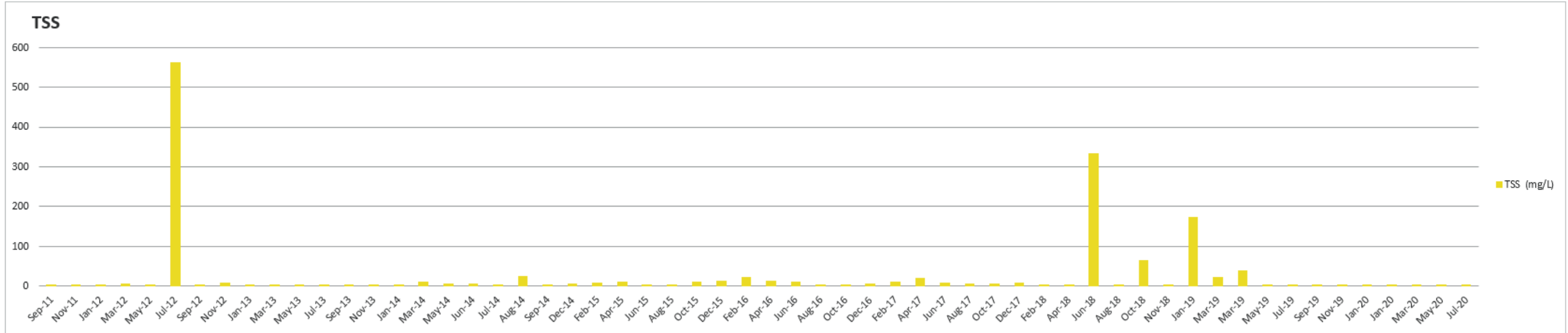
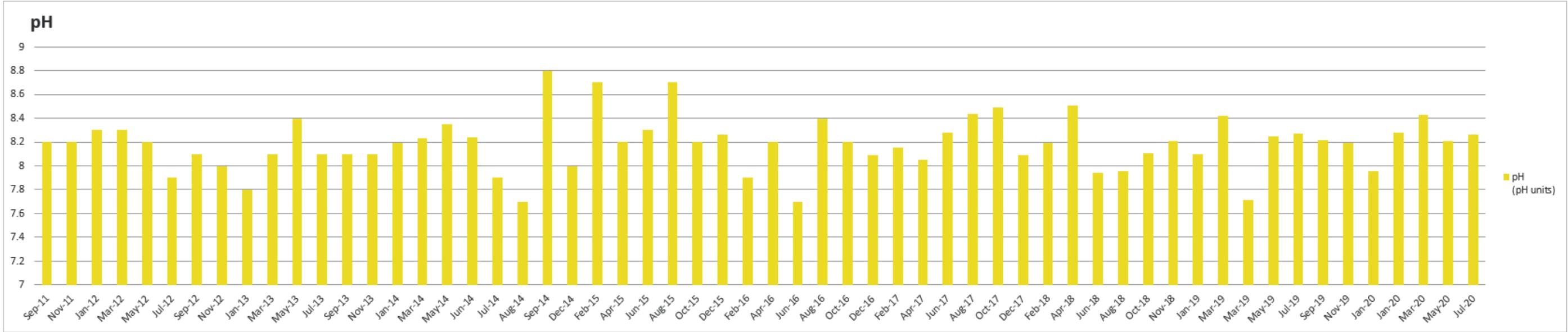
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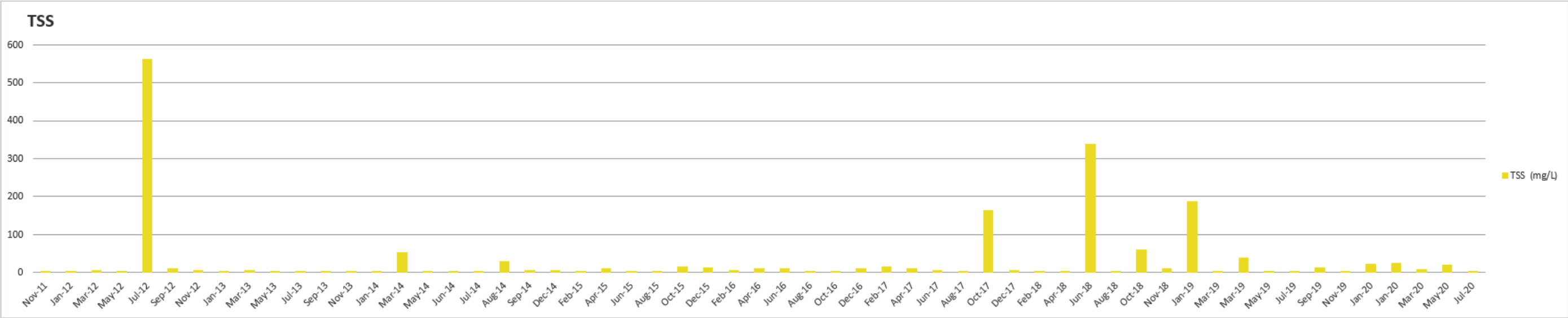
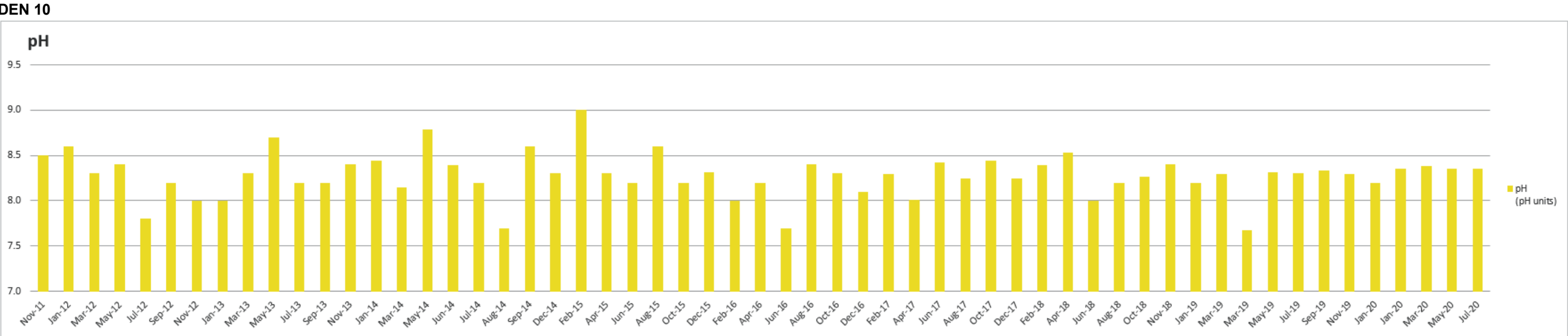
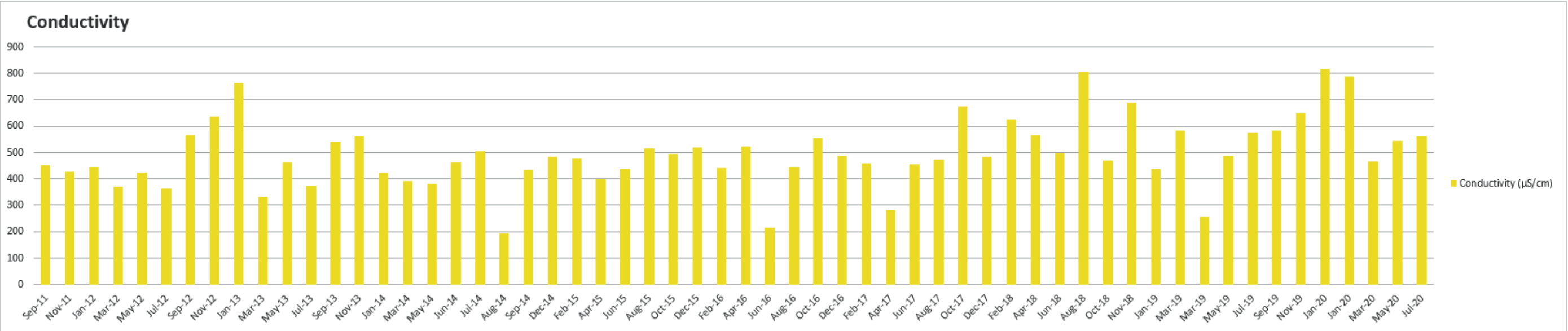


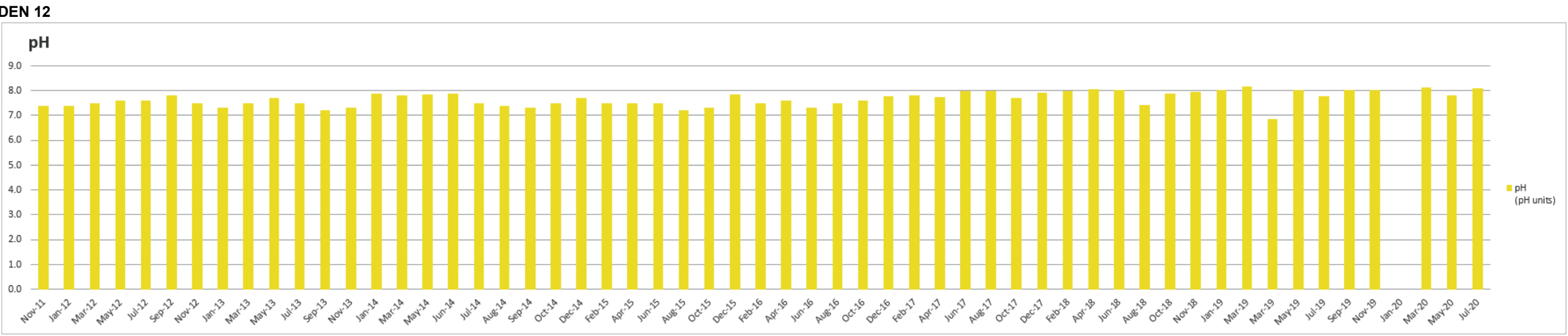
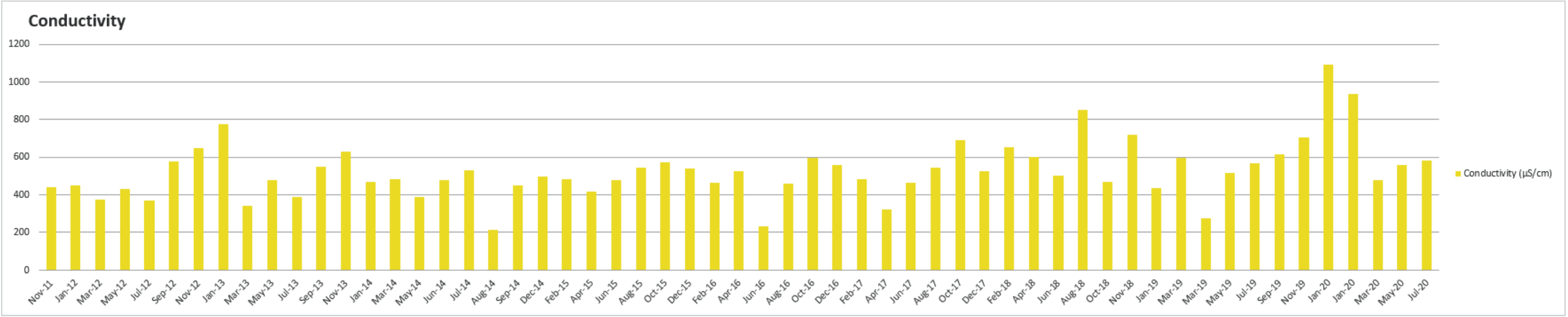
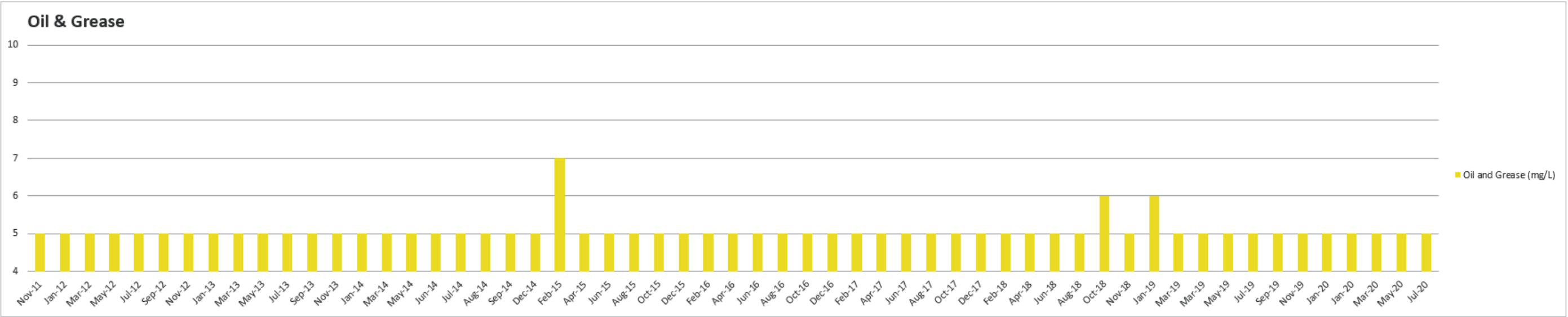
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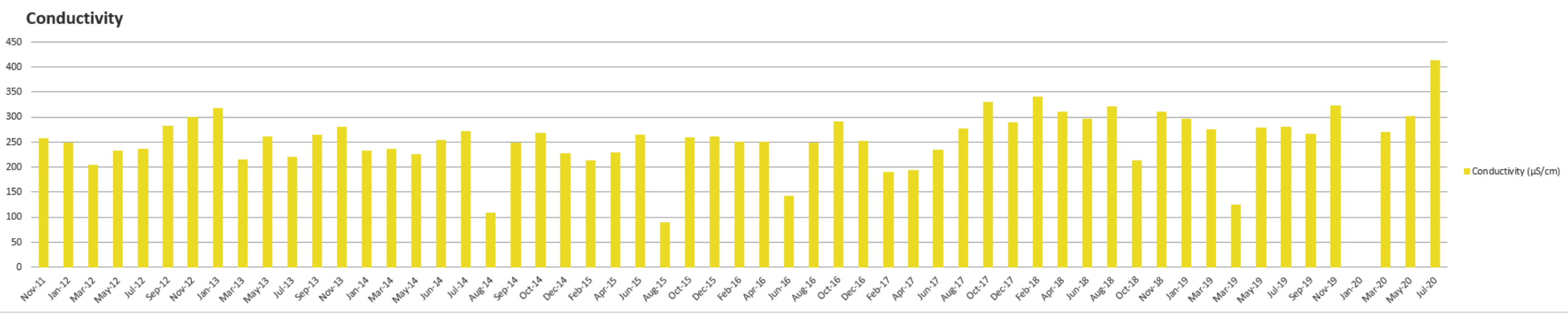
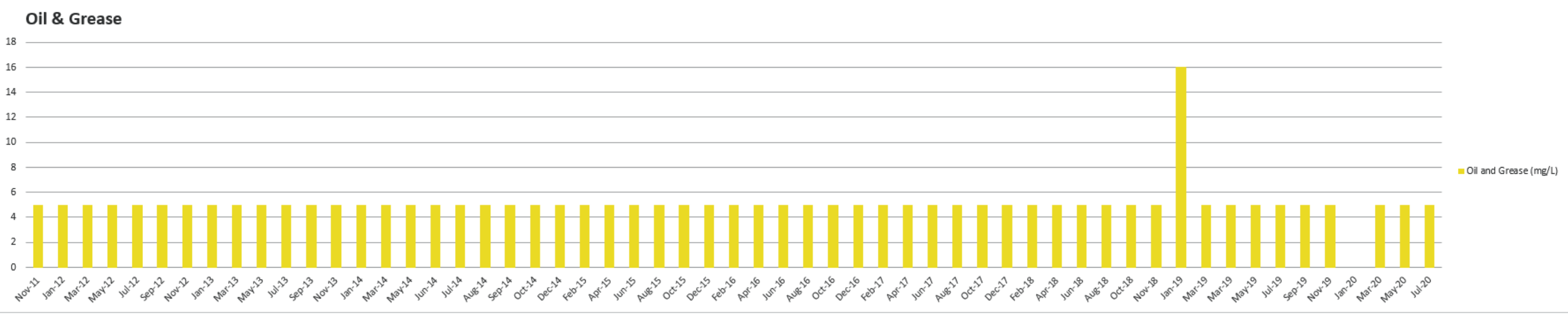
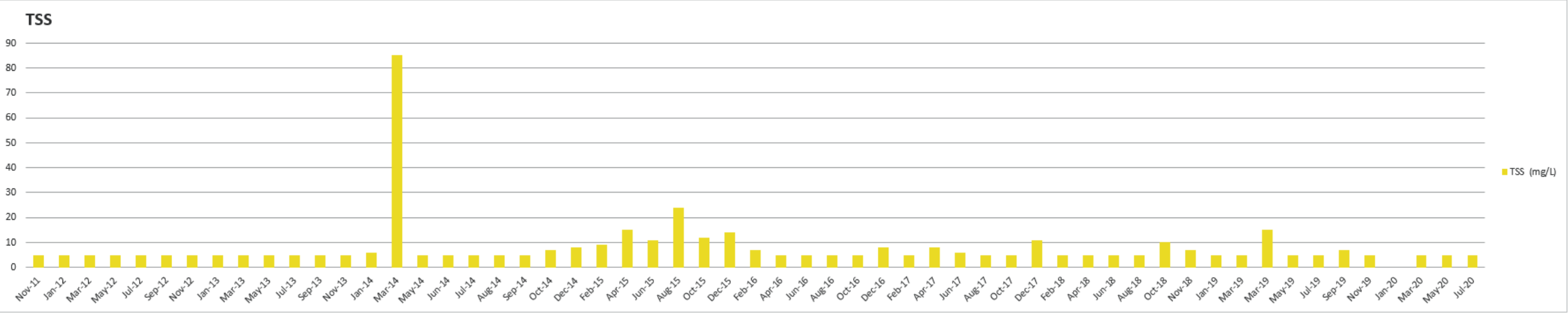


Water Quality Monitoring Results – DEN 7

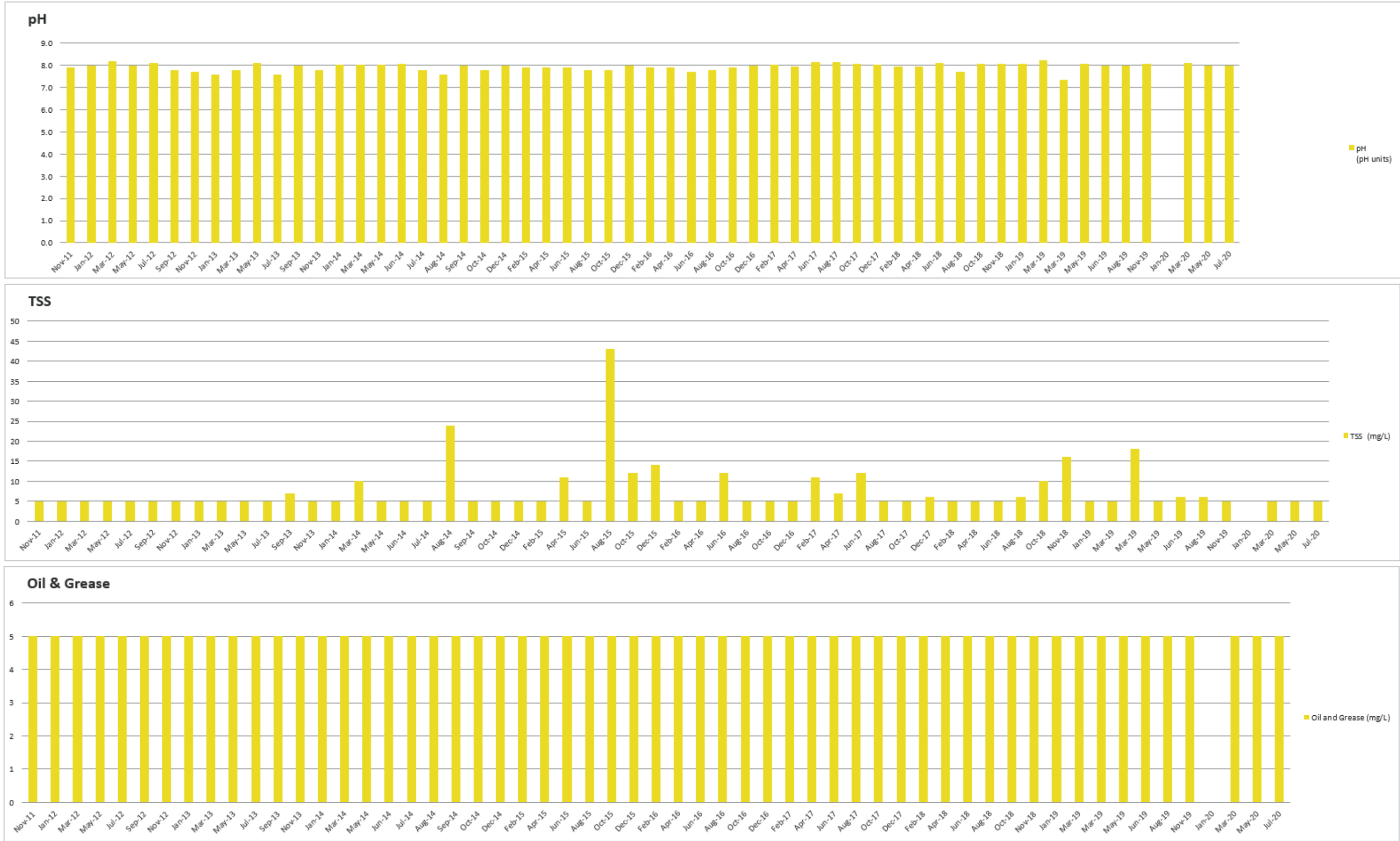


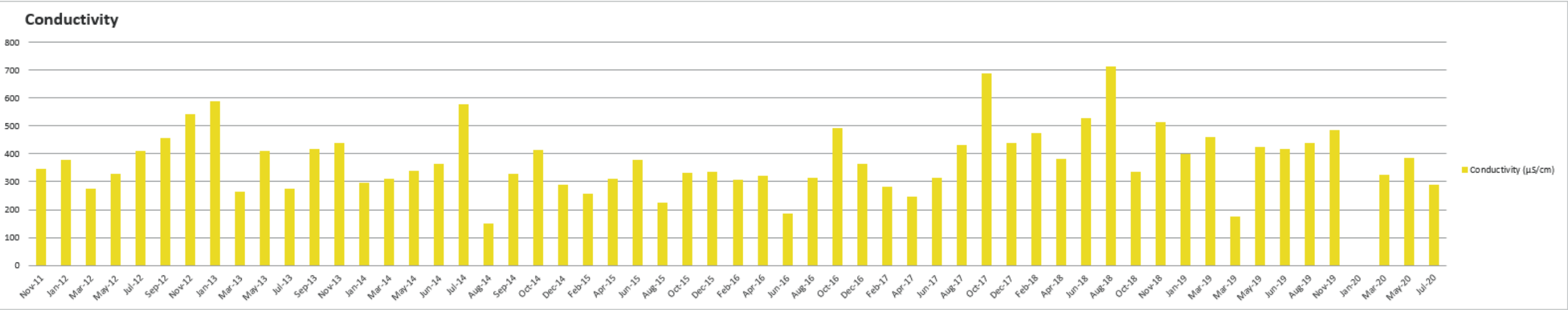




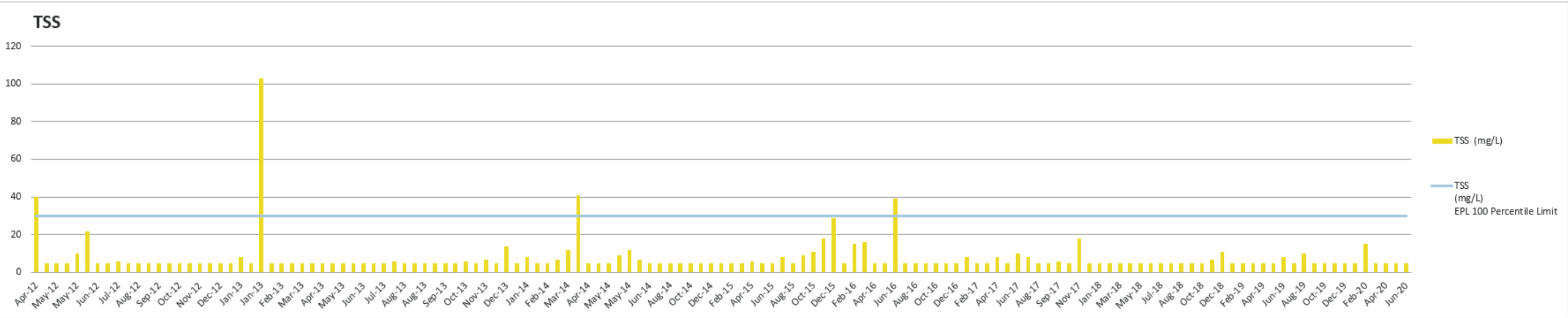
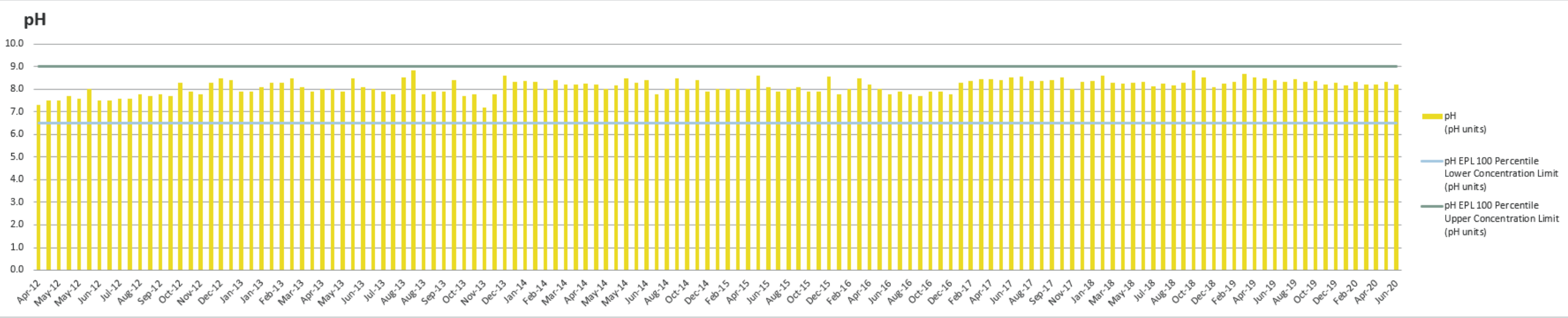


DEN 13

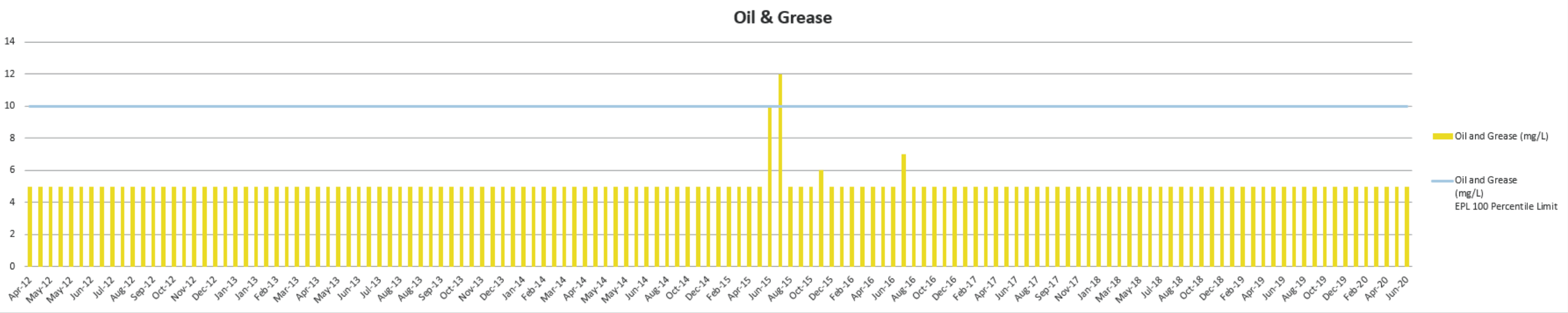




LDP5







Water Discharge Results – LDP5

