Rix's Creek Mine

2020 Annual Review

THE Bloomfield GROUP

WE CARE. WE DELIVER.

***"Cattle have sustained good growth rates since the drought. Stocking rates have not kept up with pastures growth, allowing recovery and seeding of pasture species"*- Local Agronomist comment on cattle grazing study at Rix's Creek Mine.**

Name of Operation	**Rix's Creek Mine**
Name of operator	**Bloomfield Collieries Pty Ltd**
Development consent / project approval # **Rixs Creek North** **Rixs Creek South**	 **PA 08_0102** **SSD6300 & DA49/94**
Name of holder of development consent / project approvals	**Bloomfield Collieries Pty Ltd**
Mining Lease #	**CL357, ML1630, ML1648, ML1649, ML1650, ML1651,CL352, ML1432, ML1725 & ML 1803**
	Bloomfield Collieries Pty Ltd
Water License #	**WAL41500, WAL41555, WAL40777, 20BL170864**
Name of holder of water license	**Bloomfield Collieries Pty Ltd**
MOP / RMP start date **Rixs Creek Mine**	 **1/12/2019 – 30/11/2022**
Annual Review start date	**1/1/2020**
Annual Review end date	**31/12/2020**
I, Chris Quinn, certify that this audit report is a true and accurate record of the compliance status of Rix's Creek Mine for the period 1/1/2020 – 31/12/2020 and that I am authorised to make this statement on behalf of Bloomfield Collieries Pty Ltd.	
Name of authorised reporting officer	**Chris Quinn**
Title of authorised reporting officer	**Environmental Advisor**
Signature of authorised reporting officer	
Date	**26/3/2021**

CONTENTS

LIST OF PLAN AND FIGURES

LIST OF TABLES

LIST OF APPENDICES

List of Abbreviations

AHD	Australian Height Datum
AR	Annual Review
BOA's	Biodiversity Offset Areas
bcm	Bank cubic metre
CHPP	Coal Handling and Preparation Plant
CCC	Community Consultative Committee
DA	Development Application
dBL	Noise decibels (linear)
dBA	Noise decibels (A-weighted)
DDG	Depositional Dust Gauge
DPIE	Department of Planning, Industry and Environment
EA	Environmental Assessment
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EL	Exploration Licence
EMP	Environmental Management Plan
EMS	Enviromental Management System
EPA	Environment Protection Authority
GCP	Ground Core Piezometer
GDE	Ground Dependent Ecosystems
GHG	Greenhouse Gas
EPL	Environment Protection Licence
$g/m^2/mth$	Grams per square metre per month
HVAS	High Volume Air Sampler
HRSTS	Hunter River Salinity Trading Scheme
IBC	Intermediate Bulk Container
IEA	Independent Environmental Audit
ISO	International Standard
l/s	Litres per second
LHPA	Livestock Health and Pest Association
LGA	Local Government Area
MBGL	Meters Below Ground Level
MCM	Monthly Communication Meetings
MIC	Maximum Instantaneous Charge
mm/s	Millimetres per second
MOP	Mining Operations Plan
Ml	Megalitre
ML, MPL, CCL & CL	Mining Leases
Mt	Million tonnes
MU's	Management Units
NAG	Noise Assessment Group
NRAR	Natural Resources Access Regulator
OC	Open Cut
PA	Project Approval
PIRMP	Pollution Incident Response Management Plan
PM_{10}	Particulate matter (dust) with a diameter of less than 10 microns
PPM	Parts Per Million
PPV	Peak Particle Velocity
RCS	Rix's Creek South
RCN	Rixs Creek North
RCM	Rix's Creek Mine
ROM	Run-of-mine
RR	Resources Regulator
SEPP	State Environmental Planning Policy
STP	Sewerage Treatment Plant
TBT	Toolbox Talk
TBG	The Bloomfield Group
TEOM	Tapered Element Oscillating Microbalance
TPH	Total Petroleum Hydrocarbons
TSP	Total Suspended Particulates
VWP	Vibrating Wire Piezometer
WMP	Water Management Plan
WSP	Water Sharing Plan
µS/cm	Micro Siemens per centimetre
$µg/m^3$	Micrograms per cubic metre

SECTION 1 STATEMENT OF COMPLIANCE

Table 1 Summary Statement of Compliance for Major Approvals

Were all conditions of the relevant approval(s) complied with?	
SSD 6300	NO
DC # DA 49/94 Mod 9	NO
PA 08_0102 Mod 8	NO
EPL3391	NO
ML # 1432, CL342	YES
ML # CL 357, ML 1630, ML 1648-1651	YES

The non-compliances identified with PA 08_0102 and associated mining leases are detailed in **Table 2** below**.**

Table 2 Summary of Non Compliances with Rix's Creek North PA 08_0102 and EPL3391

Condition	Non-Compliance	Risk Level	Addressed in 2020 AR/ comments
Schedule 3, Condition 22	Air quality monitoring does not assess the proportion of privately owned land for which exceedances of the cumulative criteria may occur.	**Administrative**	Section 6.4
Schedule 3, Condition 27 (d), M2.2 EPL3391	Dust Trak and TEOM downtime during reporting period.	**Low**	Section 6.4.3 Section 11.2

The non-compliances identified with SSD 6300 and associated mining leases are detailed in **Table 3** below**.**

Table 3 Summary of Non Compliances with Rix's Creek South SSD6300 and DA49/94.

Condition	Non-Compliance	Risk Level	Addressed in 2020 AR/ comments
SSD-6300 Development consent, Part B, **Condition B65**	While the majority of chemicals were stored appropriately, a couple of items identified during the Independent Environmental Audit site inspection did not comply with standards for dangerous goods storage including: • Oil drums in store were sitting on stacked pallets within bund. This meant that they weren't protected by the bund • An IBC of lubricant in the store was sitting on a bracket at the same level as the bund so hence wasn't protected by the bund.	**Low**	Section 4.6

SECTION 2 INTRODUCTION

This 2020 Annual Review is compiled pursuant to Part E, Condition 9 of SSD6300 and Schedule 5, Condition 10 of PA08_0102. Additionally, this Review satisfies the environmental reporting requirements of the Department of Planning, Industry and Environment (DPIE) and the Resources Regulator (RR), The Environment Protection Agency (EPA) and the Natural Resources Access Regulator (NRAR).This reporting period extends from 1 January 2020 to 31 December 2020. This Annual Review has been prepared in accordance with the Post Approval Requirements for State Significant Developments – Annual Review Guideline (DPE 2015).

Rix's Creek Mine is wholly owned by Bloomfield Collieries Pty Limited (BCL) an Australian owned company.

Rix's Creek (South) Mine (RCS) commenced operations in July 1990 following the granting of Development Consent DA 86/2889 and Coal Lease No. 352 on 20 October 1989. This followed the submission of Coal Lease Application No. 185, an Environmental Impact Statement (EIS) and a public inquiry into the development application. Subsequently DA 49/94 was approved on the 19 October 1995 for a period of 21 years from the date of issue of a mining lease in satisfaction of Mining Lease Application No. 17. Mining Lease 1432 was subsequently issued on 24 June 1998.

In 2015, BCL submitted a development application to extend Mining Operations within the area for a further 21 years. This project was named the Rix's Creek (South) Continuation of Mining Project State Significant Development 6300 (SSD6300). BCL sought extension to the Project Approval (DA 49/94 MOD 10) duration for nine (9) months to allow continued coal extraction while the Continuation Project assessment was undergoing due process.

During the 2020 Annual Review period, the Rix's Creek South Continuation of Mining Project SSD 6300 was commenced on 24 February 2020. An extension of time to surrender the DA49/94 consent was granted by the Planning Secretary with DA 49/94 now required to be surrendered by 24 February 2022.

In December 2015, HV Coking Coal Pty Limited (Glencore) completed the purchase of 100% of the Integra Mining Operations Complex. BCL subsequently purchased, from Glencore, the previous Integra Open Cut Operations, Coal Handling Preparation Plant, Train Loading Infrastructure and the Rail Loop. Under the "Operating, Infrastructure Access and Services Agreement", entered into by Glencore and BCL, all current mining operations covered by the 2010 Integra Complex Consent, Project 08_0101 Integra Underground Project and Project 08_0102 Integra Open Cut Project, can continue. BCL operate the Open Cut Operations as Rix's Creek North Mine (RCN). This governs open cut mining in the Camberwell Pit and Falbrook Pit areas. Delivery of Project 08_0101 Run of Mine (ROM) coal from the Underground Mine, Coal Preparation and Train Loading Operations are all operated and managed by BCL.

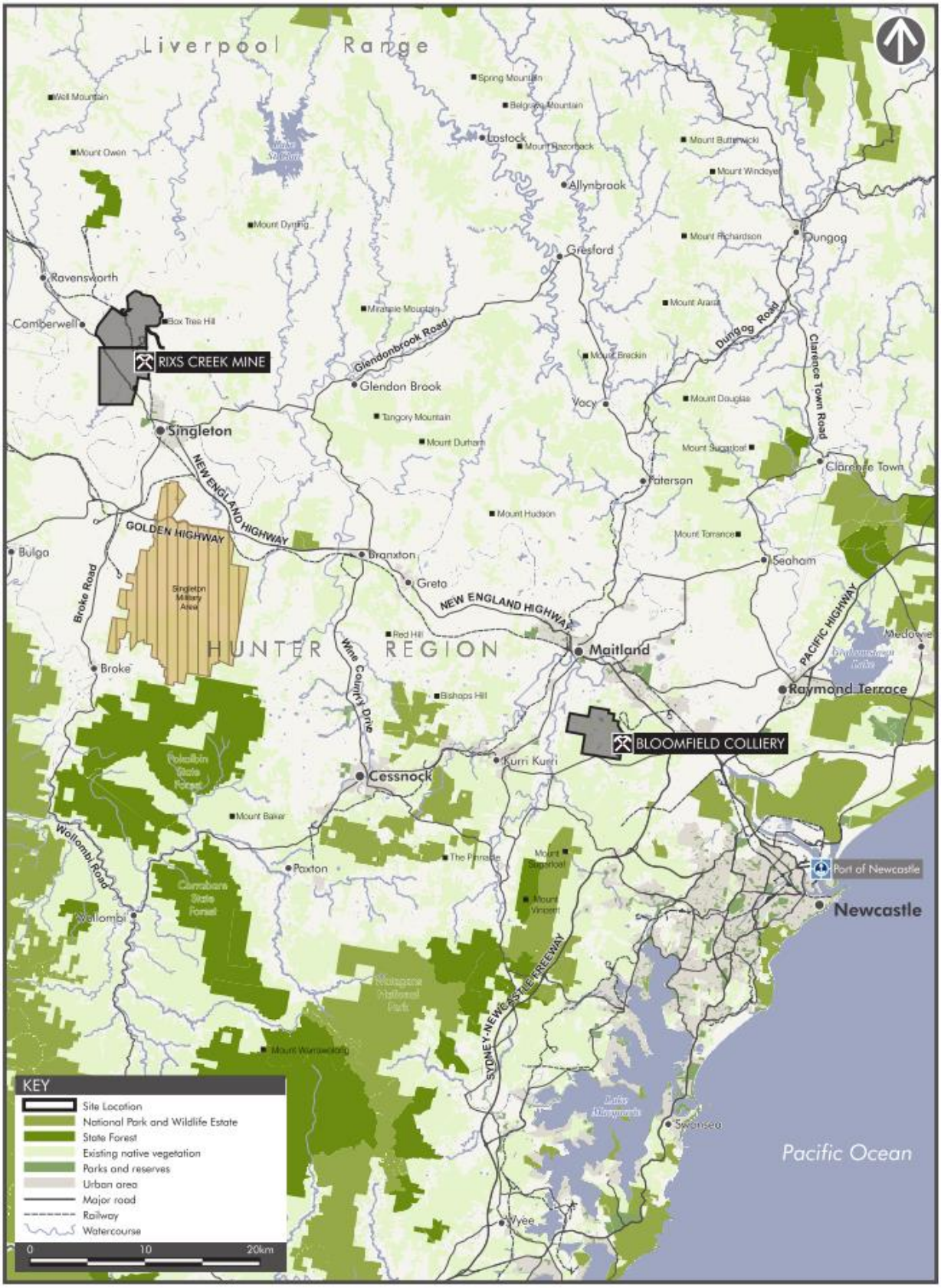


Figure 1 Regional Context Plan

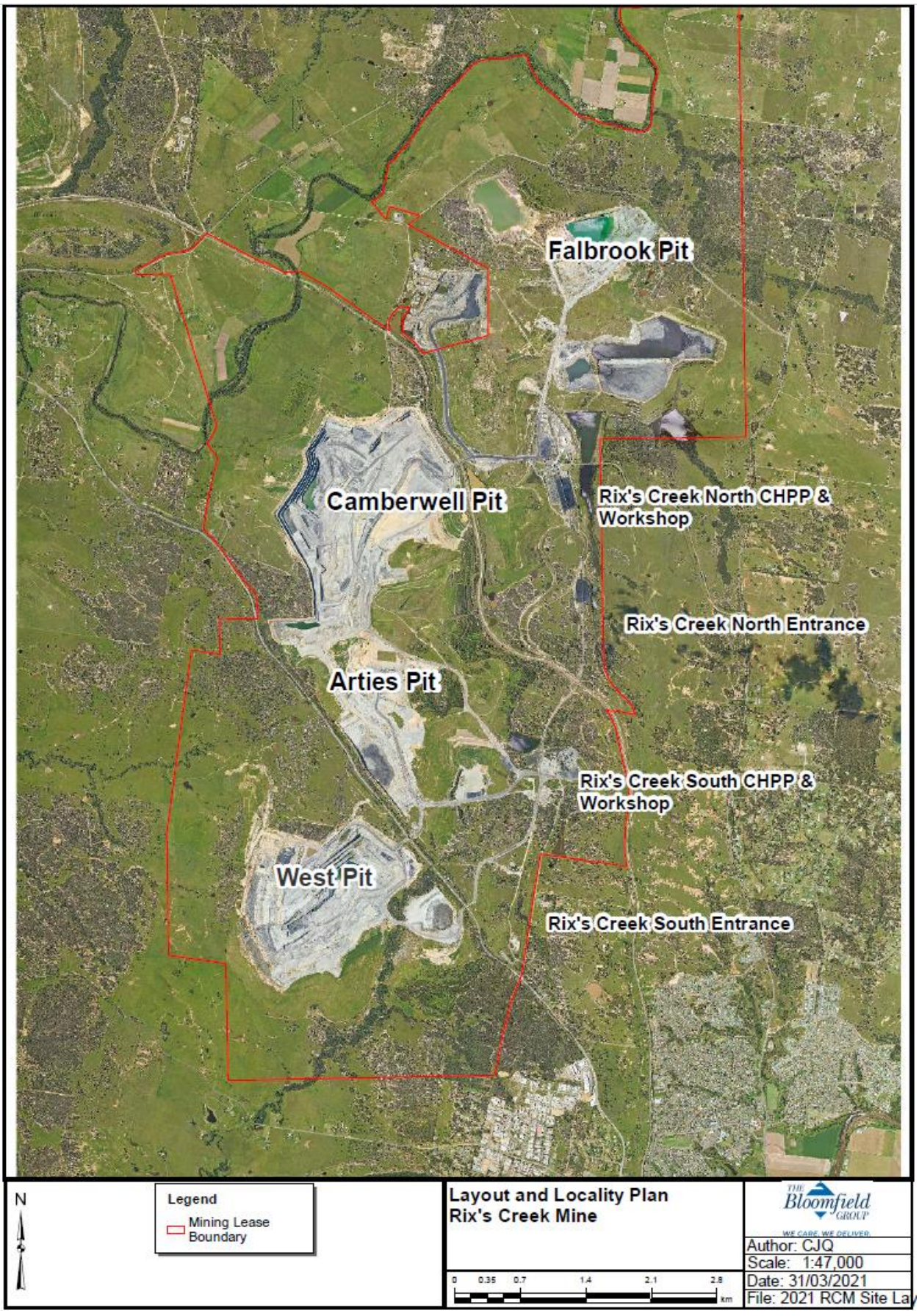


Figure 2 Site Layout and Locality Plan showing Mining Lease Boundary

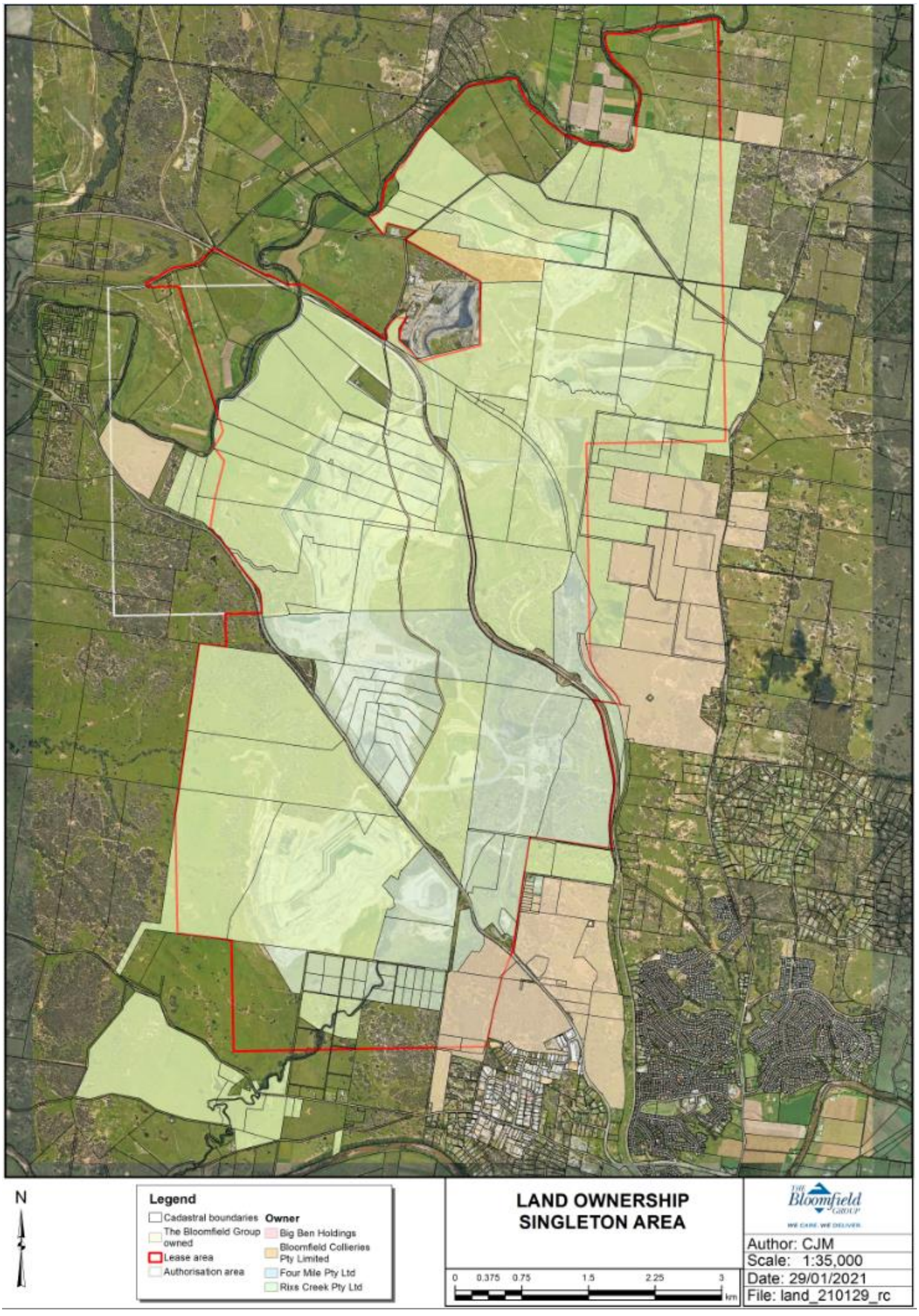


Figure 3 Land Ownership December 2020

2.2 Mine Contacts

Rix's Creek Pty Limited

Site:-	Rix's Creek Lane Singleton NSW 2330	Postal Address:-	P O Box 4 EAST MAITLAND NSW 2323.
Telephone:-	02 65788800		
Fax:-	02 65711066		

Rix's Creek Community & Blasting Hotline:-
02 49302665 (24hr)
info@bloomcoll.com.au

The Bloomfield Group Chief Operations Officer:- Luke Murray
Responsible for overseeing all Bloomfield Group operations.
E-mail:-lmurray@bloomcoll.com.au

Rix's Creek Mine Operations Manager:- Brendan Clements
Responsible for overseeing all Rix's Creek Mine operations.
E-mail:- bclements@bloomcoll.com.au

Rix's Creek Technical Services Manager:- Tim Gentle
Responsible for survey and mine planning.
E-mail:- tgentle@bloomcoll.com.au

The Bloomfield Group Environment Manager :- Chris Knight
Responsible for consulting with regulatory authorities as required, provide measures for continual improvement to site procedures and ensuring all personnel are trained and competent in relation to environmental aspects of the mine site.
E-mail:- cknight@bloomcoll.com.au

Rix's Creek Environment Advisor:- Chris Quinn
Responsible for assisting monitoring and reporting on the environmental performance of the operation and co-ordinating the rehabilitation on the mine site.
E-mail:- cquinn@bloomcoll.com.au

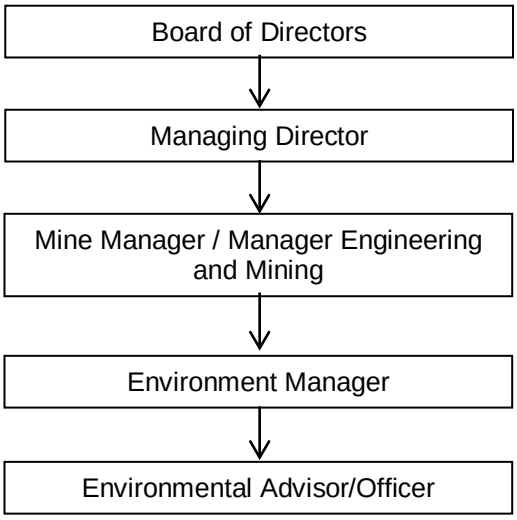
Rix's Creek Environment Officer:- David Holmes
Responsible for assisting monitoring and reporting on the environmental performance of the operation.
E-mail:- dholmes@bloomcoll.com.au

Bloomfield / Rix's Creek Website:-

www.bloomcoll.com.au

2.3 Organisational Chart (Environment)

As per *Rix's Creek Mine Management Structure Register* document:



2.4 Employment Demography

Rix's Creek currently has 311 employees comprising of staff and operators. This is a slight reduction from the 320 employees reported in the 2019 Annual Review. The areas which include the largest number of employees are Singleton Council (29%), Maitland City Council (27%) and Cessnock City Council (18%). Rix's Creek mine endeavour to employ local personnel and local contractors are preferentially engaged as required.

Table 4 Demographic Breakdown at Rix's 2020

Residential Council	TOTAL	%
Singleton Council	**90**	**29%**
Maitland City Council	**85**	**27%**
Cessnock City Council	**57**	**18%**
Newcastle City Council	**19**	**6%**
Lake Macquarie City Council	**19**	**6%**
Port Stephens Council	**11**	**4%**
Muswellbrook Shire Council	**9**	**3%**
Upper Hunter Shire Council	**9**	**3%**
Dungog Shire Council	**7**	**2%**
Central Coast Council	**2**	**1%**
Gunnedah Shire Council	**2**	**1%**
Tamworth Regional Council	**1**	**<1%**
	311	**100%**

SECTION 3 – APPROVALS

Current approvals, tenements and MOP for RCM are summarised in Table 5.

Table 5 RCM approvals, tenements and MOP

Approval Number	Description	Issue Date	Expiry Date
Approvals			
NSW Department of Planning, Industry and Environment			
PA No. 08_0102	Development Consent for the construction and operation of surface coal mine extensions.	26 November 2010	31 December 2022 (now superseded to 31 December 2035 – Mod 6)
Modification 1	Modification to acquisition and mitigation properties, increase Falbrook Pit dump height, North crib huts, Implementation date for OLC extension, BOA extension	18 March 2012	31 December 2022 (now superseded to 31 December 2035 – Mod 6).
Modification 3	Eliminate OLC, modify Falbrook Pit Operating hours (7a-10p x 7d), additional mitigation property, amend noise criteria at property 112, Further extension to BOA (2 years)	5 October 2012	31 December 2022 (now superseded to 31 December 2035 – Mod 6).
Modification 2	OLC extension (6months), BOA extension (6 months)	1 February 2013	31 December 2022 (now superseded to 31 December 2035 – Mod 6).
Modification 4	Application submitted April 2014 to revise BOA strategy	24 February 2016.	31 December 2022 (now superseded to 31 December 2035 – Mod 6).
Modification 5	Transport and Processing of ROM coal from either Open Cut at either CHPP.	26 February 2016	31 December 2022 (now superseded to 31 December 2035 – Mod 6).
Modification 6	Application submitted Feb 2016 to separate consolidated approval into individual Underground and Open Cut approvals- and extend	23 August 2016.	31 December 2035

Approval Number	Description	Issue Date	Expiry Date
	timeframe for open cut mining operations till 2035.		
Modification 7	The exploration drilling activities as described in EA (Mod 7)	1 September 2017	31 December 2035
Modification 8	Previous mined area outside approved open cut limit.	3 April 2019	31 December 2035
Modification 9	Increase in dump height, increase no of blasts per day and allow for exploration within the Approved Project Area	February 2021	31 December 2035
DA No. 49/94	Development Consent for the construction and operation of surface coal mine extensions.	19 October 1995	24 March 2020
DA No. 49/94 MOD 1	Consent modification to amend monitoring requirements	11 February 1999	24 March 2020
DA No. 49/94 MOD 2	Consent modification for Rix's Creek Mine to receive ROM coal from Glennies Creek Underground Mine and to process the coal for transport by rail (2003)	30 June 2006	24 March 2020
DA No. 49/94 MOD 3	Consent modification for Rix's Creek Mine to receive, process and transport bulk coal samples from the Bickham Exploration Project (2004);	15 June 2004	24 March 2020
DA No. 49/94 MOD 4	Consent modification for Rix's Creek Mine. To allow a tunnel under the New England Highway (2009);	27 August 2009	24 March 2020
DA No. 49/94 MOD 5	Consent modification for Rix's Creek Mine to enable the construction and operation of a rail loop, associated clean coal stockpile and rail loading facility (2013)	25 November 2013	24 March 2020
DA No. 49/94 MOD 6	Consent modification for Rix's Creek Mine to increase the total volume of material that can be moved annually to 16.1 million bcm (2014);	2 December 2014	24 March 2020
DA No. 49/94 MOD 7	Consent modification for Rix's Creek Mine for ROM coal from Rix's Creek North (former Integra Mine site) to be processed at RCS Coal Handling and Preparation Plant (CHPP) (2016);	26 February 2016	24 March 2020

Approval Number	Description	Issue Date	Expiry Date
DA No. 49/94 MOD 8	Consent modification for Rix's Creek Mine Satellite ROM Pads.	20 December 2016	24 March 2020
DA No. 49/94 MOD 9.	Consent modification for Rix's Creek Mine. (Dried tailings refuse to be emplaced in overburden dumps at Rix's Creek North (up to 500,000 m3) and overburden from Rix's Creek South to be placed at Rix's Creek North (up to 5,000,000 m3).	01 September 2017	24 March 2020
DA No. 49/94	Consent Order- 2017/211784- NSW Land and Environment Court.	12 July 2017	24 March 2020
DA 49/94 MOD 10	Consent Modification for Rix's Creek Mine Extension of approval for coal extraction until 24 March 2020.	12 June 2019	24 March 2020
SSD 6300	Rix's Creek Continuation of Mining Project	12 October 2019	12 October 2040
Singleton Shire Council			
DC	Hydrocarbon Storage Shed	7 December 2005	-
DC	Control Room	12 September 2005	-
Approval to Demolish Existing Dwelling and Shed	Dwelling and shed located at Lot 93 DP 752442 Middle Falbrook Road	13 April 2005	-
DC 719/2003	For Glennies Creek to Ashton Water Pipeline	13 February 2004	-
DC 90/2001 (Mod)	Alteration / additions to transportable office building	13 June 2001	-
DC 90/2001	For new offices and bathhouse	5 April 2001	-
BA 1/99	Construction of awning within Integra underground muster area	26 March 1999	-
BA 2/99	Bathroom / office complex	26 March 1999	-

Approval Number	Description	Issue Date	Expiry Date
DA 51/90	Stockpile and Rail Loading Facility	18 October 1990	-
7666/2019	Middle Falbrook Road Closure Permit	22 May 2019	-
18/00657	Consent for Permanent Road Closure- Disused Section of Middle Falbrook Road	18 September 2019	-
8167/2019	Stony Creek Road Use (Closure for Blasting).	30 May 2019	-
5586/2019	New England Highway Road Closure Permit	2 April 2019	-
Tenements			
CL352	Coal Lease	13 September 2011	Renewed until 20 October 2031
ML1432	Mining Lease	24 June 1998	Under renewal
CL357	Coal Lease	27 March 1990	27 March 2032
ML1630	Mining Lease	16 March 2009	16 March 2030
ML1648	Mining Lease	4 January 2011	4 January 2032
ML 1649	Mining Lease	4 January 2011	4 January 2032
ML1650	Mining Lease	4 January 2011	4 January 2032
ML1651	Mining Lease	4 January 2011	4 January 2032
ML 1725	Mining Lease	6 March 2018	11 November 2033
ML 1803	Mining Lease	5 May 2020	5 May 2041
Roads and Maritime			
New England Highway – Road Occupancy Licence.		Lic No 1185380	Renewed until 30 June 2021 (12-monthly renewal)

Approval Number	Description	Issue Date	Expiry Date
Mining Operations Plans (at end of period)			
	Mining Operations Plan	1 December 2019	1 December 2022

Issued By	Number	Grant date	Expiry, renewal or anniversary date	Comment
Environment Protection Licence				
NSW Environment Protection Authority.	EPL 3391	21 August 2000	03 April (Annually)	For coal mining and processing at the Rixs Creek North (Integra open cut) and Rix's Creek, South on a scale of >5 million tonnes coal handled and >5 million tonnes of coal products loaded.
Dangerous Goods Notification				
SafeWork NSW	NDG 028098 (RCN)	14/4/2019		Notification of Dangerous Goods on Premises (ammonium nitrate, emulsions and combustible liquids).
SafeWork NSW	NDG 032405 (RCS)	14/4/2019		Notification of Dangerous Goods on Premises (ammonium nitrate, emulsions and combustible liquids).
Water Licences				
Natural Resource Access Regulator	**Number**		**Category**	**Volume** / **Purpose**
	WAL41500		Mining	100 (ML/yr) / Open Cut (dewatering

Issued By	Number	Grant date	Expiry, renewal or anniversary date		Comment
					groundwater) Hard Rock
	WAL 41555		Mining	100(ML/yr)	Open Cut (dewatering groundwater) Hard Rock
	WAL 40777		Mining	305 (ML/yr)	Open Cut (dewatering groundwater) Hard Rock
	20BL170864		Mining	100(ML/yr)	1 x Bore (dewatering groundwater

Issued By	Number	Grant Date	Expiry, Renewal or Anniversary Date	Comment
NSW Environment Protection Authority. Radiation Management Licence No: **5079169**	Radiation Regulated Material ID 8661	-	14 April 2021	Old No: RR10119
	Radiation Regulated Material ID 8663	-	14 April 2021	Old No: RR10120
	Radiation Regulated Material ID 8664	-	14 April 2021	Old No: RR10121
	Radiation Regulated Material ID 9121	-	14 April 2021	Old No: RR7561

SECTION 4 – OPERATIONS SUMMARY

Table 5 Rix's Creek North PA08_0102 Production Summary

Material	Approved limit	Previous Reporting Period	This Reporting Period	Next Reporting Period
Waste Rock / Overburden	N/A	7,352,886BCM	5,032,788 BCM	5,980,774BCM
ROM Coal / Ore	4.5 Million Tonne per annum (Western Mining area ONLY)	1,213,920t**	1,332,678t**	1,474,016t
Coarse reject / Fine reject (Tailings)	N/A	1,072,039t*	840,796t*	1,125,000t*

** RCN CHPP washed Integra UG Coal only. Coarse reject and tailings generated from processing Integra Underground Coal. RCN Open Cut Coal processed at RCS CHPP.*
*** RCN Open Cut Coal tonnage processed at RCS CHPP.*

Table 6 Rix's Creek South SSD6300 Production Summary

Material	Approved limit	Previous Reporting Period	This Reporting Period	Next Reporting Period
Waste Rock / Overburden	N/A	7,621,847BCM	9,619,818BCM	10,326,120BCM
ROM Coal / Ore extracted	3.6 Million Tonnes per annum (RCS continued operations)	2,332,364t	3,107,814t	3,007,867t
Coarse reject / Fine reject (Tailings)	N/A	2,854,747t*	2,514,279t	2,700,000t
ROM Coal processed on site	4.5 Million Tonnes per annum		4,336,366t	3,936,297t
Saleable product	N/A	1,177,855t	1,822,344t	1,713,608t

**Combined coarse reject and tailings from RCS CHPP which processes both RCN and RCS ROM Coal.*

During 2020, the Rix's Creek North CHPP washed Glencore's Integra Underground ROM Coal, with fine tailings from the coal washing process being deposited in Rix's Creek North prescribed emplacement facility Tailings Dam 2. Course reject from the processing of Integra UG's coal was disposed within the Rix's Creek North open cut area.

Coal that was extracted from both the Rix's Creek North and Rix's Creek South open cut areas was processed at the Rix's Creek South CHPP. Solid bowl centrifuges (SBCs) were primarily used to process tailings which was co-disposed in Rix's Creek South open cut area. Tailings not treated via the SBC's was all stored in Rix's Creek South's Emplacement Area 4, which is referred to as MB19. Course reject was disposed within the Rix's Creek South open cut area.

Rix's Creek South SSD6300 operated below the 3.6 Million ROM Tonne per annum limit. At Rix's Creek North PA (08_0102) ROM coal production was significantly less than the maximum allowable limit of 4.5 Million Tonnes per annum.

Rixs Creek North & Rixs Creek South

Table 7 Rix's Creek North Production

YEAR	ROM COAL PRODUCTION (tonnes)	OVERBURDEN REMOVAL (bank cubic metres)	APPROVAL LIMIT ROM Coal (Tonnes) (Western Mining Area ONLY)
2016	915,011	4,825,050	4,500,000*
2017	1,804,652	11,564,760	4,500,000*
2018	2,979,572	10,402,073	4,500,000*
2019	1,213,920	7,352,886	4,500,000*
2020	1,332,678t	5,032,788	4,500,000*

* Project Approval 08_0102 Sch 2, Con.7.

Table 8 Rix's Creek South Production History

YEAR	RON-of-MINE COAL PRODUCTION (tonnes)	OVERBURDEN REMOVAL (bank cubic metres)	Total Movement of Material on site (bank cubic metres)	APPROVAL LIMIT
1990	300,000			
1994	800,000			
1997	1,700,000	7,198,000	8,898,000	15,000,000 BCM
1998	1,800,000	7,052,000	8,852,000	15,000,000 BCM
1999	1,888,900	7,635,000	9,523,900	15,000,000 BCM
2000	2,288,900	7,635,000	9,923,900	15,000,000 BCM
2001	1,679,400	7,460,000	9,139,400	15,000,000 BCM
2002	1,754,001	7,787,685	9,541,686	15,000,000 BCM
2003	1,943,095	8,768,068	10,711,163	15,000,000 BCM
2004	1,931,383	8,511,771	10,443,154	15,000,000 BCM
2005	1,628,753	9,567,000	11,195,753	15,000,000 BCM
2006	2,015,042	11,547,989	13,563,031	15,000,000 BCM
2007	2,096,320	11,150,416	13,246,736	15,000,000 BCM
2008	2,096,697	11,020,152	13,116,849	15,000,000 BCM
2009	2,338,424	10,698,123	13,036,547	15,000,000 BCM
2010	2,367,229	10,267,881	12,635,110	15,000,000 BCM
2011	2,212,703	10,589,386	12,802,089	15,000,000 BCM
2012	2,689,935	10,341,895	13,031,830	15,000,000 BCM
2013	2,747,880	11,502,321	14,250,201	15,000,000 BCM
2014	2,760,693	13,234,085	15,994,778	16,100,000 BCM*
2015	2,847,899	13,364,730	15,073,469	16,100,000 BCM
2016	2,662,223	13,534,982	15,132,316	16,100,000 BCM
2017	2,013,486	9,266,678	10,609,002	16,100,000 BCM
2018	1,694,275	8,343,078	10,037,353	16,100,000 BCM
2019	2,332,364t	7,621,847	9,954,211	16,100,000 BCM
2020	3,107,814**			3,600,000 ROM Tonnes extracted

*Development Consent 49/94 - Mod 6 approval granted November 2014.

** SSD 6300 consent - Approval limit now ROM Coal Extracted from pit

The tailings at Rix's Creek Mine is transported by pipeline and safeguarded by:-

- use of welded poly pipe;

- containment dams located along the length of the pipeline;
- regular pipeline inspections; and
- differential flow meters.

The solid-bowl centrifuge system located at the RCS CHPP enables a lower amount of tailing's to be transported by pipeline as the water removed during the tailing's 'drying' process allows for co-disposal of the 'dried' tailing's within the open cut emplacement area in a similar fashion to overburden. Early testing of dump areas has shown minimal surface slumping / cracking when this dried tailing's material is capped with sufficient overburden material from the mining process.

Return water is decanted from the emplacement area and pumped back to the containment water system that feeds the coal preparation plants. This maximises the recycling of mine water across site.

At Rix's Creek North CHPP, fine tailings is pumped to prescribed emplacement facility Tailings Dam 2. A sloping decant structure was built in 2011 when the Tailings Dam was augmented. This allows the tailings return water to be transported to D1 for water to be reused for coal washing and dust suppression at Rix's Creek North.

Table 12 Rix's Creek North Coal Transport PA 08_0102

YEAR	Product Coal railed from RCN Rail Loop (tonnes)	Coal Transport limit (Tonnes)
2020	2,025,512	7,300,000

4.1 Exploration

No exploration drilling was conducted in 2020 at RCM.

4.2 Land Preparation

During 2020 disturbance of the arties pit rehabilitation area occurred to increase the dump height area of the Arties Pit in accordance with SSD 6300.

The Bloomfield Groups Permit to Disturb was utilised prior to clearing any land within the defined Arties Pit rehabilitation area. As per the permit to disturb process, a flora and fauna survey was conducted of the area prior to any clearing taking place.

4.3 Construction

Construction of the RCS Coal Handling Preparation Plant (CHPP) acoustic wall was completed 2019. The Northern and Eastern cladding on the RCS CHPP was completed in July 2019 to reduce noise to our sensitive receivers to the east of Rix's Creek Mine.

4.4 Mining

Rix's Creek Mine, which includes both South and North operations operated three shifts a day, 15 shifts a week for 48 weeks during 2020.

Due to the covid-19 pandemic, shift numbers were staggard to reduce large volumes of people from coming into contact at the same time. Covid-19 posed a lot of challenges during the 2020 period, with many forms of controls, such as hand sanitiser, personel in room restrictions and people working from home occurring in 2020.

The major operation took place in the Camberwell Pit at Rix's Creek Northern operations. The

Liebherr R9800 excavator (EX9800) continued to operate at Rix's Creek North. The two Hitachi 3600 excavators continued operation in the Camberwell Pit. The Caterpillar 6060 (EX6060) was relocated from Camberwell Pit operations to Rix's Creek South West Pit in April 2018.

Operations also took place in West Pit western side of Rix's Creek South with the Hitachi 5500 excavator (EX5500) and the Hitachi EX3600 excavator (EX3600-1) in operation at West Pit.

No Mining occurred in the Falbrook Pit at RCN which remains in Care and Maintenance.

There has been no major change to mining methods on site during the reporting period. Overburden and inter-burden were removed utilising the Liebherr R9800 excavator, Cat 6060 (EX6060) Hitachi EX5500 excavator, Hitachi EX3600 excavators, and large front end loaders (Caterpillar 994 & 992). These machines load 220 tonne (Caterpillar 793) and 180 tonne (Caterpillar 789) rear dump trucks. Associated with this machinery is the normal suite of ancillary equipment (bulldozers, graders, water carts and drills) used in the overburden and coal removal process.

During 2020 the main operation areas includes mining of the Rix's Creek North Camberwell Pit. Rix's Creek West Pit will continue to progress in a north-west direction aligned with the current MOP in place (i.e. between the out of pit dump and the New England Highway).

Table 13 is a list and number of the major pieces of equipment utilised on site for the mining operation.

Table 13 Equipment List 2020

Equipment List 2020	
Caterpillar 789 Truck	26
Caterpillar 793 Truck	11
Caterpillar 994 Front-End Loader	3
Caterpillar 992 Front-End Loader	3
Caterpillar 950 Front-End Loader	1
Caterpillar 962H Front-End loader	1
Caterpillar IT12 Front-End Loader	1
Liebherr R9800 Excavator	1
Hitachi EX5500 Excavator	1
Hitachi EX3600 Excavator	3
Caterpillar 6060 Excavator	1
Caterpillar D 11 Bulldozer	8
Caterpillar D 10 Bulldozer	5
Caterpillar Tiger 854 Bulldozer	1
Caterpillar 16G Grader	1
Caterpillar 16M Grader	1
Caterpillar 16H Grader	1
Caterpillar 24H Grader	2
Redrill SK75	1

Redrill SK50	1
Sandvik Drill D75K	1
Sandvik Drill D50-i	2
Volvo Stemming Truck	2
Volvo Lube Truck	3
Caterpillar 785 Water Cart (114,000 l)	3
Caterpillar 777 Water Cart (80,000 l)	3
ACCO Water Cart (10,000 l)	2

4.6 Waste Management

The following waste streams were serviced during the reporting period:

Waste Water: Grey water generated on site consisting of domestic waste water from the bathhouse facility's, associated amenity areas and administration areas pass through septic systems approved by the local authorities. RCS: OSSM Approval No: 2820/2002 expiry 30/06/2021.RCN: OSSM Approval No 1379/1999.

These septic facilities comprise primary and secondary treatment process with solid waste processed by anaerobic bacteria. Effluent passes to a maturation pond prior to disposal by evaporation and land irrigation. The septic systems are regularly inspected by a specialist water treatment contractor. The septic tanks are vacuum cleaned out to remove sludge build up on a quarterly schedule or as required by a suitably qualified waste contractor and the resulting waste is removed from site. At the RCS Sewage Treatment Plant, an in-line chlorination dosing system was installed to significantly reduce faecal coliform within the effluent pond.

Waste Oil: Waste oil from mining equipment as a result of scheduled maintenance operations, breakdown repairs is collected in a storage tanks and there after removed for recycling by a licenced waste oil contractor. Most mining machinery is greased automatically by an on board system. The system is refilled from a bulk bin on the mobile service cart. Alternatively, this is carried out in the main workshop. Any oil contaminated water is contained within bunded storage areas, passed through specialised oil separation systems before being collected the licenced waste oil contractor.

Waste Metal: Scrap metal is collected for recycling on a regular basis and as required. The metal recycler sorts into hard and soft metal for further economic benefit to the company. A tidy up initiative continued in 2020, which saw a large portion of disused scrap metal be recycled to improve the cleanliness of areas around RCM.

Copper Bin: Assorted copper on site, mostly from electrical wiring, is recycled by a metal contractor and collected on a regular basis. Most wiring remains with the protective layer attached but where economical a contractor strips assorted wire on-site for further economic benefit to the company. A copper waste bin is located in the RCS and RCN electrical workshop to further minimise waste.

General Waste: General waste garbage is placed in large bins and taken off site by a licenced waste contractor for disposal.

Paper/Cardboard Recycling: Paper and Cardboard is placed in large bins and taken off site by licenced contractor for further recycling. Small paper/recycling bins are placed within the main offices, workshops and CHPP's to enhance recycling.

Plastic wrapping: Plastic wrapping recycling was introduced during 2015 to site. Plastic used in the wrapping of parts and other assorted uses across site is placed in tied-off bags within the store and collected with the paper/cardboard recycling for further recycling off-site by the waste contractor.

Batteries: Small general use batteries (AA, AAA, C, D, etc.) recycling was introduced during 2015 to site. Sealed battery tubs are located within the offices, electrical workshop and RCN workshop for further recycling off site by the waste contractor. Large batteries are also stored on bunded pallets, or within designated battery bays and taken off site by a licenced waste contractor.

Oil Filter Bin: Used oil filters from heavy vehicles are placed in a large lidded bins located at both the Southern and Northern workshops. These are taken off site by licenced contractor for cleaning and recycling at the waste contractor's facility

Hydraulic Hose Bins: Two hydraulic hose bins are located at the RCS and RCN workshops and regularly serviced by a licenced waste contractor.

Oily Rag Bins: There are several labelled Oil rag bins located in and around the RCS and RCN mechanical workshops and they are regularly serviced as required by a licenced waste contractor.

Used printer cartridges: These are placed in a large bin within the main office and taken off site by contractor for recycling at the waste contractor's facility as required.

Poly Pipe recycling: Poly Pipe was stored on site and reused as required in 2020.

Electronic Waste: E waste is segregated and transported offsite to a local recycler by the primary waste contractor. E-waste can include, printer cartridges, old computers and outdated electronic components from operational machinery.

Table 14 2020 Waste Volumes

Description	2020 Total	2019 Total
Liquid Waste	**60,500**	**22,500**
Metal Recycling	**272,824**	**305,100**
Batteries recycling (kg)	**15,080**	**12,400**
Copper (kg)	**712**	**13,100**
Oily Water	**27,000**	**12,600**
Waste Oil (L)	**388,600**	**431,400**
Paper and Cardboard (kg)	**12,592**	**13,705**
Timber Recycling(kg)	**29,300**	**36,340**
General Waste (kg)	**184,190**	**187,547**
Oily Rags (kg)	**6,500**	**4,400**
Hydraulic hoses (kg) and Oil Filters	**7,300**	**6,600**
E-waste (kg)	**0**	**933**
Fluro recycling(kg)	**0**	**86**

A review of hydrocarbon management was undertaken at Rix's Creek Mine following the Independent Environmental Audit where independent auditors identified opportunities for improvement in waste segregation, notably from workshop bins and Intermediate Bulk Container (IBC) storage. A tender for waste management is currently ongoing to provide one waste contractor over all of the The Bloomfield Group sites to ensure a consistent process for waste management.

During 2020 there were improvements in hydrocarbon storage completed at the RCS Contractors pad. A new waste oil tank will also be commissioned to improve the process of licenced waste oil transfer offsite. Once the waste contract is finalised, full implementation of a colour coding bin system will be rolled out to ensure that workers and contractors segregate waste effectively.

4.7 Product Stockpiles

Raw coal is transported from the active mining areas in 180 and 220 tonne rear dump trucks (Caterpillar 789 and 793) to the 30,000 tonne capacity run of mine (ROM) stockpile at the coal preparation plant or the two satellite ROM stockpiles prior to washing. Product coal (clean coal) is conveyed to a 1,000 tonne bin and then transported by road vehicles 2.0 kilometres to the rail loading facilities. Each coal transportation semi-trailer holds approximately 48 tonnes of clean coal.

The capacity of the clean coal stockpile at the rail loading facility is 185,000 tonnes.

At Rix's Creek North, Caterpillar 789 and 793 haul trucks transport coal from the Integra Underground ROM stockpile, along the RL100 haul road to the RCN CHPP. Haul trucks either place the ROM coal directly into the coal hopper for processing or stockpile the ROM coal at the RCN stockpile.

4.8 Hazardous Material Management

Under Schedule 11 of the Work Health and Safety Regulation notification of hazardous substances occurred during the reporting period. The listing of dangerous goods stored on site is listed below:-

Depot 1	Above ground tank for Class C1, UN 00C1 Diesel.	220,000 litres
Depot 2	Above ground tank for Class C1, UN 00C1 Diesel.	90,000 litres
Depot 3	Above ground tank for Class C1, UN 00C1 Diesel.	90,000 litres
Depot 5	Above ground tank for Class C1, UN 00C1 Diesel.	90,000 litres
Depot 6	Above ground tank for Class 3, UN 1989 Aldehydes, N.O.S.	15,000 litres
Depot 8	Above ground tank for Class C1, UN 00C1 Combustible liquids	60,000 litres
GAS1	Cylinder store for Class 2.1, UN1001 Acetylene, dissolved	1,000 litres
GAS2	Cylinder store for Class 2.2, UN1072 Oxygen, compressed	1,000 litres
GAS2	Cylinder store for Class 2.2, UN1006 Argon, compressed	1,000 litres
RCN1	Above ground tank for Class 5.1, Ammonium Nitrate	50,000 kg
TKN1	Above ground tank for Class 5.1, Ammonium Nitrate Emulsion	60,000 kg
TKN2	Above ground tank for Class 5.1, Ammonium Nitrate Emulsion	30,000 kg

A separate licence for the storage and handling of explosives on the site has also been made to WorkCover. License number:- XSTR100131 is granted until 5/7/2022 The listing of explosives stored on site is listed below:-

MAG1	Magazine Class 1.1B, UN 360, Detonator Assemblies non-electric	10,000 units
MAG1	Magazine Class 1.4S, UN 349, Articles, Explosives, N.O.S.	10,000 metres
MAG1	Magazine Class 1.4B, UN 255, Detonators, Electric for blasting	10,000 units
MAG2	Magazine Class 1.1D, UN 65, Cord, detonating, flexible	3,000 metres
RCN1	Explosives Receptacle Class 5.1, Ammonium Nitrate (ANFO)	50,000 kg
TNK1	Above ground tank Class 5.1, UN 3375, ANFO Emulsion	80,000 litres
TNK2	Above ground tank Class 5.1, UN 3375, ANFO Emulsion	36,000 litres

Access to Safety Data Sheets is through the ChemAlert web site. The register is continually updated as new products are brought onsite.

Explosives are stored in explosive magazines located on site.

4.9 Other Infrastructure Management

There has been an ongoing maintenance program on infrastructure associated with the Rix's Creek mining operation. This has included painting of assorted buildings and substations sheds across site.

During 2020, planned maintenance work was completed on the Rix's Creek North CHPP for washing of Integra UG ROM coal.

There has been an ongoing maintenance program replacing existing older lights with new modern LED lighting that shields and directs light more directly toward the ground rather than outwards. When

fixed lighting is installed at Rix's Creek Mine, the external lighting is assessed to comply with *Australian Standard 4282: 2019 – Control of Obtrusive Effects of Outdoor Lighting.*

4.10 Bush Fire Management

An updated Bushfire Management Plan was submitted to the Rural Fire Services (RFS) for consultation in October 2019, and submitted to the local Darlington Fire Brigade in October 2020.

A slashing program was undertaken to reduce fuel loads. Excessive grass and weeds were sprayed around site infrastructure to further reduce fuel loads. Rix's Creek and AusGrid also conducted spraying and mulching of power line easements across site throughout the year.

Proactive management was undertaken which included trimming trees that could potentially come in contact with overhead power lines and implementing an inspection program for tree trimming near the overhead power lines to reduce the occurrence of grass fires.

During 2014 Rix's Creek purchased a property and existing four-bay shed in Maison Dieu in which the shed is provided to the Rural Fire Service – Darlington brigade in sponsorship by the Bloomfield Group at no cost. This sponsorship continued in 2020.

Fuel reduction programs are undertaken on an as needed basis and done in conjunction with the local Rural Fire Service and local landholders. Areas of land owned within the lease and outside of the active mining area and rehabilitated areas will continually be leased to lessee's to graze cattle in a bid to minimise fuel loads across site.

SECTION 5 – ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

5.1 Actions Required at Previous Annual Review

On the 25 August 2020 the Resources Regulator (RR) conducted a Targeted Assessment Program at Rix's Creek Mine. The following recommendations were provided by the Resources Regulator following the site inspection.

Resources Regulator Recommendations	Information required
Undertake a specific rehabilitation risk assessment to identify the range of risks and associated controls throughout the life of mine to achieve sustainable rehabilitation outcomes. Guidance on the range of risks to consider can be found on the Regulator's website	The Bloomfield Group conducted a Rehabilitation Risk Assessment in December 2020.
Update Permit to Clear procedure to evaluate opportunities for maximising the salvage of biological resources for use in rehabilitation from the Rix's Creek South extension area for use in rehabilitation. This may include weed control in advance of clearing, preferential salvage and relocation of topsoil with potential native seedbank for establishment of tree corridors on rehabilitation areas.	Permit to Disturb has been updated to include salvage of biological resources. Current permit to disturb has a plan of topsoil and subsoil stripping, as well as habitat relocation as required. Fauna assessment is undertaken by a qualified ecologist prior to disturbance being undertaken.
Based on the outcomes of the recent characterisation analysis undertaken on topsoil stockpiles across the site, seek advice from a suitably qualified expert (e.g. agronomist) in regards to specific topsoil management measures that need to be implemented to maximise use for rehabilitation.	An Agronomist was assigned to conduct a characterisation analysis and has proposed additional advice for ongoing soil analysis and soil management onsite. Results and advice to be included in updated MOP amendment A and implemented.
Implement a process to characterise the substrate following the addition of amelioration measures to determine whether treatment has been effective.	To be included in Bi-annual rehabilitation monitoring assessment. Agronomist advice on standardised sampling process to be implemented.
Develop and finalise capping design for tailings dams 1, 2 and 3.	Capping Strategy currently being completed by independent consultant for Tailings dams 1,2 and 3.
Proceed with trial to evaluate the benefits of the biosolids/cardboard mulch mix versus the standard biosolids product.	Trial to be included in the bi-annual rehabilitation monitoring assessment.
Continue with implementation of compliance management system, including how rehabilitation commitments are formerly implemented and tracked through the mine planning process.	An Environmental Compliance System INX has been approved and is currently being implemented to Rix's Creek Mine. It's anticipated to rolled out by June 2021
Implement a program to evaluate the status of existing rehabilitation areas against the completion criteria including the identification of enhancement works (where required) to progress the areas towards sign-off.	To be included in Bi-annual rehabilitation monitoring assessment.

SECTION 6 ENVIRONMENTAL PERFORMANCE

An extensive environmental monitoring program is conducted throughout the site and surrounding areas to monitor the impacts of the operation. Environmental parameters monitored include local meteorology, air quality, water quality, blast vibration, blast over pressure and noise.

6.1 Meteorological

RCM mine operates a meteorological station on the site. The RCM meteorological station is located on the Western extent of RCS west Pit operations and has real-time capabilities for all personnel to access via computer or phone. In September 2019 a new weather station was installed with specification requirements associated with AS/NZS 3580.14:2014 (Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications). The RCM meteorological station record the following environmental parameters:-

- wind speed and direction;
- Sigma Theta;
- temperature (2m and 10m);
- relative humidity;
- solar radiation; and
- rainfall.

These parameters are recorded at 10-minute intervals and downloaded on a monthly basis. To complement this, Rix's Creek Mine is a member of the Upper Hunter Sounding Group Joint Venture (UHSGJV) which provides access to an atmospheric prediction model providing more accurate weather parameter predictions for the Rix's Creek operation. This information is used by management to access environmental conditions for blast scheduling, and determine when adverse conditions exist to cease dumping to exposed locations. This model also forecasts meteorological data for the following day so operational activities can be scheduled for the predicted conditions.

6.1.1 Rainfall

Total rainfall for the period was 893.2 mm over 147 days, which was 359.6 mm above average for the year. The yearly average for Singleton is 698 mm. The monthly rainfall data is provided in **Table 15** and **Figure 4** shows the results graphically.

January, May and November were the only months to receive below average rainfall.

Table 15 Annual Rainfall

RIX'S CREEK ANNUAL RAINFALL 2020													
Month	January	February	March	April	May	June	July	August	September	October	November	December	**TOTAL**
Total Rainfall	59.2	137.4	97.4	49	23.2	49	92.8	37	57.8	94.2	41	155.2	**893.2**
Average Rainfall	66	67	64.2	25.7	24.5	27	29	18	41	36.3	60.9	74	**533.6**
Wet days (>0.5 mm rainfall)	13	17	14	7	13	9	13	8	11	11	8	23	**147**

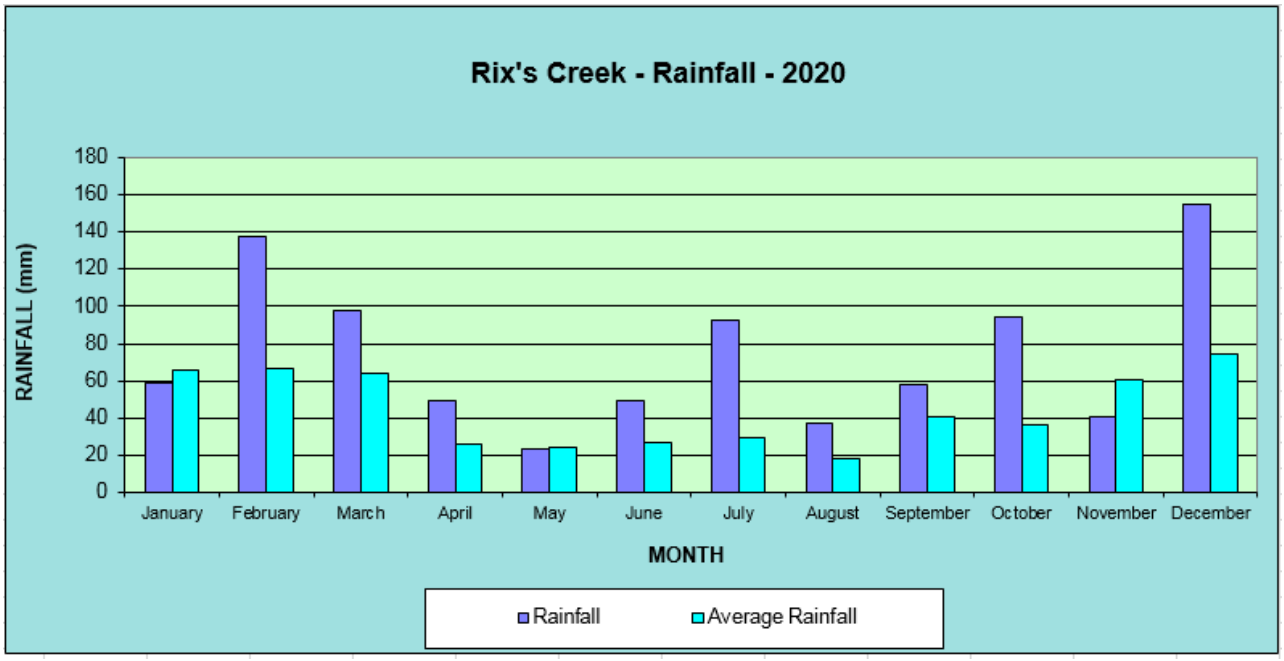


Figure 4 Annual Rainfall 2020

6.1.2 Temperature

The maximum temperature of 43.1^{0}C occurred in January and the minimum temperature of 3.4^{0}C was recorded in August. **Figure 5** shows the monthly average maximum and minimum temperatures for the site as well as the maximum and minimum recorded temperatures.

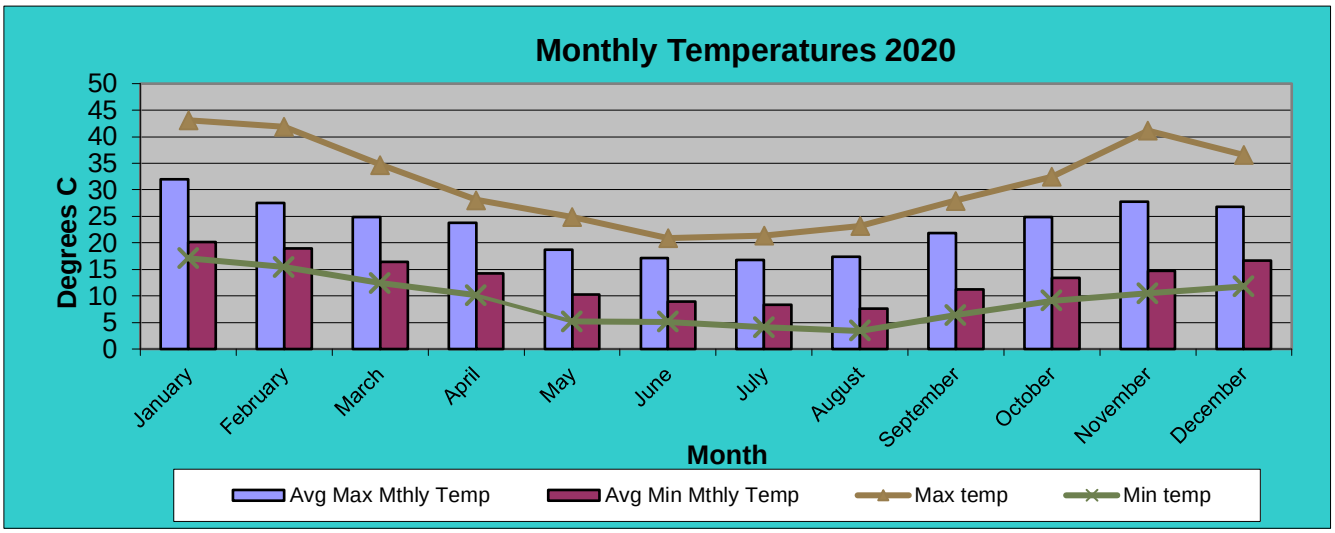
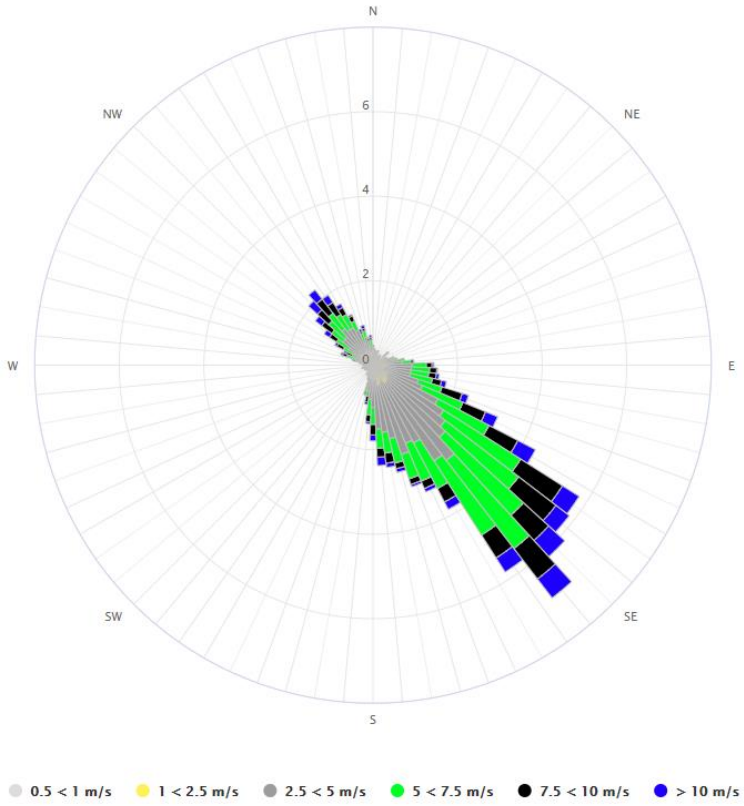


Figure 5 Average Monthly Maximum & Minimum Temperature 2020

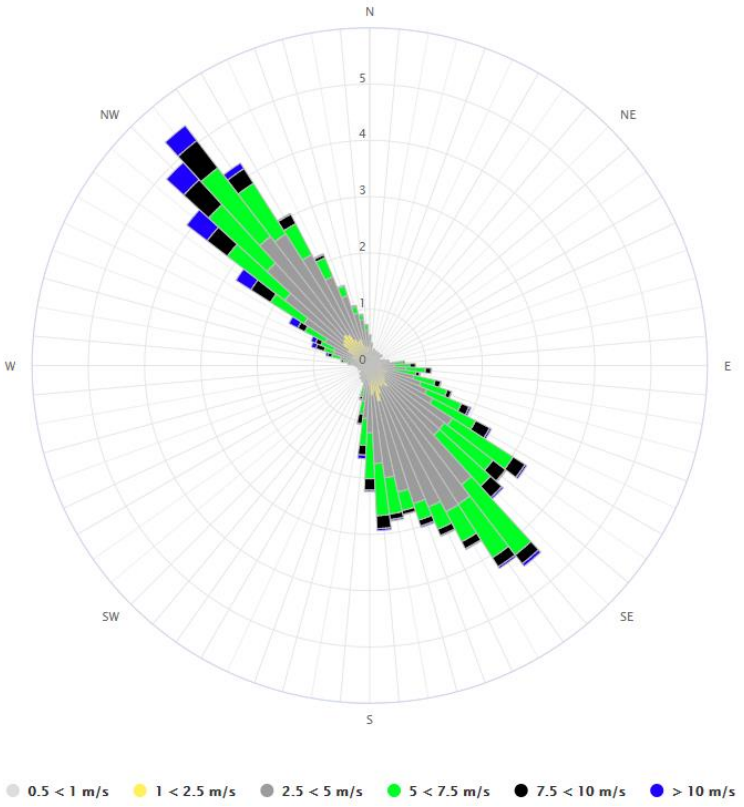
6.1.3 Wind Speed and Direction

The results of wind speed and direction monitoring shows similar trends to previous years. During summer the winds are predominant from the south east and winter the northwest. Autumn and spring are typically transitional seasons with winds distributed between both northwest and south-easterly directions. From all of the wind roses it is evident the dominant wind direction for the 2020 calendar year was from the north-west.

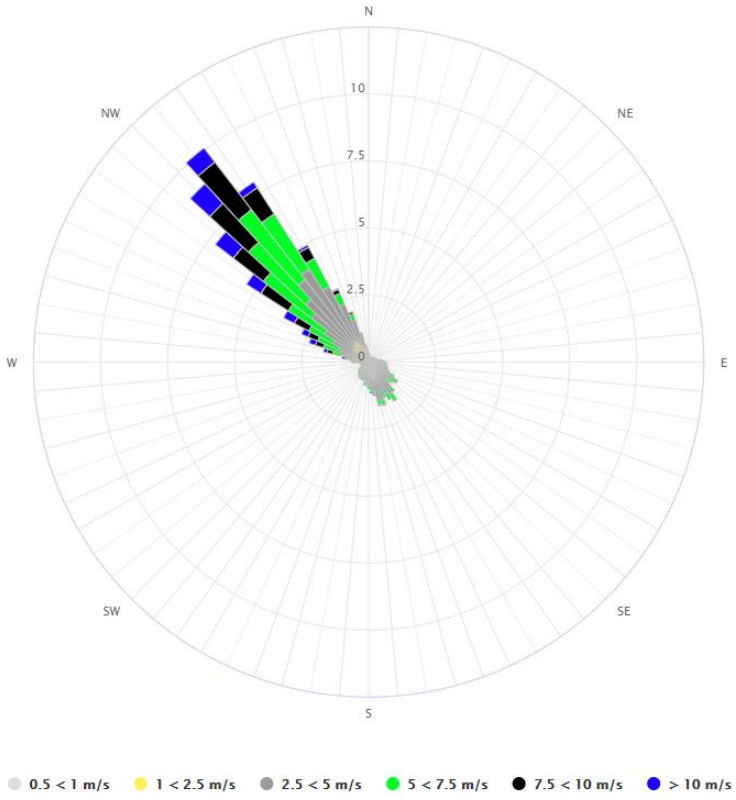
Figure 6 shows the seasonal wind roses generated for the site on a seasonal basis.



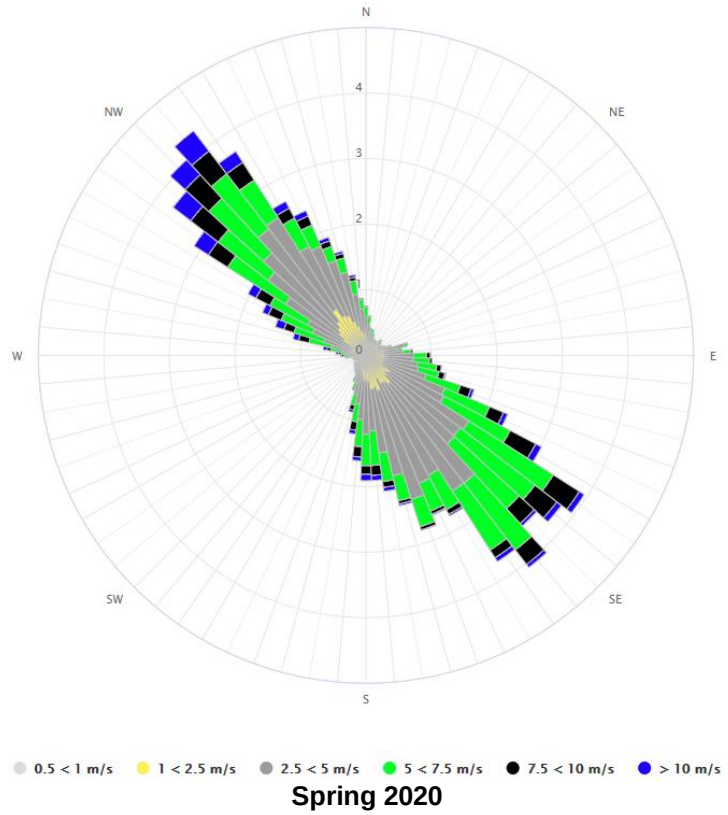
Summer 2020



Autumn 2020



Winter 2020



Spring 2020

Figure 6 Windrows for Rix's Creek 2020

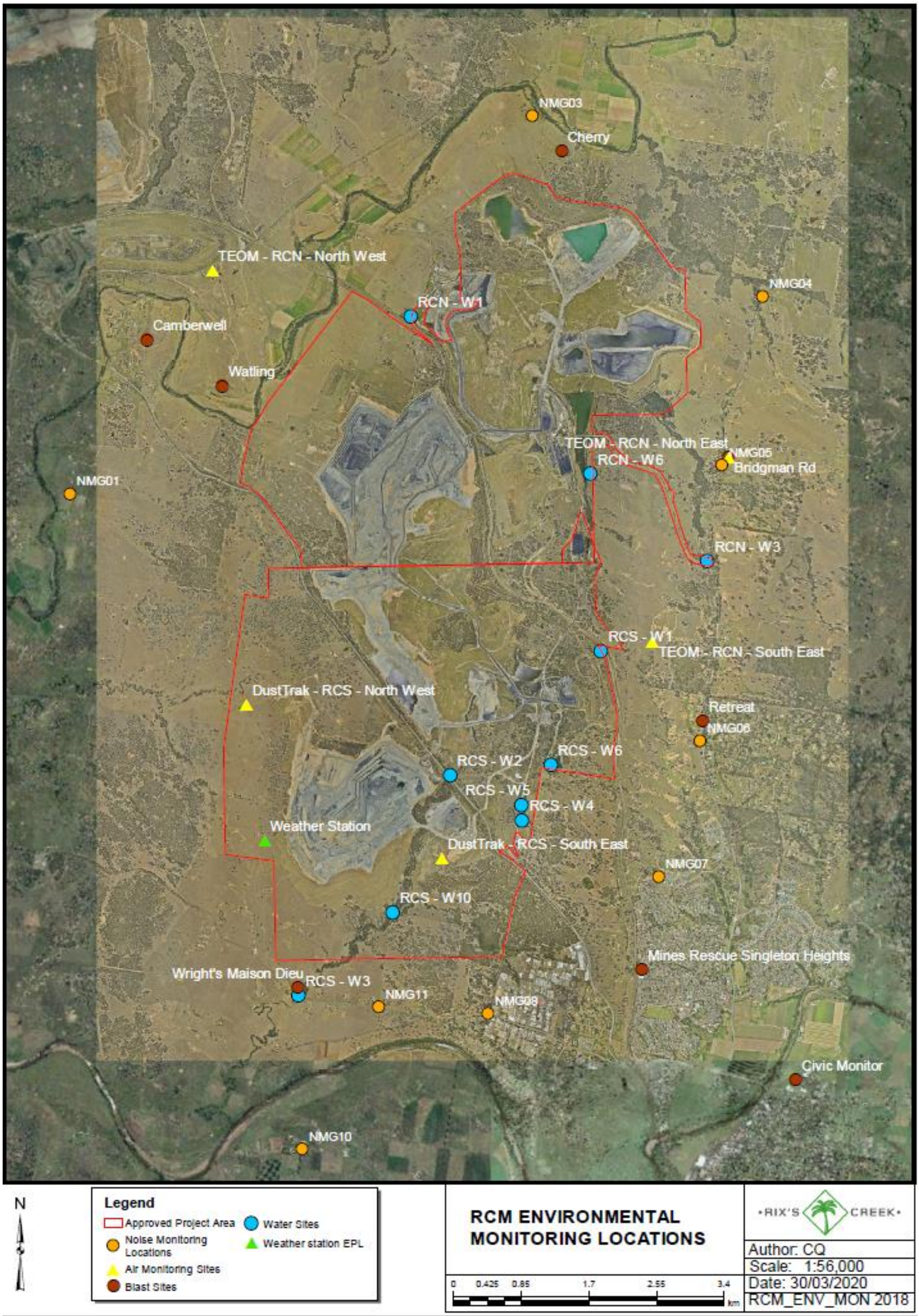


Figure 7 Rix's Creek Mine Compliance Environmental Monitoring Locations

6.2 Operational Noise

6.2.1 Environmental Management

The primary objectives of the RCM Noise Management Plan is to ensure compliance with legislative requirements, support procedures to manage and monitor noise emissions from the mine and provide management mechanisms to minimise the potential for noise from the mine to cause off site impacts were possible.

Residences surrounding RCM have been grouped generally according to the locality and local acoustic environment. These groupings are referenced in the relevant EAs as Noise Assessment Groups (NAG).

The Noise Management Plan was updated on the 14/05/2020 to adhere with conditions included in the SSD 6300 Development Approval. This updated NMP was subsequently approved by DPIE on 23/12/2020.

Rix's Creek EPL 3391 states that Rix's Creek must seek to ensure that its rail spur is only accessed by locomotives approved to operate on the NSW rail network in accordance with noise limits L6.1 to L6.4 in RailCorp's EPL (No. 12208) and ARTC's EPL (No. 3142) or a Pollution Control Approval issued under the former Pollution Control Act 1970. Rix's Creek Mine has received correspondence from ARTC and understands that each rail provider is required to meet their obligations under there respective EPL and that they must comply with conditions, which include use of approved locomotives from the EPA's list.

6.2.2 Environmental Performance

There were no externally reportable incidents relating to noise during the 2020 reporting period.

A review of the project's environmental noise performance is described in the monthly attended noise monitoring compliance reports available on The Bloomfield Groups website:

https://www.bloomcoll.com.au/sustainability/environmental-management/rixs-creek-assessments/epl-monitoring

6.2.3 Incidents and Complaints

Fifteen (15) noise complaints were recorded during 2020, an increase on the ten (10) complaints that were recorded during the 2019 period. Rix's Creek Mine investigate all complaints. All complaints that RCM receive are investigated with actions taken if required.

6.2.4 Further Improvements.

RCM employ an Environmental Technician that conducts noise monitoring during afternoon and night shifts when Rix's Creek Mine is operational. If the operational noise from the mine is recorded within 2dB of the noise compliance limits, the Open Cut Examiner (OCE) is notified and operations are changed to reduce operational noise.

A new noise software package was also developed in consultation with Global Acoustics and was introduced at Rix's Creek Mine to assess if low frequency or tonal noise penalties apply. This software is used in combination with the recently updated weather station which determines if the meteorological conditions and atmospheric stability criteria apply. This tool enables the Environmental

Technician the capability to assess real-time low frequency and tonal penalties to ensure that RCM comply with the NPfI.

All equipment is checked and maintained on a regular basis to ensure noise attenuation equipment silencers – mufflers are operational. Sound suppression will continue for any new pieces of equipment prior to commencing work/s on-site.

Installation and commissioning of a new real time noise Management monitor occured near the NM05 (Bridgman Road). The noise monitor can apply 1/3 octave low frequency and tonal noise penalties in real time in accordance with the Noise Policy for Industry Guidelines 2017 (NPFI). This system provides alarms when measured noise levels are within 2 dB of the noise criteria (Level 1 Alarm), above the noise criteria (Level 2 Alarm), or sustained over two 15 minute periods, (Level 3 Alarm). Each level of alarm requires action by either the noise technician or RCN washery operator.

During the period Rix's Creek continued work with Todoroski Air Sciences (TAS) to finesse the 3-D predictive noise model for the Mine. The meteorological data from the Hunter Valley Meteorological Sounding Group Joint Venture (HVMSGJV), meteorological forecasts for the Rix's Creek mine site is used to develop half hourly predictions, of noise enhancement conditions, for each twenty four hours of mine production. This model has been validated over a period greater than six years and to date noise enhancement has been identified at offsite locations in accordance with the model's forecast prediction.

The model continues to be upgraded from time to time as necessary. The model was upgraded during 2015 to include all offsite receptors (residences) and was again upgraded in 2016 to include the Rix's Creek North operation once purchased. During 2017 further upgrades to the 3-D noise model occurred, with areas of operational noise enhancement being highlighted in yellow within the open cut area. This provides Rix's Creek Mine with additional proactive tools to manage noise when enhancement is predicted by ensuring that the allocation of sound attenuated equipment is utilised in the yellow/orange highlighted areas.

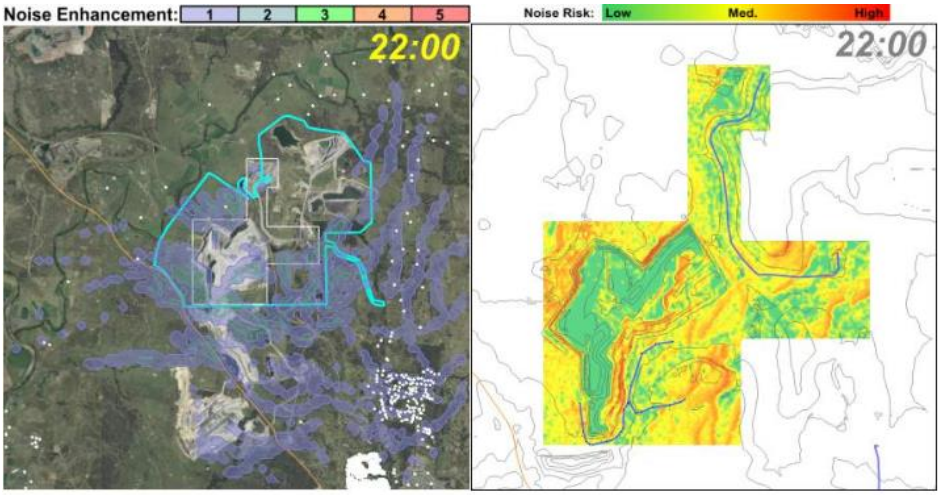


Figure 8 RCS and RCN predictive mine noise forecast models

*White dots indicate off-site receptors / residences closest to mining operation.

The use of the 3-D noise model to predict areas of possible meteorological enhancement of Rix's Creek open cut noise, to plan mine working locations, has been successful in controlling it's noise impact to current Environment Protection License (EPL 3391). An integral part of the Noise Management Plan is using real time attended monitoring. The monitoring results assist in calibration of the noise model and aid the production shift supervisor in determining suitable placement of the mines production units to keep mine noise levels within compliance limits.

6.3 Blasting

6.3.1 Environmental Management

The RCM Blast Management Plan combines Rix's Creek Southern and Rix's Creek Northern operations. On the 29/6/2020 the Blast Management Plan was updated for the SSD6300 conditions. The BMP was approved by DPIE on the 23/12/2020.

The conditions specified in the Development Consents and Environmental Protection License require blasts to be designed to minimise air blast overpressure and ground vibration. Blasts are designed to ensure that there is less than 5% probability of exceeding an air blast overpressure of 115 $dB_{(Linear)}$ to a maximum of 120 $dB_{(Linear)}$ and vibration with peak particle velocity of 5 mm/sec to a maximum of 10 mm/sec at the closest residence (not owned by the applicant outside the mining lease). Blasting frequency is also limited to one blast a day in the Camberwell Pit, this was maintained during the reporting period.

The conditions state that blasting is to be carried out in accordance with the *Australian Standard 2187-2006 Explosives - Storage and Use* and in terms of ANZECC Guidelines and to the satisfaction of the EPA.

During the year blasting in the West Pit was undertaken within the 500m exclusion zone as approved by NSW DPIE under Sch2. Cond B18(b) of SSD 6300 dated 8/2/2020. RCM holds an approved procedure to close the Highway to traffic during blasting. The Company also has approval from the Roads and Maritime Services (RMS) to conduct closures of the Highway for blasting under a Road Occupancy License (currently ROL 1185380)– This approval is renewed annually.

Real-time wind speed and direction information is used in scheduling blasting operations to minimise offsite effects of air blast overpressure and dust. The Company is one of the joint venture partners in the Meteorological Sounding Group. This group has purchased equipment to measure wind speed, direction and temperature in the atmosphere. This data is then used to better predict the impacts of atmospheric conditions that can result in overpressure enhancement off site. The on-site weather station also has real-time data that can be viewed at any time by relevant site personnel. This weather station has the ability to alarm when conditions are not suitable for blasting i.e. wind speed currently greater than 10 m/s.

During 2020 approval was sought from DPIE to increase the ground vibration limit for the approved cut and cover tunnel (a subcomponent of "Other Public Infrastructure") from 50mm/s to 100 mm/s, in accordance with Table 2 Condition B7 of Schedule 2 of SSD 6300. Approval to increase the limit was granted on 26/10/2020. During 2020 vibration monitoring of the cut and cover tunnel did not exceed the previous lower limit of 50 mm/sec, let alone 100 mm/sec. It is expected that as mining progresses towards the North at West Pit, that vibration levels will increase at the cut and cover tunnel, however stay well below the 100mm/ sec limit.

All blasts are monitored to record air blast overpressure and peak particle velocity at residences most likely to be effected. The modelling of dust and fume associated with blasting commenced during March 2012 and is constantly validated using DustTrak monitors, TEOM dust monitors and gas monitors as required. The monitoring was in conjunction with Rix's Creek daily EnvMet and NOx emissions predictive modelling. The NOx modelling shows various predicted outcomes and has continued to provide an integral part of Rix's Blast regime during 2020 and can be seen in Figure 9. The pink dots on the model are the closest residences/receptor's that can potentially be impacted via blasting. During 2020 App-Tek OdaLog gas monitors were intermittently utilised during blasting operations to measure any potential fume emanating from a blast in conjunction with the dust / fume model.

Rix's Creek send out an email blast notification to nearby mines prior to all blasts that provides a figure of the location of the blast and the intended time of firing. Rix's Creek Mine also receives blast notifications from nearby mines which identifies the intended time and position of the blast so that coordination of blasts times can occur between mine sites. A formalised communication protocol has been developed with quarterly meetings being conducted among neighbouring mine sites during the reporting period.

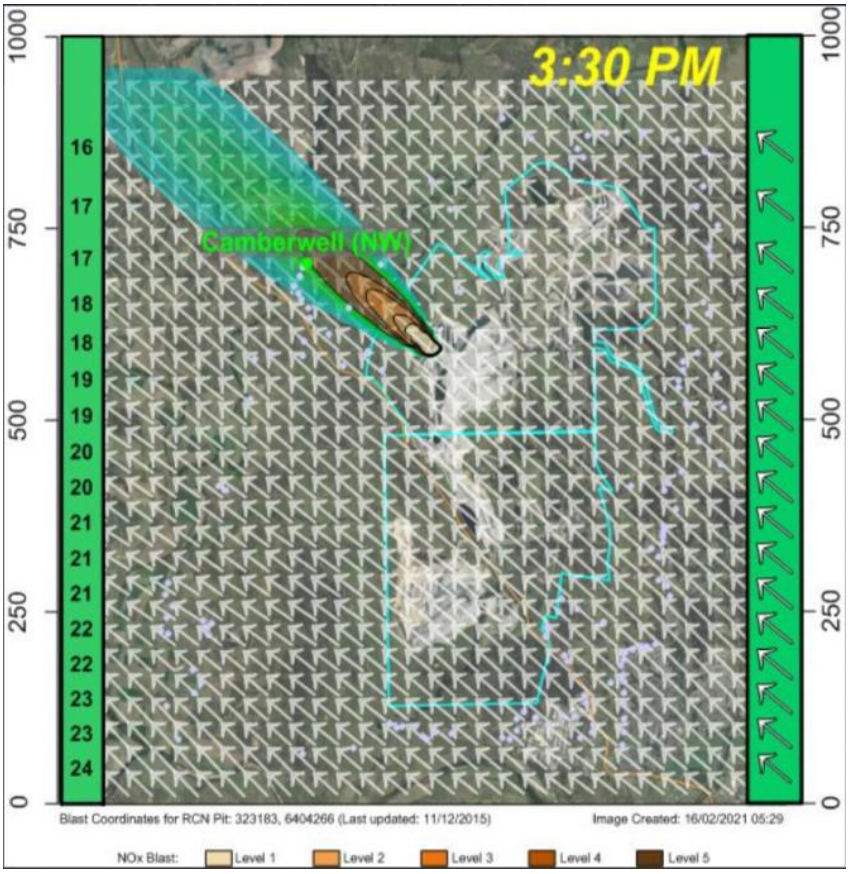


Figure 9 Blast Dust / Fume 'Plume' Model incorporated into the RCN site in 2019.

6.3.2 Environmental Performance

During 2020 a total of 87 production blasts were initiated.. 44 blasts were fired in the Camberwell Pit at Rix's Creek Northern operations and 43 shots were fired in the West Pit at Rix's Creek Southern operations.

Rix's Creek North PA 08_0102 allows one blast a day in the Camberwell Pit, unless an additional blast is required following a blast misfire. This was complied with during the 2020 reporting period. All blasts fired at Rix's Creek Mine were carried out between 9am and 5pm Monday to Saturday. No blasts were fired on Sundays or public holidays in accordance with PA (08_0102) and SSD 6300 conditions. It should be noted that Modification 9 of the Rix's Creek North Project Approval PA 08_0102 was approved in February 2021. This modification allows up to a maximum of three (3) blasts per day at either the Falbrook or Camberwell Pits, or both in total while still maintaining a maximum of ten (10) blasts per week.

Individual blast results for 2020 are shown on the Bloomfield website at:

https://www.bloomcoll.com.au/sustainability/environmental-management/rixs-creek-assessments/epl-monitoring

Of the 87 blasts the fume ratings recorded were as follows:

Rating		A	B	C
0	55	-	-	-
1	-	17	4	1
2	-	4	4	1
3	-	1	-	-
4	-	-	-	-
5	-	-	-	-

6.3.3 Incidents and Complaints

During the reporting period 87 blasts were initiated across Rix's Creek Mine.

No blast during the period exceeded the ground vibration criteria of 5mm/sec (5 % of the total number of blasts over a calendar year) or 10mm/sec.

On the 25/11/2020 a shot was fired in the West Pit Operations that recorded a 3(a) fume rating. The shot was fired under very low risk weather conditions and the fume did not leave the site boundary. Of the 87 shots fired 55 did not have any visible fume.

During the reporting period a many number of blasts were cancelled and rescheduled due to unfavourable weather conditions, this included rainfall, wind speed, wind direction, dust potential, fume potential and overpressure potential.

During 2020, Four (4) complaints were received in relation to blasting at Rix's Creek Mine. Three (3) complaints were received for blasting within the 2019 period.

6.3.4 Further Improvements

BCL is an active participant of the Terrock EnvMet Research Project. This project provides access to a prediction model for atmospheric enhancement for overpressure. This information is used to access the potential for overpressure enhancement due to the predicted atmospheric conditions throughout the day. This information is used to schedule blasting operations to minimise off site environmental impacts resulting from blast overpressure. The models (overpressure, fume and dust) are now capable to have predictive forecasting for atmospheric conditions two days ahead to further enhance blasting opportunities during ideal weather conditions. The models specifically include nearest receptors which are likely to be affected by blasting activities.

Rix's Creek have access to several predictive weather models in which products are selected for blasting based on possible weather conditions prior to blasting. Blast products will continually be reviewed and trialled where thought beneficial throughout 2020 to minimise fume emitted from blasting. Fume will continually be monitored on site to manage any onsite and offsite impacts in the case of a fume event resultant from a blast. Rix's Creek have the capability of setting up gas loggers downstream from blasts to monitor any potential gasses released from blasts on the site boundary.

The ACCO 10,000L water cart was used for crusting drill cuttings from the drill and blast process. The watering of drill cuttings occurs on the shot and is also prioritised when unfavourable wind conditions are predicted.

6.4 Air Quality

6.4.1 Environmental Management

The Rix's Creek Mine Air Quality and Greenhouse Gas Management Plan (AQGGMP) details the dust management practices and the air quality monitoring network at Rix's Creek Mine.

On the 27/7/2020 the AQGGMP was updated to include the updated SSD 6300 conditions. The Management Plan was subsequently approved by DPIE on 23/12/2020

The air quality assessment criteria are listed in **Table 16**.

TEOM and Dusk Track systems offer the vital advantage of real-time access to continuous air quality data as well as the upstream and downstream differentials across the site.

The following air quality monitoring and associated reporting will utilise:-

- 2 dust deposition gauges (DDG28 and DDG32);
- 3 TEOM's units to sample particulates less than 10 microns (PM10) in diameter via real-time / continuous monitoring (RCN NW, RCN SE and RCN NE)*;*
- 2 Dust Trak units which sample particulates less than 10 microns (PM10) in diameter via real-time continuous monitoring (RCS NW and RCS SE).

Table 16 Air Quality Assessment Criteria

POLLUTANT	STANDARD	PERIOD	AGENCY
TSP	90µg/m3	Annual average	EPA/DPIE
PM2.5	8 µg/m3	Annual Average	EPA/DPIE
	25 µg/m3	24 hour maximum (contribution)	EPA/DPIE
PM10	50µg/m3	24 hour maximum (contribution)	EPA/DPIE
	25µg/m3	Annual average	EPA/DPIE
Depositional Dust	4g/m2/month	Annual maximum total deposited dust level	EPA/DPIE
	2g/m2/month	Annual maximum increase in deposited dust level	EPA/DPIE

Dust Deposition Gauges

Two (2) Depositional Dust Gauges were sampled during the reporting period. The location of the DDG's are referred to in **Figure 7**.

The dust deposition gauges conform to Australian Standard 2724.1- 1984 Ambient Air - Particulate Matter, Part 1 - Determination of Deposited Matter expressed as insoluble solids and ash residue. Gauges have 150 mm funnels located 2 metres above the ground.

Tapered Element Oscillating Microbalance (TEOM)

The approved AQGGMP has three (3) TEOMS which were reinstated at Rix's Creek North site during February 2016. PM10 is assessed for the purpose of real-time environmental management as defined by Standards Australia AS/NZS 3580.9.8.2008: Methods for sampling and analysis of ambient air – PM10 continuous direct mass method using a tapered element oscillating microbalance analyser.

The location of the TEOMS are shown in **Figure 7**.

Dust Trak Monitors

Two Dust Trak units sample particulates less than 10 microns (PM10) in diameter via real-time continuous monitoring. Dust Trak monitors are located at the Rix's Creek Southern operations and are located toward the North West of the mining operations in West Pit (Dust Trak RCS NW). the other Dust Trak unit is located on the South Pit rehabilitation (Dust Trak RCS SE).

The location of the Dust Trak monitors are shown in **Figure 7**.

Environmental controls employed to minimise dust generation includes the application of recycled mine water to haulage roads and areas with heavy use by machinery, application of recycled mine water to drill pads (i.e. fine cuttings) and sprinkler systems on coal stockpile areas and the surrounds of the washing plant.

Under adverse weather conditions the overburden removal and dumping operation is modified with dumping occurring either in pit or to areas not exposed to the prevailing winds, alternatively operations may be ceased until conditions are suitable. For blasting, information is used in a model to predict the potential for meteorological reinforcement of overpressure as well as directional travel of dust/fume from a blast. The model shows the likelihood which receptors that may be affected by the blast which in turn can alter the timing of the blast being initiated.

The network of ambient air quality monitors surrounding the mine operation and are positioned in areas representative of the surrounding sensitive receptor locations and background air quality levels. The ambient monitoring data provide insight into the potential dust contribution due to the operations.

The Camberwell and Singleton sites measure $PM_{2.5}$ as well as PM_{10}. The closest unit to the operation is the Singleton NW sites measuring PM_{10}. The prevailing winds are predominately from the northwest during autumn/winter and southeast during spring/summer which indicate they are suitably located to measure any contribution from the Mine and can be used to further verify site monitoring results for PM_{10}.

During 2020 a site-specific dust forecasting tool was used to predict the potential for dust emissions being created on site and affecting air quality. This forecasting tool uses predictive met-data to highlight times throughout the day the operation may be affected. Based on this, the operation can be modified before the high potential of dust to occur. This includes utilising increased supervisor inspections, additional water carts, re-schedule servicing of equipment, work lower in the pit, shut-down equipment, activate water sprays on stockpiles, where required.

Tuesday 11th of February 2020

11/02/2020																							
	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am		12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
Wind Speed (m/s)	2.1	3.0	2.2	1.5	1.2	1.6	1.3	1.4	1.2	1.3	1.1	2.2	Wind Speed (m/s)	1.9	1.9	3.6	4.1	6.4	9.7	6.8	1.8	4.0	3.8	4.5	3.8
Wind Direction	NW	W	WSW	E	ESE	NE	E	SE	SE	ESE	SE	SSE	Wind Direction	SSE	SE	ESE	ESE	NE	ENE	ENE	S	SSE	S	SW	SW
Max 1-hour average PM_{10} concentration ($\mu g/m^3$)																									
North-East	4	18	58	3	0	0	0	0	0	0	0	0	North-East	0	0	0	0	0	0	0	0	0	0	19	8

12/02/2020													13/02/2020										
	12am	2am	4am	6am	8am	10am	12pm	2pm	4pm	6pm	8pm	10pm		12am	2am	4am	6am	8am	10am	12pm	2pm	4pm	6pm	8pm
Wind Speed (m/s)	2.0	0.5	2.2	2.0	2.6	3.8	3.2	7.0	7.4	7.3	6.0	5.5	Wind Speed (m/s)	3.6	5.4	3.7	4.6	5.9	6.2	8.5	8.3	8.3	5.5	4.8
Wind Direction	S	E	SSE	S	SE	SSE	SSE	ESE	E	ESE	ESE	ESE	Wind Direction	SE	ESE	SE	SE	ESE	ESE	ESE	SE	SE	SE	SE
Max 2-hour average PM_{10} concentration ($\mu g/m^3$)																								
North-West	12	19	30	2	4	4	3	1	1	0	0	4	North-West	1	11	6	8	3	3	2	2	2	2	2

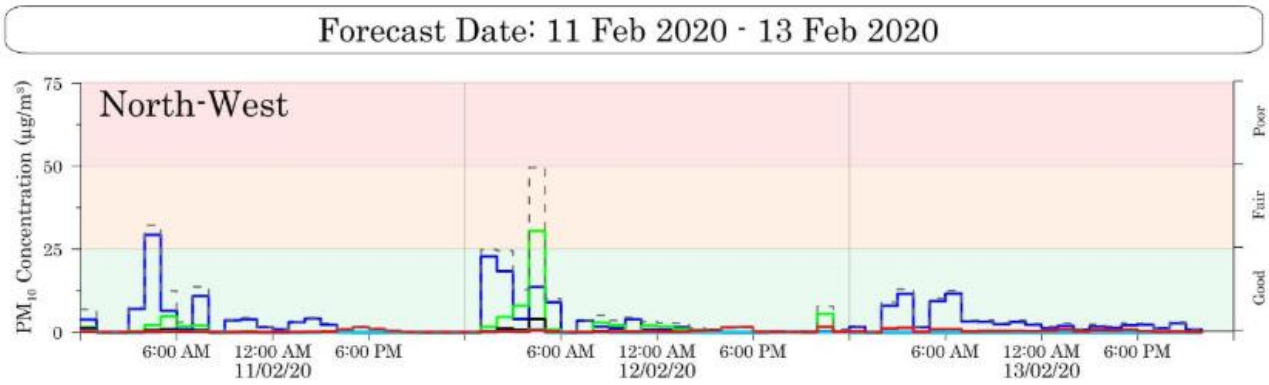


Figure 10 Example of dust forecasting tool to assist operations during 2020

Table 17 Dust Monitoring Sites

SITE	LOCATION
28	Off New England Highway north-west of lease. Relocated August 2011
32	Pre-School Gardner Circuit

6.4.2 Environmental Performance

Insoluble Solids

During the 2020 reporting period both Dust Depositional gauge DDG28 and DDG32 complied with the Insoluble Solids Dust Deposition assessment criteria of an annual average result of less than 4 gm/m^2/month. The 2019 average of DDG28 was 2.4 g/m^2/month while 2019 average of DDG32 was 2. g/m^2/month.

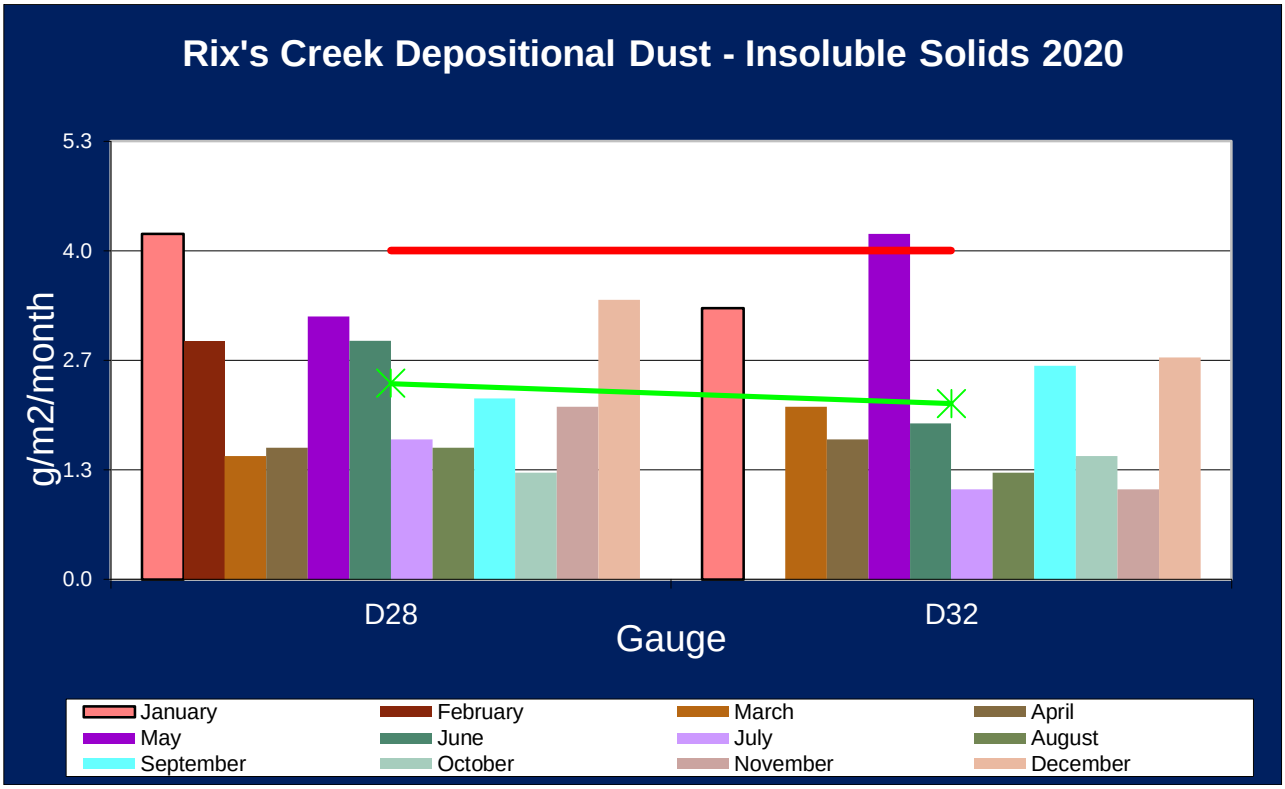


Figure 11 Rix's Creek Insoluble Solids Dust Deposition 2019

Figure 11 displays the individual monthly insoluble solids deposition rates for each gauge and annual average deposition result in g/m^2/month. There were no contaminated samples recorded in 2019.

In May 2020 DDG32 recorded 4.2 g/m^2/month and therefore exceeded the average result of 4 g/m^2/month. DDG 28 also recorded results exceeding the average of 4 g/m^2/month in January (4.2 g/m^2/month).

Particulates Less Than 10 Micron

During the 2020 reporting period, the NW RCN TEOM exceeded the 24hour PM10 contribution on 28 occasions, the NE RCN TEOM exceeded the 24 hour PM10 contribution on 11 occasions and the SE RCN TEOM exceeded the 24 hour PM10 contribution on 13 occasions. On days when the 24 hour PM10 exceeded 50ug/m3 the analysis of upstream contribution compared to the downstream contribution identified no exceedances of Rix's Creek Mines cumulative contribution occurred.

Table 18 provides analysis of the upstream and downstream TEOM monitors in conjunction with the prevailing wind direction and shows that the upstream receptor (NW RCN TEOM) has elevated readings when compared to the downstream (SE RCN TEOM) receptor. This trend indicates that the elevated air quality readings are generally coming from upstream sources in a North Westerly direction from Rix's Creek Mine.

The monthly averages and 12 month rolling averages are shown in **Figure 12.** The RCN NW TEOM recorded an annual average of 29.2ug/m3**.** The RCN NW TEOM recorded elevated monthly averages in January (50.5ug/m3) February (46.3ug/m3) and May (40.3ug/m3). January and May coincided with below average rainfall.

In comparison the SE RCN TEOM (which recorded an annual average of 19.8ug/m3) recorded elevated monthly averages in January 39.7ug/m3, February 19.3ug/m3 and May 14.7ug/m3.

The RCN NE TEOM recorded a 12 month rolling average of 20.4ug/m3. The RCN NE TEOM recorded

elevated monthly average in January 38.2ug/m3. January 2020 coincided with below average rainfall with the Singleton region still considered in drought conditions.

When the Rix's Creek North air quality results for 2020 are compared to the 2009 Environmental Assessment modelled results for year 6 part pit extent of the operations, it was determined that the annual average at the RCN NW TEOM (29.2 ug/m3) was slightly higher than the EA prediction at the mine owned residence ID 85 (27 ug/m3), which is where the location of the RCN NW TEOM is located. The South East TEOM (19.8ug/m3) and North East TEOM PM10 (20.4 ug/m3) averages were slightly above the 2009 EA predictions for year 6 part pit extent operations.

During the 2020 reporting period The DustTrak units recorded averages above 30ug/m3 in January (NW Dust Trak 49.3ug/m3 and SE Dust Trak 45.2ug/m3), in April the NW Dust Trak recorded 33.80ug/m3. This result coincided with stronger NW winds during the autumn period.

The annual average for Dust Trak RCS NW in 2018 was 17.5 ug/m3 and Dust Trak RCS SE recorded an annual average result of 15.4 ug/m3. When compared to the modelling predictions for the 2020 privately owned receptors from the 2014 Rix's Creek Environmental Assessment (EA), ID 173 which is the closest privately owned receptor to the NW Dust Trak modelled 39ug/m3 for the 2020 period. ID 140, which is the closest private receptor to the SE Dust Trak unit modelled 21ug/m3. Both dust trak units were below the 2020 predicted modelling results in the 2014 Rix's Creek EA.

The Camberwell Upper Hunter Air Monitoring Network (UHAQMN) monitor recorded an annual average of 24.3ug/m3 for the 2020 reporting period, a decrease from 39.9 ug/m3 recorded for the 2019 reporting period. The Singleton NW Hunter Air Monitoring Network (UHAQMN) monitor recorded an annual average of 22.2 ug/m3 for the 2020 reporting period, a decrease from 34.6 ug/m3 recorded for the 2019 reporting period.

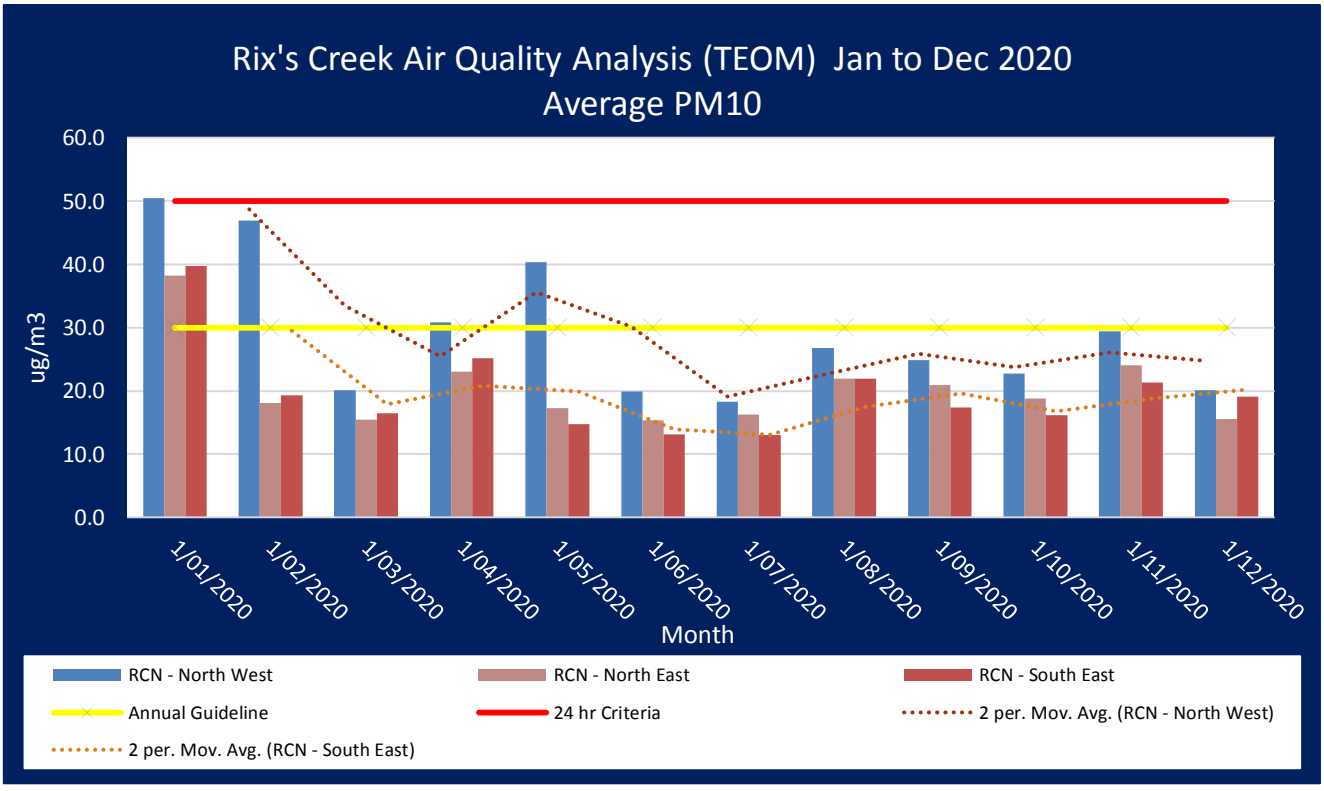


Figure 12 Particulate Matter less than 10 Micron Monthly Average and 12 Month Rolling Averages 2020 - TEOM

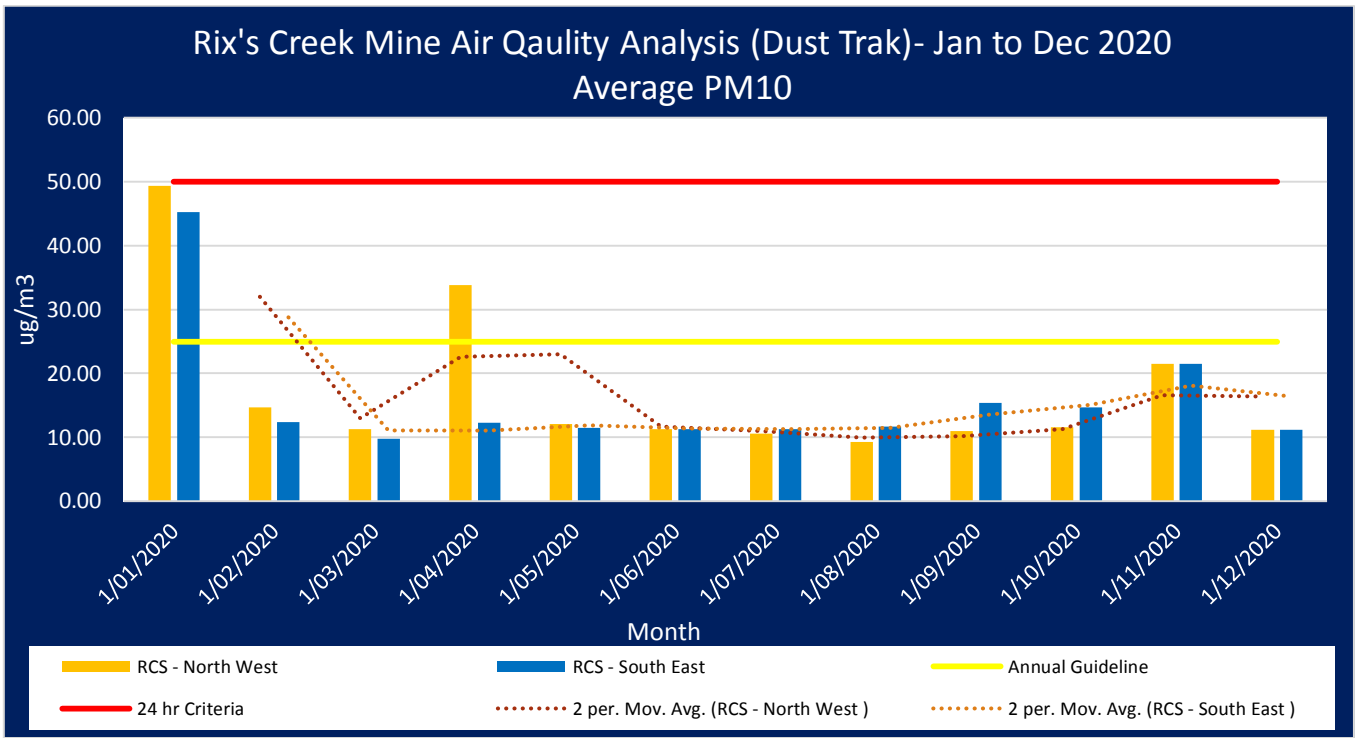


Figure 13 Particulate Matter less than 10 Micron Monthly Average and 12 Month Rolling Averages 2020 – DustTrak

Table 9 Analysis of Air Quality under adverse weather conditions upstream, downstream air quality difference.

Date	RCN NW TEOM 24 Av(ug/m3)	RCN NE TEOM 24 Av(ug/m3)	RCN SE TEOM 24 Av(ug/m3)	Upstream downstream Differential (RCM Contribution)	Predominant Wind Direction	Max Wind Speed (m/s)
1/01/2020	63.6	61.4	79.3*	-15.7	SE	16
2/01/2020	62	55	53.5*	-8.5	SE	13
4/01/2020	47.2	57.2	42.4*	-4.8	SE shift to NW	12
5/01/2020	76.7	82.9	91.3*	-14.6	SE	15.4
8/01/2020	69.6	64.7	60	-9.6	NW shift to SE	14.4
11/01/2020	56.7	59.7	53	3.7	SE	14.5
12/01/2020	58.8	49.2	47.8	11	SE	13.6
13/01/2020	52.7	26.4	30	22.7	SE	13.8
14/01/2020	50.3	20.7	25.3	25	SE	13.3
21/01/2020	63.5**	49.3	50.4	-13.1	NW shift to SE	12.7
23/01/2020	84.4	76.7	61.4	-23	NW	18.5
24/01/2020	62.9	64.1	55.1	-7.8	NW shift to SE	12.2
30/01/2020	52.4	30.9	26.3	-26.1	SE	11.6
31/01/2020	50.5	26.8	19.4	-31.1	NW shift to SE	8.9
2/02/2020	53	39.6	55	2	NW shift to SE	19.1
20/03/2020	40.6	35.5	50	9.4	NW	13.1
21/03/2020	56.5	41.2	41.8	-14.7	SE	9.4

24/04/2020	54.5	43.6	48.9	-5.6	NW	8.3
25/04/2020	50	31.2	43.5	-6.5	NW	7.5
26/04/2020	47.3	61.9	55.3	-8	NW	14.3
7/05/2020	51.2	8.9	28.3	-22.9	NW	7.1
13/05/2020	54	20.2	39.1	-14.9	NW	6.5
14/05/2020	56.4	20.3	16	-40.4	NW shift to SE	8.4
18/05/2020	51.3	11.2	11.2	40.1	SE	8.6
1/06/2020	61.2	29.5	30.4	-30.8	NW	15.7
19/08/2020	71.6	53.8	68.6	-3	NW	21
3/09/2020	51.9	34.8	44	-7.9	NW	14.2
26/11/2020	51.3	25.3	33.8	-17.5	NW shift to SE	9.7
27/11/2020	55.4	35.8	37.4	18	SE	12.2
29/11/2020	76.4	82.7	75.9	-0.5	NW shift to SE	21.4
7/12/2020	52.7	29.6	43.8	-8.9	NW	16.6

UHAQMN Singleton NW data has been referenced for the days **1 - 7 January 2020 due to RCN SE TEOM requiring filter change out. UHAQMN Singleton NW data has been referenced for the days **19 - 21 January 2020** due to RCN SE TEOM requiring filter change out.*
***UHAQMN Camberwell Data has been referenced for the days **21 - 22 January 2020** due to RCN NW TEOM being off line during this time period.*
****UHAQMN Camberwell data has been referenced for the days **5th - 8th Sept 2020** due to RCN NW TEOM being off line during this period.*

6.4.3 Incidents

The RCN SE TEOM required multiple filter changes during the January 2020 period. From the 1-7 January and the 19-21 January the RCN SE TEOM resulted in block filters that required change out. Data from the Singleton NW Upper Hunter Air Quality Monitoring Network (UHAQMN) was substituted for the period.

On the 21-22 January the RCN NW TEOM had a blocked filter and required a change out. Data from the Camberwell UHAQMN data was substituted for this period. These events coincided with regional bushfires and prevailing drought conditions placing additional load on the TEOMs during the January 2020 period.

On the 5-8 September 2020 a power outage at the RCN NW TEOM coincided with missed data for this period. Camberwell UHAQMN data was substituted for the period.

On the 21-23 April 2020 the RCS NW Dust Trak required a change out due to a faulty vacuum pump, Camberwell UHAQMN data was substituted for the period.

On the 1-2 July 2020 the RCS SE Dust Trak had a battery issue that resulted in downtime of the monitor. The Singleton NW data was substituted for this period as the battery system was upgraded.

6.4.4 Further Improvements

The Rix's Creek Mine real time air quality monitoring network has been upgraded and integrated with the sites Environmental Monitoring and Management Tele data system. This allows both the environmental team and contracted environmental consultants to identify when a machine is malfunctioning, with the aim to reduce downtime of air quality units at Rix's Creek.

6.5 Biodiversity

6.5.1 Environmental Management

The Rix's Creek North Biodiversity Management Plan (BMP) was approved by DPIE. The objectives of the Biodiversity Management Plan are to rehabilitate, revegetate and manage land for biodiversity within the biodiversity offset areas (BOA's)and the mine site during and post mining.

Efforts continue with the NSW Biodiversity Conservation Division (BCD) to finalise the Conservation Agreements for the Rix's Creek North Martins Creek, Bridgman, Southern and Northern Biodiversity Offset Areas. During October the offset areas were inspected by BCD and further progress has been made with the agreements. RCM continues to work toward finalisation of the agreements by May 2021.

During 2020, an independent audit as required under Sch. 3 Cond.41 of PA 08_0102 was undertaken of the BOA's This audit report will be provided to the Department in accordance with the conditions when finalised by the independent consultant.

Sched. 2 Condition 43 of SSD 6300 requires that a number of specified credits are retired at different stages of the Development.
During 2020 Rix's Creek Mine have been working with BCD to formalise a stewardship site at the Property "Berewin" located near Rouchel in the Upper Hunter Valley.

Once established the Berewin site will satisfy some of the credit requirements listed in Table 5 of the Project Approval.
Due to delays with the finalisation of the Stewardship agreement with BCD Rix's Creek Mine sought extension to the timeframe for retirement of the Stage 1 credits. An extension was approved to retire the Stage 1 credits by 22 September 2022.

Rix's Creek Mine continues to manage the Berewin property during finalisation of the agreement to enhance biodiversity outcomes.

The Rix's Creek South Biodiversity Management Plan was submitted on the 17/8/2020 and was subsequently reviewed and approved by DPIE on the 23/12/2020.

No clearing or disturbance of the Western Out of Pit Dump area occurred in 2020.

6.5.2 Environmental Performance

The ecological monitoring of Rix's Creek North biodiversity offset areas is prescribed in Section 2.7 – Flora and Fauna Monitoring of the RCN Biodiversity Management Plan (BMP) 2018 – 2020 (AECOM, 2017). Components relevant to annual monitoring at Rix's Creek North include:

- inspection of 76 installed nest and roost boxes for a variety of tree hollow dependent fauna, including the threatened Brush-tailed Phascogale, Squirrel Glider and honeybees;
- diurnal and nocturnal surveys along 7 designated transects for the threatened and protected species;
- monitoring of feral predators by use of remote infra-red cameras, presence of impact / damage, sightings and scats, and
- comprehensive surveys for all fauna groups conducted in 2018 and 2020, then every 3 years.

Nest box usage between 2015 - 2020 was comparable for glider and possum style boxes, with no usage of the microbat boxes. In 2020, only 1 individual of the Brush-tailed Phascogale was recorded compared to the 2017 and 2018 monitoring period. No Squirrel Gliders were detected in nest boxes in 2020, despite many of the boxes exhibiting evidence of use due to presence of leaf nests characteristic of the species.

Bird census counts conducted at each of the 6 monitoring sites in 2020 recorded species diversity of 68 native and 2 introduced species. Several of the offsets recorded significantly increased bird species diversity scores in 2020 compared to previous monitoring periods. One offset, Martins Creek

Offset, recorded a very significant increase, which is likely attributed to the improved habitat quality since the previous survey in 2018. The cessation of the drought, and improvement to floristic structure, would contribute to improvement of bird species diversity and abundance.

The trapping surveys resulted in the captures of 2 native and one introduced small mammal species, the Yellow-footed Antechinus, Brush-tailed Phascogale and introduced House Mouse. Trapping for microbats recorded only 1 individual, the Lesser Long-eared Bat Nyctophilus geoffroyi. This species cannot be detected by Anabat recording due to its similarity to other microbat species.

Monitoring of feral predators by remote cameras revealed no evidence of Fox and wild dog detected. However, the one of the cameras only partly operated, failing to take nocturnal images due to faulty flash. Despite this, no species were detected by diurnal monitoring, suggesting low abundance.

A total of 9 threatened species (3 bird species and 6 mammals) were recorded during surveys in the Rix's Creek Biodiversity Offset areas in 2020. All 9 threatened species have previously been recorded in the offsets.

6.5.3 Reportable Incidents

No reportable incidents relating to flora and fauna management occurred during the 2020 reporting period.

6.5.4 Further Improvements

In accordance with Schedule 2 Condition 39, suitable arrangements in the form of Conservation Agreements (CA) to provide long term security for the offsets at Rix's Creek North. Two CA's have been drafted and are currently under review by the Biodiversity Conservation Division (BCD).

6.6 Aboriginal Heritage

6.6.1 Environmental Management

In accordance with SSD 6300 the Rix's Creek South Aboriginal Cultural Heritage Management Plan (ACHMP) was submitted on the 25/5/2020 to the Biodiversity Conservation Division (BCD) and DPIE for approval. On the 2/9/2020 the ACHMP was approved by BCD and DPIE.

In accordance with the Rix's Creek North Project Approval (08_0102) and Rix's Creek South Project Approval (SSD 6300) an Aboriginal Cultural Heritage Management Plan sets out the procedures for the protection of Aboriginal sites as well as the salvage and care of Aboriginal objects found within the operational activities. Additional objectives of the Aboriginal Heritage Management Plan are:

- To establish an ongoing Aboriginal stakeholder consultation process;
- To describe the manner in which certain Aboriginal sites will be salvaged;
- To provide a summary research design and work plan for the sub surface excavation of select sites and areas; and
- To describe a program for Aboriginal site survey and assessment in areas not addressed by the respective EA's.

The Aboriginal Heritage Management Plan also outlines the importance of ongoing consultation with Aboriginal stakeholders during mining. All staff and contractors as part of a site induction are provided with information on what constitutes an artefact and what to do if an item of Aboriginal heritage is located.

6.6.2 Environmental Performance

From the 6 - 8 October 2020 Archaeological excavation and salvage requirements were undertaken in accordance with the Aboriginal Cultural Heritage Management Plan (ACHMP) and Salvage

Management Plan requirements for SSD 6300 Rix's Creek South Continuation of Mining Project. During the salvage process approximately 400 Aboriginal artefacts were identified over 4 transects, compromising of 43 excavations, and 14 salvage sites.

In accordance with the ACHMP a discussion was held with the Registered Aboriginal Parties (RAPS) over the three (3) days all parties represented were in agreeance of the required fencing being 4 round steel posts (not star pickets) with standard four plain wires for long term security and prevention of damage. Signage was agreed as previously organised. (This will be required for 13 sites outside the disturbance area but within the project approval area).

Discovery of a surface Aboriginal artefact

Excavation site for Aboriginal artefacts along a transect.

6.6.3 Reportable Incidents

There were no reportable incidents during the 2020 period.

6.7 Non-Aboriginal Heritage

6.7.1 Environmental Management

The Historic Heritage Management Plan (HHMP) forms part of a series of Environmental Management Plans for RCM. This HHMP is applicable to RCS only and is the primary tool that will be utilised to manage items of historical significance predicted to be impacted by the development of RCS in accordance with SSD 6300. The HHMP was submitted for consultation and review on the 21/08/2020. After two additional amendments the HHMP was approved by DPIE on the 23/12/2020.

The management of Historical Heritage at RCN is managed under a separate Heritage Management Plan Rix's Creek North (Bloomfield, 2016).

6.7.2 Environmental Performance

During the reporting period a specialised consultant was engaged to develop a Coke Oven management measures plan. The plan will be used by the RCM Environment Department to manage the coke ovens to ensure that the cultural heritage values of the location are maintained. The Plan will also provide appropriate management in relation to the auxiliary features. Procedures within this Plan will be used by contractors engaged by RCM to carry out works within the buffer area of the coke ovens.

During 2020 the external fence to the Coke Oven site was repaired with signage installed and replaced where required.

6.7.3 Reportable Incidents

There were no reportable incidents in relation to natural heritage during the 2020 reporting period.

6.7.4 Further Improvements.

The program of protection of the Coke oven area and other known natural heritage sites will continue. Annual inspections are undertaken of the areas with known heritage. Any weeds identified will be sprayed. Vegetation maintenance may be required as necessary and fencing and signage are checked for adequacy. Implementation of the Management Measures, Rix's Creek Coke Ovens and Associated Works will be undertaken in accordance with timelines identified in the approved RCS Historic Heritage Management Plan.

SECTION 7 WATER MANAGEMENT

7.1 Rix's Creek Setting and Context

7.1.1 Geology

Local Geology

The Project is confined within a basin-like north–south trending syncline that hosts the Permian coal seams of the Foybrook Formation that are part of the Whittingham Coal Measures. The syncline is approximately 8 km long by 3 km wide and is bounded by the Camberwell and Darlington Anticlines. The syncline is asymmetrical, the western limb generally dipping at a steeper angle than the eastern limb. The syncline is also locally double-plunging forming the synclinal basin structure centred on the Rix's Creek operations. North of the Rix's Creek mining lease, the syncline plunges to the north.

The major coal seams identified in the Rix's Creek syncline are (in descending stratigraphic order):

- Lemmington Seam
- Pikes Gully Seam
- Arties Seam
- Liddell Seam
- Barrett Seam
- Hebden Seam.

The seams typically out-crop within the syncline, with the outcrop of Barrett and Hebden seams to the east, west, and south, marking the limit of the mineable resources. The target coal seams vary widely throughout the area and often occur as several dispersed splits, separated by interburden sediments that comprise alternating sandstone, siltstone, conglomerate, mudstone and shale, as well as occasional minor coal seams. The interburden between the Barrett and Upper Hebden seams increases to more than 20 m in the northern and western regions, rendering the Upper Hebden seam uneconomical to mine.

7.1.2 Hydrogeological Setting

Conceptual Hydrogeological Model

The conceptual hydrogeological model for Rix's Creek is relatively simple in that the basin-like structure of the Rix's Creek Syncline acts to isolate the Coal Measures from the broader regional hydrogeological regime, with little groundwater interaction through the bounding low permeability siltstones.

The basin-like structure as defined by the base of the Hebden Seam (and upper surface of the underlying siltstone basement rock of the Saltwater Creek Formation) is depicted on Figures 17 and 18 (below).

The limbs of the anticline have a relatively shallow dip on the eastern limb with the western limb dipping at a much steeper angle. The syncline axis also plunges from the north and south. The lowest point of the Coal Measures in the synclinal basin is approximately -130mAHD.

Although geologically more complex on the local scale due to the splitting and merging of multiple minor seams, the aquifer system at Rix's Creek has been simplified and represented by a layer cake style system, with the layer geometry reflecting the synclinal basin structure. Within the layer cake, the major coal seams represent the main aquifers, with the interburden units acting as low permeability aquitards between the aquifers. Within the coal seam aquifers, preferential groundwater flow is along the bedding. Large scale groundwater flow vertically between coal units is impeded by the low permeability interburden units consisting of siltstones, sandstones, tuffs and shales.

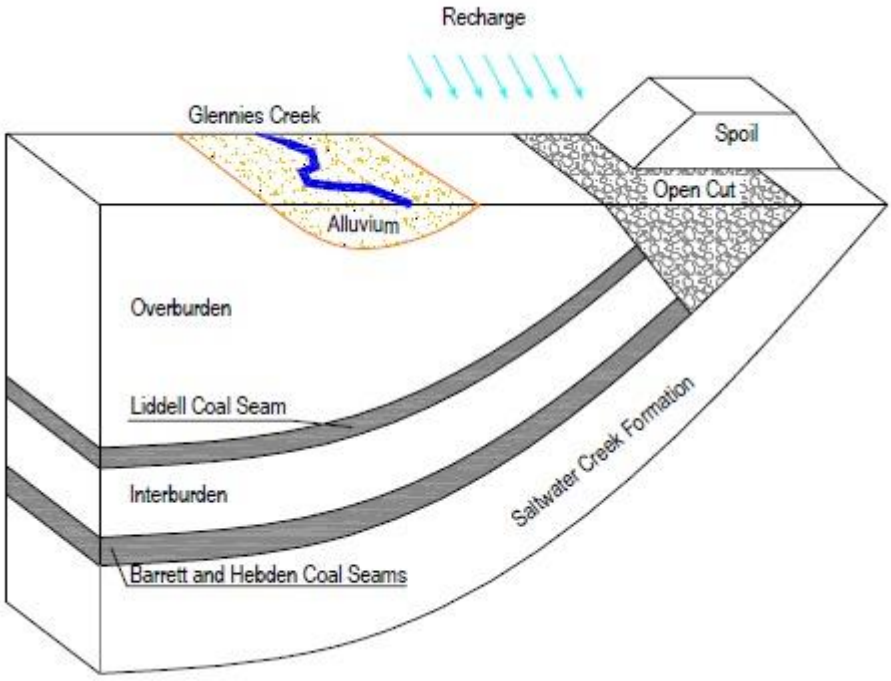


Figure 17 Conceptual Hydrogeological Model of the Rix's Creek Syncline area

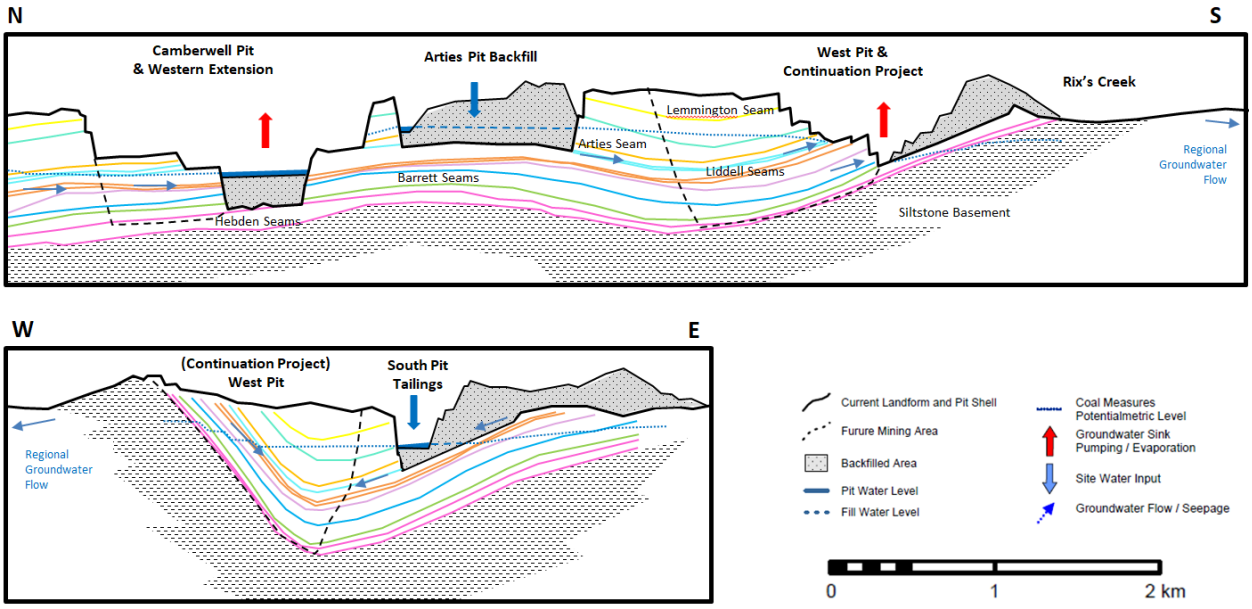


Figure 18 Conceptual Hydrogeological Cross Section

Aquifer Recharge

Rainfall recharge and infiltration will occur on remnant regolith areas, as well as rehabilitated mine areas, and direct rainfall to open cut areas. A degree of enhanced recharge and infiltration will also occur from the Old North Pit water storage and the deposition of tailings slurry in South Pit (although tailings seepage is anticipated to be a minor contributor to the overall water balance).

The lack of water level response observed at shallow monitoring bores in the creek alluvial system, located within the limit of Coal Measures outcrop, demonstrates the disconnection of the shallow regolith and alluvial aquifers from the deeper groundwater regime. It also shows that the shallow aquifers in these locations are locally reliant on direct rainfall recharge, and that this has not been diminished by the ongoing mining operations

Hydrological Setting

Figures 20 and 21 gives an indication of the approximate extent of the surface water catchments draining to the various storages within the Rix's Creek sites. In the RCN area, the eastern portion of the Falbrook Pit area intercepts runoff from the Reedy Creek catchment. Several diversion banks with excavated channels are used to divert clean catchment runoff around or through areas disturbed by mining operations.

In the RCS area, the Arties Pit, West & South Pit are surrounded by natural landforms that slope inwards towards the active mining area which directs any runoff over disturbed areas to flow back towards the pits. Clean water diversion structures have been installed to divert clean water away from active pits in average rainfall conditions.

In the vicinity of the mine footprint, all clean water flowing through or around the mine site area finds its way into either Glennie's Creek or Rix's Creek and ultimately into the Hunter River.

The catchment areas and diversion structures are progressively changing with the ongoing excavation of approved mining areas – and are adapted and maintained to enable the outcomes described above.

Groundwater Dependent Ecosystems (GDE's)

The proximity of GDEs to the Project area has been assessed by reviewing the Water Sharing Plan (WSP) and the Groundwater Dependent Ecosystem Atlas (Bureau of Meteorology, 2012). The findings have confirmed that there are no identified GDEs in the vicinity of the Project (RCS and RCN).

Most of the existing mine footprint is situated up hydraulic gradient of Rix's Creek and there are no alluvium deposits associated with the creek in the immediate vicinity of the mine. Surface water monitoring data (EC and flow observations) obtained from the creek shows the water to be relatively fresh (EC <200 µS/cm) and flows to be occasional, which suggests that the flow within the Creek is almost entirely derived from surface water run-off.

As there is no alluvium in the mining area and no apparent base flow contributions, the pumping or interception of groundwater with the Permian Coal Measure aquifer from current or future mining activities is unlikely to impact upon on creek flow volumes in the regolith/alluvial aquifer system. The only risks to the creek therefore relate to water quality impacts associated with dirty water runoff.

7.2 Water Licences

Rix's Creek has the following active groundwater licences:

Table 10 Rix's Creek Water Licences

Water Licences					
	Number		**Category**	**Volume**	**Purpose**
Natural Resource Access Regulator	WAL41500		Mining	100 (ML/yr)	Open Cut (dewatering groundwater) Hard Rock
	WAL 41555		Mining	100(ML/yr)	Open Cut (dewatering groundwater) Hard Rock

	WAL 40777		Mining	305 (ML/yr)	Open Cut (dewatering groundwater) Hard Rock
	20BL170864		Mining	100(ML/yr)	1 x Bore (dewatering groundwater

7.21 Water Management

In January 2019 the RCM Water Management Plan was approved combining both RCN and RCS to rationalise and combine the monitoring programme. This 2020 water review uses the monitoring programme outlined in RCM combined Water Management Plan. The RCM combined WMP with inclusion of the SSD6300 conditions was approved 16/3/2021.

A static water balance was calculated for 2020 providing information on inputs and outputs for RCM operations and the results are shown in **Table 20**.

Rix's Creek Mine Results

During the reporting period the strategy was to manage water levels in the open cut at Rix's Creek Mine operations by pumping water to the CHPP for re-use, to surface dams and disused pits to maximise evaporation. Water is pumped to the CHPP Dams and from west pit open cut operations and MB 19 water storage area.

The Camberwell Pit was dewatered to Dirty Water Dam 1 (D1), the CHPP supply dam. Water carts operated from the fill point adjacent to the workshop hardstand over the whole year.

Rixs Creek has a water management system where all water on-site has generally been retained in storages: mine water dams, mine voids and tailings dams for re-use by mining and processing operations. Water can be transferred from these storages via pipelines to the CHPP, the mine or to Ashton Coal. Water was also pumped to the Great Ravensworth Area Water Sharing Scheme (GRAWSS) which occurred during the reporting period.

In 2020, the strategy was to manage water levels in the open cuts by pumping water to the CHPP for re-use, to surface dams and disused voids to maximise evaporation. Water is pumped to the CHPP Dams and the North Pit Tailings Dam from the open cuts. Water carts were operated over the whole year.

Dust Suppression
Historically, the main loss or consumption of water at Rixs Creek is via the moisture retained in the product coal or waste reject material as well as water utilised for dust suppression.

Potable Water Use
31.4 megalitres (ML) of potable water was sourced from the Singleton town water supply in 2020 for potable supply and bathhouse facilities.

Hunter River Salinity Trading Scheme
Rixs Creek Mine does not discharge under the Hunter River Salinity Trading Scheme.

Groundwater
There was an estimated 85 ML of groundwater inflow into the Rix's Creek South open cut voids during the reporting period.

There was an estimated 120 ML of groundwater inflow into the Rix's Creek North open cut voids during the reporting period.

The groundwater inflow and seepage from rehabilitated emplacements and spoil dumps into the

Underground Portal Storage was estimated at 565 ML.

Site Inventory

Site inventory increased at RCM from 4250 ML to 4809 ML during 2020. This was from increased rainfall into dirty water catchments during the 2020 period.

Surface Water Dams

Water inventories in site process water dams totalled generally decreased over the year due to less than average rainfall:

The Falbrook Pit is used as a storage for excess mine water and the inventory fell from 3270 ML to 2370 ML over the year as water was pumped to Integra UG and to D1 for RCN CHPP processing and dust management.

Possum Skin Dam inventory ranged from 200 ML (about 15% of capacity) in January, closing the year at an estimated 240 ML.

DWD 1 was mostly steady around 300 ML over the year.

Free water in the tailings dams was estimated at 200ML during the reporting period.

Table 11 Estimated Sample Static Water Balance Rix's Creek Mine 2020

Water Stream	2020 (ML)	Estimation technique
Inputs		
Imported Fresh Water	0	high
Imported Potable	31.4	High (metered)
Groundwater Seepage To Open Cuts	205	Low
Underground Dewatering	0	High (metered)
Rainfall Runoff – Into Dirty Water System	1305	Moderate (catchment)
Recycled to CHPP from Tails & Storage (not included in total below)	1,510	Low
Water from ROM Coal	651	Low
Total Inputs	3702.4	
Outputs		
Groundwater Seepage Out (Down dip losses and high wall evaporation)	565	Low (modelled)
Dust Suppression – Water Carts	690.45	high (metered)
Exported to Other Mines – through GRAWSS	235.17	high (metered)
Evaporative fans	0	high
Evaporation - Mine Water & Tailings Dams	421	low
Entrained in Process Waste	902	low
Water in Product Coal	298	low
Potable Usage	31.4	High (metered)
Total Outputs	3143.23	
Estimated Change in Pit Storage (increase)	**559.17**	

7.2.1 Climate/Rainfall

Specific rainfall during 2020 is as follows:

- Over the review period, the only months to that didn't exceed the monthly average rainfall were January (59.2mm), May (23.2mm) and November (41mm).
- 2020 annual rainfall at Rix's Creek was 893.2mm, which is significantly lower than the long-term average of 631.8mm.

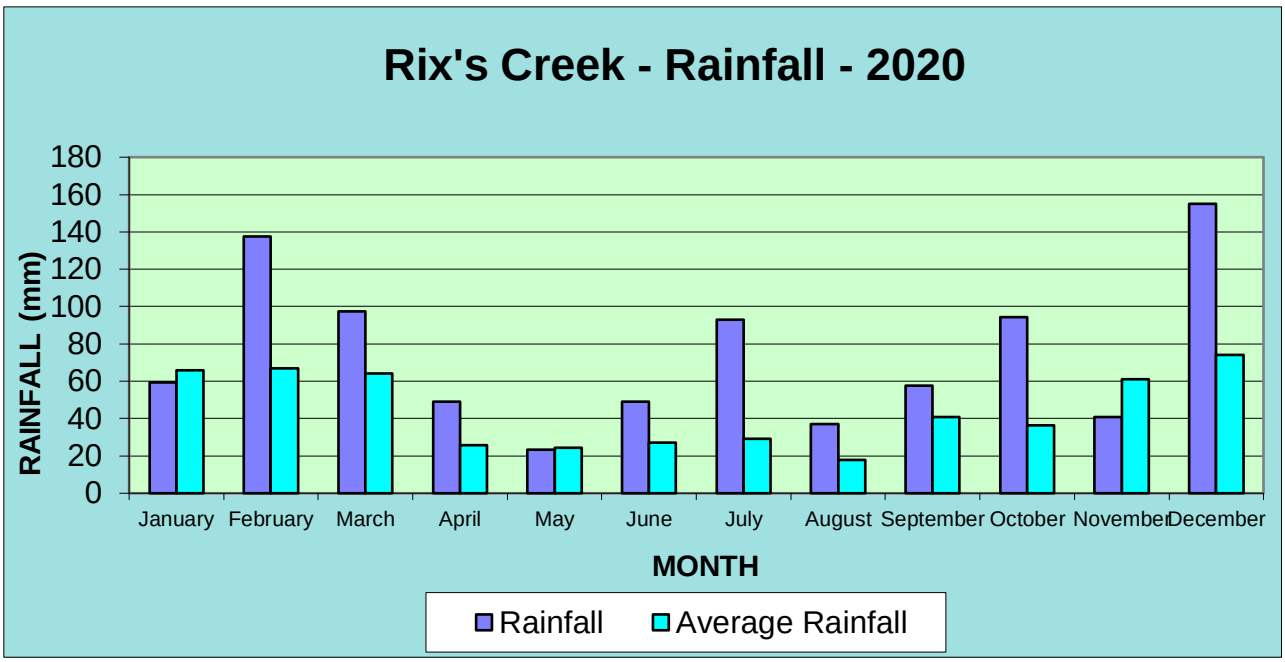


Figure 19 Annual Rainfall at Rix's Creek 2020

Annual rainfall results are plotted for the last 22 year historic rainfall average and are presented in Figure 20.

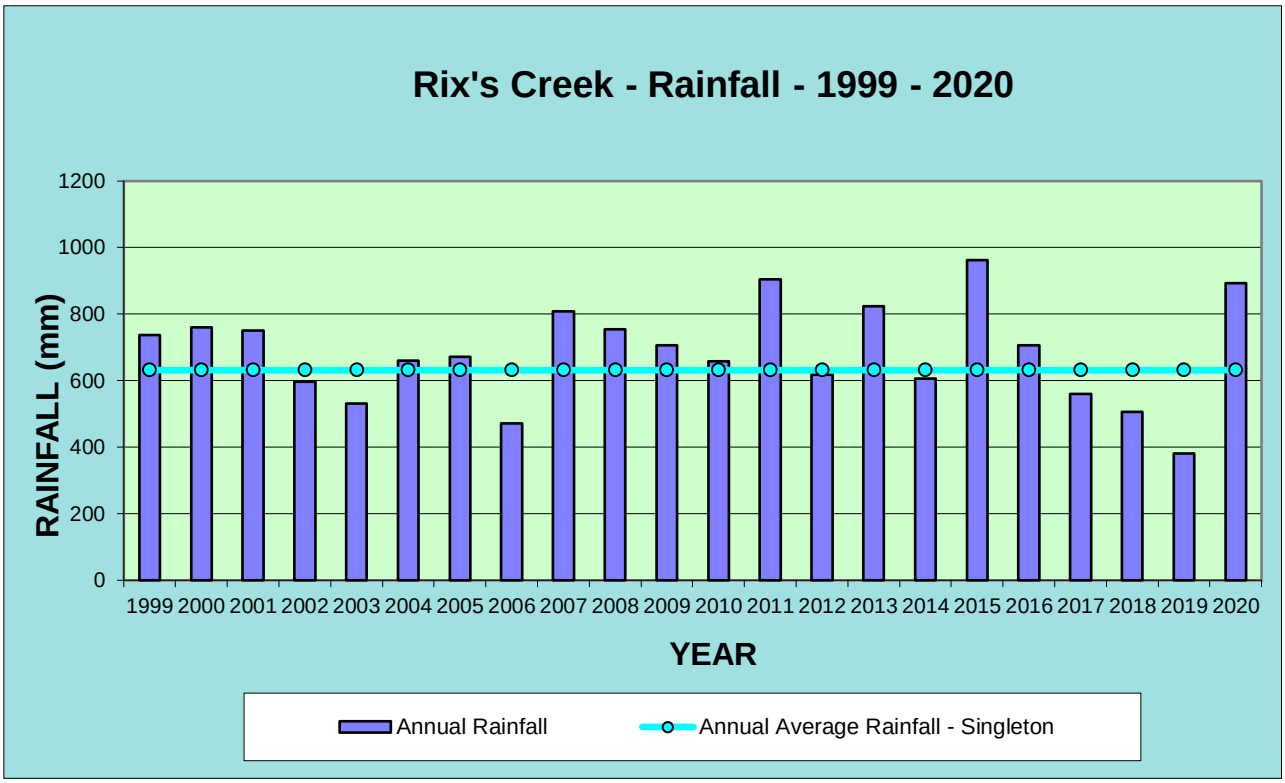


Figure 20 Annual rainfall at Rix's Creek 1999-2020

7.3 Surface Water

7.3.1 Environmental Management

The water management system at Rix's Creek mine has been designed with the primary objectives of:

- Segregation of uncontaminated, clean water runoff, from contaminated-mine water on site; and
- Priority use of, and safe containment on site of contaminated water.

Clean Water

Runoff from undisturbed areas is directed away from mining operations through diversion banks and channels. The clean water is directed into Rix's Creek, which flows through the lease. North of the New England Highway the Creek consists of a number of flow lines in smaller catchments. South of the Highway Rix's Creek is a defined flow line amongst a belt of riparian vegetation.

Water quality is monitored in the Creek on a monthly basis when there is sufficient water to sample as Rix's Creek is an ephemeral stream. Water quality is also monitored in a smaller creek north of the operation labelled Deadman's Creek.

For Rix's Creek Northern operations, in the open cut mining lease area east of the main Northern Railway Line, rainwater runoff from non-mined or rehabilitation areas, as well as from the diversion of the Martins Creek and Blackwattle Creek catchments, is collected in a series of four dams (C1, C2, C3 and C4). A vegetated clean water channel connects these dams. C3 and C4 are maintained with sufficient freeboard to ensure adequate surge capacity during storm events. Three further dams, C5, C6 and C6a are sediment laden water dams in the south of the mining lease and these dams bywash to Dam C3.

The area west of the Main Northern Railway Line had several dams constructed in 2000 due to the increase in South Pit operations and the need to separate clean and mine water. The water management system comprises clean water dams C7 to C11. The dams and diversion banks divert clean runoff water from entering mine workings. Dams C7, C8 and C11 bywash and flow into C4 via the vegetated channel, while dam C9 (west of the south pit) bywashes into Station Creek. Dam C10 was located in the active mining area and was 'mined-through' in 2001.

Mine Water

Runoff from disturbed areas is contained within a system of detention dams designed to allow settlement of the suspended solids. Runoff from active mining areas is pumped to the dirty water storages.

Tailings from the coal beneficiation process are directed to the emplacement area and water decanted off the tailing's dam surface is recycled through the coal handling and preparation plant.

First priority is given to the use of contaminated water in mine operations. Mine water is used in the coal beneficiation process and for dust suppression via water carts for haul road watering and spraying coal stockpiles.

Hunter River Salinity Trading Scheme

Although Rix's Creek is a member of the scheme there has been no need to discharge saline water and the instrumentation necessary to participate in the scheme was not installed. As a consequence, Rix's Creek is unable to discharge and EPA has subsequently revoked the discharge component of the Environmental Protection Licence.

Sampling Locations

Rix's Creek runs the length of the Rix's Creek South mining lease area. A small portion on the east side of the site adjacent to Rix's Creek Lane is drained by a tributary of Rix's Creek, known as 'Stone

Quarry Gully'.
Water samples are taken from Rix's Creek Southern site in four locations. They are:-

- Site 1 - Railway Underpass, as the Creek enters the site;
- Site 2 - New England Highway Bridge, at the mid-point through the mine site;
- Site 10 – Below Operation, on Rix's Creek below the operation; and
- Site 3 - Maison Dieu Road Bridge, after the Creek has left the site.

Water storage dams 1, 2, and 6 are sampled and analysed monthly. The locations of these dams are shown on Figure 23 with the relationship being:-

- Site 4-Clean Water Dam 1 - (CWD 1)
- Site 5-Clean Water Dam 2 - (CWD 2)
- Site 7-Clean Water Dam 6 - (CWD 6)

For Rix's Creek Northern operations, Environmental Protection Licence (EPL 3391) requires the monitoring of surface waters for pH, EC, TSS and TDS at the following sites on a monthly basis:

- W3 - Martins Creek, where it enters the site;
- W6 - Blackwattle Creek, where it enters the site; and
- W1 - Station Creek, where it leaves the mine site.

EPL Samples are taken on a monthly basis. Sampling site locations are indicated on Figure 19.

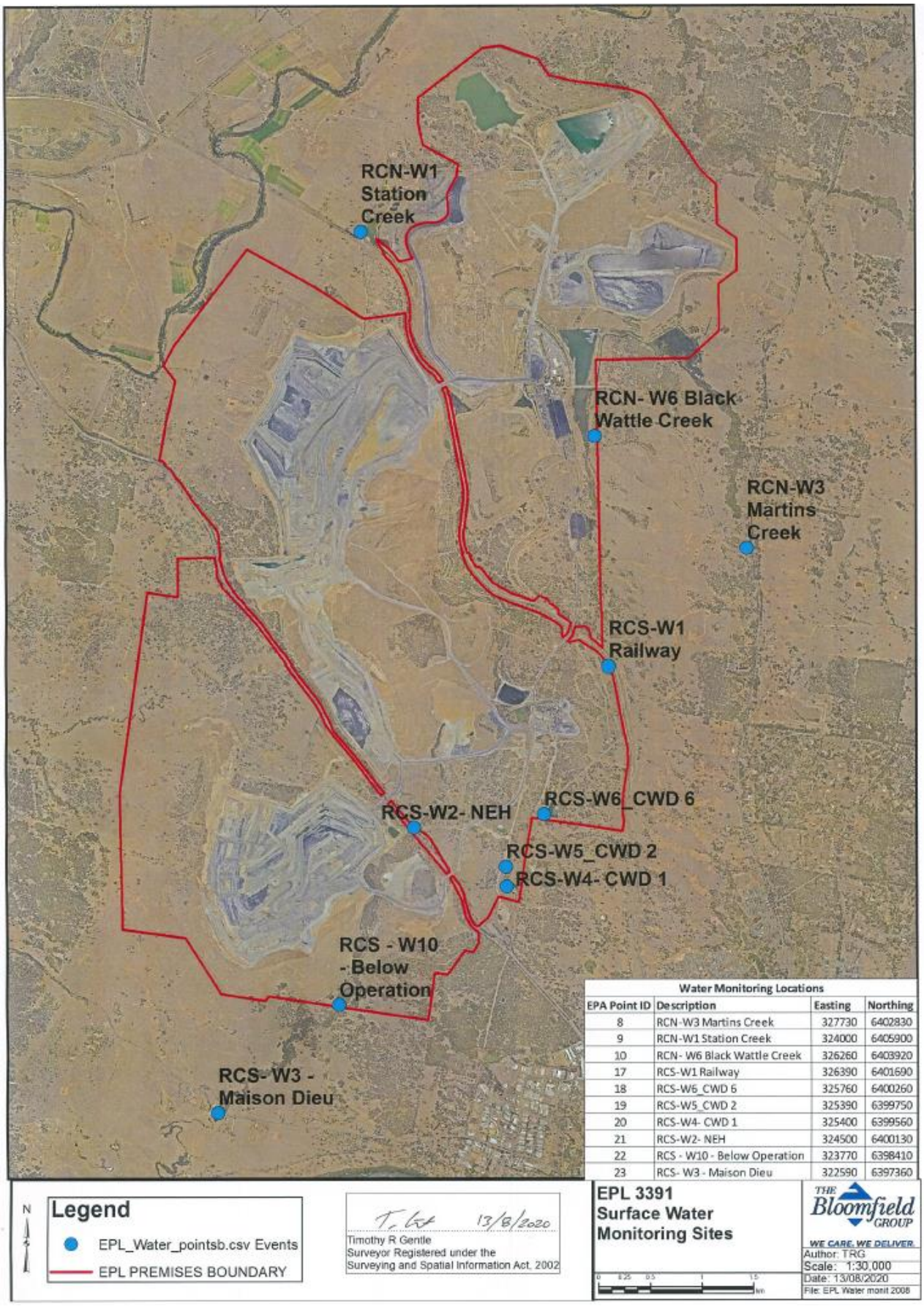


Figure 14 EPL 3391 water monitoring sites

Table 12 RCN Surface Water Monitoring Sites

Monitoring Point	Location
W1	Station Creek
W3	Martins Creek
W4	Glennies Creek upstream of the Station Creek confluence
W5	Glennies Creek downstream of the Station Creek confluence
W6	Blackwattle Creek
W7	Stony Creek where it crosses Stony Creek Road
W10	Clean Water Dam – C4
W11	Glennies Creek downstream at Camberwell where it crosses the New England Highway
W12	Clean Water Dam – C1
W13	Clean Water Dam – C6
W14	Clean Water Dam – C3
W15	Clean Water Dam – C6A (after C5 spillway channel before clean water channel)
W16	Sediment Control Dam – C7
W17	Clean Water Dam – C2
W18	Clean Water Dam – C5
W19	Mine Water Dam D1
W20	Northern Stock Water Dam No. 1
W21	Northern Stock Water Dam No. 2
W22	Station Creek Up
W23	Station Creek Down
GCS003	Possum Skin Dam
GCS004	PS Dam Seepage Collector
GCS005	PS Dam Clean Water diversion Sediment Pond
SD1	South Sediment Dam
SD2	Central Sediment Dam
SD3	North Sediment Dam
GC1	Middle Falbrook Rd Bridge
GC2	Glennies Creek Nobles Crossing
Nobles Crossing	Nobles Crossing

Figure 21. Rix's Creek North Ground and Surface Water Monitoring sites

7.3.2 Environmental Performance

Water samples are analysed for water quality parameters of pH, electrical conductivity, total dissolved solids and total suspended solids. The water samples are analysed by Steel River Testing Mayfield as well as ALS Laboratory Group at Warabrook. Both laboratories are registered by the National Association of Testing Authorities, Australia (NATA).

Rix's Creek Mine surface water results

During the 2020 surface water assessment, with exemption from January, May and November the monthly rainfall average was exceeded. The general trend with pH is that it increases under low flow or periods of low rainfall and conversely, there's a general reduction in pH under periods of above average rainfall is experienced. This trend was demonstrated during the 2020 period.

pH

The pH results are presented in **Appendix 1**. The general pH trend in the Creeks and site dams is to decrease under flow conditions and increase in times of stagnant conditions or limited flow. The decrease in pH under flow conditions reflects the slightly acidic nature of rainfall. The pH ranged from 6.5 to 9.7 throughout 2020. Due to the increase in rainfall experienced there was a general reduction in pH when compared to the low rainfall period of 2019.

The surface water assessment the pH of upstream ephemerals W6 (Black Wattle Creek) ranged between 7.6 and 8.1 and W3 (Martins Creek) ranging between 6.5 and 7.1. The Upstream Railway underpass recorded pH between 7.6 and 9.1. W1 (Station Creek) downstream ephermal monitoring site is located downstream of mining operations and recorded a neutral to slightly elevated pH during the reporting period ranging between 7.0 and 7.4.

Electrical Conductivity (Salinity)

The Electrical Conductivity results are presented in **Appendix 1**. Salinity levels at RCM generally fluctuated in correlation with variations in rainfall and flowing vs non-flowing conditions, ranging from 73µS/cm to 10,390µS/cm during the 2020 reporting period.

Results ranged from 73µS/cm at the Martins Creek to 10,390µS/cm at the Dirty Water Dam 1.

The EC of upstream ephemeral W3 (Martins Creek) ranged between 73µS/cm (March) and 215µS/cm (May), with W3 being too low to sample on one (1) occasion. W1 (Station Creek) monitoring site is located downstream of mining operations ranging between 341 and 457 µS/cm. W1 was too low to sample on three (3) occasions. Black Wattle Creek, which is ephemeral recorded 894 µS/cm to 4590 µS/cm (February). Black Wattle Creek was too low to sample on eight (8) occasions during the reporting period.

Total Dissolved Solids

The Total Dissolved Solids (TDS) results for Rix's Creek Mine are presented in **Appendix 1**. TDS ranged from 93 mg/l – Clean Water Dam 1 to 7,460 mg/L – Dirty Water Dam 1. Throughout the reporting period there was above average rainfall resulting in a general reduction of TDS when compared to the low rainfall conditions experienced in 2019.

TDS ranged from 96 mg/l (April) – W7 Stoney Creek to 8850mg/l (January) – W20 Dam. The higher results during January coincided with below average rainfall. The general trend saw TDS reduce when above average rainfall was experienced. Total dissolved solids at monitoring site W1 (Station Creek) ranged between 238mg/l in November and 566mg/l in August. Due to the ephemeral nature of Black Wattle Creek, on eight (8) occasions Black Wattle Creek was too low to sample during 2020. At W3

Martins Creek the TDS ranged between 320mg/l (April) and 882 mg/l (October).

Total Suspended Solids

Total Suspended Solids (TSS) results are presented in **Appendix 1**. TSS ranged from 1 mg/l at the Clean Water Dam 2 in May to 77 mg/l at the Below Operations site. The general trend is for levels to increase down the catchment under flow conditions. This historic trend is an indication that the water flowing in the Creeks picks up sediment and increases the sediment load down the catchment. This trend is depicted in the 2020 period and is consistent with previous reporting periods.

Rix's Creek North Results

Total Suspended Solids

TSS results are presented in **Appendix 1**. TSS results ranged from 3 mg/l (December) at the W12 Dam C1 site under no flow conditions to 136mg/l (September) at the downstream location of W1 Station Creek. The Ephemeral Black Wattle Creek ranged from 894 mg/l to 4590 mg/l with flow following sampling undertaken after a rain event. The general trend is for levels to increase down the catchment under flow conditions. This historical trend is an indication that the water flowing in the Creeks picks up sediment and increases the sediment load down the catchment.

7.3.3 Reportable Incidents

There were no external reportable incidents that occurred in the reporting period.

7.4 Groundwater

The groundwater monitoring sites across the Rix's Creek mine sites have been combined in **Table 24** and are provided as a reference to compare Rix's Creek South and Rix's Creek North.

Table 13 Rix's Creek Ground Water Monitoring Sites

Bore ID	License	Easting	Northing	Screened Interval (mgbl)	Stick Up (m)	Surface Elevation (mAHD)	Total Depth (mbgl)
Rix's Creek North							
Open Cut Piezometers and Wells							
Glennies Creek Alluvium							
GCP9	(20BL171708)	323259	6407315	Unknown	1.5	69.885	9
GCP10	(20BL171708)	324414	6408030	Unknown	0.7	74.891	11.5
GCP19	(20BL171708)	325086	6408333	8.5 - 12	0.63	77.5	12
GCP20	(20BL171708)	325201	6408179	5.2 - 8.2	0.67	82	8.2
GCP21	(20BL171721)	324466	6407916	6 to 11	0.82	76	11
GCP22	(20BL171721)	324558	6407814	8.5 - 12	0.7	75	12
GCP23	(20BL171721)	324535	6407659	4.6 - 8	1.01	75	8
Coal Measure							
GCP1	(20BL169631)	325124	6406664	Unknown	0.34	96.013	108
GCP2	(20BL169631)	325160	6406490	Unknown	0.61	105.495	105
GCP5	(20BL169631)	324337	6406203	Unknown	0.54	80.334	108
GCP6	(20BL169631)	324941	6406784	Unknown	0.38	102.931	126
GCP7	(20BL169628)	325864	6407071	60 - 72 and 96 - 102	0.1	93.034	120
GCP8	(20BL169630)	326332	6407214	Unknown	0.44	105.095	120
GCP13	(20BL169628)	326169	6406745	Unknown	0.15	105.356	66
GCP14	(20BL169628)	325774	6407042	Unknown	0.66	90.99	123
GCP15	(20BL169628)	325912	6406961	Unknown	0.42	95.035	114
GCP16	(20BL169628)	326029	6407077	Unknown	0.7	98.853	120
GCTB	(20BL169631)	325149	6406572	Unknown	0.2	102.564	90

Bore ID	License	Easting	Northing	Screened Interval (mgbl)	Stick Up (m)	Surface Elevation (mAHD)	Total Depth (mbgl)
Extended Southern Pit							
Glennies Creek Alluvium							
GCP28	(20BL171722)	322651	6405459	6.7 -12.0	0.8	69.5	12
GCP29	(20BL171722)	323191	6405356	4.5 - 10.0	0.9	71	10
GCP30	(20BL171720)	322438	6404649	5.5 -12.0	0.94	67.5	12
Coal Measure							
GCP27	(20BL171881)	323197	6406037	36.5-37.5	1.11	70	27.5
GCP32	(20BL171880)	322491	6404250	49.0-55.0	0.66	70.5	55.55
GCP34	(20BL171879)	322800	6403235	47.0-56.25	0.61	101	56.25
GCP36	(20BL171722)	322915	6405320	14.5-16.0	0.85	70.5	16
GCP38	(20BL171878)	323468	6405626	17.0-24.3	0.98	71	24.3
GCP24	(20BL171722)	323241.8	6407107	46-48	0.6	71.25	48
Rix's Creek South							
Regolith (Upper weathered zone)							
BH3		325457	6401923	5-8	0.97	100	11
BH4		323982	6398666	7-10	0.74	63	10
BH8		321803	6401175	5-14	0.8	85.446	20
Coal Measure							
BH1		323190	6400562	115-121, 127-130	0.85	113	130
BH2		322936	6401923	84-87	0.98	136	90
BH5		324562	6399924	63-66	1.04	76.469	66.5
BH7		323345	6401709	150.5-198.5	0.72	100.86	200.5
20BL170864		324633	6400335		0.3	80.5	~70

7.4.1 Monitoring Background

As part of the Water Management Plan for Rix's Creek Mine, a monitoring programme has been implemented to detect any impacts from mining on the groundwater regime, and from neighbouring groundwater users. The monitoring programme incorporates both shallow and deep groundwater monitoring locations monitoring the water levels in the Glennie's Creek Alluvial deposits and the Permian Coal Measures around both Rix's Creek South Mine and the Rix's Creek North Mine.

Mining activities that have the potential to impact groundwater levels and quality are:

- Tailings emplacement area
- Spoils and emplacement
- Surface water bodies – these may locally control groundwater levels in surrounding spoil and Permian strata; and
- Waste dumps & Coal Handling plant – surface water runoff and associated water quality issues.

7.4.2 2020 Groundwater Monitoring Performance

Rix's Creek South Groundwater Levels

In accordance with Modification 4 of the Rix's Creek South development consent (DA 49/94) DPI Water required a groundwater monitoring programme to be developed for Rix's Creek south operations that:

- detailed baseline data of groundwater levels, yield and quality in the region, and privately-owned groundwater bores, which could be affected by the development;
- groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse groundwater impacts of the development;
- a program to monitor groundwater inflows to the open cut mining operations, and impacts of the development on the regions aquifers, any groundwater bores, and surrounding watercourses.

For Rix's Creek South operations, three piezometers are installed into the Permian coal measures and three into overlying regolith zone. Bore details are summarised in Appendix 2.

Piezometers BH1, BH5 and BH7 are the deeper bore holes into the coal measures while Piezometers BH3, BH4 and BH8 are shallow into the overlying regolith. The monitoring network also included the existing production bore 20BL170864. BH2 was installed in the Permian coal measures, however this bore was destroyed in 2011.

BH1 was damaged in the second half of 2017 and BH2 was destroyed in early 2012.

Piezometer BH6 was proposed but was not completed due to several problems when drilling during 2015, with BH8 being completed in its place.

Groundwater level monitoring has been undertaken since 2010 and on a quarterly basis from 2012 to 2020 in accordance with the 2019 Rix's Creek Mine Water Management Plan (WMP).

Groundwater levels for Rix's Creek South groundwater bores have remained fairly consistent in the shallow aquifer since the commencement of monitoring ground water levels with the Coal Measures acting in hydraulic isolation from the shallow regolith and alluvium aquifer systems. This can be seen in the BH1 hydrograph (screened in Arties seam), with water levels correlating with mine water management activities in the Arties Pit.

Depressurisation was observed in BH1, BH5, BH7 and 20BL170864 in response to ongoing Coal Measures dewatering in the broader Rix's Creek area, with BH5 recovering when pumping at 20BL170864 ceased. In early December 2017 BH5 and 20BL170864 resumed their depressurisation.

The piezometers in BH4 and BH8 have remained relatively stable throughout the monitoring period, indicating the deeper coal measures are hydraulically separated from the shallow regolith and alluvium system.

BH3 has shown a slight decline in water levels in association with decreased rainfall, however, the bore log notes that the screened interval is within a small coal seam and may be connected to the deeper coal measures than the shallow regolith unit. Its water level ranged from 5.17 – 6.23mbgl.

During 2020 BH4 ranged from 3.964 – 2.27mgbl and BH8 ranged between 3.53 – 2.92mbgl.

Overall the regolith water levels are relatively stable in the shallow water table with fluctuating responses to rainfall and no observable correlation to water levels in the Coal Measures.

Groundwater levels are presented in **Appendix 2**.

Table 14 Rix's Creek South 2020 Groundwater Monitoring Network

Bore ID	Type	Depth (mbgl)	Location	Change in Water Levels during 2020 (m)
BH3	Standpipe Piezometer	11	East of waste dump / backfill area- Regolith and shallow coal seams	-1.42
BH4	Standpipe Piezometer	10	Rix's Creek south of Pit 3- Regolith	+1.67
BH5	Standpipe Piezometer	66.5	East of Rix's Creek / tailings emplacement area- Lower Barrett	+7.64
20BL170864	Production bore	~70	Above underground Workings- All coal seams	+18.18
BH7	Standpipe Piezometer	200.5	Bottom of basin- Hebden	+1.93
BH8	Standpipe Piezometer	20	Dead Man's Creek wet of coal outcrop – regolith	+0.61

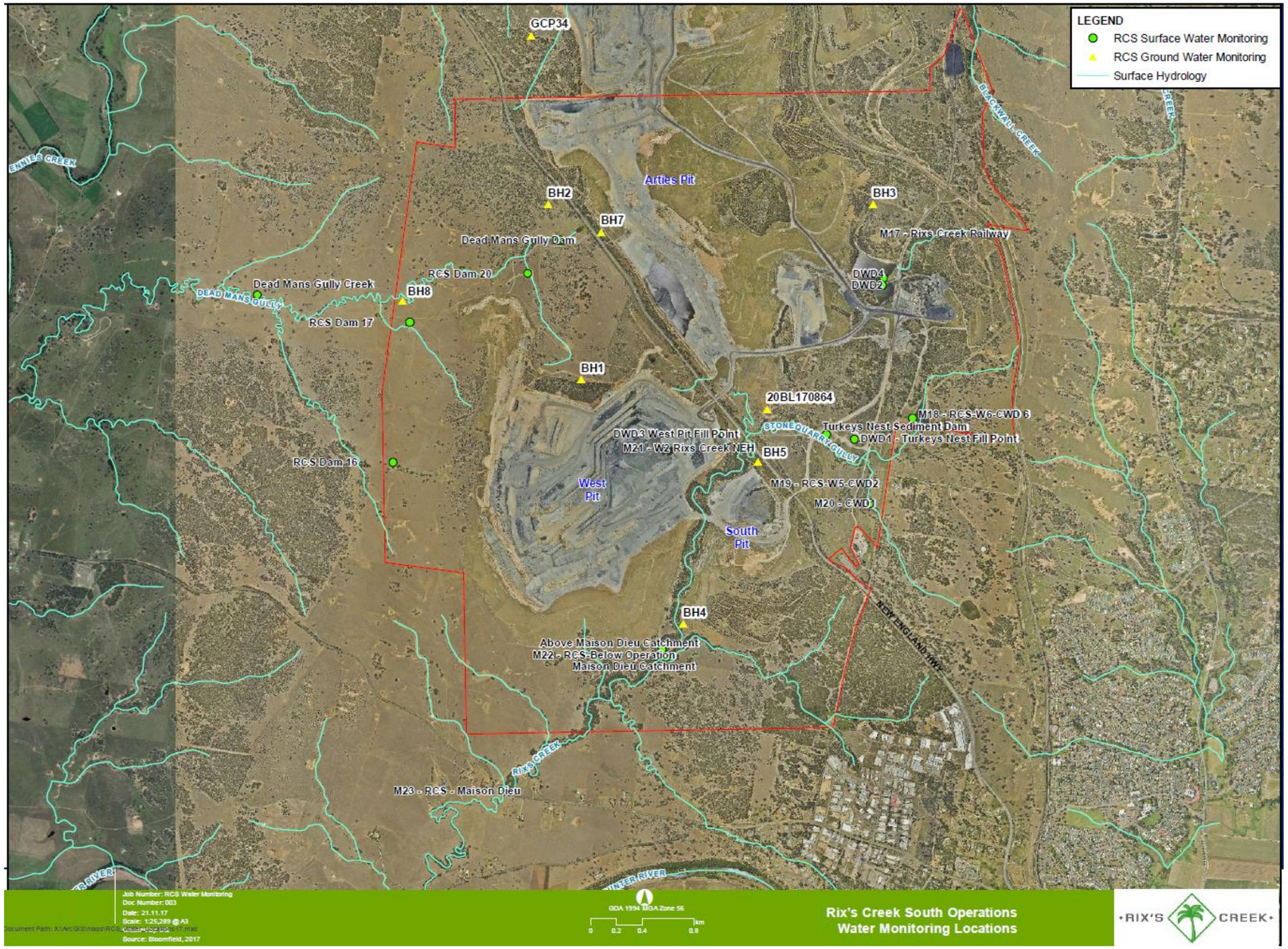


Figure 22. Rix's Creek South Groundwater and Surface Water Monitoring sites

Pit Inflows- RCS

Groundwater inflow for the Rixs Creek South (RCS) Mine is licenced for 305ML/year.

The 2014 groundwater model predicted the 2020 RCS annual groundwater inflow at 100ML/year, with the annual groundwater inflow during 2020 estimated at 85 ML.

Rix's Creek South Groundwater Quality

During 2020, salinity in the coal seam (BH5) ranged between 5,510 -6,610 mg/L.

A replacement bore for BH2 that installed during July 2015 (BH7) was dry during 2020.

Salinity within BH3 and BH4 ranged from 5,530 – 19,850mg/L which is consistent with the parameters outlined in the Rix's Creek South Water Management Plan.

Salinity levels are relatively consistent in the coal seams and the regolith which indicates limited connectivity (and mixing) between the two aquifer zones.

No negative water quality trends are being driven from mining operations in the area which is consistent with the hydrogeological conceptualisation and impact assessment predictions.

Alluvium - RCN

From the 2009 Environmental Assessment, the model indicated that groundwater within alluvial aquifers associated with Glennie's Creek and Station Creek had the potential to be marginally to negligibly affected by the proposed pit during its active mining phase, with drawdowns ranging up to 1.2m near the Mine Area until the pit excavation was completed.

As shown in Table 26 results up to the end of 2020 show the alluvium water levels have been relatively consistent with some variation induced by rainfall, evaporation and natural creek flow process.

Alluvial groundwater level monitoring indicated no response to mining outside of the influences of normal climatic variability in proximity to drawdown associated with the Falbrook Open Cut in the Glennies Creek catchment, or the Camberwell Open Cut in the Glennies Creek and Station Creek catchments.

Dewatering of the neighboring/underlying coal seams and broad depressurisation of the Permian basement has not resulted in water level impacts within the creek alluvium system. The results are presented in **Appendix 2**.

Table 15 Rix's Creek North Ground Water Monitoring Network

Bore ID	Type	Total Depth (mbgl)	Formation	Change in Water Levels during 2020 (m)
GCP09	OSP	9	Glennie's Creek Alluvium	-0.06
GCP10	OSP	11.5	Glennie's Creek Alluvium	0.0
GCP19	OSP	12	Glennie's Creek Alluvium	-0.07
GCP20	OSP	8.2	Glennie's Creek Alluvium	n/a
GCP21	OSP	8.2	Glennie's Creek Alluvium	0.0
GCP22	OSP	12	Glennie's Creek Alluvium	-0.08
GCP23	OSP	8	Glennie's Creek Alluvium	-0.07
GCP28	OSP	12	Glennie's Creek Alluvium	+0.01
GCP29	OSP	10	Glennie's Creek Alluvium	n/a
GCP30	OSP	12	Glennie's Creek Alluvium	+0.03
GCP32	OSP	55.56	Camberwell Pit Basement	-0.09

Bore ID	Type	Total Depth (mbgl)	Formation	Change in Water Levels during 2020 (m)
GCP34	OSP	56.26	Camberwell Pit Basement	n/a
GCP36	OSP	15.98	Camberwell Pit Basement	-0.03
GCP38	OSP	24.31	Camberwell Pit Basement	+0.17
GCP02	OSP	105	Falbrook pit Basement	+0.9
GCP05	OSP	108	Falbrook pit Basement	-2.31
GCP06	OSP	126	Falbrook pit Basement	-0.05
GCP07	OSP	120	Falbrook pit Basement	-3.03
GCP08	OSP	120	Falbrook pit Basement	+1.61
GCP13	OSP	66	Falbrook pit Basement	-2.05
GCP14	OSP	123	Falbrook pit Basement	-7.54
GCTB	OSP	90	Falbrook pit Basement	+0.25

The results for groundwater analysis, including range, mean and standard deviation are presented in **Appendix 2**.

Basement

As shown in **Appendix 2** the basement monitoring data to the end of the 2020 reporting period indicated;

- Recovery of GCP7, 8, 13 and 14 during 2017 associated with water storage in the Falbrook Pit, followed by a decline in water levels within GCP7, 8, 13, 14, 27 and GCP32 in and after October 2017, along with normal climatic variability for the remaining piezometers within the Falbrook Open Cut; and
- All other basement bores at RCN continued to maintain relatively constant water levels associated with regional depressurisation influences.

Pit Inflows - RCN

Groundwater inflow for the Rixs Creek North (RCN) Mine is licenced for 200ML/year.

The potential proposed RCN pit groundwater inflows from the 2009 ground water environmental assessment predicted that full pit ground water inflows of 73 ML/year in 2014 and 117ML/year from 2019 from West Pit Operations. At the North Pit Operations, Pit inflows for year 6 operations were estimated at 16.1ML. The 2020 annual groundwater inflow is estimated at 120 ML at Rix's Creek North operations.

TD2 Dam

Monitoring wells B1 to B6 monitor the groundwater pressure within the TD2 dam wall, which is driven by the water stored in the dam, and is separate from the underlying regional groundwater system.

The results recorded in each piezometer were relatively stable throughout the 2020 (and previous) reporting periods.

Bores 4, 5 and 6 have been dry since December 2015.

Rix's Creek North Groundwater Levels

Piezometers, bores and private wells included in the 2020 Rix's Creek Mine Groundwater Monitoring Plan include the Foybrook Formation basement coal measures as well as the Glennie's Creek and Station Creek alluvium groups.

Due to the complex interactive depressurisation effects of numerous coal mines on steady state groundwater levels within the model area, calibration of the 2017 groundwater model was focused on obtaining correlation

between known and modelled mine inflow rates, as opposed to matching observed and modelled groundwater levels.

The Rix's Creek North groundwater monitoring program with the results are presented in **Appendix 2**.

Piezometers GCP32 – GCP37 recorded partial data. Richards Bore was not monitored during 2020 as its monitoring has shifted to the underground operations and GCP20 was dry throughout 2020.

Rix's Creek North Groundwater Quality

The pH and salinity in the Glennie's Creek alluvial open standpipe piezometers have not shown any significant trend since they were installed in 2007, except for a reducing salinity profile in GCP30 between mid-2009 and early 2011.

The pH and salinity in the Camberwell basement open standpipe piezometers have not shown any significant trends since they were installed after mid-2007.

The pH and salinity in the Falbrook Open Cut basement open standpipe piezometers has not shown any significant trends since they were installed in 2012 except for a fall in salinity in GCP14 in mid-2016 to late 2017, and GCP08 in early 2018, both of which are north of the Falbrook Pit and may be influenced by fresher stored water within the Falbrook pit void.

GCP7 and GCP8 salinity rose after late July then fell and rose again in 2020.

The 2020 monitored electrical conductivity and pH have not varied above the 2017 WMP trigger levels of >15% variation from the average 2003 – 2016 salinity baseline data, or >0.5 pH.

The results for groundwater analysis, including range, mean and standard deviation are presented in **Appendix 2.**

7.5 Erosion and Sediment

7.5.1 Environmental Management

Erosion and sedimentation control is an integral part of the water management across the entire site. Erosion control on reshaped and rehabilitation areas is achieved by having the minimum delay in time and area between the active mining operation and establishing rehabilitation. Contour embankments are integral design components of final landform design and shaping procedures, these structures direct flows of water into relevant catchment facilities.

Revegetation of rehabilitation areas is undertaken as soon as an area becomes available with the aim to establishing a minimum of 70% ground cover, the level required to adequately control soil erosion. Accompanied with this is the use of sediment detention basins in front of the operation, along haulage roads and on drainage lines flowing from establishing rehabilitation areas.

Throughout 2020 sediment dams across site were de-silted whilst climatic conditions were dry allowing adequate access and works to take place. This required the use of a 20 tonne excavator accompanied by a 12 tonne tipper truck. Several other smaller sediment dams and drainage lines were also cleaned via an on-site backhoe as required throughout the year. These sediment dams contain the same material as that excavated from the open cut operation as well as clays, soil and silt from the surrounding environment.

Monthly sediment and erosion checklists were completed at Rix's Creek South and Rix's Creek North mine, with routine repairs to sediment fences being completed during the reporting period.

7.5.2 Environmental Performance

Total Suspended Solids (TSS) results from water sampling is used as a key indicator of sediment control. TSS results are discussed in Section 7.3 Surface Water environmental performance section.

7.5.3 Reportable Incidents

No reportable incidents relating to erosion and sediment occurred during the 2020 reporting period.

7.5.4 Further Improvements

Any sediment collected within the light-vehicle wash-down pad, heavy-vehicle wash-down pad, diesel fill-point sump, electrical workshop sump, mechanical workshop sump are all cleaned regularly with the sediment particles relocated to the site bioremediation areas in accordance with the Bioremediation Procedure.

SECTION 8 REHABILITATION

8.1 Buildings

Maintenance of structures is undertaken on as needs basis throughout the year. Throughout 2020 infrastructure sheds and structures were painted as necessary. The preferred colour scheme is light green (known as rivergum green) with this same colour utilised on the colorbond fencing installed adjacent to the bridge of the cut and cover tunnel as well as major infrastructure across the site. Rix's Creek North infrastructure will remain the non-intrusive beige colour.

8.2 Post Landform Land Use

Land capability at Rix's Creek Mine is predominantly Class IV and Class V which is suitable for grazing. The primary post mining land use goal is to provide improved pasture species with scattered tree lots and tree corridors linking surrounding rehabilitated areas, proposed tree planting corridors and surrounding existing native vegetation. The overburden emplacement areas are designed to be sympathetic to the surrounding landscape.

For Rix's Creek Northern operations, trees over pasture will be established over the Falbrook Pit (formerly referred to as Old North Pit) waste emplacement to link the rehabilitation of the Falbrook Pit with the rehabilitation of the Camberwell Pit (formerly referred to as extended South Pit) final landform. It is anticipated that this will provide a north-south link across the RCN project Area, which will link the Biodiversity Offset Areas that join the Falbrook Pit.

The progressive rehabilitation when compared to the respective Mining Operations Plans is referred in Table 28.

8.3 Resources Regulator Signoff on Rehabilitation

In 2020 no areas of rehabilitation received formal sign-off from Resources Regulator that the land use objectives and completion criteria have been met.

8.4 Rehabilitation Performance during the Reporting Period

The aim of rehabilitation at Rix's Creek Mine is to reinstate the pre-mining land capability of grazing land, with stable landforms, compatible with the surrounding landscape, and allow for a range of possible post-mining land-uses such as agricultural lots. Rix's Creek Mine have established grazing on mine rehabilitated land in the West Pit and Camberwell Pit operations. Local community residents agist these rehabilitated areas, with rehabilitation monitoring being completed to determine the long term viability of grazing on rehabilitated land.

As defined in the Rix's Creek South Rehabilitation Strategy 2020, the rehabilitation objectives for final landform and landscape for the site are:

General

- Land will be rehabilitated in accordance with the approved relevant RR standards applicable at the time of rehabilitation.
- Rehabilitated land will represent a minimal source of offsite environmental impacts, such as dust, water pollution, visual amenity, weeds and odour.
- Rehabilitated land will require ongoing management inputs no greater than similar adjacent land.
- Rehabilitation will be compatible with the proposed post-mining land-use.

Landform

- Rehabilitated land will be safe and stable.
- Land and soil capability comparable to that pre-mining.

- Mined land will be re-contoured to a landform compatible with the surrounding natural landscape.
- Reinstatement of a stable drainage network.

Growing media

- A sustainable vegetation cover will be established on rehabilitated land (soils).

Vegetation

- Rehabilitated land will be topsoiled, fertilised and sown with grass and/or native vegetation species.
- A sustainable vegetation cover will be established on rehabilitated land.
- Grazing areas will be established with a range of species suitable for pasture production in the area.
- Tree area will be established with native species by either direct seeding or tubestock planting techniques.

Infrastructure which has no use post mining

- All infrastructure, including roads, will be removed and rehabilitated unless RR agrees otherwise.
- Footings are only required to be removed to the existing ground level only, covered with a minimum of 0.5 metres of fill and rehabilitated.
- Electricity supply infrastructure (overhead lines, poles, substations, etc.) will be removed unless RR agrees otherwise.

During the reporting period a total of 8.9 ha was rehabilitated across Rix's Creek Mine. A further breakdown of this can be seen in Table 27.

Table 27 2019 Rehabilitation Summary RCM

Locator	Site Name	Type	Date Sown	Species mix	Area (ha)
Arties Pit	Pin Dump	Pasture	October	Pasture #1	2.7
West Pit	West Pit South Batter	Pasture	November	Pasture #1	2.4
West Pit	Old North Pit Void	Pasture	December	Pasture #1	3.8
TOTAL 2020 @ RCM					
CUMULATIVE TOTAL INCLUDING 2020 @ RCM					**8.9**

Arties Pit Pin Dump

The Arties Pit Pin dump site was rehabilitated in October 2020 totalling 2.7 ha. This area was direct seeded via a tractor using pasture species (Pasture mix #1).

The area was created using overburden from the Arties Pit operation then clay and subsoil (300-500 mm thick) from the Arties Pit pre-strip ("Re-Strip" see below comments) was shaped onto a 6-8 degree slope. This slope was overlaid with approximately 100 mm of topsoil from the Arties Pit topsoil re-strip. A D6 Dozer constructed 1% contours from the spoil material and covered the contours with topsoil material. Prior to seeding, the area was spread with biosolids at a rate of 100 tonnes / hectare and ripped into the soil with a tractor. The rip lines were created across the contour to minimise erosion from surface run-off. This area creates good undulation to the Arties Pit dump which has a more natural aesthetic for passing road-users.

The material used in the construction has no relevant chemical characteristics, acid forming or spontaneous combustion potential. During the seeding process a starter fertiliser was spread at a rate of 200 kg/ha. Since the post mining land use for this rehabilitation will be grazing, greater emphasis has

been placed on the removal of small to moderate rocks. The contours that were created have been formed so that four wheel drives can drive over the contours.

Old North Pit Void

The Arties Pit Old North Pit rehabilitation site was rehabilitated in November 2020 totalling 3.8 ha. This area was direct seeded via a tractor using pasture species (Pasture mix #1).

The area was created using overburden from the Arties Pit operation then clay and subsoil (300-500 mm thick) from the Camberwell South West pre-strip was shaped onto a 6-8 degree slope. This slope was overlaid with approximately 100 mm of topsoil from the South Pit Topsoil area. Prior to seeding the area was spread with biosolids at a rate of 100 tonnes / hectare and ripped into the soil with a tractor. The rip lines were created across the contour to minimise erosion from surface run-off. This area creates good undulation to the Arties Pit dump which has a more natural aesthetic for passing road-users.

The material used in the construction has no relevant chemical characteristics, acid forming or spontaneous combustion potential. During the seeding process a starter fertiliser was spread at a rate of 200 kg/ha. Since the post mining land use for this rehabilitation will be grazing, greater emphasis has been placed on the removal of small to moderate rocks. The contours that were created have been formed so that four wheel drives can drive over the contours.

West Pit South Batter

The West Pit South Batter rehabilitation was commenced in November 2020, where 2.4 ha was completed of the shaped area. This area was direct seeded via a tractor using pasture species (Pasture mix #1).

The area was created using overburden from the West Pit operation then clay and subsoil (300-500 mm thick) from the West Pit pre-strip was shaped onto a 10 degree slope. This slope was overlaid with approximately 100 mm of topsoil from the West Pit pre-strip area. A D6 Dozer constructed contours at 0.8% grade that ensure the water runs to the sediment dam at the base of the rehabilitated area. Prior to seeding the area was spread with biosolids at a rate of 80 tonnes / hectare and ripped into the soil with a tractor. The rip lines were created across the contour to minimise erosion from surface run-off. This area creates good undulation to the West Pit South batter which has a more natural aesthetic for passing road-users.

The material used in the construction has no relevant chemical characteristics, acid forming or spontaneous combustion potential. During the seeding process a starter fertiliser was spread at a rate of 200 kg/ha. Early indications also show some weed (Galenia) which will be monitored and managed accordingly. This area is designated as pasture therefore more emphasis was placed on rock raking and removing timber during the preparation of the site.

As shown in Table 28, 8.9 ha was rehabilitated in 2020 at RCM giving RCM a cumulative area rehabilitated of 702.5 ha since commencement of mining. In 2020 Rix's Creek South operations focused on completing the rehabilitation of the Old North Pit Void, West Pit South, and the Pin Dump in the Arties Pit.

During the 2020 period, in accordance with the SSD 6300 staged plans and 2020 MOP, the Arties Pit area was de-habilitated and additional dumping of overburden material was undertaken. 38.4ha of the Arties Pit area was de-habilitated during 2020. The Arties Pit area was re-striped, with the topsoil and subsoil material being stockpiled for future rehabilitation of the area. The 2020 MOP has factored the de-habitation into the proposed rehabilitation schedule for the 2020 MOP period. The actual rehabilitation that was completed during 2020 was 8.9 hectares. Further de-habitation in the Arties Pit is expected in 2021.

During the 2020 period an infrastructure area was placed over topsoil and subsoil stockpiles at the Dulwich block in Camberwell Pit. Due to the topsoil and subsoil stockpile increase there was an increase to the infrastructure area of 6.3 ha compared to the 2020 RCM MOP. Topsoil and subsoil stockpiles have been prioritised during the 2020 period. The long-term stockpiles were shaped via a dozer to a nominal three metre height and seeded with a cover crop to stabilise the topsoil stockpiles long-term.

There are two Tailings Emplacement Areas at Rix's Creek Mine that are currently being capped with overburden material. Due to the slow nature of the capping process, this has taken longer than anticipated, therefore 85.7ha remains as tailing emplacement area compared to the 2020 MOP Emplacement Area 84.2ha.

Rehabilitation will be focused on the Arties Pit for the 2021 period with bulk shaping to be undertaken in early 2021. Figure 23 has the rehabilitation as per the MOP commitments that's planned to be completed during the 2021 period.

The proposed 2021 MOP has additional rehabilitation to be completed in the Camberwell Pit RL 150. In February 2021 a modification was approved by DPIE that will enable additional dump room and micro relief on the Camberwell Pit RL150 area. A MOP amendment will be submitted reflecting the Modification 9 inclusion and this will remove the proposed Camberwell Pit RL150 rehabilitation requirement for the 2021 period.

Table 28 RCM Rehabilitation and Disturbance Areas (ha) compared to MOP

Domain / Phase	2020 RCM MOP	2020 Actual RCM	2021 RCM MOP
Infrastructure Area	207.6	213.9	206.5
Tailing's Emplacement Area –RCM	84.2	85.7	80.3
Active Mining Area RCM	232.8	225.4	173.5
Overburden Emplacement Area -RCM	675.1	710.8	731.9
Rehabilitated Lands – Pasture phase – Ecosystem and land use establishment	-8.2	8.9	35.9
Rehabilitated Lands – Pasture; Ecosystem and Land use Sustainability	174	125.7	222.8
Total Rehabilitation – Ecosystem and Land use Sustainability (incl. pre MOP rehabilitation)	689.8	702.5	701

Figure 22 outlines the progression of rehabilitation during the 2020 reporting period. All areas rehabilitated during 2020 across Rix's Creek Mine were treated with biosolids. The application of biosolids greatly enhances revegetation onsite given the poor quality of available topsoil. Biosolids organic properties also aid in water infiltration which leads to an improvement in soil composition and long-term vegetative growth. Figure 22 also shows the areas that were shaped to final landform but were not ameliorated and seeded during the reporting period due to availability issues with the biosoild spreader.

Based on the recommendations from a recent Resources Regulator Targeted Assessment Progam, an Agronomist was assigned to complete a review of the soil sampling parameters with the aim of providing advice on agronomic assessments of soil and plant growth. From the review, a standard analysis for soil has been recommended which will allow for better assessment and recommendation of any required ameliorants. Initial advice has been provided so that nutrient sampling can be compared through the phases of the rehabilitation program. This will form the basis for future soil assessments. The inclusion of dispersion testing and Emerson Aggregate testing will also be conducted in the 2021 rehabilitation monitoring assessment.

The results and advice to be included in updated MOP amendment A.

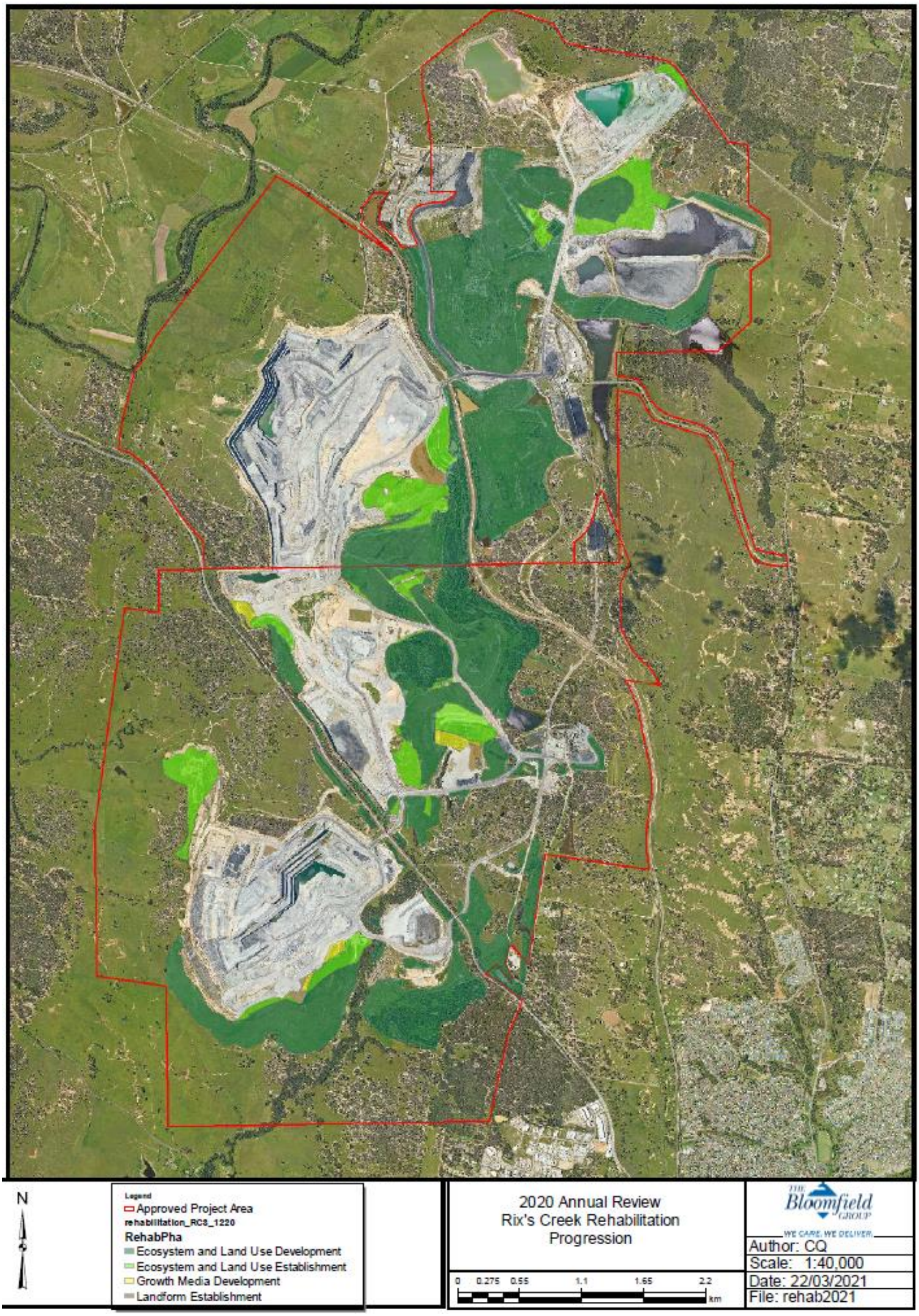


Figure 15 2020 Rix's Creek Mine Rehabilitation

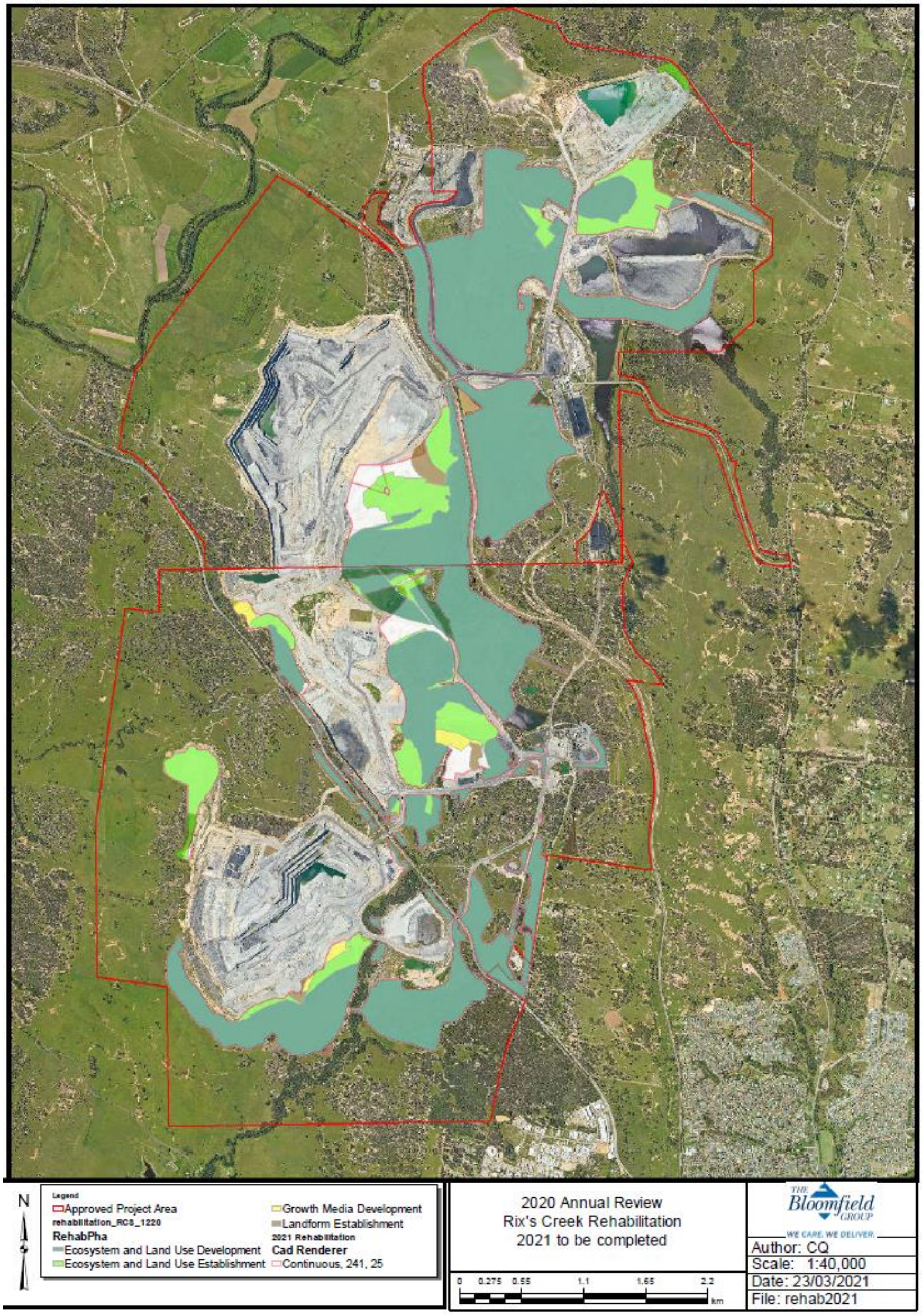


Figure 16 2021 Rehabilitation Areas

8.4 Other Infrastructure

Rix's Creek South Coal Handling Preparation Plant (CHPP) was upgraded with an acoustic cladding on the western and northern side. The colour of the cladding was river gum green.

8.5 Glennies and Station Creek Riparian Management

In accordance with the Rix's Creek North consent conditions a Glennies and Station Creek Riparian Monitoring and Management Program was developed on the 14/7/2020.

An annual weed survey and targeted weed management was completed along Glennies Creek Management Zones in July 2020. Section 8.6 has specific areas and weeds targeted along the Riparian Areas during the reporting period.

Along Glennies Creek, the riparian area has been fenced to exclude cattle. No crash grazing occurred along the Glennies Creek Riparian area during the reporting period.

Slashing in between the tubestock lines was completed on two occasions during the reporting period. No additional supplementary planting of tube stock was completed along the Riparian Area Management zones during 2020. Due to the above average rainfall good uptake of tubestock that were planted in previous years of Riparian Management was observed.

8.6 Weed and Pest Management

Ongoing weed control management programs are undertaken onsite each year. During 2020 many widespread areas were targeted to control Galenia, African Boxthorn, Mother of Millions, Prickly/Creeping/Tiger Pear, Blue Heliotrope, St. John's wart, Scotch/Saffron thistle, Coolatai grass, Cotton bush, Lantana, Castor Oil, Green Cestrum, Bitou bush, Pampas grass, African Olive and Western Australian Wattle (Acacia Saligna).

Green Cestrum within the Glennie's Creek riparian zone was targeted during November and December 2020. Coolatai Grass across the Rix's Creek Northern and Southern operations was the focus during July and September 2020. Targeted areas including the RCN rail infrastructure area, Martin's Creek Biodiversity area, Rix's Creek South rehabilitation. Assorted weeds and grasses surrounding site infrastructure and topsoil stockpiles were also controlled as required.

African Boxthorn, African Olive, Mother of Millions, Blue Heliotrope, St. John's wart, Lantana, Castor Oil, Bitou bush, Pampas grass, African Olive often occur in isolated outbreaks. During 2020 any identified occurrences of these species were identified, reported and managed as necessary. The Environmental component of the Bloomfield Group generic induction process explains to all new personal their responsibility to remain vigilant in identifying potential weed outbreaks and reporting any sightings to supervisors and/or a member of the Environment department.

During the 2020 reporting period a qualified pest control contractor sprayed amenities and infrastructure across site with odourless chemical to control insects.

The following weed species have been identified and treated on-site during 2020:-

- Blue Heliotrope, *Heliotropium amplexicaule* (non noxious - class 4 outside of Singleton LGA);
- Cotton bush, *Gomphocarpus fruticosus* (non noxious);
- Green Cestrum, *Cestrum parqui* (class 3);
- Bitou bush, *Chrysanthemoides monilifera* (non-noxious – class 3/4 out of Singleton LGA);
- Lantana, *Lantana* spp. (class 4);
- Noogoora burr, *Xanthium occidentale* (class 4); and
- African Olive, *Olea europaea subspecies Africana* (class 4).
- Mother-of-millions, *Bryophyllum* spp. (class 3);

- Galenia, *Galenia pubescens* (non noxious – class 4 Tamworth);
- Pampas grass, *Cortaderia* spp. (class 4);
- Prickly pear, *Cylindropuntia* spp. (class 4);
- Creeping pear, *Cylindropuntia* spp. (class 4);
- Tiger pear, *Cylindropuntia* spp. (class 4);
- African boxthorn, *Lycium ferocissimum* (class 4);
- St John's wort, *Hypericum perforatum* (class 4);
- Paterson's curse, *Echium plantaginuem* (class 4);
- Coolatai Grass, *Hyparrhenia hirta*, (class 4);
- Castor Oil, *Ricinus communis* (non noxious – class 4 Sydney area);

Weed management at RCM in 2020 is shown in Figure 24.

From the 6 May to 4 June 2020, a vertebrate pest management program was undertaken across site in consultation with Hunter Local Land Services and aligning with the Hunter Local Land Services Upper Hunter Autumn Wild Dog and Fox Pest Management Program.

The following methods were employed on site to target wild dogs and foxes:

- A total of 176 baits were presented at 44 stations with 9 takes being from Foxes and 20 takes from Wild Dogs based on animal sign left on the mounds and surrounding areas.

The uptake rate throughout this Autumn 2020 control program produced a percentage of 28%.This is a larger uptake of baits from the 17.5% uptake during the 2019 period.

All of the poisonous baits were consumed by foxes or wild dogs with no takes by any other species. No non-target species such as Goannas or Eagles were recorded as taking baits.

From February to April and October to December 2020, qualified open range shooters conducted a Kangaroo culling program across site. The shooting was undertaken during night time targeting Eastern Grey Kangaroo's (*Macropus giganteus*). Kangaroos were culled and tagged with tags supplied by National Parks and Wildlife Service (NPWS) in accordance with commercial and non commercial harvesting requirements.

Rixs Creek North & Rixs Creek South

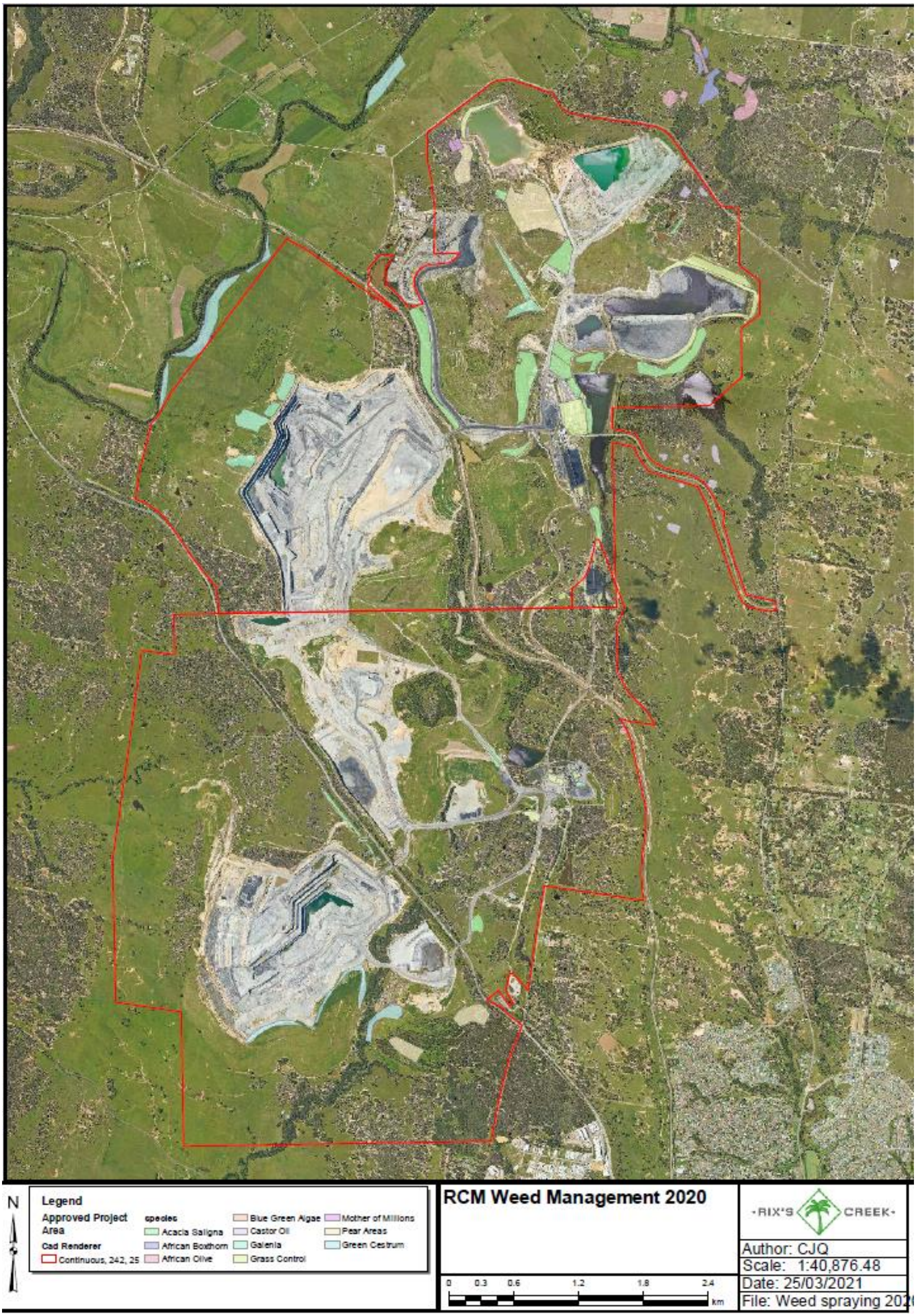


Figure 24. Weed Management Plan

8.6 Rehabilitation Trials and Research

In late 2018 a new trial commenced for monitoring the productivity of rehabilitated pasture through grazing. The aim of Rix's Creek Mines rehabilitation has been to support a productive and sustainable grazing land use post mining. The aim of the trial is to demonstrate that livestock enterprises conducted on rehabilitated pastures at Rixs Creek Mine are of comparable productivity to local district pasture land and are capable of grazing over the long term.

The methodology involves two rehabilitated pasture paddocks to be monitored, with identical monitoring of an adjoining natural pasture site which is grazed in a similar fashion will provide an analogue to which the rehabilitation sites can be compared. Monitoring and comparison with both district practice and cattle grazed on undisturbed natural pasture will provide a benchmark for comparison of productive capability.

Pasture and land condition can be compared to 'target criteria' and trigger points can be used to initiate adaptive and anticipated changes to grazing and management to suit seasonal conditions. Documentation and recording is needed to allow long term assessment over a number of seasonal conditions.

Pastures have been established on rehabilitated land on both Rix's Creek and Bloomfield. The aim is to support a productive and sustainable grazing land use.

Monitoring has been conducted to begin long term assessment of progress in achieving a long term sustainable agricultural land use of the rehabilitated land. Monitoring commenced at Rix's Creek in August 2020.

A report is currently being prepared for the 18 month period since the commencement of the trial. This will be reported in the 2021 Annual Review along with the rehabilitation monitoring.

Monitoring of the sites has included:

- Measurements of soil sustainability and productivity (and to determine soil amelioration and fertiliser requirements)
- Measurements and indicators of the health and productivity of vegetation/pasture growth on the land.
- Develop some key indicators of and best management practices for pastures on rehabilitated land.
- Provide recommendations for best management practices for future grazing.
- Provide a comparison of the grazing potential of the rehabilitated land and the adjacent analogue natural pasture site.

Soil sampling

Soil analyses of the paddocks to determine baseline soil health and fertility information have been conducted and will be monitored annually. From these results recommendations can be developed for soil fertiliser and /or soil ameliorants.

Topsoil samples have been collected and analysed by an accredited laboratory for essential plant nutrients including trace elements at both sites.

The analyses include:

- Soil pH, (acidity alkalinity)
- Electrical conductivity (EC)
- Major nutrient levels (N, P, K, S, Ca, Mg, Na, Cl)
- Important trace elements (for pasture and animal nutrition) e.g. Zn, Cu, Mn, Fe.
- Soil salinity and sodicity levels
- Organic Carbon levels.

Vegetation/Pasture Monitoring

Transects have been established across each paddock (both rehabilitated pastures and in analogue paddocks). These are permanent transects and sampling has been carried out along these transects.

At 10m intervals along the transects assessments of the following have been made:

- Ground cover (to determine soil stability and erosion risk)
- plant species recorded (eg. pasture species, season of growth and weed growth)
- determination of existence of long term perennial pastures or short term annuals
- Plant species identification and determination as either native or exotic.
- The diversity of the species is important for long term stability. Seasonal sampling will help determine the growth cycles of different species.

Ground Cover / Stability Assessments

Ground cover assessments provide a useful and practical tool in assessing the stability of the pastures and grazing management. Ground cover assessments have been conducted at each monitoring date using quadrat assessments along transects in each of the treatments.

Cattle Monitoring

Records of the number of cattle grazing are being collated to determine stocking overall productivity of the grazing cattle.

Estimates of weight gain and production (using sale weights where available) will provide an indication of production levels which can be compared to district averages. Drought conditions have made cattle data collection difficult due to forced sale and removal of some cattle. Comparisons with the district are also difficult due to the variations in conditions across the district and drought feeding on many farms. Cattle on the monitored paddocks have not been supplementary fed.

Weed Presence

The presence of weeds are noted in the pasture composition monitoring. Additional significant weed sightings outside the transects are also noted and reported. Seasonal weed occurrences have been noticeable and very dependent on pasture vigour and ground cover.

In 2020 a biomix trial was established at the Old North Pit Void rehabilitation site. Biomix is an organic soil amendment made from composting a targeted blend of Biosolids and Recycled Paper Crumble material. The resulting compost is a nutrient rich organic soil amendment which is ready for direct application to land.

The biomix was applied via spreader at a rate of 110 tonnes per hectare to a 5 hectare plot. Biosolids was applied on an adjacement 5 ha plot at a rate of 110 tonnes per hectare. The aim is to determine the suitability of the biomix as a soil amendment as well as to compare pasture productivity between the biomix and biosolid trial areas.

8.7 Rehabilitation Monitoring

Rehabilitation monitoring was conducted by an independent Consultant during November 2019. Rehabilitation monitoring occurs on a Bi-annual basis and will be completed in 2021.

8.8 Key Issues that may Affect Rehabilitation

Due to the increased rainfall during 2020, weed infestation remains the major challenge that has the potential to affect rehabilitation performance across the site, particularly with widespread occurrence and locally severe

infestations of Galenia (*Galenia pubescens*), and more localised incursions of Prickly Pear (*Opuntia spp*.), Coolatai grass (*Hyperhenia hirta*) and Western Australian Wattle (*Acacia Saligna*). Efforts have been increased to remove Acacia Saligna from previously rehabilitated areas, with secondary weed spraying conducted on areas where Acacia Saligna has been removed to prevent re-occurrence of the species. Weed management will be a priority in 2021 to ensure that we reduce the amount of invasive species that have the ability to affect rehabilitation at Rix's Creek Mine.

Soil analysis has been undertaken during the 2020 period which quantifies what soil amendments will be required for planned rehabilitation in 2021. Due to the sodic and dispersible nature of some subsoil and top soils, additional gypsum will be incorporated to planned rehabilited areas in 2021. Rix's Creek Mine will continue to work with Agronomists to ensure that the soil amendments added to topsoil and subsoil aid in improvements to rehabilitation practices onsite.

8.9 Rehabilitation Status

RCM as follows:

Mine Area Type	Previous Reporting Period (Actual) RCN*	Previous Reporting Period (Actual) RCS*	This Reporting Period (Actual)	Next Reporting Period (Forecast) combined RCM MOP
	Year 2019 (ha)	Year 2019 (ha)	Year 2020	Year 2021 (ha)
Mining Lease	1917	1823.3	5303.6**	5303.6
Total active disturbance	620.1	433.3	1235.8	1192.2
Land being prepared for rehabilitation	9.8	16.2	11.4	27
Land under active rehabilitation	3.4	13.4	8.9	35.9
Completed rehabilitation	422.9	449.7	837.1	899.7

**Previous MOPs separated for RCN and RCS operations.*
*** Inclusion of New Mining Lease 1803 added to existing mining leases in 2020.*

SECTION 9 COMMUNITY

9.1 Community Engagement.

Rix's Creek is required under the development consent to participate and co-operate with a Community Consultative Committee (CCC). The committee consists of community representatives and is chaired by Council and other Government representatives are invited to participate on the committee. Rix's Creek was the first mine in the Hunter Valley to have a CCC which has operated for 30 years.

The Committee representatives are:-

Independent Chairperson:-	Lisa Andrews
Community representatives:-	Councillor Sarah Lukeman
	Reg Eveleigh
	Patricia Bestic
	Michelle Higgins
	Deidre Olofsson
	David Moran
	Greg Hall
Company representatives:-	
	Chief Development Officer - Geoff Moore
	Chief Operations Officer – Luke Murray
	Operations Manager - Brendon Clements
	Communications Manager - Damien Butler
	Environment Manager – Chris Knight
	Environmental Advisor – Chris Quinn
	Environmental Officer – David Holmes

The Committee met three times during the year.

On the 12h February 2020, an extraordinary meeting was convened to provide a briefing to the committee of SSD 6300 – Continuation of Mining Project Approval and to discuss other general business.

On the 27th May 2020, the CCC meeting was held to discuss the 2019 Annual Review which had been circulated to members.

This meeting also discussed extensive general business such as the new Koala habitat protection guidelines and that the Singleton Argus and other local newspapers had ceased printing. An update of MOD9, outlining some areas of public concern and explaining the requirement for these changes.

On the 21st October 2020. A half yearly overview of the Environmental Performance was provided for Rix's Creek. At this meeting, Community Complaints and Responses were outlined and discussed by the Environmental Manager and Advisor, both replying to any questions raised.

A copy of the Rix's Creek Mine Community Consultative Committee meeting minutes can be found at https://www.bloomcoll.com.au/sustainability/environmental-management/rixs-creek-assessments/ccc-minutes

Additional community consultation that was conducted during the reporting period included company newsletters which informed community members on updates to Rix's Creek operations, which included:

- The Rix's Creek – Modification 9 Community Newsletter dated May 2020.

- The Rix's Creek Community Newsletter No.8 dated July 2020.
- A number of advertisements in local newspapers such as the Singleton Argus and Coalface.

Notifications on kangaroo culling and 1080 wild dog and fox baiting were also distributed to near neighbours during the reporting period.

Internal employee newsletters were also distributed throughout the workforce that provided updates for environmental initiatives occurring onsite.

The Environmental Department and Property Manager maintained a continued active presence within the local community providing updates and information on Rix's Creek operations to community members.

The Company is a financial member of the Hunter Coal Environmental Group (HCEG).

The Company is a financial member of the Hunter Valley Combined Wild Dog Association (HVCWDA) Incorporation.

The company is also part of the Upper Hunter Mining Dialogue (UHMD) in association with the NSW Minerals Council (NSWMC) which brings industry, community, and key stakeholder groups together across various projects and goals relating to:-

- Land Management
- Social Impacts and Infrastructure
- Water
- Emissions and Health

The Bloomfield Group UHMD representatives are:-

Steering Committee:-	Chief Development Officer – Geoff Moore
UHMD Industry Working Group	Environment Manager – Chris Knight
	Environmental Advisor – Chris Quinn

9.2 Community Contributions.

In 2020, the company provided support to over 30 charitable groups and to more than 10 local community groups.

In particular, in the Singleton community over the last 12 months, the company has contributed to:

- Newcastle & Hunter Combined Schools ANZAC Singleton Service
- Salvation Army – Singleton Corp – supporting local initiatives
- Singleton Business Chamber - Hunter Coal Festival 2020 (rolled over to 2021)
- Singleton Business Chamber - Business Excellence Awards
- Singleton Family Support Scheme - Kids in Sport Scholarship Pilot
- Singleton Hospital – upgrade of all lighting at Singleton Hospital to LED lighting
- Singleton Hospital – funding equipment for Emergency, Maternity, Operating Theatre, and Ambulatory Care departments
- Singleton Legacy – local recipients
- Singleton Men's Shed - Enclosing outside area small shed
- Singleton Neighbourhood Centre – wages for Open Door Project Worker
- Singleton Netball Association - Junior Umpire Development Program
- The Samaritans – Singleton Christmas Lunch
- Upper Hunter NAIDOC Week Awards 2020 - Muswellbrook/Singleton

In response to COVID-19, the Company also donated supplies of face masks and hand sanitiser to a

number of charities operating in the Hunter including Lifeline, Youth off the Streets, and Carries Place.

With most events being cancelled in 2020 due to COVID, the Company also re-directed its funds budgeted for end-of-year employee Christmas events, to charities. Employees were invited to fundraise for charities of their choice and to apply to the Company to also make donations to their selected charities. This special joint initiative of employees and the company resulted in $50,000 being fundraised and donated to charities at the end of 2020.

9.3 Community Complaints.

All complaints received are registered and investigated. All complaints are referred to the Operations Manager and or Environmental Manager and are dealt with on an individual basis. The Company standard is to personally deal with every complainant to find a resolution to the stakeholders concerns.

In 2015 The Bloomfield Group purchased the previous Integra Vale Open Cut and has combined the complaints received for both the North and South sites since 2016. It is noted a sharp increase in complaints during 2016 which has been significantly reduced over the past few years from the level recorded in 2016. Continued efforts with noise management has seen a significant reduction in noise complaints over the period. (Figure 32).

During 2020 there were twenty-four (24) complaints received. This is a slight increase from 2019, where eighteen (18) complaints were recorded. No complaints were received in the months January, February, March or December.

Of the twenty-four (24) complaints received in 2020, fifteen (15) related to noise, four (4)related to dust, four (4)related to blasting and one (1) related to a lighting complaint. Of the fifteen (15) noise complaints. Eleven (11) was from one complainant and two from NSW EPA.

Refer to **Appendix 3** for the Rix's Creek Mine Community Complaints Register.

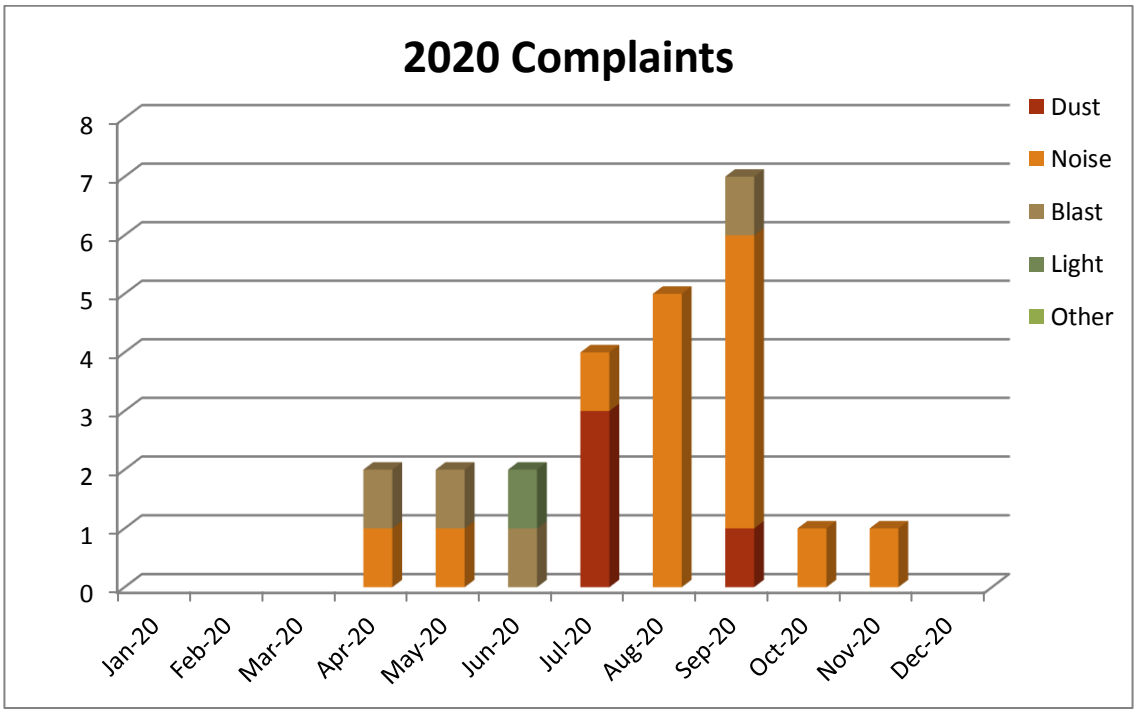


Figure 32. RCM Complaints Summary 2020

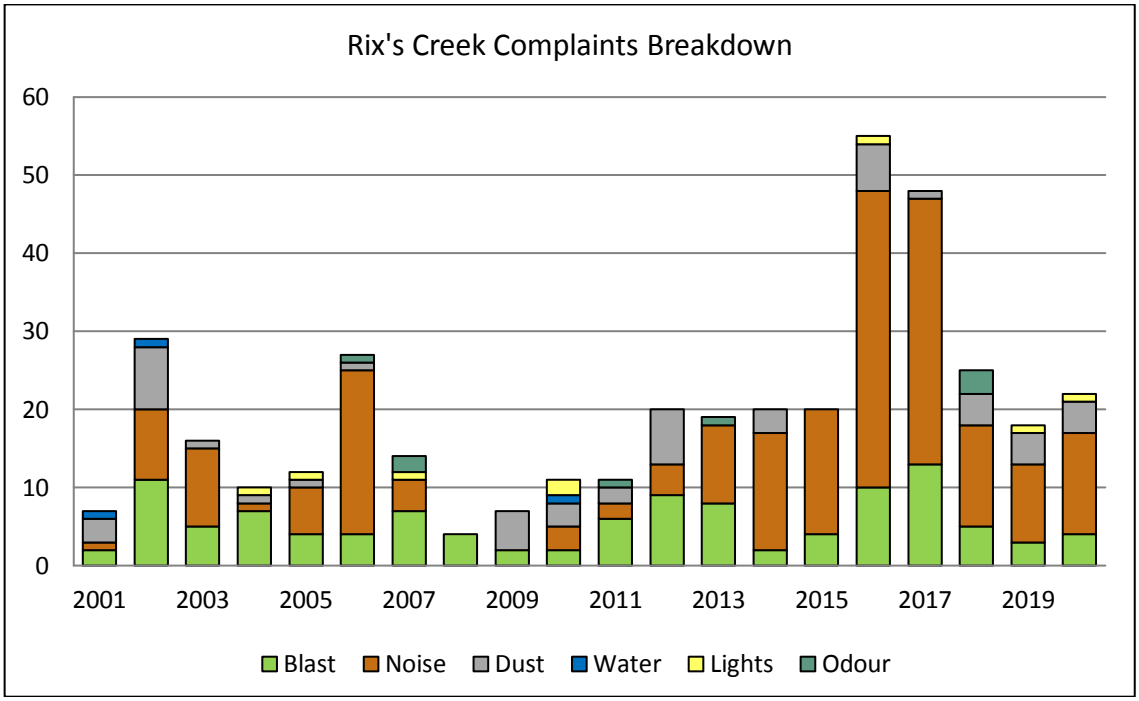


Figure 33 Summary of Rix's Creek Complaints 2001-2020

SECTION 10 – INDEPENDENT AUDIT

During 2020 an independent audit covering Rix's Creek North Project Approval (08_0102), Rix's Creek South SSD 6300, EPL 3391 and associated mining leases were independently audited by DPIE approved consultants GHD.

10.1 Development Consent

A summary of the compliance assessment against Rix's Creek Mine Development Consents is included below.

The Independent Audit Reports can also be viewed on the website https://www.bloomcoll.com.au/sustainability/environmental-management/rixs-creek assessments/independent-review

Rix's Creek North Project Approval (PA 08_0102)

The status of proposed actions from the Rix's Creek North Independent Environmental Audit are presented in **Table 32**. Actions that are ongoing, required no action or were completed prior to this Annual Review have been excluded.

Rix's Creek South Development Application (DA49/94)

The status of proposed actions from the Rix's Creek South Independent Environmental Audit are presented in **Table 33**. Actions that are ongoing, required no action or were completed prior to this Annual Review have been excluded.

Table 16 RCN Audit Response to Auditors Recommendations

2020 Rix's Creek North Mine Independent Environmental Audit Response to Auditors Corrective Actions-2020 AR Update

Number	Condition	Auditors Recommendation	Bloomfield's Response	Updated Actions
1	Environmental Performance	Store chemicals and fuels in accordance with the WHS Regulations.	The Rix's Creek North Independent Environmental Audit was undertaken to facilitate the requirements of the Environmental Planning and Assessment Act 1997. While chemicals and fuels are stored generally in accordance with the required Australian Standards the audit was not a WHS audit under the Coal Mine Health and Safety Act. A review of all chemical and fuel storage areas will be undertaken with the results reported in the next Annual Review to be submitted prior to 31/3/2021.	Review undertaken. Recent additional infrastructure now indudes a dedicated fit for purpose IBC storage area an a double skinned waste oil trans tank.
2	Schedule 3, Condition 36	Update RCM Water Management Plan to address all requirements of Schedule 3, Condition 36.	Update Water Management Plan in accordance with Schedule 5 Condition 5 of PA 08_0102.	Water Management Plan was updated and submitted and approved noting update for IEA (ver 2.6). Approved 15/3/2021
3	Schedule 5, Condition 2	Update Biodiversity Management Plan to include reference to the procedures for management of incidents, complaints, exceedances and non-compliances in the Environmental Management Strategy.	Update Biodiversity Management Plan in accordance with Schedule 5 Condition 5 of PA 08_0102.	The Biodiversity Management Plan will be updated following the results and recommendations of the Biodiversity Audit as required under Sch.3 Cond. 41.
4	EPL Condition M9.1	Update the Noise Management Plan nighttime monitoring period to comply with Condition L3.3 and M9.1.	Update Noise Management Plan in accordance with Schedule 5 Condition 5 of PA 08_0102.	TBA
5	EPL Condition R5.8	Ensure the 2020/21 Annual Water Quality Monitoring Report includes graphical presentation of results, rainfall data and a plan of the monitoring locations.	Include recommended information in the 2020 Annual Return (EPL) to be submitted by 2 June 2021.	This Report

TBA- To be actioned

2020 Rix's Creek North Mine Independent Environmental Audit Response to Auditors Recommendations -2020 AR Update

Number	Condition	Auditors Recommendation	Bloomfield's Response	Updated Actions
1	Environmental Performance	Decommission the mobile service trailer.	Bloomfield will decommission the mobile service trailer by 31/3/2021.	Service trailer decommissioned.
2	2017 audit findings SoC Conditions B2, B4 and B11	Update Land Disturbance Management Procedure to include protocols for topsoil stripping.	Update Land Disturbance Management Procedure (Internal) to include protocols for topsoil stripping by 31/3/2021.	Land Disturbance Management Procedure updated 8/2/2021. (Version 1.2).
3	Schedule 3, Condition 9	Acoustic consultant to recommend mitigation measures for equipment exceeding sound power limits.	Where attenuated equipment are identified to be greater than 3 dB over limit and no reason can be found (ie attenuation damaged) an acoustic consultant will be engaged to provide further information within 3 months of the receipt of the Annual Sound Power Testing if required.	Ongoing- reviewed after each Annual Sound Power Test. (TBA 2021).
4	Schedule 3, Condition 25	Provide a better website address in future letters to tenants to assist with locating the particulate matter monitoring data.	Direct link to information will be proviided in all future letters. It is noted that this information is openly available on the Bloomfield website and NSW EPA Upper Hunter Air Quality Monitoring Network.	Noted. As required
5	Schedule 3, Condition 48	Reinforce importance of waste segregation with operational personnel in workshop and stores.	Refresher waste training to be delivered across Rix's Creek Mine on waste management via toolbox talk to employees by 31/3/2021.	TBA
6	EPL Condition R5.8	Acoustic consultant to update monthly reports to reflect updated condition L3.7 referencing the Noise Policy for Industry (2017) in lieu of the Industrial Noise Policy.	Acoustic Consultant to reference NPfI 2017 going forward.	TBA

TBA- To be actioned

Table 17 RCS Audit Response to Auditors Recommendation.

2020 Rix's Creek South Mine Independent Environmental Audit Response to Auditors Corrective Actions-2020 AR Update

Number	Condition	Auditors Recommendation	Bloomfield's Response	Updated Actions
1	Environmental Performance	Store chemicals and fuels in accordance with the WHS Regulations.	The Rix's Creek South Independent Environmental Audit was undertaken to facilitate the requirements of the Environmental Planning and Assessment Act 1997. While chemicals and fuels are stored generally in accordance Sch.2 Condition B65 and the required Australian Standards the audit was not a WHS audit under the Coal Mine Health and Safety Act. A review of all chemical and fuel storage areas will be undertaken with the results reported in the next Annual Review to be submitted prior to 31/3/2021.	Review undertaken. Recent additional infrastructure now includes a dedicated fit for purpose IBC storage area an a double skinned waste oil trans tank.
2	Schedule 2, Condition B41	Update RCM Water Management Plan to address all requirements of Condition B41.	Update Water Management Plan in accordance with Schedule 2 Condition E5 of SSD 6300.	Water Management Plan was updated and submitted and approved noting update for IEA (ver 2.6). Approved 15/3/2021
3	Schedule 2, Condition B62	Ensure labelled receptacles are available and staff are adequately trained to allow for segregation of wastes from workshop and stores.	Update labelling across all receptacles. Refresher waste training to be delivered across Rix's Creek Mine on waste management via toolbox talk to employees by 31/3/2021.	TBA
4	EPL Condition M9.1	Update the Noise Management Plan nighttime monitoring period to comply with Condition L3.3 and M9.1.	Update Water Management Plan in accordance with Schedule 2 Condition E5 of SSD 6300.	TBA
5	EPL Condition R5.8	Ensure the 2020/21 Annual Water Quality Monitoring Report includes graphical presentation of results, rainfall data and a plan of the monitoring locations.	Include recommended information in the 2020 Annual Return (EPL) to be submitted by 2 June 2021.	TBA

TBA- To be actioned

2020 Rix's Creek South Mine Independent Environmental Audit Response to Auditors Recommendations- 2020 AR Update

Number	Condition	Auditors Recommendation	Bloomfield's Response	Updated Actions
1	Environmental Performance	Provide a dedicated bunded area for decanting that is separate to the oil and lubricant storage area.	Bloomfield will review the location to determine if the area is an appropriate decanting area in accordance with requirements by 31/3/2021. However it is noted that the identified area was undercover with an impervious floor with any surface runoff directed to an oil water separator. Since the onsite componment of the audit a fit for purpose oil IBC storage area has recently been comissioned at the RCS "connies" pad.	As noted above, additional infrastucture now available and in use.
2	Condition B4	Acoustic consultant to recommend mitigation measures for equipment exceeding sound power limits.	Where attenuated equipment are identified to be greater than 3 dB over limit and no reason can be found (ie attenuation damaged) an acoustic consultant will be engaged to provide further information within 3 months of the receipt of the Annual Sound Power Testing if required.	Ongoing- reviewed after each Annual Sound Power Test. (TBA 2021).
3	Schedule 2, Condition B24	Provide a better website address in future letters to tenants to assist with locating the particulate matter monitoring data.	Direct link to information will be provided in all future letters. It is noted that this information is openly available on the Bloomfield website and NSW EPA Upper Hunter Air Quality Monitoring Network.	Noted. As required
4	Schedule 2, Condition B62	Organise and maintain stored materials to prevent loss or damage.	Storage of spare parts to be reviewed and improved at the RCS workshop by 31 June 2021.	TBA
5	Schedule 2, Condition E4	Include in the Bushfire Management Plan a program to monitor fire breaks and fuel loads to determine when maintenance is required.	Noted. The Bushfire Management Plan already contains a requirement for annual maintenance of fire breaks or additionally as required. The Bushfire MP will be updated to further note fuel loads in accordance with Schedule 2 Condition E5 of SSD 6300.	TBA
6	EPL Condition L3.7	Acoustic consultant to update monthly reports to reflect updated condition L3.7 referencing the Noise Policy for Industry (2017) in lieu of the Industrial Noise Policy.	Acoustic Consultant to reference NPfI 2017 going forward.	TBA

TBA- To be actioned

SECTION 11 – INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

Incidents that occurred during 2020 are detailed in this section.

11.1 Air Quality Monitoring exceedances in 2020

Air quality monitoring exceedances occured during 2020, under adverse weather days, where the 24 Hour criteria of 50ug/m3 was exceeded at TEOMs during the reporting period. When the upstream monitors were compared to the downstream monitor results, there was an indication that air quality was coming from upstream sources generally in a NW direction from the mine. Therefore, Rix's Creek Mine was not the major contributor of air quality monitor exceedances. Refer to Section 6.4 Air Quality for a breakdown of exceedances during the reporting period.

11.2 DustTrak and TEOM minor down time in 2020

The RCN SE TEOM required multiple filter changes during the January 2020 period. From the 1-7 January and the 19-21 January the RCN SE TEOM resulted in block filters that required change out. Data from the Singleton NW Upper Hunter Air Quality Monitoring Network (UHAQMN) was substituted for the period.

On the 21-22 January the RCN NW TEOM had a blocked filter and required a change out. Data from the Camberwell UHAQMN data was substituted for this period. These events coincided with regional bushfires and prevailing drought conditions placing additional load on the TEOMs during the January 2020 period.

On the 5-8 September 2020 a power outage at the RCN NW TEOM coincided with missed data for this period. Camberwell UHAQMN data was substituted for the period.

On the 21-23 April 2020 the RCS NW Dust Trak required a change out due to a faulty vacuum pump, Camberwell UHAQMN data was substituted for the period.

On the 1-2 July 2020 the RCS SE Dust Trak had a battery issue that resulted in downtime of the monitor. The Singleton NW data was substituted for this period as the battery system was upgraded.

An environmental consultant currently completes monthly servicing and maintenance on the Dust Trak and TEOM units. The implementation of the Teledata Environmental Management System has seen improvements in data capturing as well as faster responses to periods of data downtime. The Environmental Consultants receive an alarm where any anomalies to the system are identified. This ensures that a faster response in repairing or servicng air quality units is undertaken.

SECTION 12 – ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Mining will be focussed in the West Pit (Pit 3) at Rix's Creek South and Camberwell Pit operations at Rix's Creek North. Due to coal advances in the West Pit a majority of overburden from the West Pit will be placed in the Arties Pit until coal mining reserves move in a northward fashion. Camberwell Pit mining will progress in a southerly manner with pre stripping to the south west of Camberwell Pit to be completed. The Dulwich block located to the North West of the Camberwell Pit will continue to be mined. The overburden placement will be dumped from the eastern section of Camberwell pit and transition to the west in 2020 as per the Mining Operation Plan.

Further improvements to the Rix's Creek environmental systems include the implementation of the INX software package to track environmental compliance requirements.

Environmental management is an ongoing process at Rix's Creek Mine with continual improvement being made to the existing systems already in place.

Table 18 Environmental Performance Improvement Activities

Environmental Performance Improvement Activities	Target Date
Rix's Creek Mine Rehabilitation Progression	Q1-Q4 2021
Flowmeter upgrades around Rix's Creek Mine. Flowmeter data to be integrated into Power BI system	Q4 2021
Review of site procedures relating to permit to disturb and sediment and erosion checklists	Q2 2021
Implementation of the INX software package to track Environmental Compliance obligations.	Q2 2021
Teledata Sytem Environmental Updates	Q4 2021

SECTION 13 MANAGEMENT PLAN REVIEW

Management Plans are required to be updated when a review is triggered. An update can be triggered by any of the following:-

- Action from independent environmental audit;
- Submission of Annual Review;
- Approval modification;
- Result of an environmental incident; and
- Changes to the operation.

The management plans for both RCN and RCS as required under their relevant approvals are listed in **Table 35** along with their relevant status. Management Plans were updated to include SSD 6300 conditions during the 2020 period. The SSD 6300 plans have recently been approved by DPIE, review updates will be completed when a review is triggered.

Table 19 Environmental Management Plans

Approval Authority	Approval Date	Review Update	Title
	Rixs Creek North		
DPIE	21/12/2017	31/5/2021	Biodiversity Management Plan
DPIE	19/2/2016	-	Heritage Management Plan
DPIE	16/10/2020	-	Rix's Creek North Glennies Creek and Station Creek Riparian Management Programme
DA49/94	**Rix's Creek South**		
DPIE	22/1/2014	-	Rix's Creek South Final Void Management Plan
DPIE	22/1/2014	-	Rix's Creek South Mine Closure Plan
DPIE	22/1/2014	-	Rix's Creek Mine Erosion and Sediment Control Plan
DPIE	22/1/2014	-	Rix's Creek Mine Traffic Management Plan
DPIE	22/1/2014	-	Rix's Creek South Landscape Management Plan
SSD 6300	**Rixs Creek South**		
DPIE	29/01/2021		Rix's Creek South Rehabilitation Strategy
DPIE	18/12/2020	-	Rix's Creek South Historic Heritage Management Plan
DPIE	23/12/2020	-	Rix's Creek South Biodiversity Management Plan
DPIE	02/09/2020	-	Rix's Creek South Aboriginal Cultural Heritage Management Plan
	RCM Integrated Management Plan to cover Rixs Creek North & Rixs Creek South Operation		
DPIE	11/03/2021	-	Environmental Management Strategy
DPIE	23/12/2020	-	Noise Management Plan
DPIE	23/12/2020	-	Blast Management Plan
DPIE	23/12/2020	-	Air Quality & Greenhouse Gas Management Plan
DPIE	15/03/2021	-	Water Management Plan
DPIE	30/10/2019	-	Bushfire Management Plan
RR	1/12/2019	30/7/2021	RCM MOP

Appendix 1 Rix's Creek Complex Surface Water Sampling Results

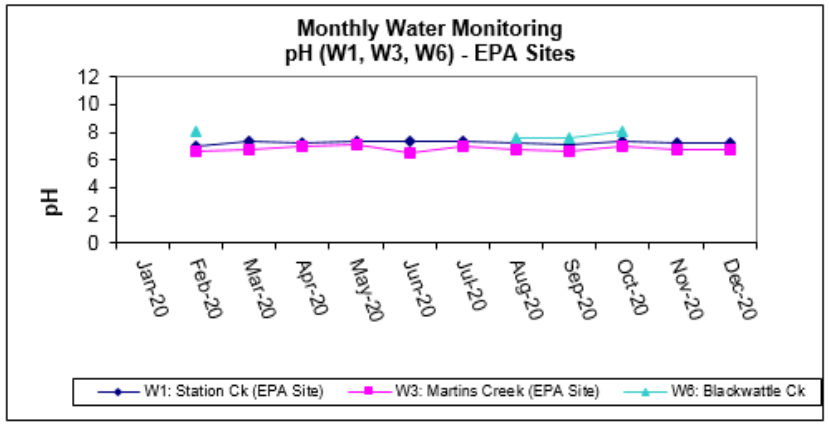
Date Sampled	Month Sampled	Site)	W3: Martins Creek (EPA Site)				W4: Glennies Ck Up (nobles Xing)				W5: Glennies Ck Down (Oxfords)			
		TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l
24/01/2020	Jan-20						7.6	301	10	175	7.6	301	10	201
25/02/2020	Feb-20	268	6.6	163	134	344	7.6	459	9	258	7.7	461	8	278
18/03/2020	Mar-20	323	6.7	152	36	365	7.6	385	9	233	7.9	412	8	239
21/04/2020	Apr-20	306	7	142	24	320	7.7	459	6	288	7.8	508	35	262
25/05/2020	May-20	293	7.1	215	42	347	7.7	376	4	225	7.8	395	6	234
16/06/2020	Jun-20	399	6.5	117	260	844	7.8	380	6	197	7.8	389	5	218
14/07/2020	Jul-20	337	7	165	47	716	7.8	432	5	271	8	453	3	349
18/08/2020	Aug-20	566	6.8	87	32	484	7.7	588	11	325	7.8	579	11	330
23/09/2020	Sep-20	339	6.6	73	183	432	7.8	494	6	269	7.9	514	8	285
22/10/2020	Oct-20	335	6.94	196	52	882	7.69	453	5	304	7.88	517	6	281
25/11/2020	Nov-20	238	6.8	121	118	828	7.7	485	21	284	7.9	685	8	353
18/12/2020	Dec-20	295	6.7	122	206	802	7.6	401	8	257	7.7	453	13	318
	2020 AVERAGE	336	6.8	141	103	579	7.7	434	8	257	7.8	472	10	279
	MIN	238.0	6.5	73.0	24.0	320.0	7.6	301.0	4.0	175.0	7.6	301.0	3.0	201.0
	MAX	566.0	7.1	215.0	260.0	882.0	7.8	588.0	21.0	325.0	8.0	685.0	35.0	353.0
	SD	87.0	0.2	43.1	82.5	233.5	0.1	73.2	4.6	43.5	0.1	99.3	8.3	50.7

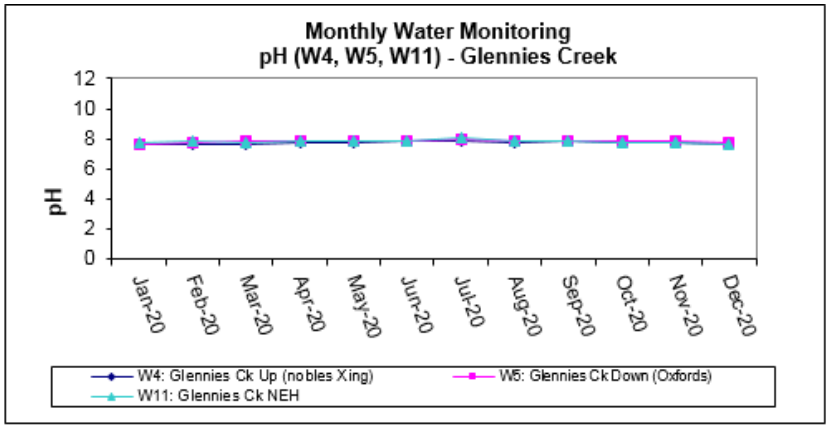
Date Sampled	Month Sampled	W6: Blackwattle Ck				W7: Stony Ck								W11: Glennies Ck NEH			
		pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l
24/01/2020	Jan-20									9.6	3260	7	1,930	7.7	307	6	179
25/02/2020	Feb-20	8.1	4590	1660	2830	6.5	94	249	196	9.3	2660	9	1,570	7.8	436	9	284
18/03/2020	Mar-20					6.8	161	89	193	9.1	2660	14	1,720	7.7	434	7	267
21/04/2020	Apr-20					6.6	118	86	96	8.7	2490	7	1,630	7.9	515	7	285
25/05/2020	May-20					6.9	124	54	116	8.9	2530	10	1510	7.9	370	5	210
16/06/2020	Jun-20					6.7	99	68	104	9.1	2520	10	1510	7.9	381	7	227
14/07/2020	Jul-20					6.8	112	161	165	9.2	2510	10	1560	8.1	457	8	309
18/08/2020	Aug-20	7.6	1516	72	956	6.5	113	67	173	8.1	1772	24	1110	7.8	552	13	336
23/09/2020	Sep-20	7.6	894	202	612	6.5	84	67	176	8.4	1787	31	1120	7.8	495	9	260
22/10/2020	Oct-20	8.11	2330	68	1280	6.87	143	17	132	8.77	2190	7	1260	7.73	458	6	261
25/11/2020	Nov-20					6.7	137	25	120	8.6	1833	5	1120	7.7	491	11	263
18/12/2020	Dec-20					6.7	169	18	176	8.2	1821	10	1160	7.6	404	8	249
	2020 AVERAGE	7.9	2333	501	1420	6.7	123	82	150	8.8	2336	12	1433	7.8	442	8	261
	MIN	7.6	894.0	68.0	612.0	6.5	84.0	17.0	96.0	8.1	1772.0	5.0	1110.0	7.6	307.0	5.0	179.0
	MAX	8.1	4590.0	1660.0	2830.0	6.9	169.0	249.0	196.0	9.6	3260.0	31.0	1930.0	8.1	552.0	13.0	336.0
	SD	0.3	1615.8	775.5	979.1	0.1	27.1	68.7	36.7	0.5	462.0	7.7	273.0	0.1	68.6	2.3	42.3

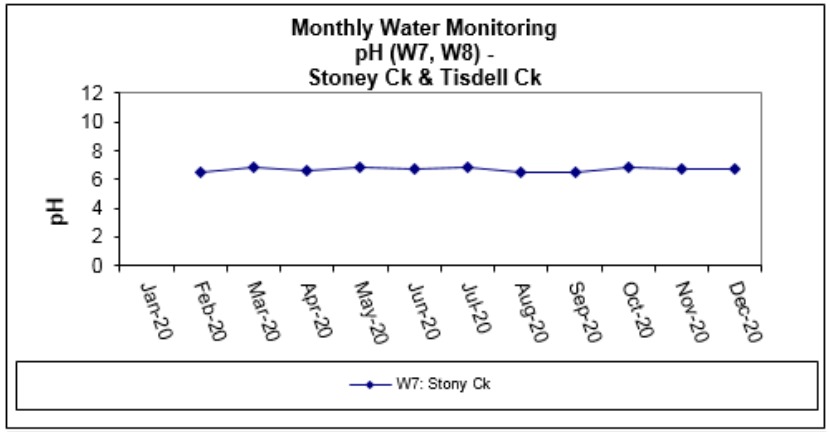
Rixs Creek North & Rixs Creek South

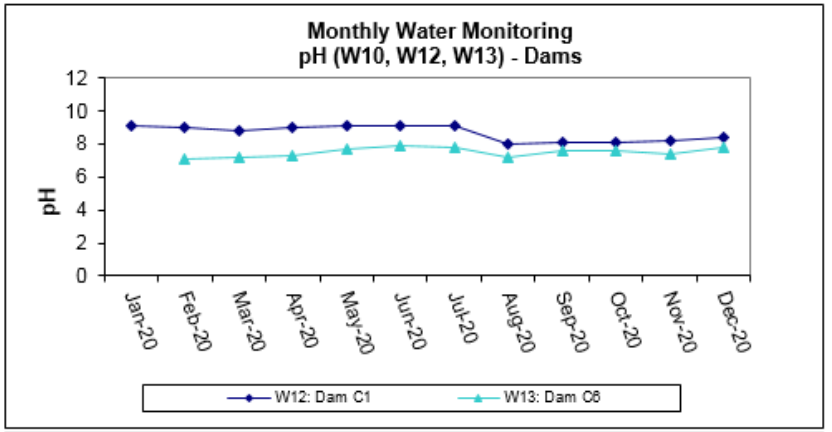
Date Sampled	Month Sampled	W13: Dam C6				W14: Dam C3				W15: Dam C6A				W16: Dam C8 (South Pit)				W17: Dam C2			
		pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l
24/01/2020	Jan-20					9.7	3660	7	2230	7.4	920	41	651	9.2	3950	36	2530	9	2520	3	1420
25/02/2020	Feb-20	7.1	214	63	276	9.3	2730	13	1730	6.4	277	36	281	9.3	989	99	691	9	2280	3	1350
18/03/2020	Mar-20	7.2	238	25	209	9.2	2780	14	1680	6.7	281	5	218	7.7	883	128	663	8.8	2250	10	1310
21/04/2020	Apr-20	7.3	275	9	207	8.8	2360	22	1370	7.1	245	8	140	7.8	574	258	748	8.9	2240	3	1250
25/05/2020	May-20	7.7	279	5	153	8.4	2380	38	1490	7.4	237	6	212	8	615	155	695	8.9	2300	5	1350
16/06/2020	Jun-20	7.9	264	16	130	8.4	2350	26	1440	7.5	212	31	198	8.1	522	975	457	8.9	2280	46	1410
14/07/2020	Jul-20	7.8	257	4	146	8.3	2390	27	1480	7.3	202	7	155	8	548	83	603	8.8	2320	5	1270
18/08/2020	Aug-20	7.2	233	4	181	8.2	1581	85	1040	7	114	39	166	7.9	281	2030	685	7.9	1650	9	930
23/09/2020	Sep-20	7.6	241	11	141	8.5	1604	48	1050	7.1	123	28	150	7.7	308	690	2820	8	1756	10	1020
22/10/2020	Oct-20	7.56	288	16	145	9	1664	16	1000	7.38	175	13	96	8	334	558	2030	8.2	2170	<5	1210
25/11/2020	Nov-20	7.4	277	10	142	8.5	1412	15	869	7.3	137	13	187	7.7	328	795	1080	8.4	2050	13	1190
18/12/2020	Dec-20	7.8	304	7	218	8.4	1479	14	901	7.3	154	8	152	7.9	362	394	1350	8.3	2230	7	1310
	2020 AVERAGE	7.5	261	15	177	8.7	2199	27	1357	7.2	256	20	217	8.1	808	517	1196	8.6	2171	10	1252
	MIN	7.1	214.0	4.0	130.0	8.2	1412.0	7.0	869.0	6.4	114.0	5.0	96.0	7.7	281.0	36.0	457.0	7.9	1650.0	3.0	930.0
	MAX	7.9	304.0	63.0	276.0	9.7	3660.0	85.0	2230.0	7.5	920.0	41.0	651.0	9.3	3950.0	2030.0	2820.0	9.0	2520.0	46.0	1420.0
	SD	0.3	27.0	17.0	45.5	0.5	676.4	21.6	406.1	0.3	216.6	14.2	144.4	0.6	1015.1	569.4	814.6	0.4	244.4	12.3	148.5

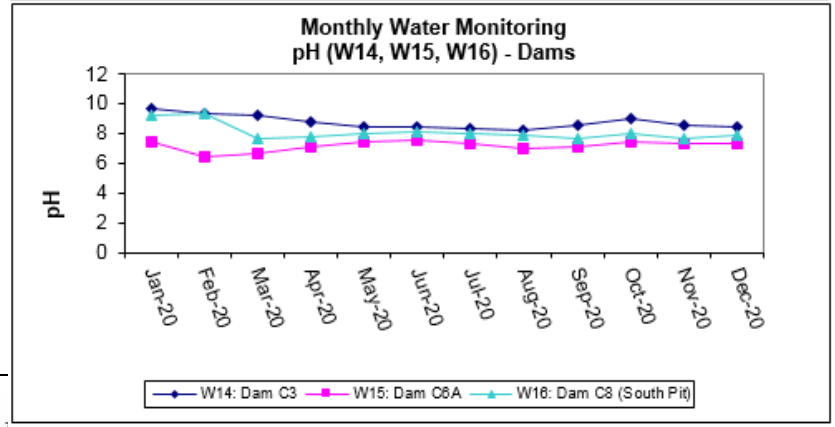
Date Sampled	Month Sampled	W18: Dam C5				W19: Dam D1				W20: North Dam 1				W21: North Dam 2			
		pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l	pH	EC uS/cm	TSS mg/l	TDS mg/l
24/01/2020	Jan-20	7.7	741	15	485	9.1	9600	6	6410	8.9	12460	83	8850	8.3	9800	241	6480
25/02/2020	Feb-20	7.3	300	4	244	9.2	8160	9	5550	9.3	7320	5	4920	7.5	1018	14	726
18/03/2020	Mar-20	7.4	314	14	244	9	8740	10	6040	9.7	8320	4	5610	7.8	1148	31	765
21/04/2020	Apr-20	7.6	304	5	176	9	8830	5	6140	8.6	9650	9	6890	7.6	812	95	751
25/05/2020	May-20	7.9	320	4	202	9	8710	10	6220	8.5	9950	16	7590	7.8	882	87	706
16/06/2020	Jun-20	7.8	304	16	213	9.1	8650	12	6150	8.3	8330	8	5970	7.8	850	25	622
14/07/2020	Jul-20	8	353	4	187	9.1	8840	15	6000	8.3	9530	5	6860	7.8	859	23	680
18/08/2020	Aug-20	7.2	228	11	175	9	8000	11	5330	8.4	8910	26	6530	7.7	466	43	761
23/09/2020	Sep-20	7.3	234	8	120	9.1	7580	22	5220	8.4	8870	5	6780	7.5	637	326	692
22/10/2020	Oct-20	7.52	266	10	136	8.9	8720	28	6310	8.8	9650	7	6990	7.6	574	353	976
25/11/2020	Nov-20	7.4	309	5	190	8.9	6970	24	4580	9.1	8740	155	6300	7.7	454	155	889
18/12/2020	Dec-20	7.3	322	8	248	9	6820	10	4830	9	9610	10	6900	7.8	578	337	836
	2020 AVERAGE	7.5	333	9	218	9.0	8302	14	5732	8.8	9278	28	6683	7.7	1507	144	1240
	MIN	7.2	228.0	4.0	120.0	8.9	6820.0	5.0	4580.0	8.3	7320.0	4.0	4920.0	7.5	454.0	14.0	622.0
	MAX	8.0	741.0	16.0	485.0	9.2	9600.0	28.0	6410.0	9.7	12460.0	155.0	8850.0	8.3	9800.0	353.0	6480.0
	SD	0.3	133.5	4.5	93.2	0.1	826.3	7.3	613.3	0.4	1253.0	45.7	985.4	0.2	2620.7	134.1	1652.9

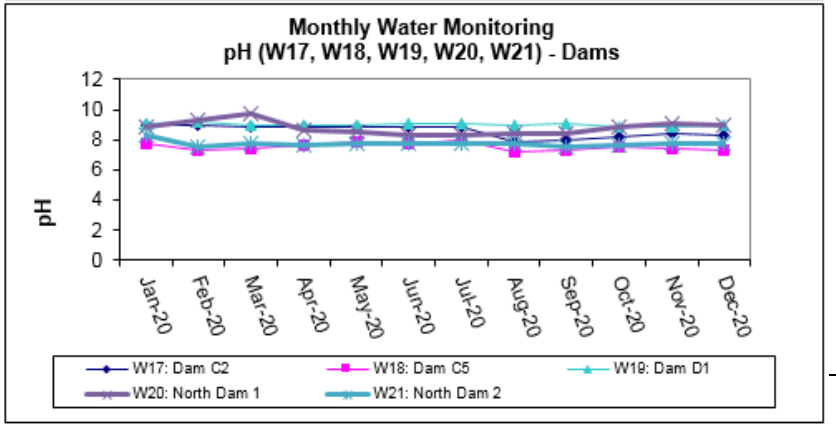

Monthly Water Monitoring
pH (W1, W3, W6) - EPA Sites
pH
W1: Station Ck (EPA Site)
W3: Martins Creek (EPA Site)
W6: Blackwattle Ck

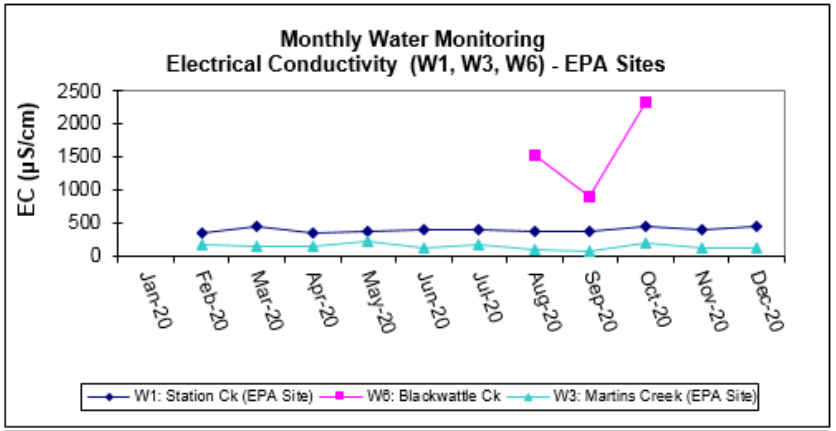

Monthly Water Monitoring
pH (W4, W5, W11) - Glennies Creek
pH
W4: Glennies Ck Up (nobles Xing)
W5: Glennies Ck Down (Oxfords)
W11: Glennies Ck NEH

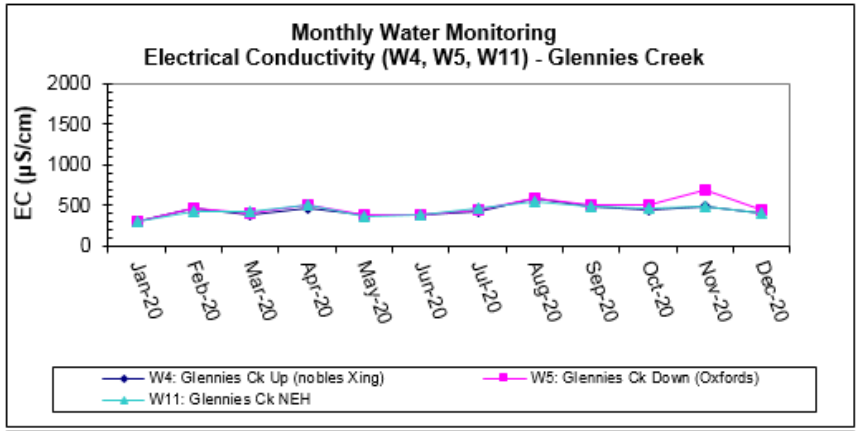

Monthly Water Monitoring
pH (W7, W8) -
Stoney Ck & Tisdell Ck
pH
W7: Stony Ck

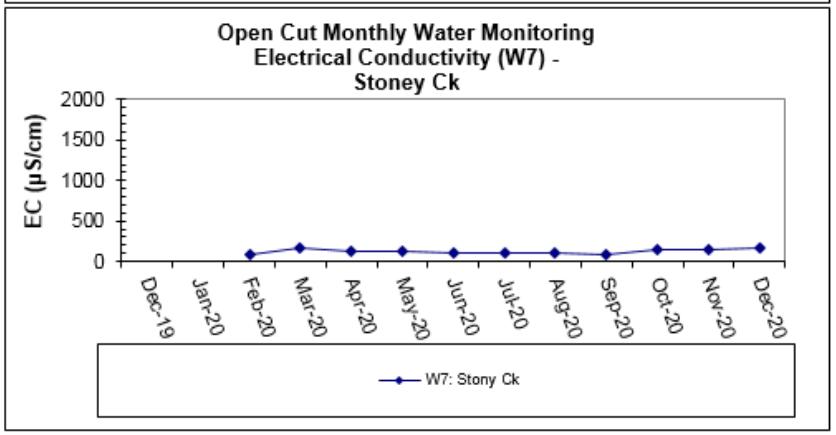

Monthly Water Monitoring
pH (W10, W12, W13) - Dams
pH
W12: Dam C1
W13: Dam C6

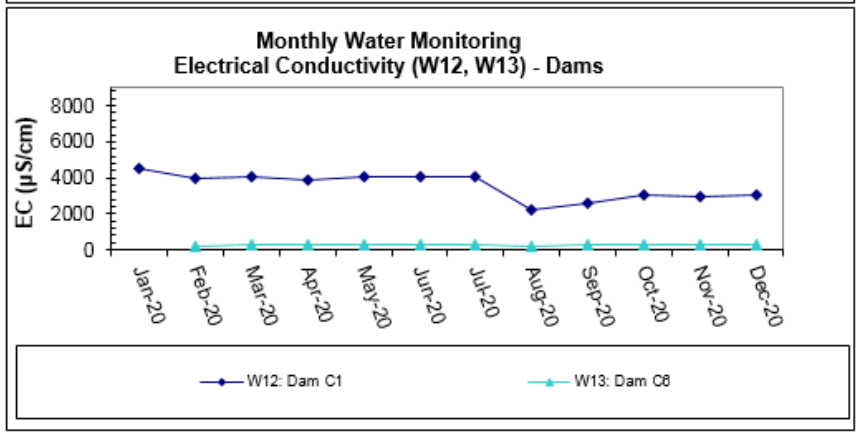

Monthly Water Monitoring
pH (W14, W15, W16) - Dams
pH
W14: Dam C3
W15: Dam C6A
W16: Dam C8 (South Pit)

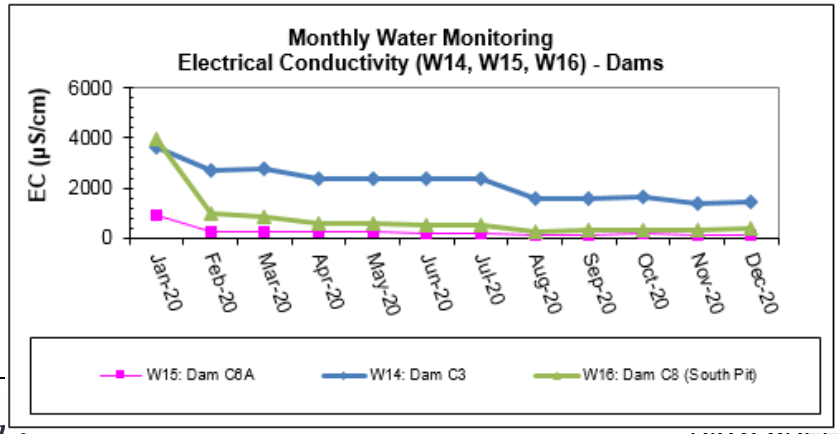

Monthly Water Monitoring
pH (W17, W18, W19, W20, W21) - Dams
pH
W17: Dam C2
W18: Dam C5
W19: Dam D1
W20: North Dam 1
W21: North Dam 2

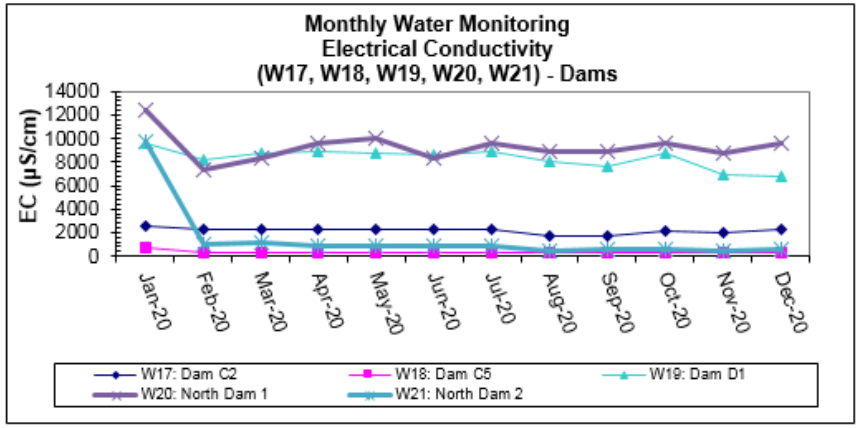

Monthly Water Monitoring
Electrical Conductivity (W1, W3, W6) - EPA Sites
EC (µS/cm)
2500
2000
1500
1000
500
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W1: Station Ck (EPA Site)
W6: Blackwattle Ck
W3: Martins Creek (EPA Site)

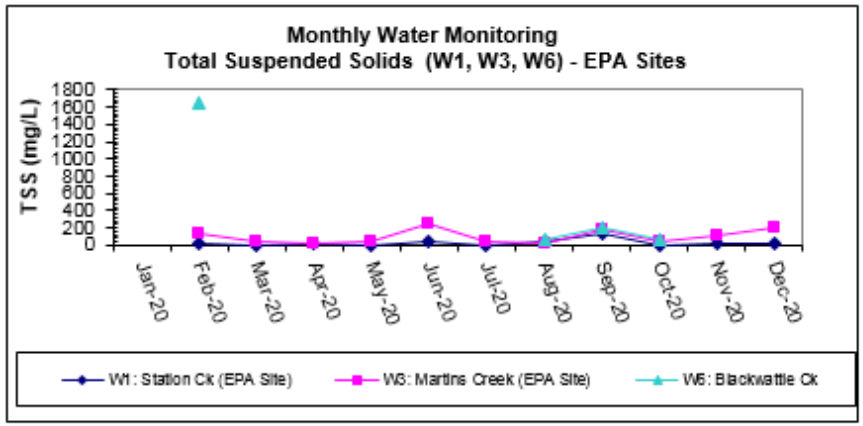

Monthly Water Monitoring
Electrical Conductivity (W4, W5, W11) - Glennies Creek
EC (µS/cm)
2000
1500
1000
500
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W4: Glennies Ck Up (nobles Xing)
W5: Glennies Ck Down (Oxfords)
W11: Glennies Ck NEH

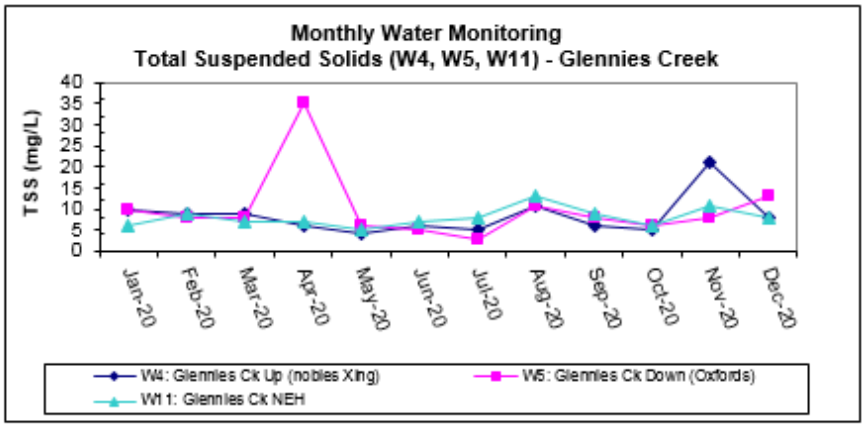

Open Cut Monthly Water Monitoring
Electrical Conductivity (W7) -
Stoney Ck
EC (µS/cm)
2000
1500
1000
500
0
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W7: Stony Ck

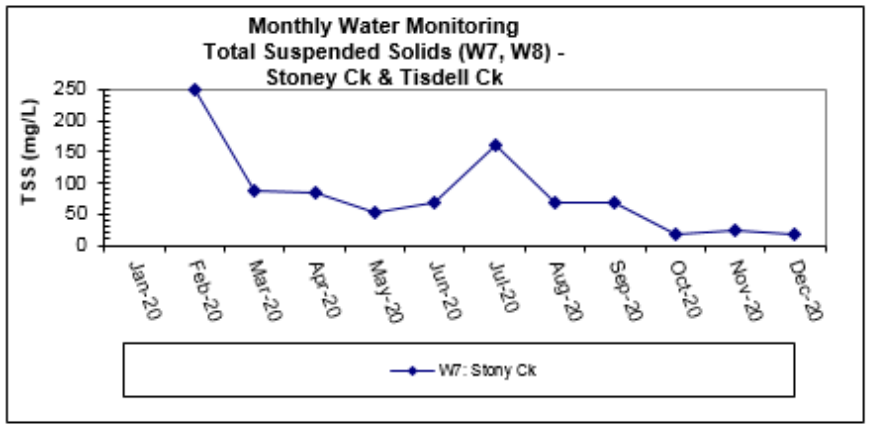

Monthly Water Monitoring
Electrical Conductivity (W12, W13) - Dams
EC (µS/cm)
8000
6000
4000
2000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W12: Dam C1
W13: Dam C6

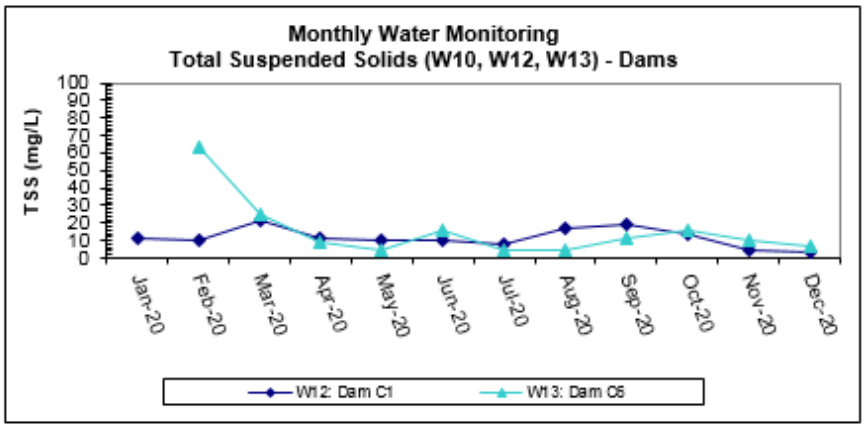

Monthly Water Monitoring
Electrical Conductivity (W14, W15, W16) - Dams
EC (µS/cm)
6000
4000
2000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W15: Dam C6A
W14: Dam C3
W16: Dam C8 (South Pit)

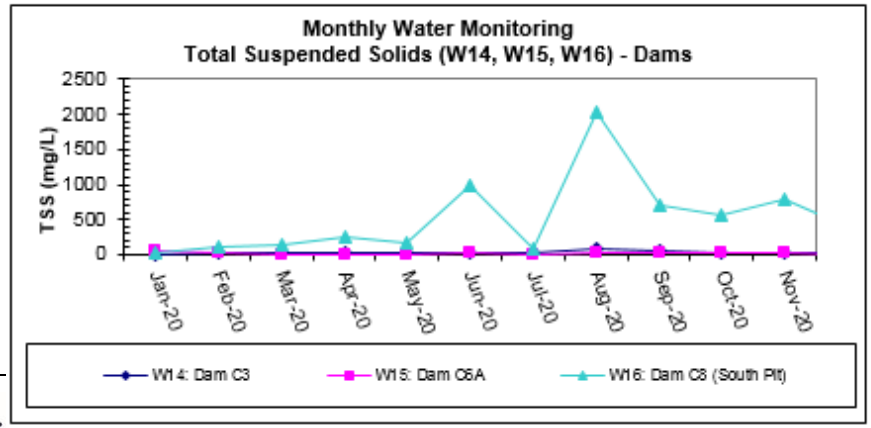

Monthly Water Monitoring
Electrical Conductivity
(W17, W18, W19, W20, W21) - Dams
EC (µS/cm)
14000
12000
10000
8000
6000
4000
2000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W17: Dam C2
W18: Dam C5
W19: Dam D1
W20: North Dam 1
W21: North Dam 2

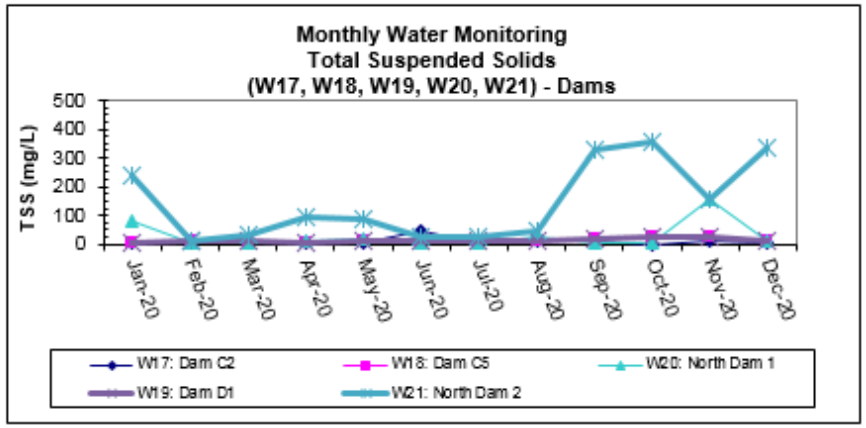

Monthly Water Monitoring
Total Suspended Solids (W1, W3, W6) - EPA Sites
TSS (mg/L)
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W1: Station Ck (EPA Site)
W3: Martins Creek (EPA Site)
W6: Blackwattle Ck

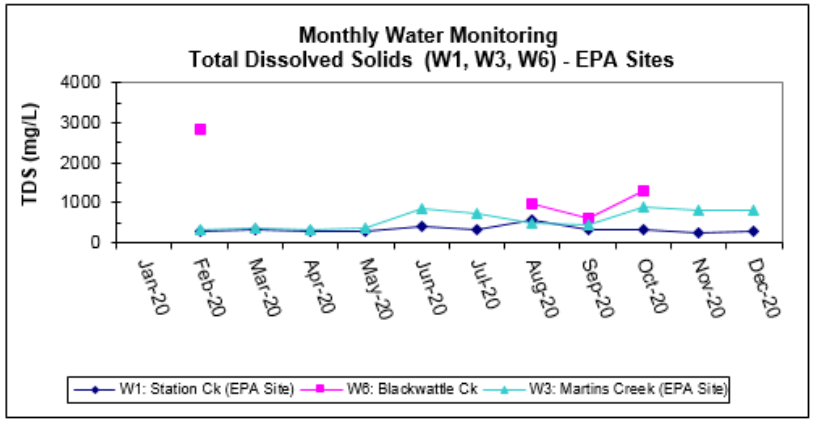

Monthly Water Monitoring
Total Suspended Solids (W4, W5, W11) - Glennies Creek
TSS (mg/L)
40
35
30
25
20
15
10
5
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W4: Glennies Ck Up (nobles Xing)
W5: Glennies Ck Down (Oxfords)
W11: Glennies Ck NEH

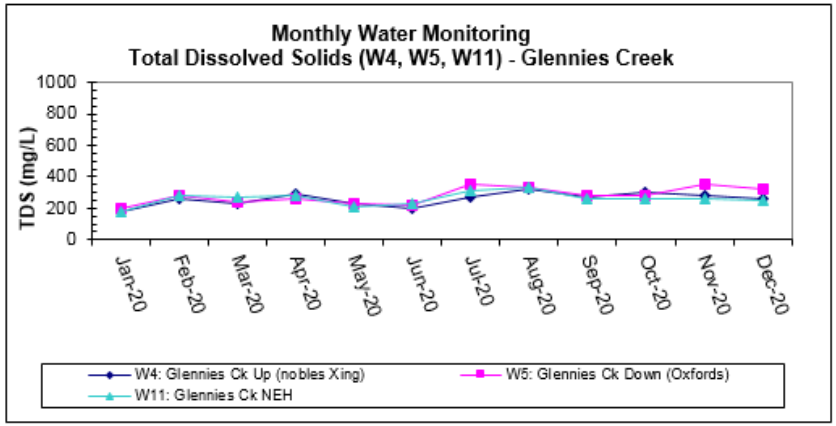

Monthly Water Monitoring
Total Suspended Solids (W7, W8) -
Stoney Ck & Tisdell Ck
TSS (mg/L)
250
200
150
100
50
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W7: Stony Ck

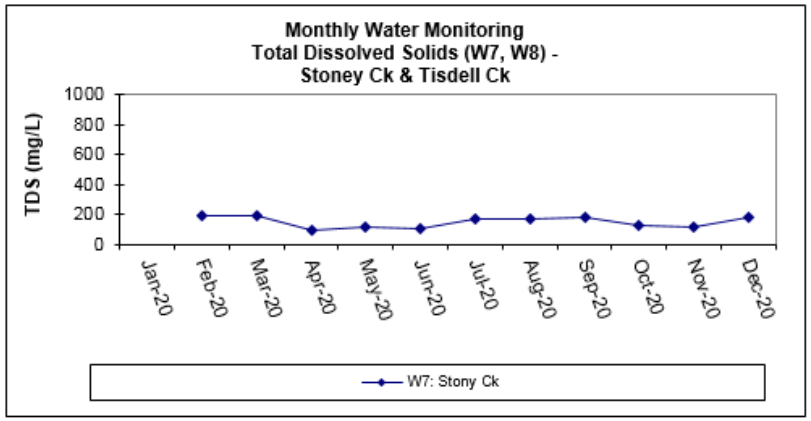

Monthly Water Monitoring
Total Suspended Solids (W10, W12, W13) - Dams
TSS (mg/L)
100
90
80
70
60
50
40
30
20
10
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W12: Dam C1
W13: Dam C6

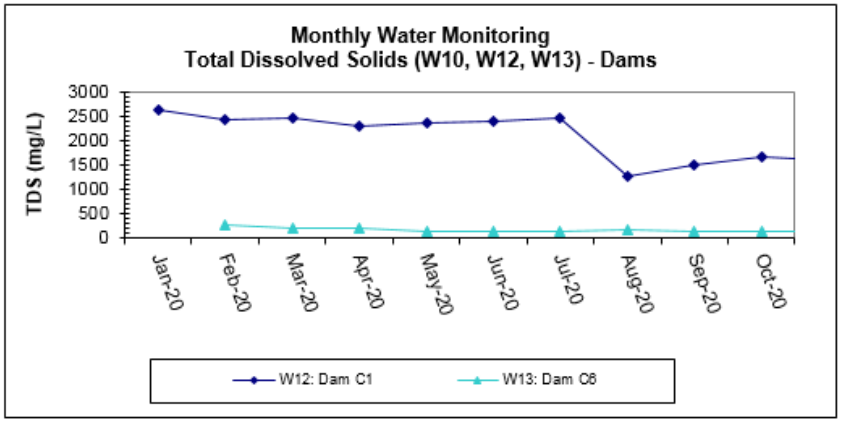

Monthly Water Monitoring
Total Suspended Solids (W14, W15, W16) - Dams
TSS (mg/L)
2500
2000
1500
1000
500
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
W14: Dam C3
W15: Dam C6A
W16: Dam C8 (South Pit)

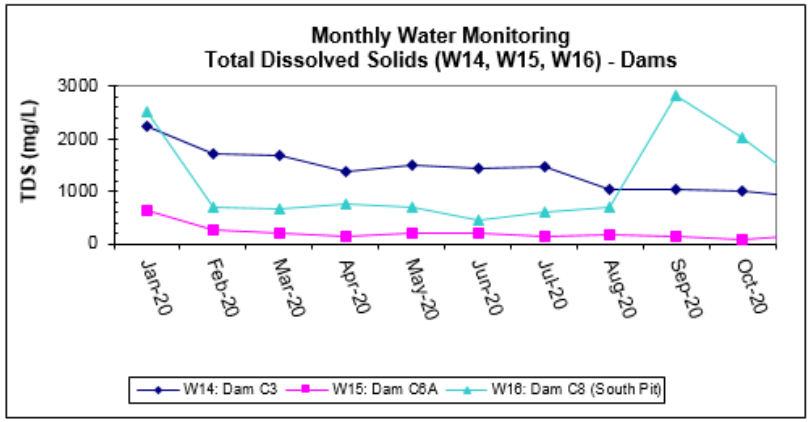

Monthly Water Monitoring
Total Suspended Solids
(W17, W18, W19, W20, W21) - Dams
TSS (mg/L)
500
400
300
200
100
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W17: Dam C2
W18: Dam C5
W20: North Dam 1
W19: Dam D1
W21: North Dam 2

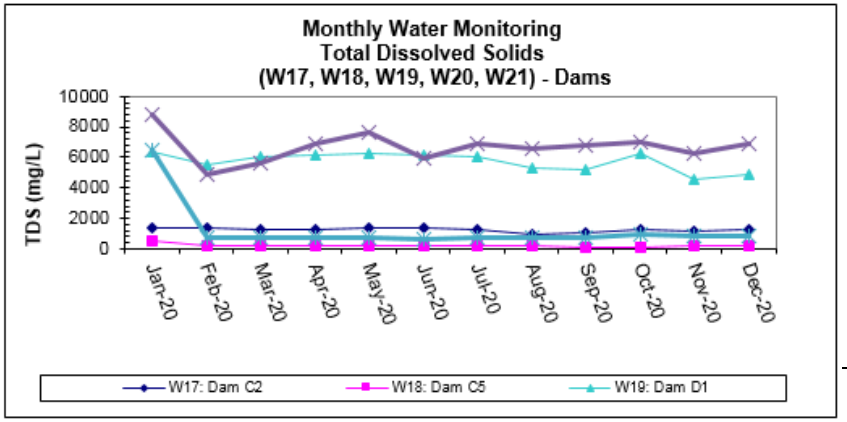

Monthly Water Monitoring
Total Dissolved Solids (W1, W3, W6) - EPA Sites
TDS (mg/L)
4000
3000
2000
1000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W1: Station Ck (EPA Site)
W6: Blackwattle Ck
W3: Martins Creek (EPA Site)

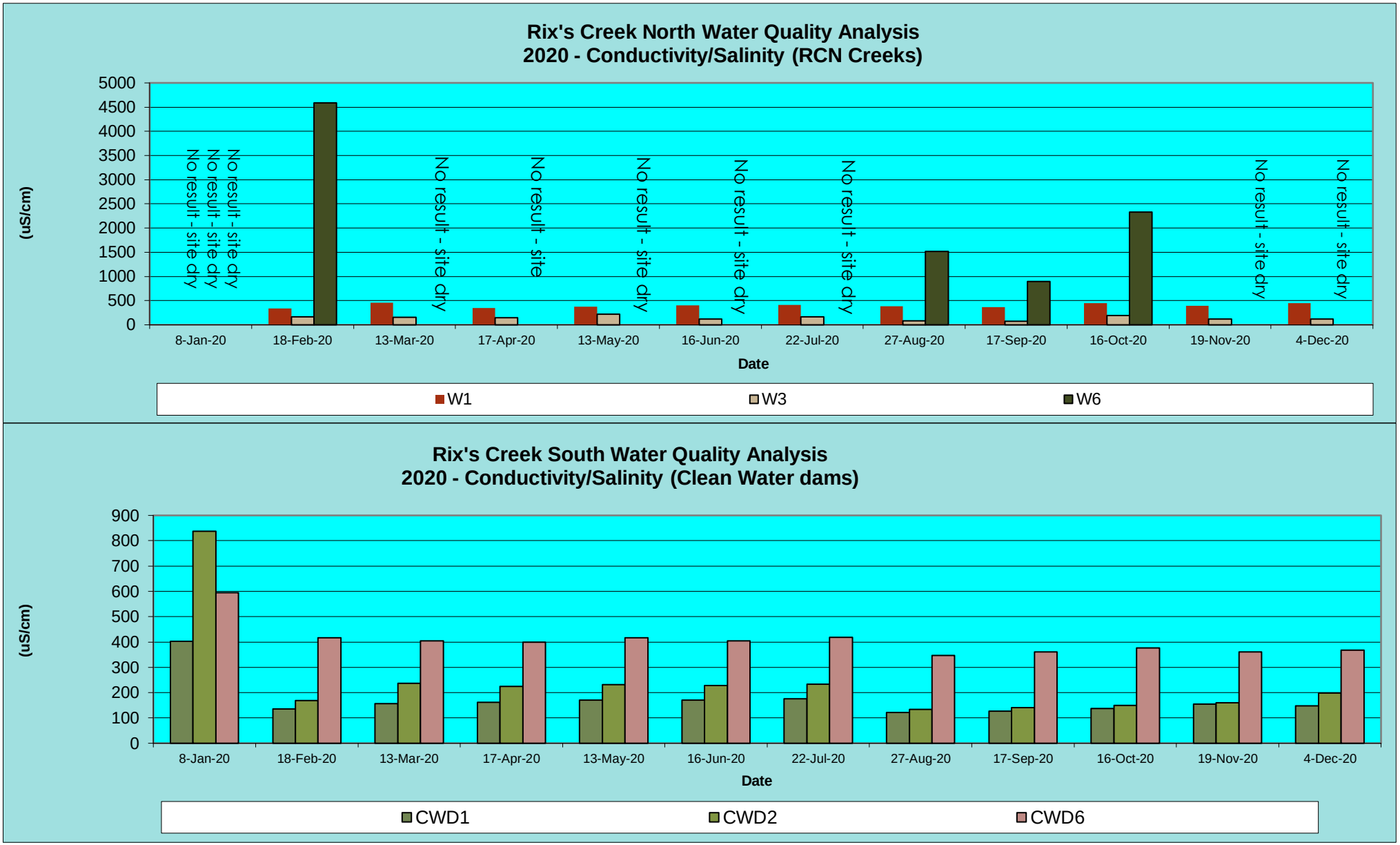

Monthly Water Monitoring
Total Dissolved Solids (W4, W5, W11) - Glennies Creek
TDS (mg/L)
1000
800
600
400
200
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W4: Glennies Ck Up (nobles Xing)
W5: Glennies Ck Down (Oxfords)
W11: Glennies Ck NEH

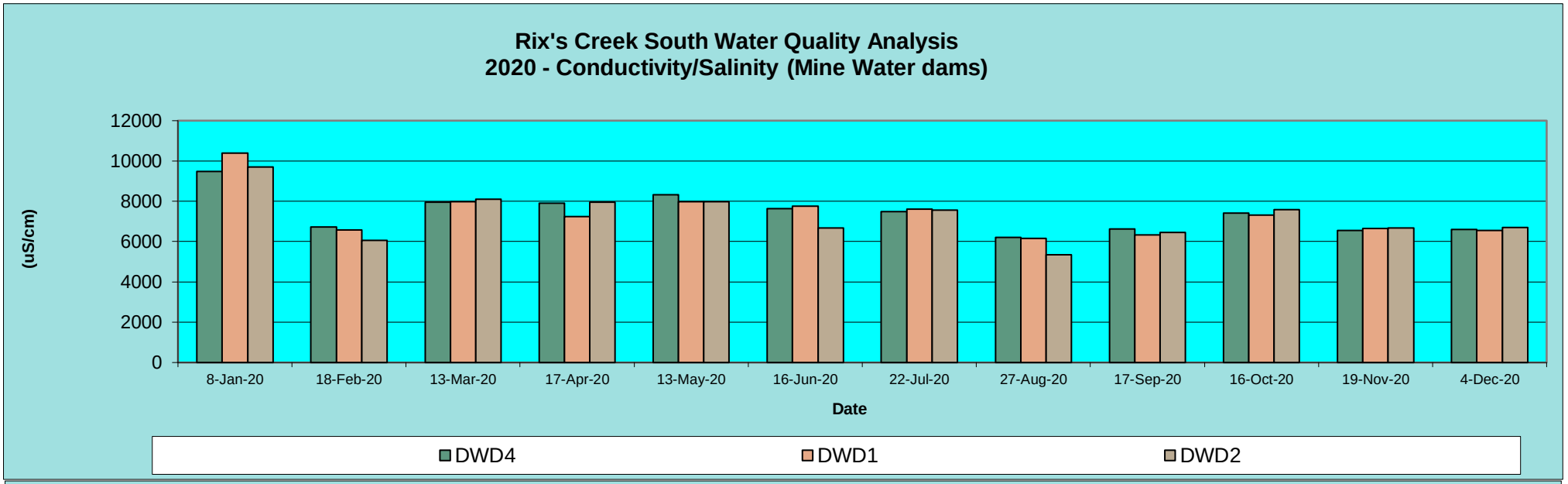

Monthly Water Monitoring
Total Dissolved Solids (W7, W8) -
Stoney Ck & Tisdell Ck
TDS (mg/L)
1000
800
600
400
200
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W7: Stony Ck

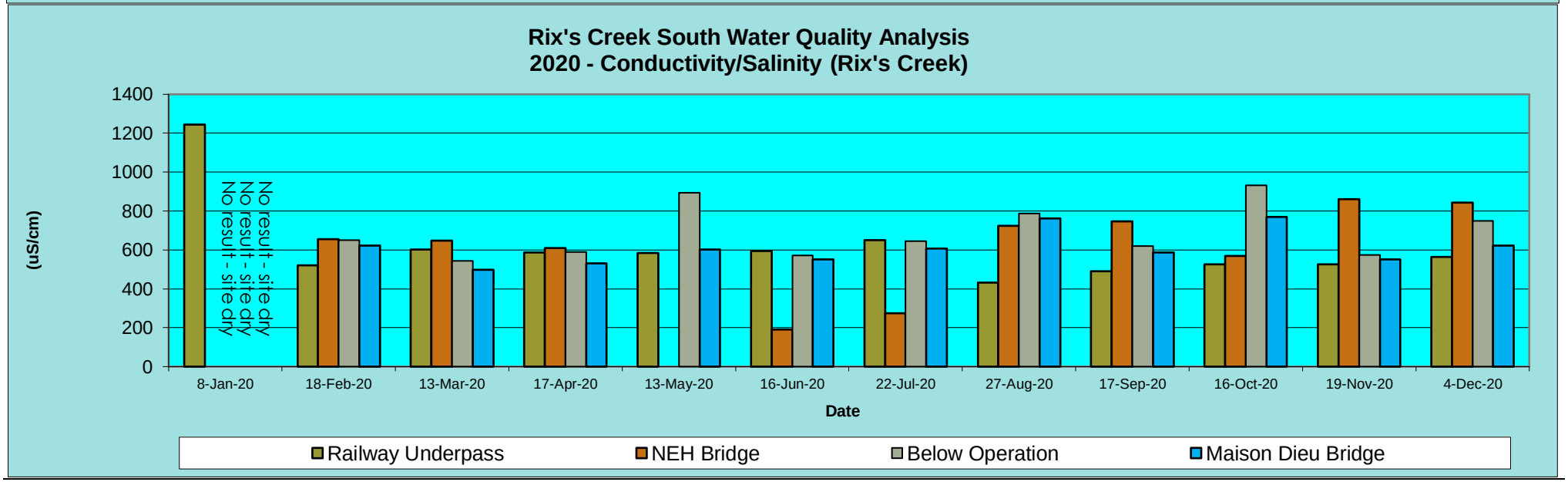

Monthly Water Monitoring
Total Dissolved Solids (W10, W12, W13) - Dams
TDS (mg/L)
3000
2500
2000
1500
1000
500
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
W12: Dam C1
W13: Dam C6

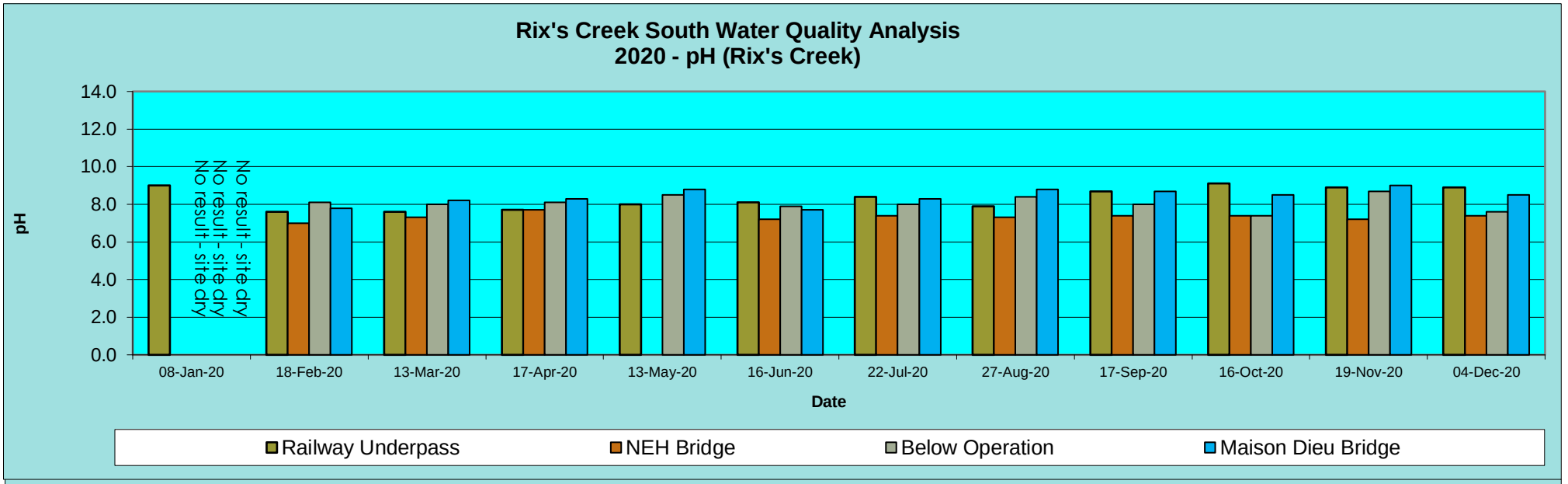

Monthly Water Monitoring
Total Dissolved Solids (W14, W15, W16) - Dams
TDS (mg/L)
3000
2000
1000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
W14: Dam C3
W15: Dam C8A
W16: Dam C8 (South Pit)

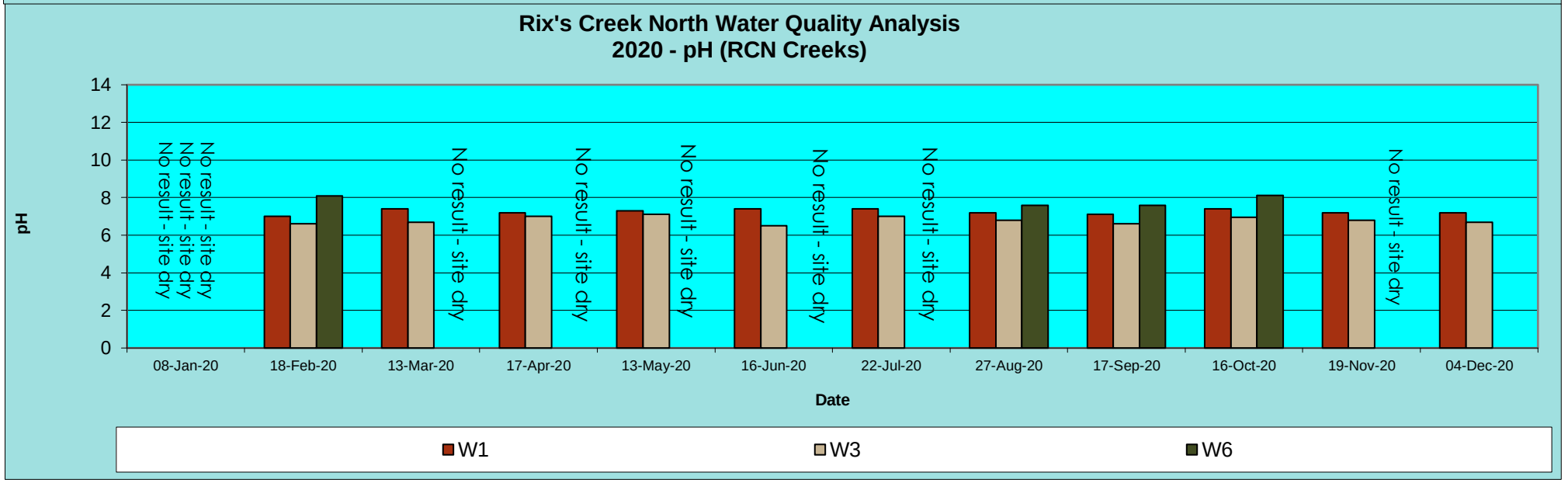

Monthly Water Monitoring
Total Dissolved Solids
(W17, W18, W19, W20, W21) - Dams
TDS (mg/L)
10000
8000
6000
4000
2000
0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
W17: Dam C2
W18: Dam C5
W19: Dam D1

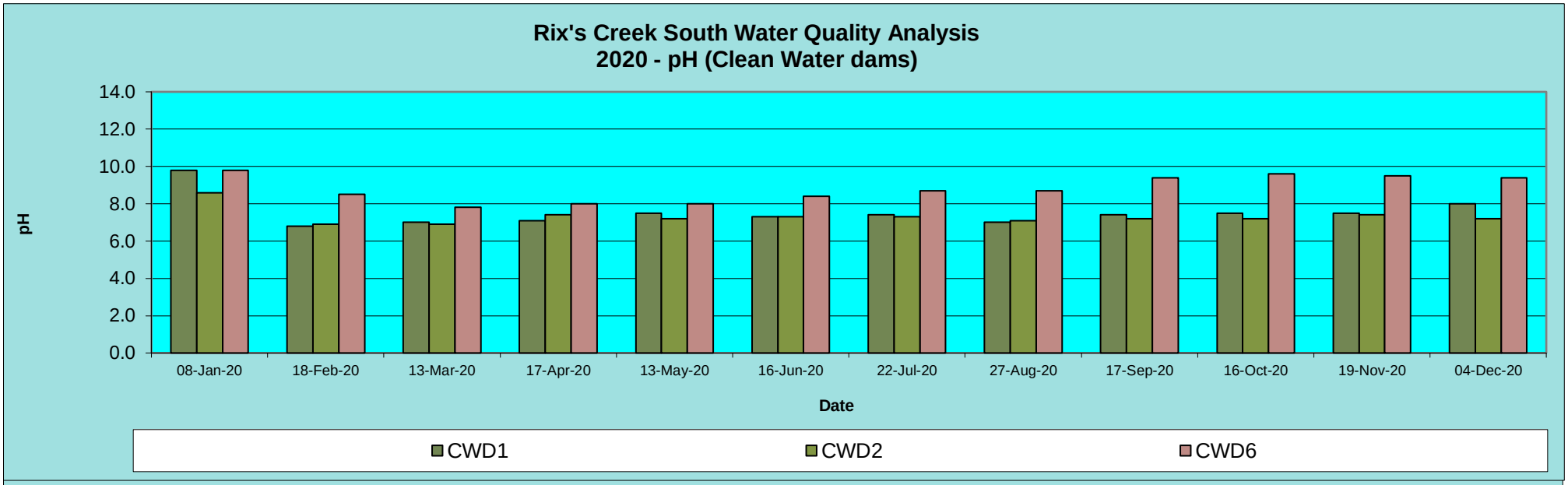

Rix's Creek North Water Quality Analysis
2020 - Conductivity/Salinity (RCN Creeks)
(uS/cm)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
W1
W3
W6
Rix's Creek South Water Quality Analysis
2020 - Conductivity/Salinity (Clean Water dams)
(uS/cm)
900
800
700
600
500
400
300
200
100
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
CWD1
CWD2
CWD6

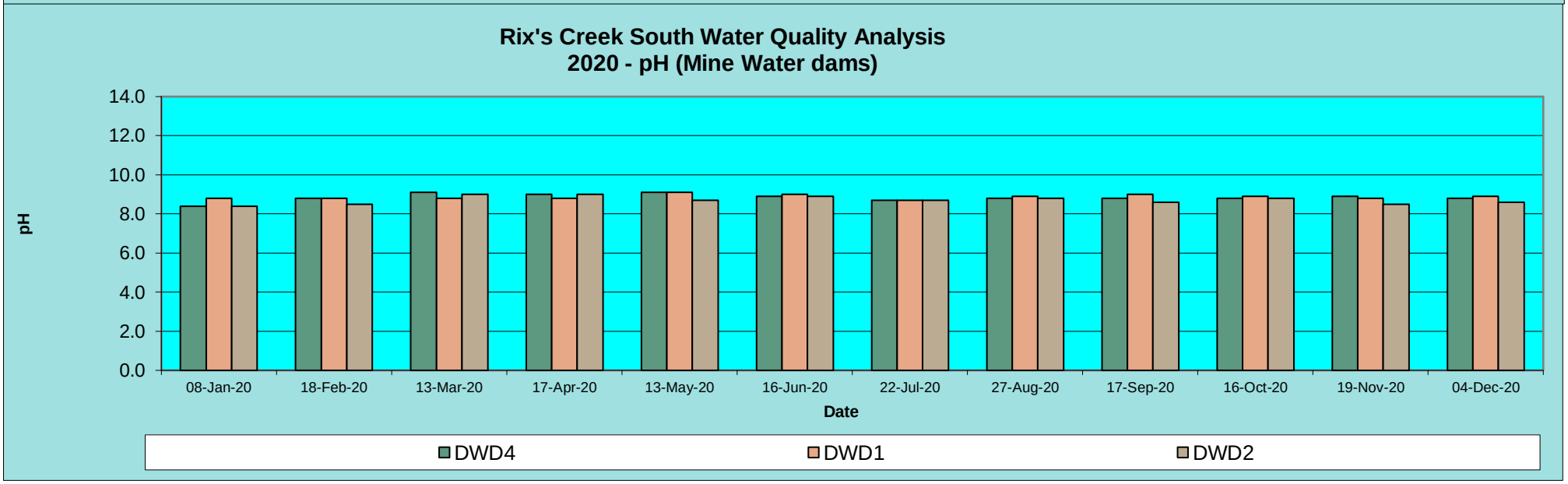

Rix's Creek South Water Quality Analysis
2020 - Conductivity/Salinity (Mine Water dams)
(uS/cm)
12000
10000
8000
6000
4000
2000
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
DWD4
DWD1
DWD2

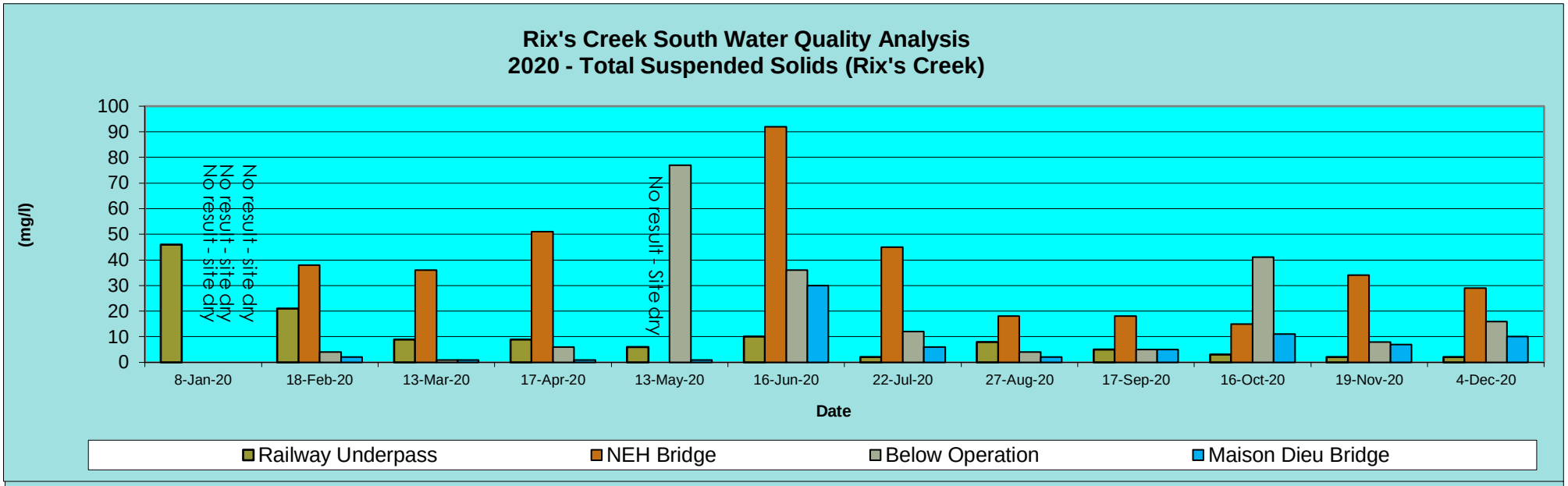

Rix's Creek South Water Quality Analysis
2020 - Conductivity/Salinity (Rix's Creek)
(uS/cm)
1400
1200
1000
800
600
400
200
0
No result - site dry
No result - site dry
No result - site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
Railway Underpass
NEH Bridge
Below Operation
Maison Dieu Bridge

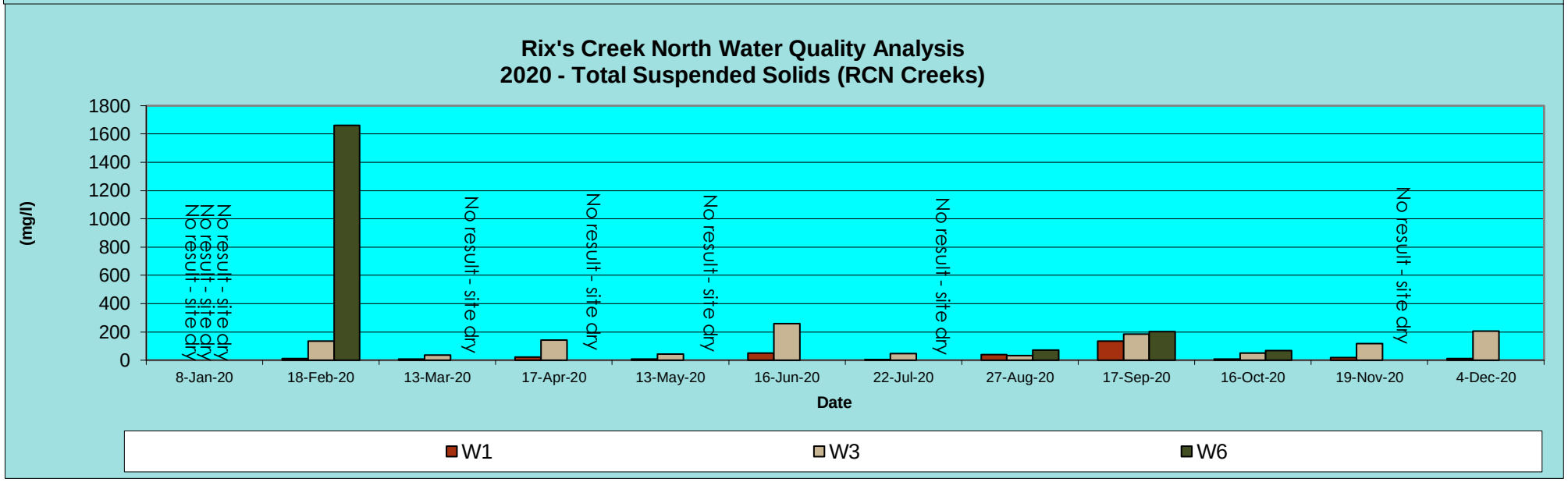

Rix's Creek South Water Quality Analysis
2020 - pH (Rix's Creek)
pH
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
No result - site dry
No result - site dry
No result - site dry
08-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
04-Dec-20
Date
Railway Underpass
NEH Bridge
Below Operation
Maison Dieu Bridge

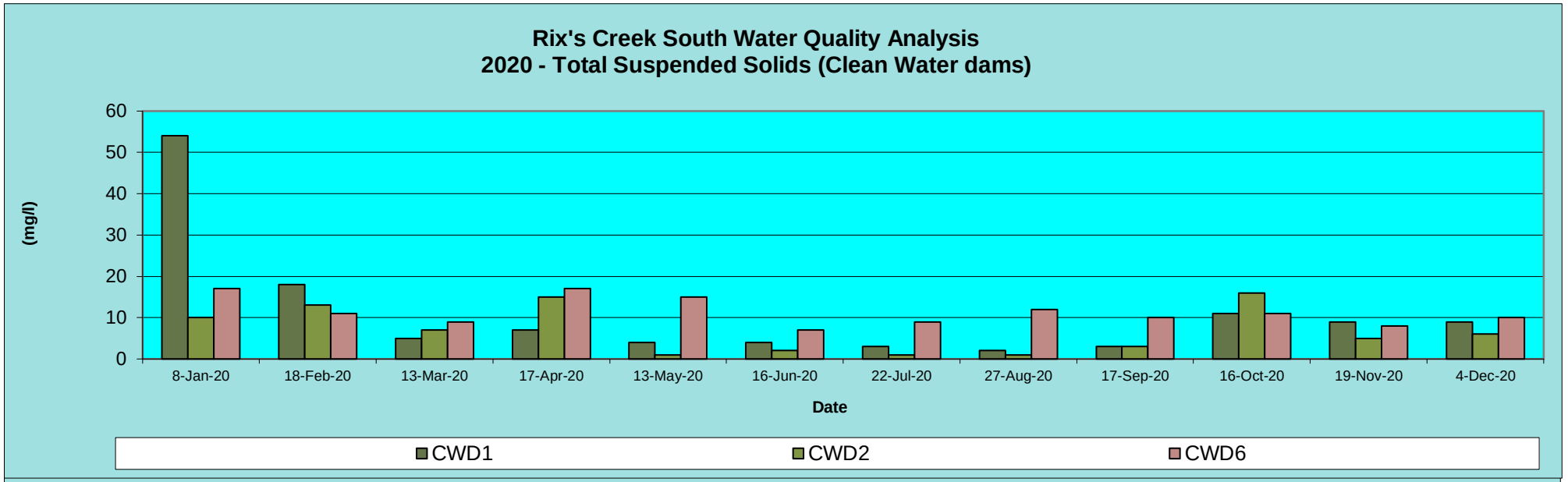

Rix's Creek North Water Quality Analysis
2020 - pH (RCN Creeks)
pH
14
12
10
8
6
4
2
0
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
08-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
04-Dec-20
Date
W1
W3
W6

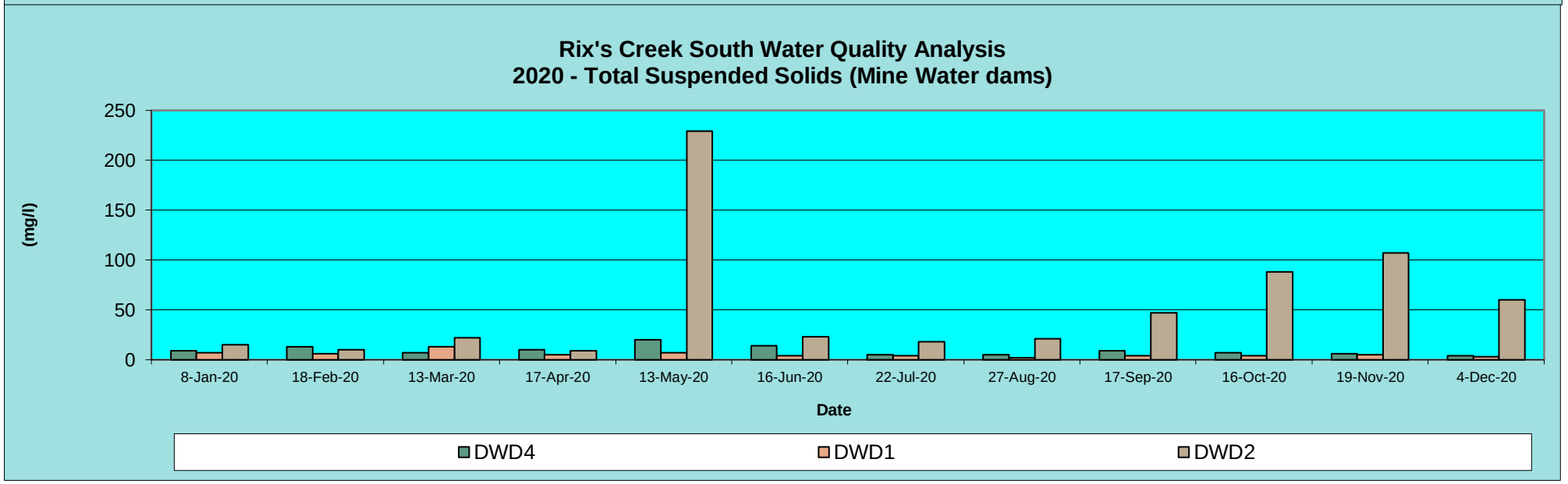

Rix's Creek South Water Quality Analysis
2020 - pH (Clean Water dams)
pH
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
08-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
04-Dec-20
Date
CWD1
CWD2
CWD6

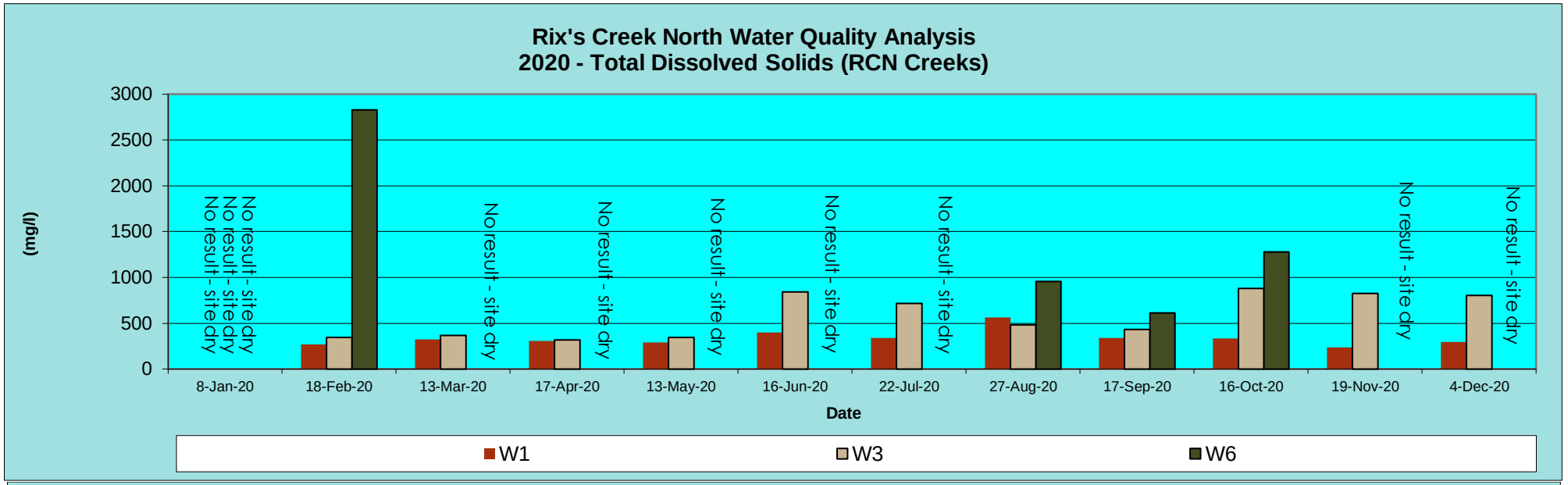

Rix's Creek South Water Quality Analysis
2020 - pH (Mine Water dams)
pH
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
08-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
04-Dec-20
Date
DWD4
DWD1
DWD2

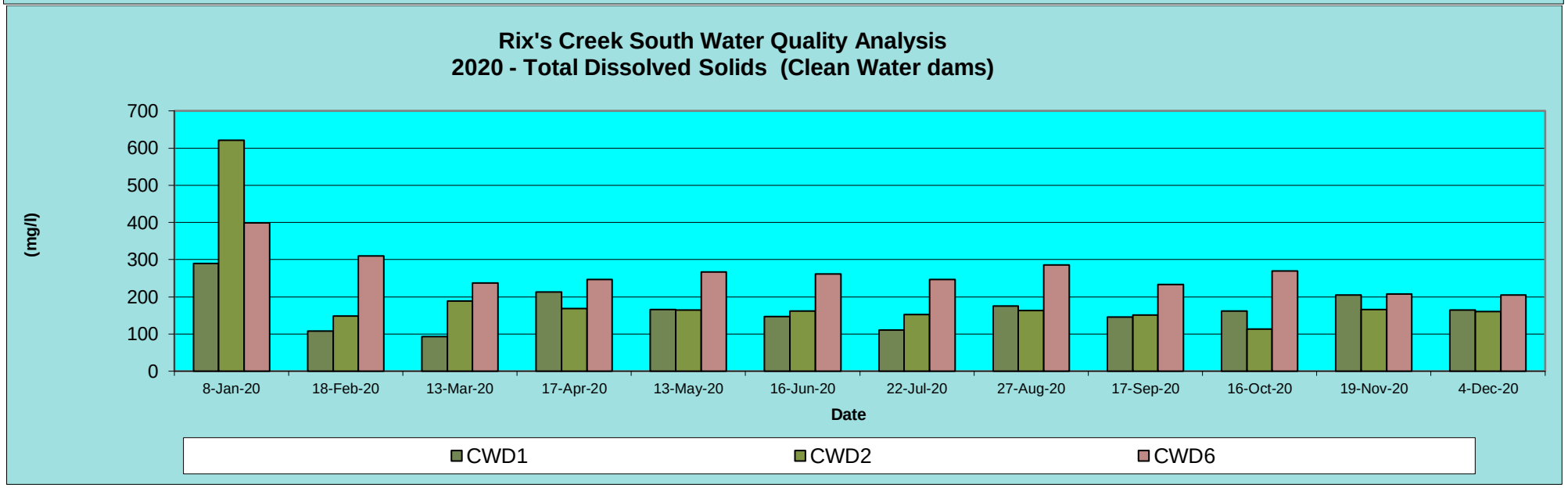

Rix's Creek South Water Quality Analysis
2020 - Total Suspended Solids (Rix's Creek)
(mg/l)
100
90
80
70
60
50
40
30
20
10
0
No result - site dry
No result - site dry
No result - site dry
No result - Site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
Railway Underpass
NEH Bridge
Below Operation
Maison Dieu Bridge

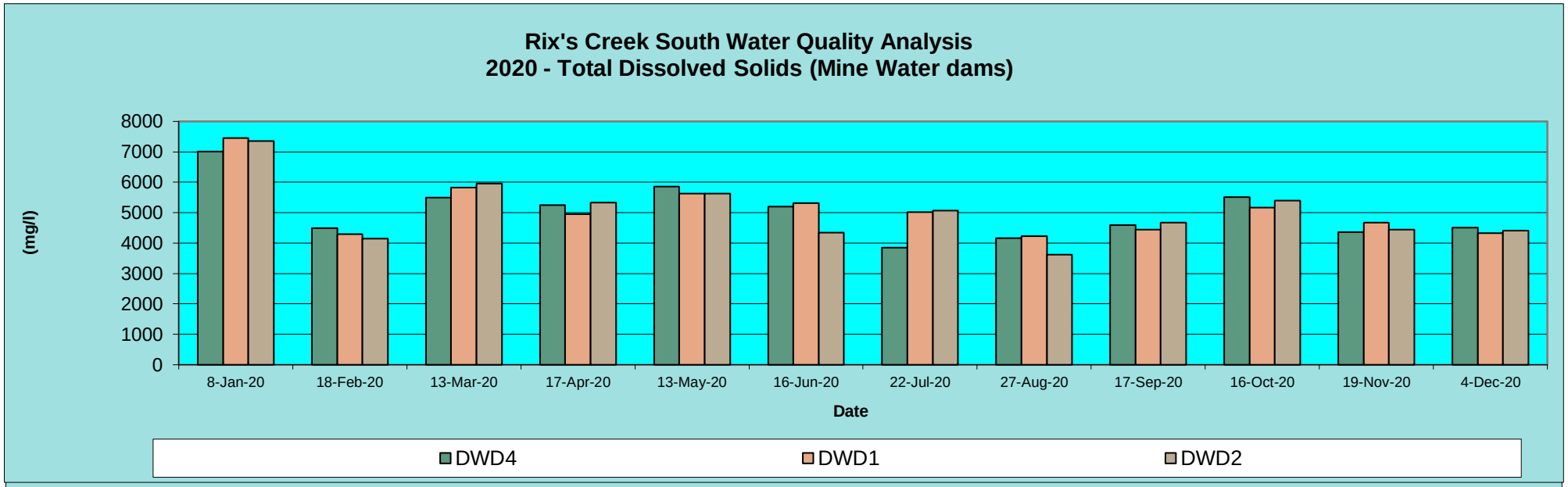

Rix's Creek North Water Quality Analysis
2020 - Total Suspended Solids (RCN Creeks)
(mg/l)
1800
1600
1400
1200
1000
800
600
400
200
0
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
W1
W3
W6

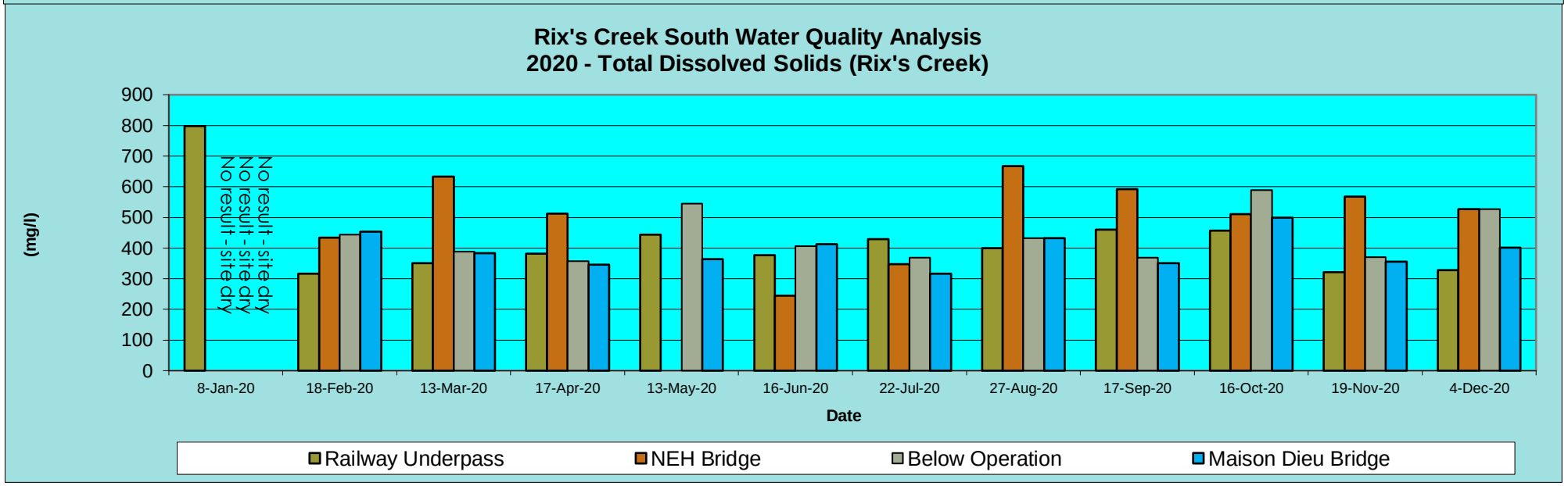

Rix's Creek South Water Quality Analysis
2020 - Total Suspended Solids (Clean Water dams)
(mg/l)
60
50
40
30
20
10
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
CWD1
CWD2
CWD6


Rix's Creek South Water Quality Analysis
2020 - Total Suspended Solids (Mine Water dams)
(mg/l)
250
200
150
100
50
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
DWD4
DWD1
DWD2


Rix's Creek North Water Quality Analysis
2020 - Total Dissolved Solids (RCN Creeks)
(mg/l)
3000
2500
2000
1500
1000
500
0
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
No result - site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
W1
W3
W6

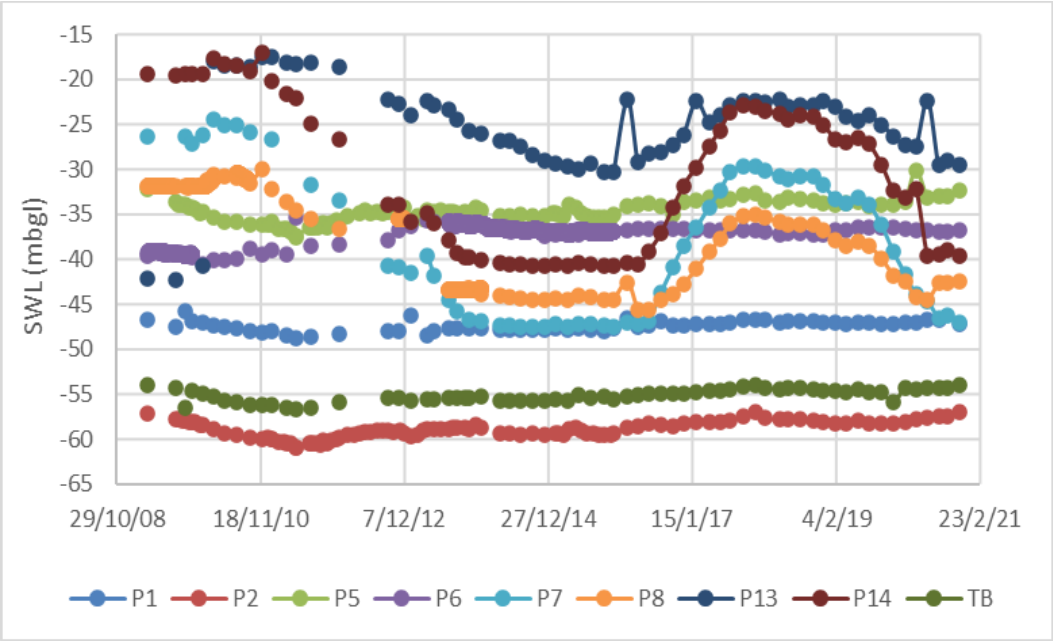

Rix's Creek South Water Quality Analysis
2020 - Total Dissolved Solids (Clean Water dams)
(mg/l)
700
600
500
400
300
200
100
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
CWD1
CWD2
CWD6

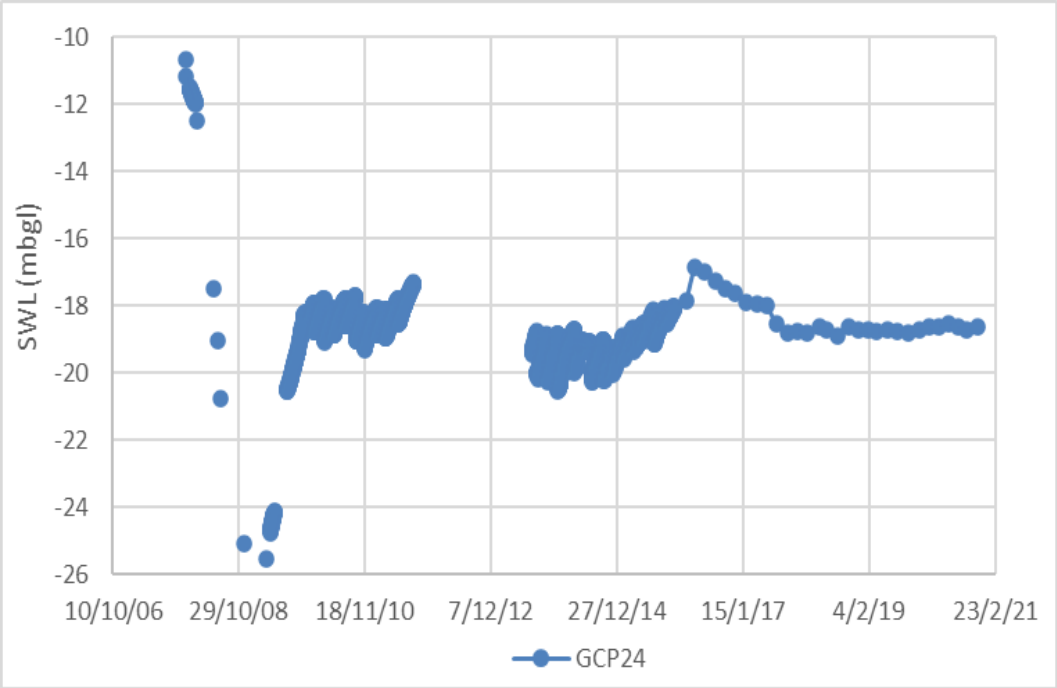

Rix's Creek South Water Quality Analysis
2020 - Total Dissolved Solids (Mine Water dams)
(mg/l)
8000
7000
6000
5000
4000
3000
2000
1000
0
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
DWD4
DWD1
DWD2


Rix's Creek South Water Quality Analysis
2020 - Total Dissolved Solids (Rix's Creek)
(mg/l)
900
800
700
600
500
400
300
200
100
0
No result - site dry
No result - site dry
No result - site dry
8-Jan-20
18-Feb-20
13-Mar-20
17-Apr-20
13-May-20
16-Jun-20
22-Jul-20
27-Aug-20
17-Sep-20
16-Oct-20
19-Nov-20
4-Dec-20
Date
Railway Underpass
NEH Bridge
Below Operation
Maison Dieu Bridge

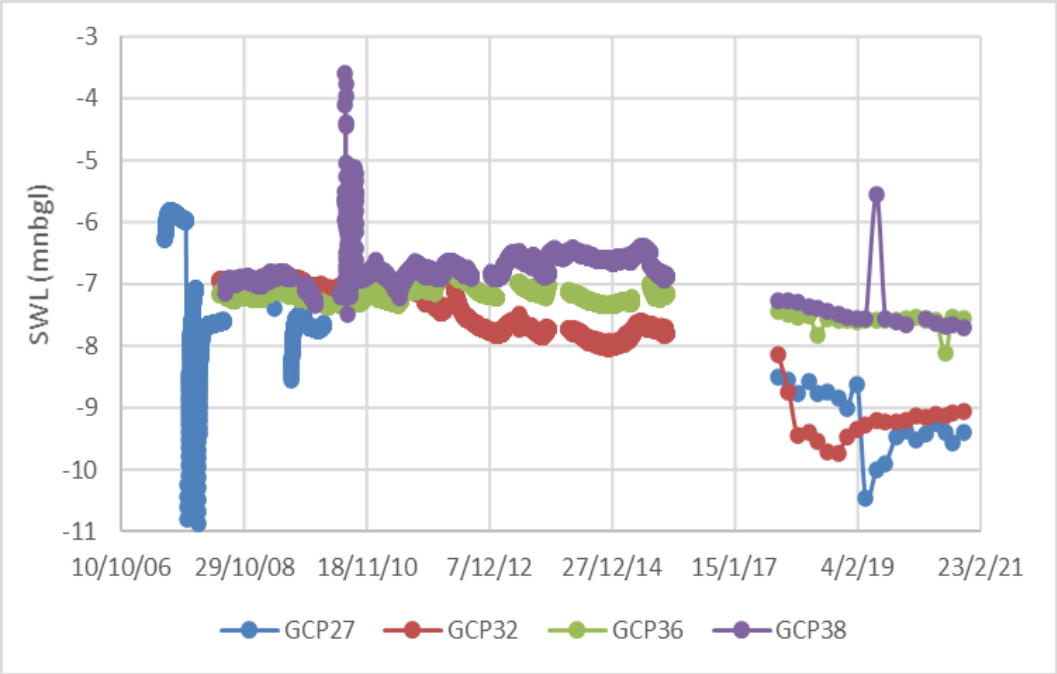
Appendix 2 Rix's Creek Mine Ground Water Sampling Results

RCN Basement Ground Waters

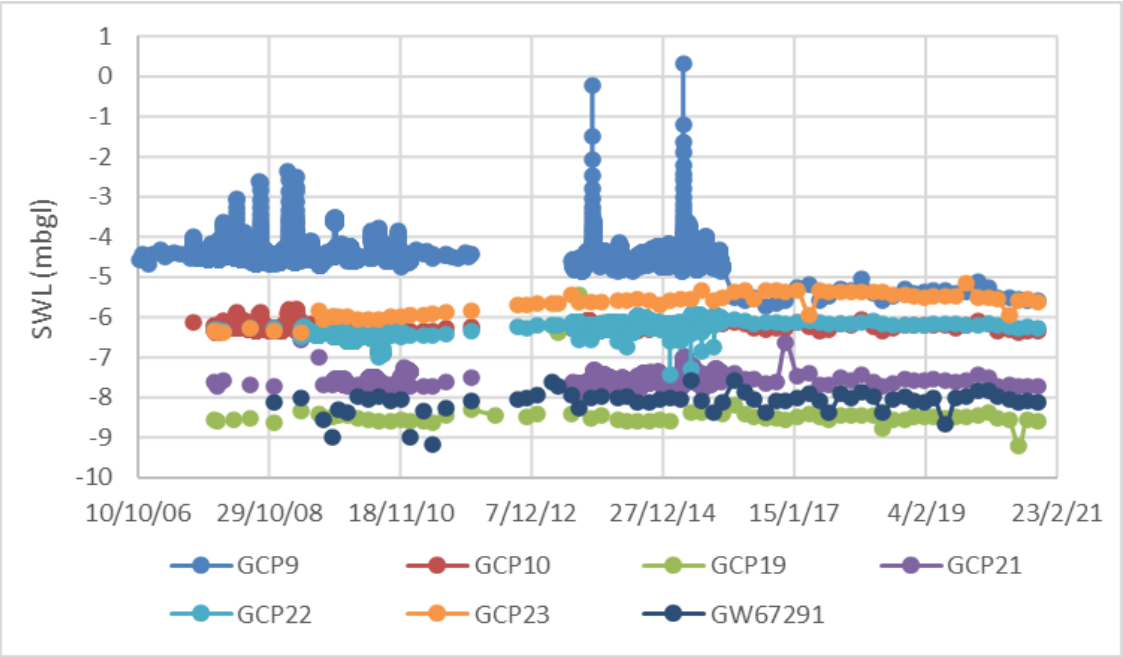


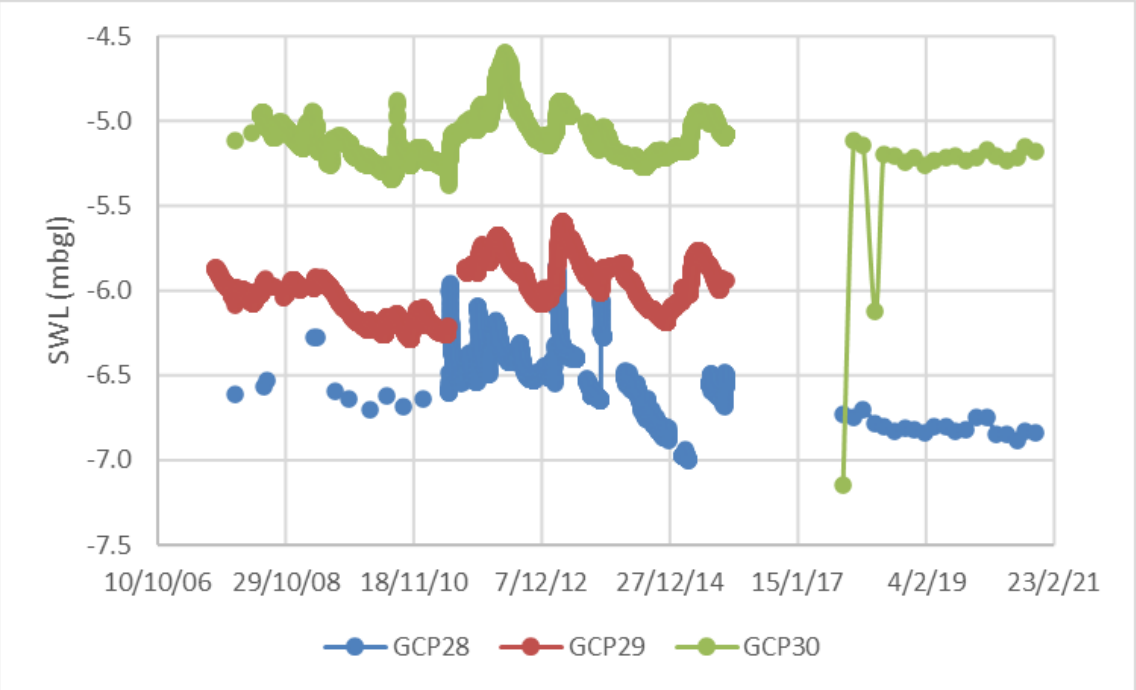


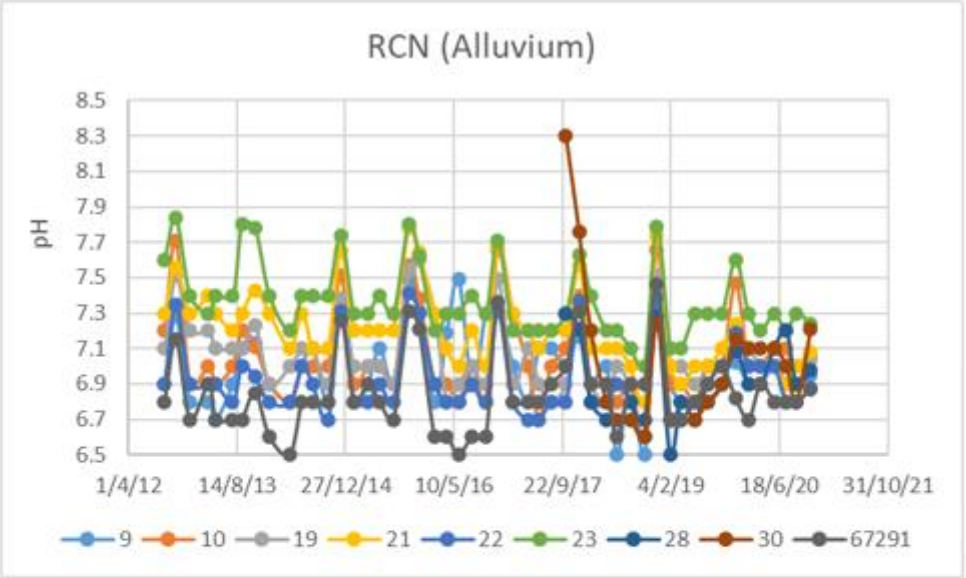
Rixs Creek North & Rixs Creek South

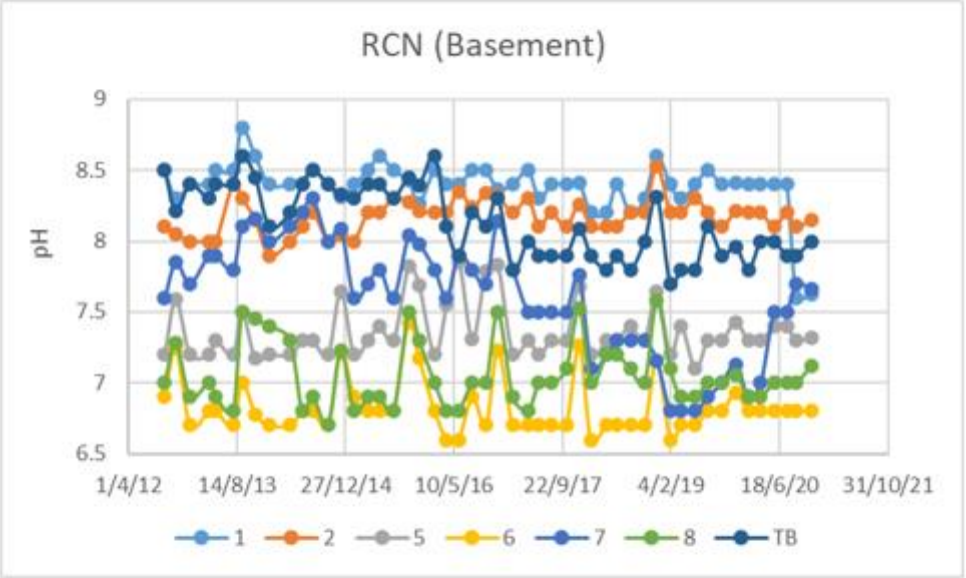


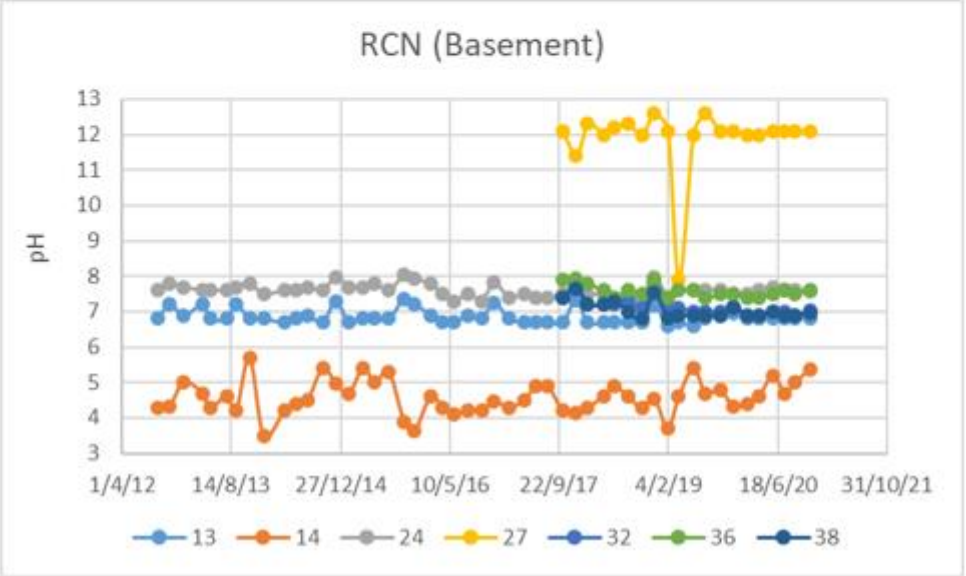
RCN Ground Water Alluvium

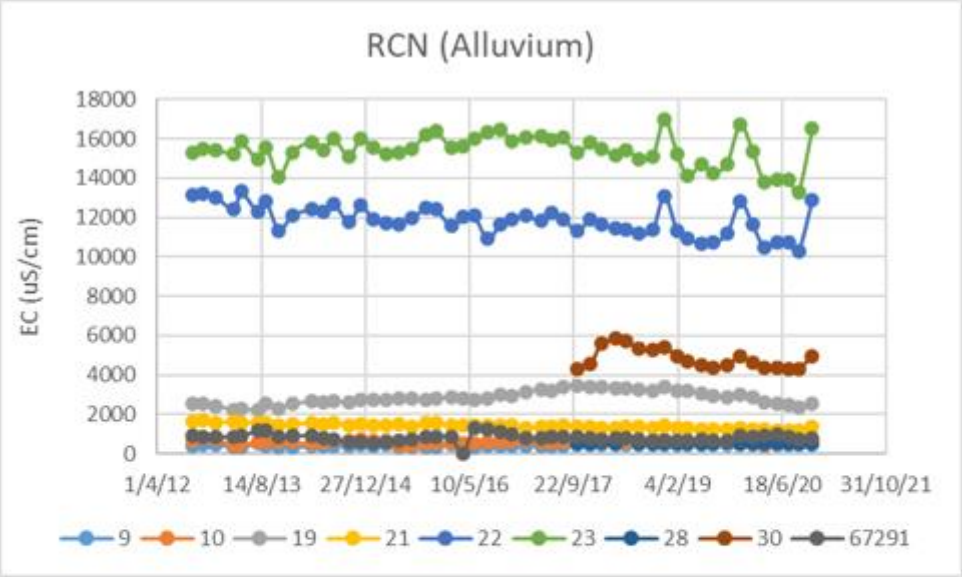


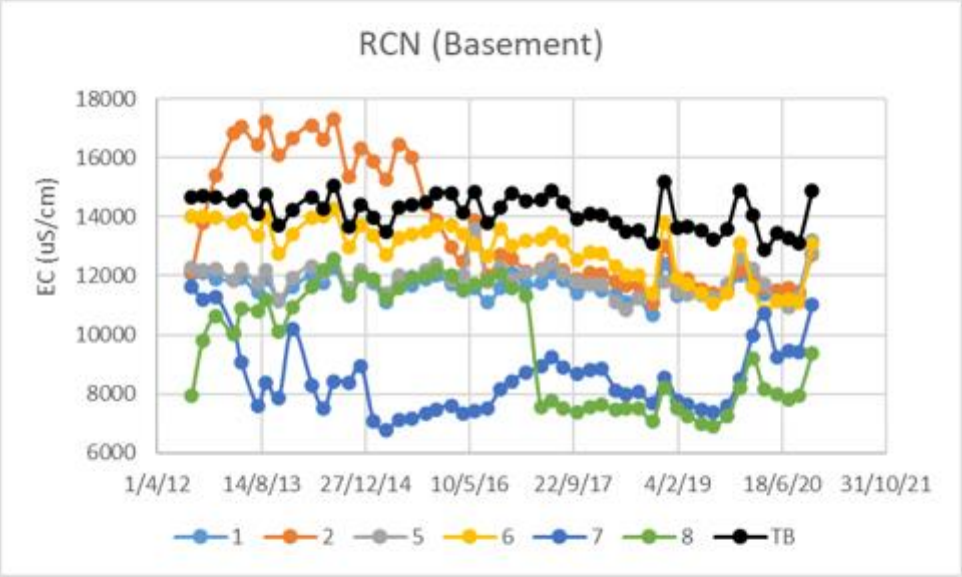


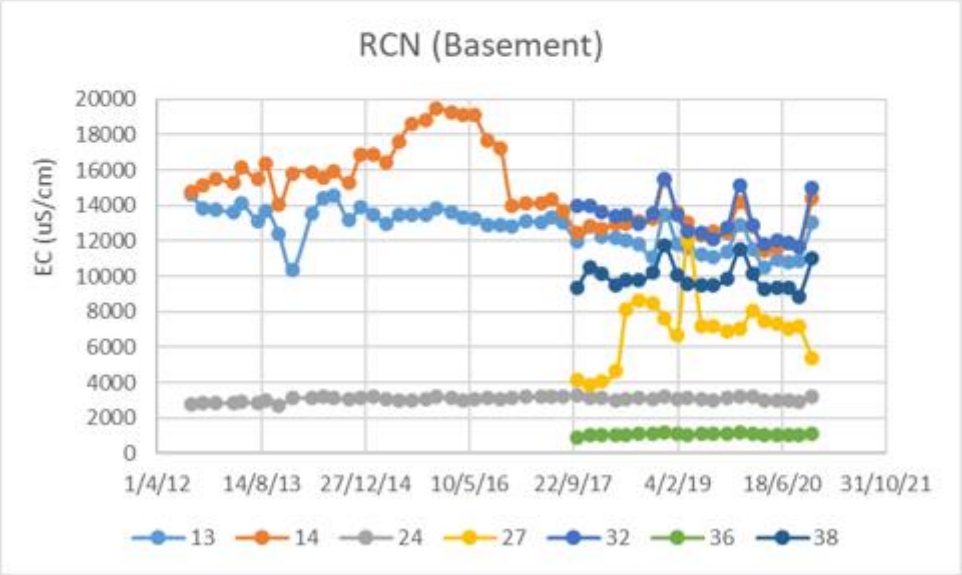

RCN (Alluvium)
pH
8.5
8.3
8.1
7.9
7.7
7.5
7.3
7.1
6.9
6.7
6.5
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
9
10
19
21
22
23
28
30
67291


RCN (Basement)
pH
9
8.5
8
7.5
7
6.5
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
1
2
5
6
7
8
TB


RCN (Basement)
pH
13
12
11
10
9
8
7
6
5
4
3
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
13
14
24
27
32
36
38


RCN (Alluvium)
EC (uS/cm)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
9
10
19
21
22
23
28
30
67291


RCN (Basement)
EC (uS/cm)
18000
16000
14000
12000
10000
8000
6000
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
1
2
5
6
7
8
TB


RCN (Basement)
EC (uS/cm)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1/4/12
14/8/13
27/12/14
10/5/16
22/9/17
4/2/19
18/6/20
31/10/21
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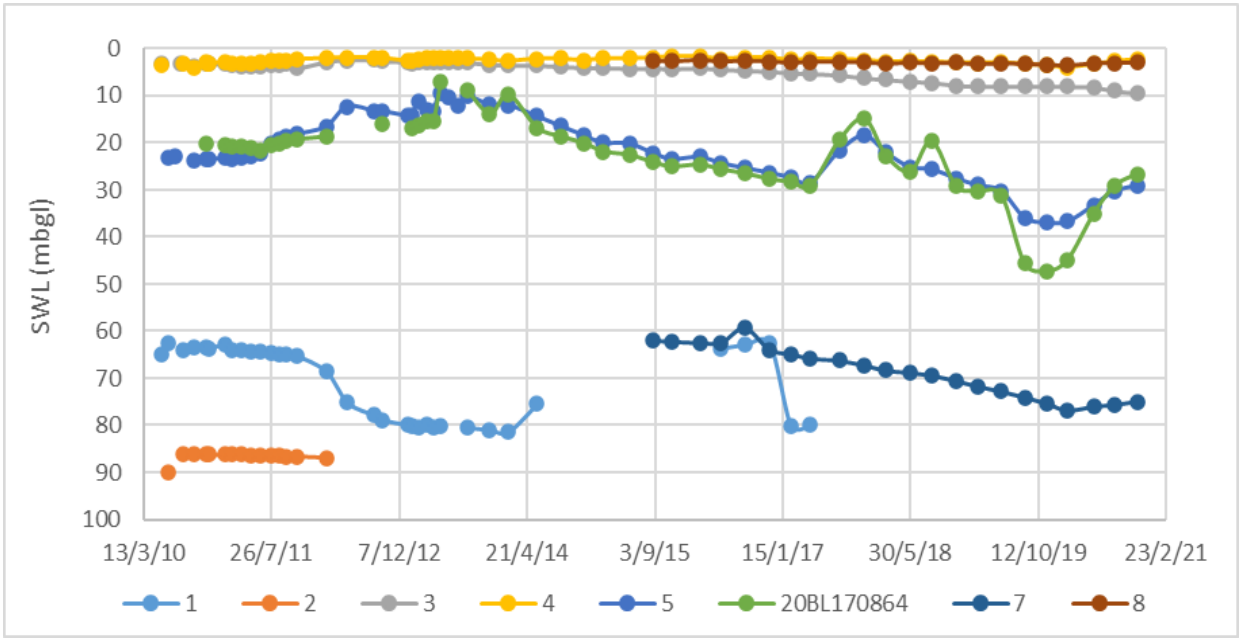
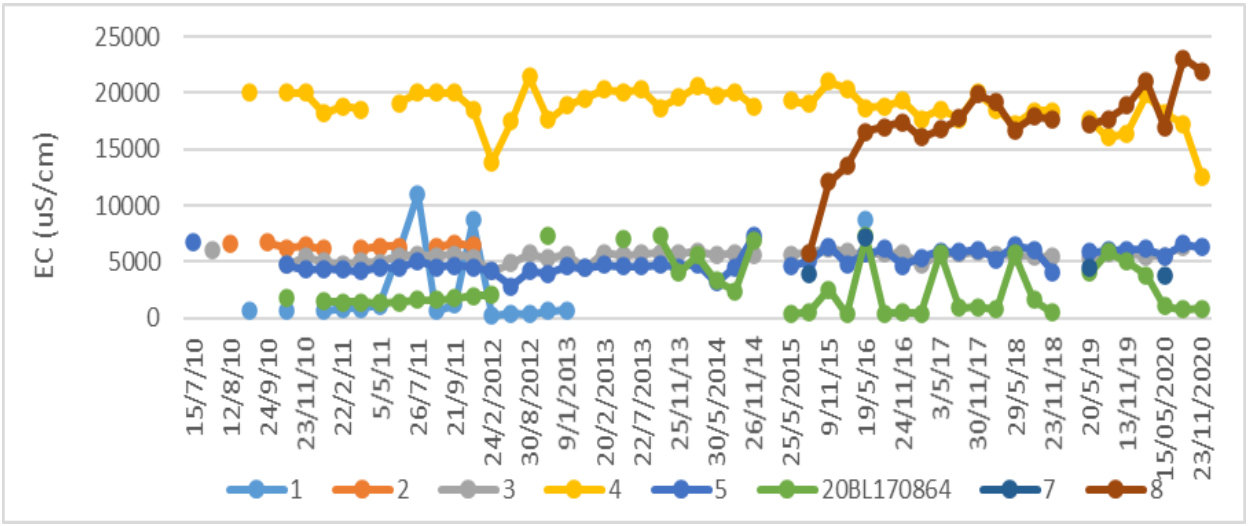
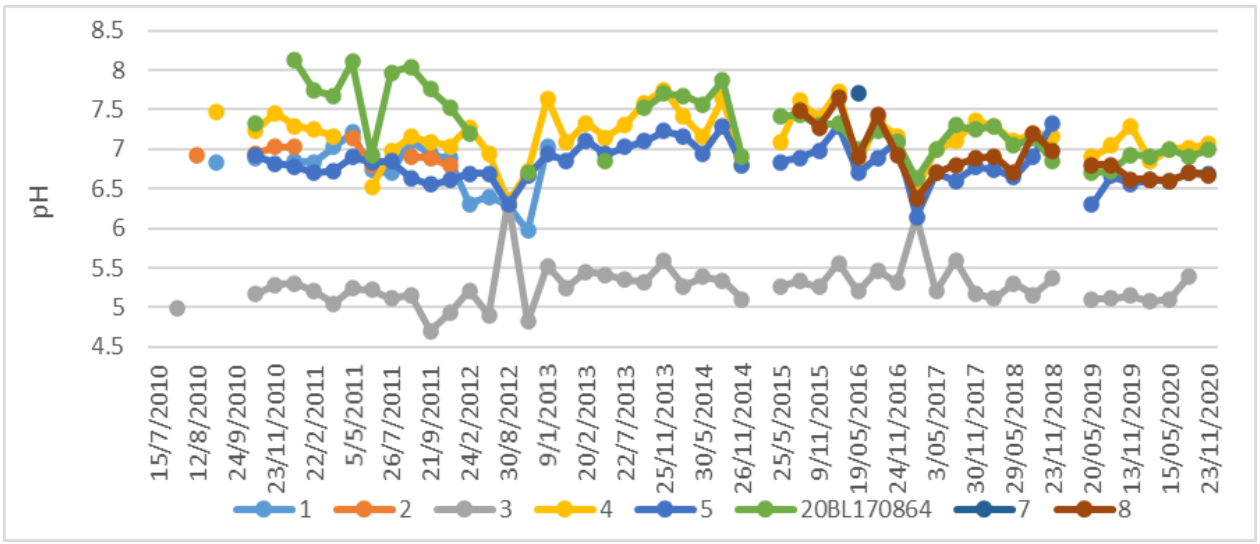
RCS Ground Water Results





Rixs Creek North & Rixs Creek South



Appendix 3 Rix's Creek Mine Community Complaints 2019

THE Bloomfield GROUP

WE CARE. WE DELIVER.

Rix's Creek Mine

Complaints Register

2020

Number	Date Received	Site	Nature of Complaint	Location	How received	Action taken and findings
JANUARY 2020						
					No complaints received	
FEBRUARY 2020						
					No complaints received	
MARCH 2020						
					No complaints received	
APRIL 2020						
1	20/04/2020	Rix's Creek	Blasting and Exclusion zones	Maison Dieu	Letter (via Email)	**Action Taken**: Meeting between Complainant and The Bloomfield Group representatives held 30/04/2020. Residence is outside the 500m exclusion zone. **Findings**: Ongoing consultation with community resident.

2	29/04/2020	Rixs Creek	Noise	Maison Dieu	Phone	**Action Taken**: Environmental Technician (ET) was conducting noise monitoring, near complainant's residence, at the time of the complaint. ET determined that noise was elevated and contacted the Open Cut Examiner (OCE) to make operational changes to reduce noise. Once operational changes were made noise was re-measured at the same location and determined to be below noise criteria. No further actions taken. **Findings**: Rix's Creeks Night time noise monitoring and Trigger Action Response Plan (TARP) for noise was able to measure, identify and quickly resolve the issue
MAY 2020						
3	06/05/2020	Rixs Creek	Blast	Glennies Creek	Phone	**Action Taken:** Environment Manager (EM) contacted complainant in relation to their blast complaint. EM explained the complainants' rights to have an inspection undertaken on the property to assess any blast damage. EM also discussed placement of a permanent blast monitor at residence. Environmental Advisor (EA) contacted the complainant and provided the blast results. Blast results from a nearby monitor were within blast criteria. **Findings**: Blast monitoring results at nearest monitor was compliant. EM investigating possibility of having a permanent blast monitor placed at residence property to assess all blasts from Rix's Creek Mine.
4	19/05/2020	Rix's Creek	Noise	Long Point	Phone	**Action Taken**: Environment Advisor (EA) returned Complainant call. Complainant said they could hear rocks banging when being loaded into trucks. EA advised that Night time Noise monitoring conducted along Maison Dieu Road at that time had been under the limits. **Findings**: EA requested noise monitoring to be conducted at Long Point Road the next evening and as per noise enhancement modelling.

JUNE 2020						
5	25/06/2020	Rix's Creek	Lighting	Wattle Ponds	Text / Complaint Hotline	**Action Taken:** Following text message Environment Officer (EO) attended Wattle Ponds Road and determined the lights were intrusive. EO communicated with OCE and lights were re-directed till EO satisfied lights no longer an issue. Environment Manager (EM) rang Complainant in response to complaint line to discuss issue. **Findings:** Environment Advisor (EA) and EO attended the dump where lights were set up and reviewed the setup. Setup requirements noted to OCE's.
6	29/06/2020	Rix's Creek	Blast	Maison Dieu	Email from NSW EPA	**Action Taken:** Environment Advisor (EA) replied to EPA via email that no blasting was undertaken on Thursday 25/06/2020 at Rix's Creek. EA also supplied the blast results from Friday 26/06/2020 blasts. **Findings:** Rix's Creek did not blast on Thursday 25/06/2020. Blast monitoring results at nearest monitor was compliant for Friday 26/06/2020. No further action required.
JULY 2020						
7	02/07/2020	Rix's Creek	Dust	Bridgman Rd	Text / Complaint Hotline	**Actions:** Environment Advisor (EA) and Environment Officer (EO) investigated complaint issue. RCN Tailings Dam 2 southern area identified as source. EA contacted RCN CHPP Supervisor and asked for spigot lines to be opened to wet surface of TD2 southern area. EM contacted the Complainant back notifying them of the action taken by the mine and offered the Complainant our 'Complaints Line' phone number for future reference. **Findings:** Area of Tailings Dam not in regular use and North west winds suddenly picked up. RCN CHPP are to open spigot lines prior to adverse weather conditions.

8	03/07/2020	Rix's Creek	Dust	Bridgman Rd	Complaint Hotline	**Actions:** Spigot lines open and wetting surface of Tailings dam. Environment Advisor (EA) phoned Complainant outlining the actions that had been taken in relation to the Tailings Dam surface area. **Findings:** Surface area of TD2 southern area being saturated. RCM monitoring weather conditions.
9	23/07/2020	Rix's Creek	Noise	Gouldsville / Long Point Road	OCE Phone	**Actions:** OCE asked Environmental Officer (EO) to attend the Longpoint area and take a reading. Excavator operators told to be mindful of the height of bucket when loading trucks. **Findings:** EO completed reading which was compliant. No other operational changes required apart from reduced height of loading bucket.
10	25/07/2020	Rix's Creek	Dust	Gowrie	Email	**Actions:** Environment Manager (EM) replied to the Complainant via email outlining the mines dust management processes. EM also outlined our air quality monitoring results which demonstrate our compliance to the Environment Protection Licence and offered the Bloomfield website address. **Findings:** EM made themselves available for a discussion if the Complainant wished to phone.

AUGUST 2020						
11	11/08/2020	Rix's Creek	Noise	Maison Dieu	Text Message	**Actions:** Environment Officer (EO) had attended Maison Dieu area between 9 - 10pm conducting noise monitoring (3 readings) prior to complaint. The EO noted that while he could hear noise from operations, there was also significant highway truck noise. All readings were below compliance limits. EO informed the Complainant that he would be returning to continue noise monitoring after the start of Night shift from around 10:30pm. **Findings:** EO noted that modelling showed enhancement in the direction of Maison Dieu area. EO continued to monitor noise within the Maison Dieu and surrounding areas till end of shift. All readings were below compliance limits.
12	12/08/2020	Rix's Creek	Noise	Maison Dieu	Text Message	**Actions:** Environment Officer (EO) had attended Maison Dieu area between 9 - 10pm conducting noise monitoring (2 readings) prior to complaint. Both readings were below compliance. **Findings:** EO performed noise monitoring after Complainants text message. Reading was below compliance limits.
13	18/08/2020	Rix's Creek	Noise	Maison Dieu	Text Message	**Actions:** Environment Officer (EO) had attended Maison Dieu area between 8:30 - 10pm conducting noise monitoring prior to complaint. All readings were below compliance limits. **Findings:** EO performed noise monitoring after Complainants text message. Readings was below compliance limits.

14	25/08/2020	Rix's Creek	Noise	Maison Dieu	Text Message	**Actions:** Environment Officer (EO) had attended area between 9:30pm - 01:00am, conducted readings. One reading close to limits, OCE notified as per TARP. EO conducted three further readings all below compliant limits. **Findings:** EO continued night time noise monitoring in the area after Complainants Text message.
15	26/08/2020	Rix's Creek	Noise	Maison Dieu	Text Message	**Actions:** Environment Officer (EO) had been monitoring in the area from 10:00pm. At 11:41 TARP was activated, OCE notified and operational changes made to reduce noise. **Findings:** EO continued night time noise monitoring in the area. As per TARP operational changes made through the shift to minimise noise.
SEPTEMBER 2020						
16	02/09/2020	Rix's Creek	Blast	Glennies Creek	Email	**Actions:** Environment Manager (EM) replied by email with blast results. **Findings:** EM explained that blast results were below compliance limits. EM to phone Complainant to discuss the blast results.
17	03/09/2020	Rix's Creek	Noise	Maison Dieu	Text	**Actions**: Environment Officer (EO) was conducting monitoring in the Maison Dieu area at the time of complaint. **Findings**: EO conducted monitoring between 21:00 - 01:00, all readings were below compliance limits. No further actions required.

18	08/09/2020	Rix's Creek	Noise	Maison Dieu	Text	**Actions**: Environment Officer (EO) was conducting monitoring in the Maison Dieu area from 8:30pm. At 9:10 TARP was activated, OCE notified and operational changes made to reduce noise. During this measurement Complainants text was received. EO continued to monitor in the area during the night. **Findings**: EO continued night time noise monitoring in the area. As per TARP operational changes made through the shift to minimise noise. No further actions required.
19	18/09/2020	Rix's Creek	Noise	Maison Dieu	EPA Email (Anonymous)	**Actions**: Environment Adviser and Officer reviewed Noise Monitoring records for these two days. **Findings**: All readings below compliance levels. No further action required.
20	18/09/2020	Rix's Creek	Noise/Blast	Maison Dieu	Text	**Actions**: Noise Monitor (NM) conducted monitoring in the Maison Dieu area from 21:00 till 01:00. **Findings**: NM continued monitor in Maison Dieu area. All readings were below compliance levels. Blast results from morning blast were also below compliance levels (Vibration result 1.11mm - Limit 5mm; Overpressure result 102dB - Limit 115dB). No further action required.
21	22/09/2020	Rix's Creek	Noise	Maison Dieu	EPA Email (Anonymous)	**Actions**: Environment Adviser (EA) reviewed the Noise Monitoring records for that night (20th Sept). **Findings** EA found that there was reduced operations due to rain event that day. The Noise monitoring results from the Maison Dieu area were below compliance limits. EA forwarded on Noise Monitoring results to EPA. No further action required.

22	25/09/2020	Rix's Creek	Dust	Bridgman Road	Complaints Hotline	**Actions**: At time of call, spigot lines were open on eastern side of dam. Immediate action taken to open all spigot lines to the east to saturate tailings dam. Water cart sent to water the crest of the wall of the dam. **Findings**: Environment Advisor contacted Complainant to advise of the actions taken to mitigate the dust. Complainant was satisfied that actions were being put in place.
OCTOBER 2020						
23	20/10/2020	Rix's Creek	Noise	Maison Dieu	Text	**Actions**: Environment Officer (EO) had taken four readings between 20:50 - 21:50 in the Maison Duie area. All readings were below compliance levels. **Findings**: EO continued monitoring in the Maison Dieu area throughout the night with all readings below compliance levels. No further action required.
NOVEMBER 2020						
24	11/11/2020	Rix's Creek	Noise	Maison Dieu	Text	**Actions**: Environment Officer (EO) had taken five readings between 21:00 - 22:30 in the Maison Duie area. All readings were below compliance levels. **Findings**: EO continued monitoring in the Maison Dieu area throughout the night with all readings below compliance levels. No further action required.
DECEMBER 2020						
					No complaints received	