

Maules Creek Coal Mine Community Consultative Committee Meeting #25

Environmental Monitoring Report For the Q1 period, January - March 2019

Attended Noise Monitoring

Attended noise monitoring was undertaken at six locations during January, February and March 2019 by an independent acoustic consultant. The measured noise level (LAeq 15 minute) attributed to Maules Creek Coal Mine (MCCM) and applicable criteria for each location are shown in the tables below.

LAeq, 15minute GENERATED BY MCCM AGAINST OPERATIONAL NIGHT NOISE CRITERIA – JANUARY TO MARCH 2019.

Table 1 - January Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	14/01/2019 23:00	0.5	0.0	35	Yes	<25	Nil
NM2	15/01/2019 00:00	0.4	0.0	39	Yes	<20	Nil
NM3	15/01/2019 01:00	0.6	0.0	35	Yes	IA	Nil
NM4	14/01/2019 23:25	0.8	0.0	35	Yes	IA	Nil
NM5	14/01/2019 22:30	0.5	0.0	35	Yes	25	Nil
NM6	15/01/2019 00:25	0.5	0.0	35	Yes	IA	Nil

Table 2 - February Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	06/02/2019 22:30	4.0	0	35	No	IA	NA
NM2	06/02/2019 23:00	4.3	0	39	No	<30	NA
NM3	07/02/2019 00:00	5.2	0	35	No	IA	NA
NM4	06/02/2019 23:30	4.6	0	35	No	IA	NA
NM5	06/02/2019 22:00	5.0	0	35	No	IA	NA
NM6	07/02/2019 00:00	5.2	0	35	No	IA	NA

Table 3 - March Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	27/03/2019 22:32	0.5	0	35	Yes	IA	Nil
NM2	27/03/2019 23:01	2.5	0	39	Yes	<25	Nil
NM3	27/03/2019 23:29	4.4	0	35	No	<20	NA
NM4	27/03/2019 23:25	3.9	0	35	No	<20	NA
NM5	27/03/2019 22:01	1.9	0	35	Yes	IA	Nil
NM6	27/03/2019 23:51	2.5	0	35	Yes	<20	Nil

(1). Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres);

(2). Estimated or measured LAeq,15minute attributed to MCCM;

(3). NA in exceedance column means criterion is not applicable, either due to atmospheric conditions outside those specified in project approval or due to property acquisition by MCC; and

(4). Bold results indicate exceedance of criterion.

IA – Inaudible NM – Not measurable

None of the measurements during Q1 satisfied the conditions for further assessment when assessed for the applicability of low frequency modification factors in accordance with the EPA's Noise Policy for Industry. Therefore, no further assessment of modifying factors was needed to be undertaken.

The Maules Creek Coal (MCC) EPL 20221 also has a '1 Minute - Night' criteria (LA1) that applies from 10pm to 7am Monday to Saturday & 10pm to 8am Sundays and Public Holidays. The results for the LA1 monitoring are shown below. The results show that mine operations did not exceed the applicable LA1 criteria during attended noise monitoring in Q1 2019.

LA1, 1minute GENERATED BY MCC AGAINST OPERATIONAL NIGHT NOISE CRITERIA – JANUARY TO MARCH 2019.

Table 4 - January Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	14/01/2019 23:00	0.5	0.0	45	Yes	<25	Nil
NM2	15/01/2019 00:00	0.4	0.0	45	Yes	<20	Nil
NM3	15/01/2019 01:00	0.6	0.0	45	Yes	IA	Nil
NM4	14/01/2019 23:25	0.8	0.0	45	Yes	IA	Nil
NM5	14/01/2019 22:30	0.5	0.0	45	Yes	30	Nil
NM6	15/01/2019 00:28	0.5	0.0	45	Yes	IA	Nil

Table 5 - February Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	06/02/2019 22:30	4.0	0	45	No	IA	NA
NM2	06/02/2019 23:00	4.3	0	45	No	<30	NA
NM3	07/02/2019 00:00	5.2	0	45	No	IA	NA
NM4	06/02/2019 23:30	4.6	0	45	No	IA	NA
NM5	06/02/2019 22:00	5.0	0	45	No	IA	NA
NM6	07/02/2019 00:00	5.2	0	45	No	IA	NA

Table 6 - March Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	27/03/2019 22:32	0.5	0	45	Yes	IA	Nil
NM2	27/03/2019 23:01	2.5	0	45	Yes	<30	Nil
NM3	27/03/2019 23:29	4.4	0	45	No	<25	NA
NM4	27/03/2019 23:25	3.9	0	45	No	<20	NA
NM5	27/03/2019 22:01	1.9	0	45	Yes	IA	Nil
NM6	27/03/2019 23:51	2.5	0	45	Yes	<20	Nil

Notes:

- Noise emission limits do not apply during periods of rainfall or wind speeds greater than 3 metres per second (at 10 metres);
 - Estimated or measured LAeq,15minute attributed to MCCM;
 - Estimated or measured LA1,1minute attributed to MCCM;
 - NA in exceedance column means atmospheric conditions outside those specified in Project Approval and criterion is not applicable.
- IA – Inaudible NM – Not measurable

Wind Direction during Attended Monitoring

Wind direction data is collected from the MCCM Automated Weather Station (AWS). Wind data for the duration of the attended monitoring assessment, recorded at the MCCM AWS is presented in the table below.

Table 7 - Prevailing Wind Direction

Monitoring Date	Prevailing Wind Direction
January	Not recorded
February	NE/SE
March	NE

Blast Monitoring

There have been 24 blasts at MCCM during Q1 2019. All blast monitoring results recorded within the reporting period have been within the applicable overpressure and ground vibration limits specified in the respective approvals.

Table 8 - Blast Results Summary Quarter 1 2019

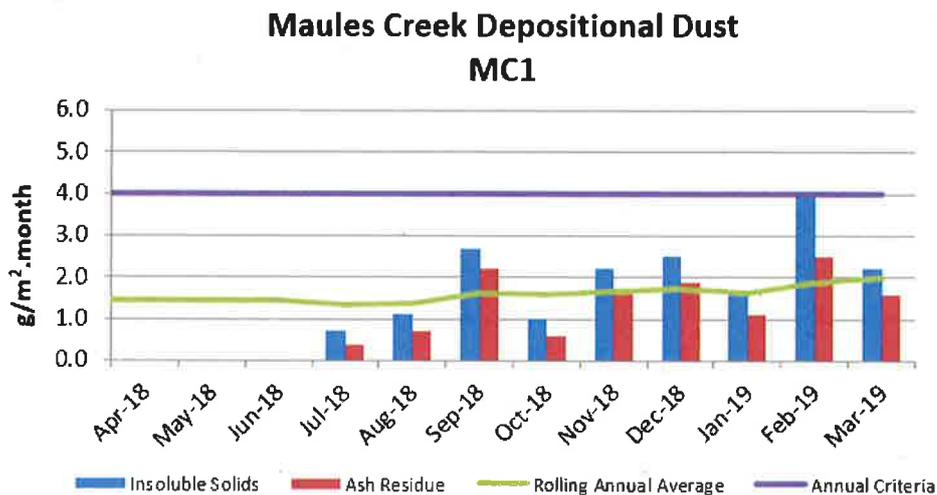
Parameter	Units	Frequency	Number	Average	Max	100% Limit	Exceedance (Yes / No)
Noise	dB (Lin Peak)	All	24	94.623	106.3	120	No
Vibration	mm/s		24	0.195	1.09	10	No

Air Quality

Total Depositional Dust

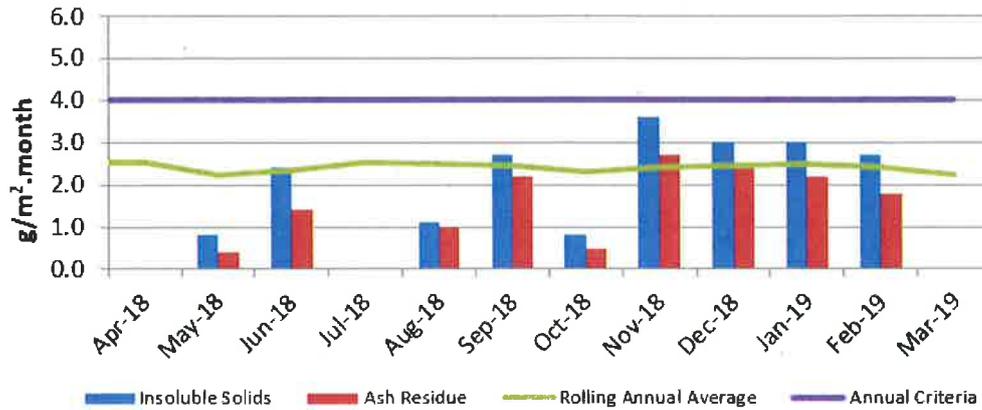
The monthly rolling annual average remains below the relevant Project Approval criteria of 4gm/m²/month for the respective monitoring points, as shown on the graphs below. Depositional dust at MC1 and MC4 was elevated during January and February 2019 and attributable to dust conditions across the region associated with the drought. This trend is seen across all dust monitoring results.

Deposited Dust Monitoring Figures (MC1 – MC4)



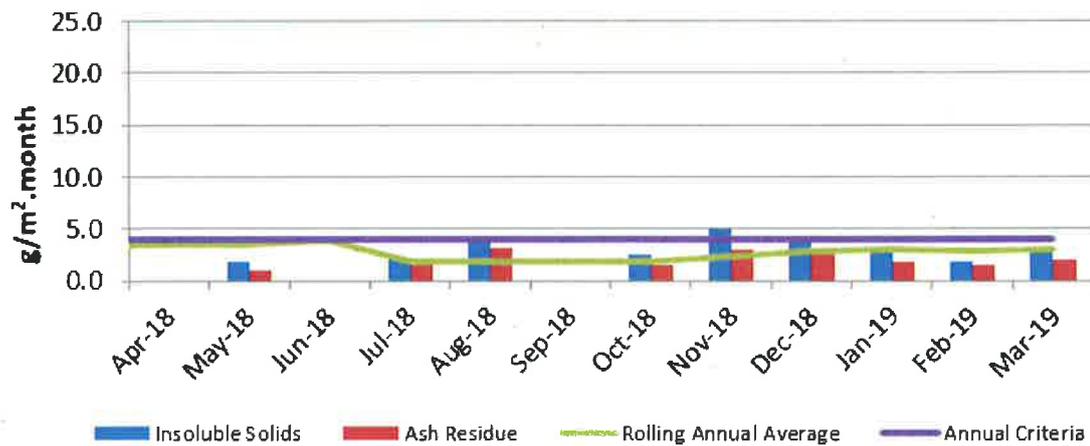
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

Maules Creek Depositional Dust MC2



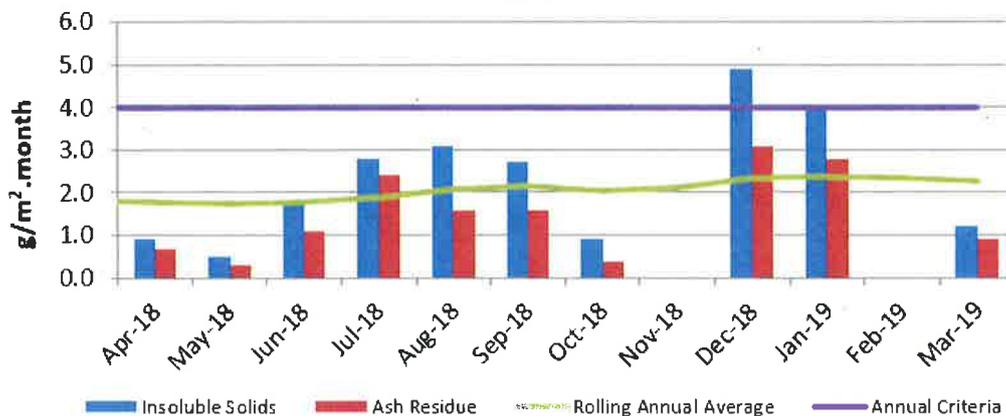
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

Maules Creek Depositional Dust MC3



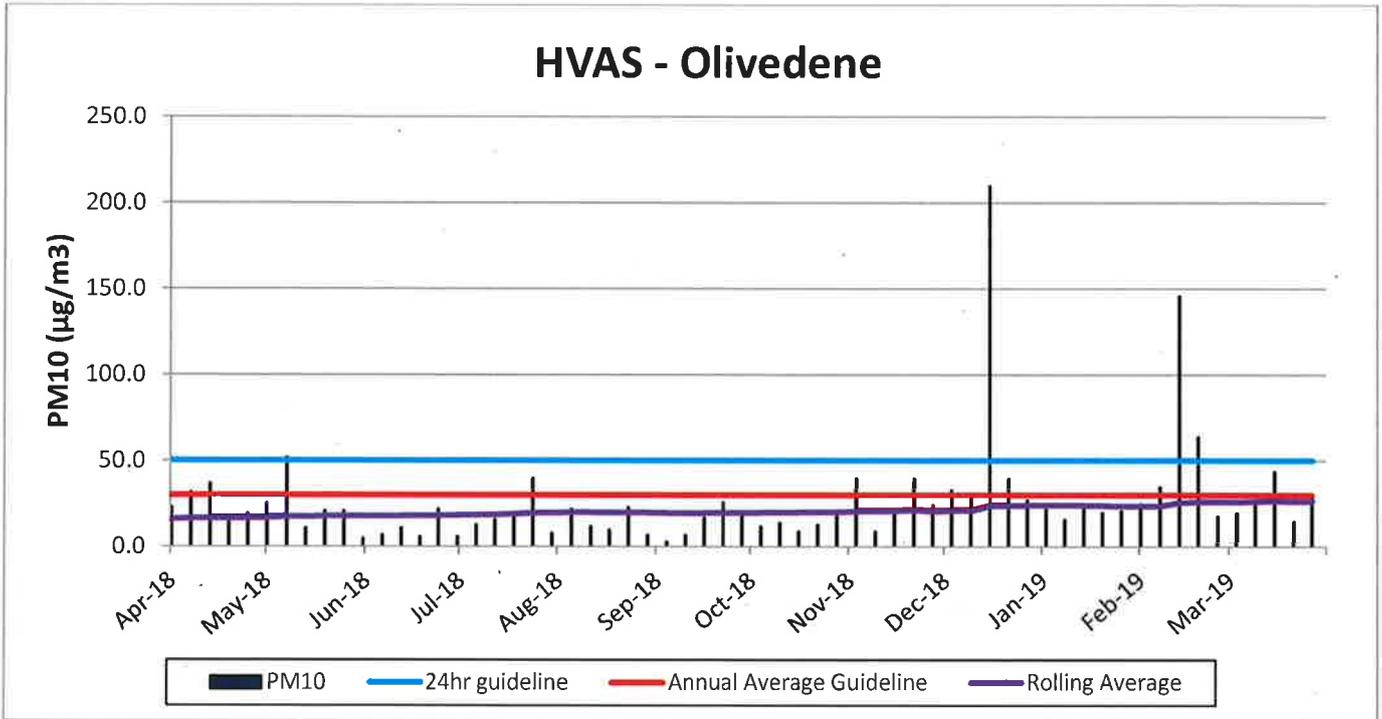
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

Maules Creek Depositional Dust MC4



High Volume Air Sampling (HVAS)

The HVAS monitor is located on the property 'Olivedene,' a mine owned property on Therribri Road.
 HVAS PM₁₀ Rolling Annual Average during Q1 2019 remained below the Annual Average Guideline 30 µg/m³. An elevated result was recorded on 13 and 19 February 2019, which was attributed to regional weather conditions.

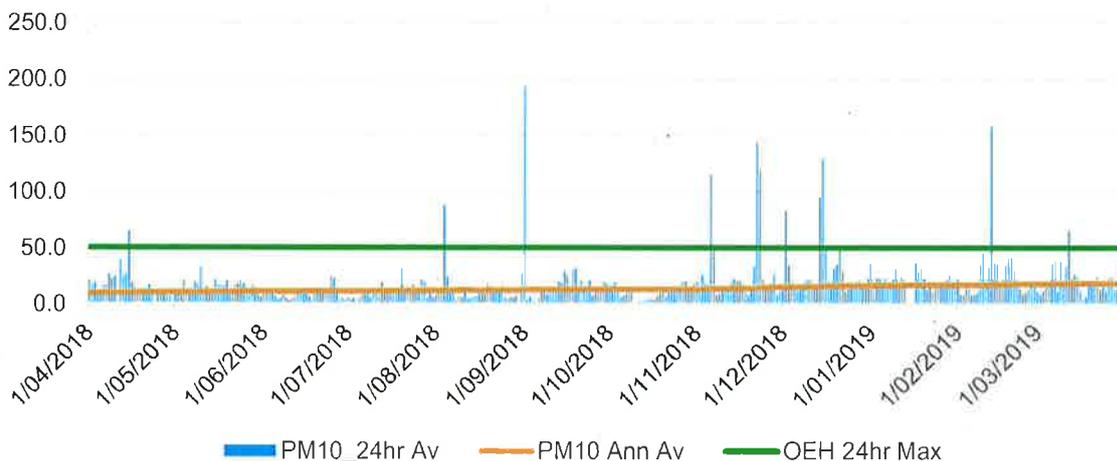


TEOM - PM₁₀ Results

The annual average for PM₁₀ results at the Maules Creek Coal TEOM remain below the Project Approval annual average criteria of 30µg/m³ (at 31 March 2019) as shown in the following figure. The PM₁₀ average results have remained below this criteria since the TEOM was commissioned in November 2011. On 13 February and 12 March 2019, there were 24 hour average results of 157.9 µg/m³ and 65.4 µg/m³ respectively which were above the OEH 24hr maximum. These elevated results were not mine related and attributable to regional dust events.

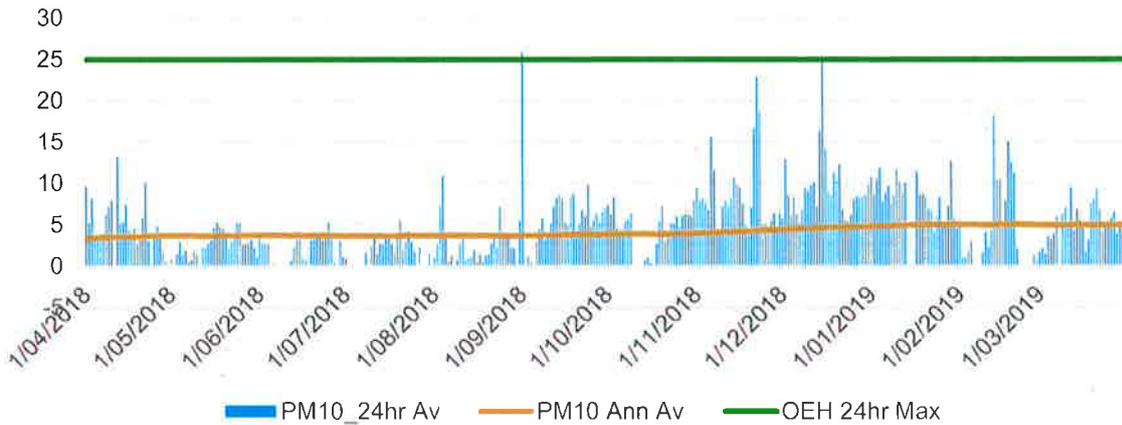
TEOM Result Figures – Particulate Matter PM₁₀µg/m³ and PM_{2.5}µg/m³

Maules Creek TEOM1 PM₁₀



* Blank columns indicate sample periods where there was either power outage, maintenance or other related causes.

Maules Creek TEOM1 PM2.5

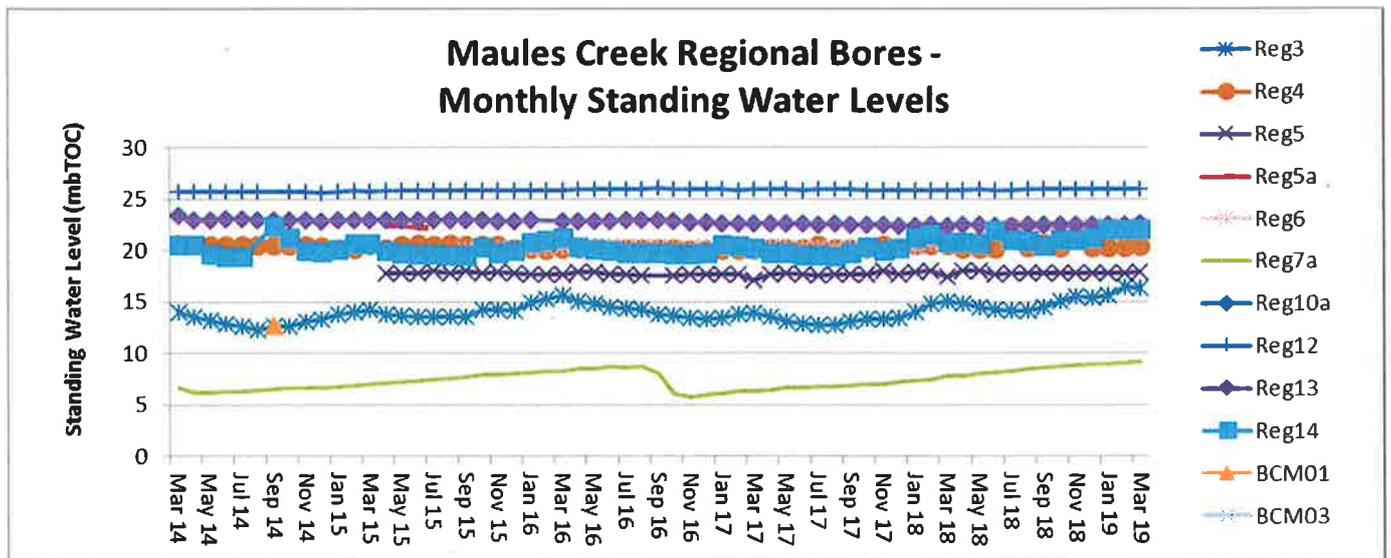


* Blank columns indicate sample periods where there was either power outage, maintenance or other related causes.

Water Monitoring

Groundwater

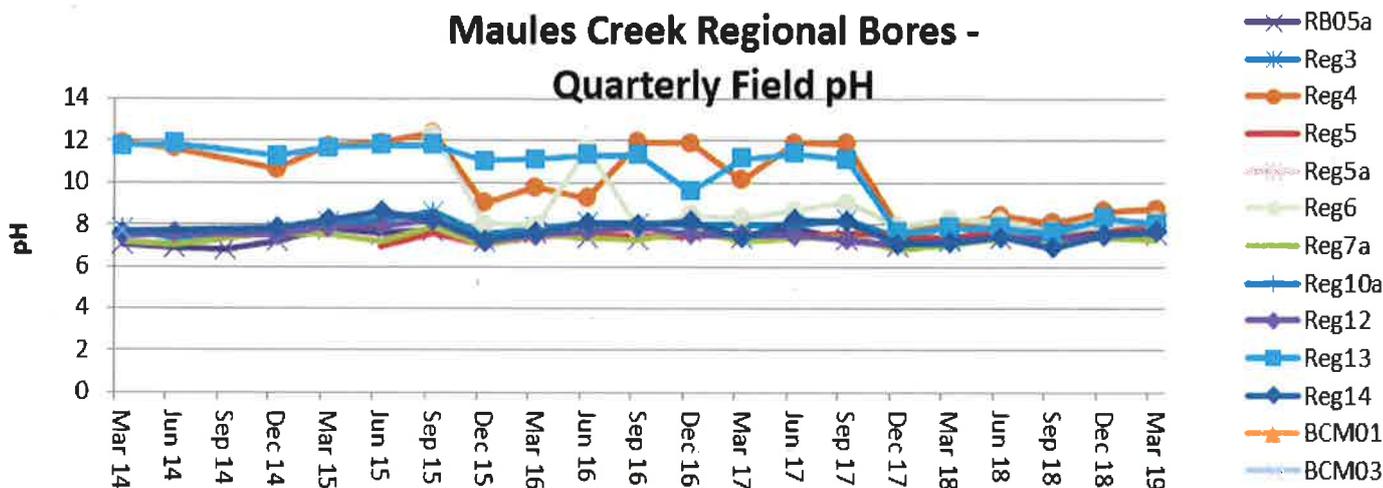
Groundwater monitoring results in open standpipe piezometers show levels to be relatively stable. The Regional bores were installed between Q4, 2013 and Q1, 2014. BCM01, BCM03, Reg10 are shallow bores which have remained dry since construction in 2013.



Acidity / Alkalinity (pH)

Initially bores Reg4 and Reg13 showed elevated pH levels (above pH 8.5) which has been determined to be likely as a result of low recharge volumes and affected by grout within these bores at installation, however for the past 12 months pH levels for both of these bores have stabilised.

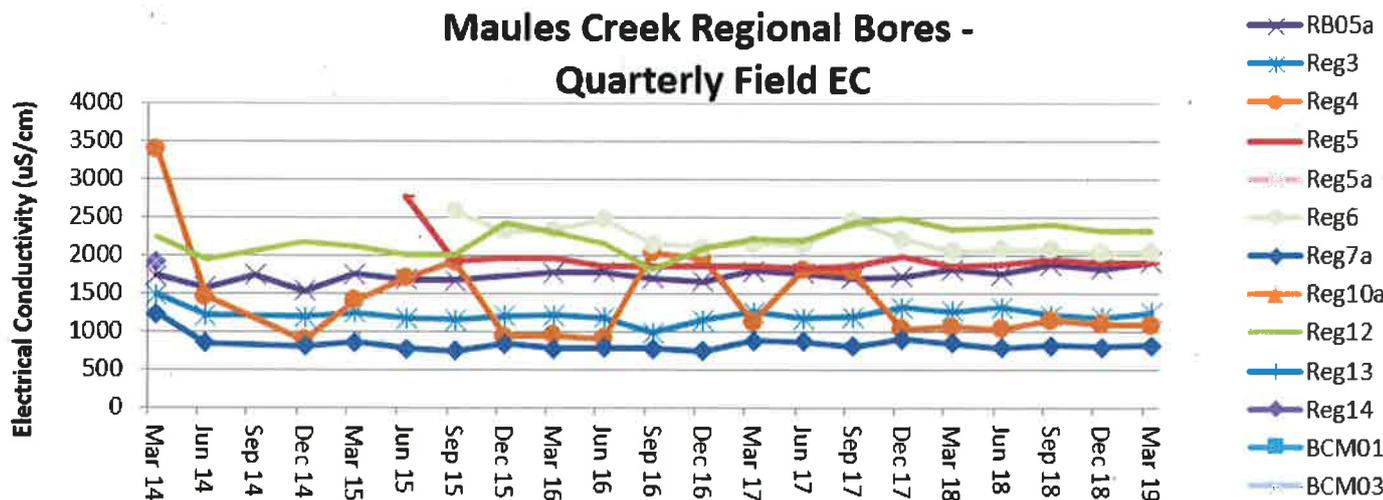
Maules Creek Regional Bores - Quarterly Field pH



Electrical Conductivity

Laboratory Electrical Conductivity (EC) levels are all within historic groundwater EC range of 500 $\mu\text{s}/\text{cm}$ to 2,500 $\mu\text{s}/\text{cm}$, with the exception of monitoring bore Reg13 which has a historic groundwater EC range of 2,500 $\mu\text{s}/\text{cm}$ to 4,100 $\mu\text{s}/\text{cm}$.

Maules Creek Regional Bores - Quarterly Field EC



Wet Weather Discharge Sampling

Between 1st January and 31st March 2019, Maules Creek Coal AWS recorded 129.6 mm of rainfall. There were two rainfall events that exceeded the 38.4mm value over a consecutive 5 day period during Q1 2019. There were no wet weather discharge events during Q1 2019.

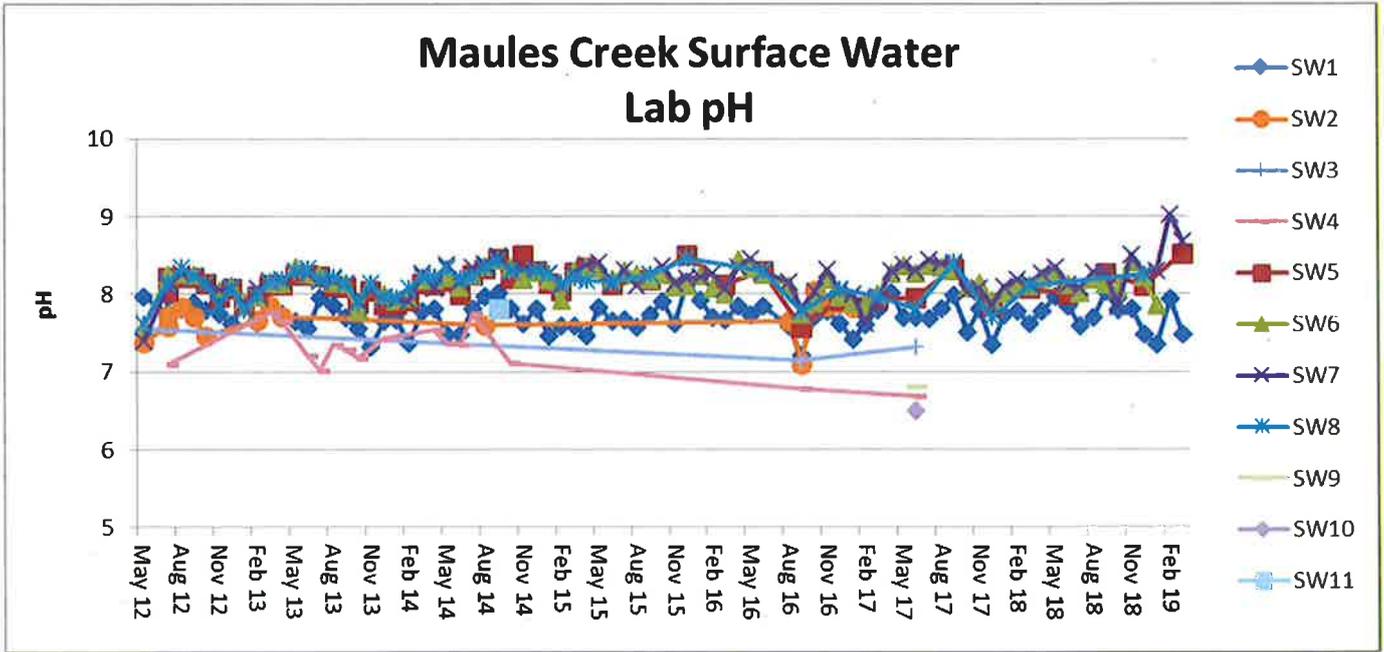
Note: As per wording of condition L2.5 of EPL20221, 38.4mm equates to the 5 day 90 percentile rainfall for the Gunnedah region.

Surface Water – Creeks and Rivers

Routine surface water monitoring is conducted in surrounding creeks and rivers on a monthly basis. Results for parameters including pH, EC and Total Suspended Solids (TSS) are shown in the figures below.

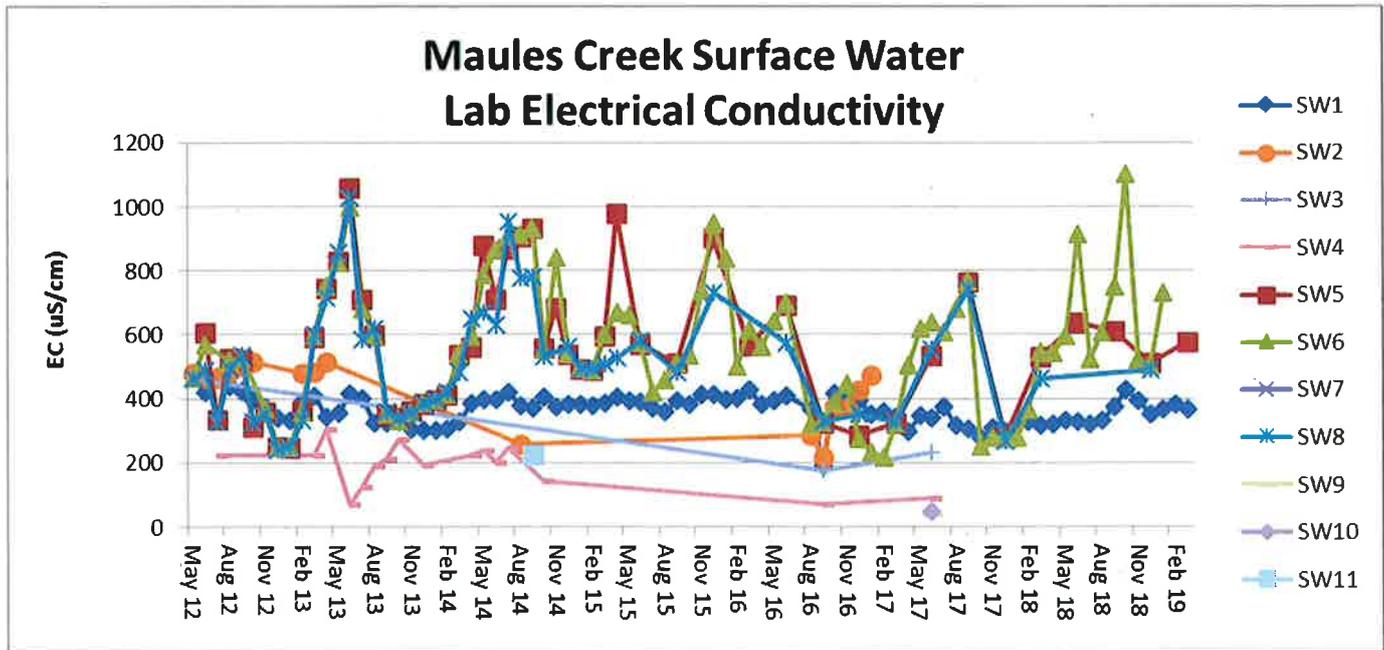
Acidity / Alkalinity (pH)

Monitoring results for pH in creeks and rivers surrounding MCCM are all trending within the ANZECC range for Irrigation, Ecosystem Health and Recreation.



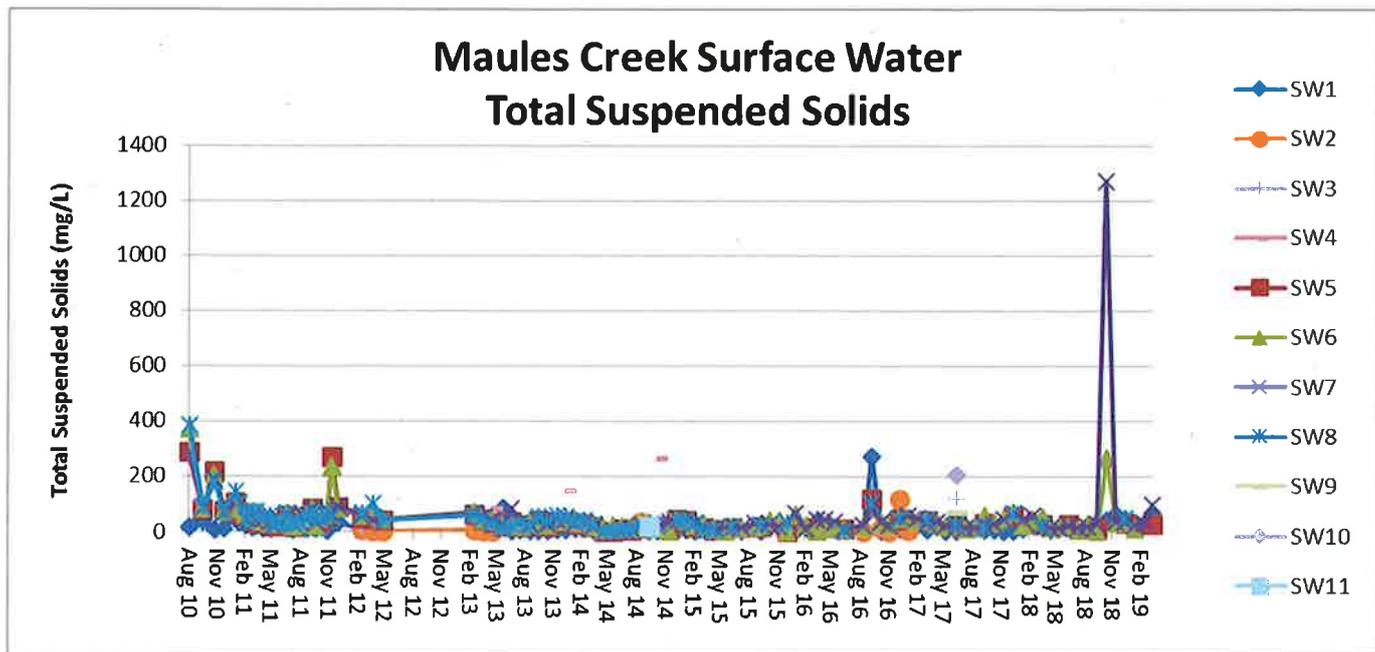
Electrical Conductivity

Surface water EC trends have remained consistent with SW5, SW6, SW7 and SW8 all historically variable. SW5, SW6, SW7 and SW8 are points along the Namoi River which is subject to regulated and variable flow regimes.



Total Suspended Solids (TSS)

Surface water TSS trends have remained generally consistent with historical results. SW5, SW6, SW7 and SW8 are historically variable as they are located along the Namoi River which is subject to regulated and variable flow regimes. Elevated levels of TSS are likely due to a release of dam water into the Namoi River during November.



Rehabilitation

The rehabilitation phase of bulk shaping of the lower benches on the northern and western out of pit dumps is ongoing. At the end of March 2019 approximately 78.9 hectares of bulk reshaping had been completed.

Feral Animal Management

During the most recent routine Whitehaven Offset Area Feral Animal Control program (February and March 2019) the results included: 50 pigs trapped and 32 foxes baited were from the Maules Creek/Boggabri area.

Weed Management

Broadleaf weed control of revegetation areas and Box Thorn were targeted for spraying prior to Xmas. Targeted Tiger Pear spraying has been ongoing for the Southern Offsets otherwise resources have been utilised for tree watering.

Revegetation

During the prevailing hot/dry conditions; resources have been deployed to undertake tree watering of the Maules Offset FY18 revegetation areas to minimise mortality given the unknown duration of the current climatic/weather patterns.

Now with conditions cooling; Maules Offset FY19 revegetation will commence in May 2019.

Monitoring

Autumn ecological monitoring of Maules Offsets was completed in April 2019 including flora surveys in accordance with the Biodiversity Management Plan.

Maules Creek Coal Mine Community Consultative Committee Meeting #26

Environmental Monitoring Report For the Q2 period, April - June 2019

Attended Noise Monitoring

Attended noise monitoring was undertaken at six locations during April, May and June 2019 by an independent acoustic consultant. The measured noise level (LAeq 15 minute) attributed to Maules Creek Coal Mine (MCCM) and applicable criteria for each location are shown in the tables below.

LAeq, 15minute GENERATED BY MCCM AGAINST OPERATIONAL NIGHT NOISE CRITERIA – APRIL TO JUNE 2019.

Table 1 - April Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	16/04/2019 22:26	2.6	0	35	Yes	IA	Nil
NM2	16/04/2019 23:15	1.8	0	39	Yes	<30	Nil
NM3	16/04/2019 23:48	2.4	0	35	Yes	<20	Nil
NM4	16/04/2019 22:51	2.3	0	35	Yes	IA	Nil
NM5	16/04/2019 22:00	2.8	0	35	Yes	IA	Nil
NM6	16/04/2019 23:33	1.8	0	35	Yes	<20	Nil

Table 2 - May Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	02/05/2019 22:30	0.6	0.0	35	Yes	IA	Nil
NM2	02/05/2019 23:20	0.7	0.0	39	Yes	NM	Nil
NM3	02/05/2019 23:39	0.6	0.0	35	Yes	IA	Nil
NM4	02/05/2019 22:56	0.5	0.0	35	Yes	IA	Nil
NM5	02/05/2019 22:00	0.7	0.0	35	Yes	IA	Nil
NM6	02/05/2019 23:48	0.6	0.0	35	Yes	IA	Nil

Table 3 - June Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	05/06/2019 22:30	0.5	0.0	35	Yes	30	Nil
NM2	05/06/2019 23:30	0.4	0.0	39	Yes	34	Nil
NM3	05/06/2019 23:42	0.5	0.0	35	Yes	29	Nil
NM4	05/06/2019 23:00	0.3	0.0	35	Yes	33 ⁴	Nil
NM5	05/06/2019 22:00	0.7	0.0	35	Yes	<25	Nil
NM6	06/06/2019 00:00	0.6	0.0	35	Yes	<25	Nil

(1). Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres);

(2). Estimated or measured LAeq,15minute attributed to MCCM;

(3). NA in exceedance column means criterion is not applicable, either due to atmospheric conditions outside those specified in project approval or due to property acquisition by MCC; and

(4). Indicates the application of a 2dB low frequency modifying factor.

IA/NM – Inaudible NM – Not measurable

During Q2 one measurement satisfied the conditions for further assessment when reviewed for the applicability of low frequency modification factors in accordance with the EPA's Noise Policy for Industry. The measurement was assessed against the low frequency modification factors in accordance with the EPA's Noise Policy for Industry, and was determined to have remained compliant.

The Maules Creek Coal (MCC) EPL 20221 also has a '1 Minute - Night' criteria (LA1) that applies from 10pm to 7am Monday to Saturday & 10pm to 8am Sundays and Public Holidays. The results for the LA1 monitoring are shown below. The results show that mine operations did not exceed the applicable LA1 criteria during attended noise monitoring in Q2 2019.

LA1, 1minute GENERATED BY MCC AGAINST OPERATIONAL NIGHT NOISE CRITERIA – April TO June 2019.

Table 4 - April Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	16/04/2019 22:26	2.6	0	45	Yes	IA	Nil
NM2	16/04/2019 23:15	1.8	0	45	Yes	37	Nil
NM3	16/04/2019 23:48	2.4	0	45	Yes	<20	Nil
NM4	16/04/2019 22:51	2.3	0	45	Yes	IA	Nil
NM5	16/04/2019 22:00	2.8	0	45	Yes	IA	Nil
NM6	16/04/2019 23:33	1.8	0	45	Yes	<20	Nil

Table 5 – May Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	06/02/2019 22:30	4.0	0	45	No	IA	NA
NM2	06/02/2019 23:00	4.3	0	45	No	<30	NA
NM3	07/02/2019 00:00	5.2	0	45	No	IA	NA
NM4	06/02/2019 23:30	4.6	0	45	No	IA	NA
NM5	06/02/2019 22:00	5.0	0	45	No	IA	NA
NM6	07/02/2019 00:00	5.2	0	45	No	IA	NA

Table 6 - June Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	05/06/2019 22:30	0.5	0.0	45	Yes	35	Nil
NM2	05/06/2019 23:30	0.4	0.0	45	Yes	40	Nil
NM3	05/06/2019 23:42	0.5	0.0	45	Yes	35	Nil
NM4	05/06/2019 23:00	0.3	0.0	45	Yes	40	Nil
NM5	05/06/2019 22:00	0.7	0.0	45	Yes	<25	Nil
NM6	06/06/2019 00:00	0.6	0.0	45	Yes	<25	Nil

Notes:

1. Noise emission limits do not apply during periods of rainfall or wind speeds greater than 3 metres per second (at 10 metres);
 2. Estimated or measured LAeq,15minute attributed to MCCM;
 3. Estimated or measured LA1,1minute attributed to MCCM;
 4. NA in exceedance column means atmospheric conditions outside those specified in Project Approval and criterion is not applicable.
- IA – Inaudible NM – Not measurable

Wind Direction during Attended Monitoring

Wind direction data is collected from the MCCM Automated Weather Station (AWS). Wind data for the duration of the attended monitoring assessment, recorded at the MCCM AWS is presented in the table below.

Table 7 - Prevailing Wind Direction

Monitoring Date	Prevailing Wind Direction
April	SE
May	SW/SE
June	SE

Blast Monitoring

There have been 31 blasts at MCCM during Q2 2019. All blast monitoring results recorded within the reporting period have been within the applicable overpressure and ground vibration limits specified in the respective approvals.

Table 8 - Blast Results Summary Quarter 2 2019

Parameter	Units	Frequency	Number	Average	Max	100% Limit	Exceedance (Yes / No)
Noise	dB (Lin Peak)	All	31	91.9	108.4	120	No
Vibration	mm/s		31	0.21	1.39	10	No

Air Quality

Total Depositional Dust

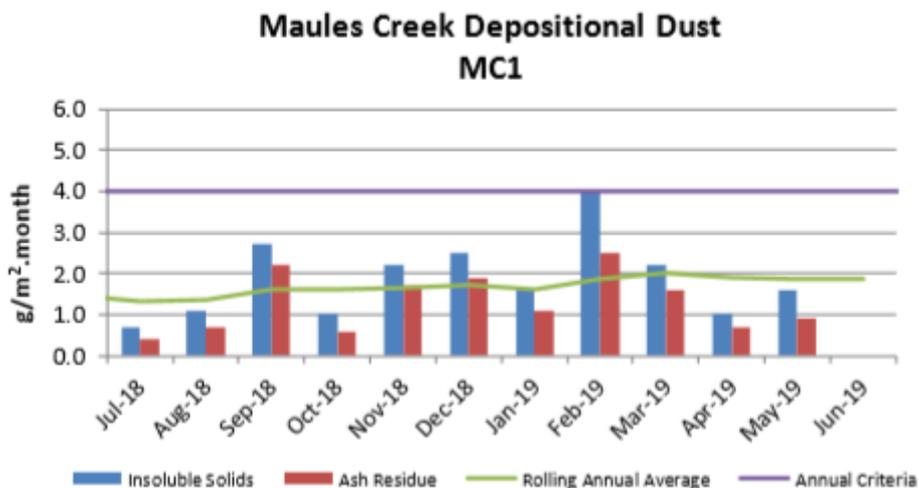
The monthly rolling annual average remains below the relevant Project Approval criteria of 4g/m²/month for the respective monitoring points, as shown on the graphs below. Depositional dust levels at MC1 and MC2 were elevated during June however this is attributed to sample contamination.

Table 9 – Deposited Dust Gauge Results [g/m²/month]

MONTH	MC1	MC2	MC3	MC4
April - 19	1.0	3.7	3.9	3.9
May-19	1.6	1.6	2.4	1.3
June-19	9.0*	5.8*	2.7	0.9
12 MONTH ROLLING AVERAGE	1.9	2.5	3.1	2.2

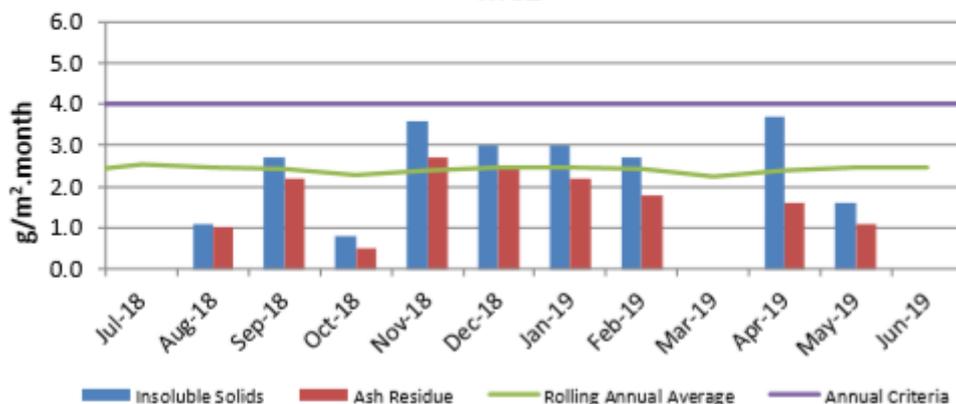
* indicate an excessively contaminated gauge and are not included in the project average. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen, seeds), and insects.

Deposited Dust Monitoring Figures (MC1 – MC4)



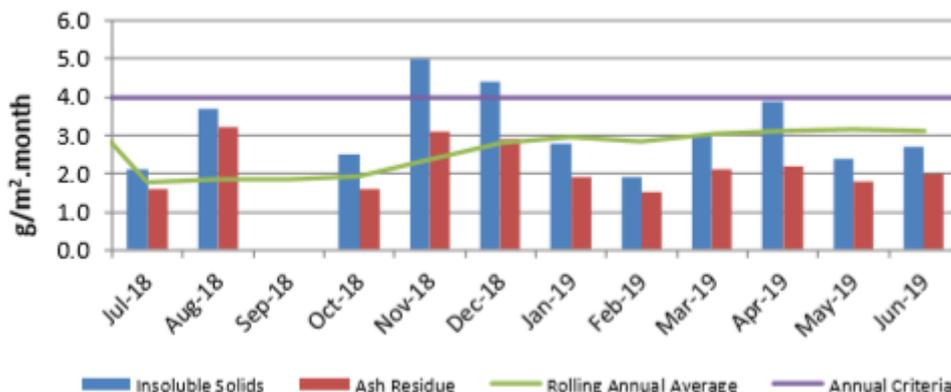
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

Maules Creek Depositional Dust MC2



* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

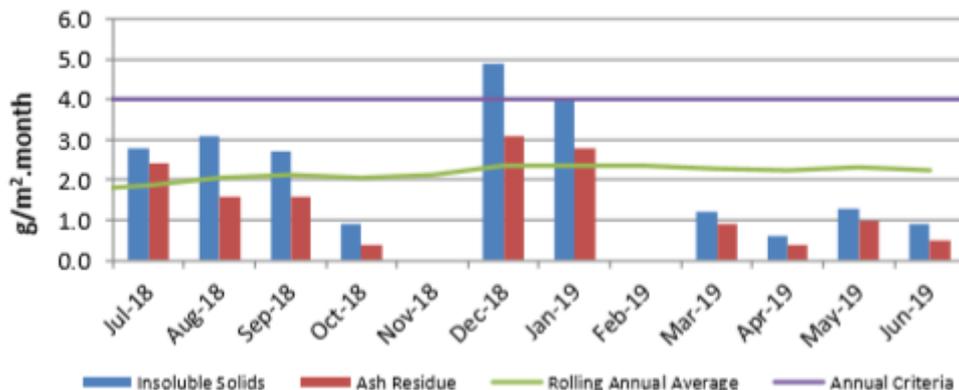
Maules Creek Depositional Dust MC3



* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

** Exceedances recorded in November and December were attributed to the regional events and discussed at the February 2019 CCC meeting

Maules Creek Depositional Dust MC4



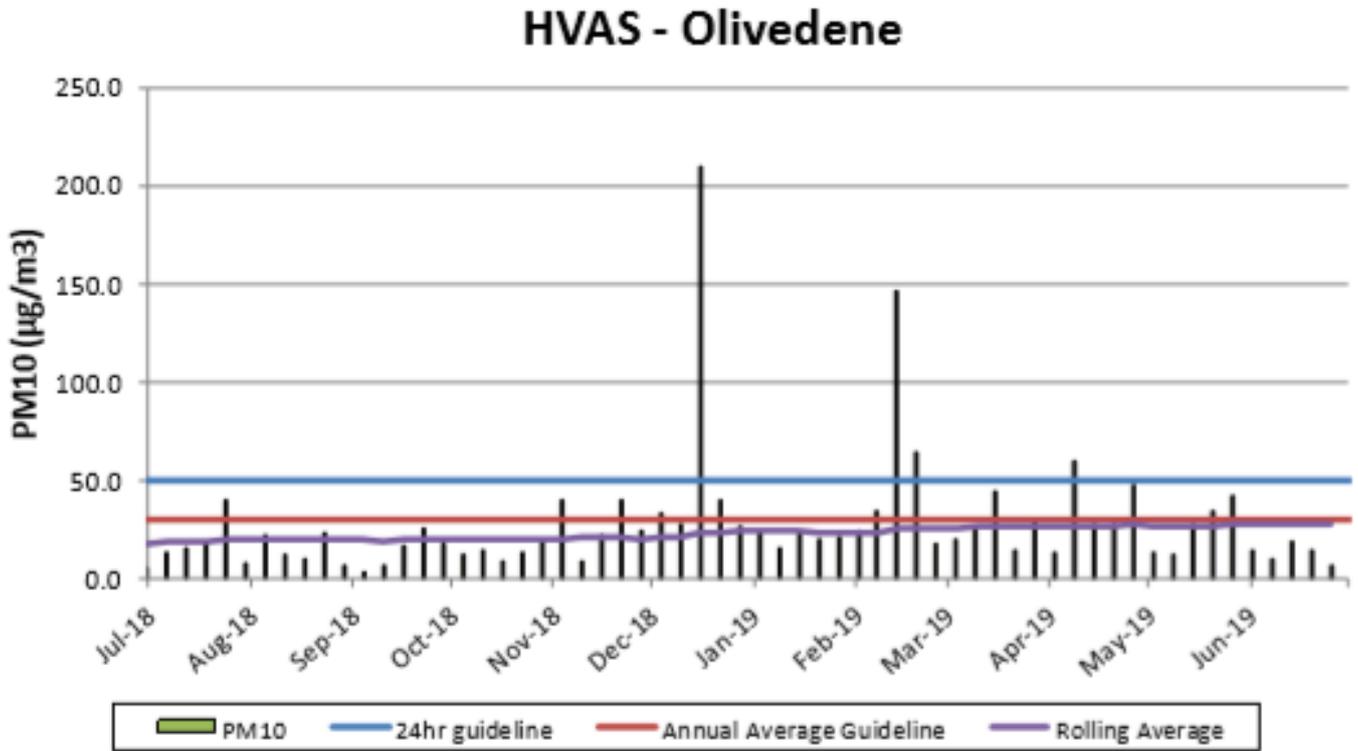
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

** Exceedances recorded in December were attributed to the regional events and discussed at the February 2019 CCC meeting

High Volume Air Sampling (HVAS)

The HVAS monitor is located on the property 'Olivedene,' a mine owned property on Therribri Road.

HVAS PM₁₀ Rolling Annual Average during Q2 2019 remained below the Annual Average Guideline 30 µg/m³. An elevated result was recorded on 8th April 2019, which was attributed to regional weather conditions.

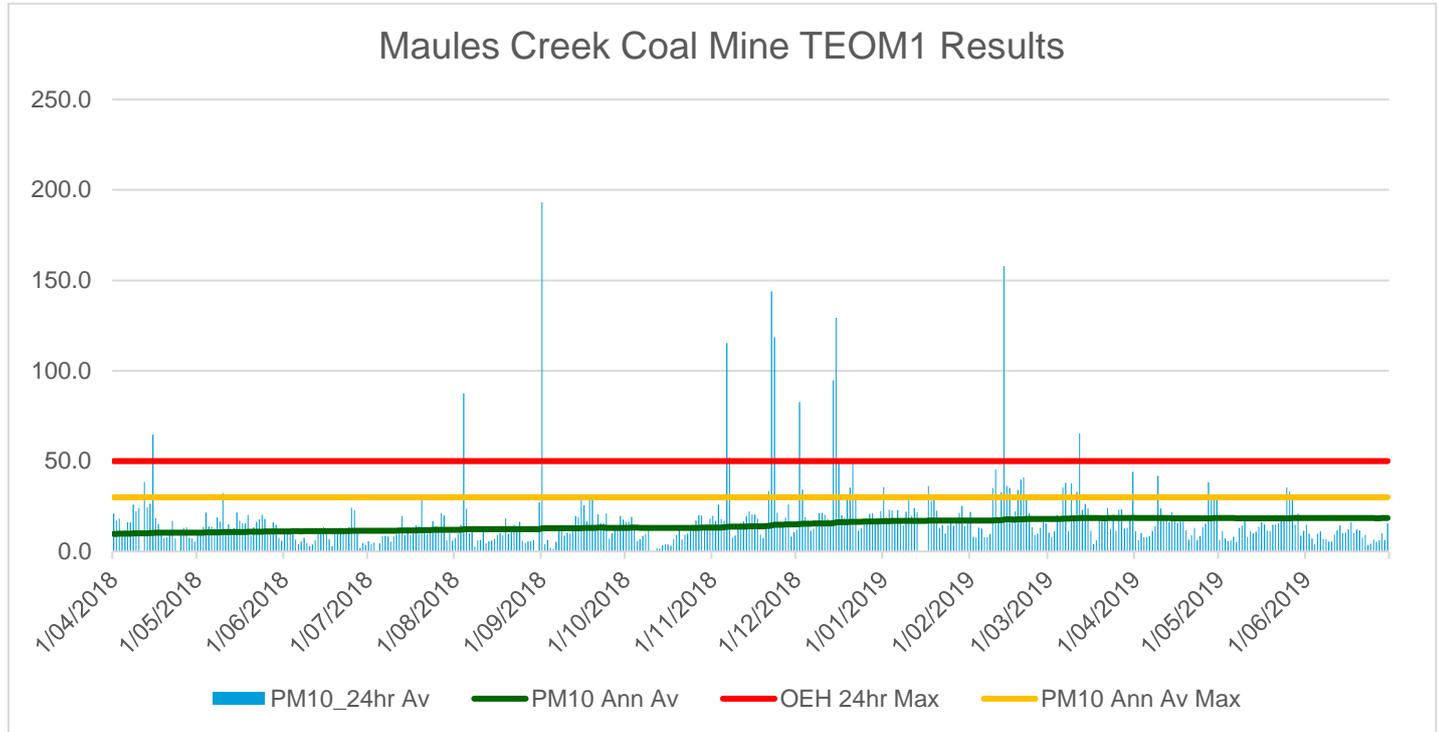


* Exceedances recorded in December, February and April were attributed to the regional events and discussed at the February and May 2019 CCC meetings

TEOM - PM₁₀ Results

The annual average for PM₁₀ results at the Maules Creek Coal TEOM remain below the Project Approval annual average criteria of 30µg/m³ (at 30 June 2019) as shown in the following figure. The PM₁₀ annual average results have remained below this criteria since the TEOM was commissioned in November 2011. There have been no exceedances of the 24 hour average for Q2.

TEOM Result Figures – Particulate Matter PM₁₀µg/m³ and PM_{2.5}µg/m³



* Blank columns indicate sample periods where there was either power outage, maintenance or other related causes.

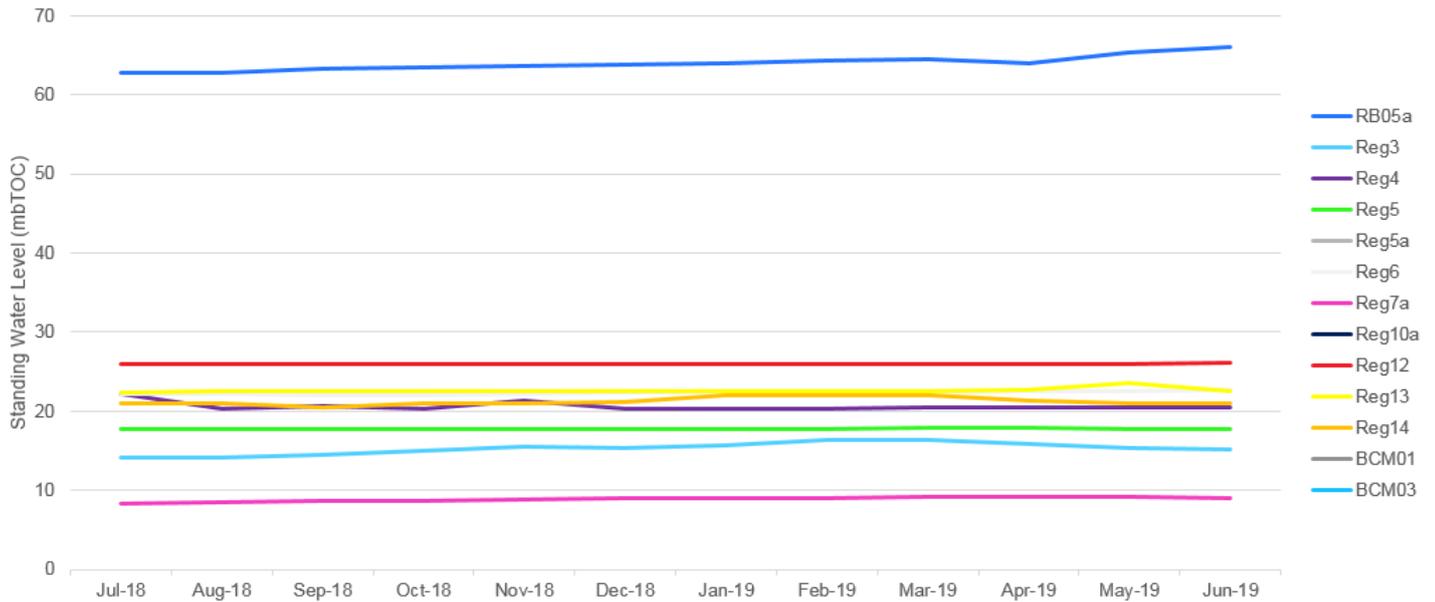
** Exceedances of the OEH 24hr Maximum over the past 12 months have been non mine related and have been attributed to regional dust events, all previous exceedances have been discussed at CCC meetings.

Water Monitoring

Groundwater

Groundwater monitoring results in open standpipe piezometers show levels to be relatively stable. The Regional bores were installed between Q4, 2013 and Q1, 2014. BCM01, BCM03, Reg10 are shallow bores which have remained dry since construction in 2013.

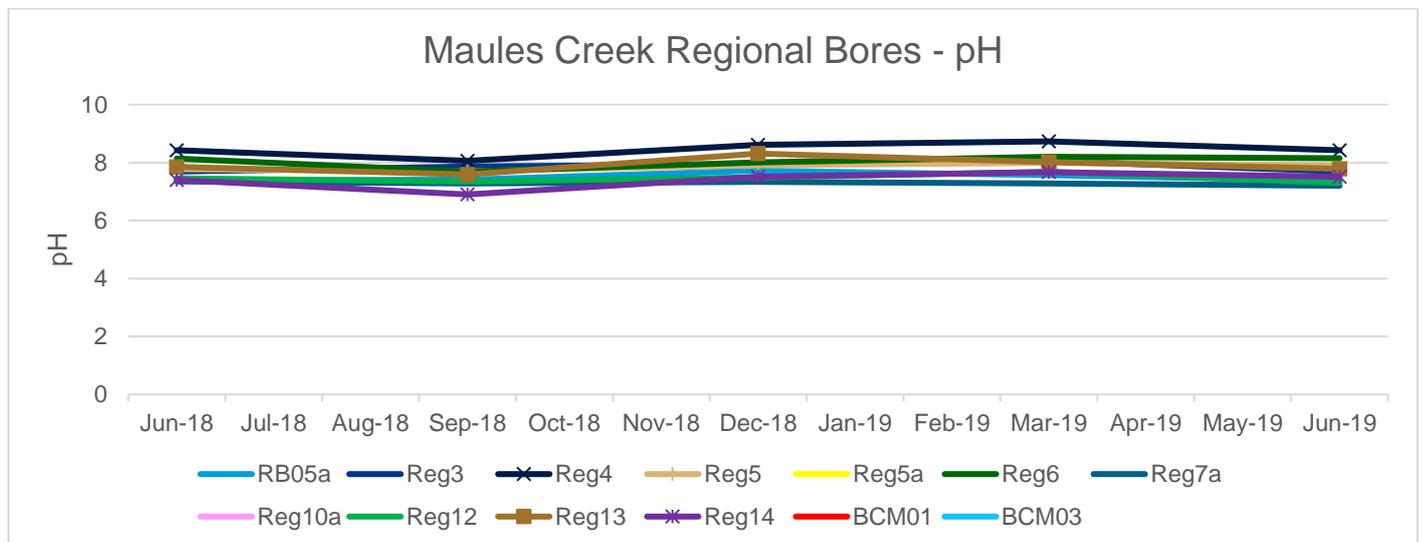
**Maules Creek Regional Bores-
 Monthly Standing Water Levels**



Acidity / Alkalinity (pH)

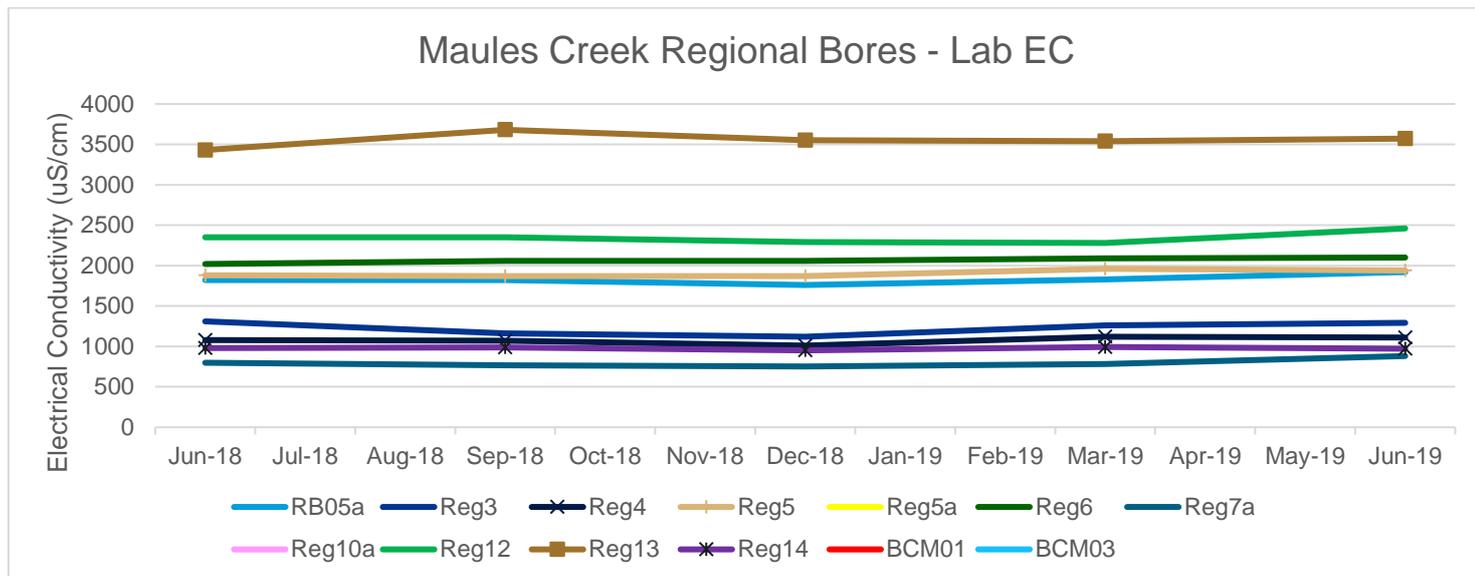
Over the past twelve months pH readings across the regional bores have remained static with very little fluctuation.

Maules Creek Regional Bores - pH



Electrical Conductivity

Laboratory Electrical Conductivity (EC) levels are all within historic groundwater EC range of 500 μ S/cm to 2,500 μ S/cm, with the exception of monitoring bore Reg13 which has a historic groundwater EC range of 2,500 μ S/cm to 4,100 μ S/cm. Within the last twelve months EC has remained static.



Wet Weather Discharge Sampling

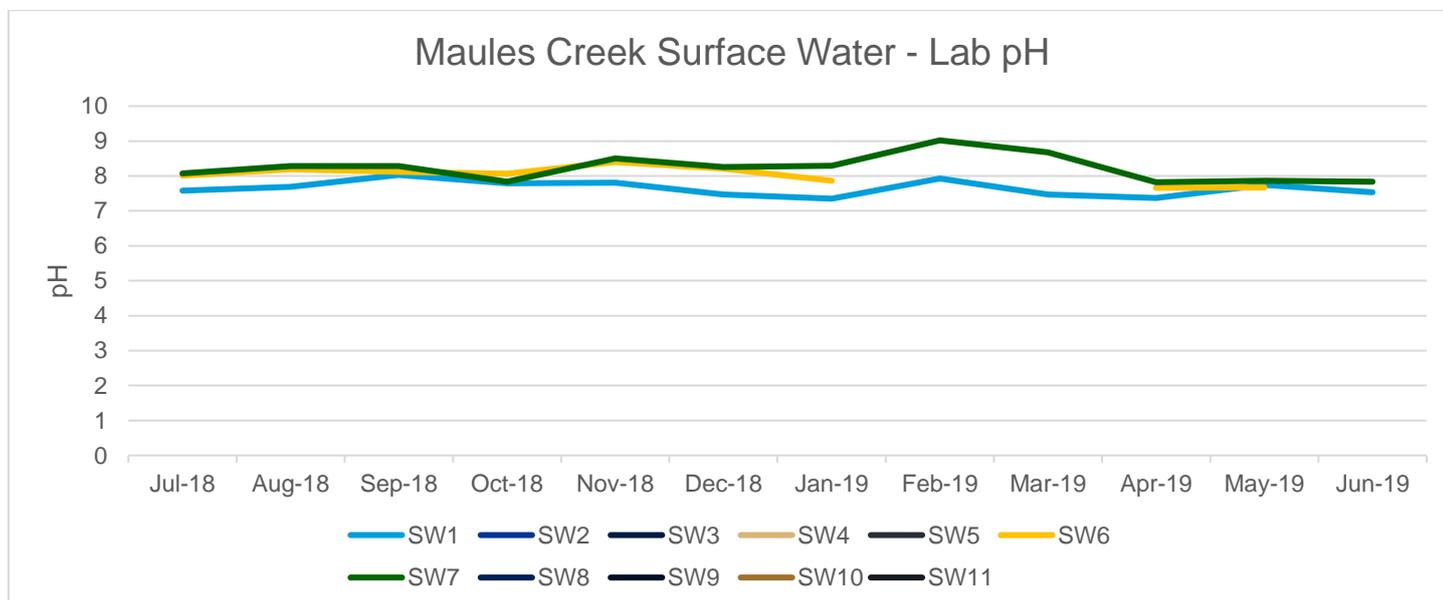
Between 1st April and 31st July 2019, Maules Creek Coal AWS recorded 65.2 mm of rainfall, bringing the total yearly rainfall to 195 mm of rain. There was one rainfall event that exceeded the 38.4mm value over a consecutive 5 day period during May. This resulted in a wet weather discharge from SD9. Monitoring undertaken at the time showed compliance with the EPL conditions. Note: As per wording of condition L2.5 of EPL20221, 38.4mm equates to the 5 day 90 percentile rainfall for the Gunnedah region.

Surface Water – Creeks and Rivers

Routine surface water monitoring is conducted in surrounding creeks and rivers on a monthly basis. Results for parameters including pH, EC and Total Suspended Solids (TSS) are shown in the figures below. There are 11 Surface Water monitoring points, however due to the current drought only three were able to be sampled during the twelve month period.

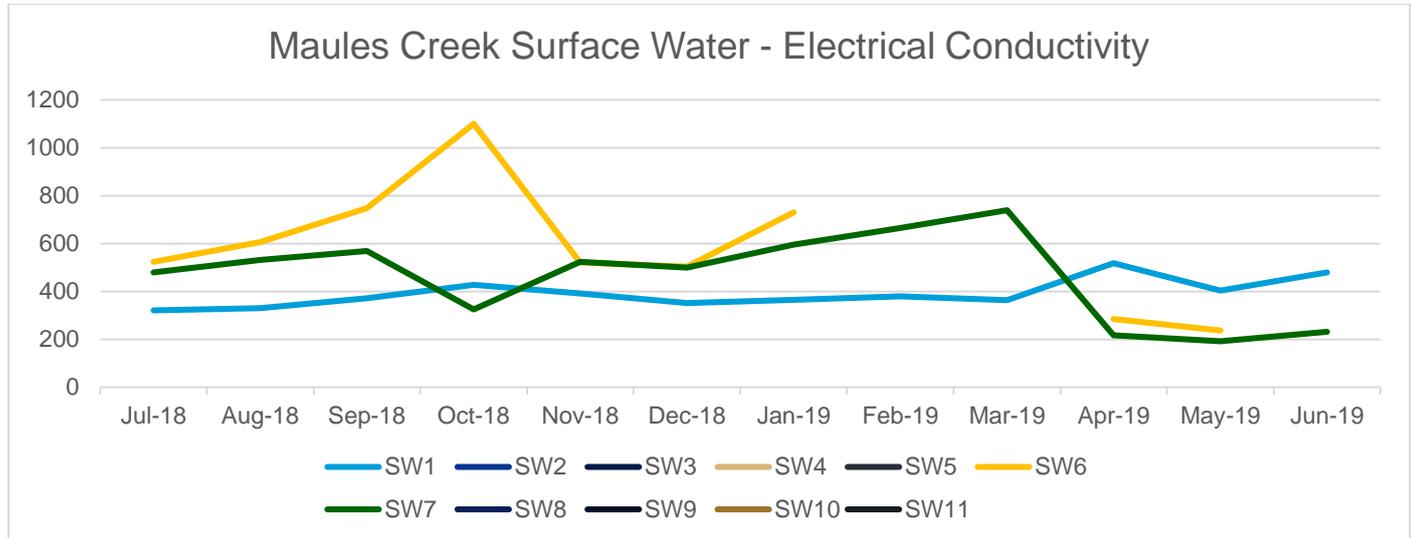
Acidity / Alkalinity (pH)

Monitoring results for pH in creeks and rivers surrounding MCCM are all trending within the ANZECC range for Irrigation, Ecosystem Health and Recreation.



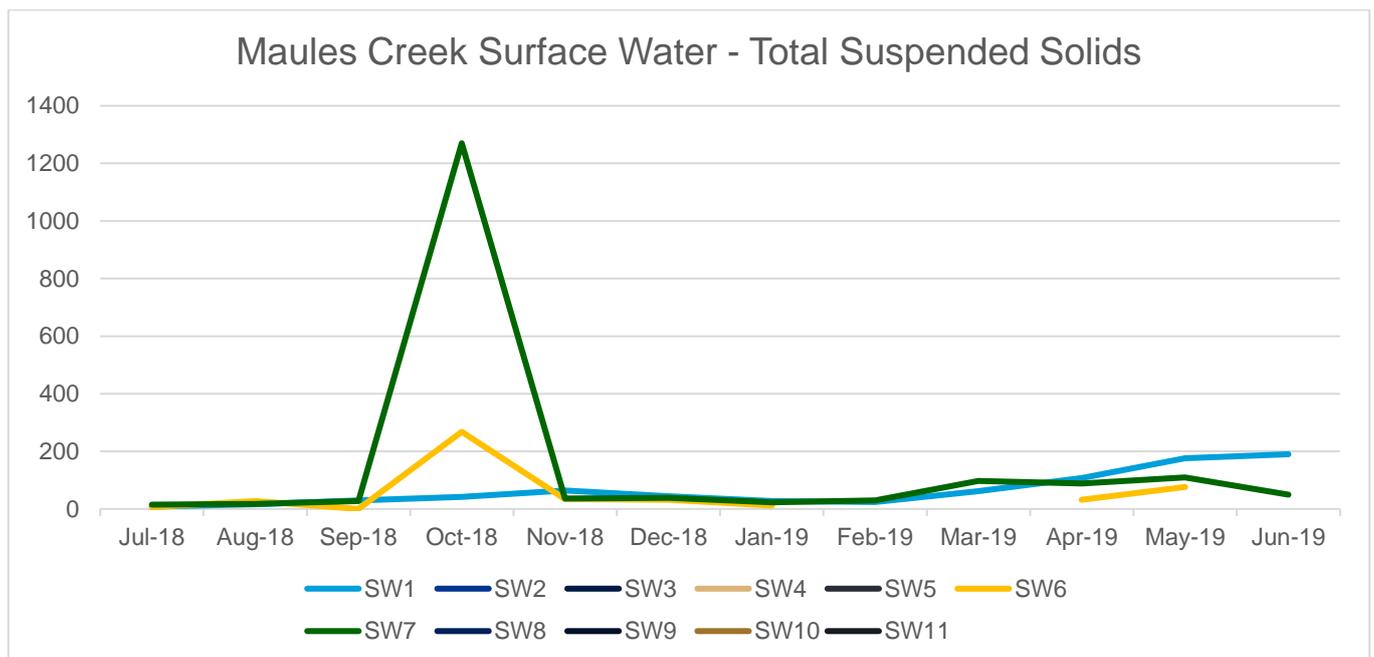
Electrical Conductivity

Surface water EC trends have remained consistent with SW5, SW6, SW7 and SW8 all historically variable. SW5, SW6, SW7 and SW8 are points along the Namoi River which are subject to regulated and variable flow regimes.



Total Suspended Solids (TSS)

Surface water TSS trends have remained generally consistent with historical results. SW5, SW6, SW7 and SW8 are historically variable as they are located along the Namoi River which is subject to regulated and variable flow regimes. There were no elevated levels of TSS in Q2.



Rehabilitation

The rehabilitation phase of bulk shaping of the lower benches on the northern and western out of pit dumps is ongoing. At the end of June 2019 approximately 110 hectares of bulk reshaping had been completed.

Feral Animal Management

During the most recent routine Whitehaven Offset Area Feral Animal Control program (April and June 2019) the results included:

- 29 out of total 41 pigs trapped were from the Maules Creek/Boggabri area; and
- 59 out of total 134 foxes baited were from the Maules Creek/Boggabri area (14% bait take rate).

Weed Management

Broadleaf weed control of Revegetation areas; seasonal Box Thorn spraying and Tiger Pear manual removal (Southern Offsets) has been undertaken otherwise resources have been utilised for tree watering.

Revegetation

Peak Revegetation Period during Autumn through Spring for Maules Offsets targeting:

- 444ha to be seeded with Native Woodland Understorey species mix;
- 1054ha to be planted with Native Woodland Overstorey species.

Ecological Burns and NSW Mining Environmental Excellence Award

- Maules Offsets burns were completed during May 2019 on Olivedene and Bimbooria;
- Whitehaven Maules Wirradale Offset Ecological Burn 2018 was a finalist for the NSW Mining Environmental Excellence Award.

Maules Creek Coal Mine Community Consultative Committee Meeting #28

Environmental Monitoring Report For the Q3 period, July - September 2019

Attended Noise Monitoring

Attended noise monitoring was undertaken at six locations during July, August and September 2019 by an independent acoustic consultant. The measured noise level (LAeq 15 minute) attributed to Maules Creek Coal Mine (MCCM) and applicable criteria for each location are shown in the tables below.

LAeq, 15minute GENERATED BY MCCM AGAINST OPERATIONAL NIGHT NOISE CRITERIA – APRIL TO JUNE 2019.

Table 1 - July Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	08/07/2019 22:45	0.2	0.0	35	Yes	<25	Nil
NM2	08/07/2019 23:45	1.0	0.0	39	Yes	<25	Nil
NM3	08/07/2019 23:40	1.1	0.0	35	Yes	IA	Nil
NM4	08/07/2019 23:15	1.3	0.0	35	Yes	22	Nil
NM5	08/07/2019 22:15	0.8	0.0	35	Yes	<25	Nil
NM6	09/07/2019 00:13	1.0	0.0	35	Yes	IA	Nil

Table 2 - August Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	07/08/2019 22:30	0.8	0.0	35	Yes	IA	Nil
NM2	07/08/2019 23:15	0.4	0.0	39	Yes	IA	Nil
NM3	07/08/2019 23:34	0.3	0.0	35	Yes	IA	Nil
NM4	07/08/2019 22:52	0.5	0.0	35	Yes	IA	Nil
NM5	07/08/2019 22:00	0.5	0.0	35	Yes	IA	Nil
NM6	07/08/2019 23:40	0.3	0.0	35	Yes	IA	Nil

Table 3 - September Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	23/09/2019 22:45	1.1	0.0	35	Yes	29	Nil
NM1 ⁴	23/09/2019 23:06	1.7	0.0	35	Yes	31	Nil
NM2	24/09/2019 00:15	1.4	0.0	39	Yes	31	Nil
NM3	23/09/2019 23:37	1.3	0.0	35	Yes	IA	Nil
NM4	23/09/2019 23:45	1.2	0.0	35	Yes	28	Nil
NM5	23/09/2019 22:15	1.8	0.0	35	Yes	<25	Nil
NM6	24/09/2019 00:40	0.4	0.0	35	Yes	<20	Nil

(1). Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres);
 (2). Estimated or measured LAeq,15minute attributed to MCCM;
 (3). NA in exceedance column means criterion is not applicable, either due to atmospheric conditions outside those specified in project approval or due to property acquisition by MCC; and
 (4). Indicates the application of a 2dB low frequency modifying factor.
 IA/NM – Inaudible NM – Not measurable

During Q3 no measurement satisfied conditions for further assessment of low frequency modification factors in accordance with the EPA's Noise Policy for Industry.

The Maules Creek Coal (MCC) EPL 20221 also has a '1 Minute - Night' criteria (LA1) that applies from 10pm to 7am Monday to Saturday & 10pm to 8am Sundays and Public Holidays. The results for the LA1 monitoring are shown below. There was one exceedance of the applicable LA1 criteria during the September monitoring period. Additional monitoring which was undertaken 15 minutes later showed that MCC noise had returned to compliance levels.

LA1, 1minute GENERATED BY MCC AGAINST OPERATIONAL NIGHT NOISE CRITERIA – July TO September 2019.

Table 4 - July Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	08/07/2019 22:45	0.2	0.0	45	Yes	33	Nil
NM2	08/07/2019 23:45	1.0	0.0	45	Yes	26	Nil
NM3	08/07/2019 23:40	1.1	0.0	45	Yes	IA	Nil
NM4	08/07/2019 23:15	1.3	0.0	45	Yes	29	Nil
NM5	08/07/2019 22:15	0.8	0.0	45	Yes	28	Nil
NM6	09/07/2019 00:13	1.0	0.0	45	Yes	IA	Nil

Table 5 – August Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	07/08/2019 22:30	0.8	0.0	45	Yes	IA	Nil
NM2	07/08/2019 23:15	0.4	0.0	45	Yes	IA	Nil
NM3	07/08/2019 23:34	0.3	0.0	45	Yes	IA	Nil
NM4	07/08/2019 22:52	0.5	0.0	45	Yes	IA	Nil
NM5	07/08/2019 22:00	0.5	0.0	45	Yes	IA	Nil
NM6	07/08/2019 23:40	0.3	0.0	45	Yes	IA	Nil

Table 6 - September Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ^{2,3}	Exceedance dB ^{3,4}
NM1	23/09/2019 22:45	1.1	0.0	45	Yes	46	1
NM1 ^f	23/09/2019 23:06	1.7	0.0	45	Yes	39	Nil
NM2	24/09/2019 00:15	1.4	0.0	45	Yes	37	Nil
NM3	23/09/2019 23:37	1.3	0.0	45	Yes	IA	Nil
NM4	23/09/2019 23:45	1.2	0.0	45	Yes	40	Nil
NM5	23/09/2019 22:15	1.8	0.0	45	Yes	29	Nil
NM6	24/09/2019 00:40	0.4	0.0	45	Yes	<20	Nil

Notes:

- Noise emission limits do not apply during periods of rainfall or wind speeds greater than 3 metres per second (at 10 metres);
 - Estimated or measured LAeq,15minute attributed to MCCM;
 - Estimated or measured LA1,1minute attributed to MCCM;
 - NA in exceedance column means atmospheric conditions outside those specified in Project Approval and criterion is not applicable.
- IA – Inaudible NM – Not measurable

Wind Direction during Attended Monitoring

Wind direction data is collected from the MCCM Automated Weather Station (AWS). Wind data for the duration of the attended monitoring assessment, recorded at the MCCM AWS is presented in the table below.

Table 7 - Prevailing Wind Direction

Monitoring Date	Prevailing Wind Direction
July	SE
August	NW
September	NE

Blast Monitoring

There have been 34 blasts at MCCM during Q3 2019. All blast monitoring results recorded within the reporting period have been within the applicable overpressure and ground vibration limits specified in the respective approvals.

Table 8 - Blast Results Summary Quarter 3 2019

Parameter	Units	Frequency	Number	Average	Max	100% Limit	Exceedance (Yes / No)
Noise	dB (Lin Peak)	All	34	91.2	115	120	No
Vibration	mm/s		34	0.21	0.98	10	No

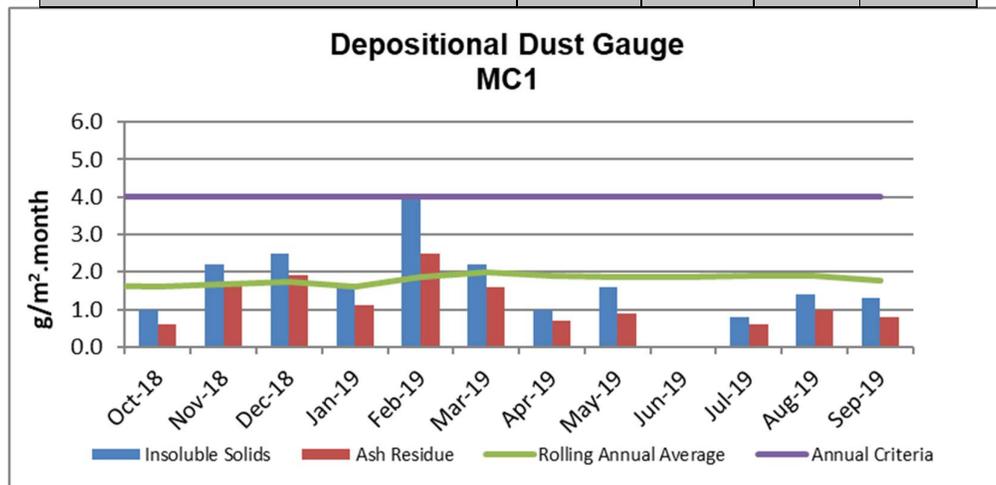
Air Quality

Total Depositional Dust

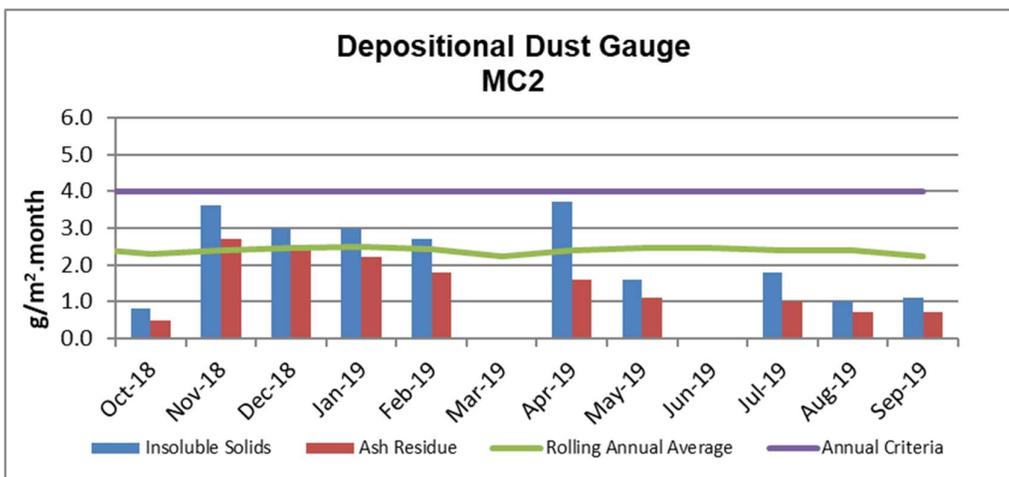
The monthly rolling annual average remains below the relevant Project Approval criteria of 4gm/m²/month for the respective monitoring points, as shown on the graphs below.

Table 9 – Deposited Dust Gauge Results [g/m²/month]

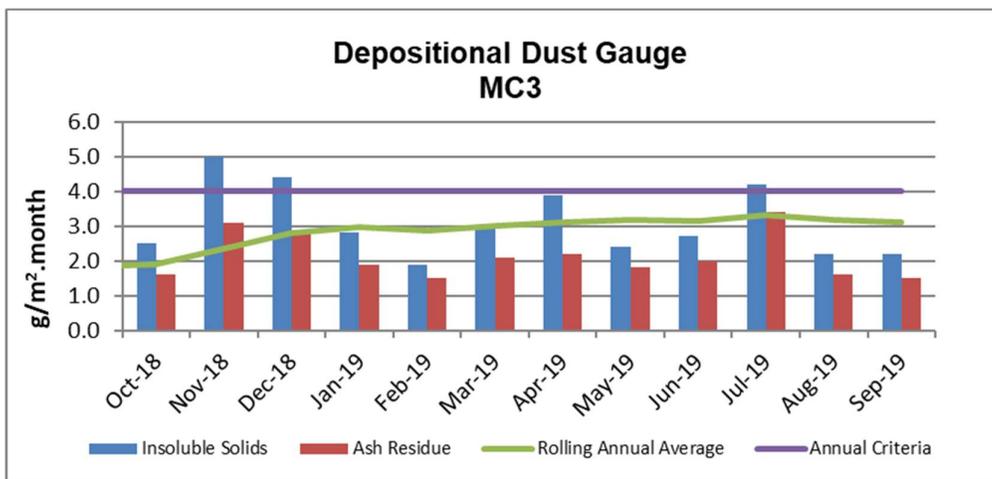
Deposited Monitoring (MC4)	MONTH	MC1	MC2	MC3	MC4	Dust Figures (MC1 – MC4)
	July - 19		0.8	1.8	4.2	
August-19		1.4	1.0	2.2	1.0	
September-19		1.3	1.1	2.2	2.9	
	12 MONTH ROLLING AVERAGE	1.8	2.2	3.1	1.8	



* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

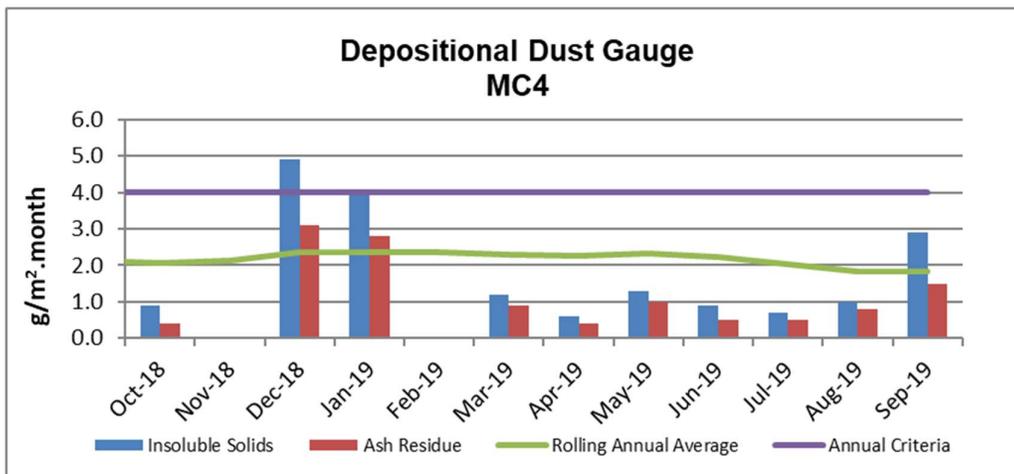


* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).



* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

** Exceedances recorded in November and December were attributed to the regional events and discussed at the February 2019 CCC meeting



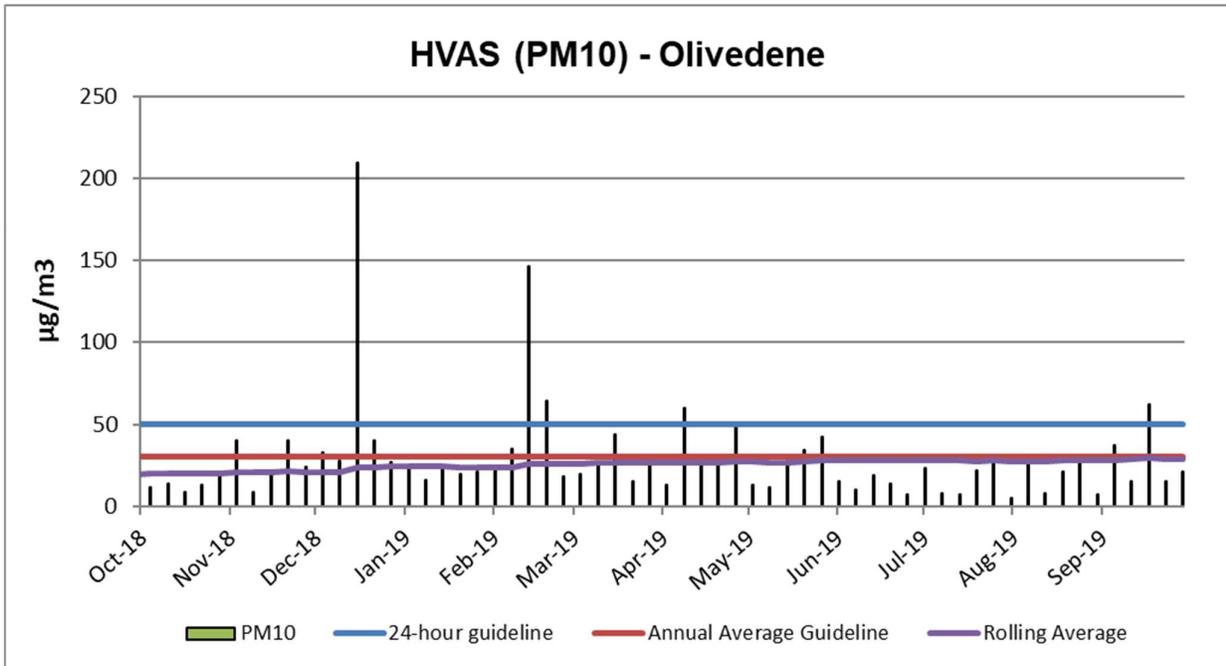
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).

** Exceedances recorded in December were attributed to the regional events and discussed at the February 2019 CCC meeting

High Volume Air Sampling (HVAS)

The HVAS monitor is located on the property ‘Olivedene,’ a mine owned property on Therribri Road.

HVAS PM₁₀ Rolling Annual Average during Q3 2019 remained below the Annual Average Guideline 30 µg/m³. An elevated result was recorded on 17th September 2019, which was attributed to regional weather conditions.

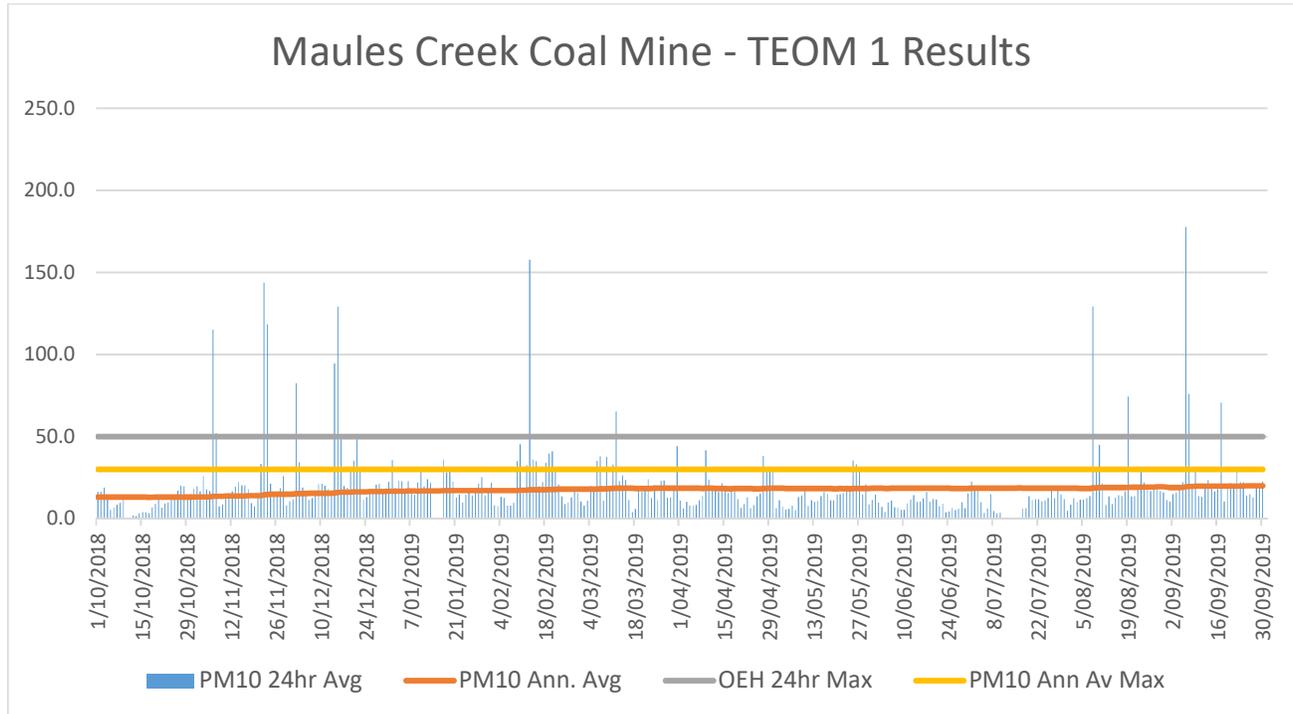


* Exceedances recorded in December, February and April were attributed to the regional events and discussed at the February and May 2019 CCC meetings

TEOM - PM₁₀ Results

The annual average for PM₁₀ results at the Maules Creek Coal TEOM remain below the Project Approval annual average criteria of 30µg/m³ (at 30 September 2019) as shown in the following figure. The PM₁₀ annual average results have remained below this criteria since the TEOM was commissioned in November 2011. There have been five exceedances of the 24 hour average for Q3, these have all been attributed to regional dust events.

TEOM Result Figures – Particulate Matter PM₁₀µg/m³ and PM_{2.5}µg/m³



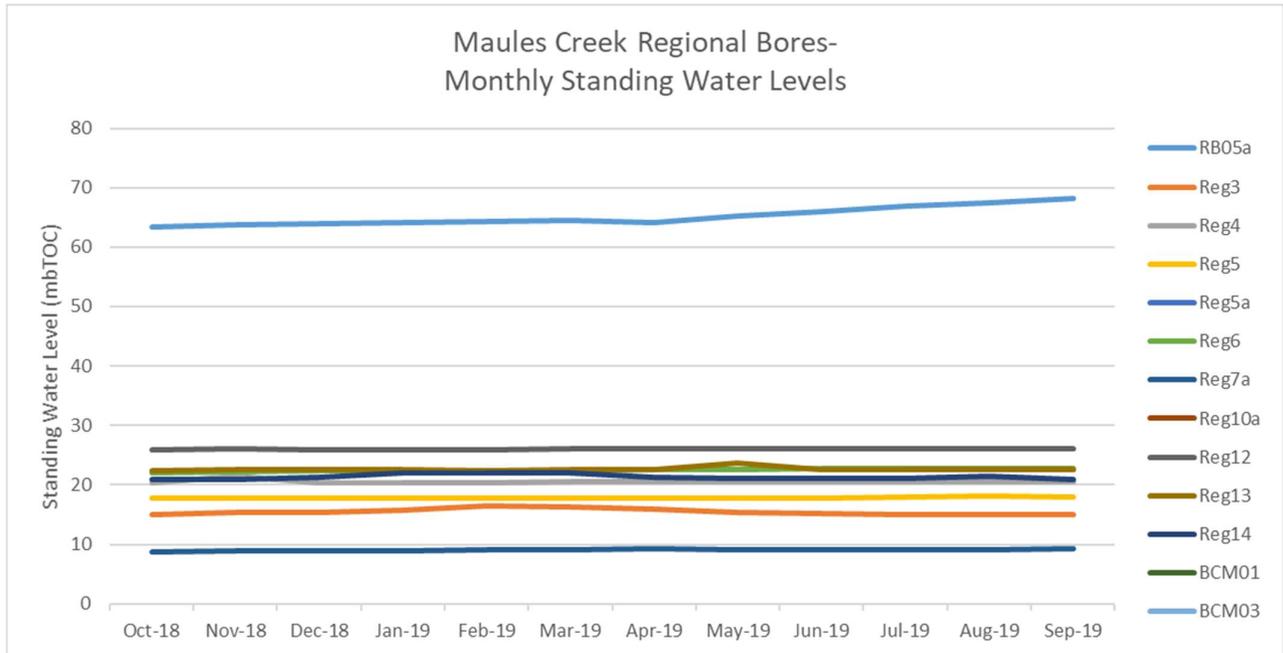
* Blank columns indicate sample periods where there was either power outage, maintenance or other related causes.

** Exceedances of the OEH 24hr Maximum over the past 12 months have been non mine related and have been attributed to regional dust events, all previous exceedances have been discussed at CCC meetings.

Water Monitoring

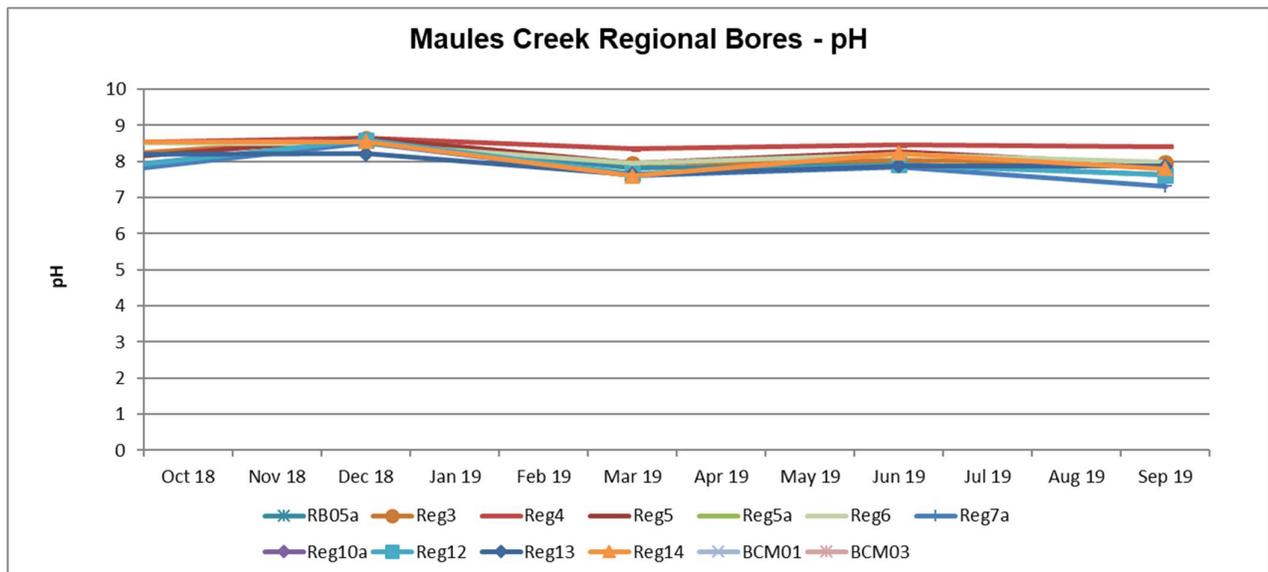
Groundwater

Groundwater monitoring results in open standpipe piezometers show levels to be relatively stable. The Regional bores were installed between Q4, 2013 and Q1, 2014. BCM01, BCM03, Reg10 are shallow bores which have remained dry since construction in 2013.



Acidity / Alkalinity (pH)

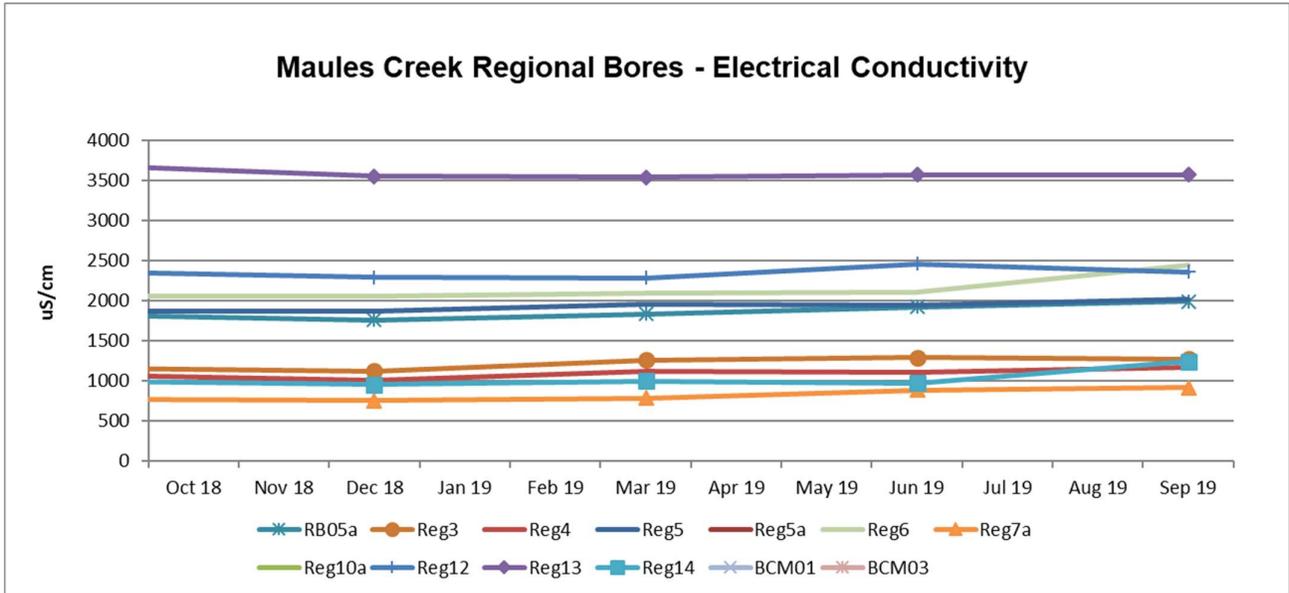
Over the past twelve months pH readings across the regional bores have remained static with very little fluctuation.



Electrical Conductivity

Laboratory Electrical Conductivity (EC) levels are all within historic groundwater EC range of 500 $\mu\text{s}/\text{cm}$ to 2,500 $\mu\text{s}/\text{cm}$, with the exception of monitoring bore Reg13 which has a historic groundwater EC range of 2,500 $\mu\text{s}/\text{cm}$ to 4,100 $\mu\text{s}/\text{cm}$.

Within the last twelve months EC has remained static.



Wet Weather Discharge Sampling

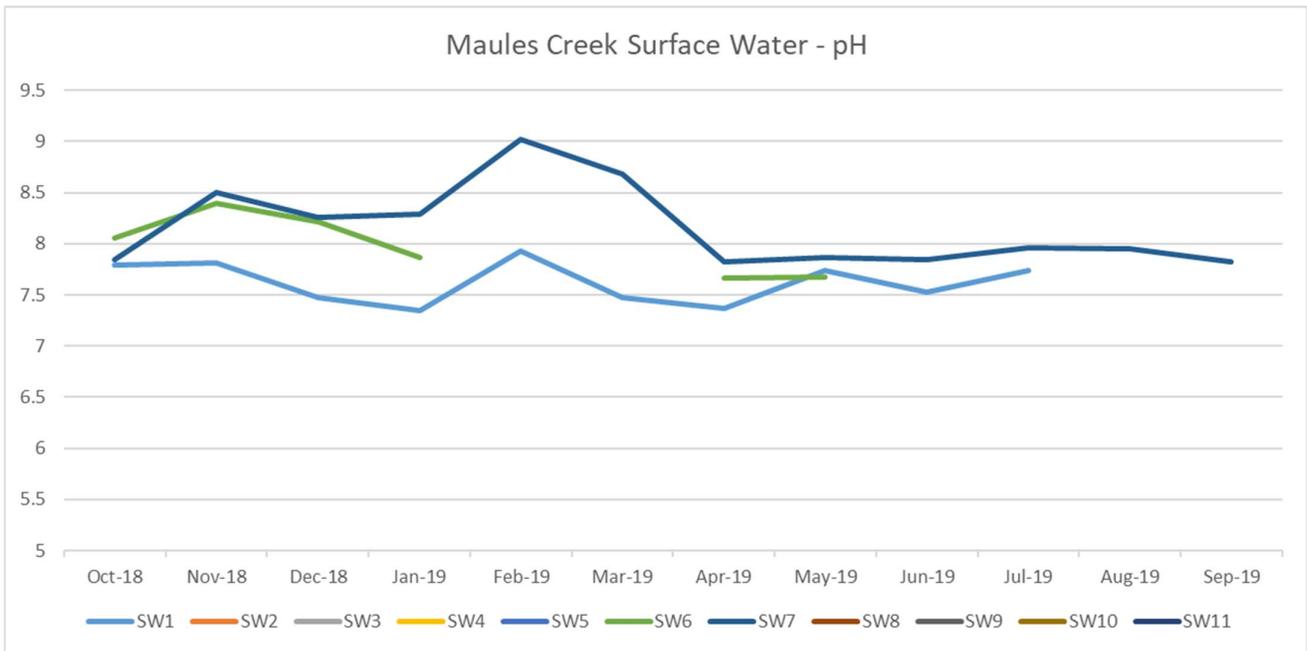
During Q3 there were no discharge events.

Surface Water – Creeks and Rivers

Routine surface water monitoring is conducted in surrounding creeks and rivers on a monthly basis. Results for parameters including pH, EC and Total Suspended Solids (TSS) are shown in the figures below. There are 11 Surface Water monitoring points, however due to the current drought only three were able to be sampled during the twelve month period.

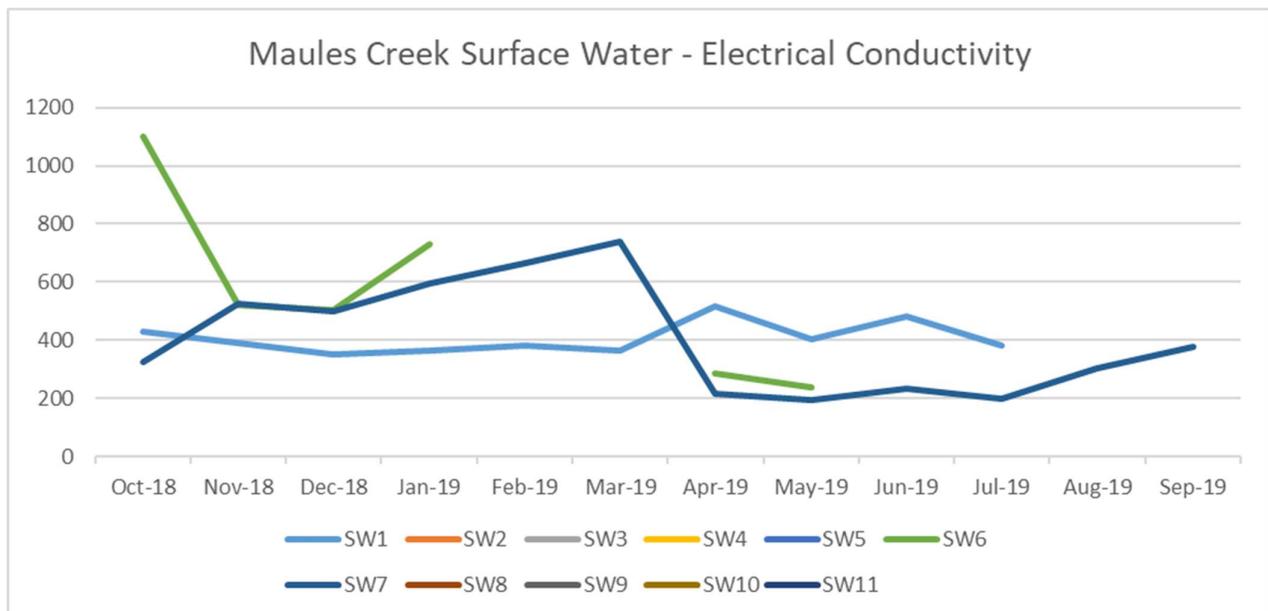
Acidity / Alkalinity (pH)

Monitoring results for pH in creeks and rivers surrounding MCCM are all trending within the ANZECC range for Irrigation, Ecosystem Health and Recreation.



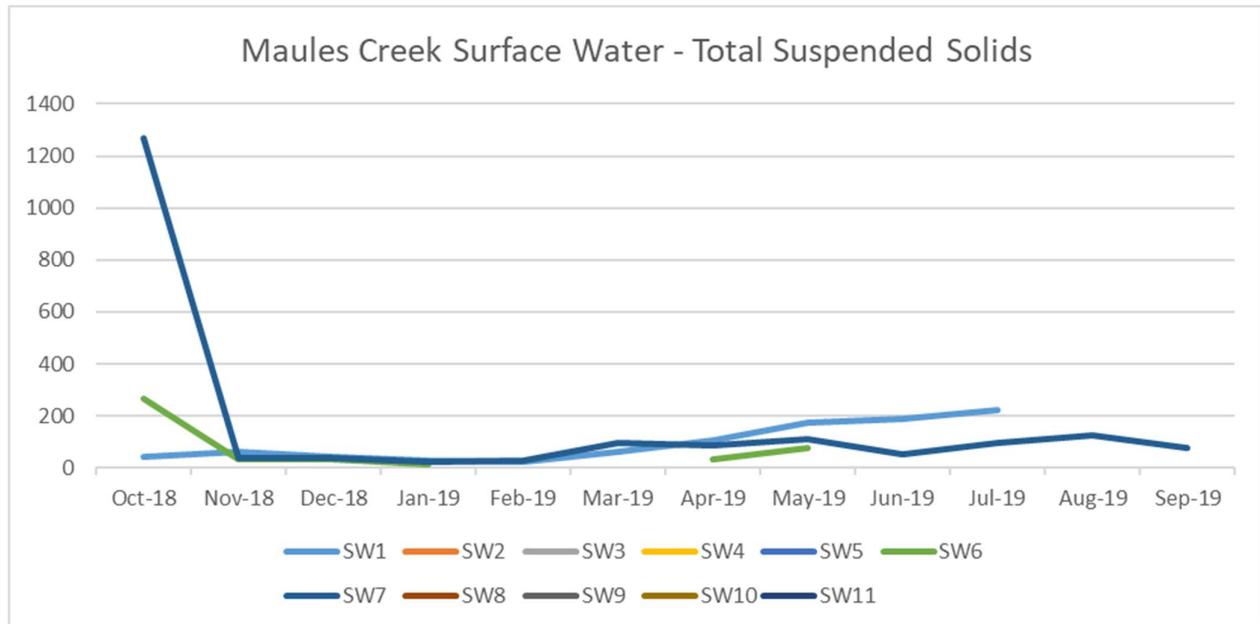
Electrical Conductivity

Surface water EC trends have remained consistent with SW5, SW6, SW7 and SW8 all historically variable. SW5, SW6, SW7 and SW8 are points along the Namoi River which are subject to regulated and variable flow regimes.



Total Suspended Solids (TSS)

Surface water TSS trends have remained generally consistent with historical results. SW5, SW6, SW7 and SW8 are historically variable as they are located along the Namoi River which is subject to regulated and variable flow regimes. There were no elevated levels of TSS in Q2.



Rehabilitation

Rehabilitation work is ongoing, bulk reshape and topsoiling is currently being completed.

Feral Animal Management

During the most recent routine Whitehaven Offset Area Feral Animal Control program (September 2019) the results included:

- 55 out of total 100 pigs trapped were from the Maules Creek/Boggabri area; and
- 27 out of total 108 foxes baited were from the Maules Creek/Boggabri area (9% bait take rate).

Revegetation

- Maules Creek Biodiversity revegetation completed with over 76,000 trees planted
- Tree watering ongoing achieving over 80% survival rate with damage from kangaroos the biggest issue

Fire Management

- Annual fire break track maintenance of Biodiversity Offsets underway to maintain zero fuel barriers and good access around Maules Offsets;
- Engaged LRM Fire & Rescue to provide Bushfire Response Service for 2019/2020 fire season

Maules Creek Coal Mine Community Consultative Committee Meeting #28

Environmental Monitoring Report For the Q4 period, October - December 2019

Attended Noise Monitoring

Attended noise monitoring was undertaken at six locations during October, November and December 2019 by an independent acoustic consultant. The measured noise level (LAeq,15 minute) attributed to Maules Creek Coal Mine (MCCM) and applicable criteria for each location are shown in the tables below.

LAeq, 15minute GENERATED BY MCCM AGAINST OPERATIONAL NIGHT NOISE CRITERIA – OCTOBER TO DECEMBER 2019.

Table 1 - October Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	10/10/2019 22:30	2.8	0.0	35	Yes	<25	Nil
NM2	10/10/2019 23:00	2.6	0.0	39	Yes	32	Nil
NM3	10/10/2019 23:24	2.4	0.0	35	Yes	<25	Nil
NM4	10/10/2019 23:30	2.7	0.0	35	Yes	<25	Nil
NM5	10/10/2019 22:00	2.1	0.0	35	Yes	IA	Nil
NM6	10/10/2019 23:54	2.9	0.0	35	Yes	IA	Nil

Table 2 - November Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	14/11/2019 22:30	0.2	0.0	35	Yes	25	Nil
NM2	14/11/2019 23:30	0.2	0.0	39	Yes	<25	Nil
NM3	14/11/2019 23:45	0.6	0.0	35	Yes	IA	Nil
NM4	14/11/2019 23:00	0.3	0.0	35	Yes	<25	Nil
NM5	14/11/2019 22:00	0.6	0.0	35	Yes	<25	Nil
NM6	14/11/2019 23:56	0.2	0.0	35	Yes	IA	Nil

Table 3 - December Noise Monitoring

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LAeq dB ²	Exceedance dB ³
NM1	02/12/19 22:51	1.1	0.0	35	Yes	<30	Nil
NM2	02/12/19 23:46	1.4	0.0	39	Yes	IA	Nil
NM3	02/12/19 23:25	1.4	0.0	35	Yes	IA	Nil
NM4	02/12/19 23:22	1.4	0.0	35	Yes	<25	Nil
NM5	02/12/19 22:21	2.7	0.0	35	Yes	IA	Nil
NM6	03/12/19 00:12	1.5	0.0	35	Yes	IA	Nil

(1). Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres);

(2). Estimated or measured LAeq,15minute attributed to MCCM;

(3). NA in exceedance column means criterion is not applicable, either due to atmospheric conditions outside those specified in project approval or due to property acquisition by MCC; and

(4). Indicates the application of a 2dB low frequency modifying factor.

IA/NM – Inaudible NM – Not measurable

During Q4 no measurement satisfied the conditions for further assessment when reviewed for the applicability of low frequency modification factors in accordance with the EPA's Noise Policy for Industry.

The Maules Creek Coal (MCC) EPL 20221 also has a '1 Minute - Night' criteria (LA1) that applies from 10pm to 7am Monday to Saturday & 10pm to 8am Sundays and Public Holidays. The results for the LA1 monitoring are shown below. The results show that mine operations did not exceed the applicable LA1 criteria during attended noise monitoring in Q4 2019.

LA1, 1minute GENERATED BY MCC AGAINST OPERATIONAL NIGHT NOISE CRITERIA – October to December 2019.

Table 4 - October Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	10/10/2019 22:30	2.8	0.0	45	Yes	32	Nil
NM2	10/10/2019 23:00	2.6	0.0	45	Yes	38	Nil
NM3	10/10/2019 23:24	2.4	0.0	45	Yes	30	Nil
NM4	10/10/2019 23:30	2.7	0.0	45	Yes	<25	Nil
NM5	10/10/2019 22:00	2.1	0.0	45	Yes	IA	Nil
NM6	10/10/2019 23:54	2.9	0.0	45	Yes	IA	Nil

Table 5 – November Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	14/11/2019 22:30	0.2	0.0	45	Yes	33	Nil
NM2	14/11/2019 23:30	0.2	0.0	45	Yes	35	Nil
NM3	14/11/2019 23:45	0.6	0.0	45	Yes	IA	Nil
NM4	14/11/2019 23:00	0.3	0.0	45	Yes	29	Nil
NM5	14/11/2019 22:00	0.6	0.0	45	Yes	28	Nil
NM6	14/11/2019 23:56	0.2	0.0	45	Yes	IA	Nil

Table 6 - December Noise Monitoring – Night

Location	Start Date and Time	Wind Speed m/s	Rainfall mm	Criterion dB	Criterion Applies ¹	MCCP LA1,1min dB ²	Exceedance dB ³
NM1	02/12/19 22:51	1.1	0.0	45	Yes	31	Nil
NM2	02/12/19 23:46	1.4	0.0	45	Yes	IA	Nil
NM3	02/12/19 23:25	1.4	0.0	45	Yes	IA	Nil
NM4	02/12/19 23:22	1.4	0.0	45	Yes	<25	Nil
NM5	02/12/19 22:21	2.7	0.0	45	Yes	IA	Nil
NM6	03/12/19 00:12	1.5	0.0	45	Yes	IA	Nil

Notes:

1. Noise emission limits do not apply during periods of rainfall or wind speeds greater than 3 metres per second (at 10 metres);
2. Estimated or measured LAeq,15minute attributed to MCCM;
3. Estimated or measured LA1,1minute attributed to MCCM;
4. NA in exceedance column means atmospheric conditions outside those specified in Project Approval and criterion is not applicable.

IA – Inaudible NM – Not measurable

Wind Direction during Attended Monitoring

Wind direction data is collected from the MCCM Automated Weather Station (AWS). Wind data for the duration of the attended monitoring assessment, recorded at the MCCM AWS is presented in the table below.

Table 7 - Prevailing Wind Direction

Monitoring Date	Prevailing Wind Direction
October	SE
November	WNW
December	SE

Blast Monitoring

There were 25 blasts at MCCM during Q4 2019. All blast monitoring results recorded within the reporting period have been within the applicable overpressure and ground vibration limits specified in the respective approvals.

Table 8 - Blast Results Summary Quarter 4 2019

Parameter	Units	Frequency	Number	Average	Max	100% Limit	Exceedance (Yes / No)
Noise	dB (Lin Peak)	All	24	94.6	106.3	120	No
Vibration	mm/s		24	0.2	1.09	10	No

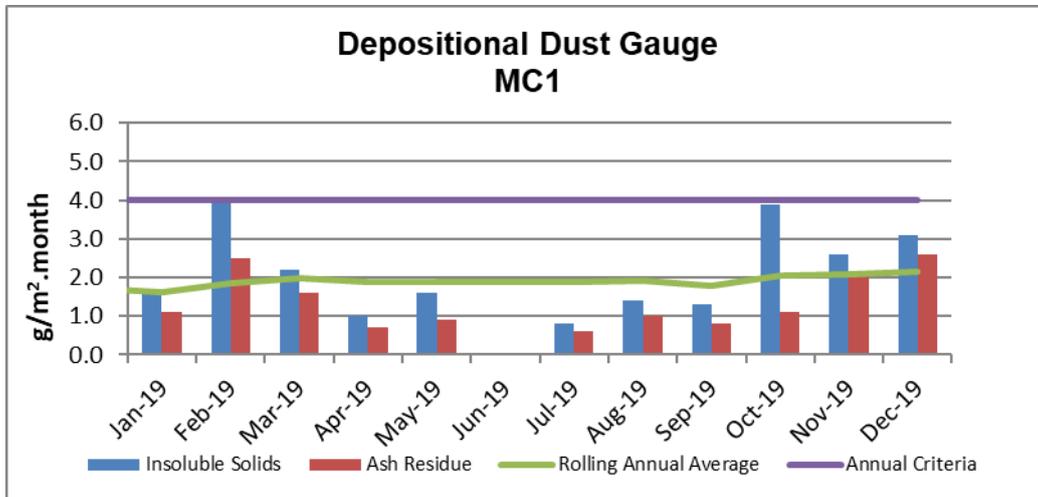
Air Quality

Total Depositional Dust

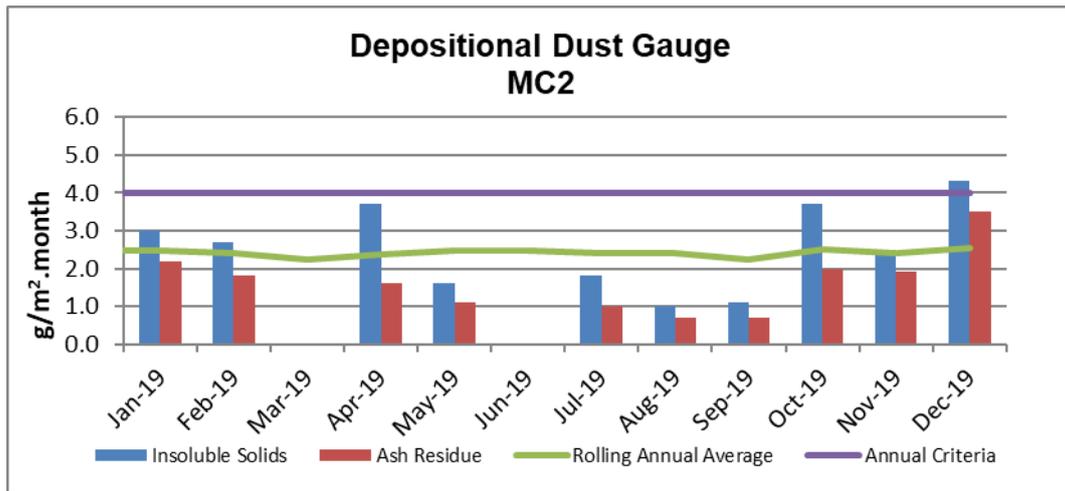
The monthly rolling annual average remains below the relevant Project Approval criteria of 4g/m²/month for the respective monitoring points, as shown on the graphs below.

Table 9 – Deposited Dust Gauge Results [g/m²/month]

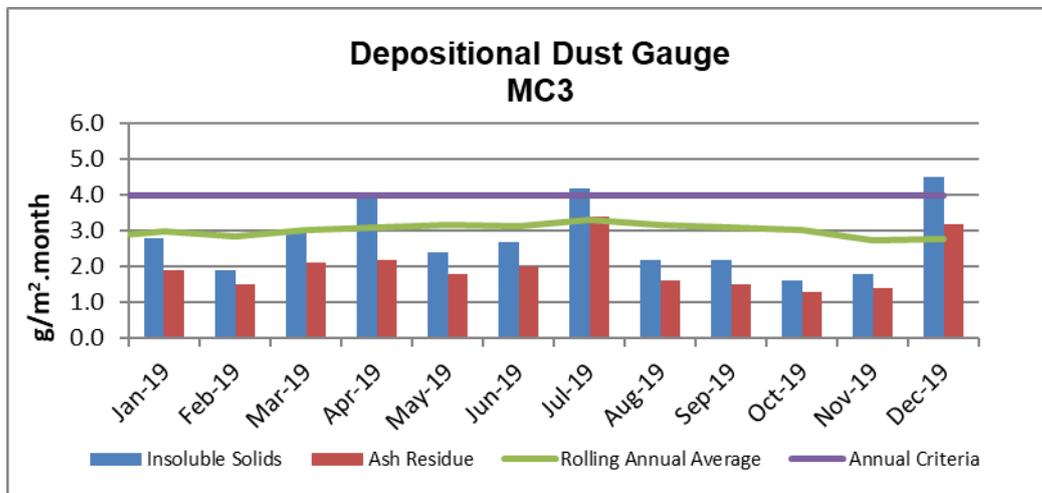
MONTH	MC1	MC2	MC3	MC4
October - 19	3.9	3.7	1.6	51.7
November-19	2.6	2.5	1.8	3.2
December-19	3.1	4.3	4.5	5.8
12 MONTH ROLLING AVERAGE	2.1	2.5	2.8	6.7



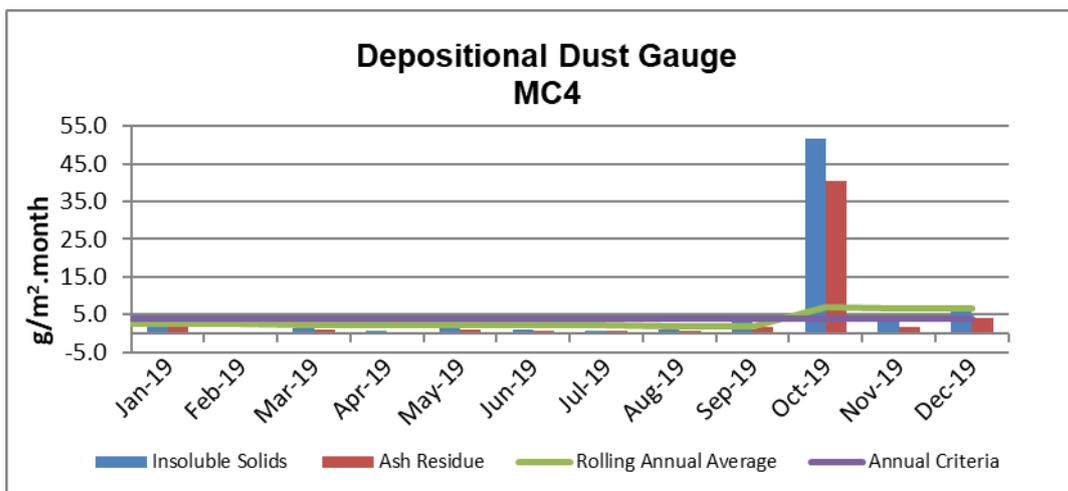
* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.).



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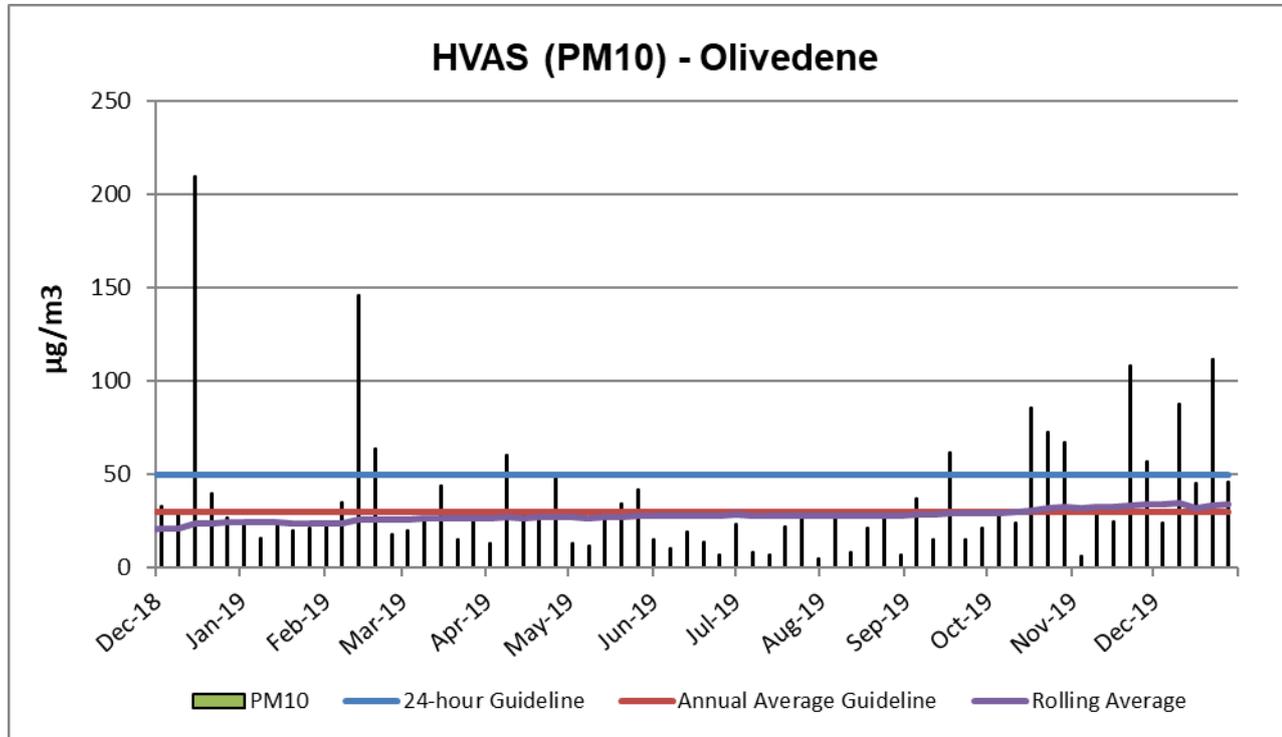


* Blank cells indicate sample periods where the sample has been contaminated and excluded from the results tables due to contaminated material (insect larvae, bird droppings, vegetation etc.). ** Exceedances recorded in October were attributed to the regional events and potential contamination.

High Volume Air Sampling (HVAS)

The HVAS monitor is located on the property ‘*Olivedene*,’ a mine owned property on Therribri Road. During Q4 there were seven exceedances of the 24 hour average of 50 µg/m³.

HVAS PM₁₀ Rolling Annual Average during Q4 2019 elevated above the Annual Average Guideline 30 µg/m³. Recalculations of this figure have been undertaken to remove all extraordinary events as per approvals. Recalculated annual averages were below the Annual Average Guideline of 30 µg/m³.

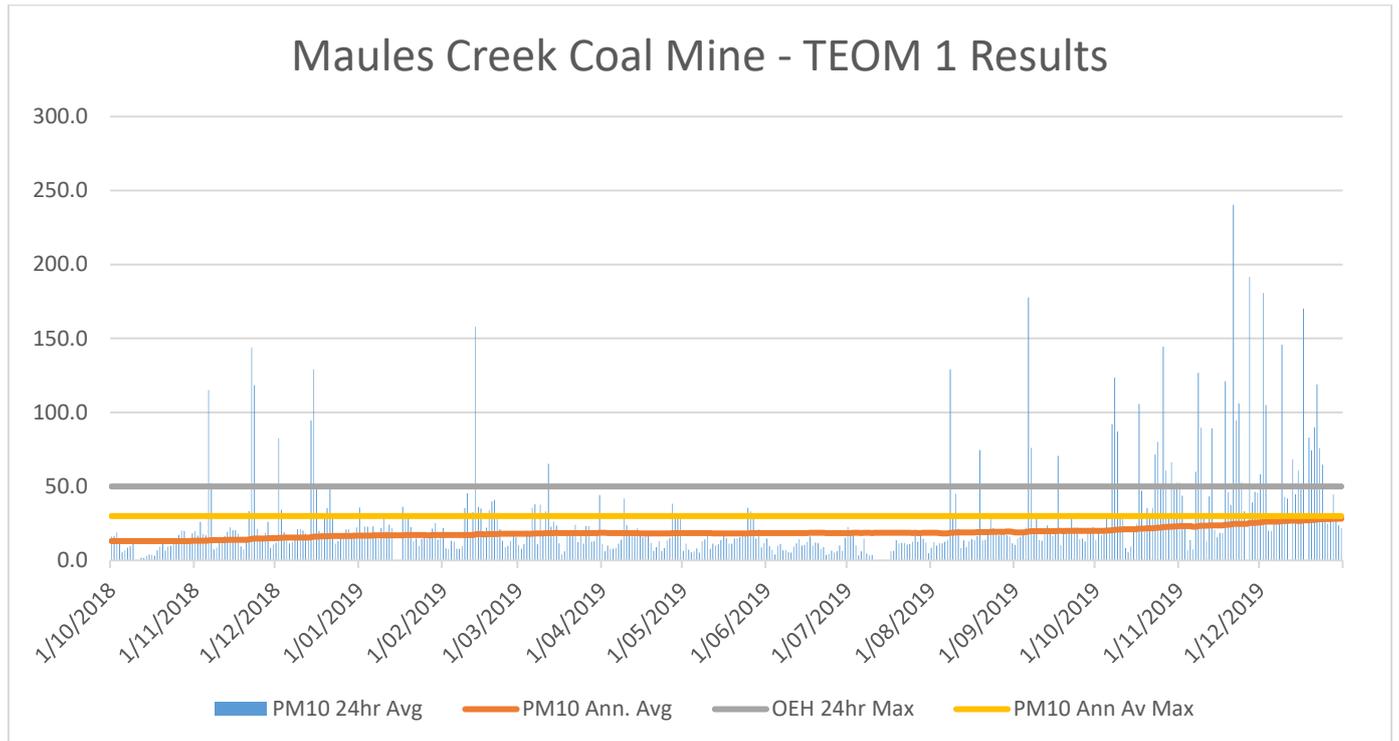


* Exceedances recorded in December, February and April, September, October, November and December were attributed to the regional events and discussed at the February, May, August and October 2019 CCC meetings

TEOM - PM₁₀ Results

The annual average for PM₁₀ results at the Maules Creek Coal TEOM is above the Project Approval annual average criteria of 30µg/m³ as shown in the following figure. As per the project approval, recalculations have been undertaken to remove extraordinary events resulting in The PM₁₀ annual average results below the 30µg/m³. There have been fifteen exceedances of the 24 hour average for Q4, these have all been attributed to regional dust events and bushfires.

TEOM Result Figures – Particulate Matter PM₁₀µg/m³



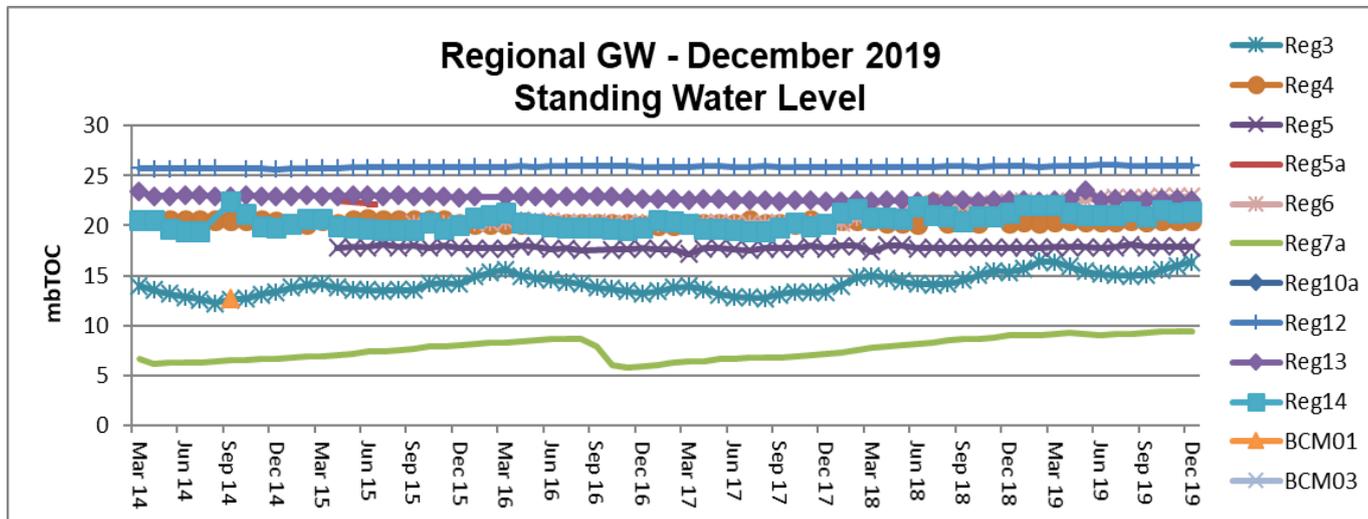
* Blank columns indicate sample periods where there was either power outage, maintenance or other related causes.

** Exceedances of the OEH 24hr Maximum over the past 12 months have been non mine related and have been attributed to regional dust events, all previous exceedances have been discussed at CCC meetings.

Water Monitoring

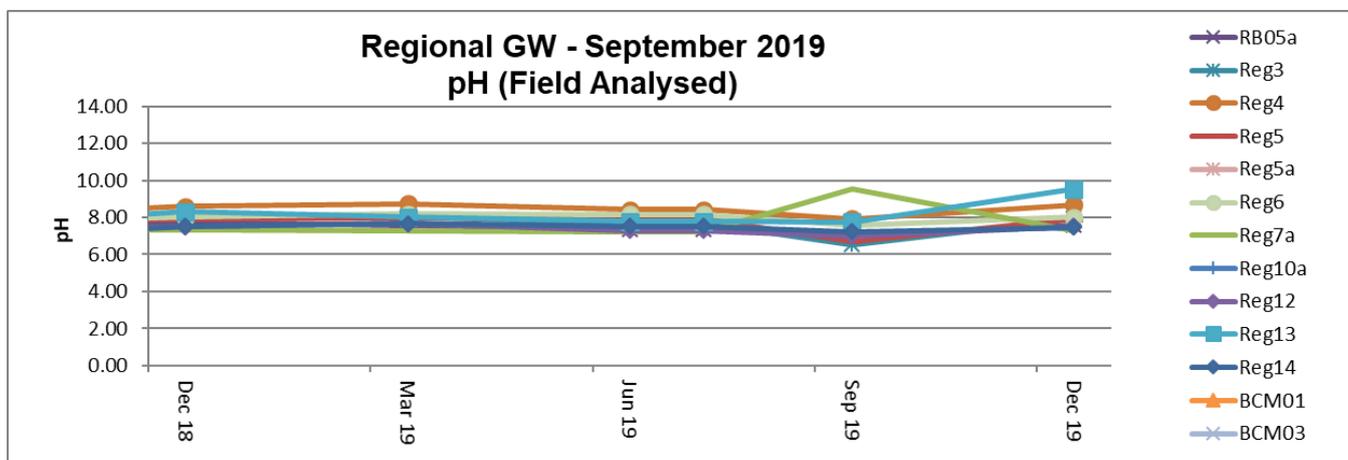
Groundwater

Groundwater monitoring results in open standpipe piezometers show levels to be relatively stable. The Regional bores were installed between Q4, 2013 and Q1, 2014. BCM01, BCM03, Reg10 are shallow bores which have remained dry since construction in 2013.



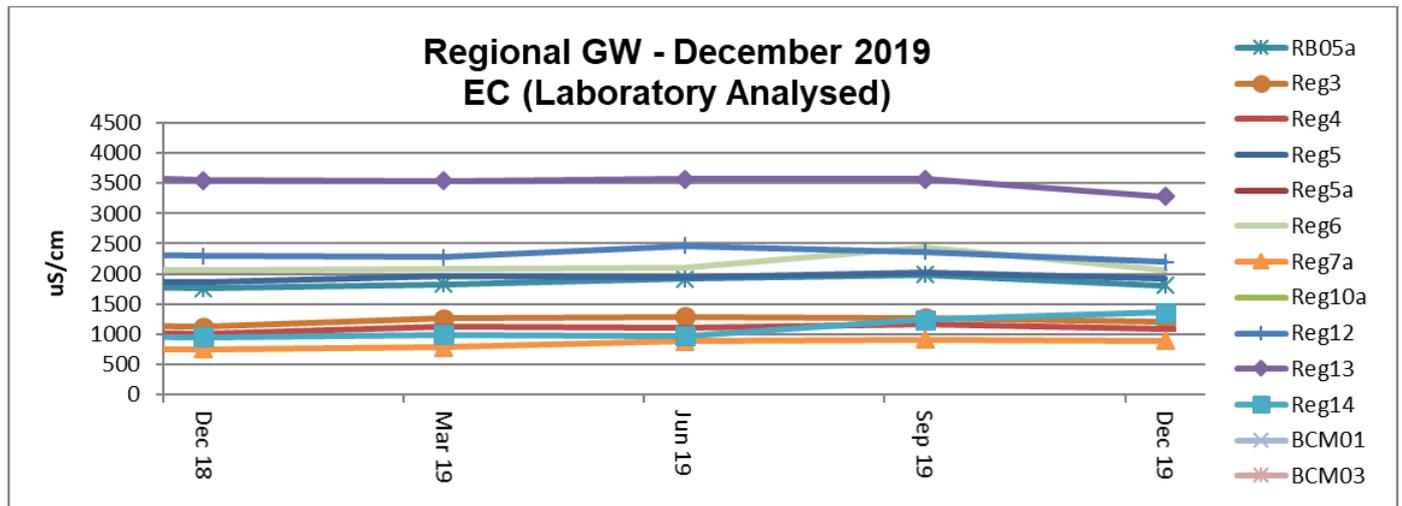
Acidity / Alkalinity (pH)

Over the past twelve months pH readings across the regional bores have remained static with very little fluctuation.



Electrical Conductivity

Laboratory Electrical Conductivity (EC) levels are all within historic groundwater EC range of 500 $\mu\text{s}/\text{cm}$ to 2,500 $\mu\text{s}/\text{cm}$, with the exception of monitoring bore Reg13 which has a historic groundwater EC range of 2,500 $\mu\text{s}/\text{cm}$ to 4,100 $\mu\text{s}/\text{cm}$. Within the last twelve months EC has remained static.



Wet Weather Discharge Sampling

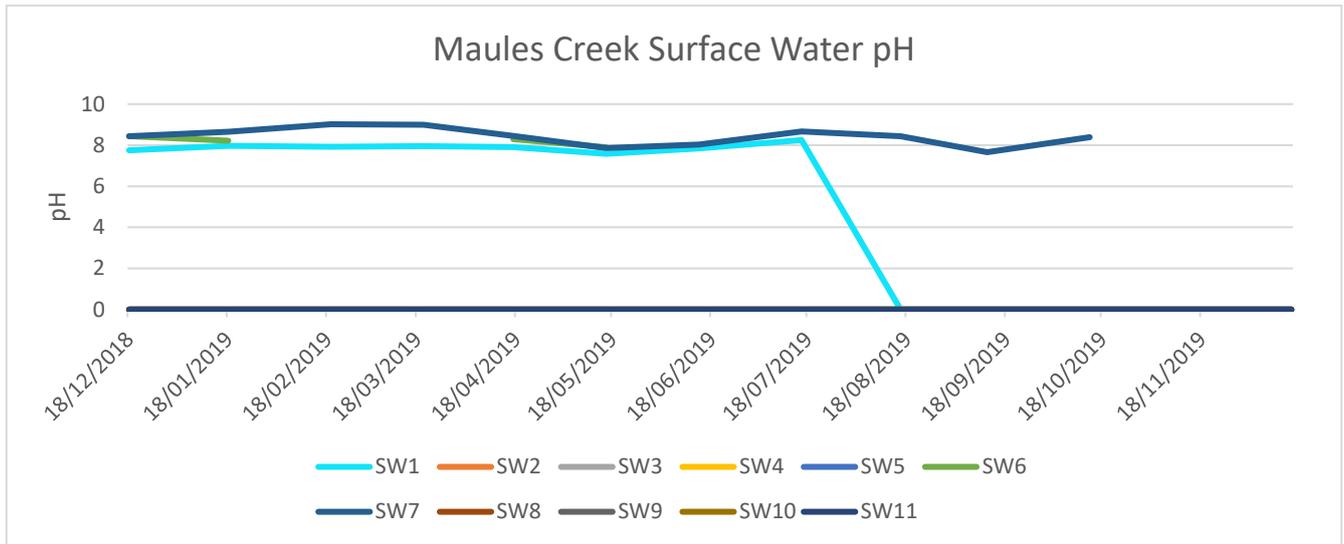
During Q4 there were no discharge events.

Surface Water – Creeks and Rivers

Routine surface water monitoring is conducted in surrounding creeks and rivers on a monthly basis. Results for parameters including pH, EC and Total Suspended Solids (TSS) are shown in the figures below. There are 11 Surface Water monitoring points, however due to the current drought only five were able to be sampled during the twelve month period.

Acidity / Alkalinity (pH)

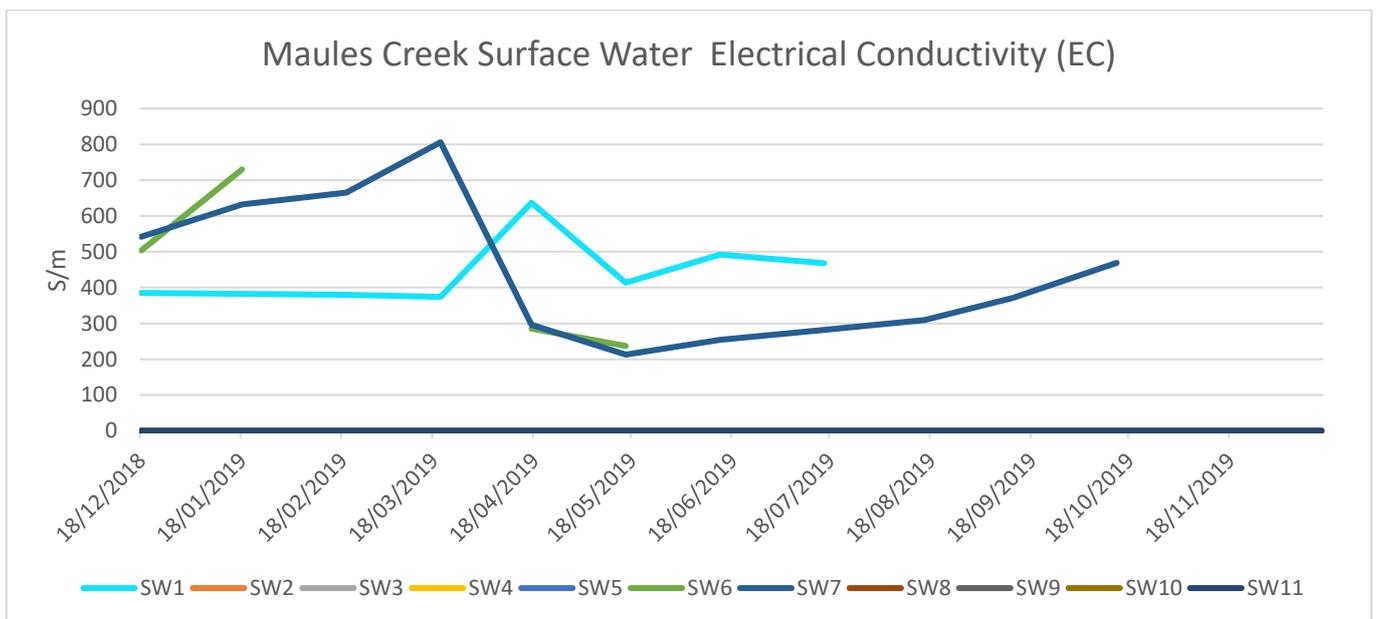
Monitoring results for pH in creeks and rivers surrounding MCCM are all trending within the ANZECC range for Irrigation, Ecosystem Health and Recreation.



*0 values indicate no water to sample due to the creek being dry

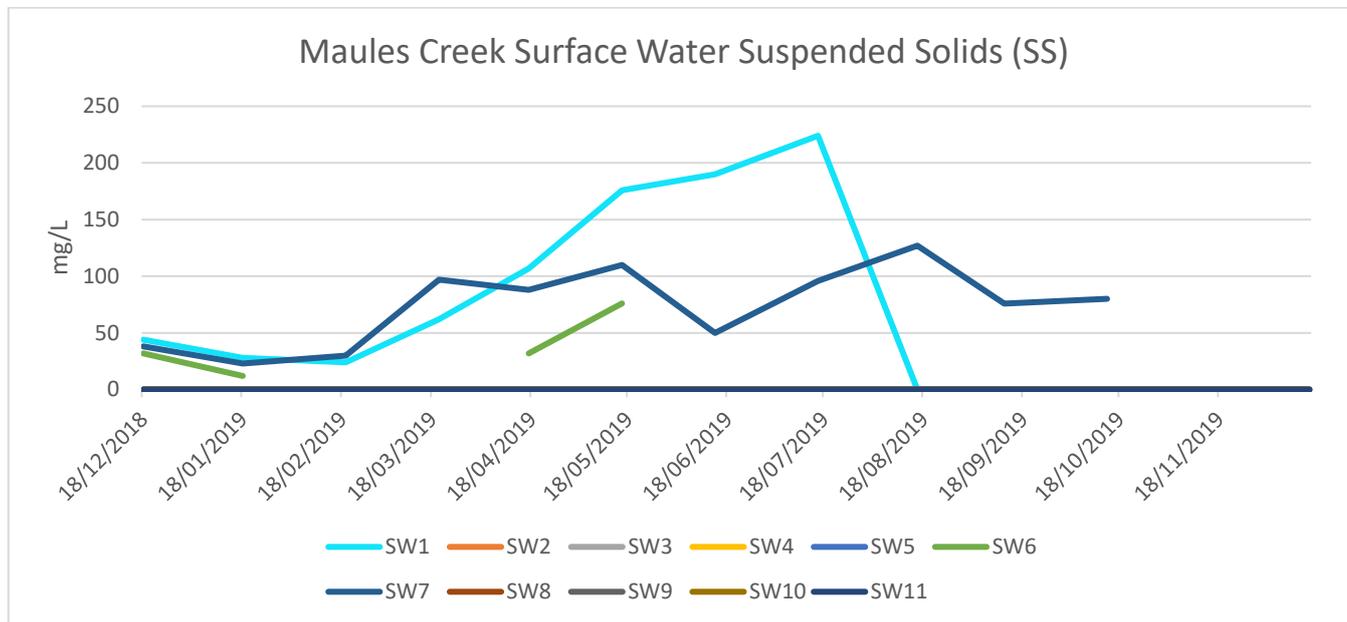
Electrical Conductivity

Surface water EC trends have remained consistent with SW5, SW6, SW7 and SW8 all historically variable. SW5, SW6, SW7 and SW8 are points along the Namoi River which are subject to regulated and variable flow regimes.



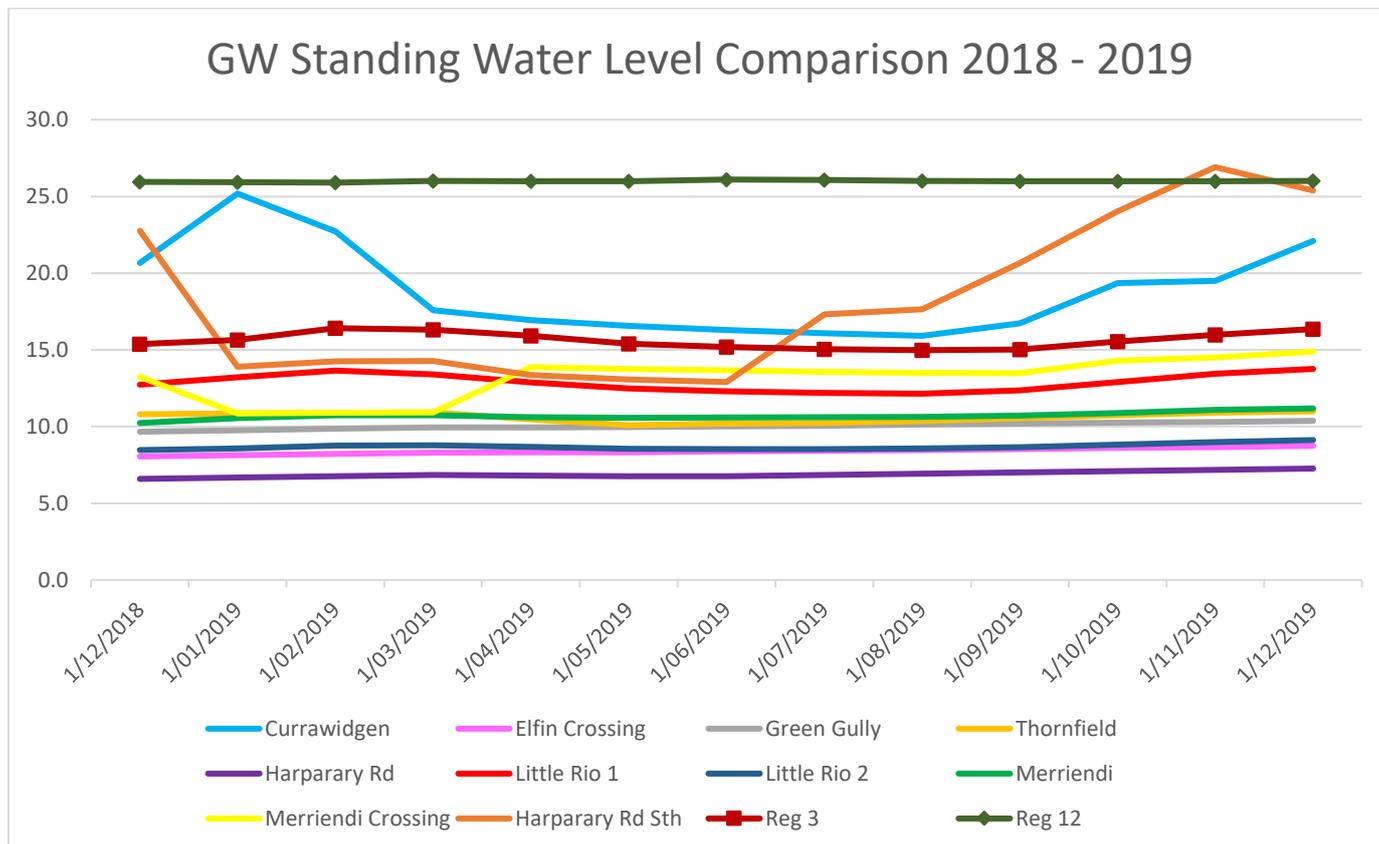
Total Suspended Solids (TSS)

Surface water TSS trends have remained generally consistent with historical results. SW5, SW6, SW7 and SW8 are historically variable as they are located along the Namoi River which is subject to regulated and variable flow regimes. There were no elevated levels of TSS in Q4.



Regional Groundwater monitoring

Maules Creek Coal Mine monitors bores across the region.



Rehabilitation

Rehabilitation work is ongoing, bulk reshape and topsoiling is currently being completed.

Feral Animal Management

During the most recent routine Whitehaven Offset Area Feral Animal Control program (December 2019) the results included:

- 64 out of total 160 pigs trapped were from the Maules Creek/Boggabri area; and
- 71 out of a total 209 fox baits (1080) taken were from the Maules/Boggabri area.

Revegetation

- Maules Creek Biodiversity revegetation completed with over 76,000 trees planted
- Tree watering currently on hold given the good soaking rain.

Fire Management

- Annual fire break track maintenance of Biodiversity Offsets carried out to maintain zero fuel barriers and good access around Maules Offsets;
- Engaged LRM Fire & Rescue to provide Bushfire Response Service for 2019/2020 fire season

Community Complaints

- 7 complaints were received during Q4 CY2019. Please refer to the Community Complaints Register on the Whitehaven Coal Maules Creek website.