COAL & ALLIED

Managed by Rio Tinto Coal Australia

Hunter Valley Operations

Monthly Environmental Report

March 2017

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CONTENTS

Figures

Tables

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	Environmental Graduate	Draft	4/05/2017
1.1	Acting Environmental Specialist	Final	08/05/2017

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Hunter Valley Operations (HVO) as described in the Hunter Valley Operations Online Communication Plan. This report includes all monitoring data collected for the period 1 March 2017 to 31 March 2017.

2.0 AIR QUALITY

2.1 Meteorological Monitoring

HVO maintains two meteorological stations; 'Corporate' and 'Cheshunt' (Refer to Figure 4: Air Quality Monitoring Location Plan).

2.1.1 Rainfall

Rainfall for the period is summarised in Table 1, the 2017 trend and historical trend are shown in Figure 1.

Table 1: Monthly Rainfall HVO

2017	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
March	192.2	253.4

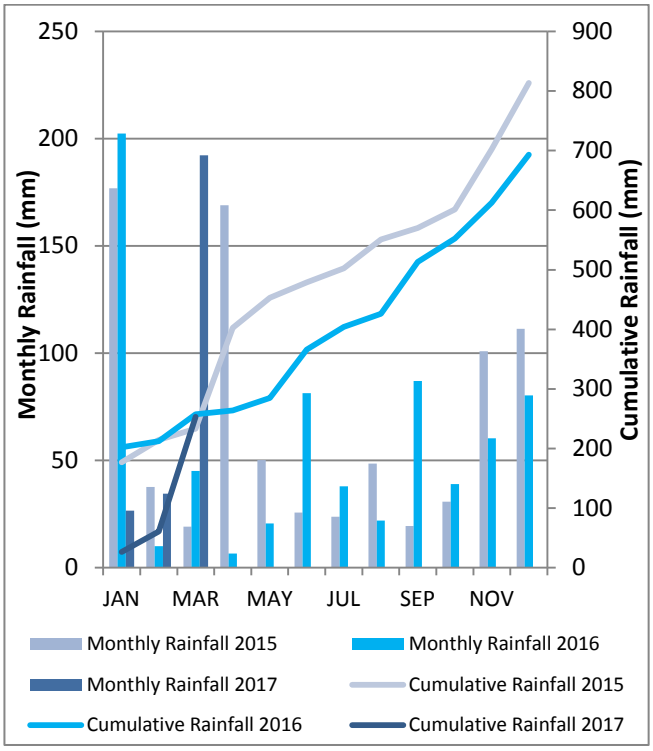

Figure 1: Year to Date Rainfall Summary 2017

2.1.2 Wind Speed and Direction

South Easterly winds were dominant during March as shown in Figure 2 (HVO Corporate) and Figure 3 (HVO Cheshunt).

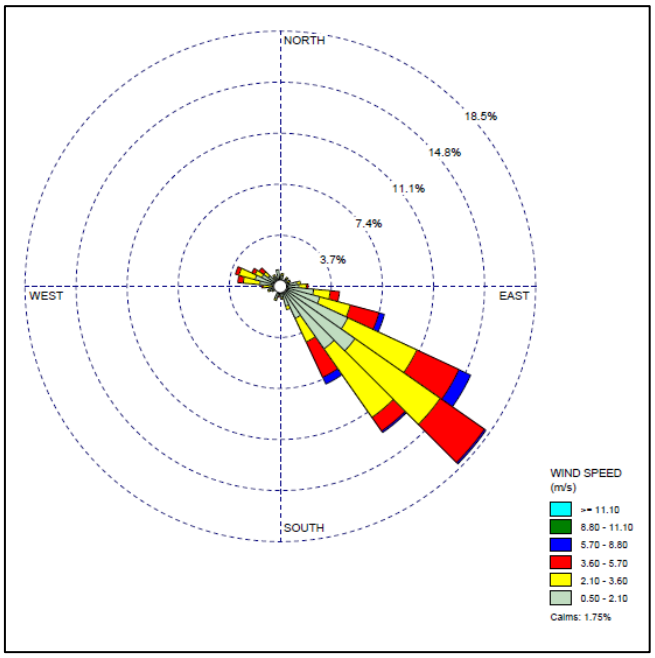

Figure 2: HVO Corporate Wind Rose – March 2017

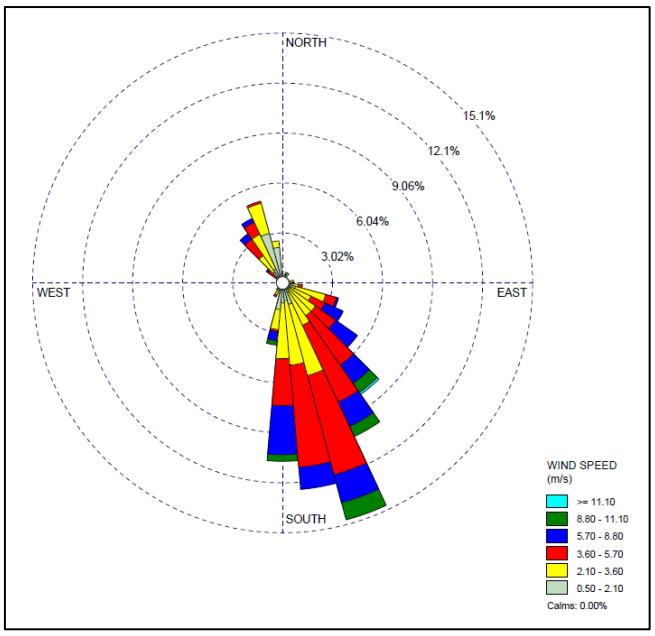

Figure 3: HVO Cheshunt Wind Rose – March 2017

Figure 4: Air Quality Monitoring Location Plan

2.2 Depositional Dust

To monitor regional air quality, HVO operates and maintains a network of nine depositional dust gauges, situated on private and mine owned land surrounding HVO.

Figure 5 displays insoluble solids results from depositional dust gauges during the reporting period compared against the year-to-date average and the annual impact assessment criteria.

During the reporting period the DL21, DL22, D118, DL30 and Warkworth monitors recorded monthly results above the long term impact assessment criteria of 4.0 g/m^2 per month. The field notes associated with the DL21 and DL22 results confirm the presence of insects and bird droppings. As such the results are considered contaminated and will be excluded from calculation of the annual average. There is no evidence to suggest that the D118, DL30 and Warkworth results were contaminated. Accordingly, these results will be included in the annual average calculation.

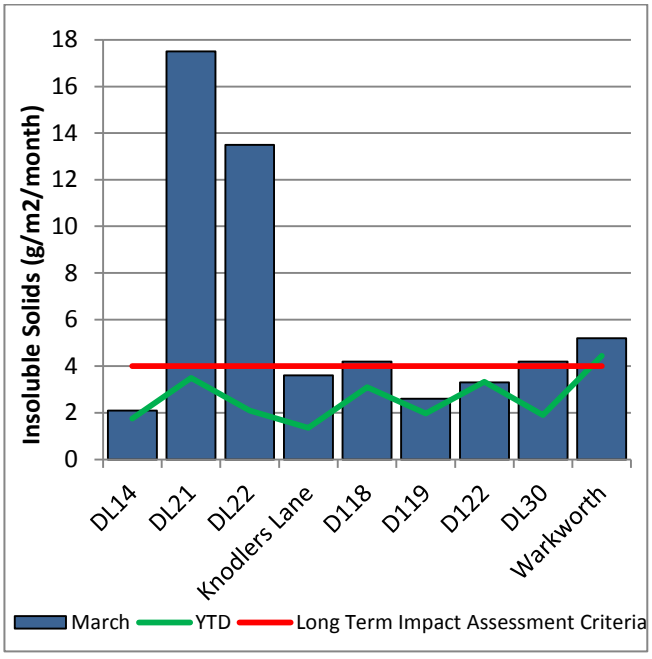

Figure 5: Depositional Dust Results – March 2017

2.3 Suspended Particulates

Suspended particulates are measured by a network of High Volume Air Samplers (HVAS) measuring Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM_{10}). The location of these monitors can be found in Figure 4. Each HVAS was run for 24 hours on a six-day cycle in accordance with EPA requirements.

2.3.1 HVAS PM_{10} Results

Figure 6 shows individual PM_{10} results at each monitoring station against the short term impact assessment criteria of 50µg/m^3.

The Kilburnie South HVAS monitor failed to collect a valid sample on the 19th of March due to a power outage.

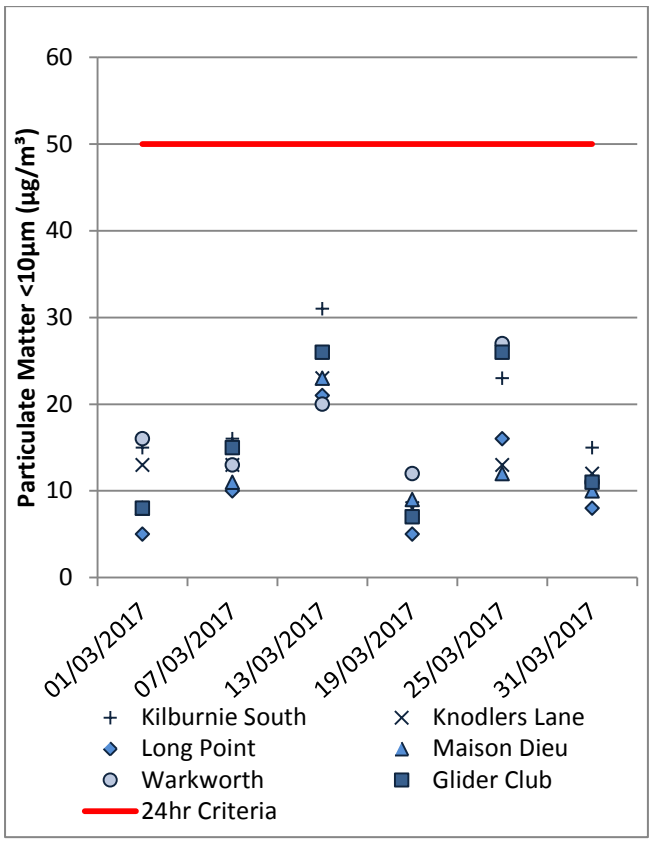

Figure 6: Individual PM_{10} Results – March 2017

Figure 7 shows the annual average PM_{10} results. During the reporting period, all PM_{10} results were below the long term impact assessment criteria.

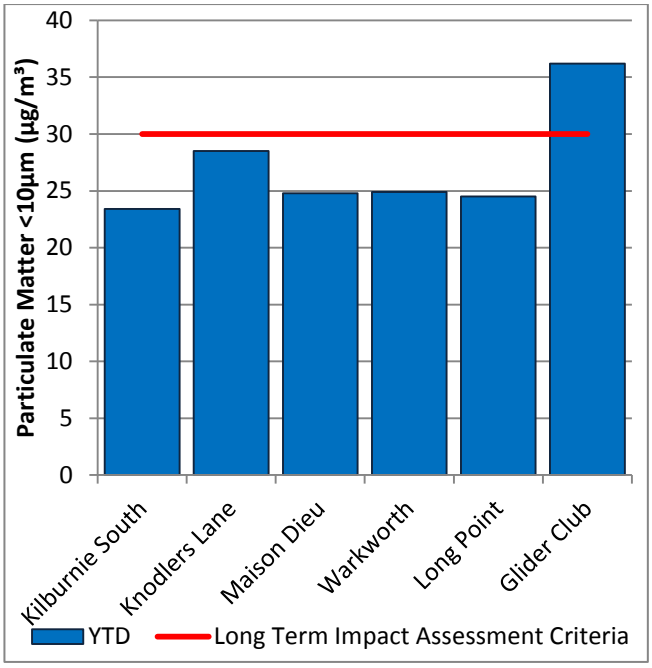

Figure 7: Year to Date Average PM_{10} – March 2017

2.3.2 TSP Results

Figure 8 shows the annual average TSP results compared against the long term impact assessment criteria of 90µg/m³.

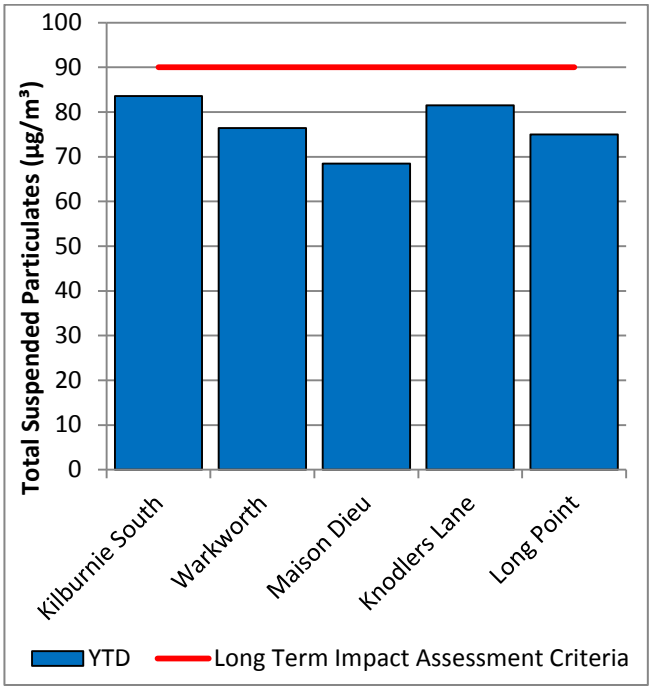

Figure 8: Annual Average Total Suspended Particulates – March 2017

2.3.3 Real Time PM_{10} Results

Hunter Valley Operations maintains a network of real time PM_{10} monitors. The real time air quality monitoring stations continuously log information and transmit data to a central database, generating alarms when particulate matter levels exceed internal trigger limits. Results from real time PM_{10} monitoring are used as a reactive measure to guide mining operations to ensure compliance with the relevant conditions of the project approval.

Results for real time dust sampling are shown in Figure 9, including the daily 24 hour average PM_{10} result and the 24 hour YTD PM_{10} average. There were no results recorded which exceeded the short term (24hr) criteria of 50 µg/m³.

Data was not available on the 15th March (Knodlers Lane) due to technical issues.

2.3.4 Real Time Alarms for Air Quality

During March, the real time monitoring system generated 25 automated air quality related alarms. 12 alarms were related to adverse weather conditions and 13 alarms related to PM_{10}.

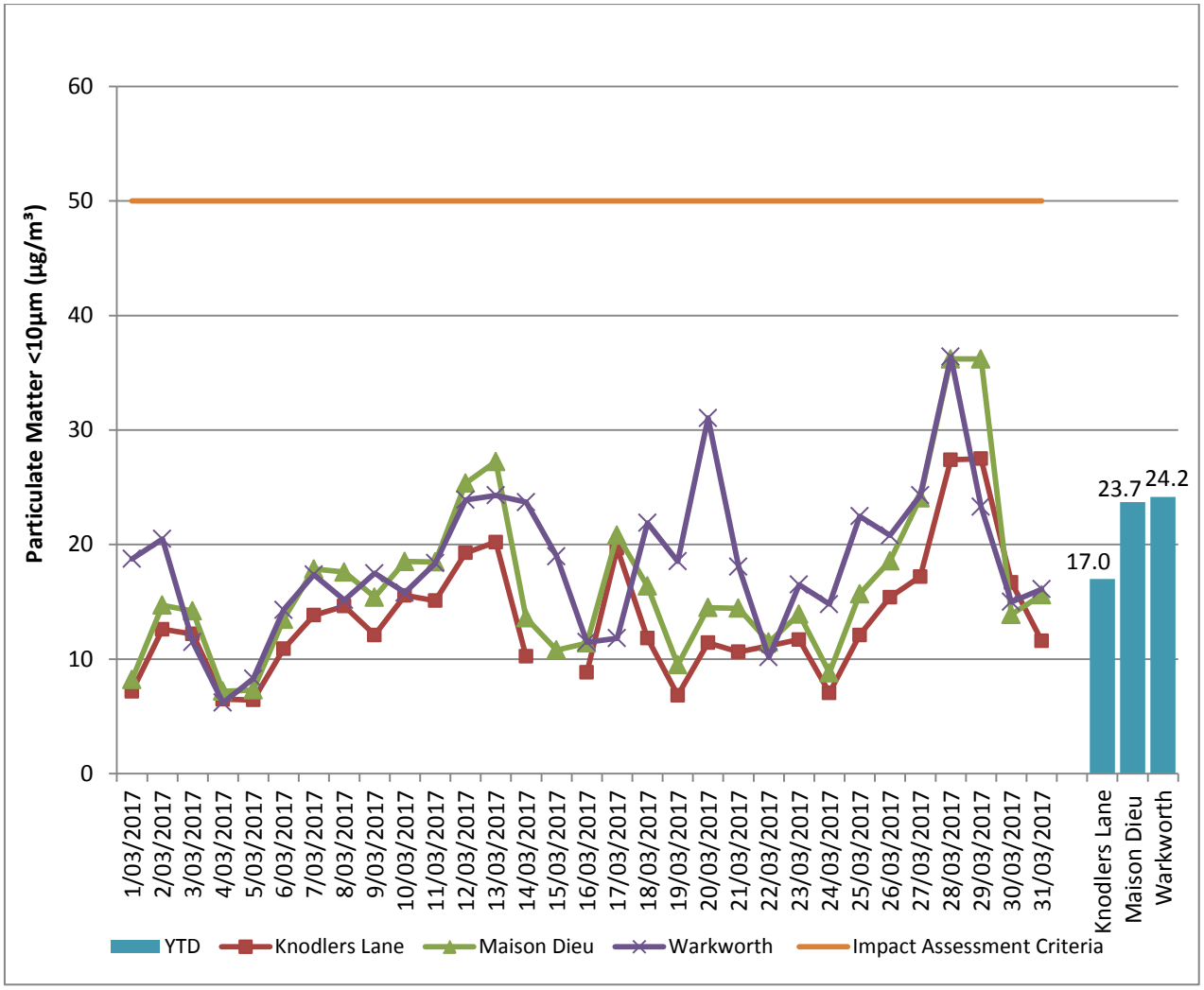

Figure 9: Real Time PM_{10} 24hr average and YTD average – March 2017

3.0 SURFACE WATER

3.1.1 Surface Water Monitoring

Surface water courses are sampled on a quarterly or rain event sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS).

Watercourses are assessed against ANZECC Guidelines for Fresh and Marine Water Quality (2000) for:

- pH (6.5 to 8.5);
- Electrical Conductivity (125 to 2200µS/cm); and
- Total Suspended Solids (maximum 50mg/L)

The location of Surface Water monitoring locations is shown in Figure 22.

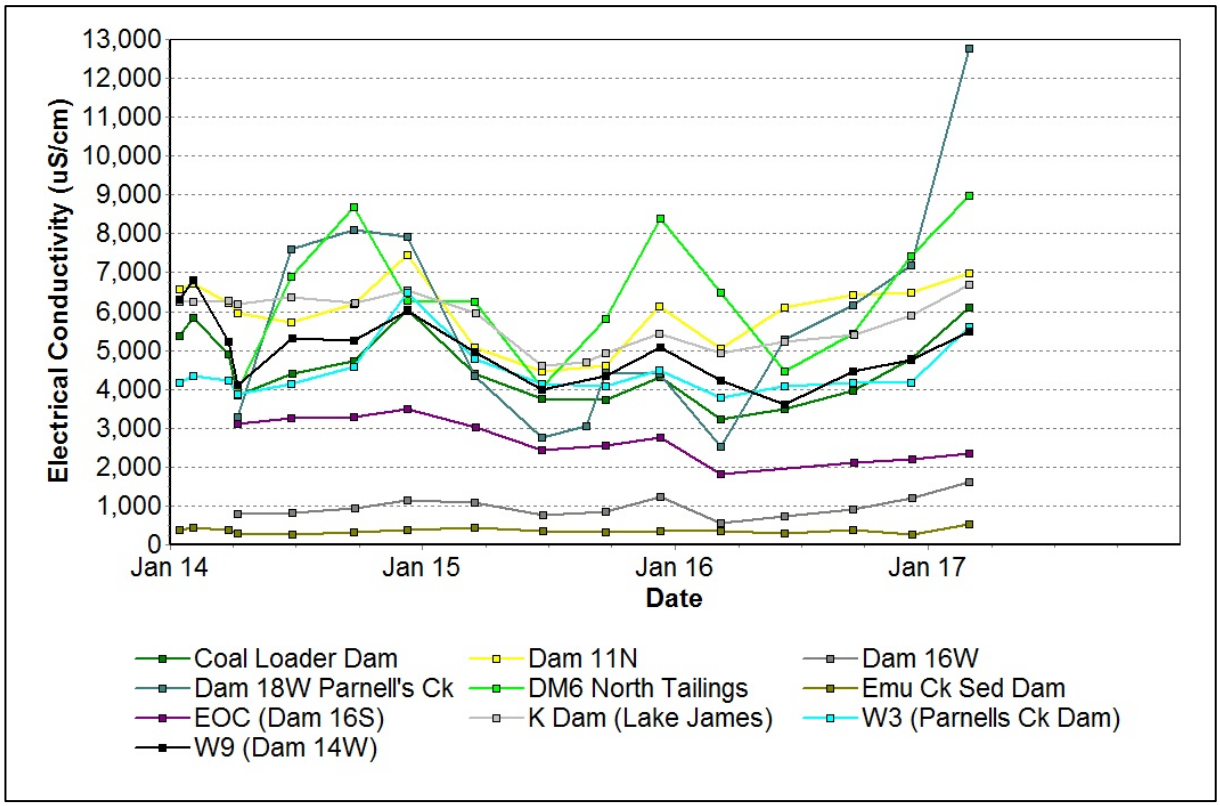

Figure 10: Site Dams Electrical Conductivity Trend - March 2017

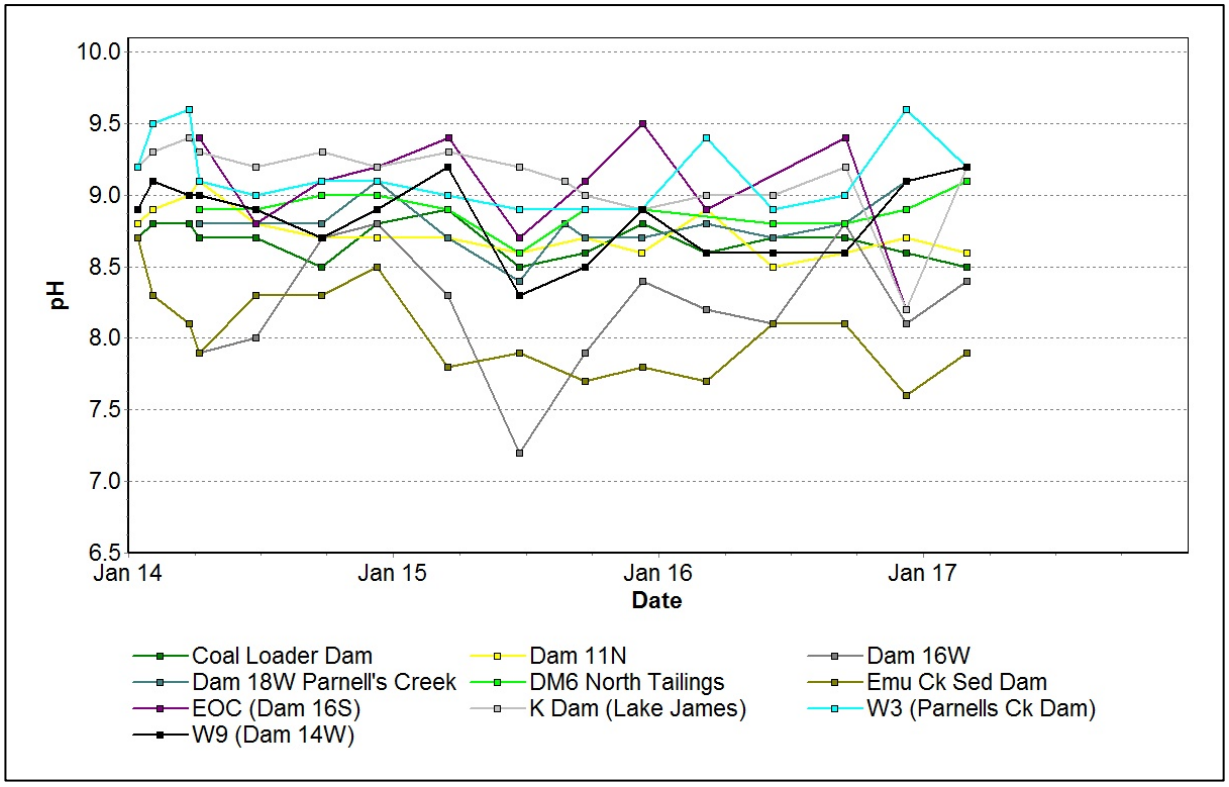

Figure 11: Site Dams pH Trend - March 2017

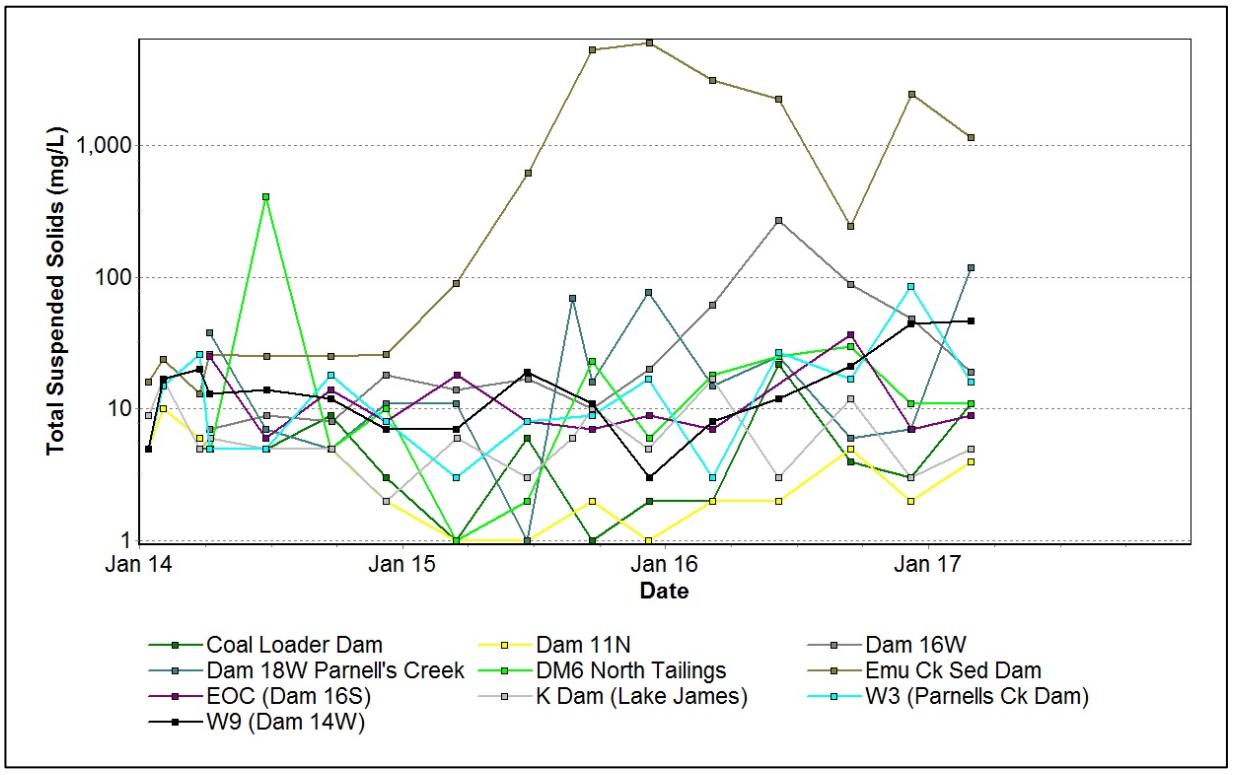

Figure 12: Site Dams Total Suspended Solids Trend – March 2017

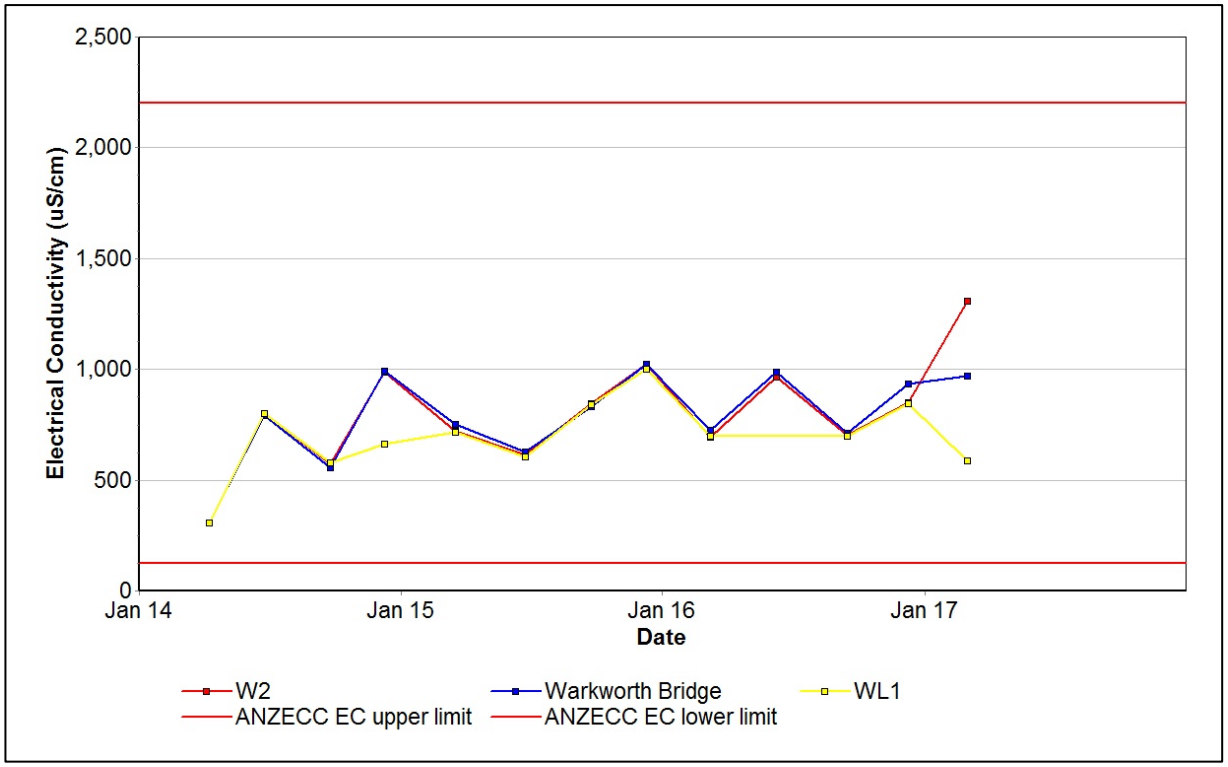

Figure 13: Wollombi Brook Electrical Conductivity Trend - March 2017

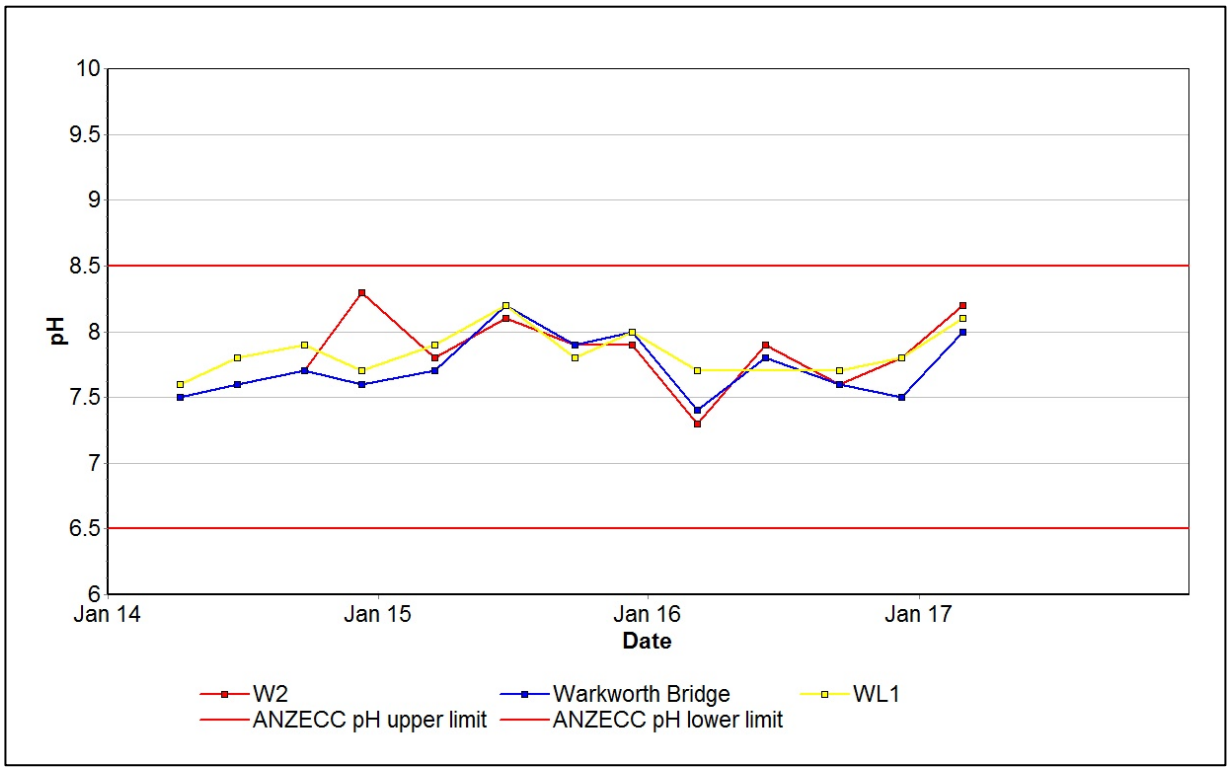

Figure 14: Wollombi Brook pH Trend - March 2017

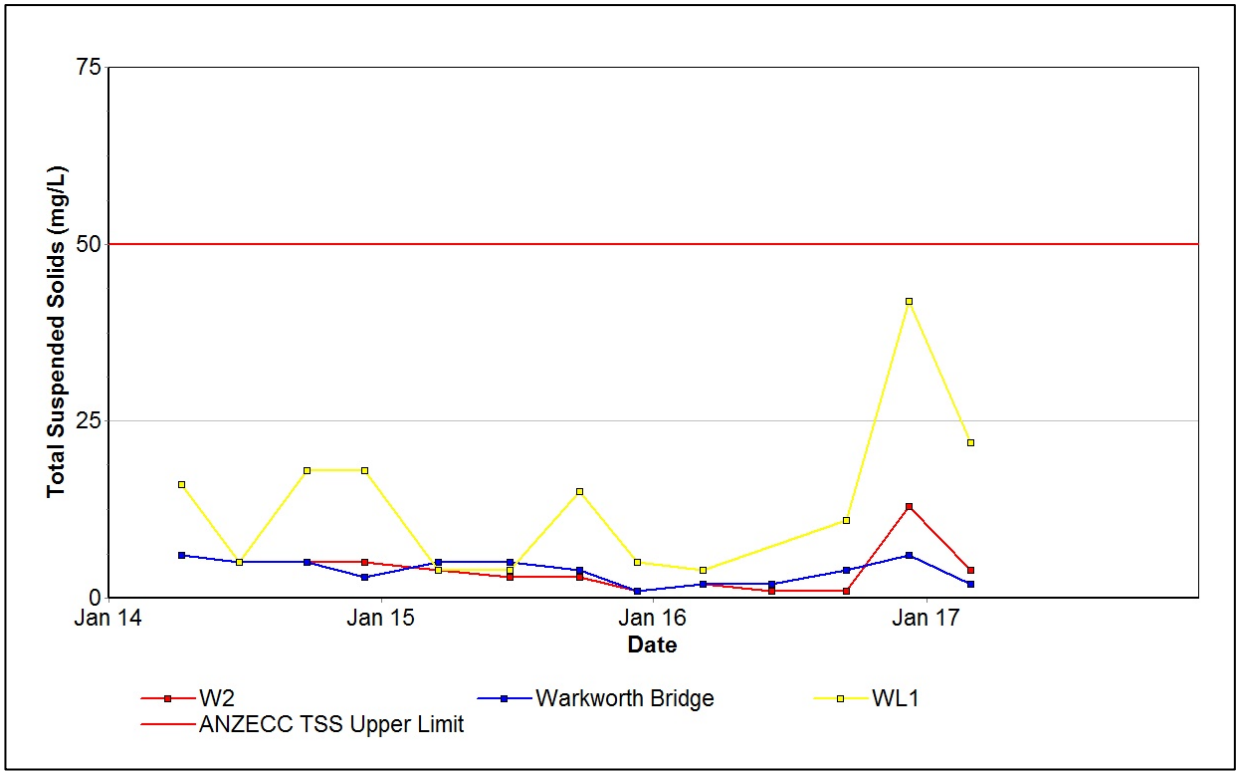

Figure 15: Wollombi Brook Total Suspended Solids Trend - March 2017

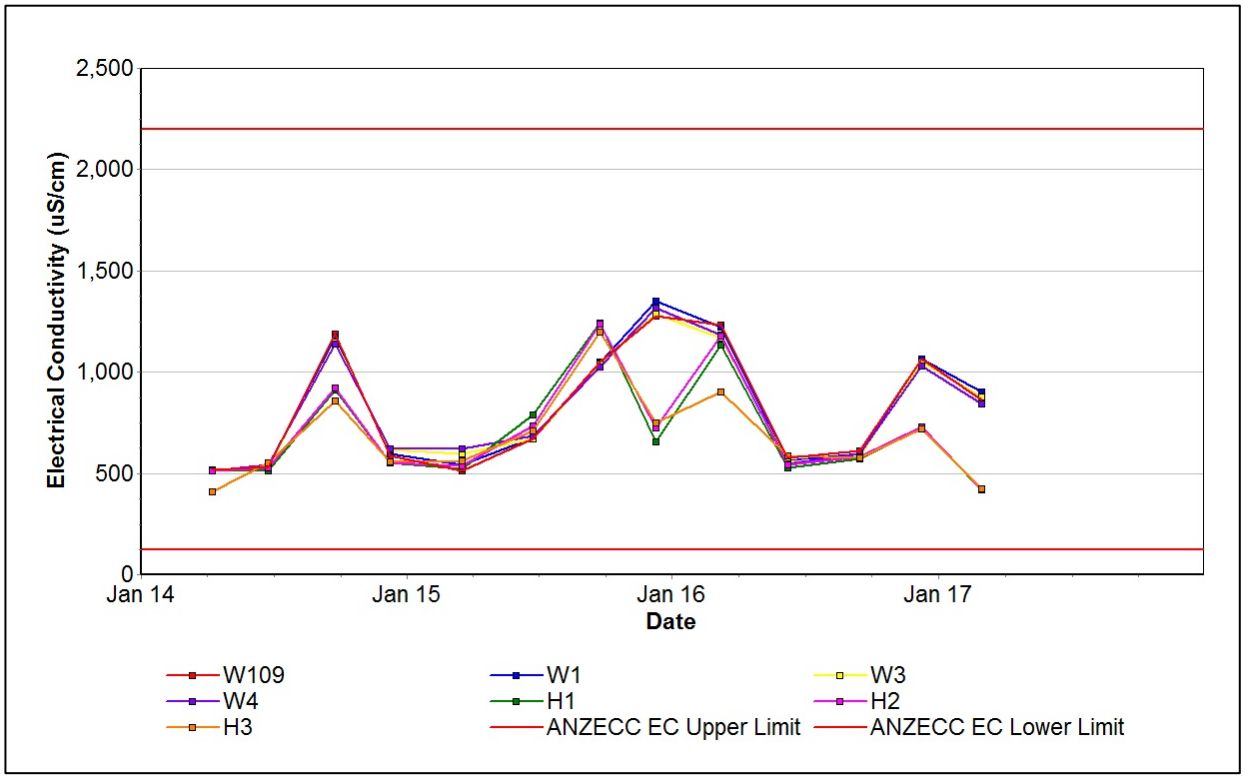

Figure 16: Hunter River Electrical Conductivity Trend - March 2017

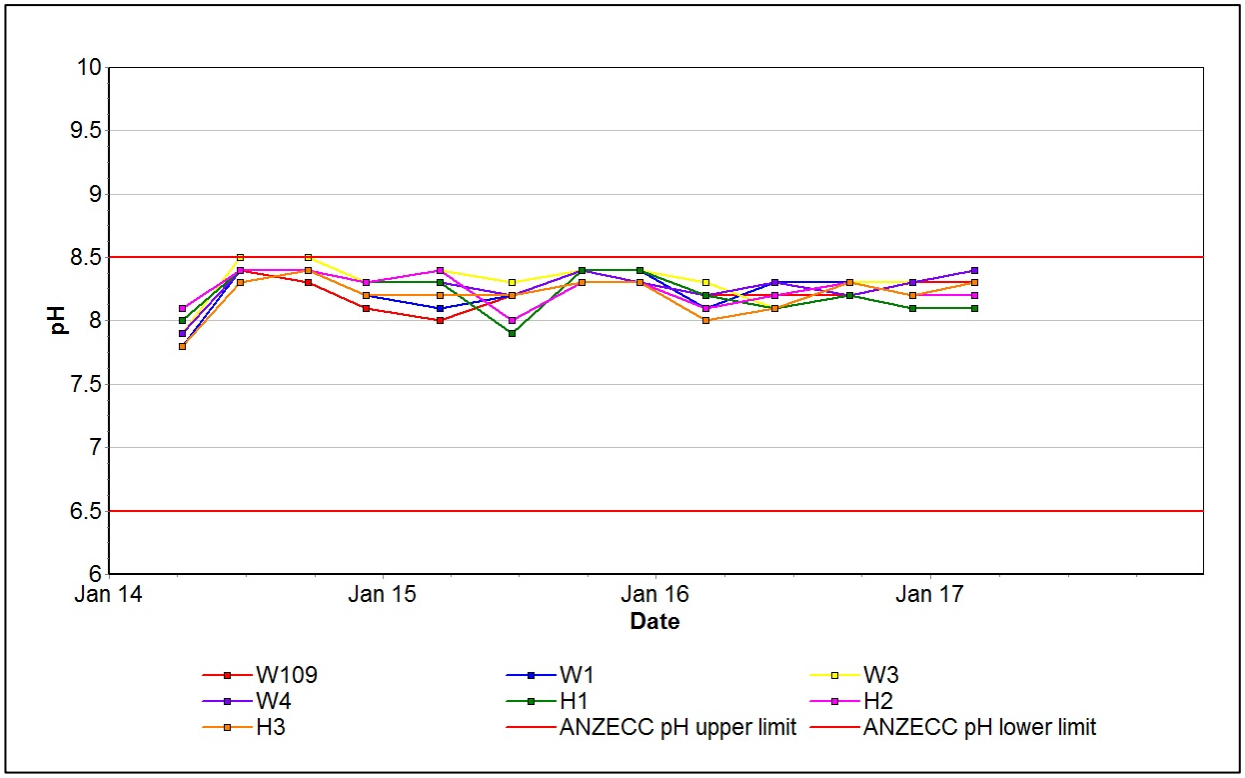

Figure 17: Hunter River pH Trend - March 2017

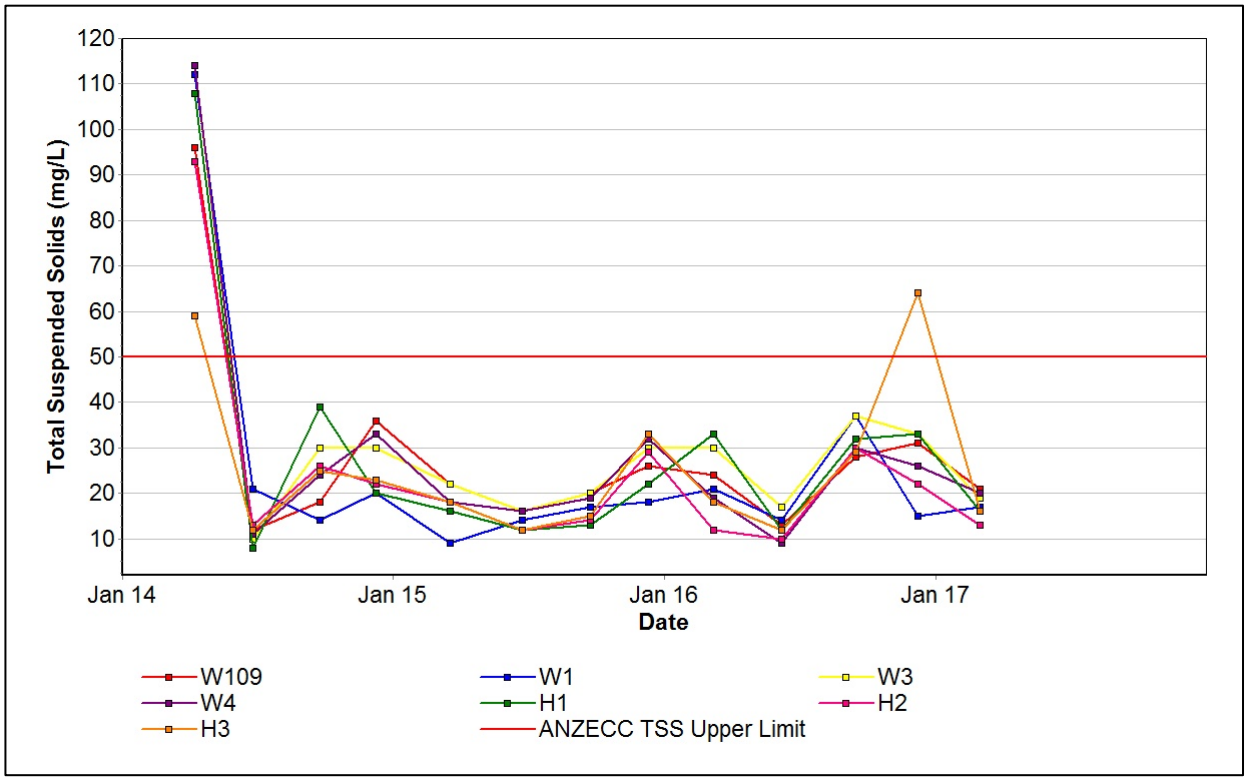

Figure 18: Hunter River Total Suspended Solids - March 2017

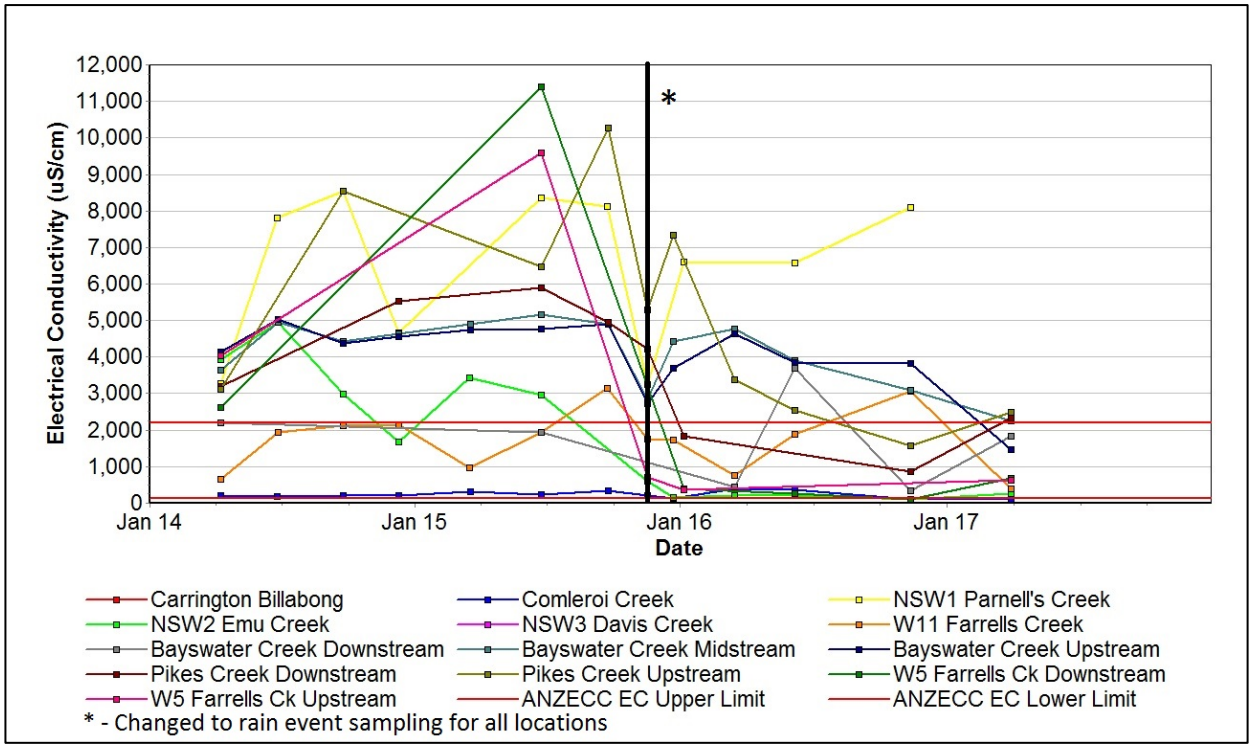

Figure 19: Other Tributaries Electrical Conductivity Trend - March 2017

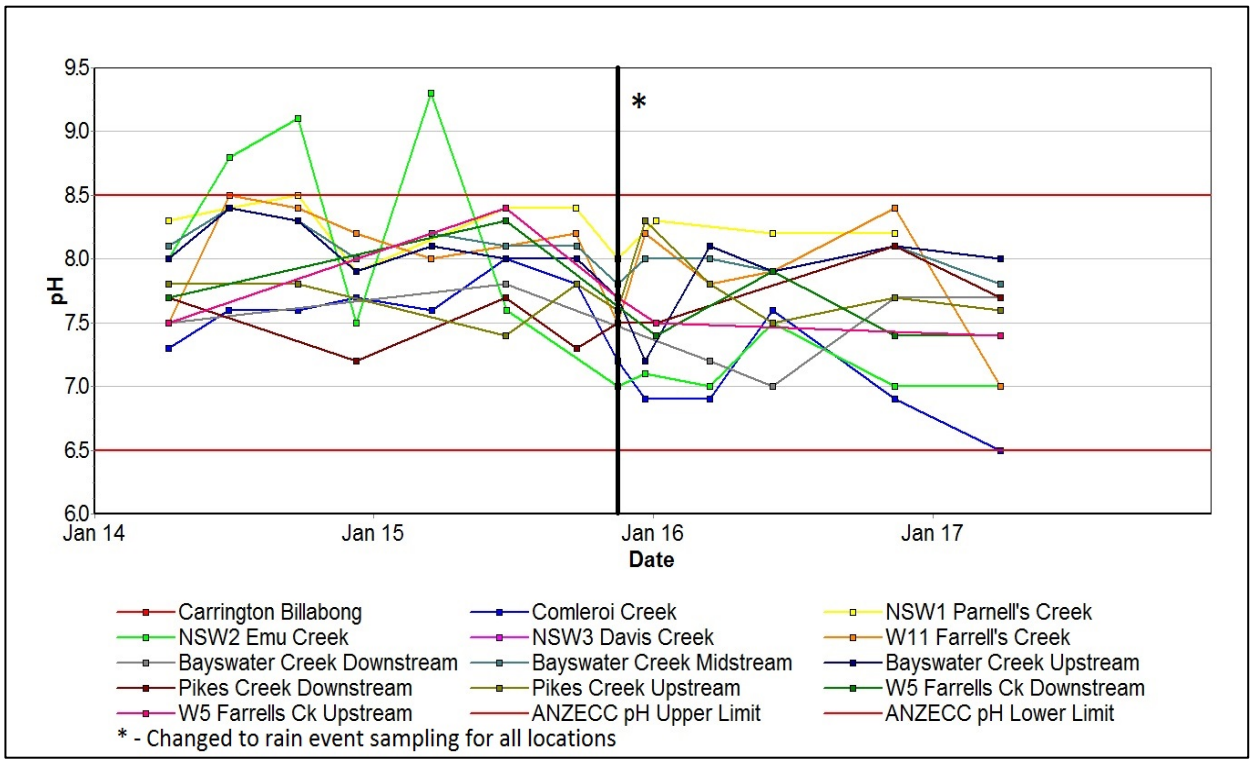

Figure 20: Other Tributaries pH Trend – March 2017

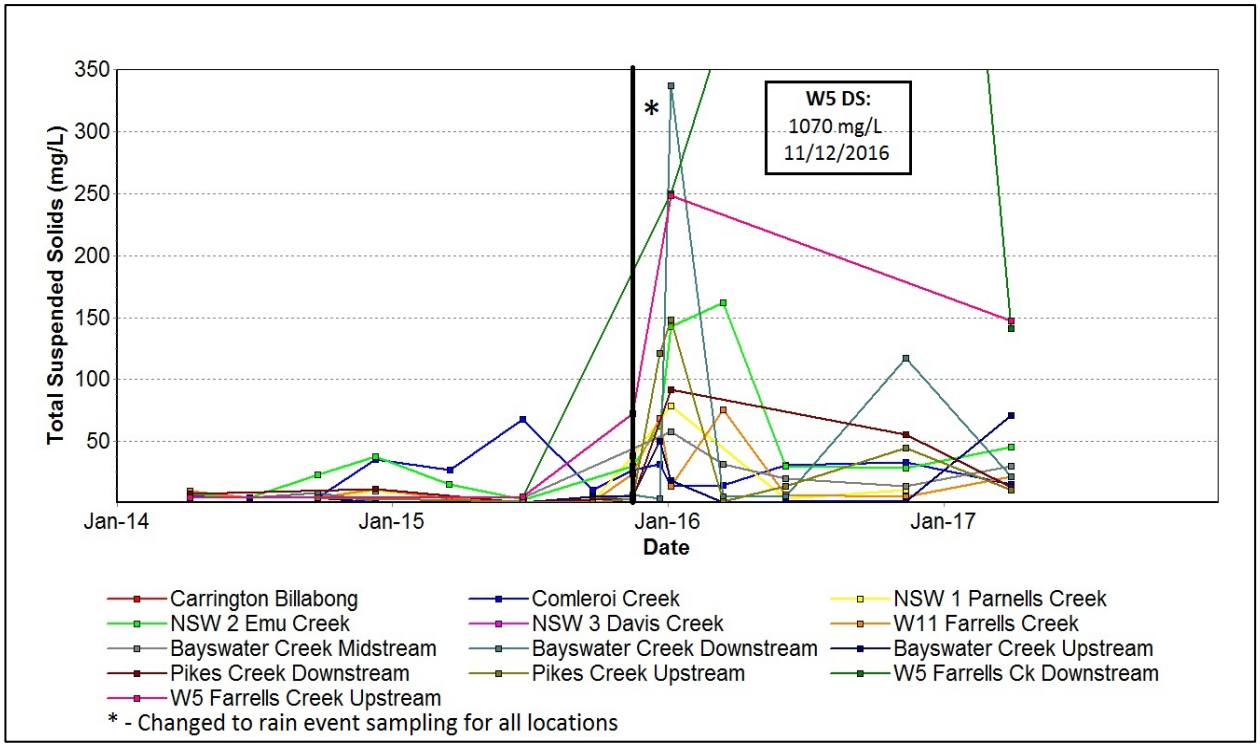

Figure 21: Other Tributaries Total Suspended Solids Trend - March 2017

3.1.2 Site Water Use

Under water allocation licences issued by the NSW Office of Water, HVO is permitted to extract water from the Hunter River. During the reporting period, HVO did not extract any water from the Hunter River.

3.1.3 HRSTS Discharge

HVO participates in the HRSTS, allowing it to discharge from licensed discharge points Dam 11N (to Farrell's Creek), Lake James (to the Hunter River) and Parnell's Dam (to Parnell's Creek). Discharges can only take place subject to HRSTS regulations.

During the reporting period no water was discharged under the HRSTS.

3.1.4 Surface Water Trigger Limits

Internal trigger limits have been developed to assess monitoring data on an on-going basis, and to highlight potentially adverse surface water impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses are outlined in the HVO Water Management Plan.

During Q1 2017 5 internal trigger limits were breached, summarised in Table 2.

Table 2: Surface Water Trigger Limit Summary

Site	Date	Trigger Limit Breached	Action taken in response

W2	01/03/2017	EC –95th Percentile	Watching Brief*
Bayswater Creek Midstream	01/03/2017	pH – 5th Percentile	Watching Brief*
W11	31/03/2017	pH – 5th Percentile	Watching Brief*
W3 Hunter River	01/03/2017	pH – 95th Percentile	Watching Brief*
Bayswater Creek Upstream	31/03/2017	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with high-intensity rainfall event; any potential sources of sediment upstream from operations. No further action.

* = Watching Brief established pending outcomes of subsequent monitoring events. No further action required.

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Figure 22: Surface Water Monitoring Location Plan

4.0 GROUNDWATER

4.1.1 Groundwater Monitoring

Groundwater monitoring is undertaken on a quarterly basis in accordance with the HVO Water Management Plan and Ground Water Monitoring Programme. Monitoring sites are shown in Figure 77.

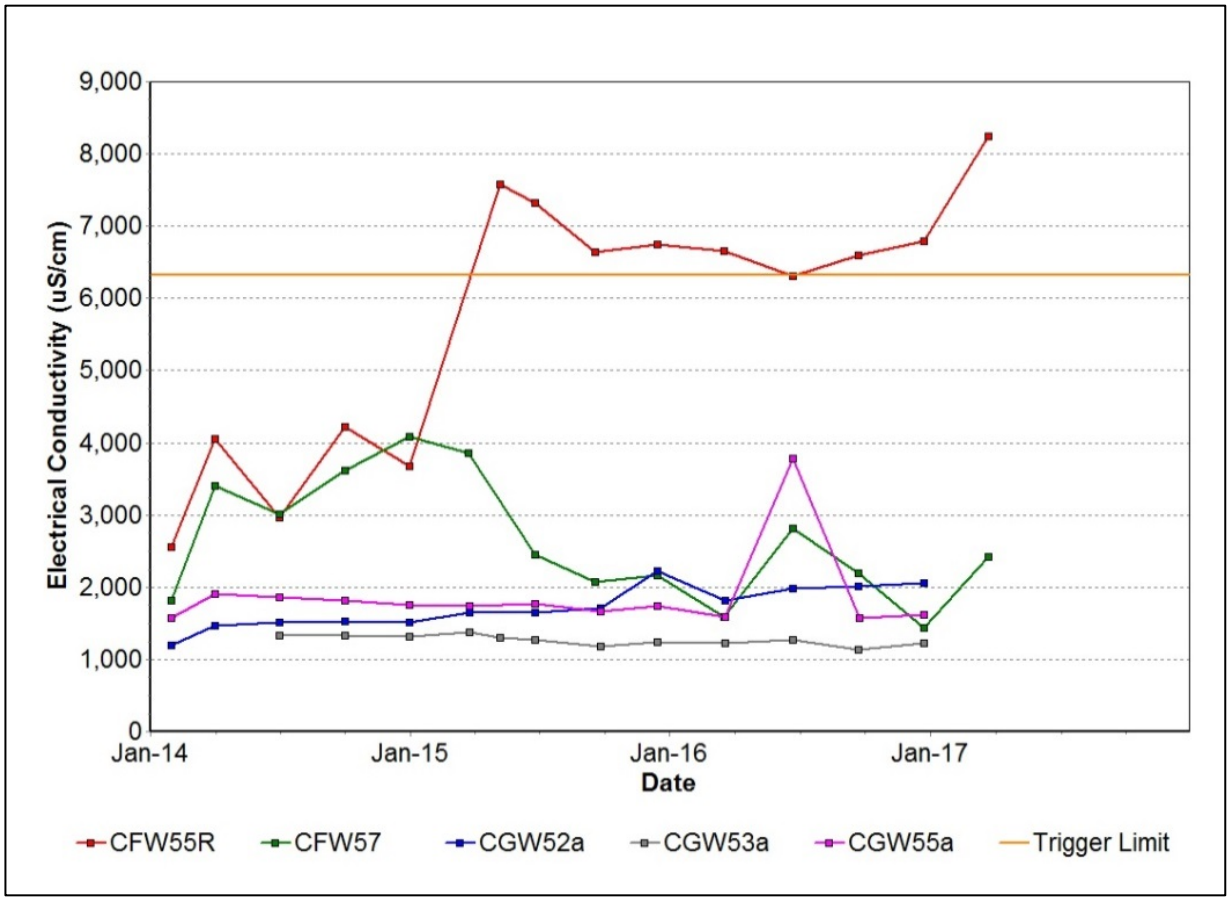

Figure 23: Carrington Alluvium Electrical Conductivity Trend - March 2017

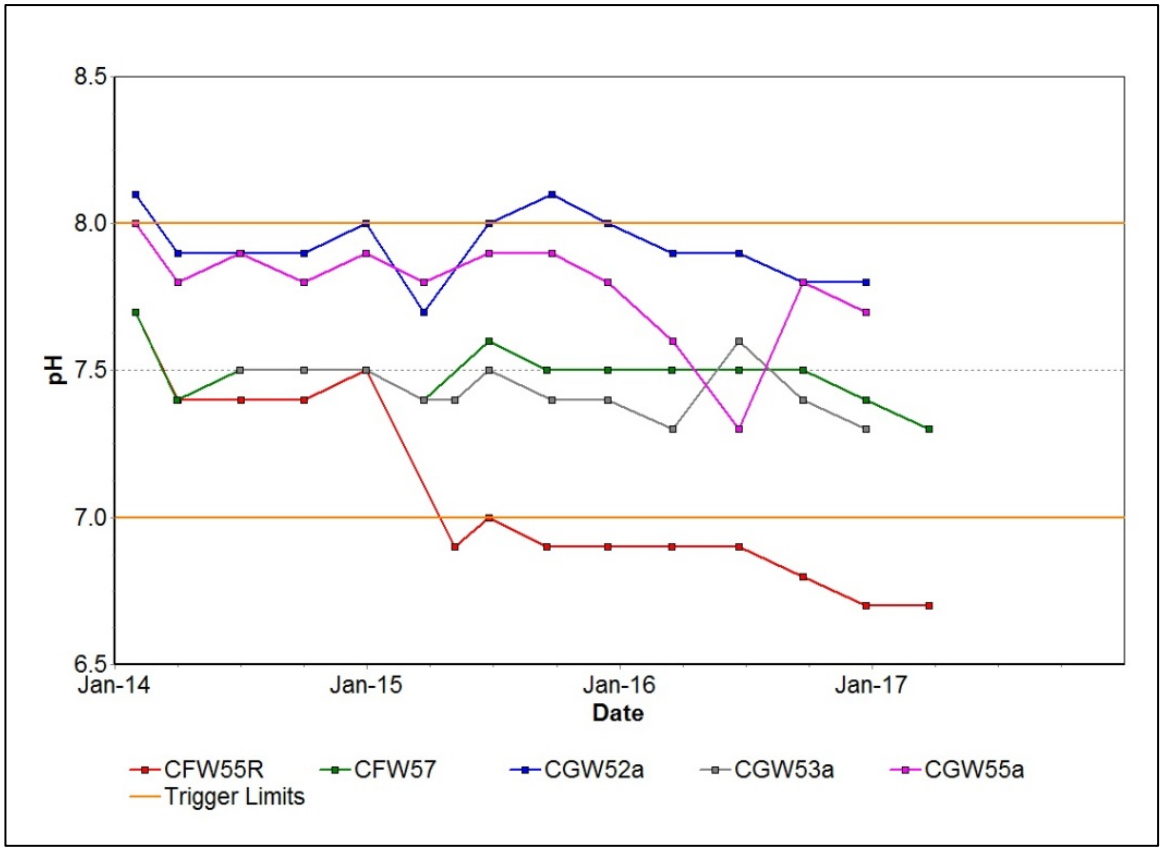

Figure 24: Carrington Alluvium pH Trend – March 2017

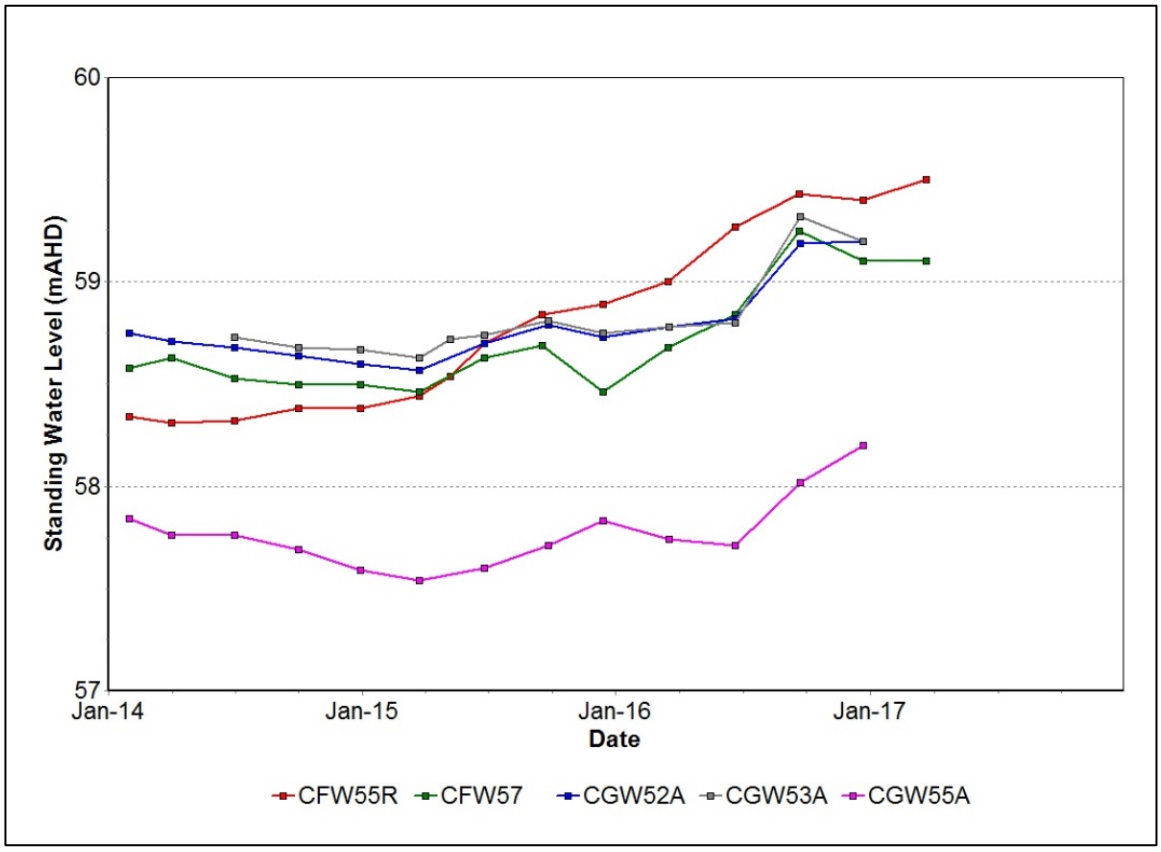

Figure 25: Carrington Alluvium Standing Water Level - March 2017

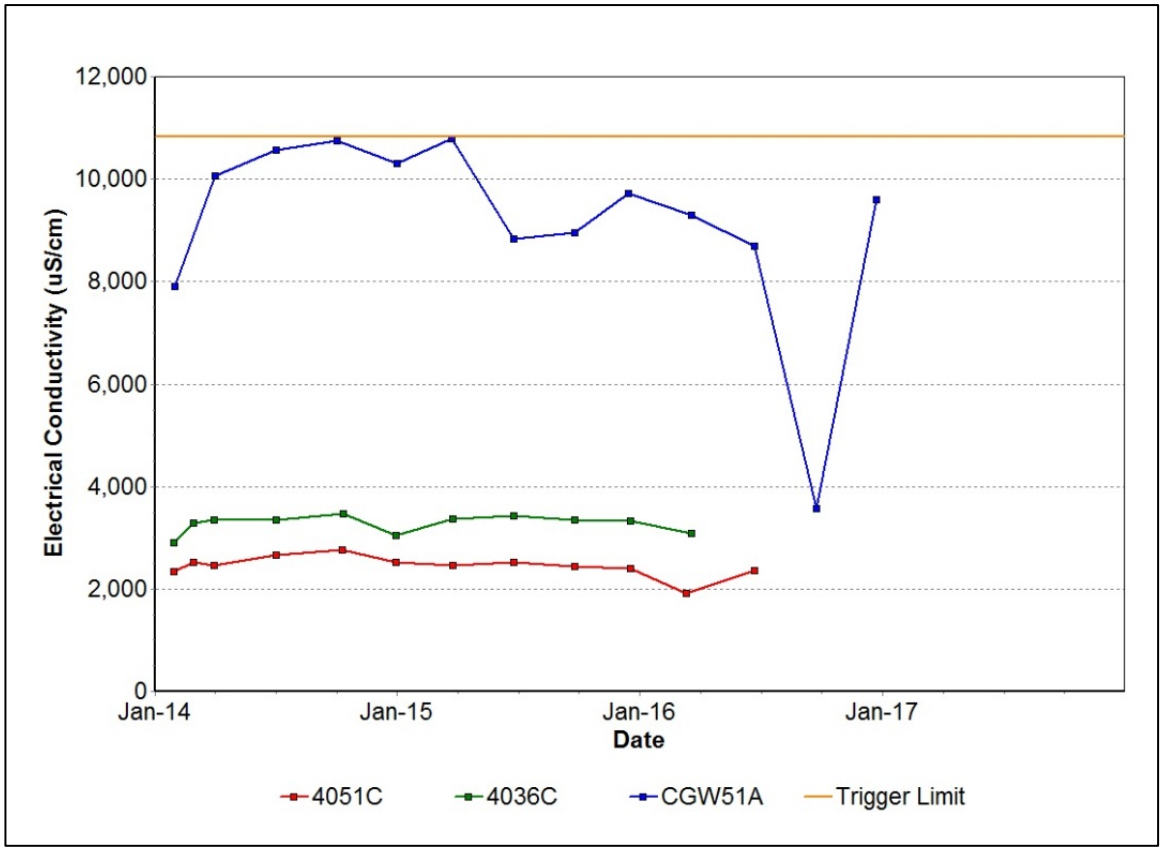

Figure 26: Carrington Interburden Electrical Conductivity Trend - March 2017

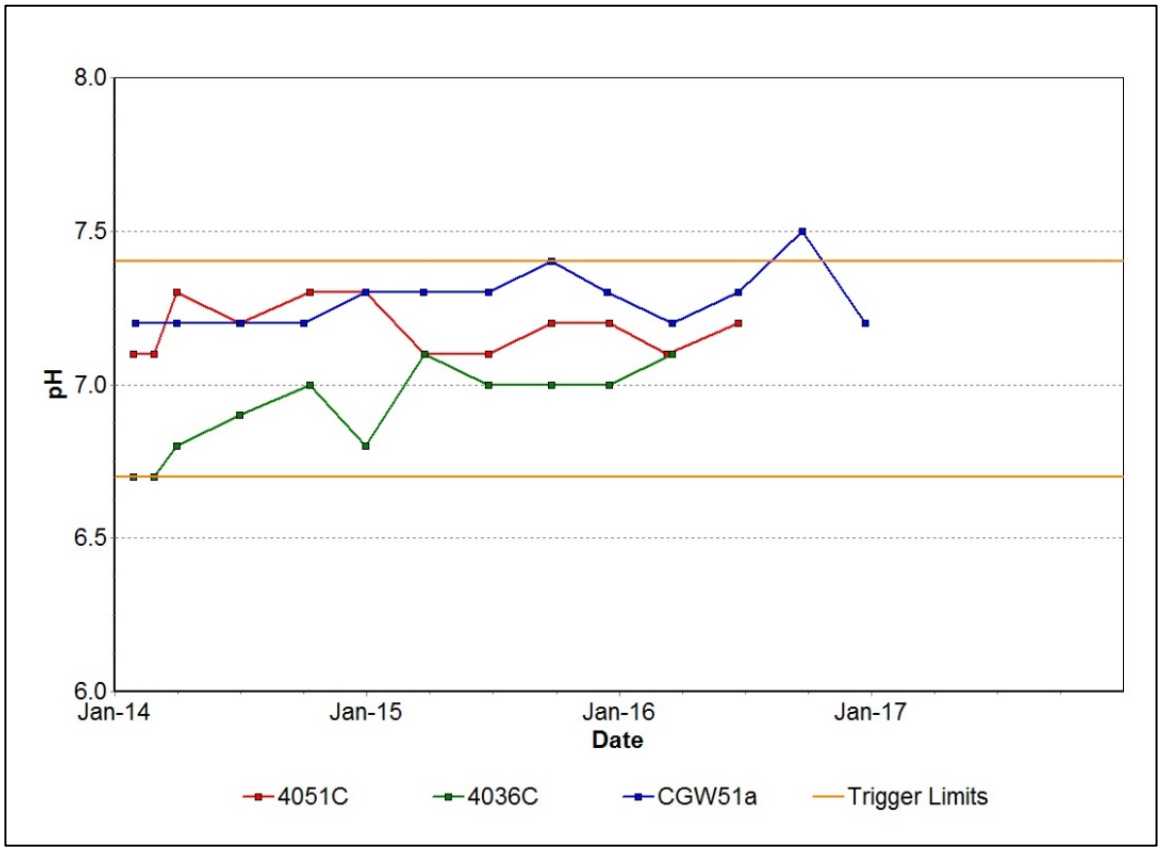

Figure 27: Carrington Interburden pH Trend – March 2017

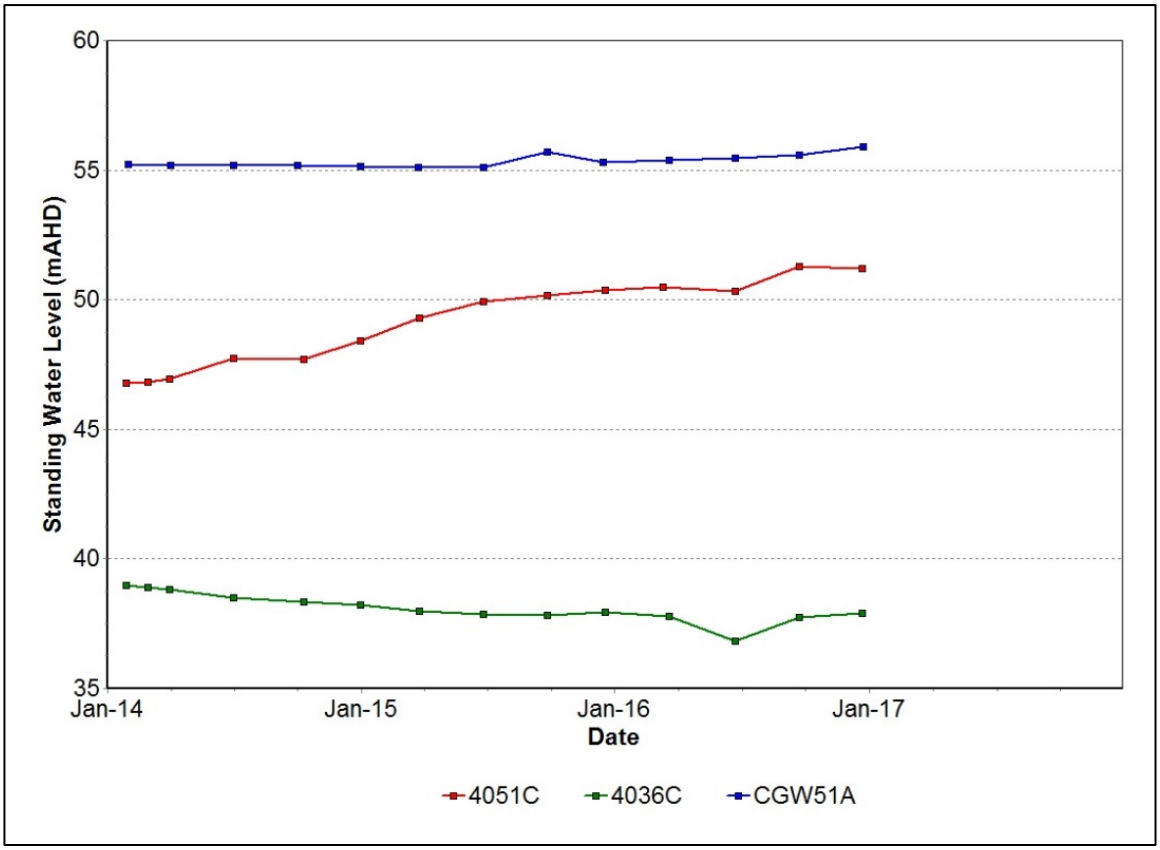

Figure 28: Carrington Interburden Standing Water Level - March 2017

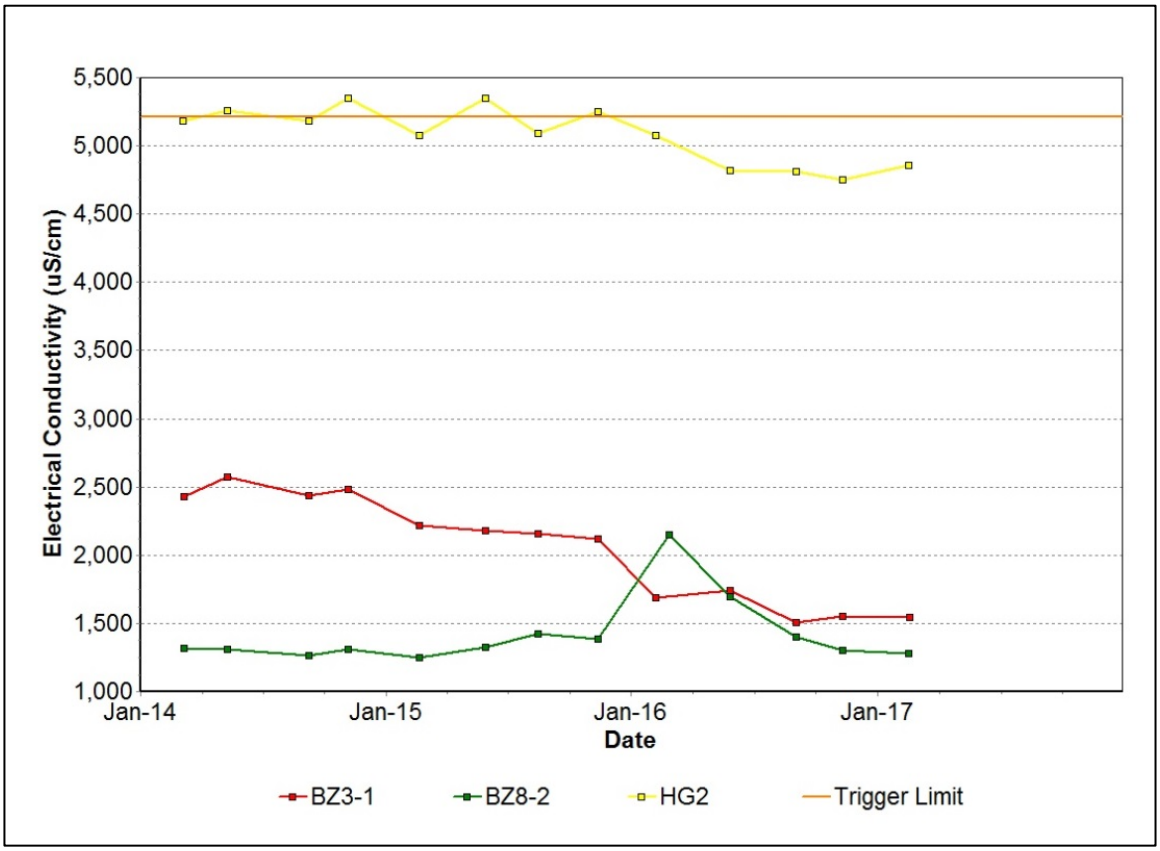

Figure 29: Cheshunt Interburden Electrical Conductivity Trend - March 2017

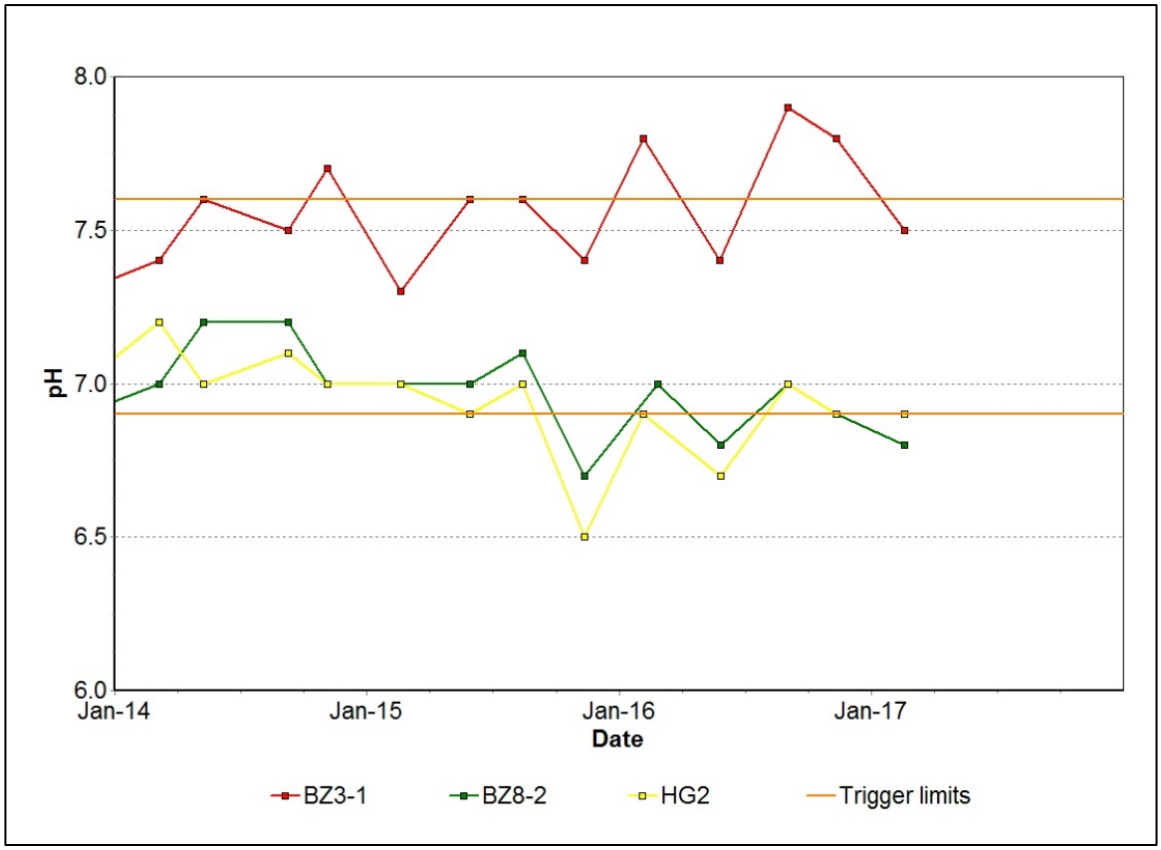

Figure 30: Cheshunt Interburden pH Trend - March 2017

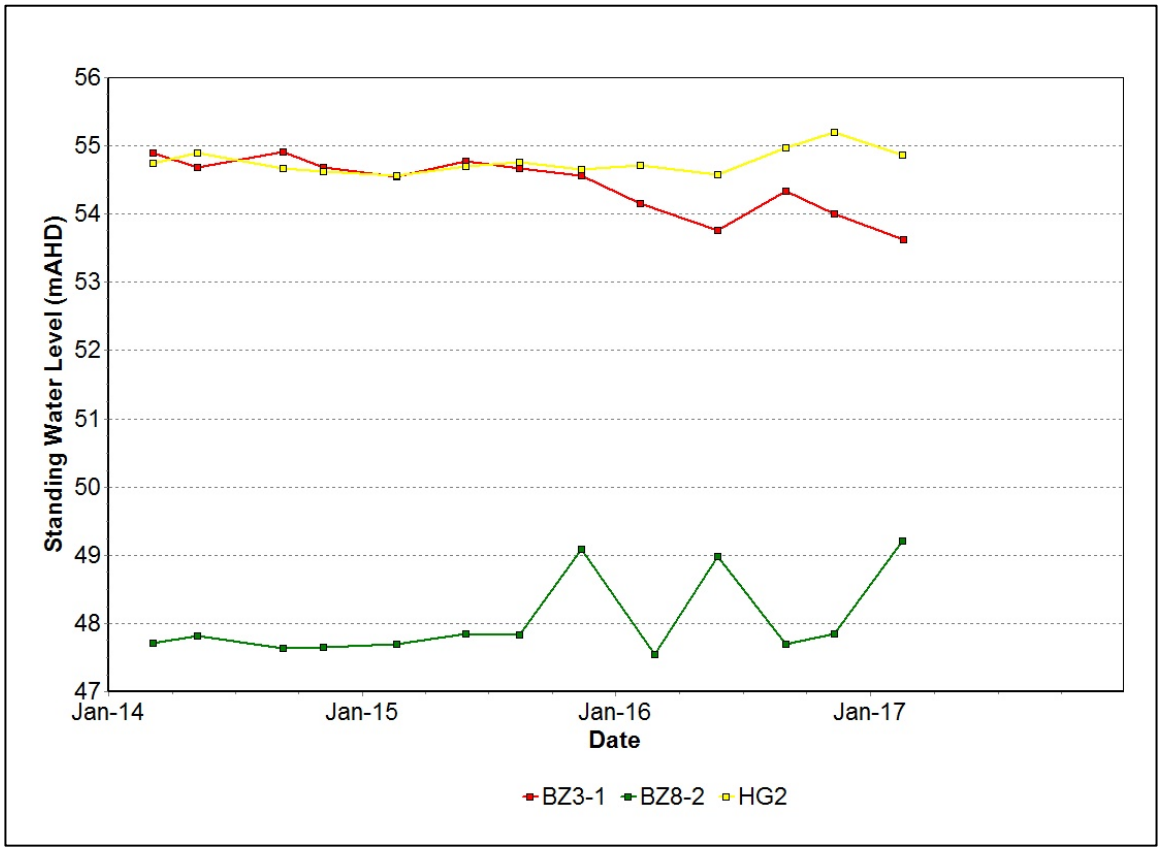

Figure 31: Cheshunt Interburden Standing Water Level – March 2017

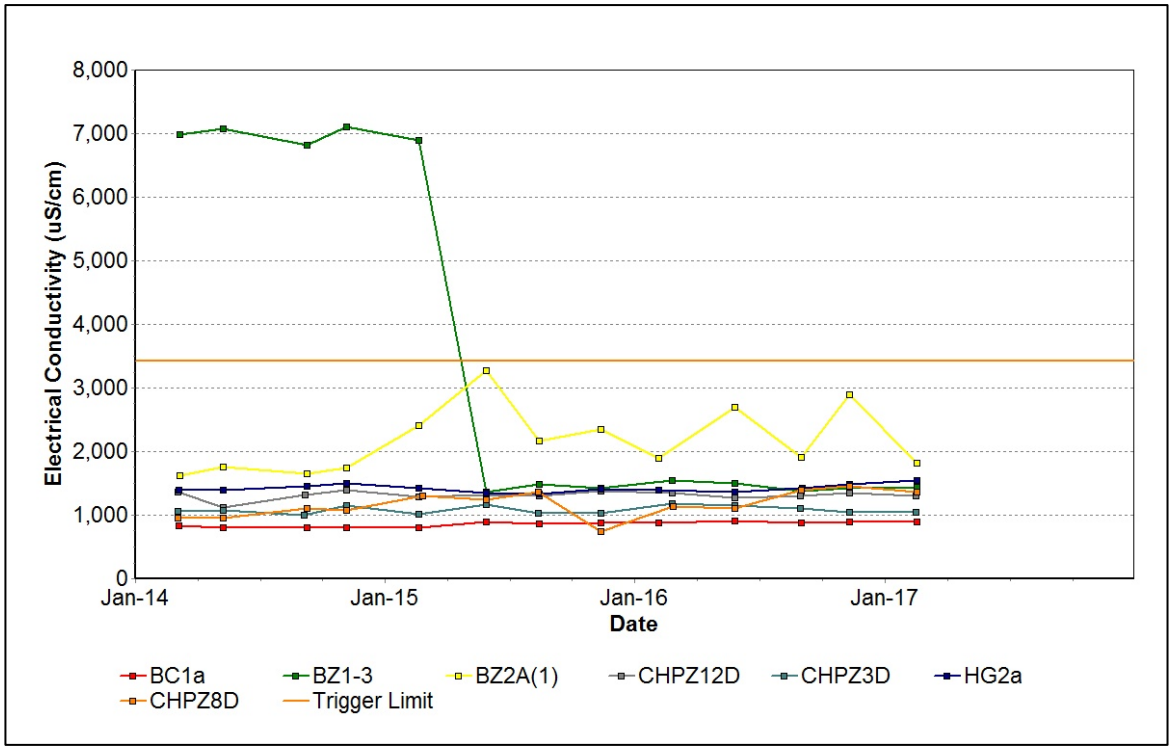

Figure 32: Cheshunt Mt Arthur Electrical Conductivity Trend - March 2017

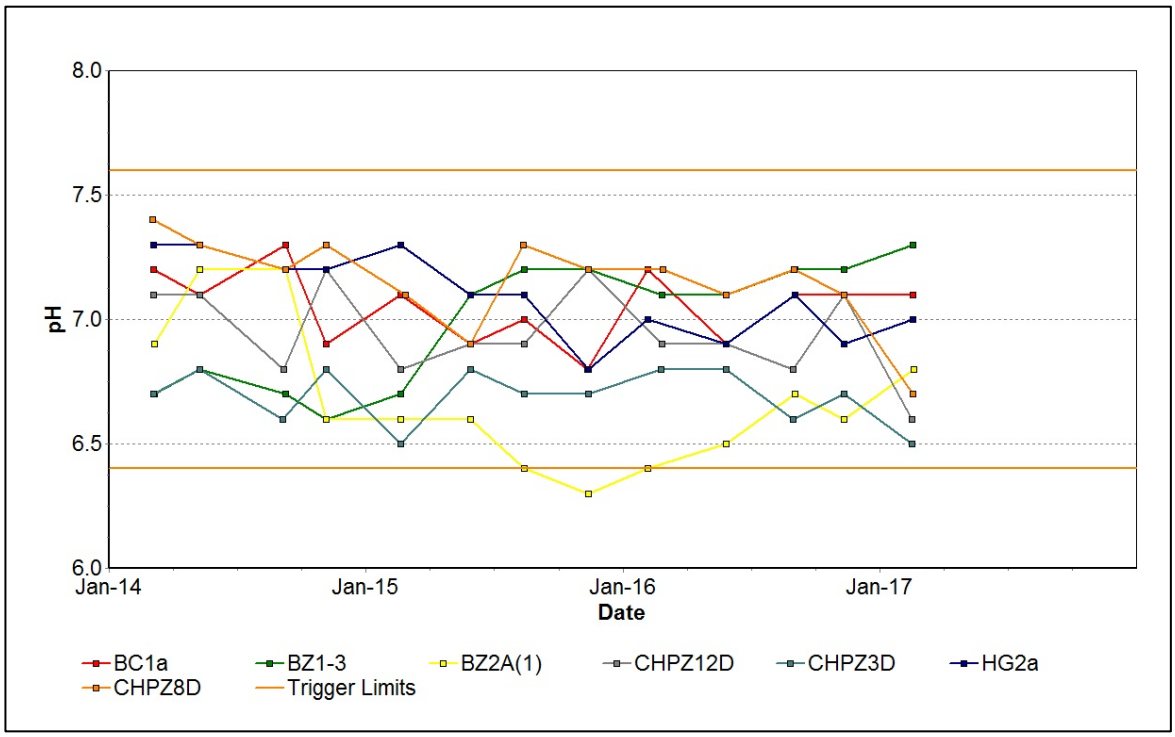

Figure 33: Cheshunt Mt Arthur pH Trend - March 2017

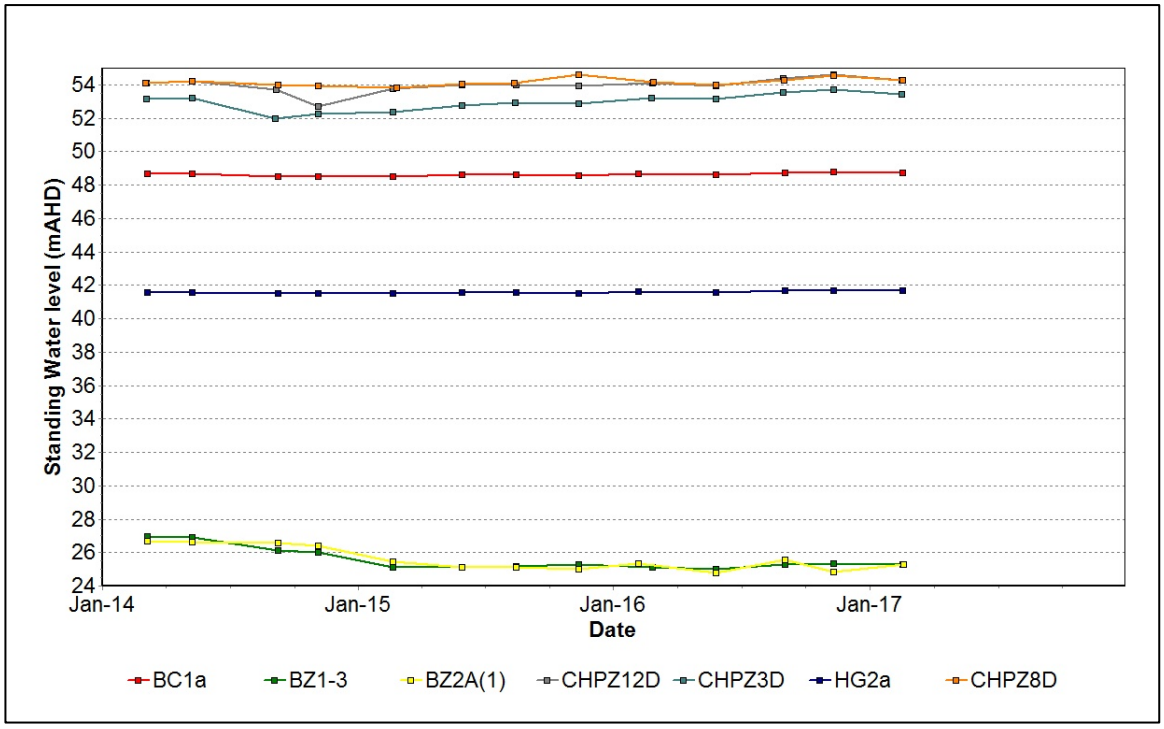

Figure 34: Cheshunt Mt Arthur Standing Water Level – March 2017

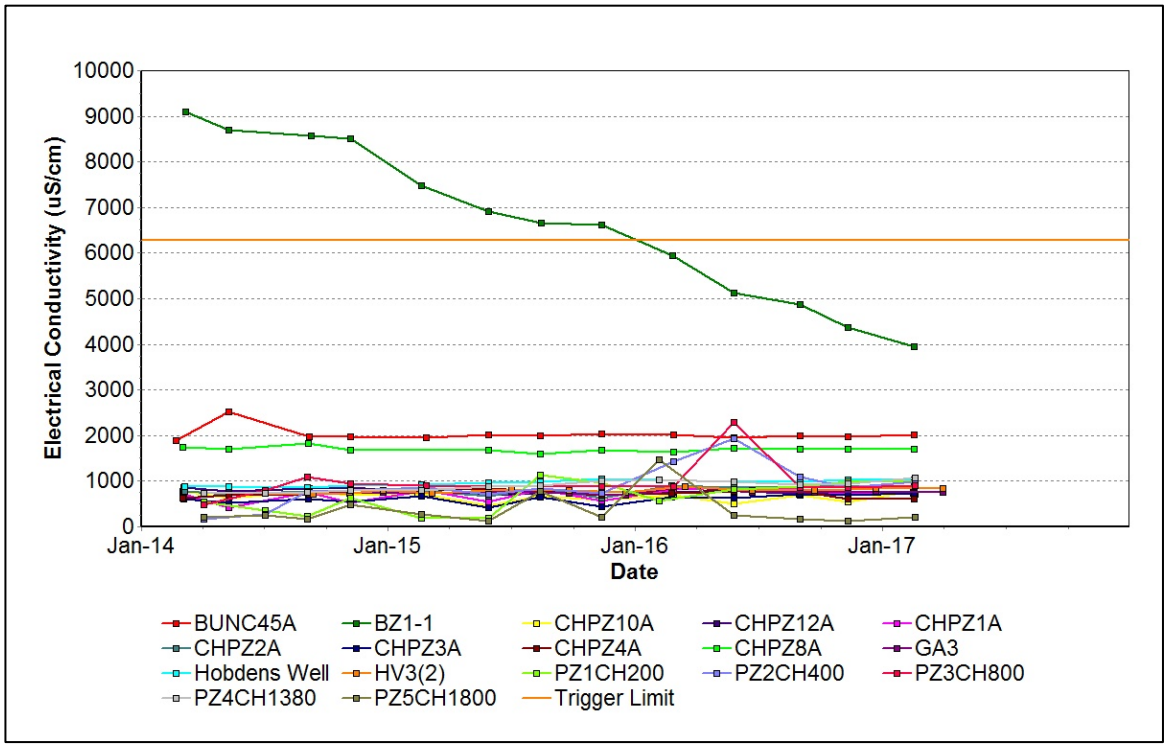

Figure 35: Cheshunt / North Pit Alluvium Electrical Conductivity Trend - March 2017

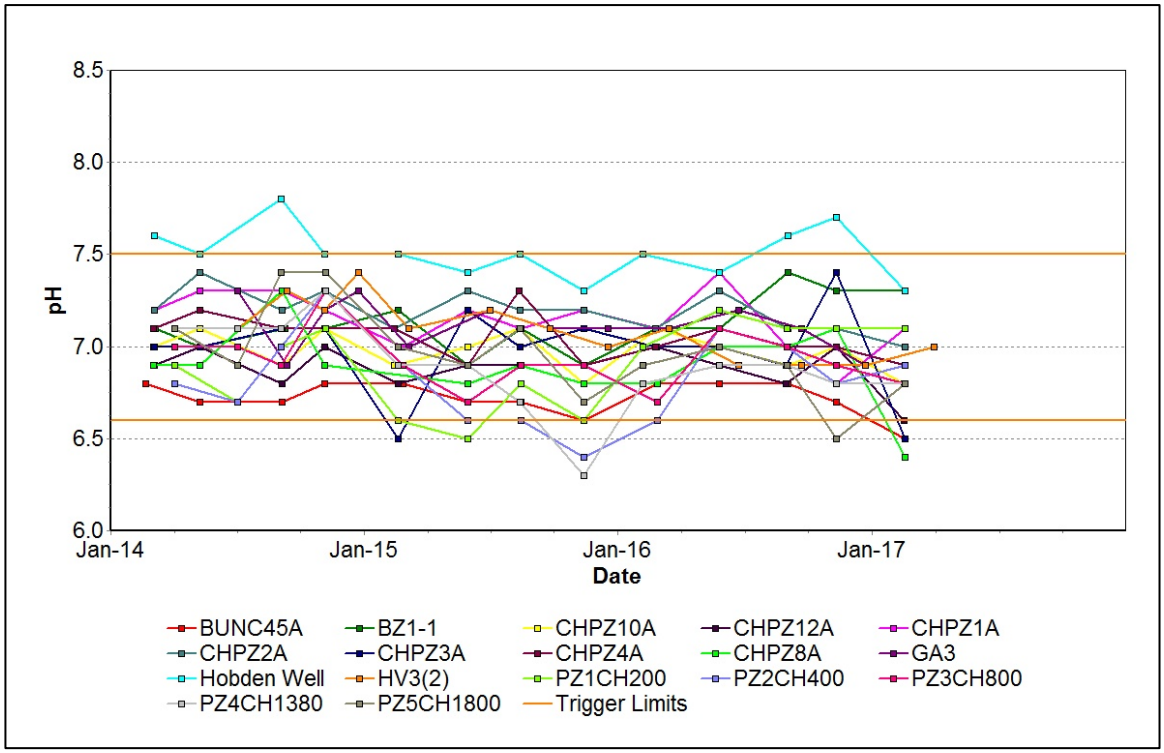

Figure 36: Cheshunt / North Pit Alluvium pH Trend - March 2017

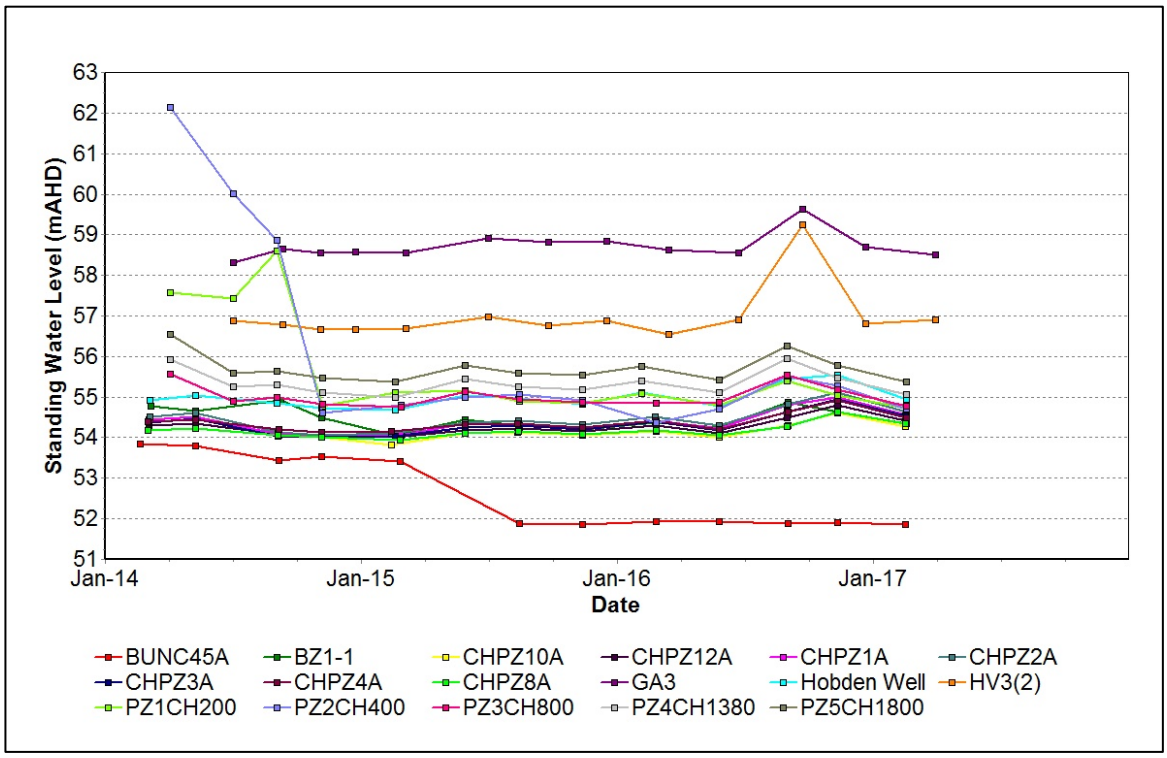

Figure 37: Cheshunt / North Pit Alluvium Standing Water Level – March 2017

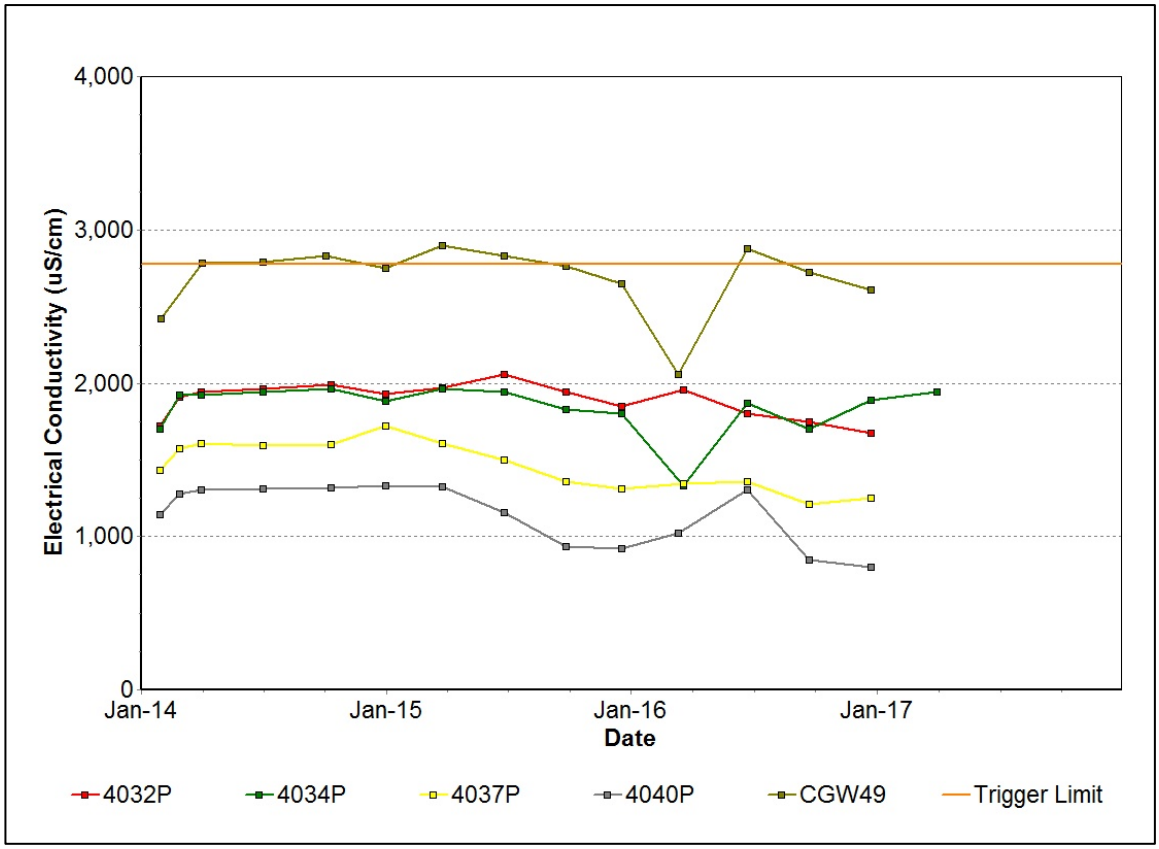

Figure 38: Carrington West Wing Alluvium Electrical Conductivity Trend - March 2017

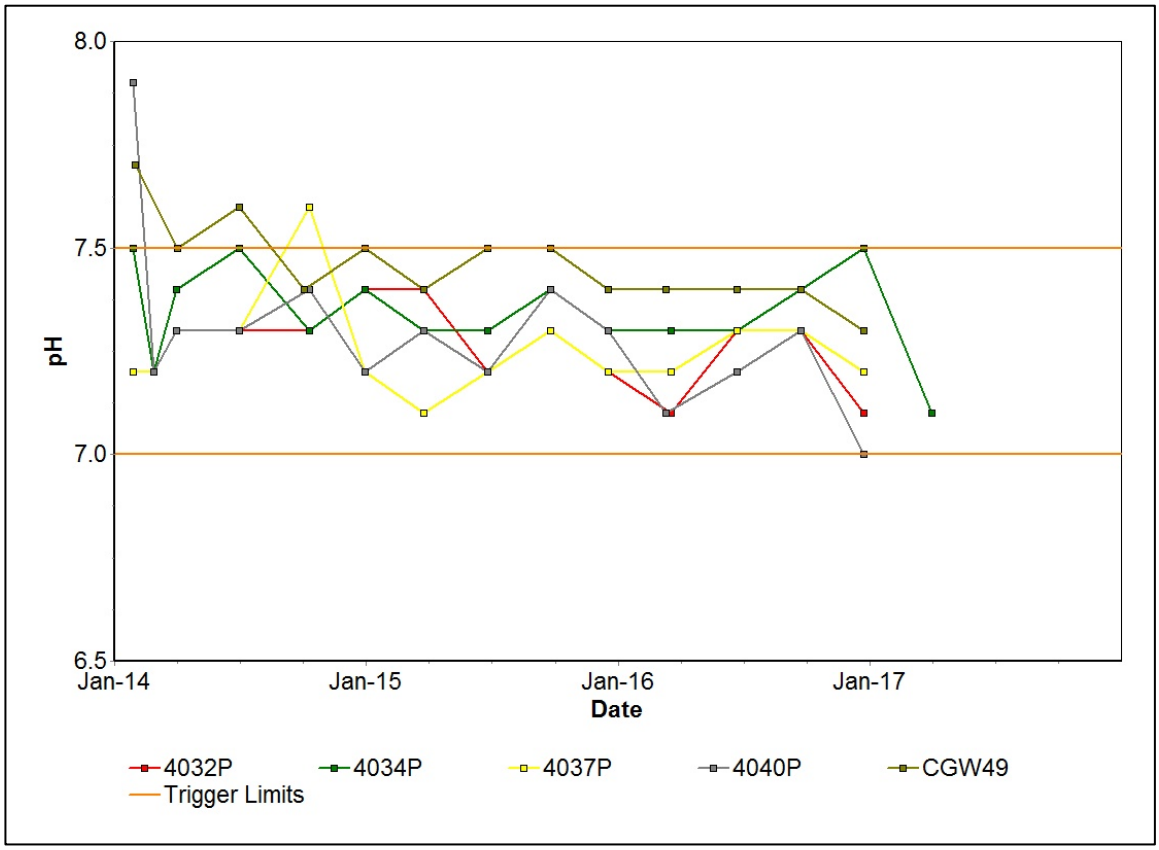

Figure 39: Carrington West Wing Alluvium pH Trend - March 2017

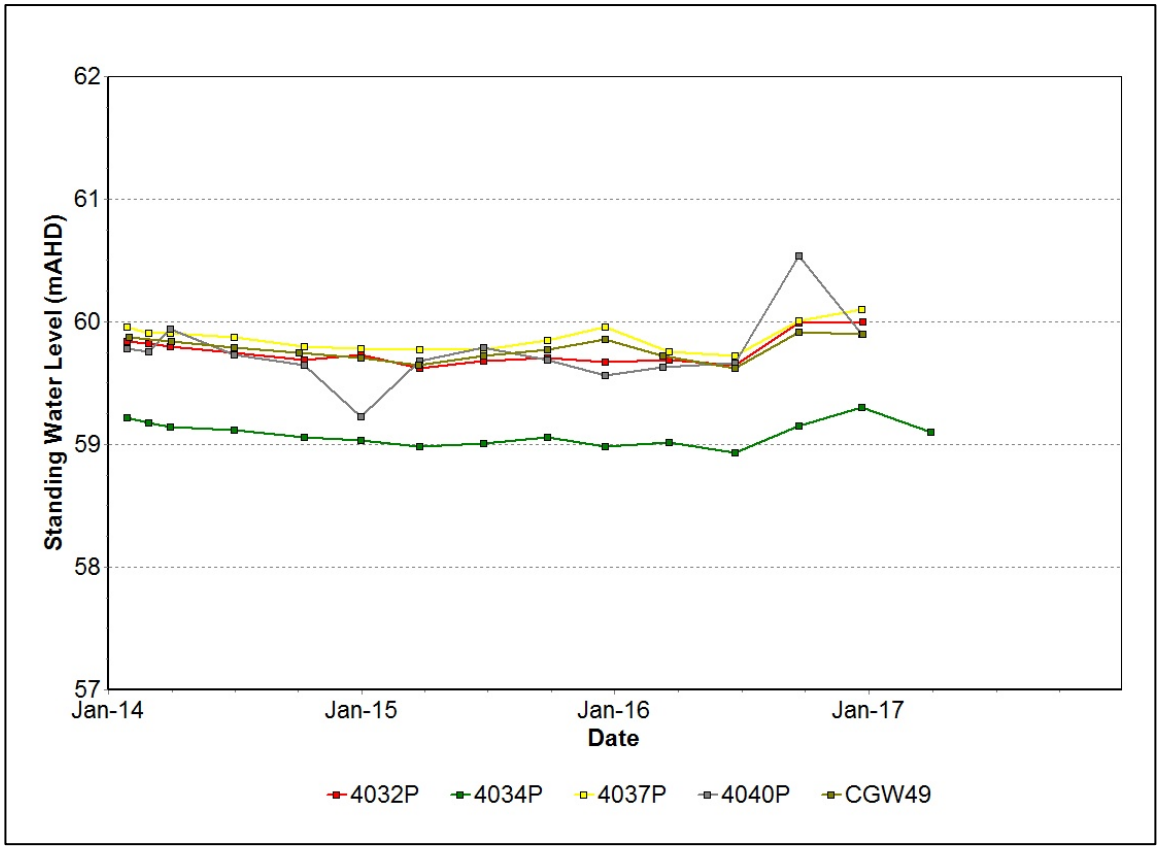

Figure 40: Carrington West Wing Alluvium Standing Water Level – March 2017

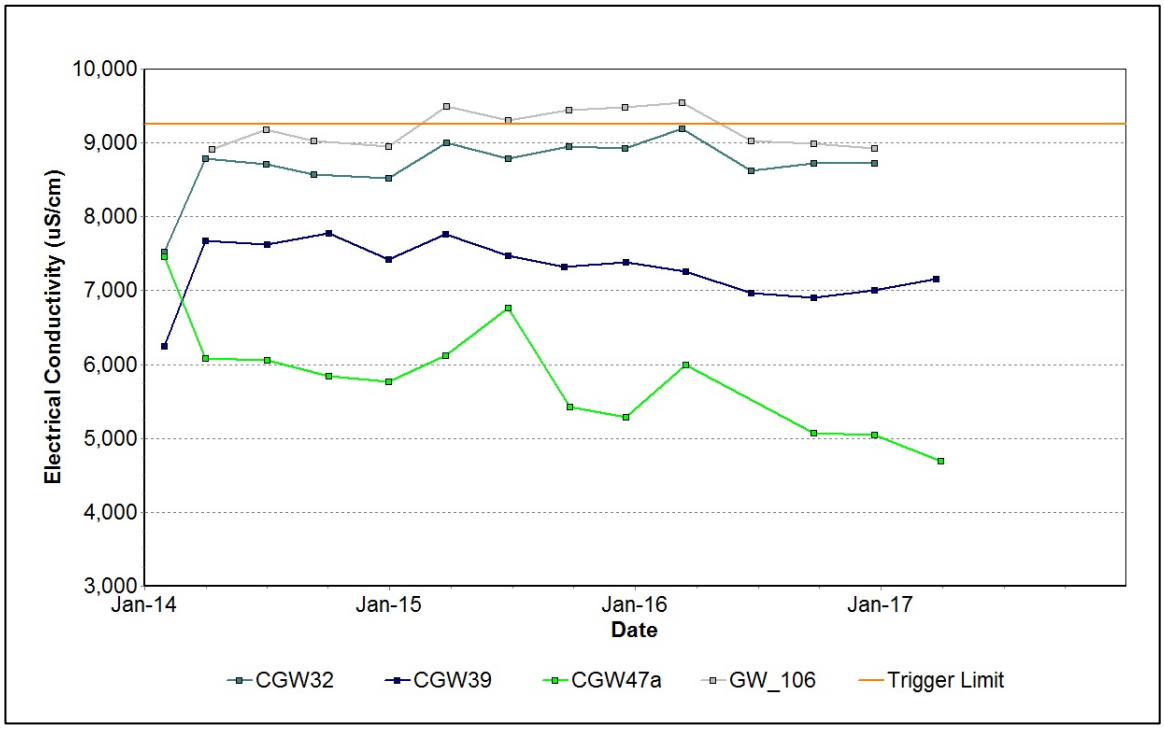

Figure 41: Carrington West Wing Flood Plain Electrical Conductivity Trend - March 2017

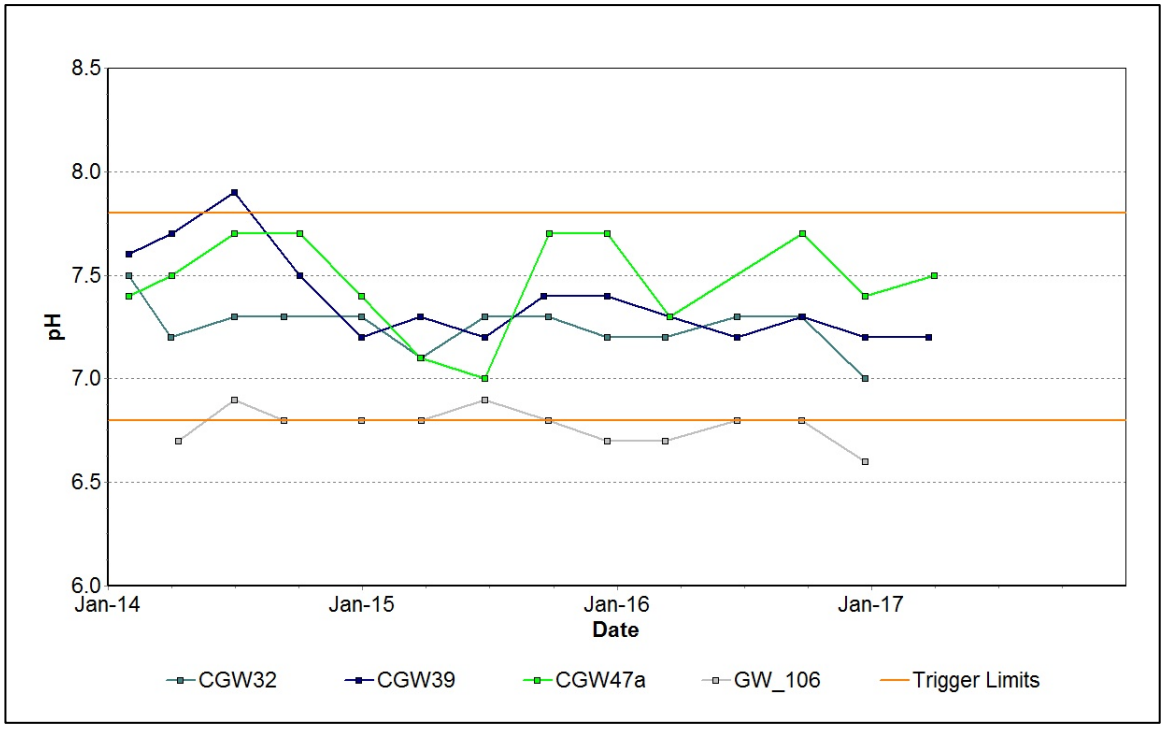

Figure 42: Carrington West Wing Flood Plain pH Trend - March 2017

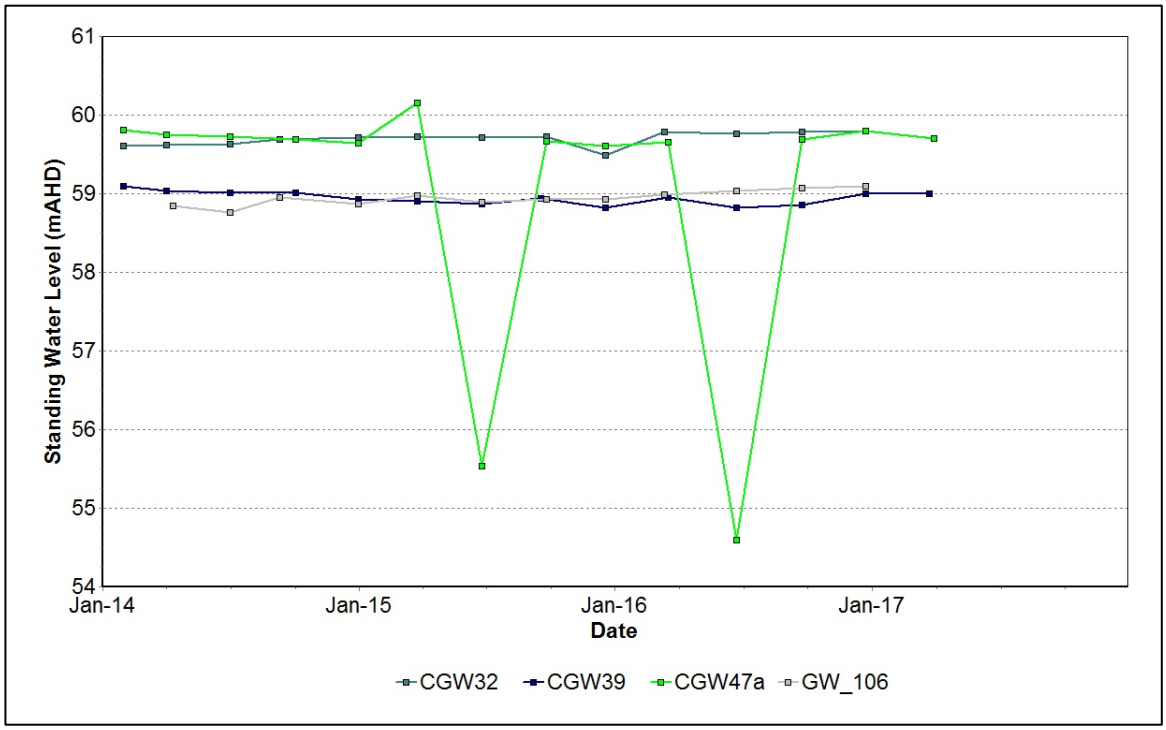

Figure 43: Carrington West Wing Flood Plain Standing Water Level – March 2017

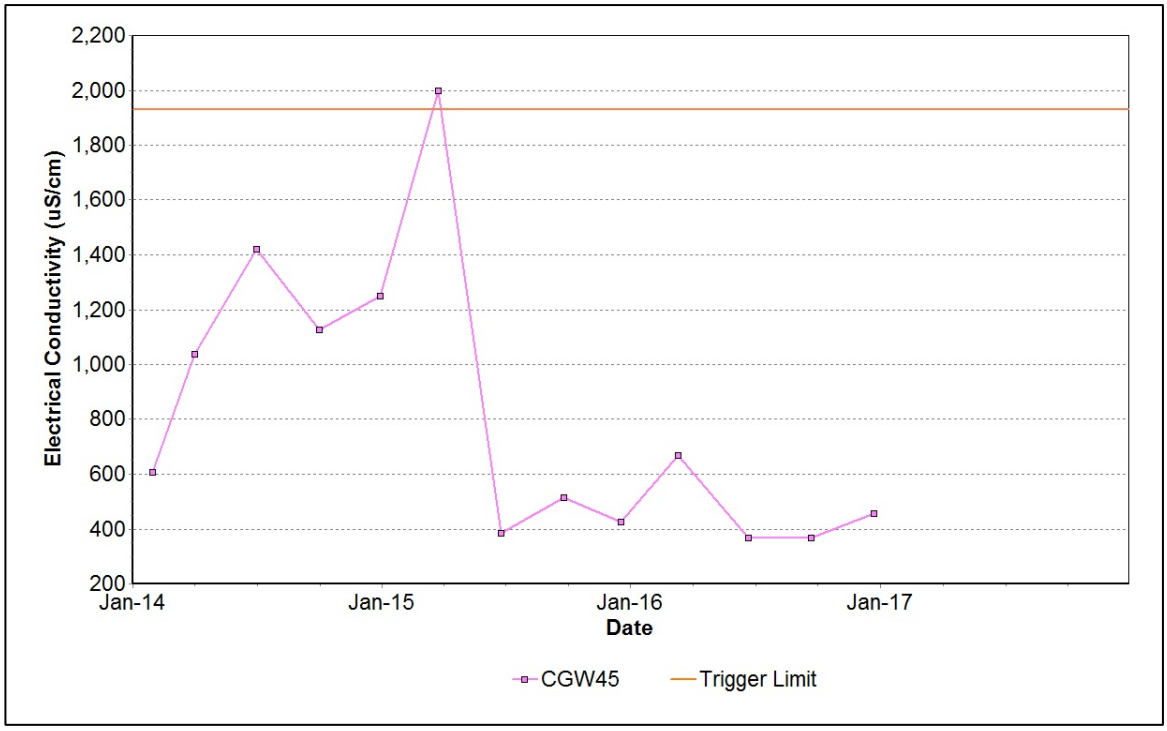

Figure 44: Carrington West Wing LBL Electrical Conductivity Trend - March 2017

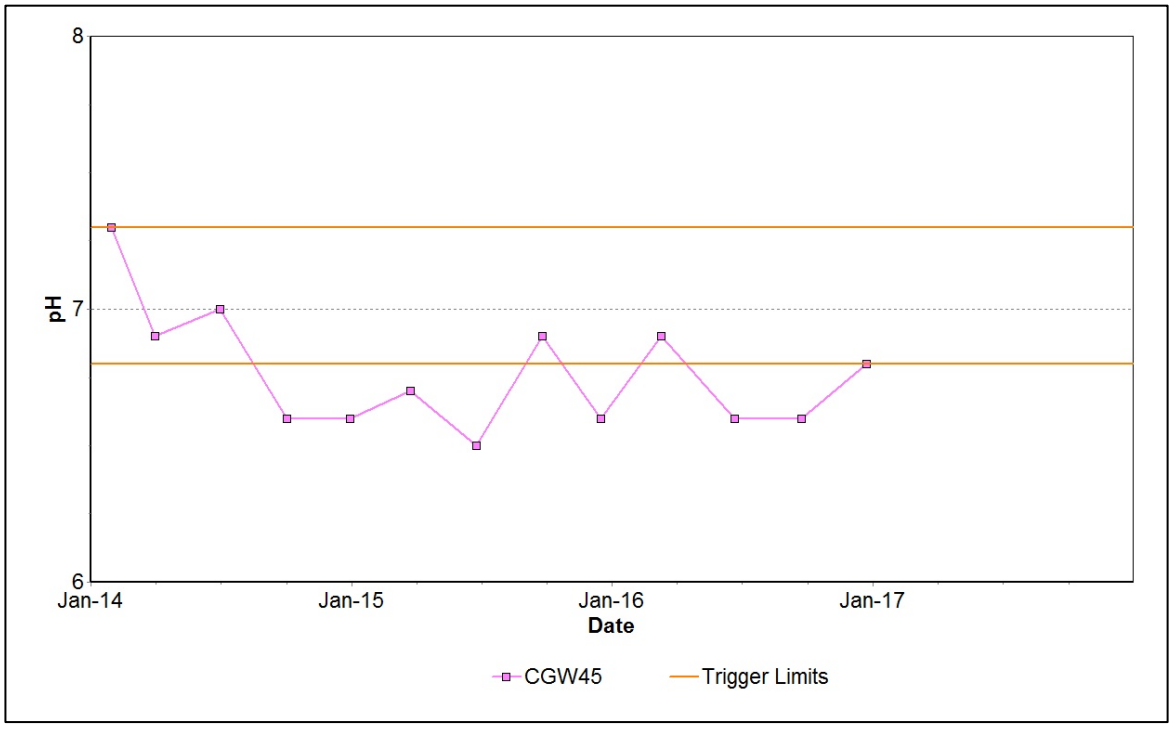

Figure 45: Carrington West Wing LBL pH Trend - March 2017

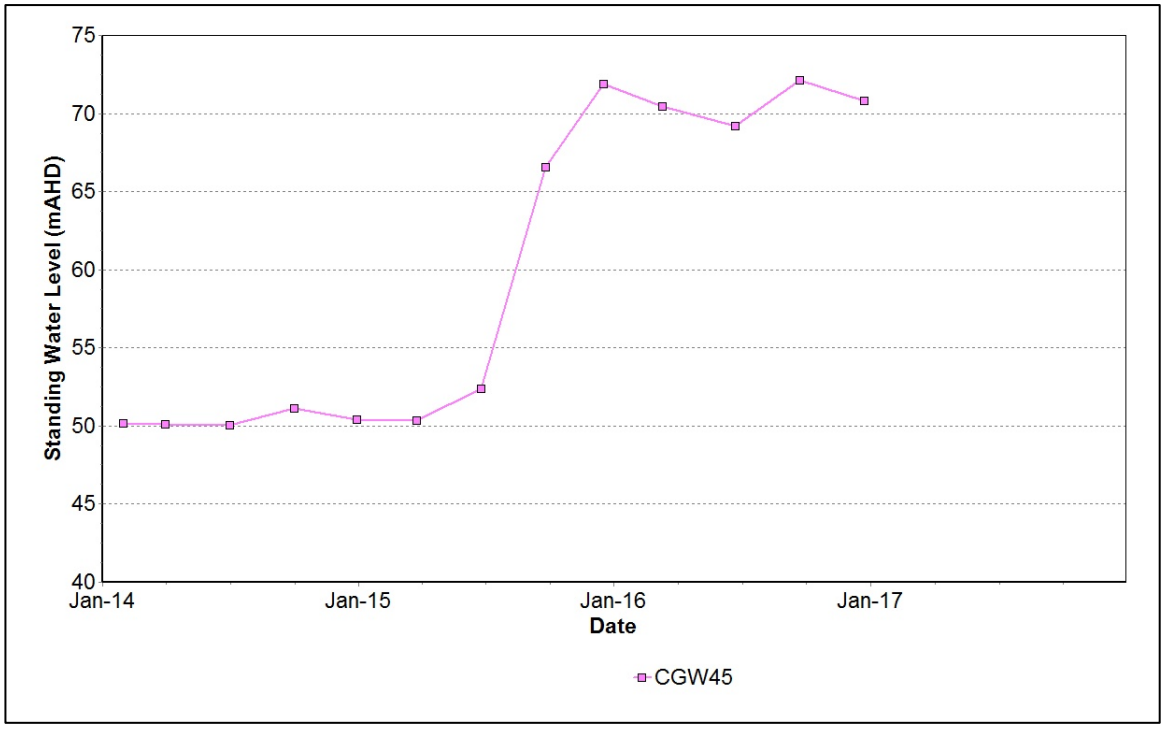

Figure 46: Carrington West Wing LBL Standing Water Level - March 2017

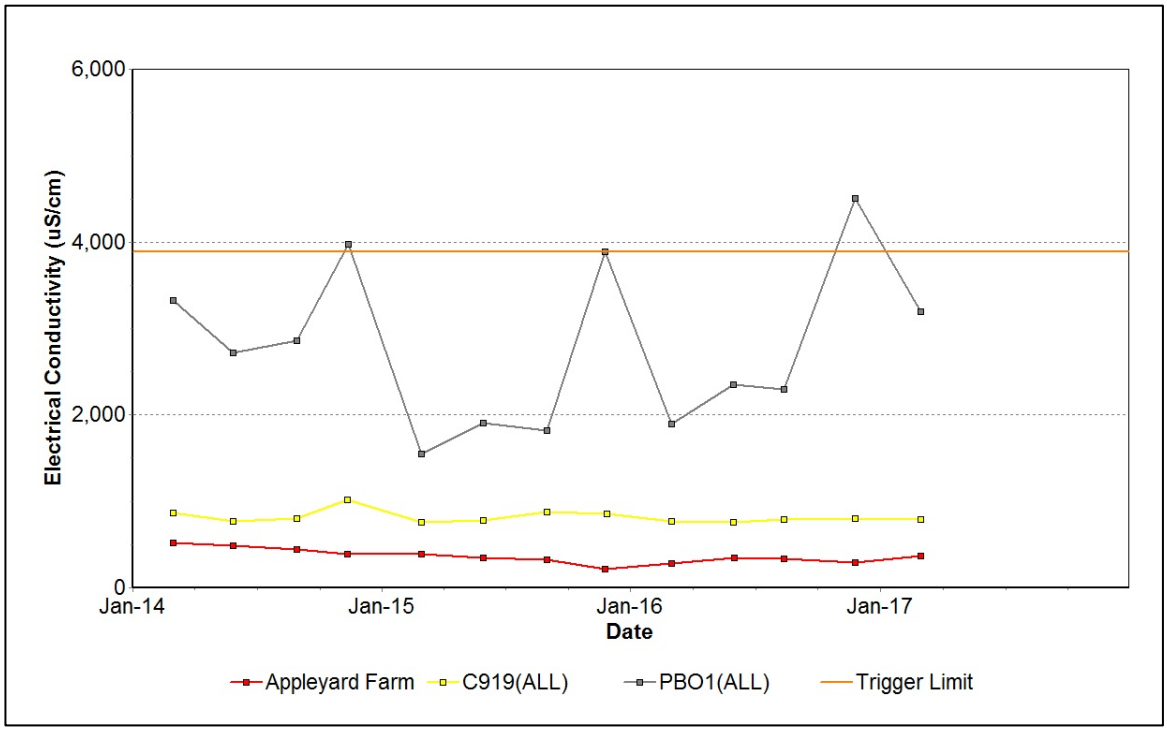

Figure 47: Lemington South Alluvium Electrical Conductivity Trend - March 2017

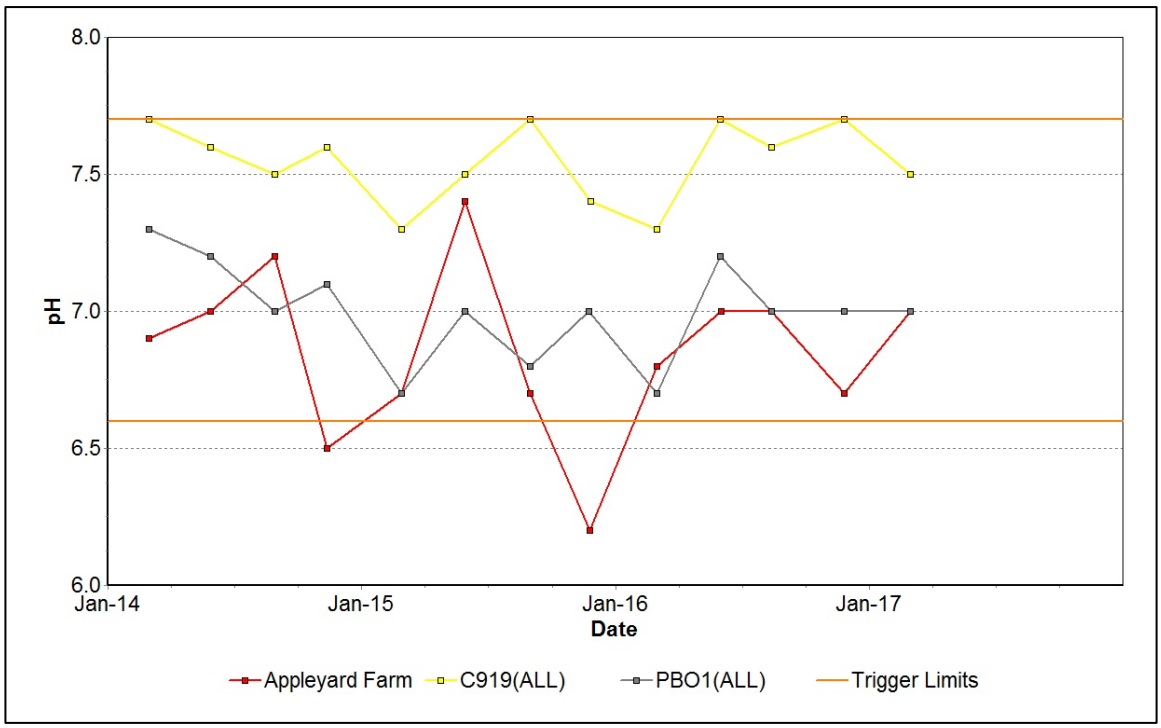

Figure 48: Lemington South Alluvium pH Trend – March 2017

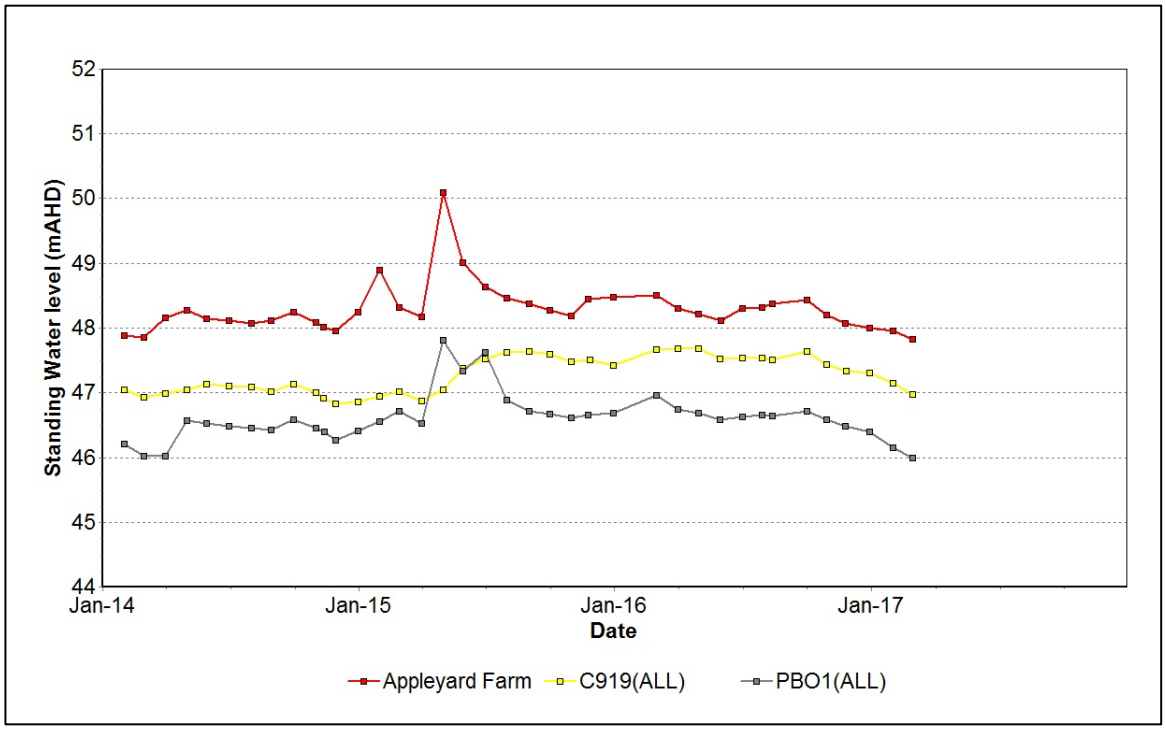

Figure 49: Lemington South Alluvium Standing Water Level Trend – March 2017

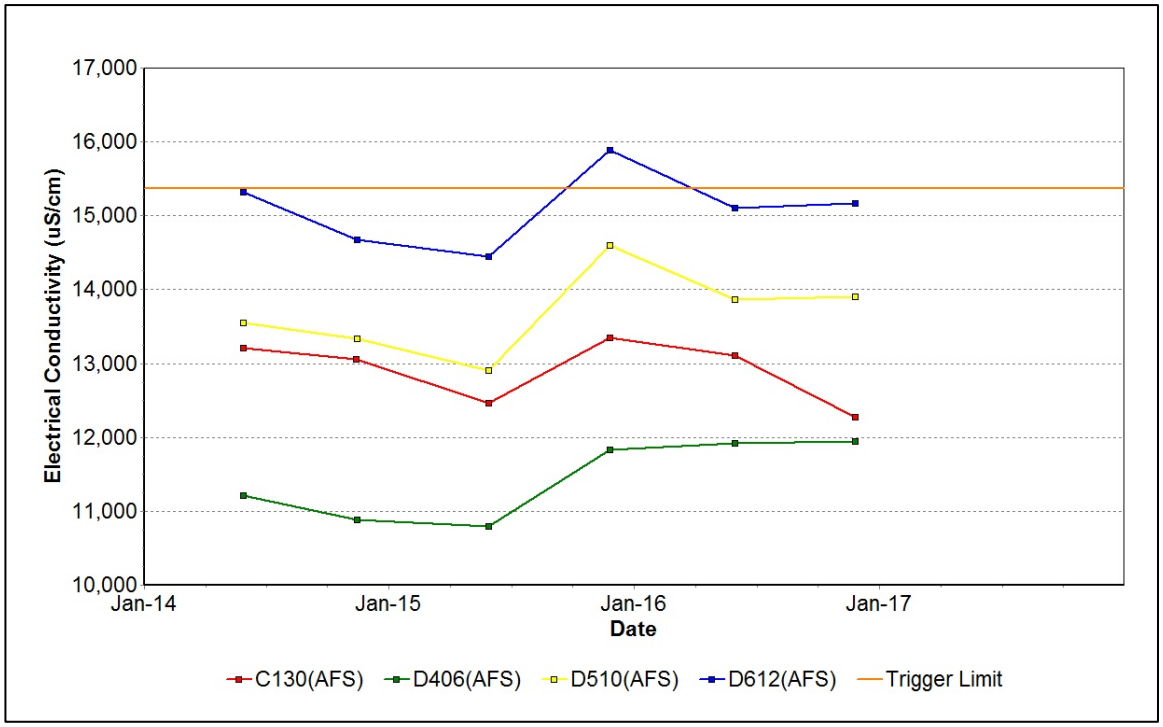

Figure 50: Lemington South Arrowfield Electrical Conductivity Trend – March 2017

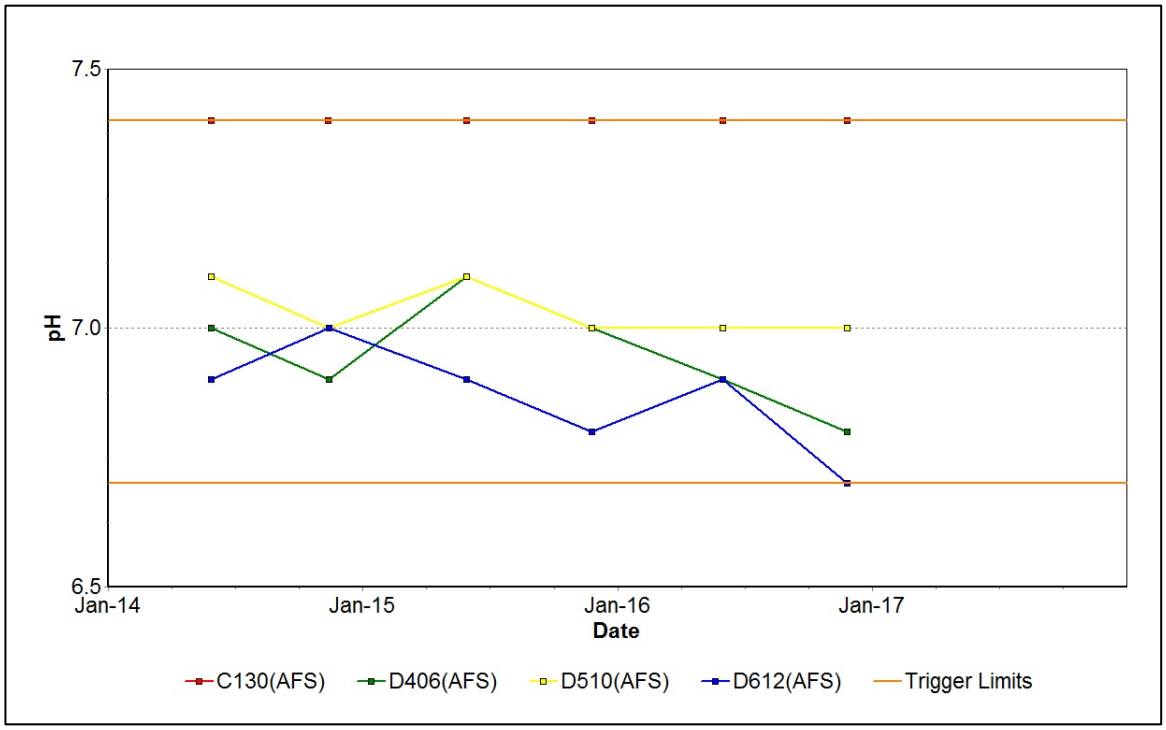

Figure 51: Lemington South Arrowfield pH Trend – March 2017

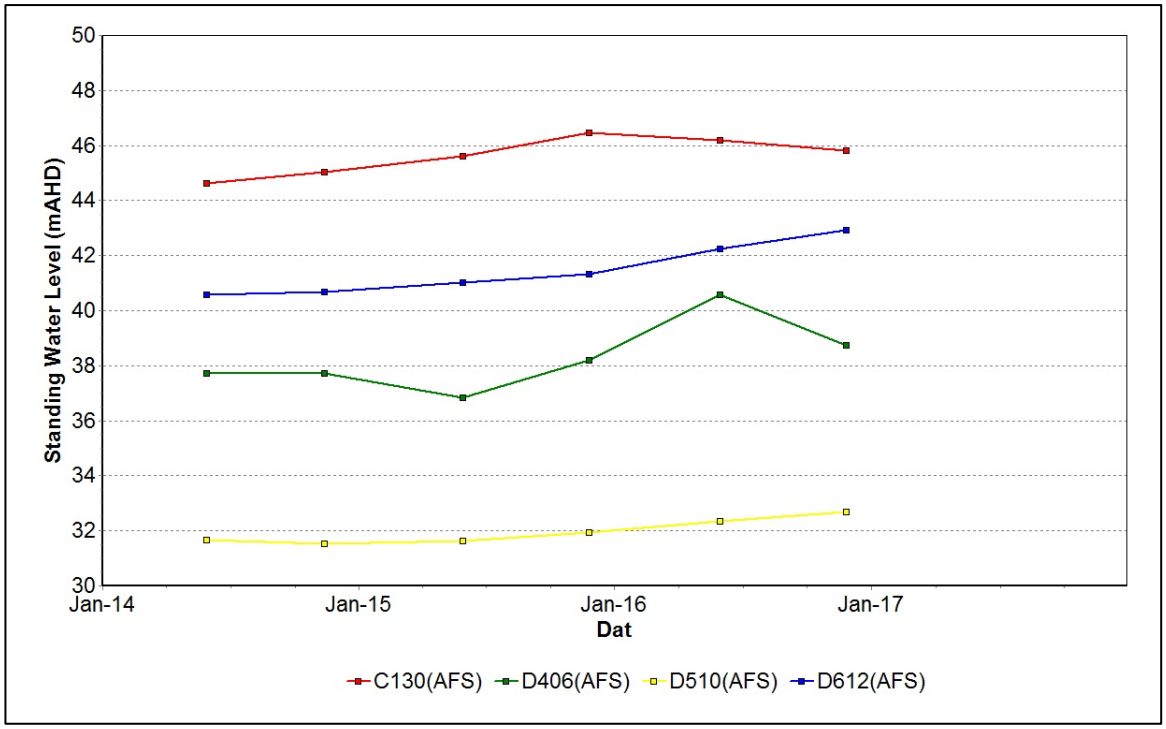

Figure 52: Lemington South Arrowfield Standing Water Level - March 2017

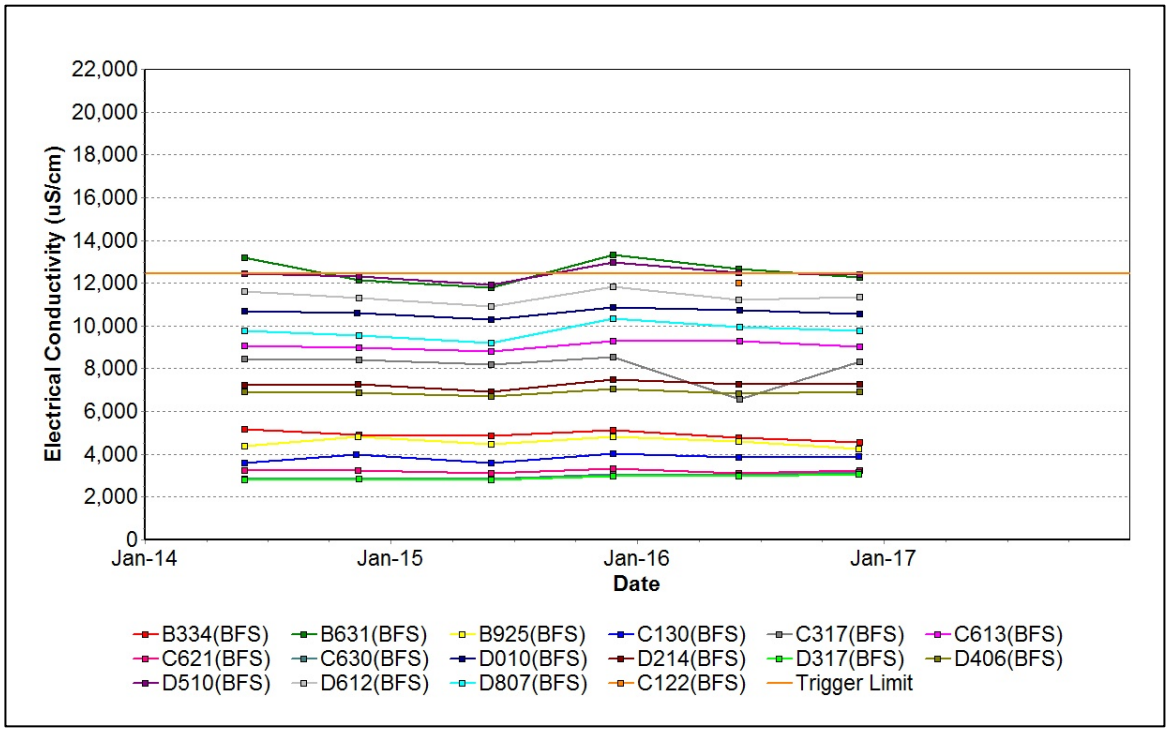

Figure 53: Lemington South Bowfield Electrical Conductivity Trend - March 2017

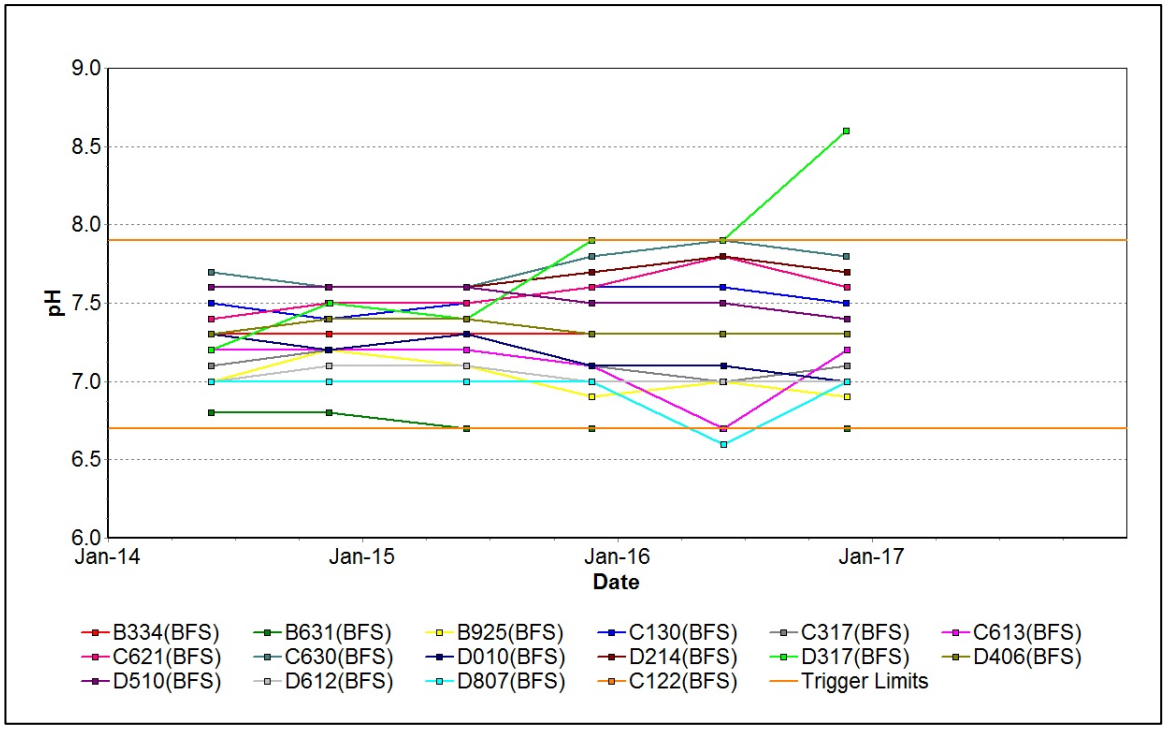

Figure 54: Lemington South Bowfield pH Trend - March 2017

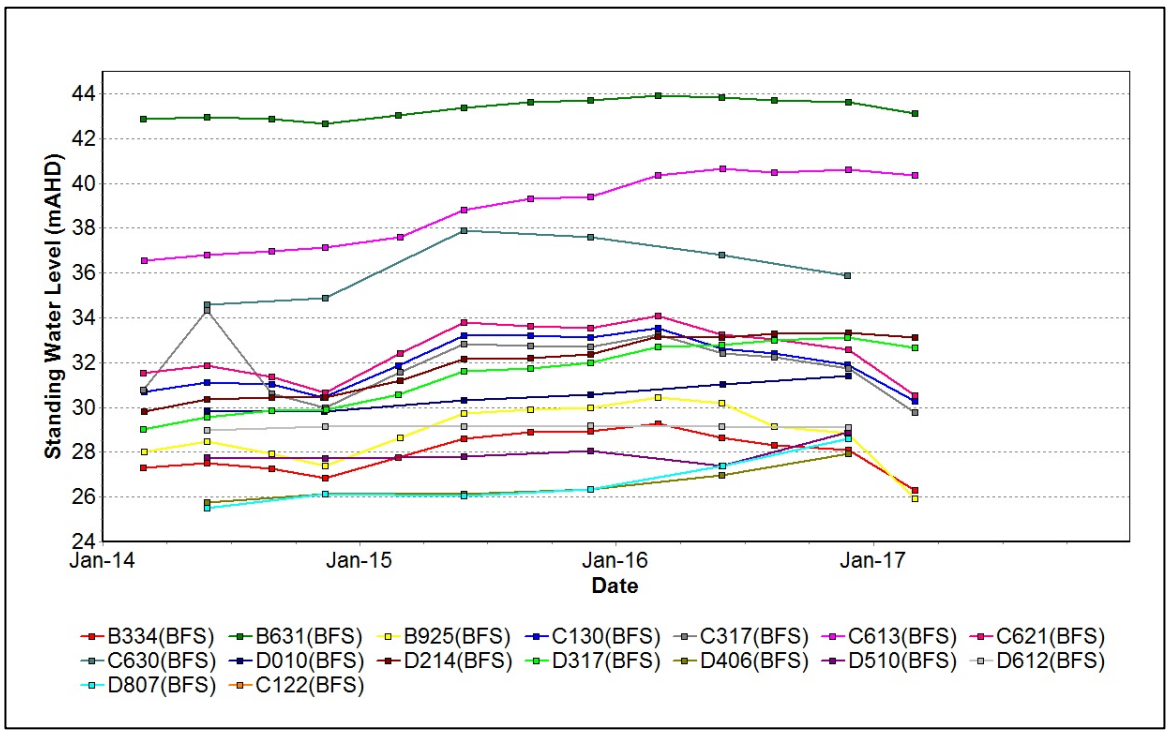

Figure 55: Lemington South Bowfield Standing Water Level - March 2017

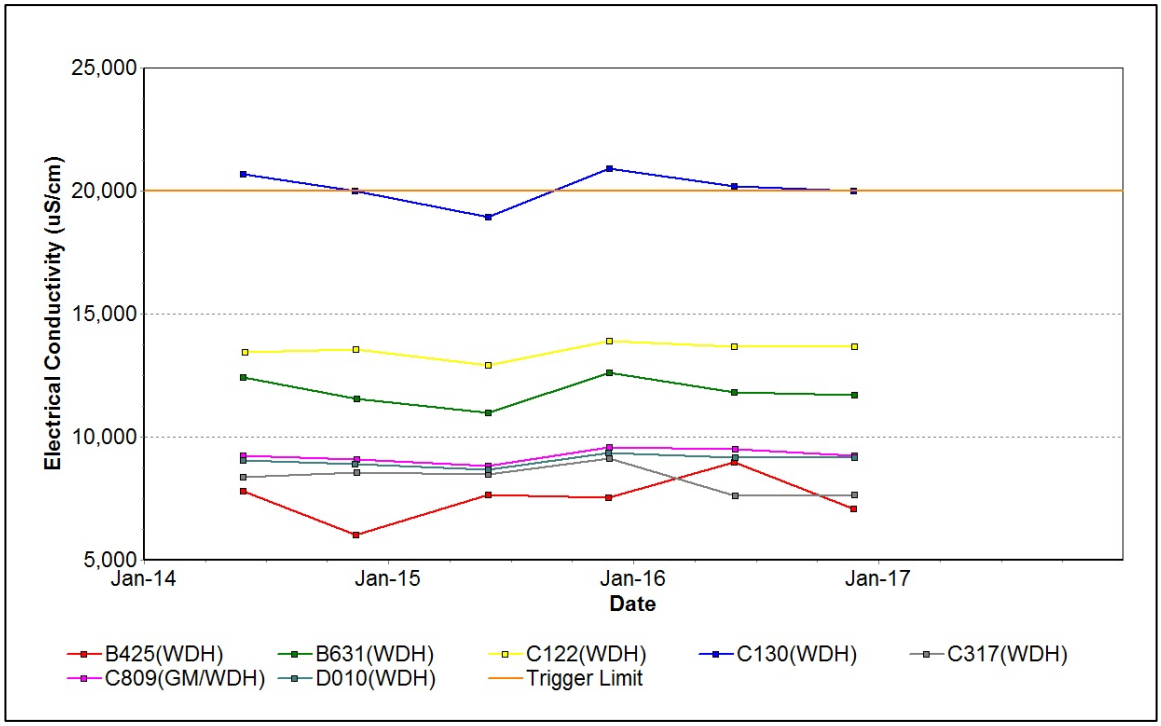

Figure 56: Lemington South Woodlands Hill Electrical Conductivity Trend - March 2017

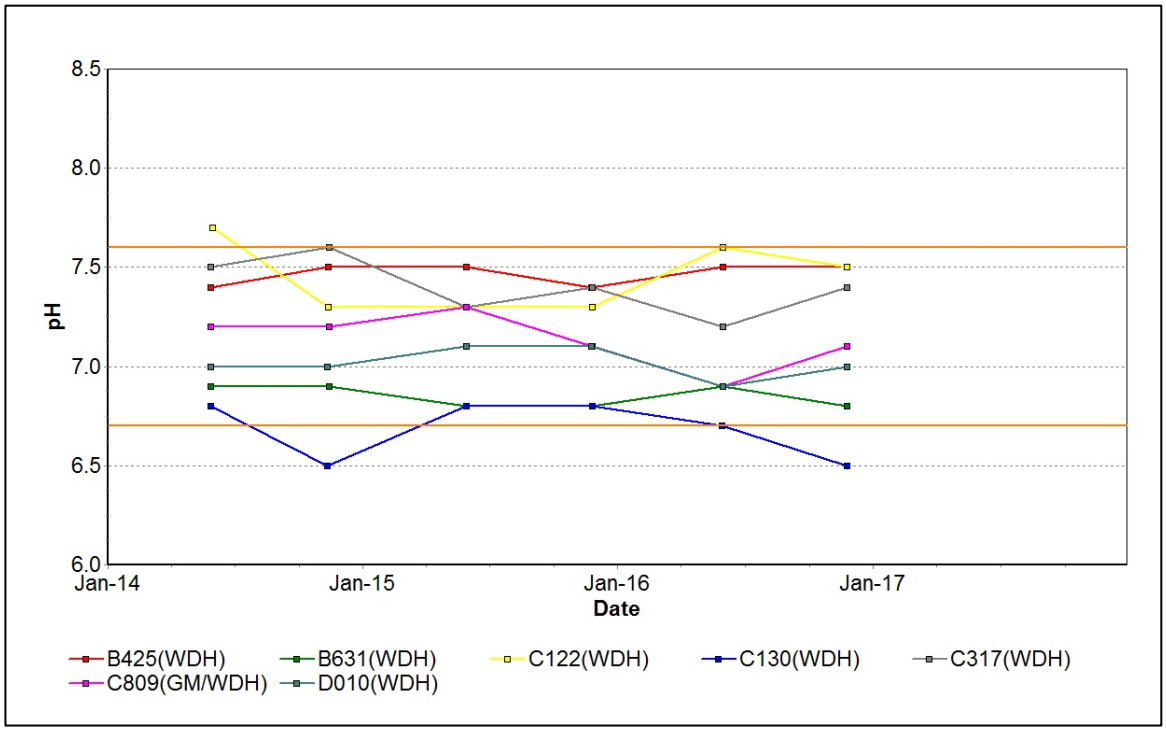

Figure 57: Lemington South Woodlands Hill pH Trend - March 2017

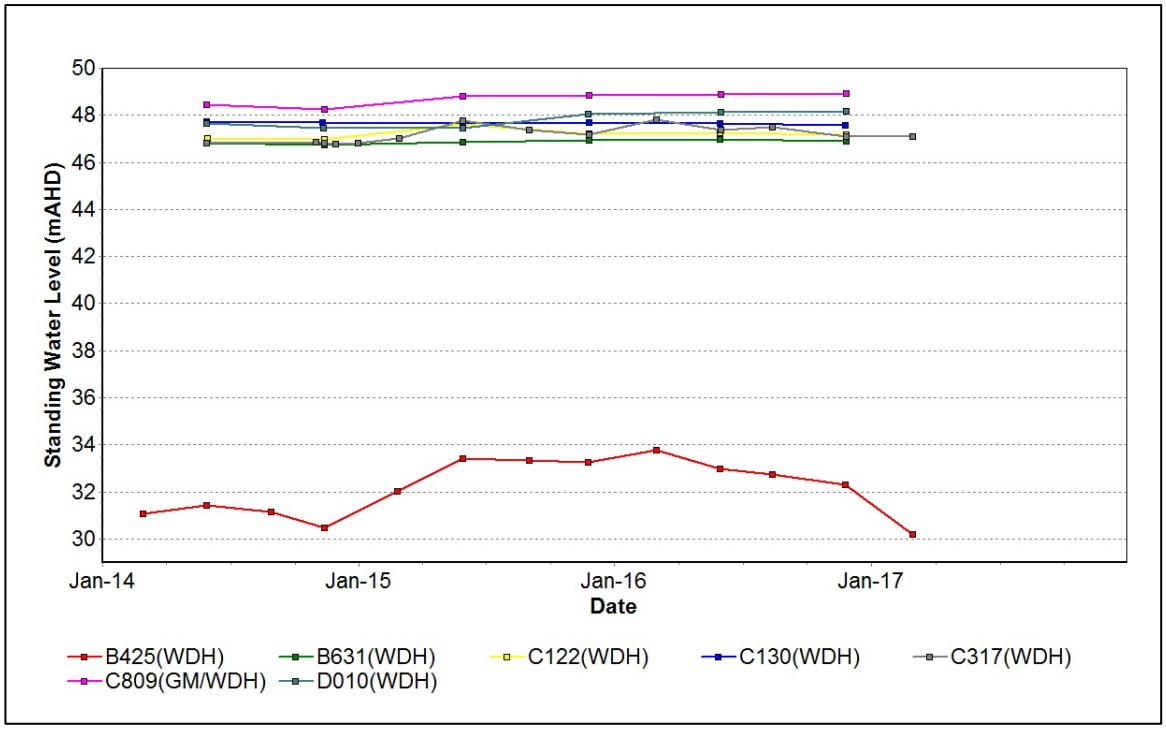

Figure 58: Lemington South Woodlands Hill Standing Water Level – March 2017

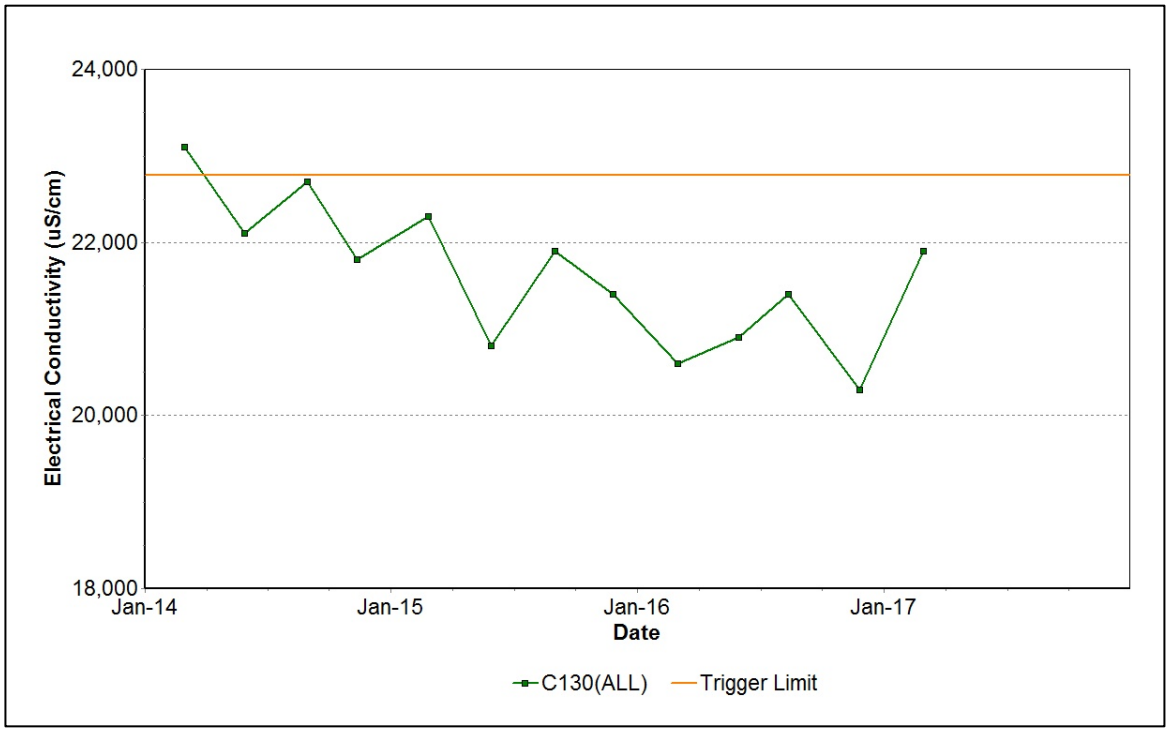

Figure 59: Lemington South Interburden Electrical Conductivity Trend - March 2017

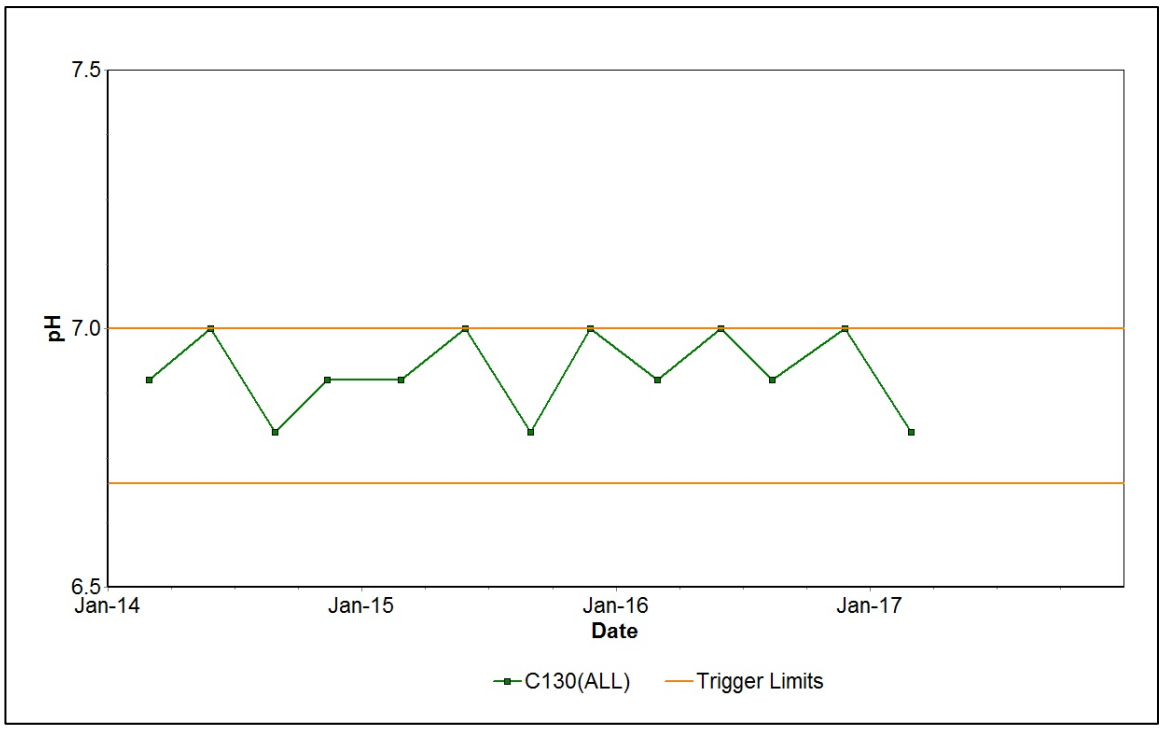

Figure 60: Lemington South Interburden pH Trend - March 2017

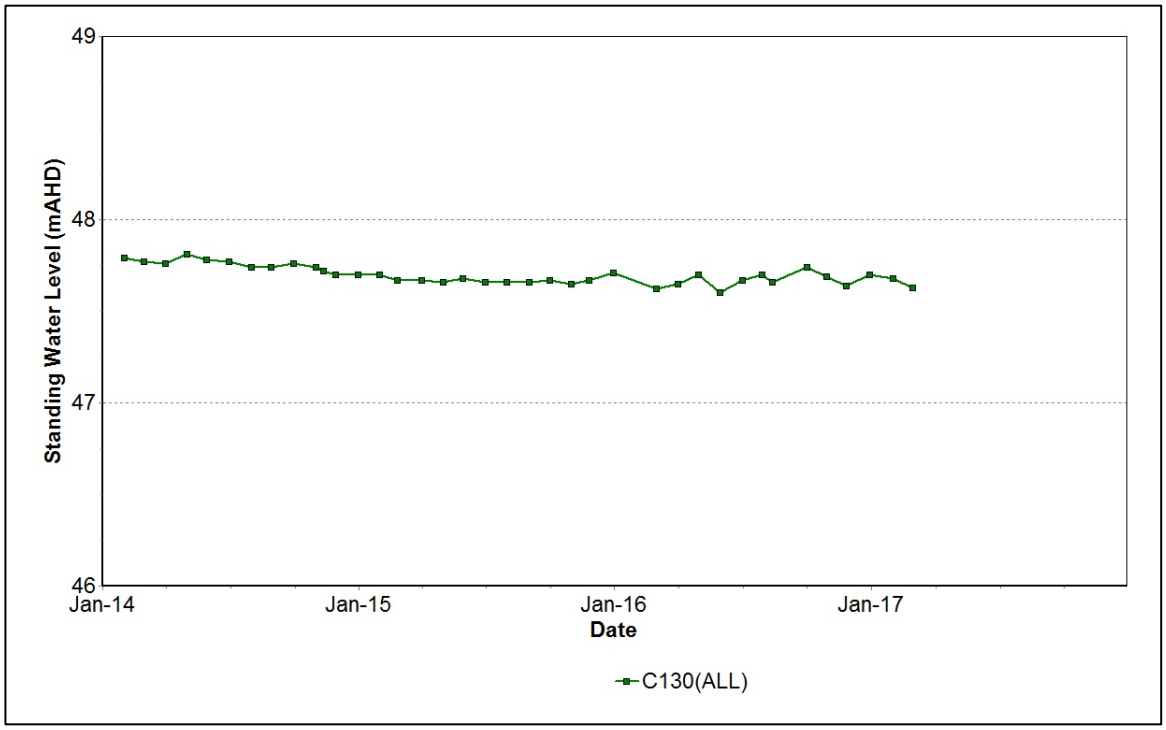

Figure 61: Lemington South Interburden Standing Water Level - March 2017

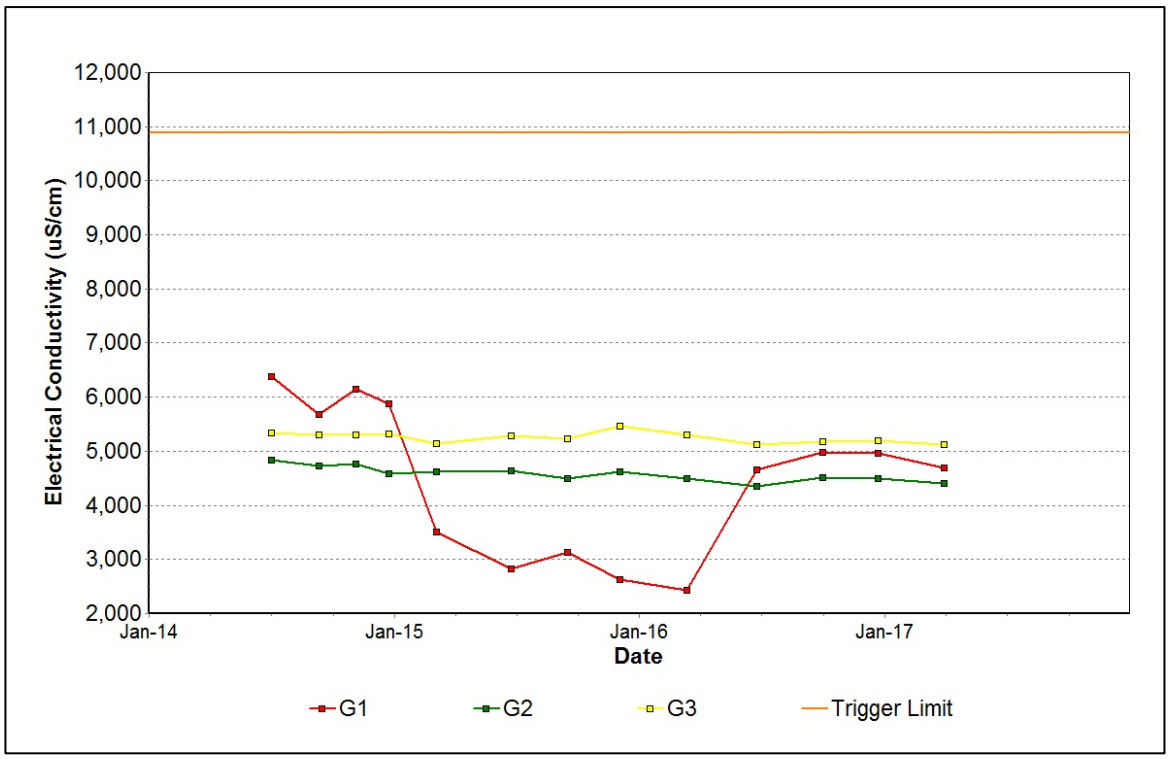

Figure 62: West Pit Alluvium Electrical Conductivity Trend - March 2017

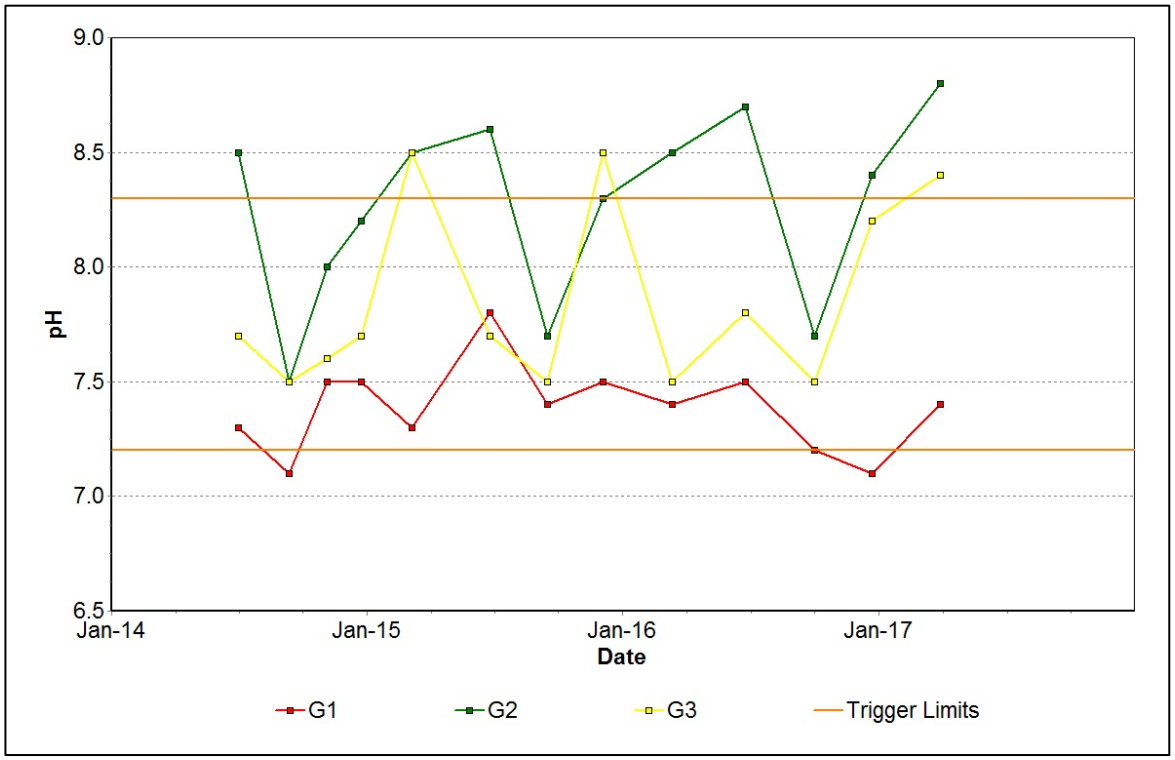

Figure 63: West Pit Alluvium pH Trend – March 2017

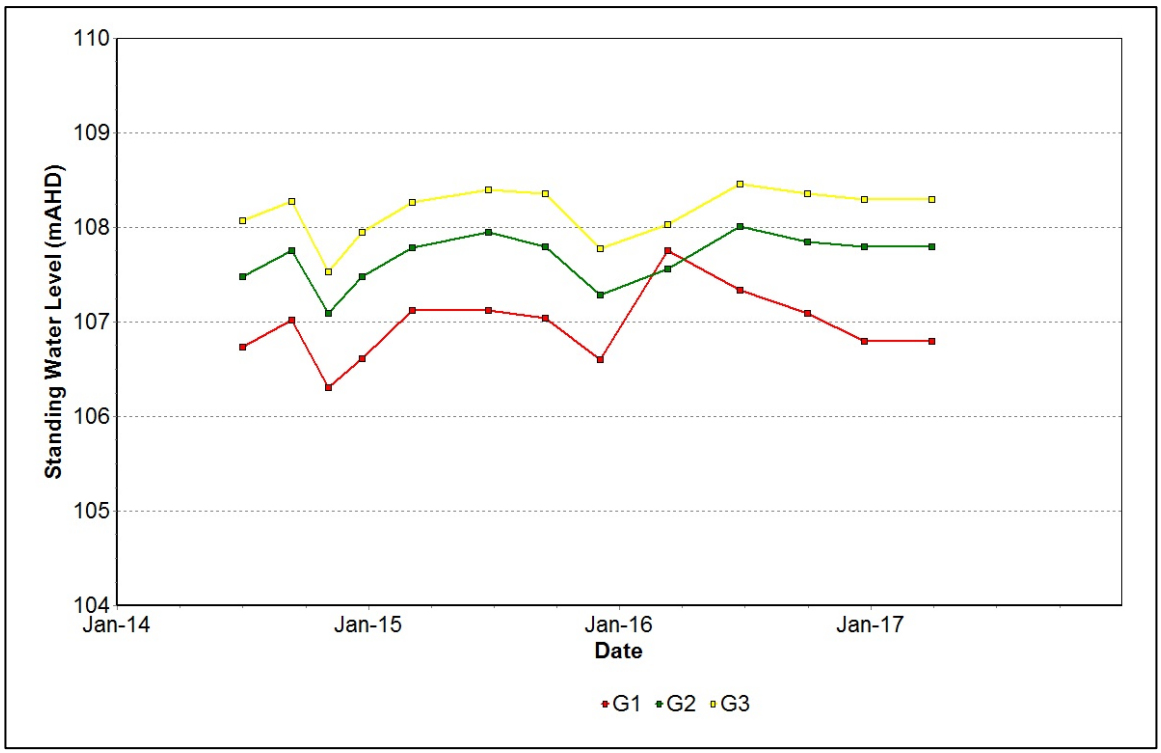

Figure 64: West Pit Alluvium Standing Water Level - March 2017

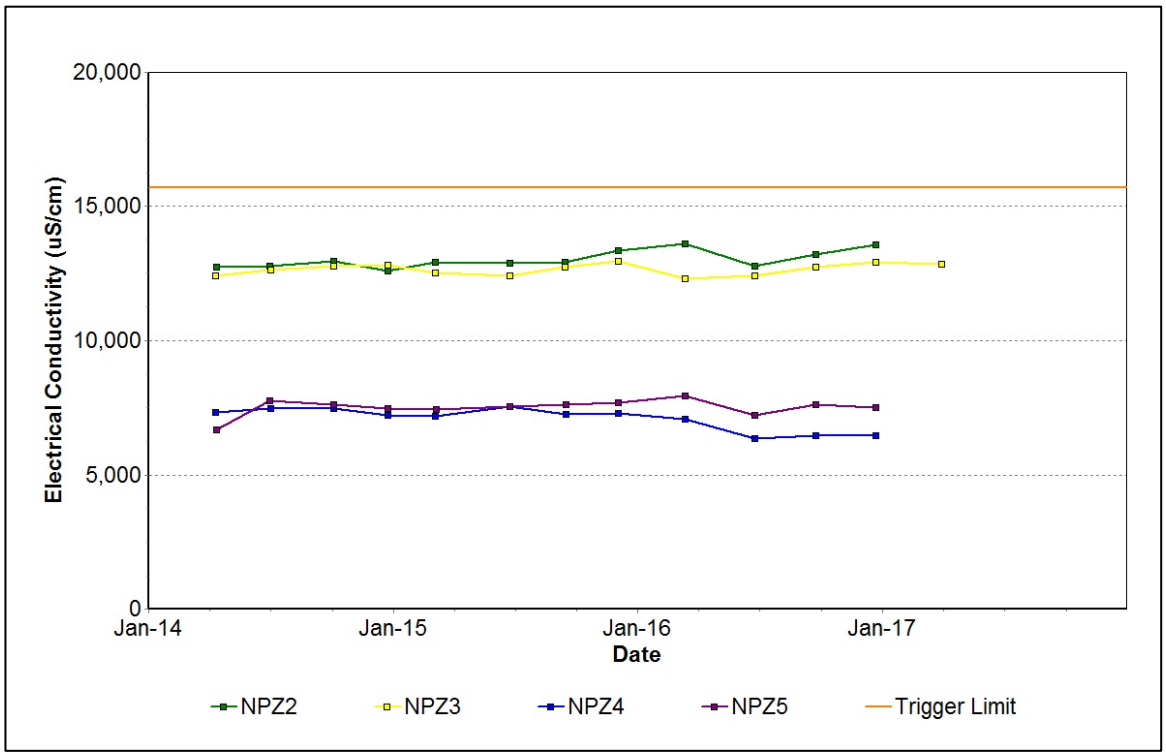

Figure 65: West Pit Siltstone Electrical Conductivity Trend – March 2017

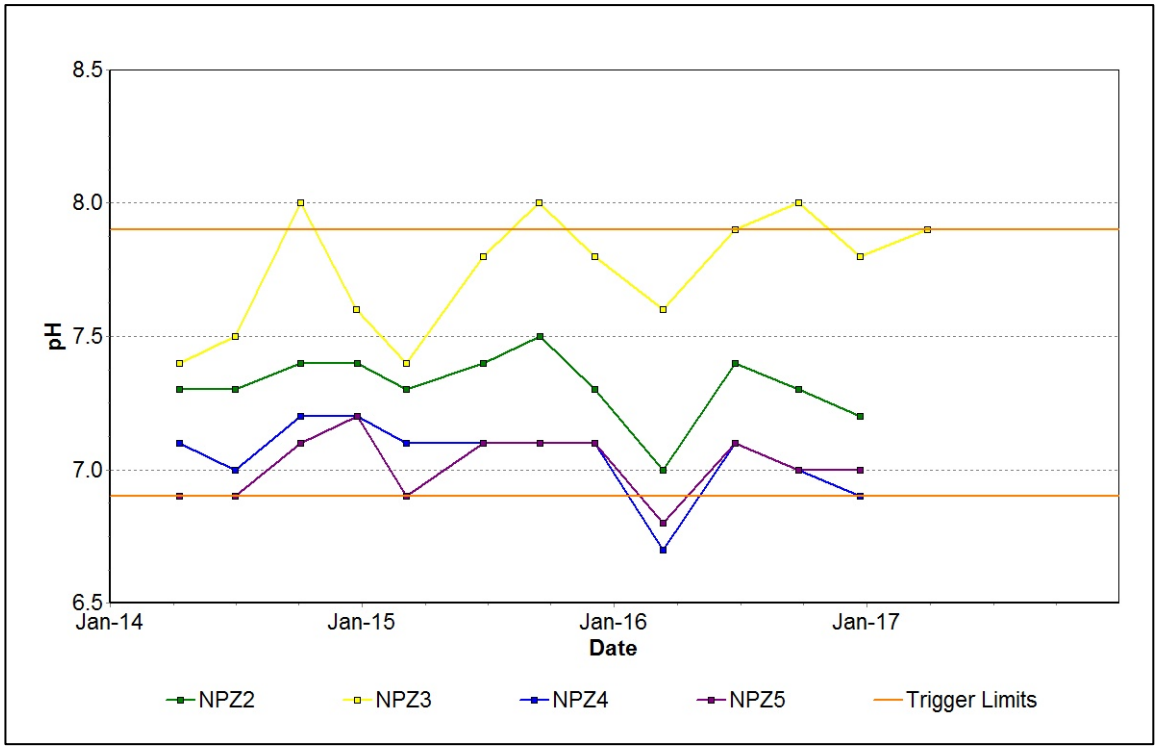

Figure 66: West Pit Siltstone pH Trend – March 2017

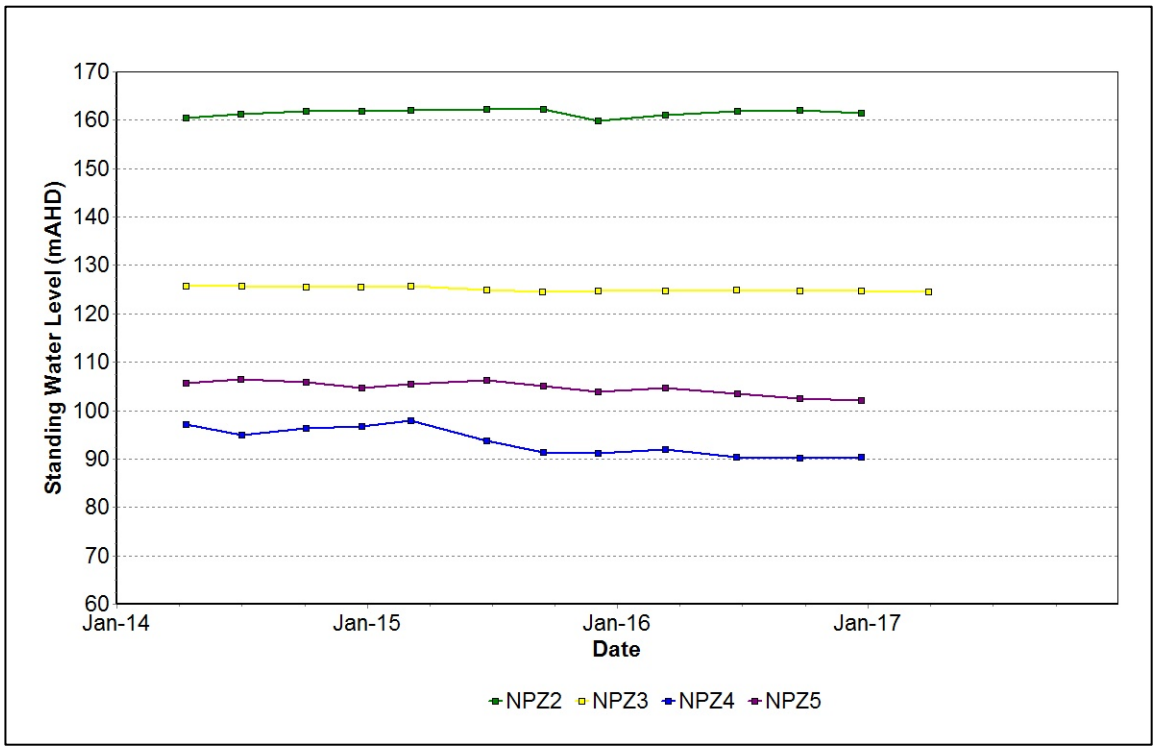

Figure 67: West Pit Siltstone Standing Water Level – March 2017

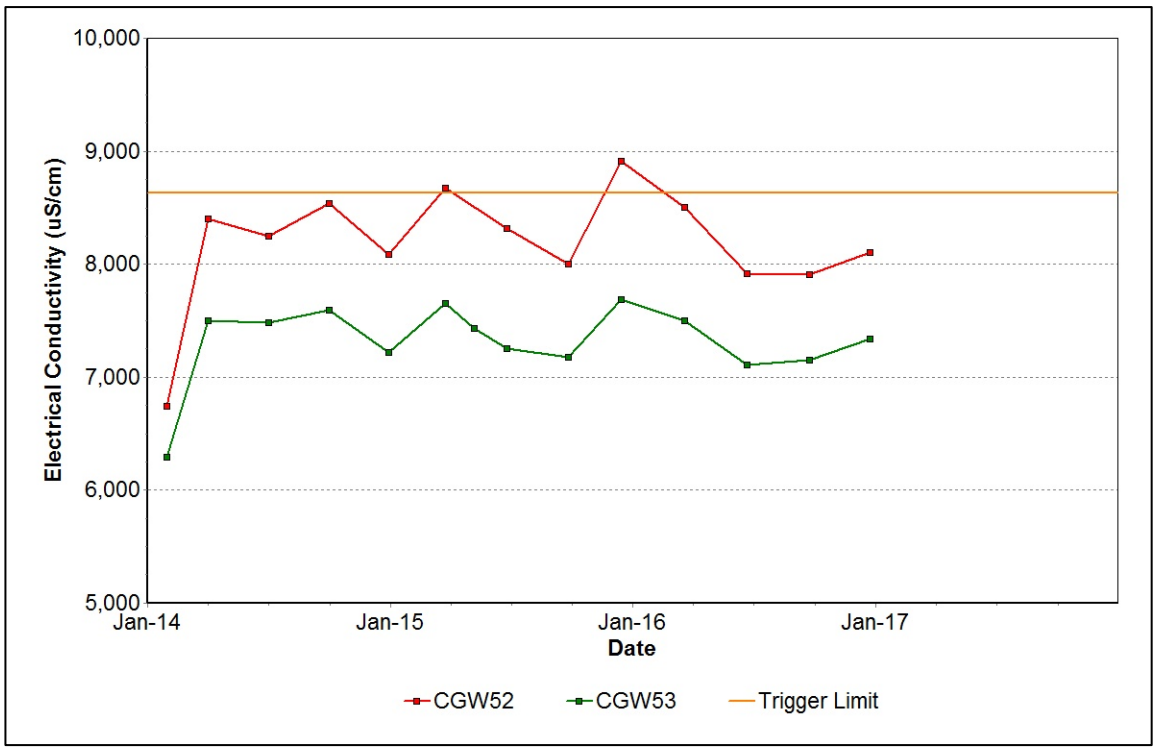

Figure 68: Carrington Broonie Electrical Conductivity Trend - March 2017

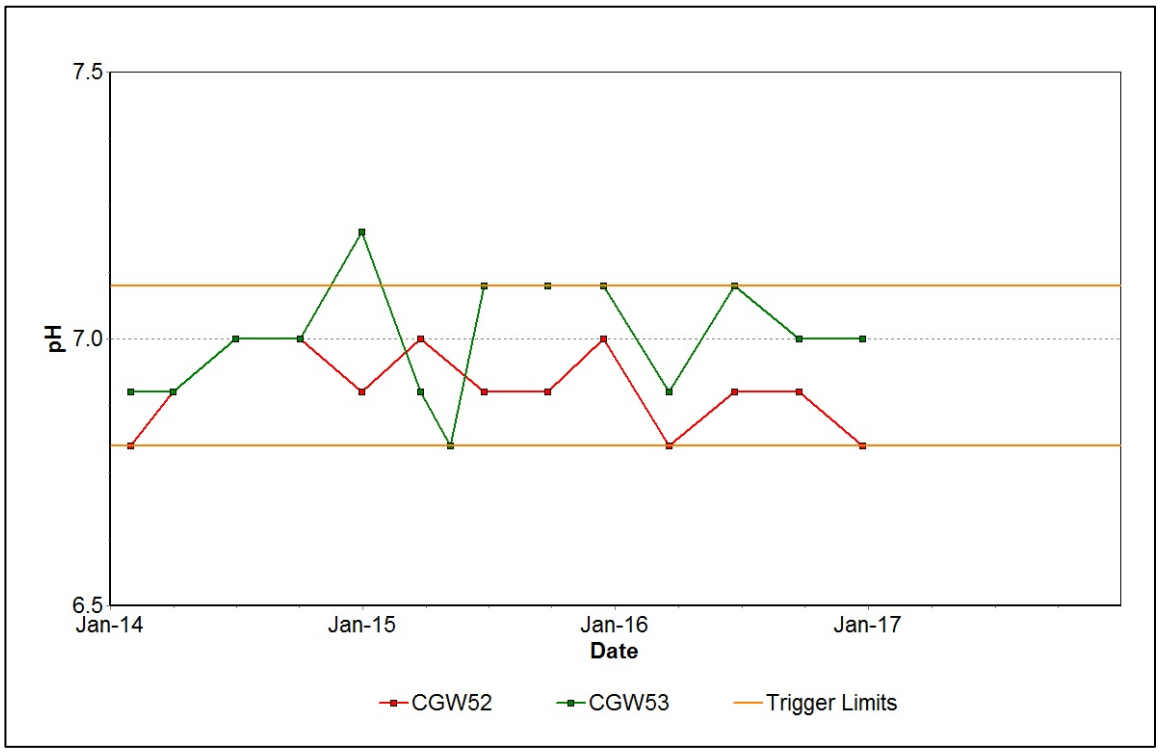

Figure 69: Carrington Broonie pH Trend - March 2017

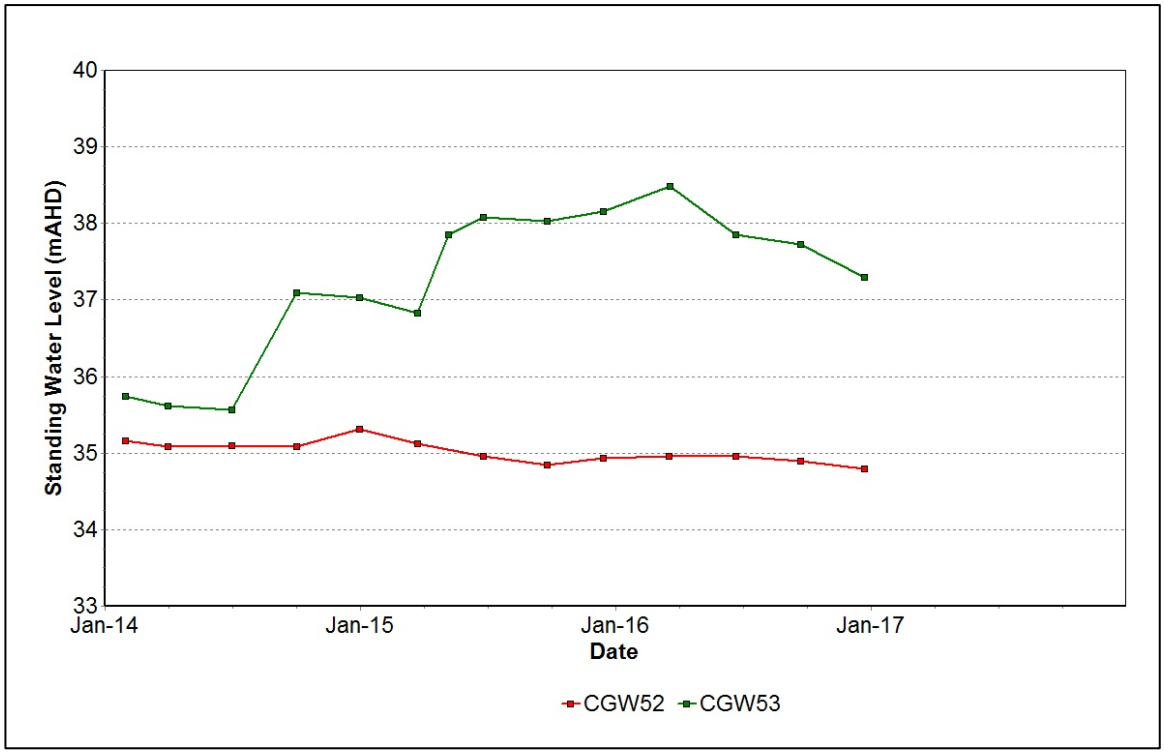

Figure 70: Carrington Broonie Standing Water Level - March 2017

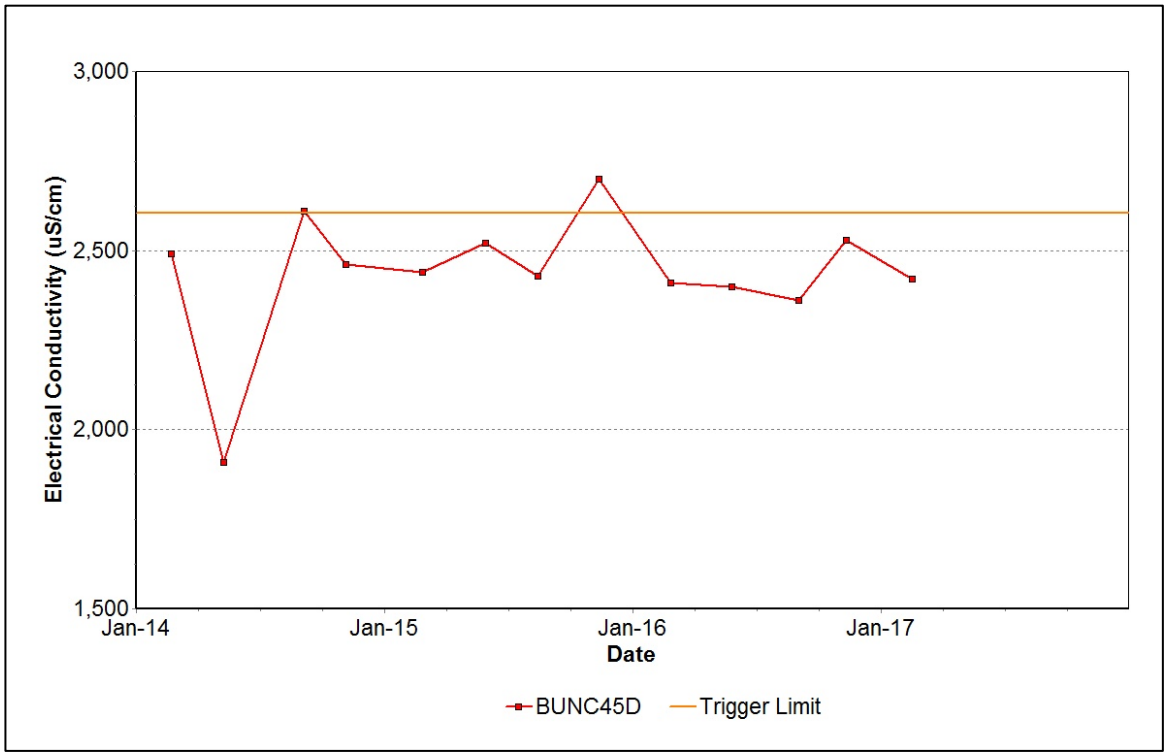

Figure 71: Cheshunt Piercefield Electrical Conductivity Trend - March 2017

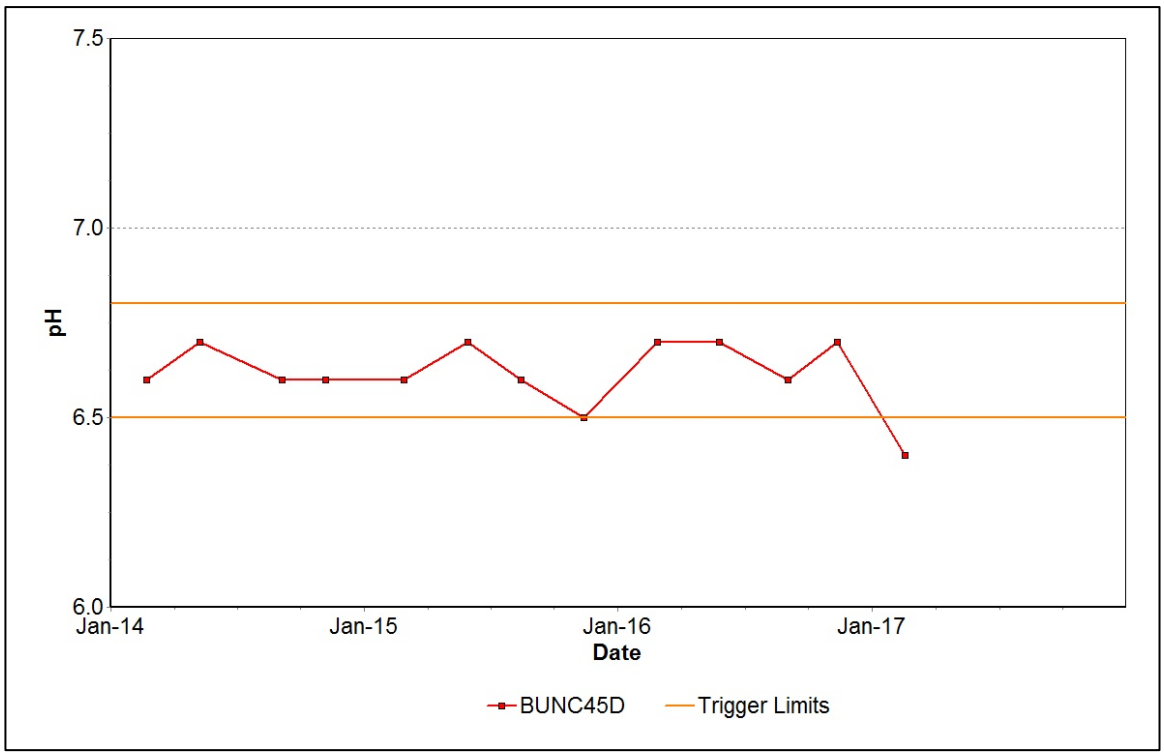

Figure 72: Cheshunt Piercefield pH Trend - March 2017

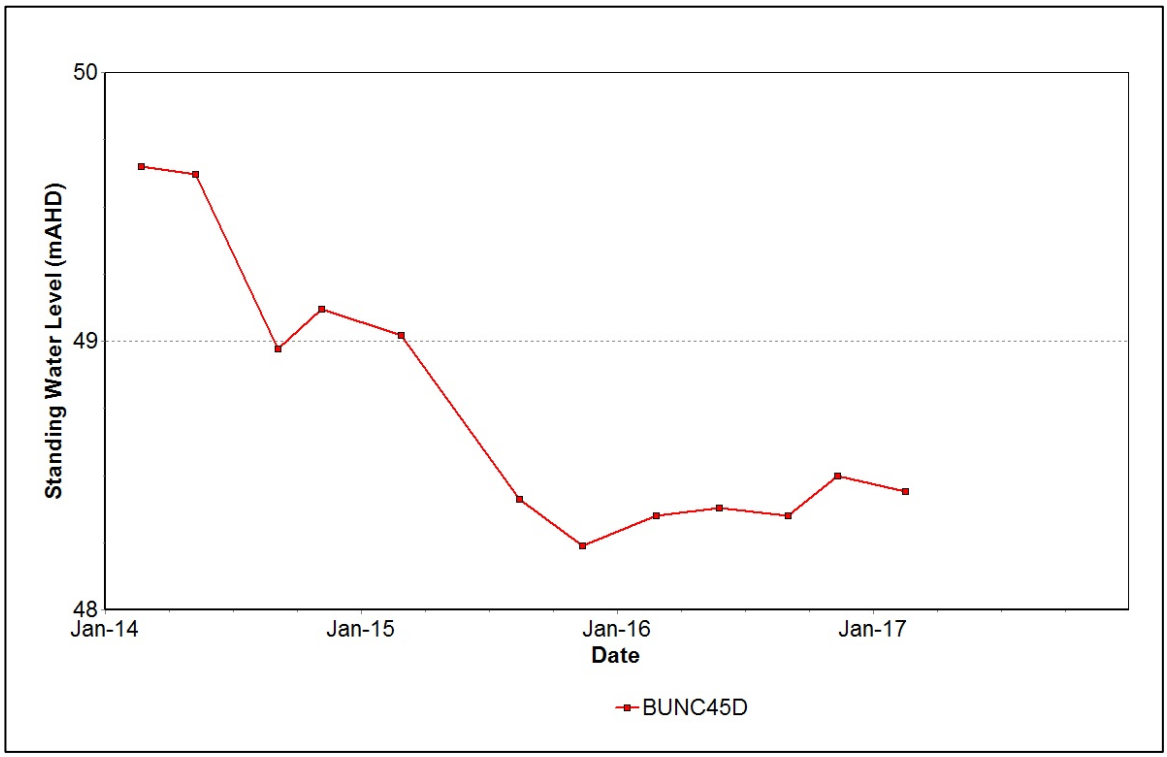

Figure 73: Cheshunt Piercefield Standing Water Level - March 2017

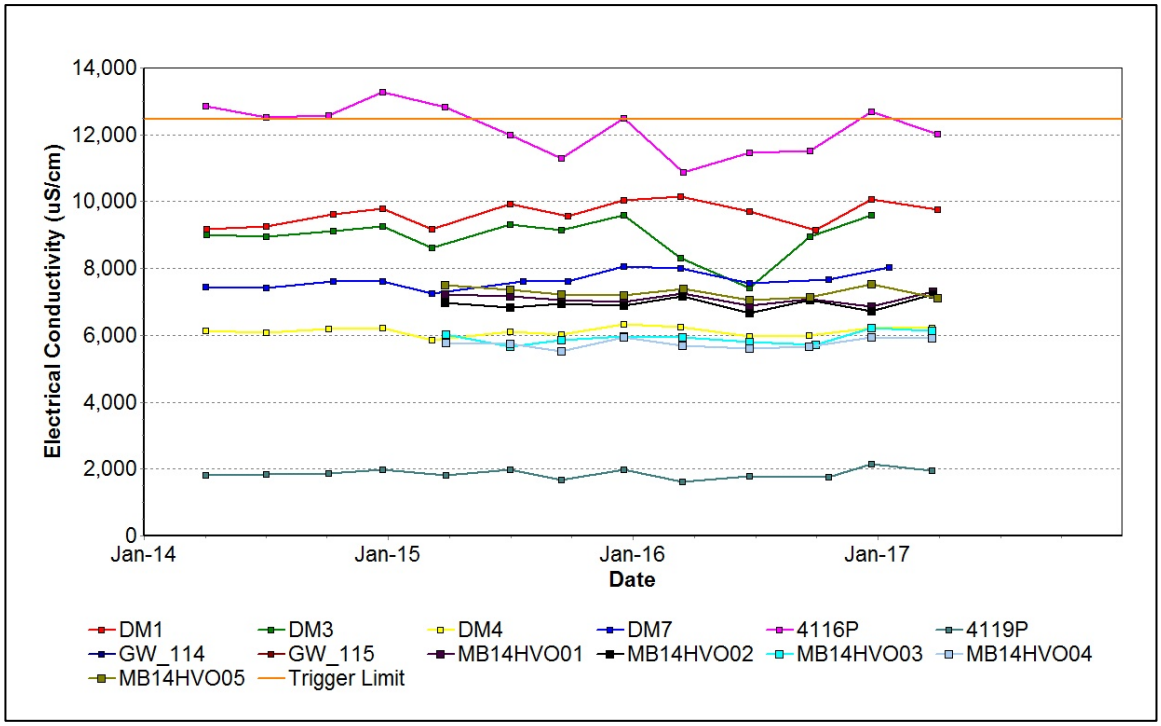

Figure 74: North Pit Spoil Electrical Conductivity Trend - March 2017

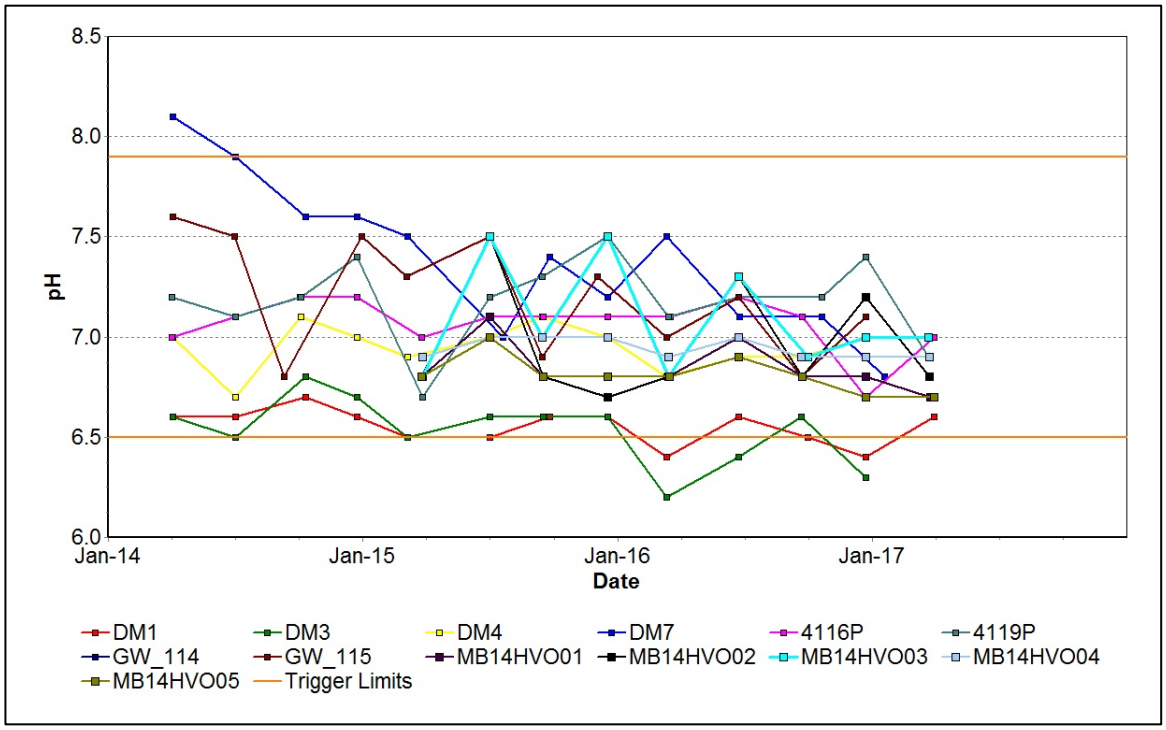

Figure 75: North Pit Spoil pH Trend - March 2017

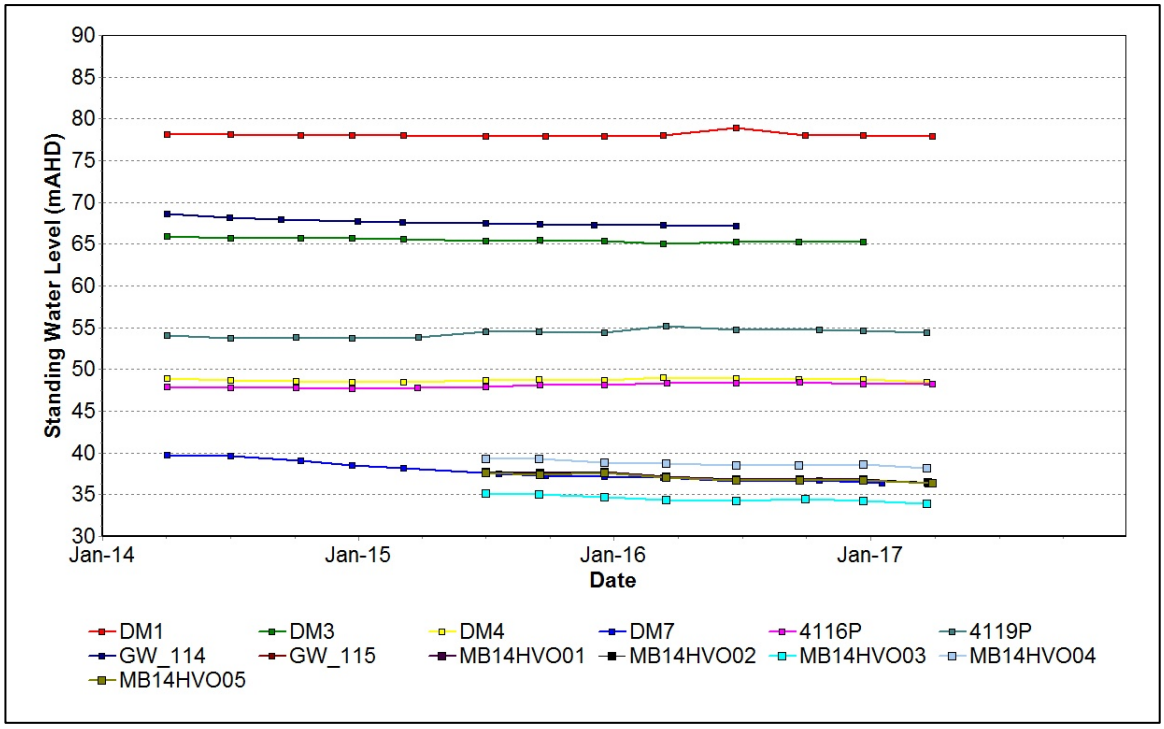

Figure 76: North Pit Spoil Standing Water Level - March 2017

4.2.1 Groundwater Trigger Tracking

Internal trigger limits have been developed to assess monitoring data on an on-going basis, and to highlight potentially adverse groundwater impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses are outlined in the HVO Water Management Plan. Locations of groundwater bores are shown in Figure 77.

During Q1 2017 a range of internal trigger limits were breached, these are summarised in Table 3.

Table 3: Groundwater Triggers - 2017

Site	Date	Trigger Limit Breached	Action Taken in Response
GW-100	29/03/2017	EC – 95th Percentile	Watching Brief*
CFW55R	23/03/2017	EC – 95th Percentile	Previous investigation determined that hydro geochemical speciation has not changed and that water quality is consistent with nearby bore CFW57. This, coupled with historical data showing similar elevated EC and depressed pH, suggests the variations are natural and unlikely to be due to anthropogenic impact. Watching brief, no further action required.
BZ8-2	16/02/2017	PH – 5th Percentile	Watching Brief*
BUNC45A	16/02/2017	PH – 5th Percentile	Watching Brief*
CHPz3A	15/02/2017	PH – 5th Percentile	Watching Brief*
CHPZ8A	16/02/2017	PH – 5th Percentile	Watching Brief*
G2	29/03/2017	PH – 95th Percentile	Watching Brief*
CFW55R	23/03/2017	PH – 5th Percentile	Previous investigation determined that hydro geochemical speciation has not changed and that water quality is consistent with nearby bore CFW57. This, coupled with historical data showing similar elevated EC and depressed pH, suggests the variations are natural and unlikely to be due to anthropogenic impact. Watching brief, no further action required.
BUNC45D	16/02/2017	PH – 5th Percentile	Watching Brief*

* = Watching brief established pending outcomes of subsequent monitoring events. No specific actions required.

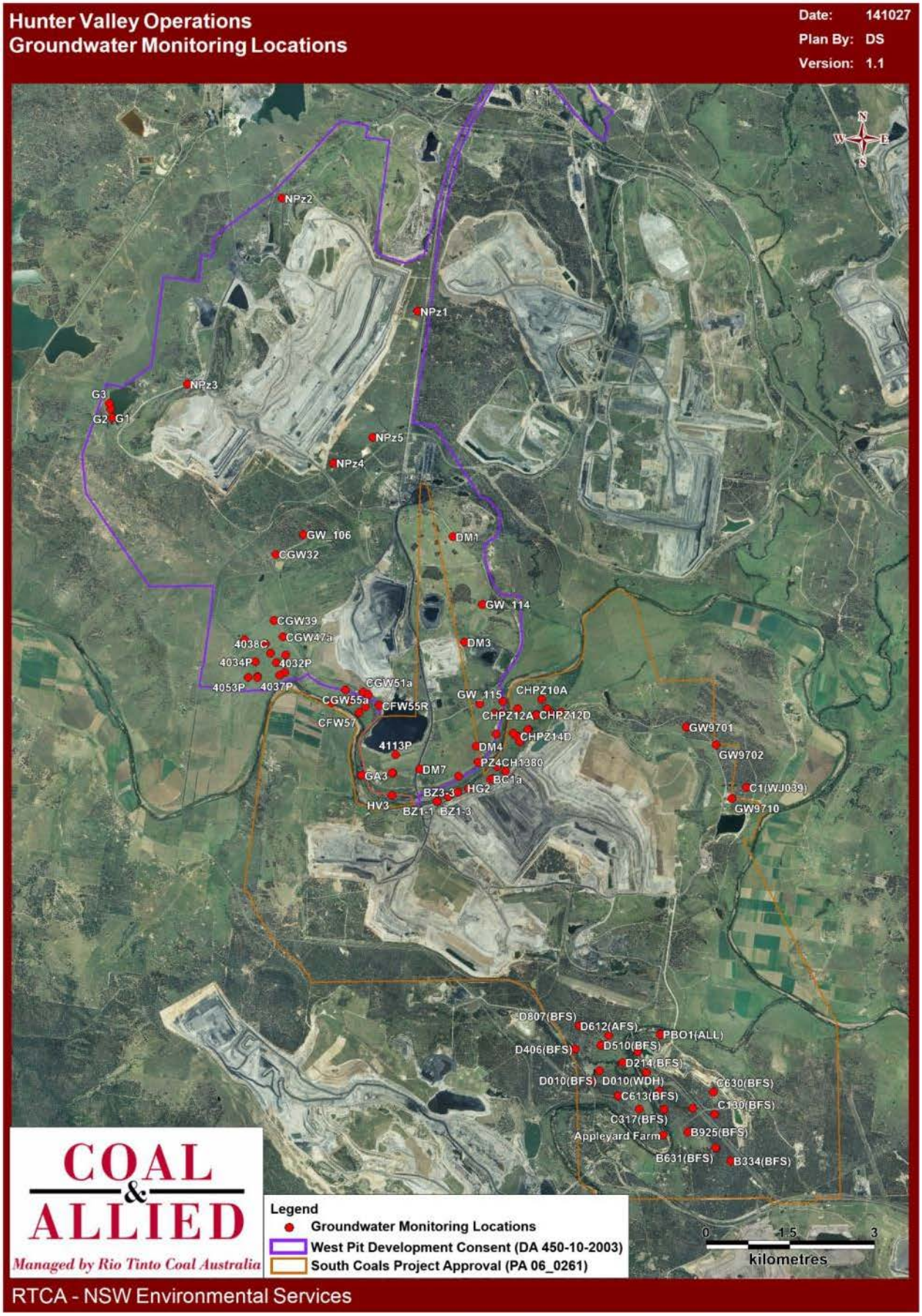

Figure 77: Groundwater Monitoring Location Plan

5.0 BLASTING

5.1.1 Blast Monitoring

HVO have a network of five blast monitoring units. These are located at nearby privately owned residences and function as regulatory compliance monitors. The location of these monitors can be found in Figure 83.

During March, 22 blasts were initiated at HVO. Figure 78 through to Figure 82 show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in Table 4.

Table 4: Blasting Limits

Airblast Overpressure (dB(L))	Comments
115	5% of the total number of blasts in a 12 month period
120	0%
Ground Vibration (mm/s)	**Comments**
5	5% of the total number of blasts in a 12 month period
10	0%

During the reporting period there were no exceedances of the airblast overpressure or ground vibration criteria.

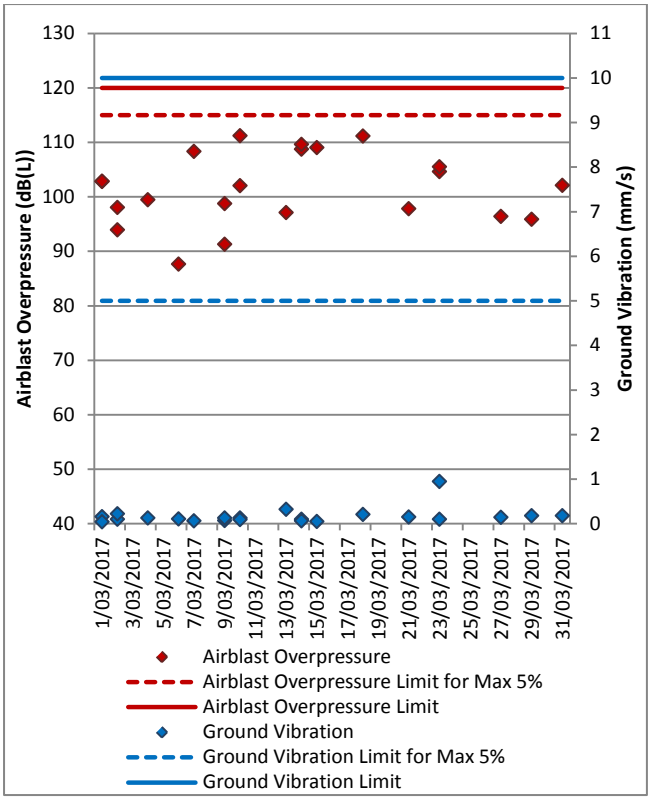

Figure 78: Moses Crossing Blast Monitoring Results – March 2017

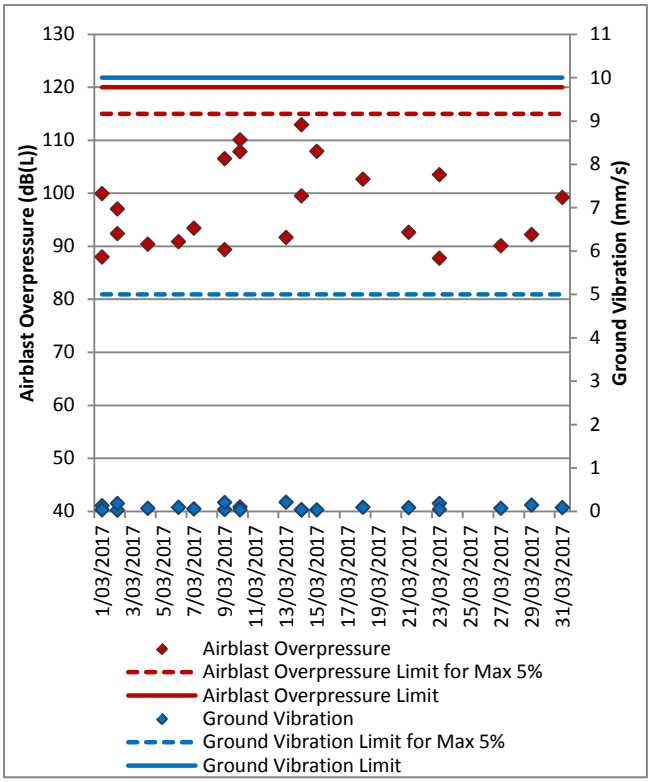

Figure 79: Jerrys Plains Blast Monitoring Results – March 2017

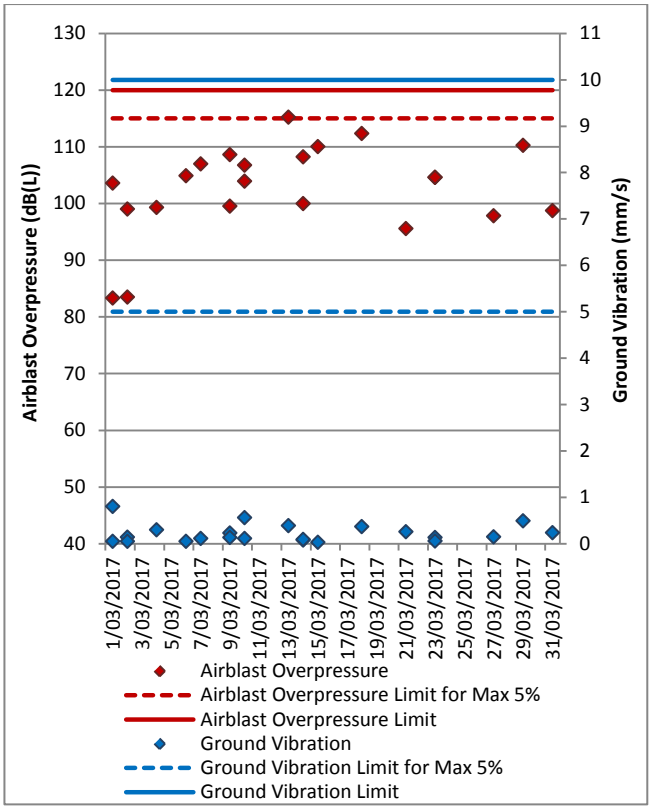

Figure 80: Maison Dieu Blast Monitoring Results – March 2017

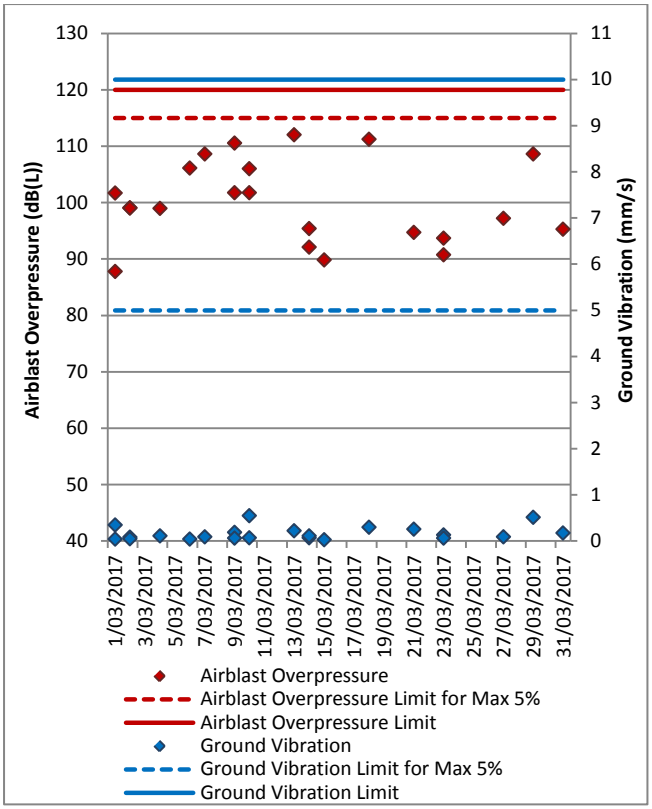

Figure 82: Knodlers Lane Blast Monitoring Results – March 2017

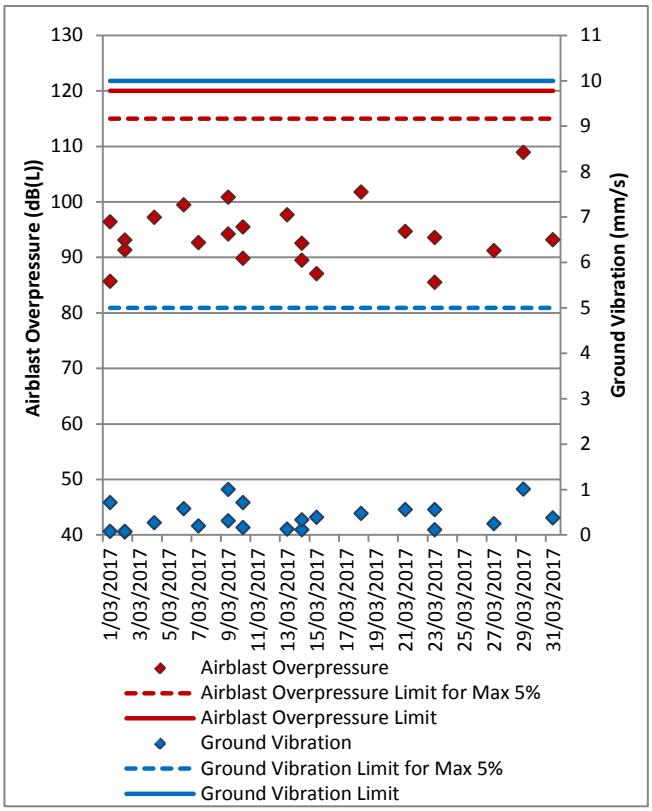

Figure 81: Warkworth Blast Monitoring Results – March 2017

Figure 83: Blast Monitoring Location Plan

6.0 NOISE

Routine attended noise monitoring is carried out at defined locations around HVO as described in the HVO Noise Monitoring Programme. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Unattended monitoring (real time noise monitoring) also occurs at five sites surrounding HVO. The attended noise monitoring locations are displayed in Figure 84.

6.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding HVO on the night of the 7th of March 2017. Monitoring results are detailed in Table 5 to Table 10.

Table 5: $L_{Aeq,\ 15\ minute}$ HVO South - Impact Assessment Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO South L_{Aeq} dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	37	No	IA	NA
Maison Dieu	7/03/2017 21:25	1.5	3	37	No	<30	NA
Shearers Lane	7/03/2017 21:52	1.8	3	41	No	NM	NA
Kilburnie South	7/03/2017 22:41	1.2	3	36	No	27	NA
Jerrys Plains Village	7/03/2017 21:36	1.5	3	35	No	IA	NA
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	35	Yes	IA	Nil
Long Point Road	7/03/2017 21:00	3	-1	35	No	IA	NA
HVGC	7/03/2017 23:17	0.7	3	55	No	IA	NA

Table 6: $L_{Aeq,\ 15\ minute}$ HVO South - Land Acquisition Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO South L_{Aeq} dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	41	No	IA	NA
Maison Dieu	7/03/2017 21:25	1.5	3	41	No	<30	NA
Shearers Lane	7/03/2017 21:52	1.8	3	41	No	NM	NA
Kilburnie South	7/03/2017 22:41	1.2	3	41	No	27	NA
Jerrys Plains Village	7/03/2017 21:36	1.5	3	40	No	IA	NA
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	40	Yes	IA	Nil
Long Point Road	7/03/2017 21:00	3	-1	40	No	IA	NA
HVGC	7/03/2017 23:17	0.7	3	NA	No	IA	NA

Table 7: $L_{A1, 1minute}$ HVO South – Impact Assessment Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO South $L_{A1, 1min}$ dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	45	No	IA	NA
Maison Dieu	7/03/2017 21:25	1.5	3	45	No	35	NA
Shearers Lane	7/03/2017 21:52	1.8	3	45	No	NM	NA
Kilburnie South	7/03/2017 22:41	1.2	3	45	No	44	NA
Jerrys Plains Village	7/03/2017 21:36	1.5	3	45	No	IA	NA
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	45	Yes	IA	Nil
Long Point Road	7/03/2017 21:00	3	-1	45	No	IA	NA
HVGC	7/03/2017 23:17	0.7	3	NA	No	IA	NA

Notes
1. Noise emission limits apply for winds up to 3 metres per second (at a height of 10m), or vertical temperature gradients of up to 3 degrees/100m and wind speeds of up to 2 m/s (at a height of 10m);
2. Estimated or measured $L_{Aeq,15minute}$ dB attributed to HVO South Pit Area;
3. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable;
4. Bolded results in red indicate exceedance of criteria;
5. Atmospheric data is sourced from the HVO Corporate weather station using logged met data; and
6. Criterion may or may not apply due to rounding of meteorological data values

Table 8: $L_{Aeq, 15minute}$ HVO North – Impact Assessment Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO North L_{Aeq} dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	35	Yes	IA	Nil
Maison Dieu	7/03/2017 21:25	1.5	3	35	Yes	IA	Nil
Shearers Lane	7/03/2017 21:52	1.8	3	35	Yes	IA	Nil
Kilburnie South	7/03/2017 22:41	1.2	3	39	Yes	IA	Nil
Jerrys Plains Village	7/03/2017 21:36	1.5	3	36	Yes	IA	Nil
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	39	Yes	IA	Nil
Long Point Road	7/03/2017 21:00	3	-1	35	Yes	IA	Nil
HVGC	7/03/2017 23:17	0.7	3	NA	Yes	IA	Nil

Table 9: $L_{Aeq,15minute}$ HVO North - Land Acquisition Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO North L_{Aeq} dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	41	Yes	IA	Nil
Maison Dieu	7/03/2017 21:25	1.5	3	41	Yes	IA	Nil
Shearers Lane	7/03/2017 21:52	1.8	3	41	Yes	IA	Nil
Kilburnie South	7/03/2017 22:41	1.2	3	41	Yes	IA	Nil
Jerrys Plains Village	7/03/2017 21:36	1.5	3	41	Yes	IA	Nil
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	41	Yes	IA	Nil

Long Point Road	7/03/2017 21:00	3	-1	41	Yes	IA	Nil
HVGC	7/03/2017 23:17	0.7	3	NA	NA	IA	NA

Table 10: $L_{A1,\ 1Minute}$ HVO North – Impact Assessment Criteria – March 2017

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB	Criterion Applies?[1,6]	HVO North $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Knodlers Lane	7/03/2017 21:01	2.2	3	46	Yes	IA	Nil
Maison Dieu	7/03/2017 21:25	1.5	3	46	Yes	IA	Nil
Shearers Lane	7/03/2017 21:52	1.8	3	46	Yes	IA	Nil
Kilburnie South	7/03/2017 22:41	1.2	3	46	Yes	IA	Nil
Jerrys Plains Village	7/03/2017 21:36	1.5	3	46	Yes	IA	Nil
Jerrys Plains East	7/03/2017 21:13	1.6	0.5	NA	NA	IA	NA
Long Point Road	7/03/2017 21:00	3	-1	46	Yes	IA	Nil
HVGC	7/03/2017 23:17	0.7	3	NA	NA	IA	NA

Notes
1. Noise emission limits apply for winds up to 3 metres per second (at a height of 10m), or vertical temperature gradients of up to 3 degrees/100m and wind speeds of up to 2 m/s (at a height of 10m);
2. Estimated or measured LAeq,15minute dB attributed to HVO North Area;
3. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable;
4. Bolded results in red indicate exceedance of criteria;
5. Atmospheric data is sourced from the HVO Corporate weather station using logged met data; and
6. Criterion may or may not apply due to rounding of meteorological data values.

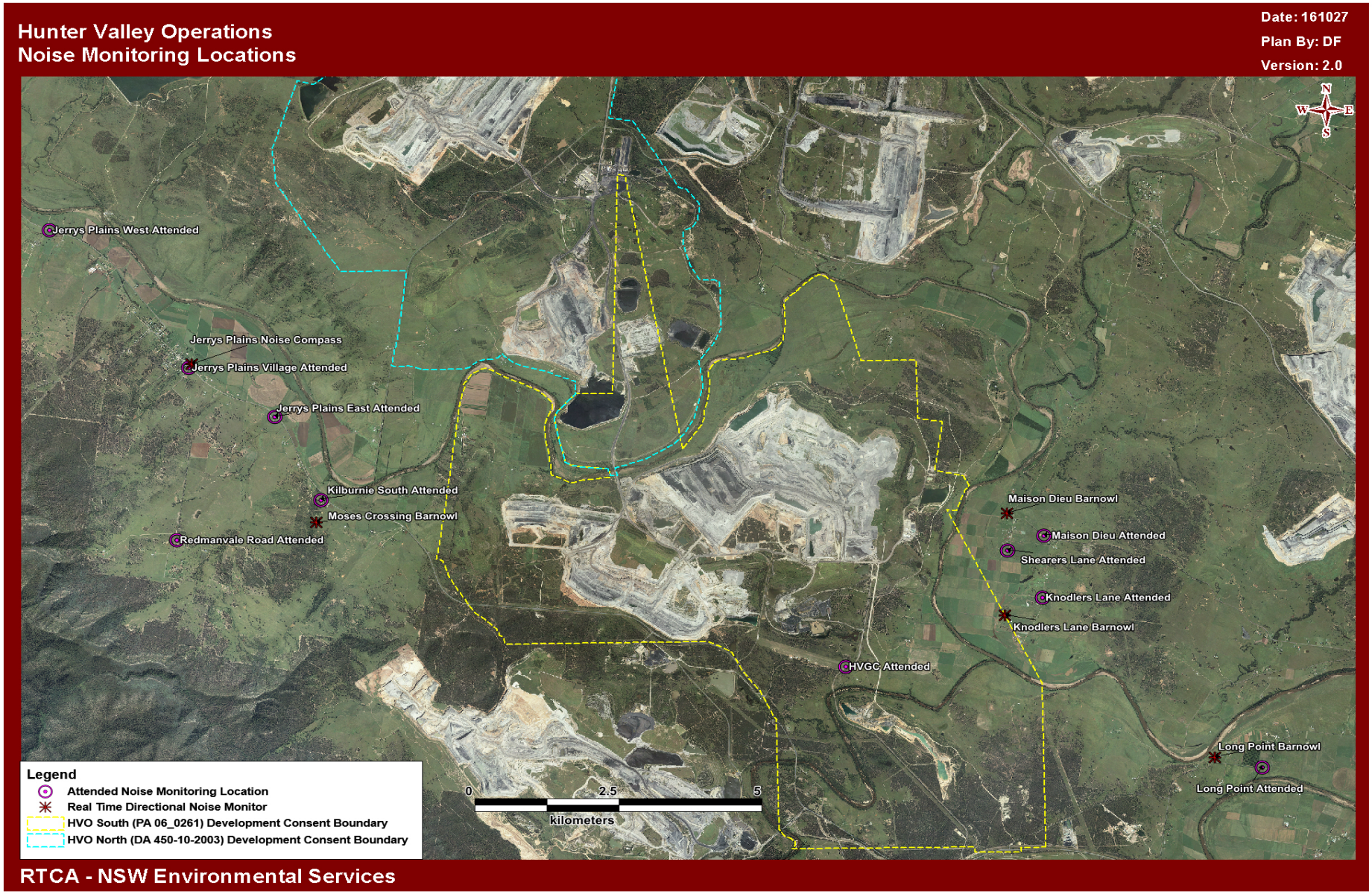

Figure 84: Noise Monitoring Location Plan

6.2 Real Time Noise Monitoring

HVO utilises a network of real-time directional noise monitors to manage noise impacts on a continuous basis. Noise alarms are in place at five monitoring locations (Knodlers Lane, Maison Dieu, Jerrys Plains, Moses Crossing, and Long Point), which alert HVO staff to elevated noise levels likely to be attributable to HVO. Noise alarms are investigated and responded to with the appropriate level of operational modification. Changes in response to a noise alarm can include replacing equipment with quieter (noise attenuated) units, changing or relocating tasks, and shutting down equipment.

HVO's Planning approvals stipulate noise criteria which must be met during the life of the development(s). The approvals however do not stipulate requirements or give guidance on noise affectation, or the frequency of any elevated noise event which would constitute noise affectation. Page 6 of the NSW Industrial Noise Policy (INP) comments that criteria "seek to restrict the risk of people being highly annoyed to less than 10 percent, and to meet this for at least 90 percent of the time".

For the purposes of assessing the effectiveness of the noise management system, HVO applies a similar approach with regard to the frequency of any elevated noise event. It should be noted that this assessment does not compliment or conflict with attended noise monitoring detailed in Section 6.1, and that real time monitoring data includes non-mine noise sources such as dogs, cows, or more commonly, road traffic.

7.0 OPERATIONAL DOWNTIME

During March, a total of 11.3 hours of equipment downtime was logged in response to real time monitoring and visual inspections for environmental reasons such as dust, noise and meteorological conditions. Operational downtime by equipment type is shown in Figure 85.

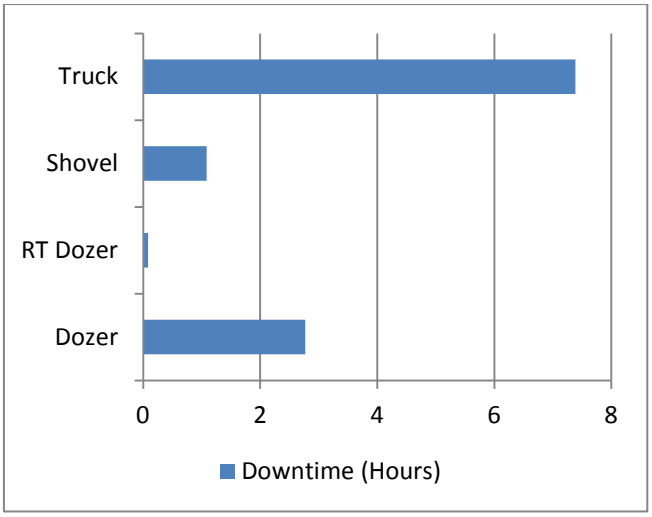

Figure 85: Operational Downtime by Equipment Type –March 2017

8.0 REHABILITATION

During March, 0.9Ha of land was released and 3.0Ha of land was bulk shaped. Year to date progress can be viewed in Figure 86.

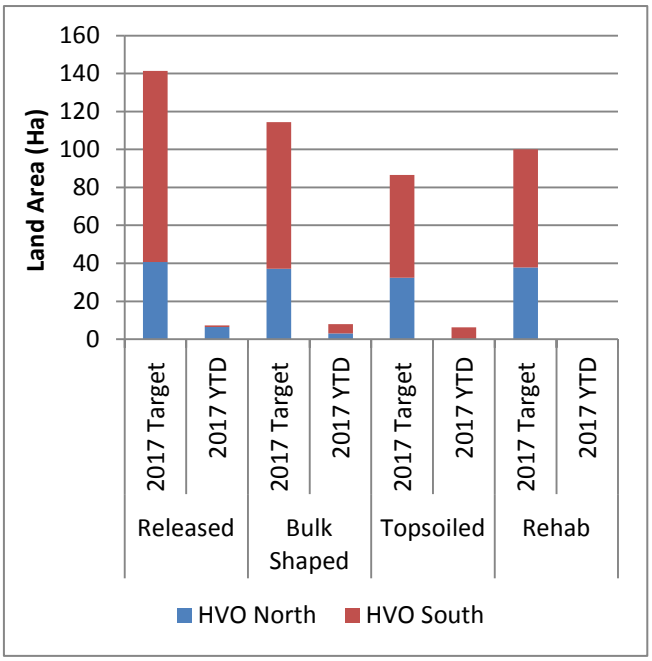

Figure 86: Rehabilitation YTD – March 2017

9.0 COMPLAINTS

Three complaints were received during the reporting period. Details of this complaint are shown in Figure 87 below.

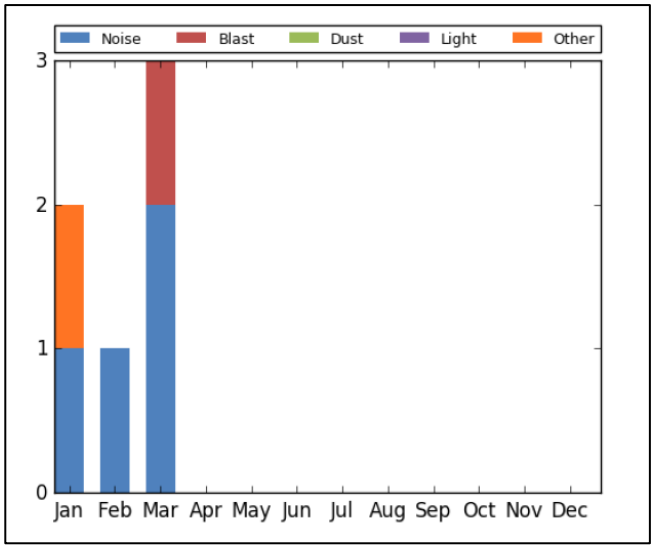

Figure 87: Complaints Graph – March 2017

10.0 ENVIRONMENTAL INCIDENTS

One reportable environmental incident occurred during the reporting period.

On the 30th March 2017 a sediment sump at the Hunter Valley Load Point (HVLP) was observed to be overtopping via the sump spillway into Bayswater Creek, following a high intensity, short duration rainfall event.

Water sampling was undertaken on the 30th March to characterise potential impacts upon receiving waters. Water quality results indicated that no environmental harm is likely to have occurred as a result of the overflowing water. A trailer mounted pump was fitted to provide additional dewatering capacity to the site.

An improvement project is currently underway to increase the size and pumping capacity of the HVLP sediment sump.

The incident was recorded in the Coal and Allied incident and action management system for investigation. The Department of Planning and Environment, the Environmental Protection Agency and other relevant agencies were notified of the incident on 30th March.

Appendix A: Meteorological Data

Table 11: Meteorological Data - HVO Corporate Meteorological Station – March 2017

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Solar Radiation Maximum (W/Sq. M)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/03/2017	28.7	15.8	100.0	43.2	1289	119.1	2.8	7.0
2/03/2017	29.7	15.8	100.0	35.5	1306	120.3	2.3	0.2
3/03/2017	27.8	16.6	99.1	45.9	1439	128.6	2.7	0.0
4/03/2017	24.1	15.5	100.0	63.1	537	158.6	1.5	18.4
5/03/2017	21.4	14.5	100.0	79.2	1356	238.6	1.3	21.8
6/03/2017	25.5	13.7	100.0	38.9	1459	165.2	2.0	0.2
7/03/2017	24.9	12.7	94.5	37.4	1319	142.3	2.8	0.0
8/03/2017	22.8	12.6	96.9	44.1	1383	126.2	2.6	0.0
9/03/2017	24.1	11.0	100.0	38.4	1305	133.9	2.0	0.4
10/03/2017	26.4	12.7	89.0	33.9	1536	148.6	1.9	0.0
11/03/2017	27.7	12.1	100.0	29.1	1155	160.0	1.5	0.0
12/03/2017	33.6	11.2	93.3	12.1	903	163.9	1.3	0.0
13/03/2017	23.9	17.9	76.4	53.4	-	128.2	2.7	0.0
14/03/2017	29.3	15.9	100.0	37.3	1149	120.6	4.4	0.0
15/03/2017	27.0	15.4	100.0	56.0	1409	121.7	3.8	5.2
16/03/2017	32.4	19.3	100.0	34.7	1205	179.9	2.1	4.2
17/03/2017	23.1	15.6	98.3	65.2	1331	150.2	3.8	0.0
18/03/2017	26.4	15.4	100.0	58.4	1348	128.4	5.7	16.0
19/03/2017	29.7	18.9	100.0	60.0	1388	128.1	3.1	9.2
20/03/2017	27.8	18.8	100.0	62.4	1021	118.8	1.4	0.0
21/03/2017	31.8	17.3	100.0	42.5	1393	163.8	1.8	26.0
22/03/2017	28.7	17.6	100.0	59.5	1259	258.5	2.7	3.6
23/03/2017	23.6	16.2	100.0	69.0	1029	129.2	1.9	0.2
24/03/2017	23.9	14.5	100.0	62.9	1076	117.0	2.1	16.6
25/03/2017	26.4	12.7	100.0	54.8	1250	132.1	1.2	0.8
26/03/2017	28.8	15.8	100.0	48.8	1140	164.2	1.7	0.2
27/03/2017	30.2	14.0	100.0	38.8	1159	158.3	1.0	0.0
28/03/2017	32.2	18.0	100.0	46.3	785	171.6	2.4	0.0
29/03/2017	33.7	17.5	100.0	35.5	815	233.4	1.7	0.0
30/03/2017	27.2	14.5	100.0	49.9	210	201.7	2.7	62.2
31/03/2017	22.6	11.6	84.2	43.0	1046	135.3	2.6	0.0

"-" Data unavailable due to equipment or communications issue