2024 Annual Performance Report

Aberthaw Quarry Ash Disposal Site

Permit Number: BP3339BH

March 2025

RWE
The energy to lead

Summary

This document gives details on the performance of Aberthaw Quarry Ash Disposal Site over 2024, as required by condition 4.2.1 of the site's Environmental Permit (EP), BP3339BH.

CONTENTS

1. Operational Update

Aberthaw Ash Disposal Site is a mono-fill landfill site solely utilised historically for the disposal of surplus Pulverised Fuel Ash (PFA) from Aberthaw Power Station. It was designed and constructed over four distinct phases (see Appendix A).

- Phase 1 - constructed in 2008, filled between Quarter 4 2008 to Quarter 4 2010 and capped and hydroseeded in Spring 2011.
- Phase 2 - constructed in 2009/10 with filling commencing from Quarter 4 2010. Phase 2 East was filled until Quarter 3 2013 before being capped and hydroseeded whilst Phase 2 West was filled until Quarter 4 2014 before being capped and hydroseeded.
- Phase 3 – Phase 3A (east) was constructed in 2012/13 with filling commencing in Quarter 3 2013 and remained the working phase throughout 2014 to 2015. The construction of Phase 3B (west) was completed in 2014 with filling commencing in Quarter 2 2015. These phases continued to be worked until the formal closure of Aberthaw Power Station.
- Phase 4 - although consented Phase 4 has never been developed or utilised for PFA disposal.

Aberthaw Power Station formally closed in March 2020. The main coal-fired generating units ceased generation in December 2019 after which only the gas turbines remained operational during Quarter 1 of 2020 before eventual full site closure. Ash removal routes remained open throughout the station decommissioning period, however, the last time PFA was deposited at Aberthaw Quarry was Quarter 3 2019.

Due to the early closure of Aberthaw Power Station, the final restoration plan for the Quarry was reviewed by RWE. Predominantly this was because the approved fill level and final profile could no longer be achieved due to the cessation of ash disposal at the site. A S73 application to the Planning Authority was made in July 2024 and was approved by the Vale of Glamorgan in March 2025 (Section 73 (s73) of the Town and Country Planning Act 1990 allows for planning applications to be made for the variation or removal of a condition on an existing planning permission.) A permit Variation will be made to Natural Resources Wales (NRW) to align the permit with the approved pre-settlement contours and final landform for the site.

The primary purpose of the revised restoration plan is to improve the surface water run-off of the site (especially within Phases 3a & 3b) preventing surface/ash erosion and return the landform to an agricultural end use in line with the previously approved planning permission

2. Review of Results for Emission Monitoring

Four groundwater monitoring visits were undertaken by a specialist contractor during 2024:

- 20th February 2024 (Q1 Visit)
- 7th May 2024 (Q2 Visit)
- 23rd July 2024 (Q3 Visit)
- 30th October 2024(Q4 Visit)

All sample locations were able to be safely accessed and sampled without any reported issues.

2.1. Hydrogeological Risk Assessment (HRA) Review

A HRA review for the Aberthaw Quarry Site was undertaken by an external specialist and submitted to NRW in October 2023. An updated version was reissued in April 2024 following comments received by NRW.

Following further discussion with NRW, the number of down-gradient groundwater monitoring sample points was increased with three additional boreholes installed in December 2024. Monitoring of these commenced in Q1 2025.

2.2. Groundwater Quality Review

Monitoring Objective

To carry out routine monitoring of groundwater to monitor the performance of the ash disposal site by measurement of absolute levels/concentrations and trends relative to relevant criteria including background levels, control levels and compliance limits.

Number and Location of Monitoring Points

A summary of the monitoring boreholes is provided in Table 1 below and the locations are shown in Appendix A. In total, in 2024, there were 12 monitored borehole locations in natural ground all completed in the Porthkerry Member limestone.

Groundwater flow beneath the ash disposal site is directed towards the cement work lagoons and the River Thaw to the west. Hence, monitoring boreholes, E09-01A, E09-01B, E09-02A and E09-02B on the north-eastern site boundary (approximately 200m apart) are upgradient. Borehole E15/1 on the south site boundary is also classed as upgradient.

Monitoring boreholes along the western site boundary (E23-03, E05-04 and E06-01) with an average spacing of 100m are downgradient of the Pulverised Fuel Ash (PFA) disposal area (Phase 1 and 2). Along the south-western site boundary, two of the monitoring boreholes with an average spacing of 100m (E06-02 and E06-03) are downgradient of the last active PFA disposal area (Phase 3A & 3B) and the non-utilised area (Phase 4). Whilst the two remaining boreholes (E23-04 and E06-05) with an average spacing of 100m are located downgradient of the unworked Phase 4.

Table 1: Summary of Monitoring Boreholes

Monitoring Borehole	Formation Sampled	Lithology Type – Natural (N)	Response Zone Depth (m b GL)	Designation
E09-01A	Limestone	N	18-24	Upgradient
E09-01B	Limestone	N	24-30	Upgradient
E09-02A	Limestone	N	21-27	Upgradient
E09-02B	Limestone	N	27-33	Upgradient
E15-1	Limestone	N	17-29	Upgradient
# E24/06	Limestone	N	12-16	Downgradient Phase 1&2 Restored Area
# E24/07A	Limestone	N	17-21	Downgradient Phase 1&2 Restored Area
# E24/07B	Limestone	N	28-33	Downgradient Phase 1&2 Restored Area
E23-03	Limestone	N	3-15	Downgradient Phase 1&2 Restored Area
E05-04	Limestone	N	2.5-20	Downgradient Phase 1&2 Restored Area
E06-01	Limestone	N	3 5	Downgradient Phase 1&2 Restored Area
E06-02	Limestone	N	2-10	Downgradient Phase 3A & 3B Active Area
E06-03	Limestone	N	2-10	Downgradient Phase 3A & 3B Active Area
E23-04	Limestone	N	2-10	Downgradient Unutilised Phase 4
E06-05	Limestone	N	2–8	Downgradient Unutilised Phase 4

m b GL – metres below ground level
n/b E23-03 and E23-04 replaced E05-03 & E05-04 respectively.
Monitoring to commence in Q1 2025

Monitoring Measurements

The groundwater monitoring analytical suite contains a range of parameters which are monitored in accordance with the Environmental Permit on a quarterly basis, along with the groundwater level and standard field measurements. An independent external contractor is responsible for the sampling of the groundwater boreholes, and they utilise an independent external UKAS accredited laboratory for analysis of the samples.

Figure 1 shows the recorded groundwater elevations for the previous 19 years which vary between +17 (E05-03) to +35m OD (E09-02B). Upgradient groundwater elevations (dashed lines) are characterised by larger amplitude seasonal water level fluctuations with annual winter influxes of rainfall recharge. Downgradient groundwater elevations (solid lines) fluctuate only slightly due to the effect of dewatering from the Quarry which maintains groundwater at near-constant elevations.

Figure 1: Groundwater Hydrograph

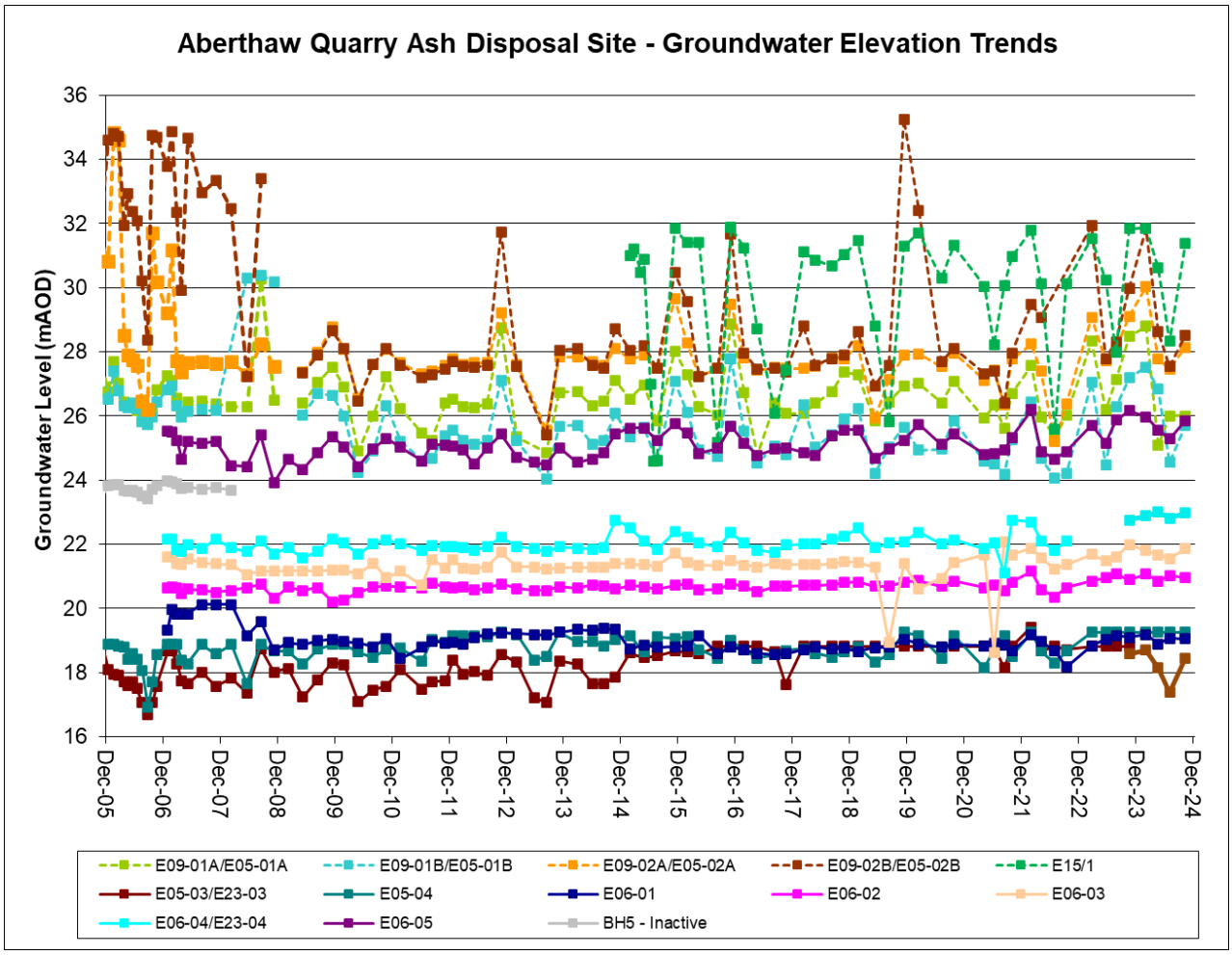
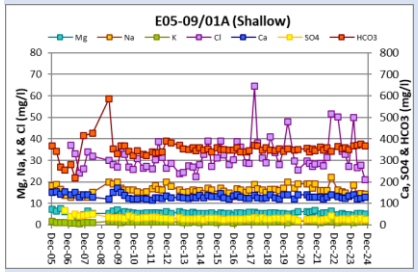


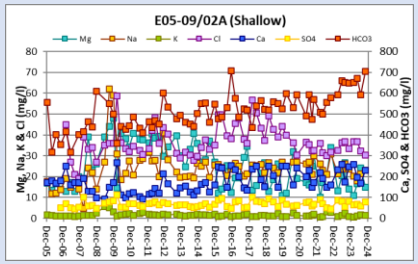
Figure 2 shows the general groundwater quality for the major ions in each of the site's boreholes. Natural groundwater quality varies between upgradient and downgradient locations. Calcium is depleted in some of the downgradient boreholes and correlates with elevated sodium, suggesting ion exchange reactions are occurring along the groundwater flow path. Whilst in other downgradient boreholes major ion chemistry is distinctly different with elevation of calcium, magnesium and sulphate, suggesting a natural geological or quarry-related source in or upgradient of this area.

Figure 2: General Groundwater Quality Charts

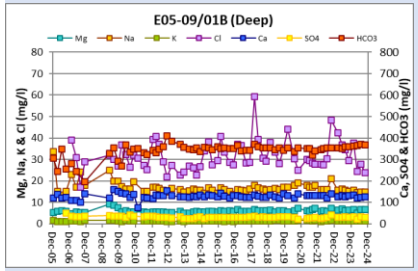
Upgradient Boreholes



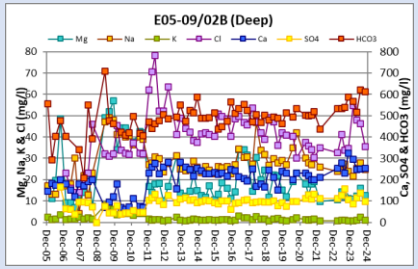
All analytes low and concentrations remain relatively steady.



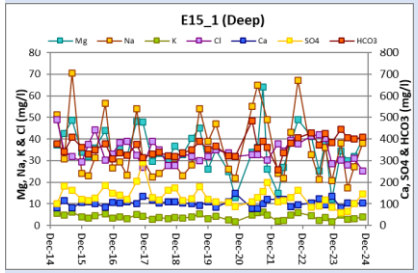
All analytes low but fluctuating with the exception of Bicarbonate which is on an upwards trend.



All analytes low and concentrations remain relatively steady.

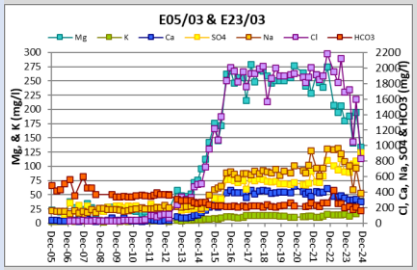


All analytes low but fluctuating.

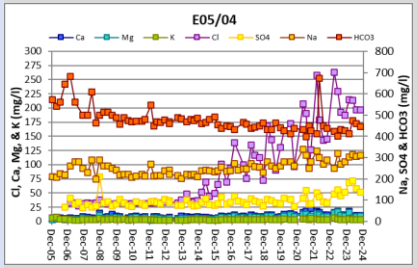


All analytes low but fluctuating.

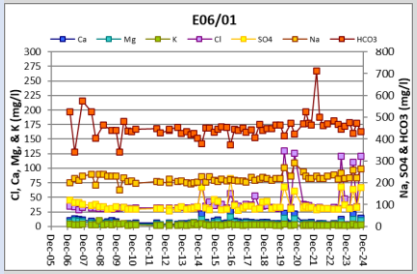
Downgradient Boreholes Phase 1/2



All analytes relatively steady since mid-2015. Continued drop in Mg & Cl during 2024.

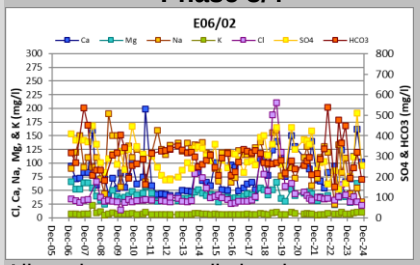


All analytes relatively steady, although Cl showing a gradual upwards trend since 2013.

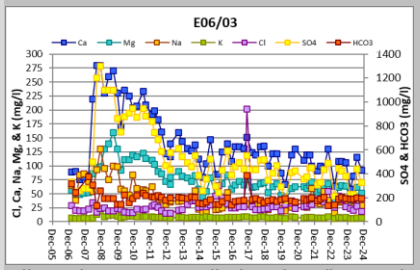


All analytes realtively steady.

Downgradient Boreholes Phase 3/4

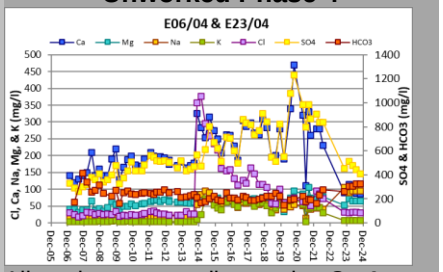


All analytes generally low but fluctuating.

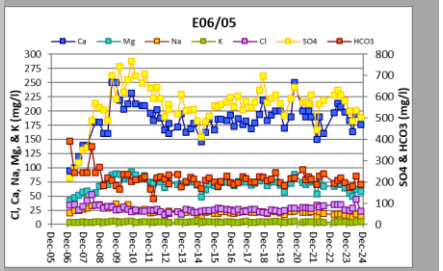


All analytes generally low but fluctuating.

Downgradient Boreholes Unworked Phase 4



All analytes generally steady. Ca & SO_4 have remained at their reduced levels since 2023.



All analytes generally steady.

Figure 3 shows the groundwater control charts with concentrations of the downgradient boreholes plotted as well as the average upgradient concentration (representing concentrations in boreholes E09-01A, E09-01B, E09-02A, E09-02B and E15/1, i.e. background groundwater quality). It should be noted that the compliance limits apply to boreholes E05-03/E23-03, E05-04 and E06-01 whilst the control levels (where defined) apply to all downgradient boreholes. An exceedance is defined as a result above the compliance limit or control level for 3 consecutive sampling events. Quarry Phase average trends are also included for information within Figure 3.

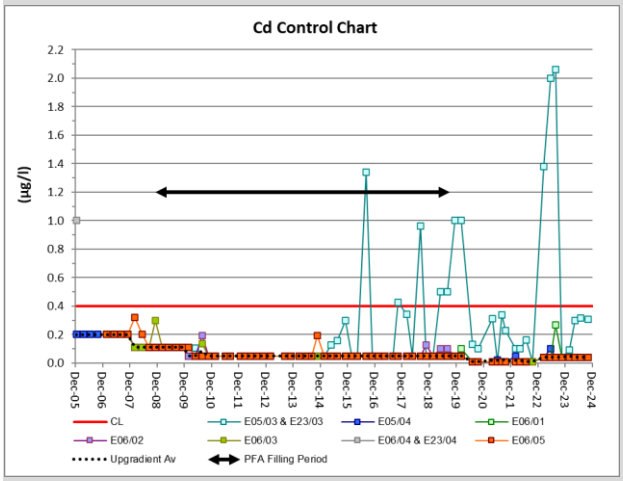
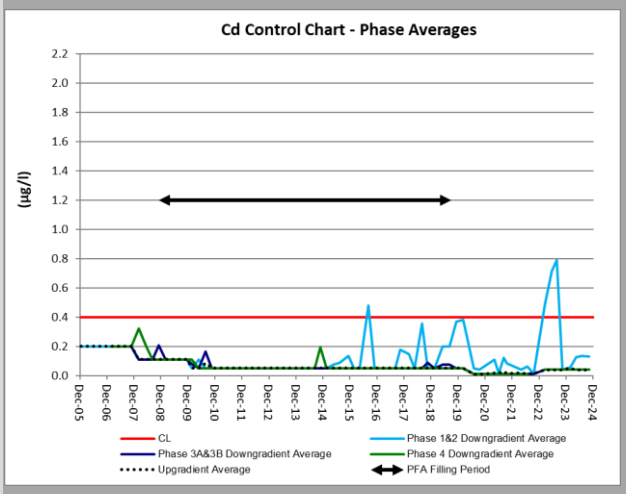
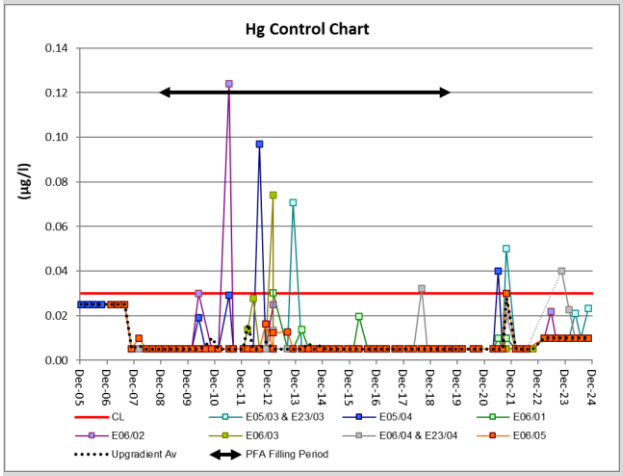
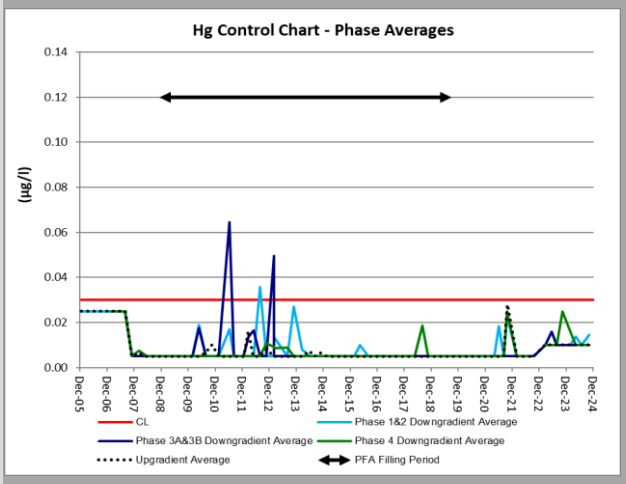
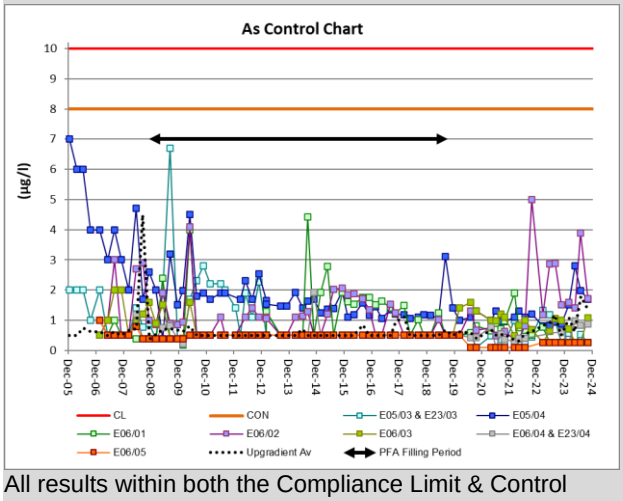
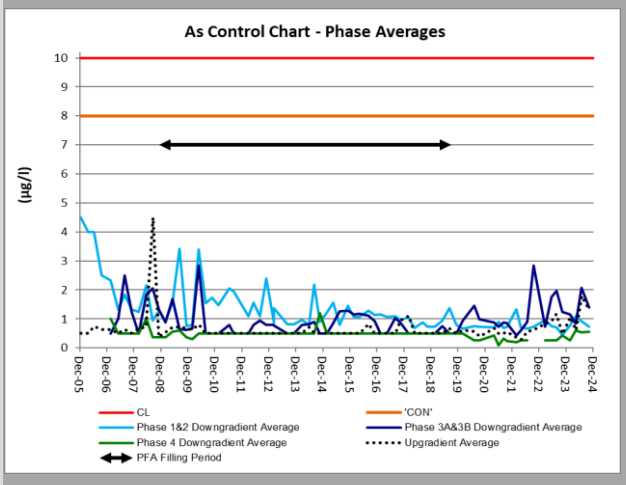
It should be noted that to prevent distorting trends the dataset has continued to be managed in line with that previously set out within the 2021 Annual Report. All values reported by the accredited laboratory as less than the limit of detection (<LOD) have been substituted with values of half the reported LOD value applicable at the time of analysis.

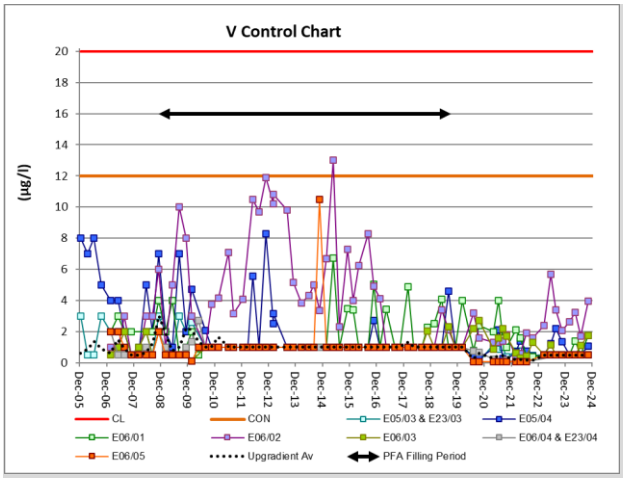
In 2024 the following should be noted:

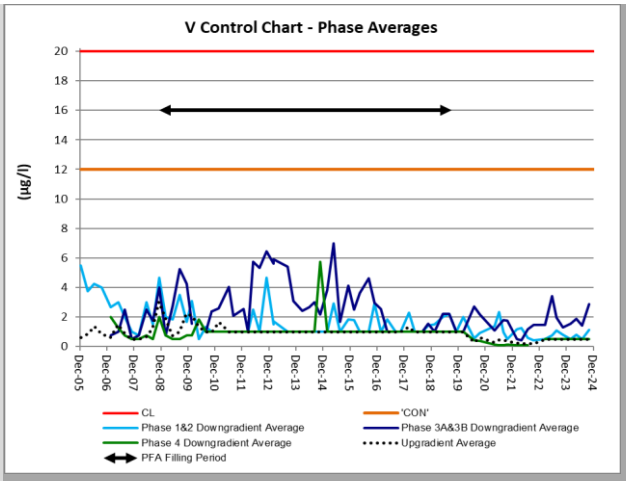
- There was a continued exceedance of the compliance limit and control level for Sulphate at borehole E23-03. Boreholes E06-02 and E06-02 also recorded elevated results above the control limit in Quarter 3. As with previous years the boreholes downgradient of the undeveloped phase 4 area have also consistently record elevated sodium levels.
- There was a continued exceedance of the compliance limit and control level for Molybdenum at borehole E23-03. Borehole E05-04 also recorded all four rounds above the control limit. E06-01 was below both limits for Q1 and Q3, but exceeded the control limit in the other two samples.

Figure 3: Control charts & Phase Averages for Down-gradient Groundwater boreholes

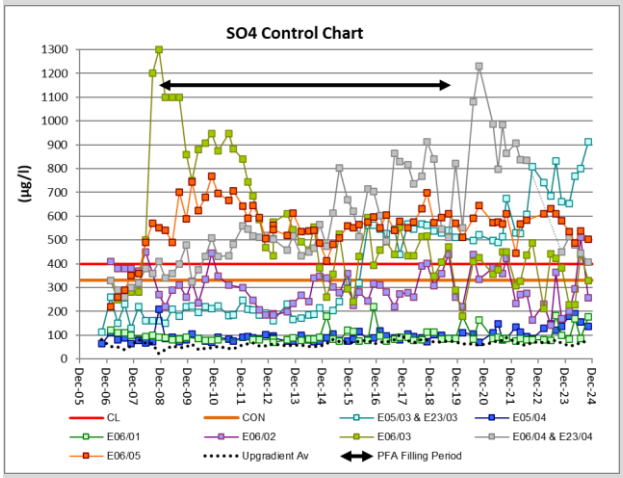
(CL – Compliance Limit, CON – Control Level)

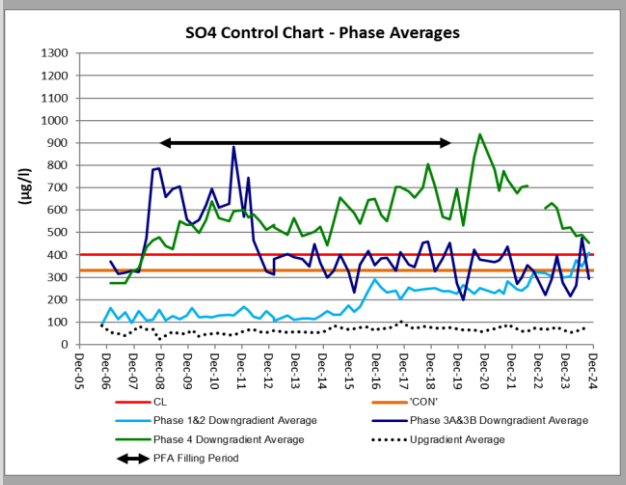
Down-gradient Boreholes against Up-gradient Average	*Down-gradient Site Phase averages*
	
All results within the Compliance Limit over the last year.	
	
All results within the Compliance Limit over the last year.	
	
All results within both the Compliance Limit & Control Level over the last year.	



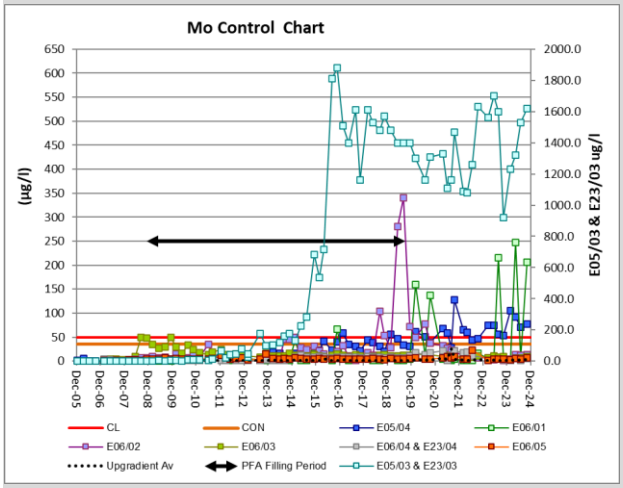


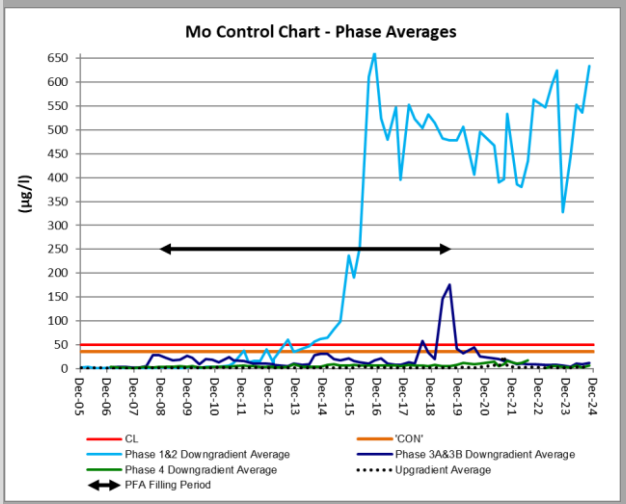
All results within both the Compliance Limit & Control Level over the last year.



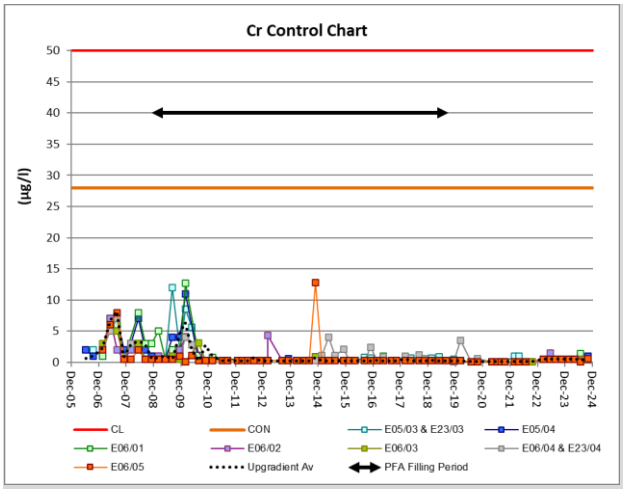


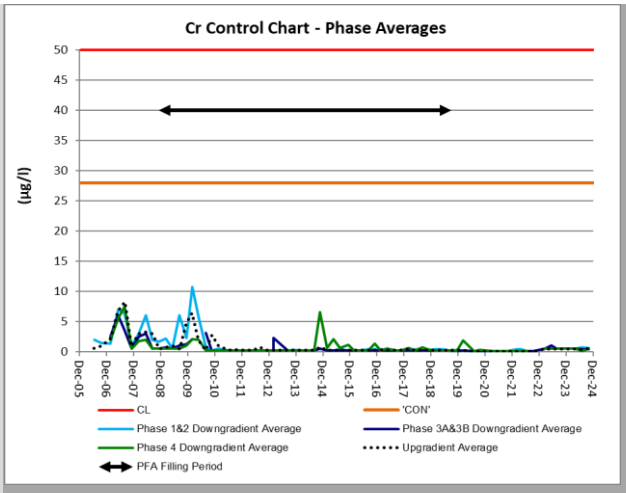
All trends generally steady, although E23-03 remains consistently above the Compliance Limit. E23-04 and E06-05 also remained above the CL and E06-01 & E06-02 also recorded single results above the CL in July 2024.



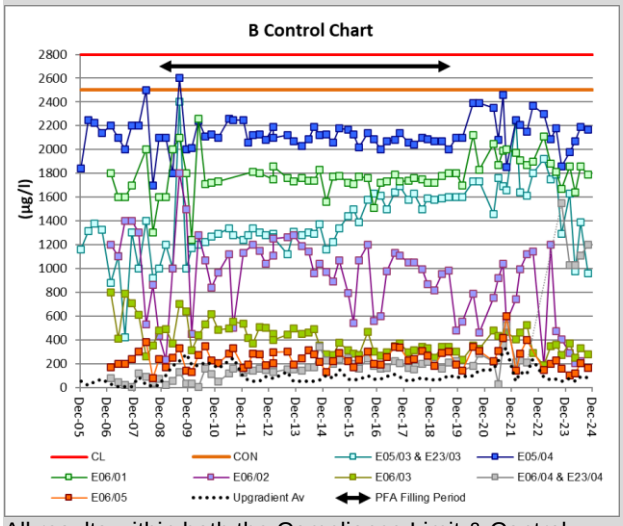


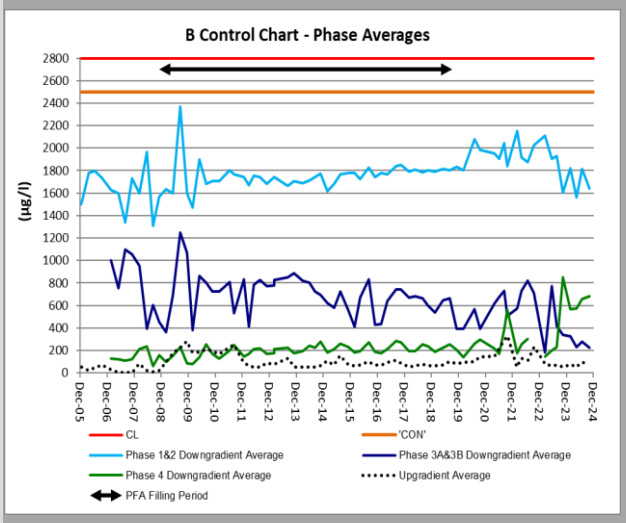
As discussed further in Section 2.2 below, E23-03 (& historically E05-03) have remained consistently over the Compliance Limit. E05-04 has also recorded results above the Control Level for all four samples. Other locations remain consistently low with the exception of E06-01 which recorded two elevated results.



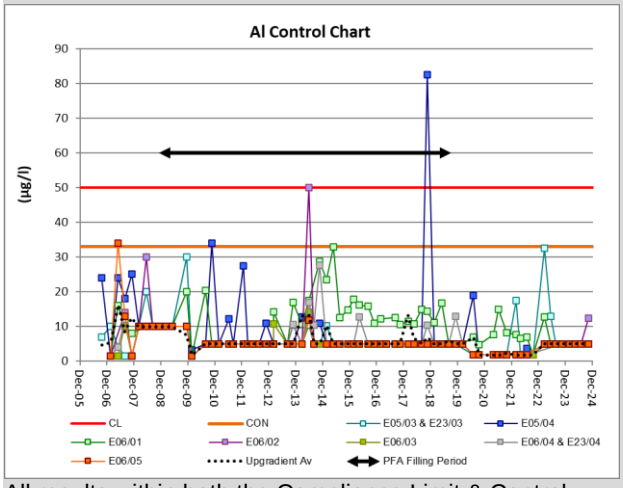


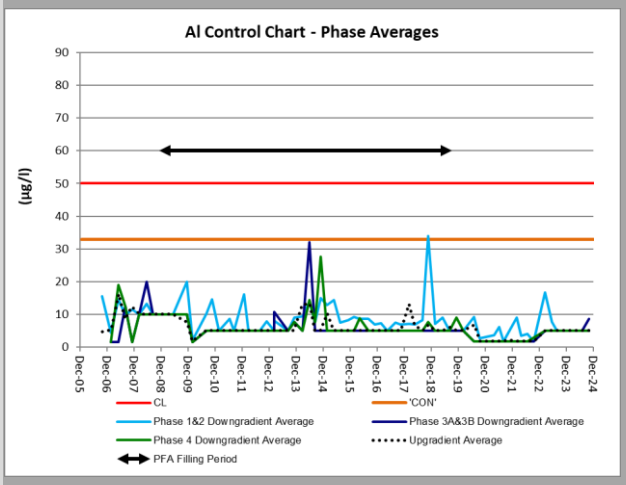
All results within both the Compliance Limit & Control Level over the last year.



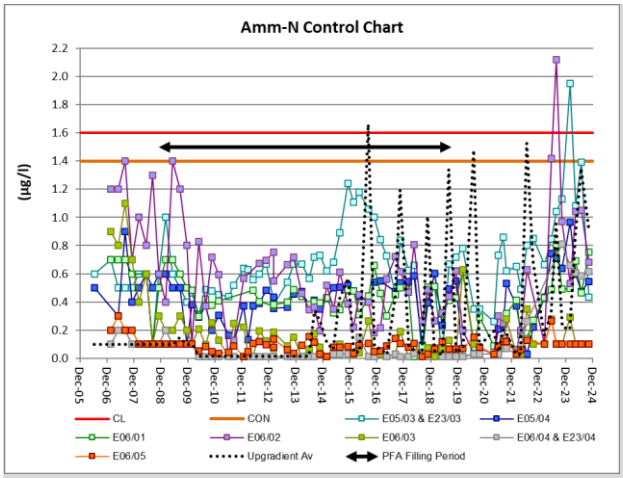


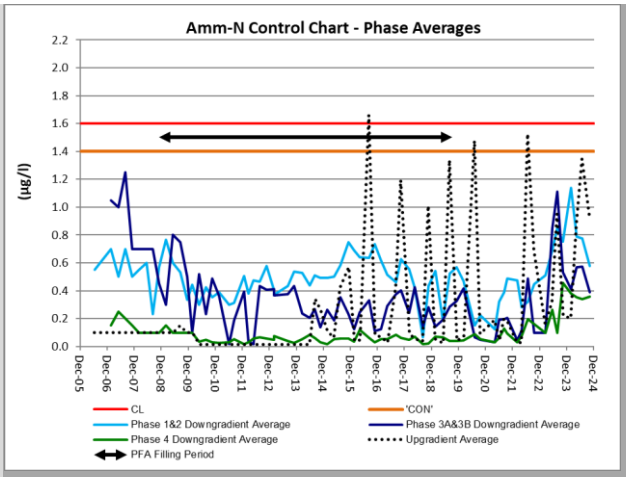
All results within both the Compliance Limit & Control Level over the last year.





All results within both the Compliance Limit & Control Level over the last year.

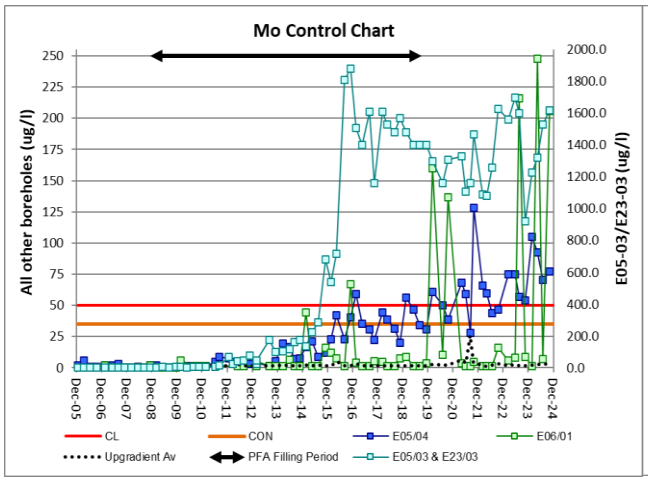


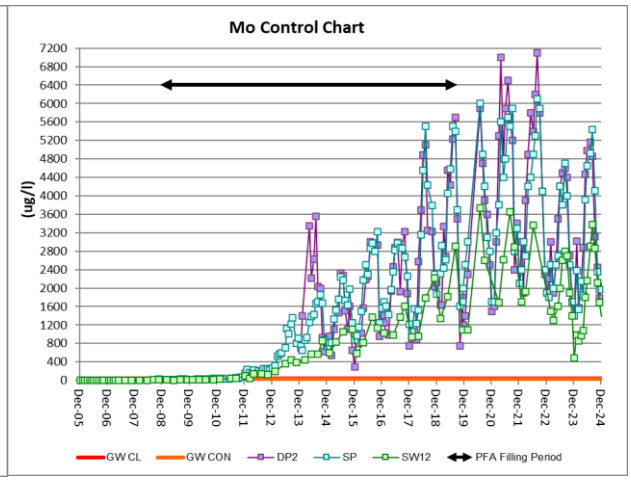


All results within the Compliance Limit & Control Level over the last year with the exception of E23-03 which recorded a single elevated result in Q1.

Figure 4 shows the control chart for molybdenum for E05-03/E23-03 and the two other boreholes located closest to it, E05-04 and E06-01, as well as the surface water monitoring points for the Quarry site (n/b there are no surface water compliance limits or control levels for molybdenum). The boreholes are located to the west of and adjacent to Phase 1 and are downgradient of the PFA fill. Natural background concentrations of molybdenum in the Porthkerry Formation are <3µg/l and the average pre-filling concentration for the cement works lagoon (SW12) is around 4µg/l.

Figure 4: Molybdenum concentrations





Molybdenum concentrations in E05-03 initially increased from around January 2012, about a year after Phase 1 was completed. Upon data review it appeared there was a co-association of increasing concentrations in other indicative PFA leachate parameters; boron, sulphate and ammoniacal-nitrogen, suggesting PFA was the source of contamination. During site investigations in 2014, three possible sources were identified; discharges from the wheel wash pipe into an unlined ditch close to the borehole; surface water discharges of eroded PFA areas around the wheel wash pipe into the unlined ditch; and/or; leakage from adjacent cement works lagoon. In 2015, the wheel wash discharge pipe was re-routed into Settlement Pond 1, the unlined ditch cleaned out and the eroded areas smoothed.

Despite the improvements, molybdenum concentrations continued to increase from the site, the biggest step change occurring from 2015 onwards when Phase 3 was being actively filled. Boron, Ammoniacal Nitrogen and Sulphate have remained relatively consistent across the boreholes and stable within borehole E05-03 (where boron remains consistently below the Compliance Limit). Borehole E05-03 was replaced in 2023 with E23-03 after the last HRA review raised concerns that E05-03 may not be representative.

In borehole E05-04, molybdenum concentrations were approximately double the natural background concentrations until March 2014. Since then concentrations have slowly increased up to a peak of 128µg/l in October 2021. Prior to 2015, the molybdenum concentrations in E06-01 consistently reflected the natural background concentrations, but since February 2015, results have been sporadically above this.

As in E05-03/E23-03, molybdenum concentrations in the settlement ponds (SP) have been generally increasing since January 2012, however, since 2013, concentrations have been characterised by large amplitude seasonal fluctuations, with the highest concentrations in the summer and the lowest in the winter. This seasonal fluctuation is also reflected in DP2 which collects surface water and potentially under-drainage flows from the site. The water from the settlement ponds is discharged periodically into the cement works lagoon (SW12) where molybdenum concentrations have also been rising steadily since January 2012. The close proximity of SW12 to E05-03/E23-03 and E05-04 is noted.

A summary of the average groundwater quality for all monitoring parameters between 2006 and 2024 is provided in Appendix B with a comparison of pre- and post-fill concentrations. The key trends in the data have been discussed above, however, it can be summarised that there is some elevation of a few key identified parameters potentially due to surface water contact with PFA surfaces.

The external contractor reported that the duplicate samples collected during 2024 showed good repeatability and were within the expected laboratory error levels.

2.3. Surface Water Quality Review

Monitoring Objective

To carry out routine monitoring of surface water to;

- monitor the performance of the ash disposal site by measurement of absolute levels/concentrations and trends relative to relevant criteria including background concentrations and control levels; and;
- identify and quantify effects on surface water receptors.

Number and Location of Monitoring Points

A summary of the surface water monitoring points is provided in Table 3 below and the locations are shown in Appendix A. As detailed in a letter to NRW dated 13th June 2014 a new surface water monitoring point, DP2, was added to monitor the composition of water from the under-drainage. Routine monitoring of DP2 began in May 2014.

A proportion of the upstream and underlying groundwater will be collected by the site under-drainage layer and directed towards the two settlement ponds along with any water that, however unlikely, may have infiltrated through the PFA and the barrier/attenuation layer. Surface water from runoff is also directed into the two settlement ponds via a series of perimeter ditches and toe drains. The settlement ponds are constructed on the quarry floor, contained by concrete and butyl lined 3m high bunds, and are designed to allow suspended solids to settle out before the water is discharged through penstocks into the nearby cement works lagoon (SW12).

In 2024 efforts were made to try and understand the wider surface water discharge route from SW12 (Tarmac Lagoon) into the River Kenson/Thaw. The SW12 lagoon discharges directly into Tarmac's Leat via an underground pipeline from where they either utilise the water for their processes or discharge it directly into the River Kenson via discharge weir W1 (Tarmac Permit BL3986ID). Following discussions with Tarmac, RWE now have permission to access their site on a quarterly basis to obtain a sample from W1 for analysis. Samples have therefore only available from this location since Q2 2024.

RWE have also reviewed our own historic dataset for the River Thaw sample location S3 associated with the Aberthaw Ash Mound Permit (previously monitored and reported by RWE under DP3432SW until the end of 2022 when the power station site was sold and the associated permits transferred). S3 is upstream of the Ash Mound deposit, but located downstream of the confluence of the River Thaw & Kenson. Following discussions with the new site owners CCR limited data was provided for this location, however RWE now have permission to access the site to undertake our own quarterly sampling from the S3 sample location. RWE samples recommenced at this location in Q4 2024.

For information both the 'Tarmac W1' and 'River Thaw S3' data have now been added, as far as possible, to the surface water analysis tables and graphs.

Table 3: Summary of Surface water monitoring points

Monitoring Point	Description	Direction from site	Designation
DP2	Surface water and groundwater drainage channel at base of Phase 1 and 2	West (within site)	Surface water sample from within the site.
Settlement Ponds (SP)	Final discharge from two concrete ponds collecting groundwater and surface water from the site.	South-west	Actual surface water discharge from the permitted area.
SW12	East shore of cement works lagoon in NW area	West	Surface water Receptor (outside permit boundary & RWE's control)
# W1 Discharge Weir (Tarmac Permit BL3986ID)	River Kenson Leat/Pond within Tarmac's control (receives water from SW12 pond)	North-west	Surface water discharge sample from Tarmac's leat.
# S3 River Thaw (CCR Permit DP3432SW)	River sample downstream of the confluence with the River Kenson.	West	River Water sample from outside of the site

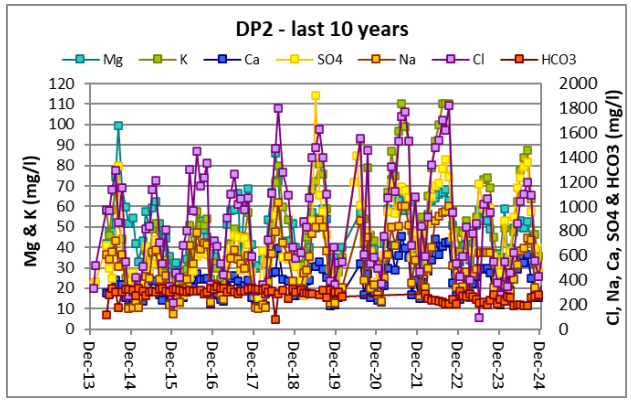
 # Additional wider samples (external to site) for information.

Monitoring Measurements

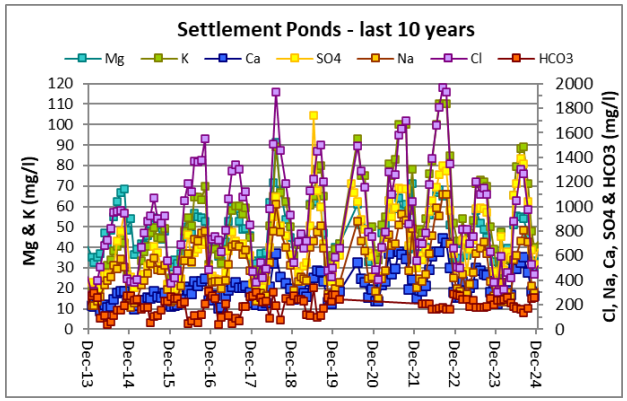
The surface water monitoring analytical suite contains a range of parameters which are reported in accordance with the Environmental Permit - a quarterly basis for SW12 and a monthly basis for the SP and DP2. Surface water samples are taken by trained in-house operatives and an independent external UKAS accredited laboratory is contracted for the analysis of the samples.

Figure 5 shows the general surface water quality for the major ions. Calcium, magnesium and sulphate concentrations appear naturally elevated in the cement works lagoon and the settlement ponds (i.e. prior to any PFA deposition). Concentrations appear to be seasonably variable in the settlement ponds and the cement works lagoon with highs in July to December and lows in February to June except for HCO_3 with lows in July to December and highs in February to June. When routine monitoring began in DP2 in May 2014 this seasonal concentration pattern was also evident.

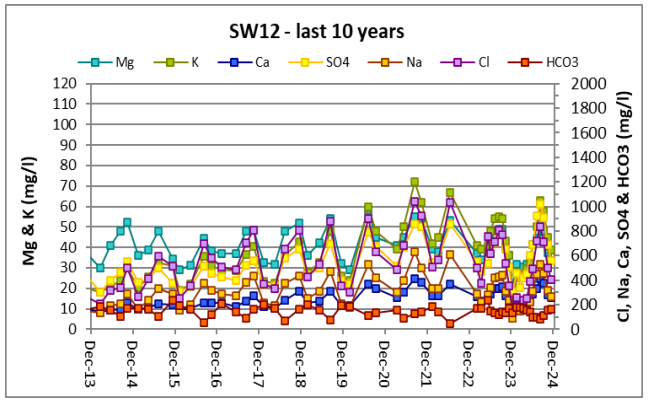
Figure 5: General Surface Water Quality Charts



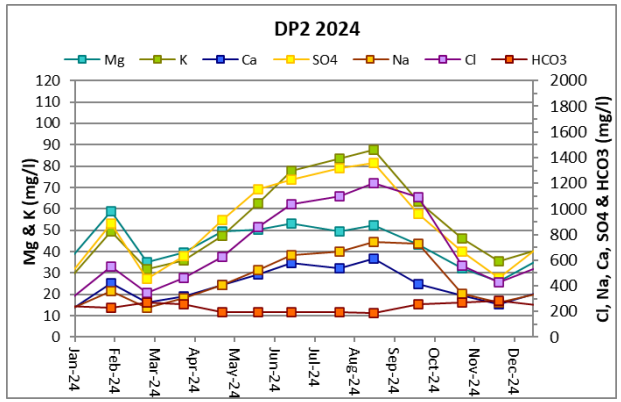
Fluctuations in SO4, Na & Cl with high concentrations in summer and low concentrations in winter.

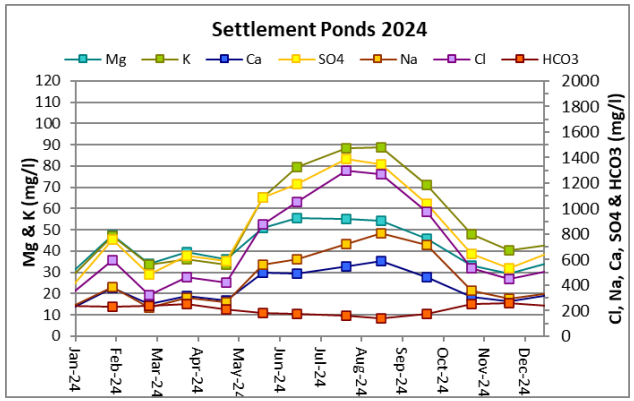


From 2013 fluctuations in Mg, K, Ca, SO4, Na & Cl with high concentrations in summer and low concentrations in winter.



From 2013 fluctuations in Mg, K, SO4, Na & Cl with high concentrations in summer and low concentrations in winter.





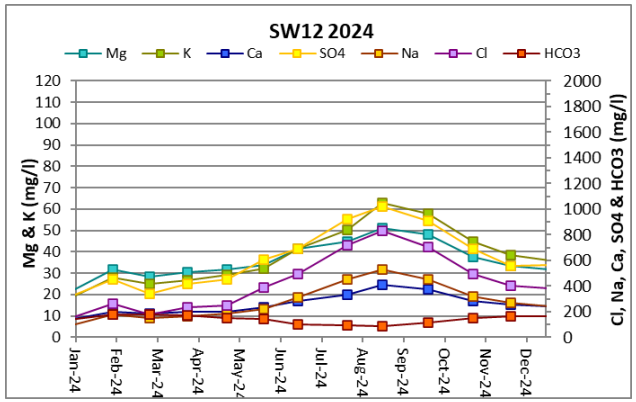


Figure 6 shows the surface water control charts. It should be noted that the compliance limits apply to the discharge from the settlement ponds whilst the control levels (where defined) apply to both the discharge from the settlement ponds and SW12. An exceedance is defined as a result above the compliance limit or control level for 3 consecutive sampling events.

In 2024, there were no exceedances of the compliance limit or control level for any critical parameter, with the exception of:

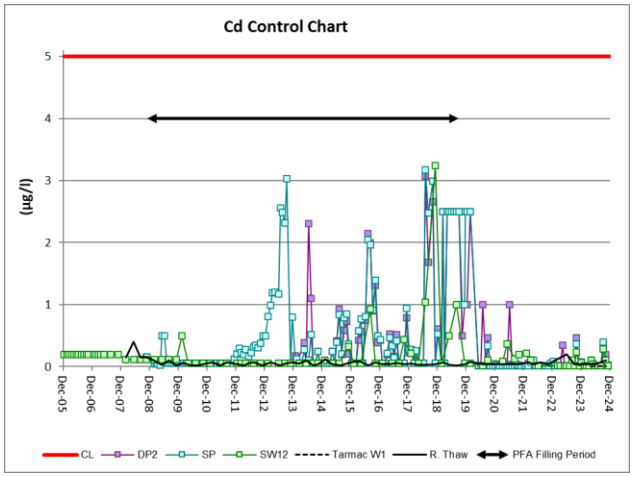
- Boron – All three locations recorded multiple results above the Control Level, however in terms of the Compliance Limit three results were recorded above this for DP2 and four for the SP location. All were in the summer period and the peak is consistent with previous years. All three Tarmac W1 samples returned results well below the compliance limit.
- Sulphate – The majority of the analysis results during 2024 for all three site surface water locations (DP2, SP & SW12) were recorded above the Compliance Limit of 400mg/l. The three Tarmac W1 samples were also elevated.
- Ammonia – is also consistently above the Compliance Level for both the Settlement Ponds and DP2, although sufficient oxidation or stripping appears to take place by the time the discharge passes to the cement works lagoon (SW12) as concentrations are lower, generally within target limits and not increasing. Ammonia was injected into the Power Station flue gas stream to increase the efficiency of the Electrostatic Precipitators. This will have resulted in the deposited PFA being slightly ammoniated. This may be the source of the elevated Ammonia levels observed at DP2 and SP. All three Tarmac W1 samples were below the analysis lower limit of detection.

In general, Figure 6 shows that there are no increasing trends in critical parameter concentrations except for sulphate, boron and ammoniated nitrogen. As well as returning the site to agricultural end use, a key purpose of the restoration/reprofiling site works is to potentially improve the surface water run-off from the site, limiting the erosion of ash surfaces and the associated mobilisation of parameters of concern. Concentrations of key contaminants in surface water should begin to drop, and the associated compliance borehole trends should also improve if they are, as suspected, being impacted by SW12.

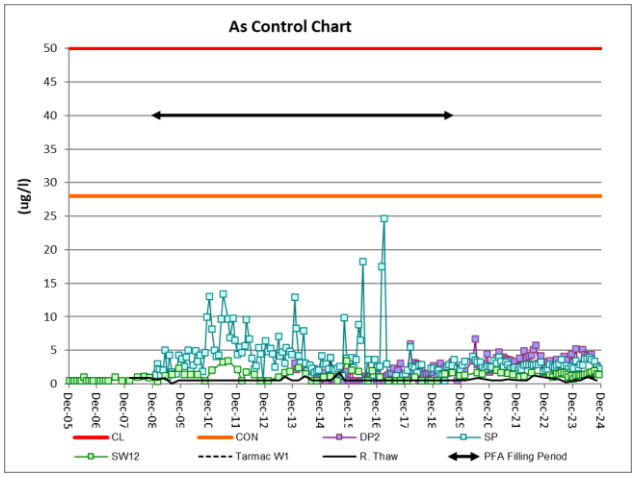
A summary of the average surface water quality between 2006 and 2024 is provided in Appendix B with a comparison of pre- and post-fill concentrations. The key trends in the data have been discussed above, however, it can be summarised that there may be some low-level contamination from surface water contact with PFA.

Figure 6: Surface Water Control Charts

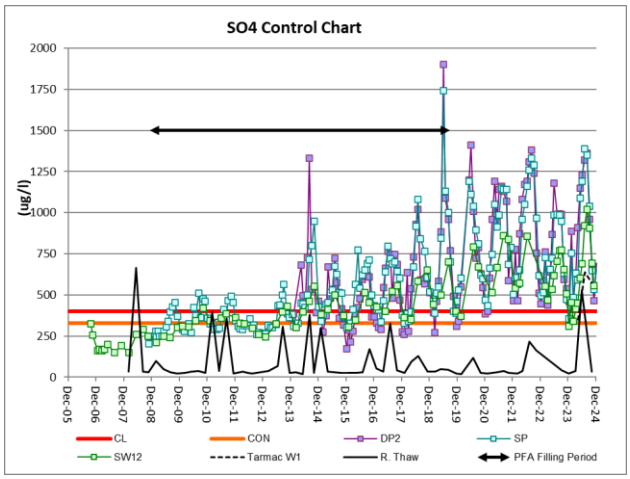
(CL – Compliance Limit, CON – Control Level)



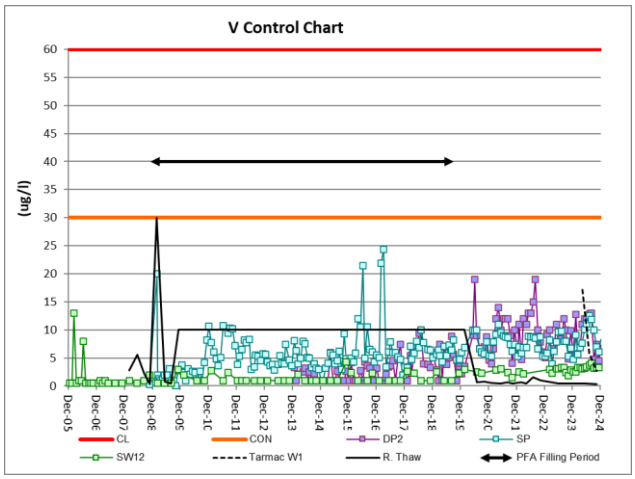
All results within the Compliance Limit during 2024.



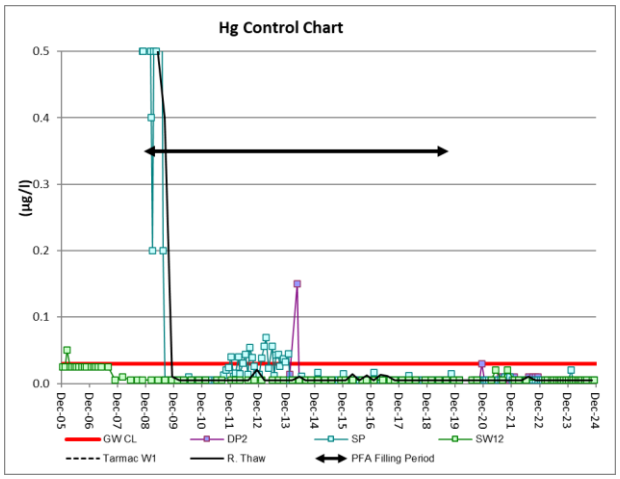
All results within both the Compliance Limit & Control Level during 2024.



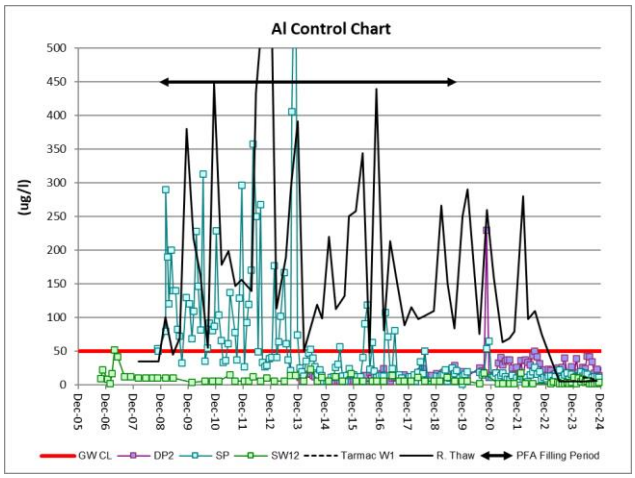
Elevated (seasonal) trends continue across all three site locations consistently exceeding both target limits during 2024. The Tarmac W1 discharge is also elevated.



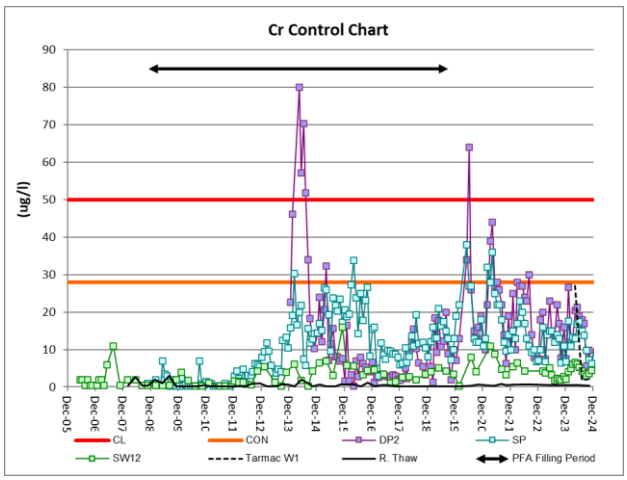
All results within both the Compliance Limit & Control Level during 2024.



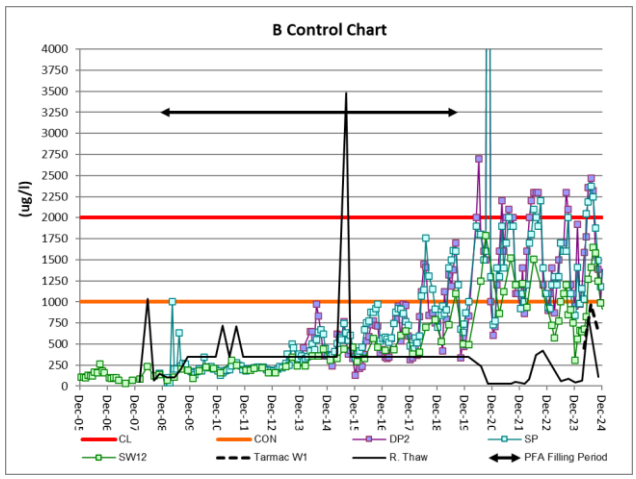
All results within the Groundwater Compliance Limit (applied for comparison) during 2024.



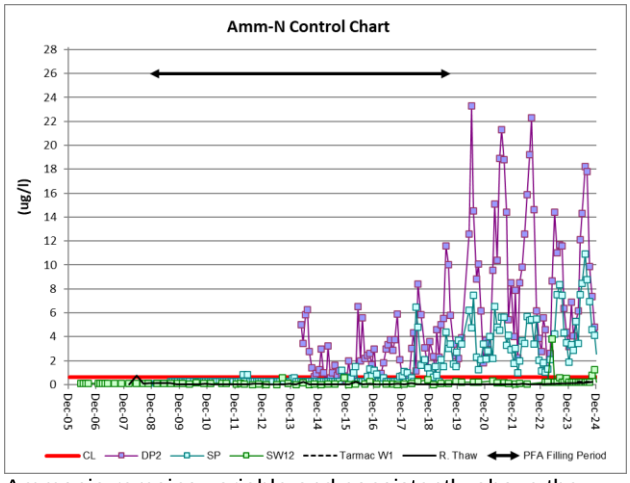
All results within Groundwater Compliance Limit (applied for comparison) during 2024 (n/b SP above scale Nov-13 peak = 736 ug/l). Historic R.Thaw S3 sample is highly variable.



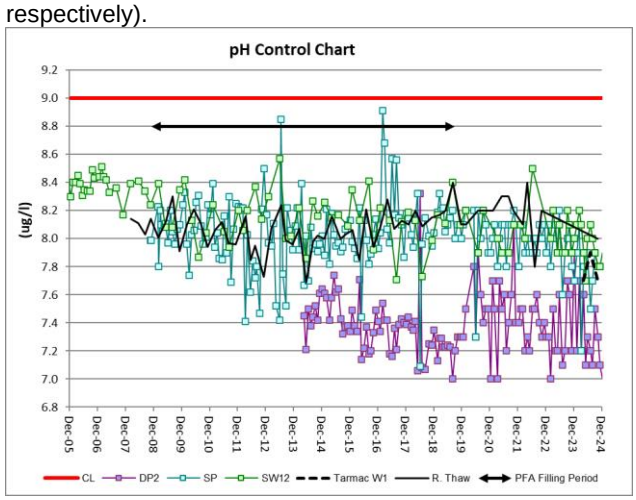
All results within both the Compliance Limit and Control Level during 2024.



SP Boron level was above the Control Limit four times during 2024. DP2 & SW12 have both increased slightly compared with 2023. (n/b DP2 & SP Nov-2020 peaks above scale = 13,000 & 10,000 ug/l respectively).



Ammonia remains variable and consistently above the Compliance Level within both the DP2 and the SP locations. SW12 remains within target with the exception of two results towards the end of the year.



pH levels have remained generally consistent across all three site surface water locations.

3. Annual Production/Treatment Data

Table 5: Annual Production/Treatment Data(Table S5.2 EP)

Parameter	Value	Unit
Surface water disposed off site	0	m^3/yr
Groundwater disposed off site	0	m^3/yr

4. Contamination/Decontamination of Site

There have been no incidents or emissions which may have caused any site contamination during 2024.

5. Topographical Survey

The last site topographical survey was undertaken during 2020 to support the revised restoration profiles for the site. The 2020 topography of the site can be seen in Appendix C, and a separate file of the plan (due to the level of detail involved) was also attached to the previous 2023 annual report. The 2020 levels were also confirmed in 2023 by RPS.

The site will undergo further topographical surveys as part of the site reprofiling and restoration works ensuring that the final landform meets the approved plan as well as establishing the new baseline for the site in terms of future slope stability assurance.

6. Landfill Capacity

Table 6 below details the amount of PFA deposited at Aberthaw Quarry Ash Disposal Site during 2024 as reported to Natural Resources Wales via the Waste Return Form. With the closure of Aberthaw Power Station the site will no longer be utilised for the disposal of PFA.

Table 6: PFA Deposited

Reporting Period	PFA Deposited (tonnes)
1st January – 31st December 2024	Nil

7. Waste Acceptance Compliance Testing

Aberthaw Quarry Ash Disposal Site is a mono-landfill site which was under the direct operational control of Aberthaw Power Station. All PFA was transported directly from the Power Station to the Quarry using lorries.

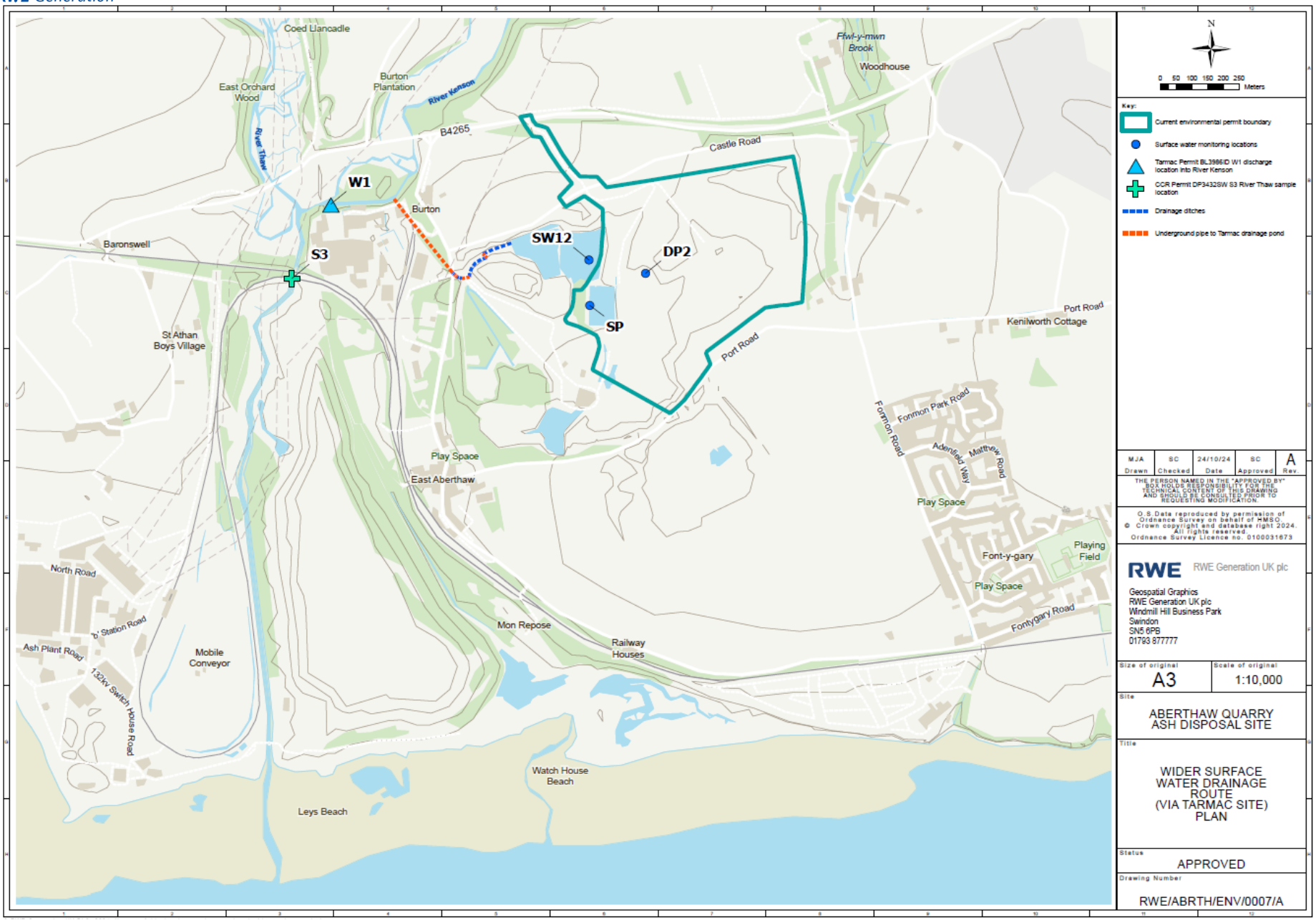
The exact composition of PFA was dependent upon the composition of the fuel utilised by Aberthaw Power Station. RWE has well established procedures which control the quality of fuel supplied to its stations.

Table 7 summarises the analytical data obtained for historic leachate tests performed on composite samples of conditioned PFA from Aberthaw Power Station between 2012 and 2017. The CEN two-stage method for leachate analysis was used (BS EN 12457-3:2002 Characterisation of waste – Leaching – Compliance test for leaching of granular waste materials and sludges Part 3).

Table 7: Summary of 10:1 Leachate Calculated Results (mg/kg)

Period	Jan-17	Apr-12 to Jan-17			
Analyte:	Latest Result	Minimum	Mean	Maximum	Number of results
Aluminium as Al (Dissolved)	8.1	2.4	21.9	75.4	15
Ammoniacal Nitrogen as N	156.6	4.2	83.5	158.1	15
Antimony as Sb (Dissolved)	0.192	0.020	0.163	0.256	15
Arsenic as As (Dissolved)	2.449	0.077	1.907	3.313	15
Barium as Ba (Dissolved)	1.4	0.1	2.5	5.9	15
Boron as B (Dissolved)	12.1	0.7	12.8	17.7	15
Bromide as Br	36.3	0.6	71.5	293.5	15
Cadmium as Cd (Dissolved)	0.0010	0.0004	0.002	0.0056	15
Chromium as Cr (Dissolved)	0.19	0.01	0.3	1.03	15
Copper as Cu (Dissolved)	0.010	0.004	0.015	0.028	15
Cyanide (Total) as CN	0.5	0.2	0.3	0.5	15
Dissolved Organic Carbon	25.5	2.2	22.6	43.3	15
Fluoride as F	21.7	2.3	23.5	45.1	15
Iron as Fe (Dissolved)	1.16	0.52	1.03	1.52	15
Lead as Pb (Dissolved)	0.043	0.013	0.034	0.083	15
Manganese as Mn (Dissolved)	0.025	0.006	0.066	0.174	15
Mercury as Hg (Dissolved)	0.0019	0.0004	0.0057	0.0132	15
Molybdenum as Mo (Dissolved)	8.1	0.7	9.4	17.8	15
Nickel as Ni (Dissolved)	0.040	0.003	0.028	0.062	15
Nitrate as N	4.6	2.3	3.1	4.6	15
Selenium as Se (Dissolved)	2.8	0.2	2.1	3.5	15
Sodium as Na (Dissolved)	327	9	821	2696	15
Total Dissolved Solids	6787	350	8888	21800	15
Total Nitrogen as N	162.7	5.0	92.1	166.0	15
Total Sulphur as SO4 (Dissolved)	3745	170	3422	4271	15
Vanadium as V (Dissolved)	3.59	0.40	2.39	3.59	15
Zinc as Zn (Dissolved)	0.17	0.01	0.14	0.57	15

Appendix A Groundwater and Surface Water Monitoring Locations


Coed Llancadle
East Orchard Wood
Burton Plantation
River Kenson
River Thaw
B4265
Ffwl-y-mwn Brook
Woodhouse
Castle Road
W1
Burton
Baronswell
S3
SW12
DP2
SP
Port Road
Kenilworth Cottage
St Athan Boys Village
Play Space
East Aberthaw
Fonmon Park Road
Fonmon Road
Adenfield Way
Matthew Road
Play Space
Font-y-gary
Playing Field
Play Space
Fontygary Road
North Road
'b' Station Road
Ash Plant Road
132kV Switch House Road
Mobile Conveyor
Mon Repose
Railway Houses
Watch House Beach
Leys Beach
N
0 50 100 150 200 250
Meters
Key:
Current environmental permit boundary
Surface water monitoring locations
Tarmac Permit BL3986/D W1 discharge location into River Kenson
CCR Permit DP3432SW S3 River Thaw sample location
Drainage ditches
Underground pipe to Tarmac drainage pond
MJA Drawn
SC Checked
24/10/24 Date
SC Approved
A Rev.
THE PERSON NAMED IN THE "APPROVED BY" BOX HOLDS RESPONSIBILITY FOR THE TECHNICAL CONTENT OF THIS DRAWING AND SHOULD BE CONSULTED PRIOR TO REQUESTING MODIFICATION.
O.S. Data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2024. All rights reserved. Ordnance Survey Licence no. 0100031673
RWE
RWE Generation UK plc
Geospatial Graphics
RWE Generation UK plc
Windmill Hill Business Park
Swindon
SN5 6PB
01793 877777
Size of original
A3
Scale of original
1:10,000
Site
ABERTHAW QUARRY ASH DISPOSAL SITE
Title
WIDER SURFACE WATER DRAINAGE ROUTE (VIA TARMAC SITE) PLAN
Status
APPROVED
Drawing Number
RWE/ABRTH/ENV/0007/A

Appendix B. Groundwater and Surface Water Quality 2006-2024

	Aquifer	Response Zone Interval m b GL	Al µg/l	Sb µg/l	As µg/l	B µg/l	Cd µg/l	Ca mg/l	Cr µg/l	Cu µg/l	Fe µg/l	Mg mg/l	Mn µg/l
Background - Limestone [2]			5.8	0.9	0.7	100	0.07	152	0.9	2.6	55	17.2	28.4
Background - Seawater [3]			256	<10	2	4166	0.07		1.1	12	<100		<20
GW EQS/DWL			200	5	10	2000	5.0	250	50	2000	1000	50	50
GW MRV					1		1.0						
Groundwater CL			50		10	2800	0.4		50				
Surface Water CL					50	2000	5.0		50				
Upgradient Groundwater			Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average
E05-09_01A	Limestone	18-24	5.5	0.8	0.4	54.0	0.06	132.1	0.8	2.0	21	5	5
E05-09_01B	Limestone	24-30	6.3	0.7	0.4	52.5	0.06	128.2	0.7	1.3	24	6	4
E05-09_02A	Limestone	21-27	5.4	1.0	0.8	93.6	0.07	175.0	0.8	4.0	146	25	43
E05-09_02B	Limestone	27-33	5.3	1.0	0.7	135.9	0.07	201.9	1.2	4.5	46	21	23
E15_1	Limestone	17-29	4.8	0.6	1.1	217.7	0.04	104.8	0.3	1.4	38	35	108
Downgradient Utilised Areas			Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill
E05_03 / E23_03	Limestone	3-15	8.0 / 6.1	2.1 / 0.8	1.2 / 0.9	1109 / 1454	0.18 / 0.26	37 / 235	2.8 / 0.8	6.5 / 1.5	38 / 65	24 / 148	11 / 47
E05_04	Limestone	2.5-20	15.3 / 7.8	3.9 / 1.0	4.1 / 1.5	2123 / 2132	0.18 / 0.05	6 / 10	3.7 / 0.6	4.5 / 0.9	42 / 18	4 / 7	6 / 5
E06_01	Limestone	3-15	9.3 / 10.7	2.9 / 0.8	0.6 / 1.0	1667 / 1796	0.17 / 0.05	10 / 7	4.3 / 0.7	0.8 / 1.0	53 / 15	7 / 5	1 / 9
E06_02	Limestone	2-10	11.2 / 5.7	4.1 / 0.8	1.6 / 1.2	1113 / 877	0.16 / 0.05	89 / 80	2.4 / 0.5	4.8 / 1.2	89 / 35	56 / 40	18 / 11
Downgradient Phase 4 (unfilled)			Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill
E06_03	Limestone	2-10	6.5 / 5.0	2.0 / 1.2	1.2 / 0.7	561 / 392	0.16 / 0.05	131 / 140	2.9 / 0.3	1.8 / 1.4	77 / 17	62 / 76	10 / 10
E06_04 / E23_04	Limestone	2-10	7.0 / 5.9	1.8 / 0.7	0.7 / 0.5	57 / 255	0.16 / 0.05	147 / 218	2.9 / 0.6	5.1 / 2.5	59 / 20	42 / 64	5 / 26
E06_05	Limestone	2-8	11.4 / 4.9	3.1 / 0.6	0.6 / 0.4	224 / 244	0.20 / 0.05	129 / 189	2.8 / 0.5	1.5 / 1.6	41 / 22	52 / 72	6 / 11
Downstream Surface Water			Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill	Prefill / Postfill
DP2 Phase 2 West			/ 18.8	/ 0.7	/ 2.4	/ 1143	/ 0.43	/ 371	/ 15.3	/ 2.8	/ 14	/ 47	/ 42
Settlement Ponds			120.8 / 49.3	0.7 / 0.8	2.2 / 3.8	256 / 872	0.14 / 0.45	83 / 281	1.7 / 12.0	2.0 / 2.6	20 / 31	30 / 44	3 / 13
SW12 (Lafarge Lagoon)			15.7 / 6.1	2.1 / 0.6	0.7 / 1.4	124 / 653	0.18 / 0.17	86 / 220	1.8 / 3.7	1.4 / 2.5	33 / 16	24 / 39	2 / 8
BL3986ID W1 (Tarmac) #1			/ 9.2	/ 7.1	/ 0.9	/ 690	/ 0.01	/ 227	/ 10.4	/ 2.0	/ 14	/ 32	/ 4
DP3432SW S3 R. Thaw #2			/ 177.6	/ 3.8	/ 0.6	/ 363	/ 0.05	/ 122	/ 0.5	/ 1.6	/ 268	/ 57	/ 25

1 Response zone interval for latest well where time series data are compiled from the original and replacement monitor well

2 Background - Limestone is mean of upstream boreholes (E05-09/1A,E05-09/1B, E05-09/2A, E05-09/2B)

3 Background - Seawater is mean of Aberthaw Power Station CW Inlet data collected 2011-12

Over Compliance Limit

Above DWS / EQS

Above Background by >25% (GW)

Compliance Location

#1 Off site sample taken from Tarmac W1 Outlet (from 2024 only)

#2 Off site sample. RWE analysis history of DP3432SW S3 location. 2023 onwards permit transferred to CCR

	Aquifer	Response Zone Interval m b GL	Hg µg/l		Mo µg/l		Ni µg/l		K mg/l		Se µg/l		Na mg/l		V µg/l		pH		EC µS/cm		Bicarbonate mg/l		Sulphate mg/l	
Background - Limestone [2]			0.008		2.2		2.7		1.9		0.8		23		0.9		7.4		831		416		64	
Background - Seawater [3]			0.024		<30		9		380		<1				<20		7.9				97		2396	
GW EQS/DWL			0.070		70		20		12		10		200		60				2500				400	
GW MRV			0.100																					
Groundwater CL			0.030		50										20								400	
Surface Water CL															60		9.00						400	
Upgradient Groundwater			**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**	
E05-09_01A	Limestone	18-24	0.008		1.4		1.4		1.3		0.6		16		0.8		7.4		669		352		31	
E05-09_01B	Limestone	24-30	0.009		1.7		1.1		1.3		0.7		17		0.8		7.4		660		341		31	
E05-09_02A	Limestone	21-27	0.008		1.7		3.6		1.6		0.9		24		0.9		7.2		952		511		68	
E05-09_02B	Limestone	27-33	0.008		1.9		5.0		1.9		0.9		28		1.1		7.2		1079		488		92	
E15_1	Limestone	17-29	0.007		6.7		1.4		4.0		0.6		36		0.8		7.6		812		364		133	
Downgradient Utilised Areas			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
E05_03 / E23_03	Limestone	3-15	0.018	0.008	1.1	788	2.2	1.8	3.5	9.5	0.9	0.5	149	469	1.5	1.0	8.5	7.6	977	3948	462	269	178	409
E05_04	Limestone	2.5-20	0.018	0.008	1.8	31.4	2.3	0.7	3.7	3.1	1.3	0.8	241	254	4.2	1.6	8.8	8.5	1010	1101	564	461	79	101
E06_01	Limestone	3-15	0.015	0.007	0.8	21.9	0.8	0.7	3.2	2.8	1.0	0.6	215	220	2.2	1.7	8.7	8.6	923	913	473	450	106	98
E06_02	Limestone	2-10	0.014	0.008	2.9	28.4	4.3	1.5	9.9	7.2	1.6	0.7	109	107	1.7	4.1	8.4	7.8	1214	1028	336	288	390	291
Downgradient Phase 4 (unfilled)			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
E06_03	Limestone	2-10	0.014	0.007	10.9	14.7	4.9	2.4	7.3	8.0	4.9	1.4	70	41	1.1	1.0	8.2	7.8	1224	1171	276	189	443	537
E06_04 / E23_04	Limestone	2-10	0.014	0.007	2.5	6.7	4.2	4.2	3.7	28.2	2.3	0.6	17	44	0.8	0.9	8.0	7.6	930	1473	290	228	320	612
E06_05	Limestone	2-8	0.014	0.006	2.0	5.7	3.8	1.9	4.0	4.5	1.4	0.5	27	22	1.0	0.9	8.1	7.6	1063	1240	289	207	363	580
Downstream Surface Water			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
DP2 Phase 2 West				0.007		2822		13.4		50.0		22.6		499		5.7		7.4		3958		280		682
Settlement Ponds			0.392	0.010	19.8	2054	8.5	9.5	7.4	40.2	7.4	15.9	43	392	2.9	6.4	8.1	8.0	864	3125	144	182	292	592
SW12 (Lafarge Lagoon)			0.020	0.005	4.0	1312	2.2	4.4	6.1	31.8	1.5	8.4	26	256	1.4	2.1	8.4	8.1	710	2307	161	147	214	503
BL3986ID W1 (Tarmac) #1				0.005		1125		3.2		37.6		13.2		201		8.5		7.8		1947		160		520
DP3432SW S3 R. Thaw #2				0.006		25		0.8		17.4		0.5		395		7.4		8.1		2452		329		87

1 Response zone interval for latest well where time series data are compiled from the original and replacement monitor well

2 Background - Limestone is mean of upstream boreholes (E05-09/1A,E05-09/1B, E05-09/2A, E05-09/2B)

3 Background - Seawater is mean of Aberthaw Power Station CW Inlet data collected 2011-12

Over Compliance Limit

Above DWS / EQS

Above Background by >25% (GW)

Compliance Location

#1 Off site sample taken from Tarmac W1 Outlet (from 2024 only)

#2 Off site sample. RWE analysis history of DP3432SW S3 location. 2023 onwards permit transferred to CCR

	Aquifer	Response Zone Interval	Ammoniacal Nitrogen as N		Total Oxidised Nitrogen as N		Nitrate		Chloride		Fluoride		Total Organic Carbon		Cr VI	
		m b GL	mg/l		mg/l		mg/l		mg/l		mg/l		mg/l		µg/l	
Background - Limestone [2]			0.27		10.2		11.7		35		0.2		4.1		5.3	
Background - Seawater [3]									16300		1.3					
GW EQS/DWL			0.5				50		250		1.5				3.4	
GW MRV																
Groundwater CL			1.6													
Surface Water CL			0.6													
Upgradient Groundwater			**Average**		**Average**		**Average**		**Average**		**Average**		**Average**		**Average**	
E05-09_01A	Limestone	18-24	0.04		5.3		8.5		32		0.1		3.1		5.1	
E05-09_01B		24-30	0.04		4.8		5.7		32		0.1		2.6		5.3	
E05-09_02A		21-27	0.65		11.6		13.5		37		0.2		4.8		5.2	
E05-09_02B		27-33	0.41		25.4		27.3		41		0.2		6.0		6.4	
E15_1		17-29	0.31		2.0		1.8		34		0.3		2.3		5.2	
Downgradient Utilised Areas			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
E05_03 / E23_03	Limestone	3-15	0.51	0.68	0.2	0.7	0.3	0.8	33	1088	1.4	1.2	15.9	2.5		5.2
E05_04		2.5-20	0.53	0.40	0.3	0.3	0.8	0.2	31	97	6.4	5.3	18.6	2.8		5.2
E06_01		3-15	0.57	0.41	0.5	0.4	0.2	0.5	33	42	2.1	2.9	19.2	2.2		5.1
E06_02		2-10	1.09	0.52	0.8	0.6	0.6	0.6	38	46	0.6	0.5	4.3	3.4		5.1
Downgradient Phase 4 (unfilled)			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
E06_03	Limestone	2-10	0.66	0.12	2.3	0.7	1.6	0.2	23	30	0.4	0.4	3.8	2.4		5.0
E06_04 / E23_04		2-10	0.13	0.09	0.2	1.0	0.5	0.7	26	84	0.3	0.4	11.3	3.1		3.8
E06_05		2-8	0.17	0.09	0.4	0.2	3.3	0.2	37	26	0.3	0.4	8.3	1.3		5.5
Downstream Surface Water			**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**	**Prefill**	**Postfill**
DP2 Phase 2 West				5.80		28.9		19.9		865		0.2		1.6		12.3
Settlement Ponds			0.13	1.79	1.7	18.7	0.6	12.8	35	687	0.6	0.2	2.0	3.1		9.3
SW12 (Lafarge Lagoon)			0.10	0.22	1.2	7.7	5.0	6.6	40	432	0.3	0.3	6.1	3.7		2.9
BL3986ID W1 (Tarmac) #1				0.21		6.2		6.2		315		0.3		3.1		8.5
DP3432SW S3 R. Thaw #2				0.04		3.5		3.6		629		0.5		3.0		1.5

1 Response zone interval for latest well where time series data are compiled from the original and replacement monitor well

2 Background - Limestone is mean of upstream boreholes (E05-09/1A,E05-09/1B, E05-09/2A, E05-09/2B)

3 Background - Seawater is mean of Aberthaw Power Station CW Inlet data collected 2011-12

Over Compliance Limit

Above DWS / EQS

Above Background by >25% (GW)

Compliance Location

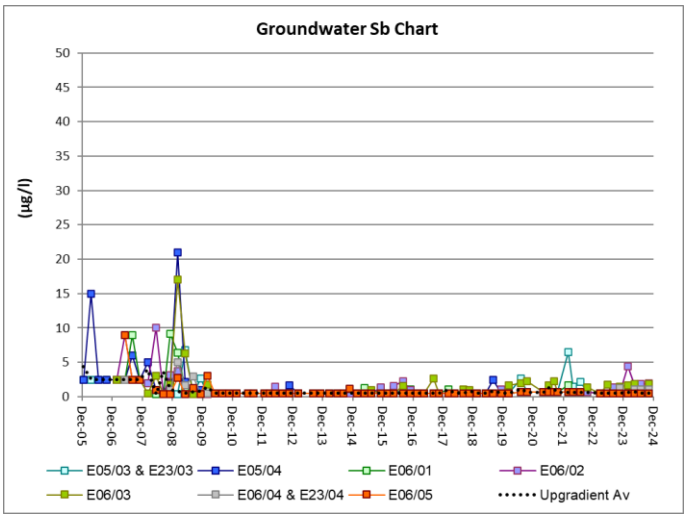
#1 Off site sample taken from Tarmac W1 Outlet (from 2024 only)

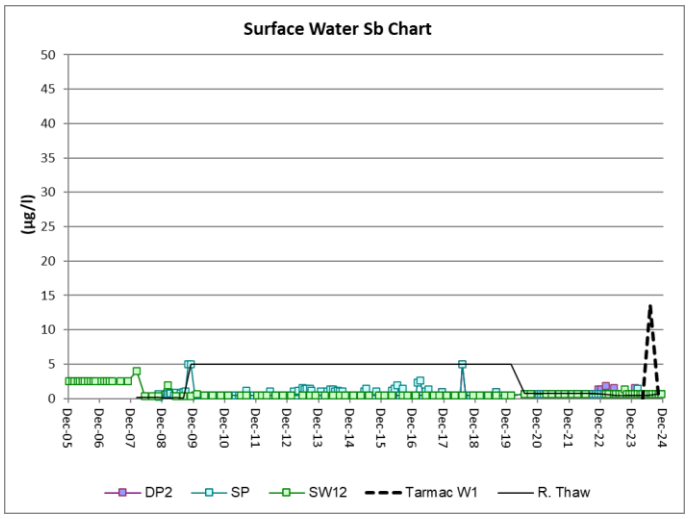
#2 Off site sample. RWE analysis history of DP3432SW S3 location. 2023 onwards permit transferred to CCR

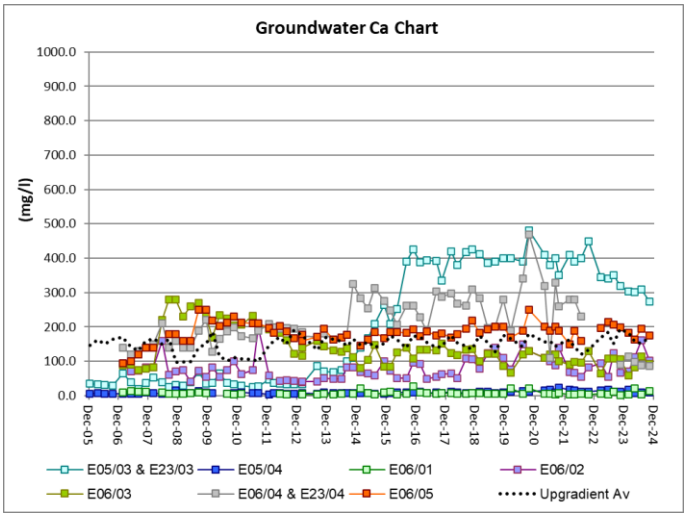
Appendix C. Topographical Survey

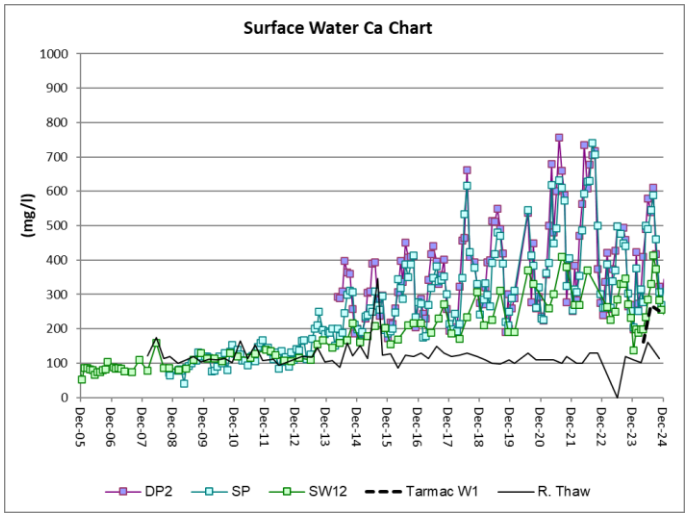
(Due to the size/detail of the topographical plan it was also provided separately with the previous 2023 Annual Report).

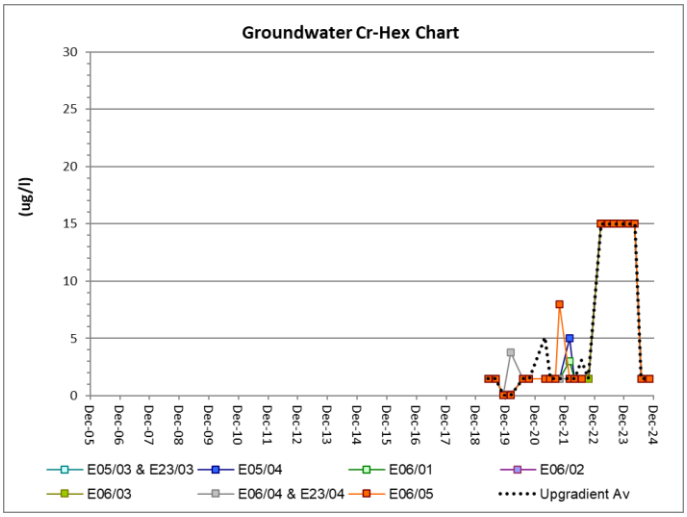
Appendix D. Other monitored parameters

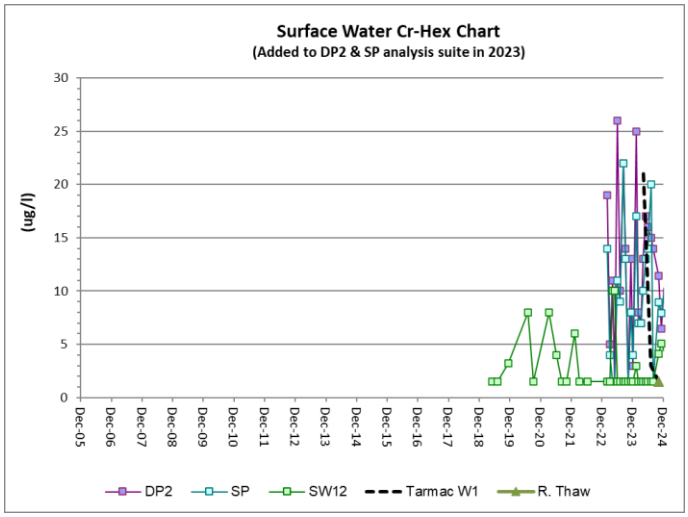


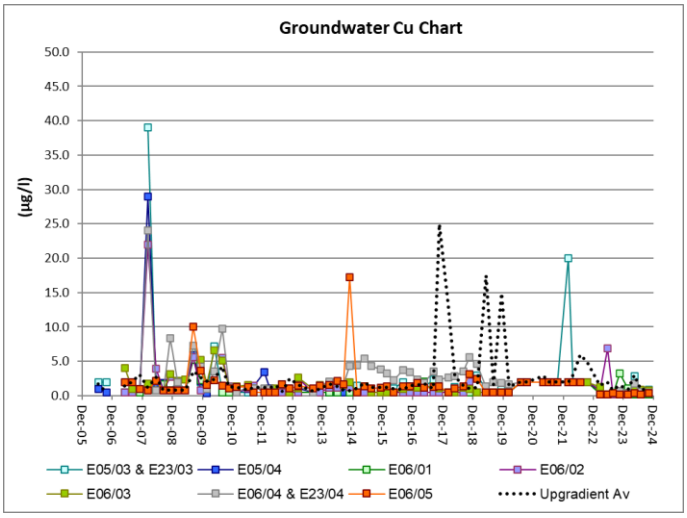


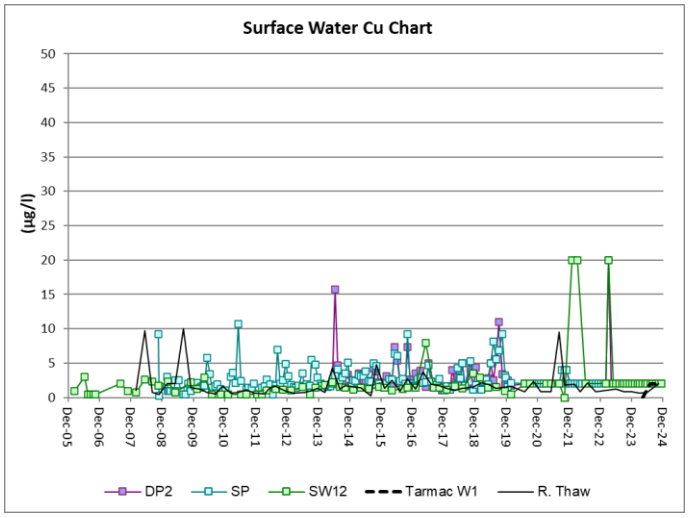


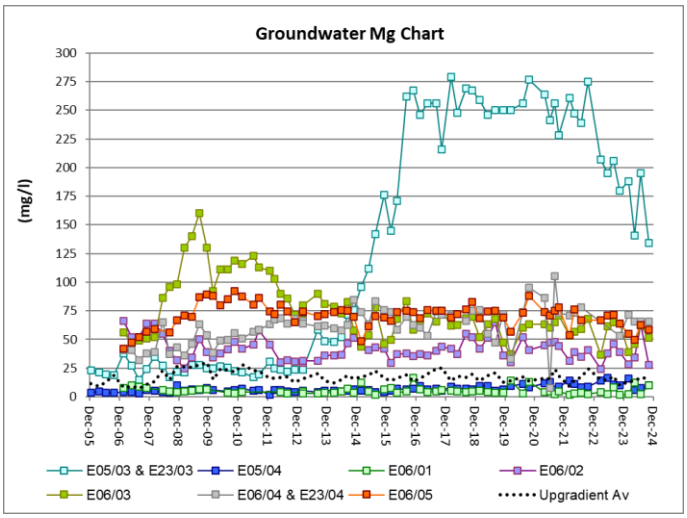


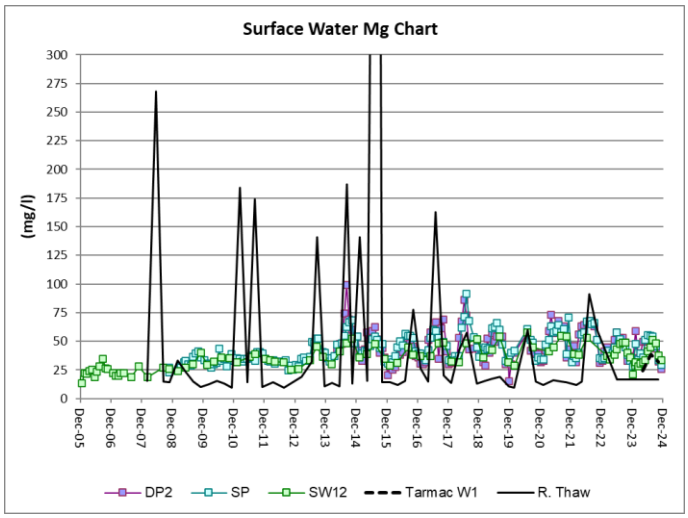


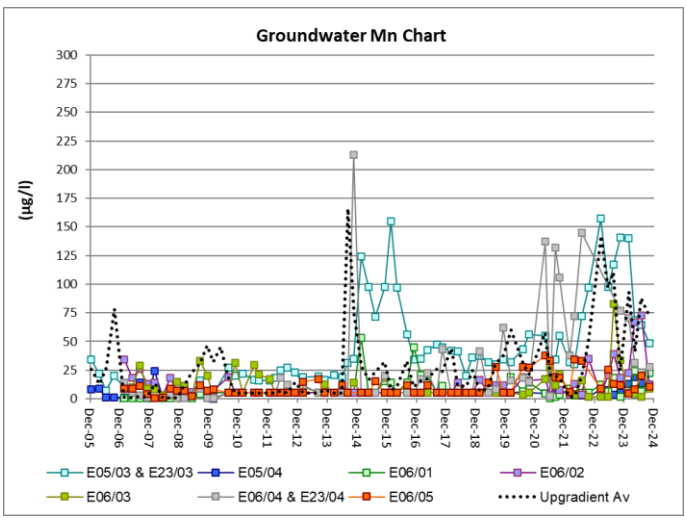


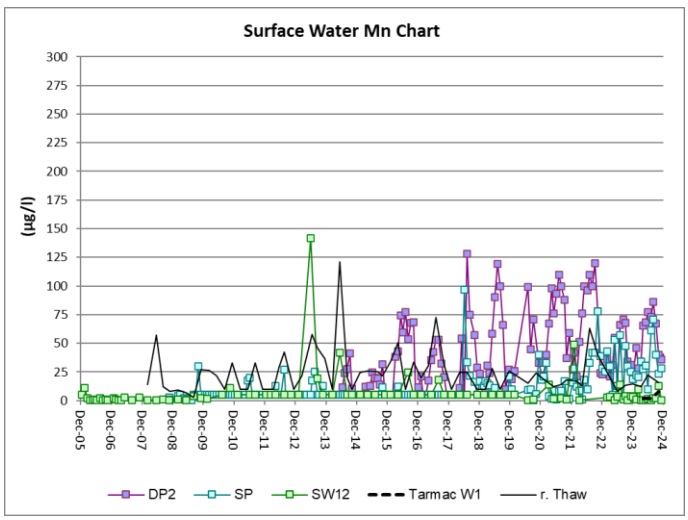

Groundwater Cu Chart
(µg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

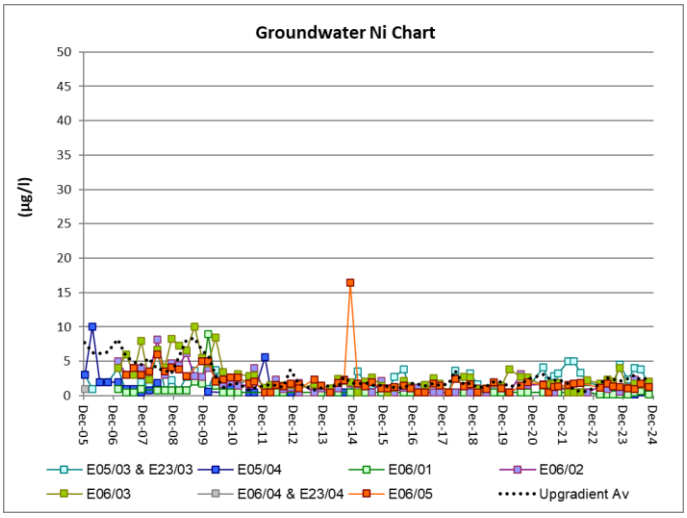

Surface Water Cu Chart
(µg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

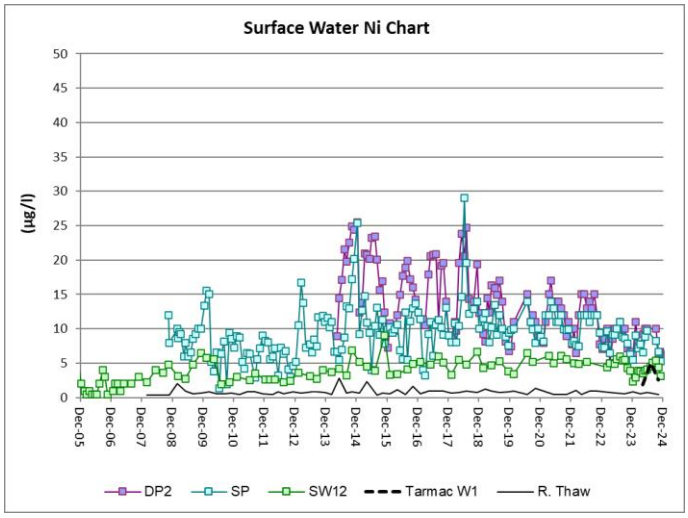

Groundwater Mg Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

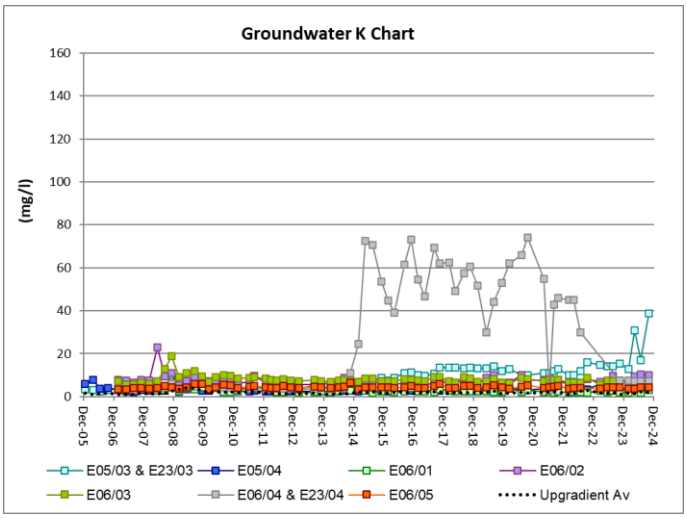

Surface Water Mg Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

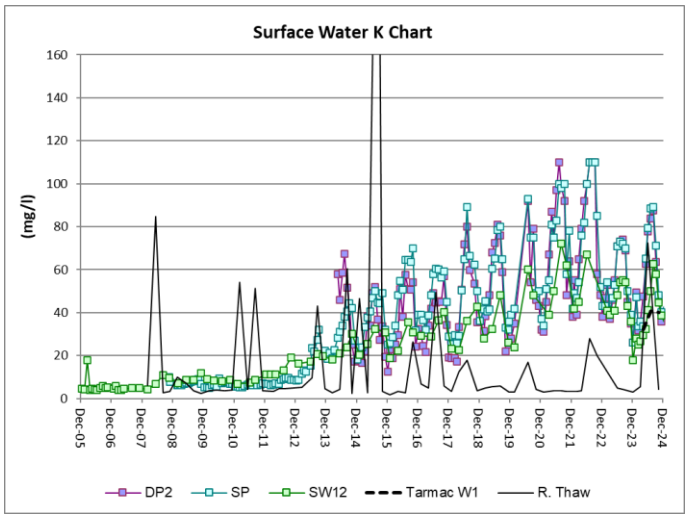

Groundwater Mn Chart
(µg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

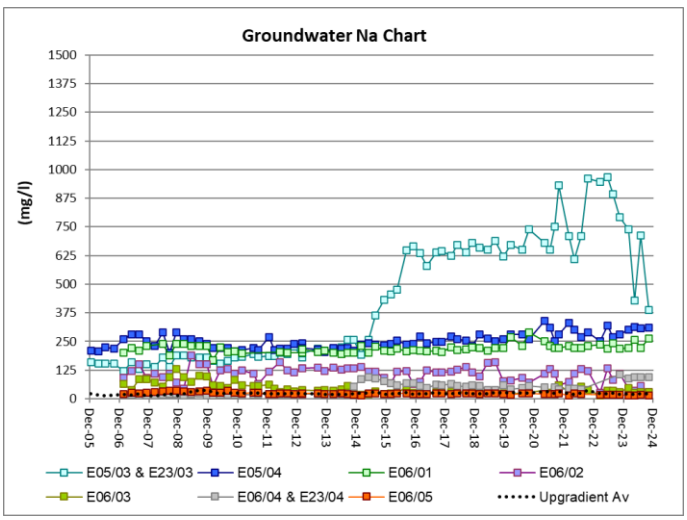

Surface Water Mn Chart
(µg/l)
DP2
SP
SW12
Tarmac W1
r. Thaw

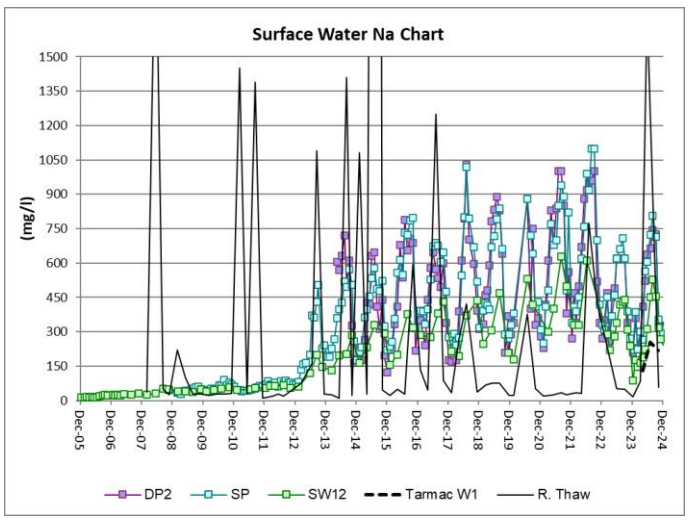

Groundwater Ni Chart
(µg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

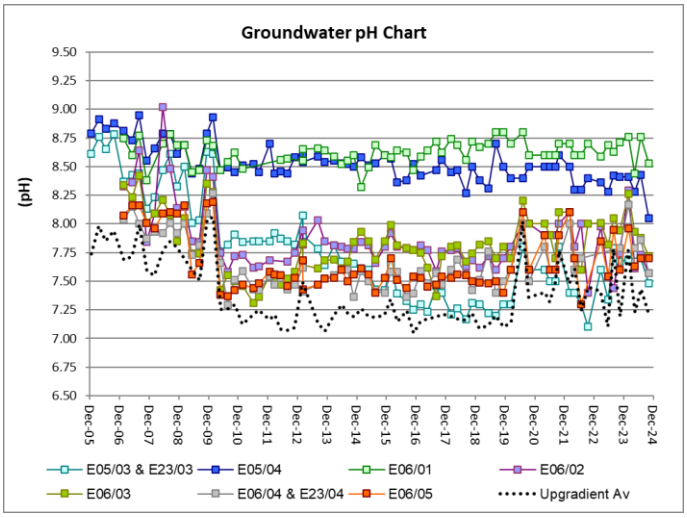

Surface Water Ni Chart
(µg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

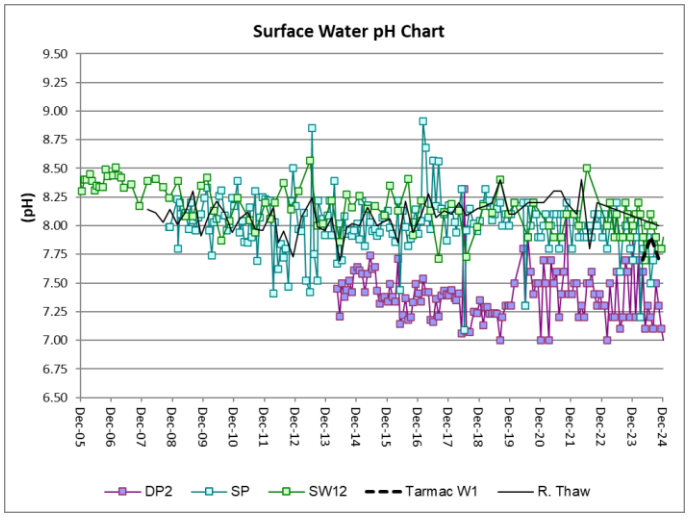

Groundwater K Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

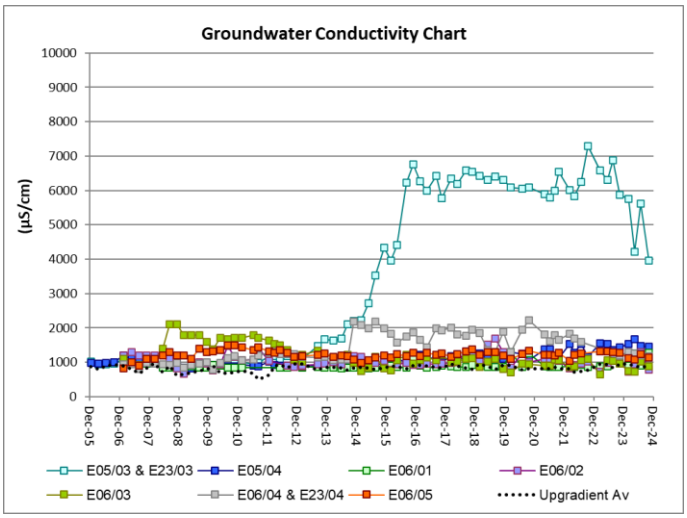

Surface Water K Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

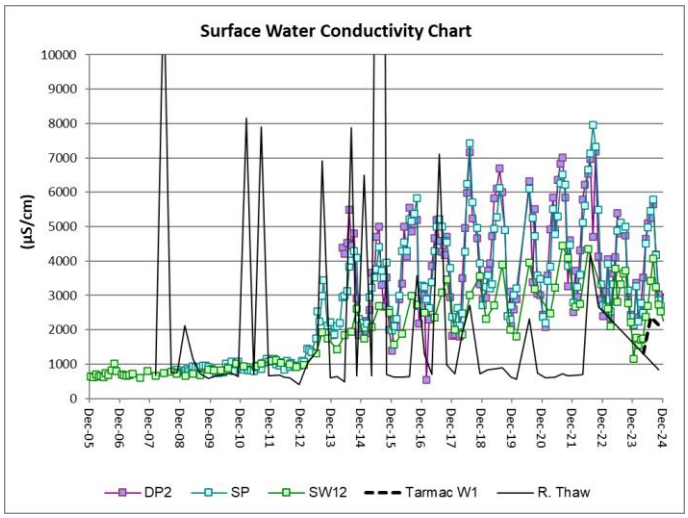

Groundwater Na Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

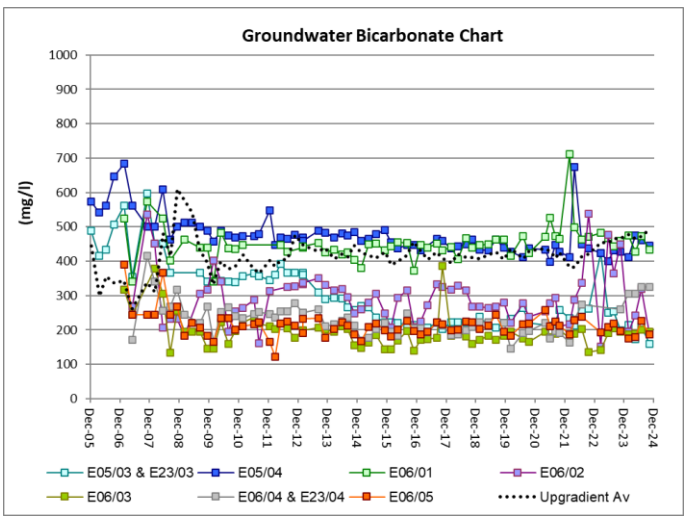

Surface Water Na Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

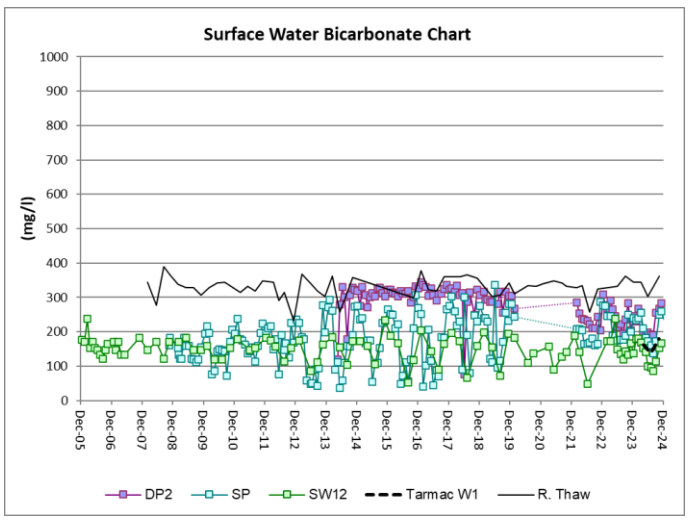

Groundwater pH Chart
(pH)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

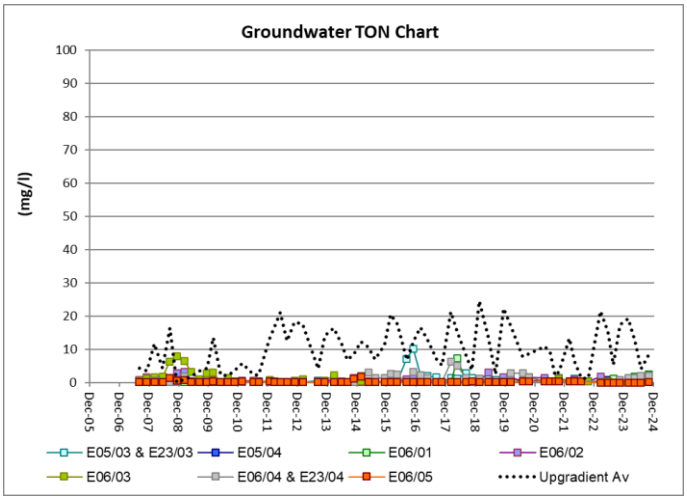

Surface Water pH Chart
(pH)
DP2
SP
SW12
Tarmac W1
R. Thaw

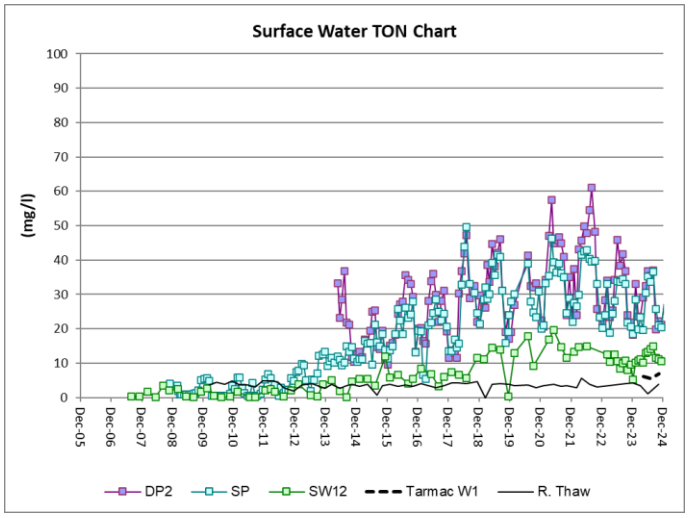

Groundwater Conductivity Chart
(µS/cm)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

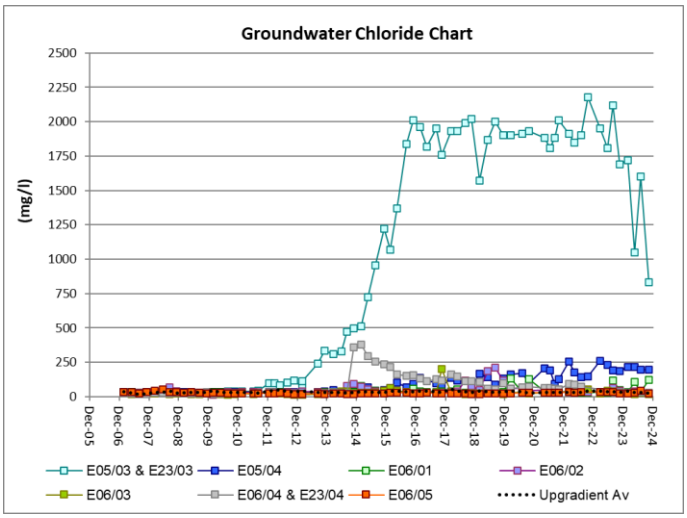

Surface Water Conductivity Chart
(µS/cm)
DP2
SP
SW12
Tarmac W1
R. Thaw

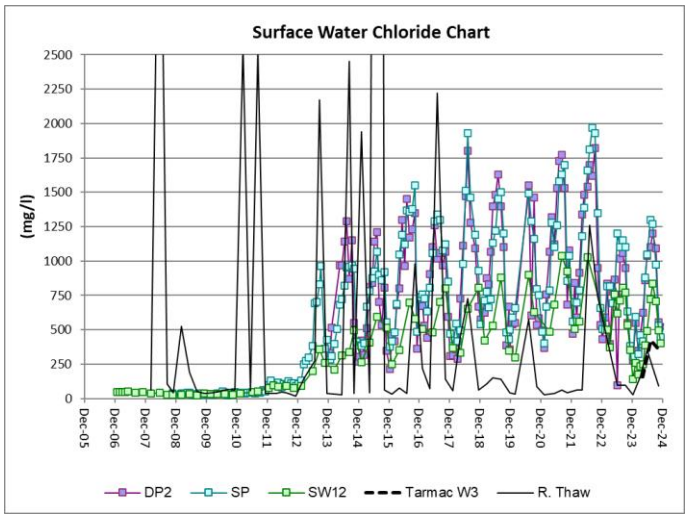

Groundwater Bicarbonate Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

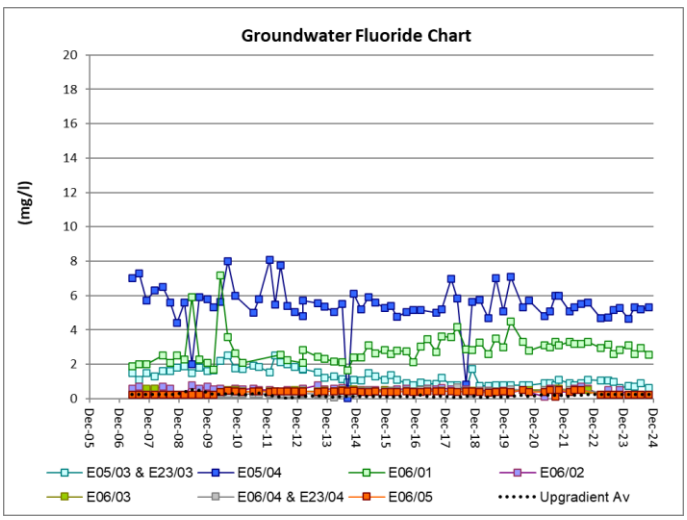

Surface Water Bicarbonate Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

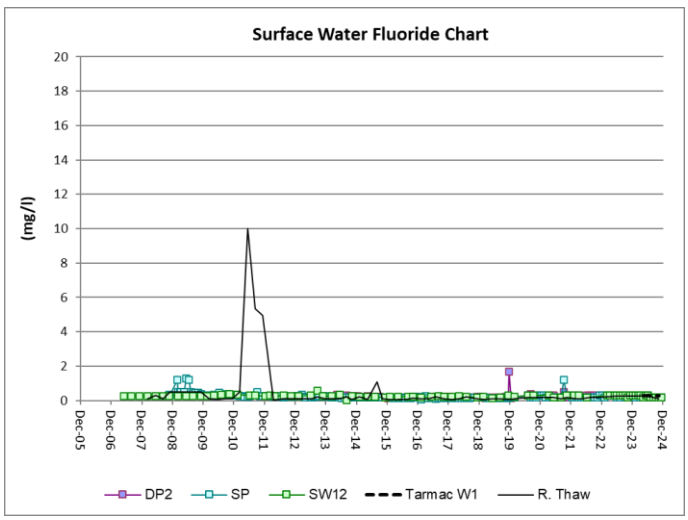

Groundwater TON Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av

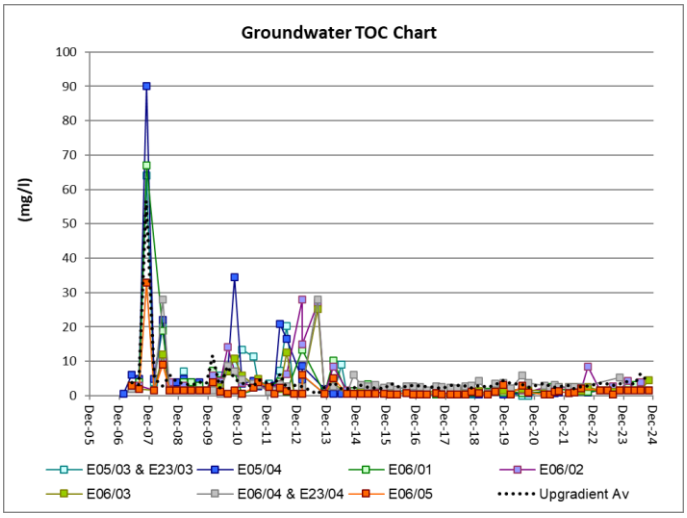

Surface Water TON Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw

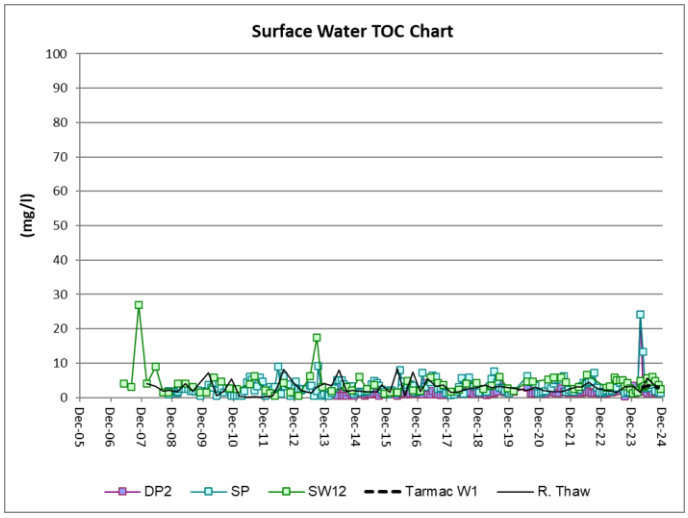

Groundwater Chloride Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av


Surface Water Chloride Chart
(mg/l)
DP2
SP
SW12
Tarmac W3
R. Thaw


Groundwater Fluoride Chart
(mg/l)
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av


Surface Water Fluoride Chart
(mg/l)
DP2
SP
SW12
Tarmac W1
R. Thaw


Groundwater TOC Chart
(mg/l)
100
90
80
70
60
50
40
30
20
10
0
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
E05/03 & E23/03
E05/04
E06/01
E06/02
E06/03
E06/04 & E23/04
E06/05
Upgradient Av


Surface Water TOC Chart
(mg/l)
100
90
80
70
60
50
40
30
20
10
0
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
DP2
SP
SW12
Tarmac W1
R. Thaw