Docksway Disposal Site

Annual Environmental Review for Area 2 - 2020

On behalf of **Newport City Council**

Project Ref: 49428/3503 | Rev: 00 | Date: February 2021

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1 Introduction

1.1 Background

1.1.1 Docksway Disposal Site is located approximately 3km south of Newport city centre and is centred on National Grid Reference ST 305 853. The site is operated by Newport City Council, referred to hereafter as NCC. The location of the site is shown on **Figure 1**.

1.1.2 The site is approximately split into a northern part (Area 1) and a southern part (Area 2):

- Area 1 is an unlined ('dilute and disperse') landfill that was operated under Waste Management Licence (WML) number EAWML30058 and is now closed, and in the aftercare phase; and
- Area 2 is an engineered containment landfill that is active and operated under Environmental Permit No. DP3733BK, Variation Number V004 (July 2016).

1.1.3 It is a requirement of the Environmental Permit for Area 2 (Conditions 4.2.1 and 4.2.2) that an Environmental Review report is provided to Natural Resources Wales (NRW) on an annual basis in order to provide a review of data collected in relation to the environmental performance of the site.

1.2 Scope

1.2.1 This document reviews the data produced by various environmental monitoring programmes and management systems and provides an analysis of any trends in the data over the preceding 12-month period of January 2020 to December 2020. The data review and analysis are used to provide an appraisal of the potential environmental risks associated with Area 2 of the site. This document includes the following:

- Review and analysis of the Area 2 environmental monitoring results collated over the past 12 months,
- Comments on temporal trends observed in the longer-term monitoring data collected,
- A review of the potential risks to sensitive environmental receptors,
- Energy consumption at the site and annual production/treatment,
- Comparison of the current topographical survey and the previous topographical survey and assessment of the settlement behaviour together with volumetric difference,
- Calculation of the remaining capacity.

1.2.2 Guidance for readers of this report is given in **Section 10** of this report.

1.3 Related Work

1.3.1 The environmental data commented on in this report has been issued to NRW previously in the form of monthly or quarterly interim environmental monitoring reports but is provided in graphed format within this report as a series of Appendices for ease of reference.

2 Surface Water Quality Monitoring

2.1 Current Monitoring Programme

2.1.1 A surface water monitoring programme commenced at Docksway Disposal Site in September 2003, in accordance with the requirements of Condition 62 of the Area 1 WML and continues in accordance with the Environmental Permit for Area 2 (EPR/DP3733BK).

2.1.2 Since commencement of the monitoring, NCC has undertaken monthly surface water monitoring and has reported these results to NRW on a generally monthly basis. Details of the monitoring methodology and protocols for the site (including the frequency of testing and the range of chemical testing suites used) are presented in the Monitoring Plan for Area 1, (PBA, 2011)[1], in relation to surface water, and also the Monitoring Plan for Area 2: Landfill Extension, (PBA, 2005)[2].

2.1.3 Sampling locations SW_25 and SW_26 are the subject of individual discharge consents and will continue to be monitored and assessed in accordance with those consents, whilst all other locations will continue to be monitored and assessed in accordance with the Environmental Permit.

2.1.4 It is noted that sampling point C3_Asb was established at the start of 2017 and is specific to Cell 3a.

2.1.5 A total of six monitoring locations have been used for assessing the surface water quality over the past 12 months, the locations of which are shown on Figure 2, and details are tabulated below:

Table 2-1 Details of Surface Water Locations Monitoring during 2020

Position Monitored	Location
SW_1A	Ebbw Upstream
SW_23	Discharge to Maes Glas Pill from Docks Drain Outfall (Disused Culvert)
SW_24	Oxbow Lake Position 1
SW_25	Surface Water Management System Discharge Point. Subject to a discharge consent.
SW_26	Area 2 Surface Water. Subject to a discharge consent.
C3_Asb	Cell 3 Settling Lagoon

Note: SW02 and SW07 were not sampled during 2020 due to unsafe access and SW11 was not sampled as there is no requirement.

2.2 Surface Water Hydrochemistry over the Preceding 12 Months

Compliance Limits

2.2.1 Surface water sampling points SW_25 and SW_26 are subject to discharge consents (Consent Number AN0394301 and AN0401301 respectively) and have compliance limit values as set within the consents.

2.2.2 Sampling location C3_Asb has compliance limit values which are set out in the Environmental Permit (EPR/DP3733BK).

2.2.3 Notwithstanding the surface water discharge consents, surface water compliance limits are not generally required by NRW for the site as part of the Environmental Permit, and consequently none have been set, except for surface water sampling point C3_Asb. Therefore, comments on the surface water hydrochemistry with respect to compliance limits are only presented in this report where applicable. The data and any temporal trends in the data are presented and commented upon for those positions without compliance limits.

SW_25

2.2.4 In the last 12 months, SW_25 has been sampled nine times (January, February, March, April, June, July, October, November and December 2020) and was recorded as dry on each of the other monthly monitoring visits.

2.2.5 The following provides commentary on the laboratory test results compared to the consented compliance limit values:

- On all the occasions that SW_25 was sampled in 2020 the concentration of Ammoniacal Nitrogen was below the discharge consent limit of 30mg/l, and adverse trends have not been identified in the longer-term data.
- The discharge consent limit of 40mg/l for Biological Oxygen Demand (BOD) was not exceeded during 2020 for SW_25, and the longer-term data does not indicate any developing adverse trends.
- The samples from SW_25 recorded pH values between 7.7 and 8.1 in 2020, which is within the acceptable range of between 6 and 9 set in the discharge consent.
- The concentration of Total Suspended Solids (TSS) was recorded below the discharge consent limit of 60mg/l during 2020, except during the February, March and June monitoring rounds where the concentrations were recorded as 79.7mg/l, 99.7mg/l and 197mg/l respectively. The concentrations returned to below the discharge consent limit in the following monitoring rounds. These concentrations are also similar to previous slightly elevated concentrations seen at this monitoring location and adverse trends have not been identified in the longer-term data.

2.2.6 There is currently no evidence to suggest that there are any detrimental temporal trends with regard to surface water quality at this location with reference to the parameters tested.

SW_26

2.2.7 Surface water monitoring point SW_26 was included in the monitoring programme for Area 1 at the start of 2013. In the last 12 months, SW_26 has been sampled four times (January, February, March and November 2020) and was recorded as dry on each of the other monthly monitoring visits.

2.2.8 The following provides commentary on the laboratory test results compared to the consented limit values.

- There is no acceptable limit value for Ammoniacal Nitrogen in the discharge consent for SW_26. However, concentrations recorded in 2020 are lower than those recorded in 2018 and 2019 with no adverse trends being identified.

- The results of the TSS testing undertaken on the samples obtained from SW_26 during 2020 recorded concentrations of between <2mg/l and 21.3mg/l which is below the discharge consent limit of 60mg/l.

- During 2020, the pH values recorded at SW_26 were within the acceptable range of between 6 and 9, in accordance with the discharge consent.

2.2.9 There is currently no evidence to suggest that there are any detrimental temporal trends with regard to surface water quality at this location with reference to the parameters tested.

C3_Asb

2.2.10 Surface water monitoring point C3_Asb is the settling lagoon for surface water from the Stable Non-Reactive Hazardous Waste (SNRHW) cell. A specific testing requirement for this location is for the presence of asbestos fibres.

2.2.11 During 2020, samples were taken from this location on eleven occasions, however testing for asbestos fibres was only undertaken in July, August, September, October, November and December. The laboratory did not identify the presence of asbestos fibres on any of the six occasions that they tested for asbestos fibres. The laboratory stopped providing this test in 2019 and only restarted in July 2020 therefore no testing was undertaken from January to June of 2020.

2.2.12 It is noted that in addition to testing for the presence of asbestos fibres other surface water hydrochemistry parameters are tested for at C3_Asb. These are commented on below alongside other testing locations.

Commentary on Other Surface Water Monitoring Locations

Ammoniacal Nitrogen

2.2.13 **Appendix 1-1** presents the results of Ammoniacal Nitrogen concentrations since 2003 at each of the surface water monitoring locations.

2.2.14 SW_1A was sampled on eleven occasions during 2020. It can be seen that Ammoniacal Nitrogen concentrations in SW_1A have been recorded below the method detection limit (MDL) for the laboratory (0.2mg/l) in the last 12 months. This is consistent with the longer-term dataset.

2.2.15 SW_23 was sampled eight times during 2020 and the Ammoniacal Nitrogen concentrations have been relatively consistent, being recorded generally below 25mg/l in the last 5 years.

2.2.16 The remaining surface water monitoring location, SW_24, shows a generally uniform trend since commencement of monitoring, with concentrations predominantly below 1mg/l. The concentrations of Ammoniacal Nitrogen recorded in the eleven samples obtained from SW_24 in 2020 were below the limit of detection on nine of the eleven samples.

Biochemical and Chemical Oxygen Demand

2.2.17 **Appendices 1-2** and **1-3** present Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) concentrations, since 2003, at each of the surface water monitoring locations.

2.2.18 All locations appear to be displaying a generally uniform trend in BOD concentrations with the majority of results recorded at concentrations below 10mg/l.

2.2.19 In general, COD concentrations appear to be relatively consistent at all monitoring locations during 2020 and in the longer term, with results generally below 100mg/l. The exception to this

is C3_Asb where COD concentrations between 100mg/l and 250mg/l have been recorded during 2020.

Chloride

2.2.20 **Appendix 1-4** presents the Chloride concentrations at each of the surface water monitoring locations since 2003. The data indicates that most surface water monitoring locations are showing a generally uniform trend of Chloride concentrations over the last 12 months and in the longer term, with concentrations at most locations predominantly below 100mg/l.

2.2.21 The exceptions to this are SW_23 where concentrations of Chloride have fluctuated from month to month in 2020 (from about 22mg/l up to 225mg/l). These concentrations are within the overall dataset but with less variation/fluctuation during the 12 months compared to previous years. Concentrations of Chloride at C3_Asb have fluctuated between 165mg/l and 310mg/l during 2020, which is within the longer term dataset.

pH

2.2.22 **Appendix 1-5** presents the results of pH monitoring of surface water since 2003 at each of the current surface water monitoring locations. In the past 12 months the majority of the pH readings have generally been recorded between about pH 7.5 and pH 8.5, which is within the normal range for all of the monitoring locations in the last 9 years.

Electrical Conductivity

2.2.23 **Appendix 1-6** presents Electrical Conductivity (EC) readings in each of the surface water monitoring locations since 2003. The data indicates a stable trend of Electrical Conductivity, all below 5mS/cm at all monitoring locations in the last 12 months. This is within the range of the overall dataset.

Total Suspended Solids

2.2.24 **Appendix 1-7** presents the concentrations of Total Suspended Solids (TSS) at SW_25 since 2007, SW_26 since 2013, and C3_Asb since 2017. The data does not currently indicate any developing trends for TSS.

Dissolved Oxygen

2.2.25 **Appendix 1-8** presents the Dissolved Oxygen (DO) concentrations recorded at the surface water monitoring locations in the last 12 months. The concentrations have generally been between about 5mg/l and 16mg/l, and this is consistent with the overall dataset with no indication of developing trends.

2.3 Review of Potential Risks and Further Monitoring

2.3.1 The environmental data obtained for January to December 2020 for surface water locations does not indicate any significant adverse trends developing in surface water quality, with reference to the parameters tested, and over the last 12 months does not indicate any significant decrease in surface water quality since the previous Annual Environmental Review for Area 2 – 2019 [4].

3 Groundwater Quality Monitoring

3.1 Monitoring Programme

3.1.1 A groundwater monitoring/sampling programme commenced at Docksway Disposal Site in September 2003 to monitor groundwater quality within the underlying River Terrace Gravel deposits present beneath the site.

3.1.2 Details of the monitoring methodology and protocols for the site (including the frequency of testing and the range of chemical testing suites used) are presented in the Monitoring Plan for Area 2: Landfill Extension, (PBA, 2005) [2].

3.1.3 The locations of the boreholes used in the current monitoring and sampling programme are indicated on **Figure 2**.

3.1.4 Interim groundwater quality reports have previously been provided to NRW on a quarterly basis (in accordance with the Environmental Permit Conditions 3.6.1 and 3.6.2).

3.2 Monitoring Locations and Compliance Levels

3.2.1 There are fourteen monitoring wells across Area 2, and the coordinates for each are presented in **Table 3-1** below.

Table 3-1 Groundwater Monitoring Well Locations

Monitoring Well	Easting	Northing
GW07_40	331007	185204
GW12_30	331089	185194
GW09_31	331165	185095
GW03_09	331166	184999
GW09_32	331118	184919
GW12_33	331055	184834
GW06_34	331015	184732
GW09_35	330904	184755
GW06_36	330811	184777
GW06_37	330715	184801
GW06_13	330602	184887
GW12_38	330705	184986
GW06_14a	330829	185098
GW06_39	330932	185137

3.2.2 The current control levels and compliance limits for Area 2 groundwater monitoring wells are reproduced in **Table 3.2**. It is noted that in relation to Benzene, Naphthalene, Xylene and Arsenic, only compliance limits have been set, with other determinands having both control levels and compliance levels set.

Table 3-2 Area 2 Groundwater Compliance Limits for Emissions to Groundwater

Monitoring Well	Benzene	Naphthalene	Xylene	Arsenic
	Compliance Limit	Compliance Limit	Compliance Limit	Compliance Limit
	ug/l	ug/l	ug/l	ug/l
GW03_09	2	5	3	35
GW06_13	2	5	3	50
GW06_14a	2	5	3	25
GW06_34	2	5	3	65
GW06_36	2	5	3	30
GW06_37	2	5	3	60
GW06_39	2	5	3	50
GW07_40	2	5	3	35
GW09_31	13	5	3	80
GW09_32	3	5	3	30
GW09_35	2	5	3	50
GW12_30	1	1	1	160
GW12_33	1	1	1	560
GW12_38	1	1	1	26

Monitoring Well	Nickel		Potassium		Ammoniacal Nitrogen	
	Control Level	Compliance Limit	Control Level	Compliance Limit	Control Level	Compliance Limit
	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l
GW03_09	8	10	160	180	30	35
GW06_13	12	14	100	110	30	35
GW06_14a	12	14	160	180	53	60
GW06_34	12	14	310	350	30	35
GW06_36	8	10	100	110	20	23
GW06_37	8	10	100	110	30	35
GW06_39	26.4	30	100	110	20	23
GW07_40	8	10	39.6	45	20	23
GW09_31	8	10	100	110	50	50
GW09_32	8	10	160	180	50	50
GW09_35	8	10	100	110	30	35
GW12_30	25	30	35	40	10	12
GW12_33	5	6	50	55	15	18
GW12_38	25	30	65	70	10	12

3.3 Groundwater Quality

Ammoniacal Nitrogen

3.3.1 **Appendices 2-1** to **2-5** present the recorded concentrations of Ammoniacal Nitrogen for the Area 2 groundwater monitoring locations.

3.3.2 Ammoniacal Nitrogen concentrations in all monitoring wells have been relatively consistent in the last 12 months and also in the longer term and there have generally been no exceedances of the Compliance Limits for Ammoniacal Nitrogen in 2020, with the exception of GW06_37. GW06_37 has shown a slow increase in the concentration of Ammoniacal Nitrogen since 2010, and the Compliance Limit of 35mg/l was exceeded in March, June, September and December 2020 with recorded concentrations between 42.4mg/l and 47.0mg/l. The concentration recorded in December is the highest concentration recorded at this location.

3.3.3 All other monitoring locations remained below the compliance limits throughout the monitoring period with no indication of adverse trends developing.

Arsenic

3.3.4 **Appendices 2-6** to **2-15** present the recorded Arsenic concentrations for the current Area 2 groundwater monitoring locations. There were generally no exceedances of the Compliance Limits for Arsenic in the Area 2 groundwater monitoring wells during 2020, with the exception of GW06_37.

3.3.5 In March, June and December 2020, the Compliance Limit of 60ug/l was exceeded at GW06_37 with recorded concentrations of 60.0ug/l, 69.7ug/l and 70.9ug/l respectively. These

concentrations are however within the range of the overall dataset, and no distinct adverse trends are apparent with this or any of the monitoring locations.

Benzene, Naphthalene and o-Xylene

3.3.6 **Appendices 2-16** to **2-23** present the results of Benzene, Naphthalene and o-Xylene concentrations.

3.3.7 Benzene, Naphthalene and o-Xylene concentrations in all Area 2 compliance wells have been consistent in the last 12 months, with no exceedances of the compliance limits and no concentrations recorded above the method detection limit (MDL).

3.3.8 It should be noted that the laboratory MDL has changed a number of times since 2004 for Benzene, Naphthalene and o-Xylene which gives a false impression that some of the results have occasionally exceeded the compliance limit, because the compliance limit tracks the MDL.

Extractable Petroleum Hydrocarbons

3.3.9 **Appendices 2-24** and **2-25** present the results of Extractable Petroleum Hydrocarbons (EPH) concentrations. Concentrations of EPH have generally been recorded below 500µg/l in all of the monitoring wells in Area 2 during 2020, with the exception of GW06_34, GW06_36 and GW06_37, where concentrations between 830ug/l and 2,590ug/l were recorded. The highest recorded concentration of 2,590ug/l was recorded in GW06_34 in December 2020, and is the highest concentration recorded at this location to date. There are, however, no compliance limits for EPH, and the data does not indicate any adverse trends at the current time.

Nickel and Potassium

3.3.10 **Appendices 2-26** to **2-38** present the results of Nickel and Potassium concentrations in the monitoring wells.

3.3.11 Nickel and Potassium concentrations at the majority of the compliance wells have remained consistent throughout the 12-month monitoring period, with no recorded Compliance Limit exceedances. The exceptions to this were Nickel at GW09_32 in March 2020 where the concentration recorded, 11.3µg/l, was marginally above the compliance limit. However, during the following monitoring rounds the Nickel concentration in GW09_32 has returned to below the control level.

Review of Potential Risks and Future Monitoring

3.3.12 The environmental data obtained for the groundwater monitoring wells in Area 2 indicates that in general the River Terrace Gravel groundwater chemistry is in a stable condition and that there is therefore no significant deterioration in water quality since the previous Annual Environmental Review for Area 2 - 2019[4].

3.3.13 During 2020, a small number of intermittent exceedances of compliance limits were recorded in some monitoring wells, however, these are not generally considered to represent a significant risk to the groundwater quality and there is no indication of adverse trends developing.

4 Leachate Monitoring

4.1 Leachate Control Measures and Management System

4.1.1 In accordance with Condition 2.7.1 of the Environmental Permit, leachate levels should be recorded monthly. However, there have been occasions where either access to the monitoring locations has not been possible. As such, for this period of reporting, leachate levels have been monitored at five locations in Cell 1, three locations in Cell 2, one location in Cell 3B and one location within Cell 4, with samples recovered for analytical testing (similarly when access permits) on a quarterly basis at LF08_07 located within Cell 1, C2B within Cell 2, C3B within Cell 3 and Cell 4.

4.1.2 Leachate generated in Area 2 is pumped directly to tankers and removed off site for disposal.

Table 4-1 Leachate Measurements at Cells 1,2,3 and 4

Monitoring Round in 2020	Leachate Head Level above base of cell (m)									
	LF08_07 (Cell 1)	C1A (Cell 1)	C1B (Cell 1)	C1D (Cell 1)	C1E (Cell 1)	C2A (Cell 2)	C2B (Cell 2)	C2C (Cell 2)	C3B (Cell 3)	C4 (Cell 4)
January	1.45	N/A	1.96	1.61	1.89	1.81	N/A	0.88	0.92	1.94
February	1.65	N/A	1.72	1.71	***2.15***	***2.05***	1.84	1.80	1.62	1.71
March	1.76	N/A	2.53	1.68	1.77	***2.04***	***2.60***	***3.02***	***2.35***	1.94
April	1.71	N/A	2.12	N/A	1.23	***3.17***	***2.55***	***3.07***	N/A	N/A
May	0.71	N/A	2.82	N/A	0.38	***3.10***	***2.14***	***3.07***	N/A	N/A
June	1.26	***2.52***	***2.05***	1.02	0.81	***2.67***	***2.67***	***2.45***	1.64	***2.4***
July	0.81	***2.12***	***2.05***	N/A	0.37	1.80	***2.70***	***2.41***	1.80	1.80
August	1.09	***2.28***	***2.03***	0.70	0.66	1.14	***2.07***	***2.09***	1.32	1.72
September	1.14	***2.19***	***2.16***	0.82	0.72	1.43	1.97	***2.39***	1.90	1.83
October	0.28	***2.21***	1.95	0.86	0.09	1.56	1.86	1.99	1.56	***2.02***
November	0.85	***2.55***	1.98	1.23	0.44	***2.31***	1.79	***2.68***	***2.67***	***2.33***
December	1.37	***3.13***	***2.46***	1.54	0.95	***2.40***	***2.11***	***2.40***	1.90	***2.88***
Leachate removed from Area 2 during 2020 = 20,907,360kg										

Bold text indicates leachate head levels above the permitted leachate head level (2m).
N/A indicates the location was not accessible

4.2 Leachate Chemistry

4.2.1 The leachate wells in Cells 1 and 2 have been connected to the gas abstraction system and therefore there is currently no access for sampling leachate directly from the leachate wells (LF08_07 and C2B respectively). Leachate samples have however been obtained from the closest side risers and submitted for laboratory analysis. For consistency with historical data, these have been referred to as LF08_07 and C2B throughout this Section.

4.2.2 The frequency of leachate sampling required by the Environmental Permit is quarterly. In 2020, samples were obtained from Cell 1, Cell 2, Cell 3B and Cell 4 on four occasions (March, June, September and December). In September and December samples were taken from C1D rather than LF08/07

Ammoniacal Nitrogen

4.2.3 **Appendix 3-1** presents the results of Ammoniacal Nitrogen concentrations. The Ammoniacal Nitrogen concentrations recorded in Area 2 leachate during 2020 are as follows;

- Cell 1 between 327mg/l and 777mg/l
- Cell 2 between 638mg/l and 1200mg/l
- Cell 3Bbetween 537mg/l and 1970mg/l.
- Cell 4 between 312mg/l and 418mg/l.

4.2.4 The results for each cell do not appear to show any distinct trend, although there are limited datasets for Cells 3B and 4 due to them being relatively new cells.

Arsenic

4.2.5 **Appendix 3-2** presents the results of Arsenic concentrations over time in leachate in Area 2, and the concentrations recorded in 2020 are as follows;

- Cell 1 between 3.57µg/l and 45 µg/l.
- Cell 2 between 36.8µg/l and 23.9µg/l.
- Cell 3B between 39.4ug/l and 237ug/l.
- Cell 4 between 8.2ug/l and 164ug/l.

4.2.6 The results for Cells 1 and 2 are within the range of the overall datasets for these locations. The datasets for Cells 3B and 4 are limited, however the results for Cell 4 indicate some fluctuations during 2020 without any distinct trend, and the results for Cell 3B indicate increasing concentrations during 2020.

Benzene

4.2.7 **Appendix 3-3** presents the results of Benzene concentrations in leachate from Area 2 and the concentrations recorded during 2020 are as follows;

- Cell 1, were between the method detection limit (MDL) of the testing and 1.3ug/l.
- Cell 2, between 2.64ug/l and 8.17ug/l
- Cell 3B, between 1.53ug/l and 3.54ug/l.
- Cell 4, between 1.32ug/l and 2.16ug/l.

4.2.8 The Benzene results for all cells do not appear to indicate any distinct trends.

Naphthalene

4.2.9 **Appendix 3-4** present the results of Naphthalene concentrations in leachate from Area 2.

4.2.10 Naphthalene concentrations in Cell 1 leachate have been recorded below the MDL during all monitoring rounds since 2013. Concentrations of Naphthalene were also mostly below the MDL in Cell 2, with the exception of the June monitoring round which recorded a concentration of 1.19ug/l.

4.2.11 Naphthalene concentrations in Cell 3B were mostly below the MDL, with the exception of the June and December monitoring rounds which recorded concentrations of 1.06ug/l and 1.71ug/l respectively. The Naphthalene concentrations in Cell 4 were recorded below the MDL during all monitoring rounds.

o-Xylene and EPH

4.2.12 **Appendices 3-5** and **3-6** present the results of o-Xylene and EPH concentrations.

4.2.13 Concentrations of o-Xylene in Cell 2 leachate have been recorded between 1.87ug/l and 5.47ug/l in 2020, which is within the range of the overall dataset. The concentrations of o-Xylene recorded in Cell 1 were all below the MDL.

4.2.14 The concentrations of o-Xylene in C3B were recorded between the MDL and 5.73ug/l, and between 1.4ug/l and 7.5ug/l in C4 in 2020

4.2.15 Concentrations of EPH in Cell 1 were recorded between 402ug/l and 2480ug/l, and in Cell 2 were recorded between 1650ug/l and 6310ug/l which are within the range of the overall datasets.

4.2.16 Concentrations of EPH in Cell 3B were recorded between 1660ug/l and 5860ug/l, and in Cell 4 were recorded between 1500ug/l and 2710ug/l.

4.2.17 There are no distinct trends of either o-Xylene or EPH in any of the Cells.

Nickel and Potassium

4.2.18 **Appendices 3-7** and **3-8** present the results of Nickel and Potassium concentrations since commencement of monitoring.

4.2.19 During 2020, Nickel concentrations in Cell 1 were recorded between 43.2ug/l and 114.0ug/l and in Cell 2 were recorded between 78.1ug/l and 185ug/l. These concentrations are within the overall range of the datasets with no indication of any adverse trends developing.

4.2.20 Nickel concentrations within Cell 3B were recorded between 30.8ug/l and 249ug/l, and in cell 4 were recorded between 62ug/l and 109ug/l.

4.2.21 The Potassium concentrations recorded in Cell 1 during 2020 were between 179mg/l and 383mg/l, and in Cell 2 were recorded between 331ug/l and 556mg/l. These concentrations are within the range of the overall datasets.

4.2.22 Potassium concentrations within Cell 3B were recorded between 110mg/l and 640ug/l, and in Cell 4 were recorded between 253ug/l and 298ug/l.

4.2.23 There are no distinct trends of either Nickel or Potassium in any of the Cells.

Review of Potential Risks and Future Monitoring

4.2.24 The environmental monitoring data for LF08_07, C1D and C2B indicates that the leachate chemistry has been variable throughout the 12-month monitoring period in both Cells 1 and 2, although generally the concentrations are within the range of the overall dataset for each of the parameters.

4.2.25 There is currently insufficient data to determine whether there are any trends developing from Cell 3 and from Cell 4.

4.2.26 The data is not indicative of a significant change in the leachate quality in Area 2 during 2020.

4.2.27 The data indicates that during 2020 there have been exceedances of the permitted leachate levels (being greater than 2m above the base) in all Cells in Area 2.

5 External Landfill Gas Monitoring

5.1 Gas Monitoring Locations

5.1.1 There are currently fifteen purpose drilled gas monitoring boreholes available around the perimeter of Area 2. The locations of the boreholes are shown on **Figure 2** and coordinates of the gas monitoring boreholes are shown within **Table 5.1**.

Table 5-1 Area 2 Landfill Gas Monitoring Boreholes

Gas Monitoring Borehole	Easting	Northing	Comments
GP03_06	331150	185227	-
GP06_08a	331830	185104	-
GP05_14	331172	185144	-
GP05_15	331187	185055	-
GP05_16	331153	184977	-
GP05_17	331091	184884	-
GP09_18	331033	184804	-
GP18_18A	331035	184805	New well – installed April 2018
GP18_18B	331028	184798	New well – installed April 2018
GP18_18C	331032	184795	New well – installed April 2018
GP05_20	330676	184817	-
GP05_21	330602	184887	-
GP05_22	330649	184963	-
GP12_23	330781	185028	-
GP06_24	330973	185165	Well destroyed
GP06_25	331060	185236	-

5.1.2 These boreholes all have their response zones situated in the shallow strata (the Alluvial Deposits and the Made Ground above, where it is present). Monitoring started at many of these boreholes before the commencement of landfilling in Cell 1 to enable comparison of the historical (baseline) soil gas regime around the perimeter of the site with the regime once waste disposal operations had commenced.

5.2 Monitoring Requirements and Trigger Levels

5.2.1 Landfill gas monitoring has generally been undertaken on a quarterly basis with reports being produced for NRW quarterly in accordance with Condition 3.1.7 of the Environmental Permit.

5.2.2 Trigger Levels for all the Area 2 wells have previously been submitted to and accepted by NRW. The exceptions to this are the new monitoring wells GP18_18, A, B and C that surround and are in close proximity to GP09_18. The trigger levels for these new monitoring wells are the same as for GP09_18.

5.2.3 Well-specific trigger levels for landfill gas as set out in the Environmental Permit are presented in Table 5.2 below. There are no trigger levels for carbon dioxide or methane in GP06_24 and

GP06_25 or for carbon dioxide in GP05_20 and GP05_21 – in accordance with NRW requirements.

Table 5-2 Gas Monitoring Borehole Specific Trigger Levels for Area 2

Gas Monitoring Borehole	Methane (%Volume)	Carbon Dioxide (%Volume)
GP03_06	1.0	6.1
GP06_08A	1.0	2.4
GP05_14	1.0	2.2
GP05_15	1.0	10.4
GP05_16	1.0	7.7
GP05_17	1.0	13.5
GP09_18, GP18_18A, GP18_18B & GP18_18C	1.0	19.0
GP05_20	1.5	n/a
GP05_21	1.5	n/a
GP05_22	1.0	8.3
GP06_24	n/a	n/a
GP06_25	n/a	n/a

5.3 External Landfill Gas Monitoring

Methane

5.3.1 **Appendices 4-1, 4-2**, **4-3 and 4-4** present the results of Methane concentrations in the Area 2 gas monitoring wells since commencement of monitoring.

5.3.2 **Appendix 4-1** indicates that the majority of the Area 2 wells did not typically detect Methane above the trigger level of 1% during 2020. The exception to this is GP05_17, where Methane was recorded above the 1% trigger level in March and September, with recorded concentrations of 2.3% and 1.5% respectively.

5.3.3 **Appendix 4-2** presents the Methane concentrations in GP06_24 and GP06_25, constructed on the Area 2 side of the in-ground barrier installed between Area 1 and Area 2. Methane concentrations typically fluctuated significantly in GP06_24 from around mid-2008, however this monitoring well has been destroyed by site activity and is no longer monitored.

5.3.4 The methane concentrations in GP06_25 have fluctuated significantly since the start of 2012, including in the last 12 months.

5.3.5 GP06_25 was monitored four times during 2020 (quarterly - March, June, September and December). On the four visits the Methane concentrations were recorded in the range 33.2%v/v to 67.8%v/v which are within the overall range for the dataset.

5.3.6 **Appendix 4-3** presents the methane concentrations at GP09_18 and three surrounding monitoring wells GP18_18A, GP18_18B and GP18_18C which were all monitored on four

occasions. In late 2016 the methane (and carbon dioxide) concentrations at GP09_18 started to rise significantly and therefore the three additional monitoring wells were installed in 2018 at locations surrounding the original monitoring location. The new monitoring wells have been included as part of the monitoring programme for Area 2 since June 2018, and methane concentrations at these locations have also been recorded at significantly elevated concentrations.

5.3.7 In 2020, GP09_18 recorded methane concentrations of between about 0.2%v/v and 42.0%v/v. In comparison, GP18_18A recorded methane concentrations of between 0.1%v/v and 36.3%v/v. GP18_18B recorded methane concentrations between 40.9%v/v and 90.7%v/v. GP18_18C recorded methane concentrations between 37.2%v/v and 88.4%v/v.

5.3.8 At the current time the reason for the elevated methane concentrations at this location are unknown. Concentrations of methane at the closest monitoring well to GP09_18 (GP05_17) had previously started to rise, however concentrations in 2020 have started to decrease to levels below the trigger level and to levels previously seen at this monitoring point.

5.3.9 We have provided recommendations to NCC regarding additional investigation work to identify the potential causes of the elevated methane.

5.3.10 **Appendix 4-4** indicates that concentrations of Methane in GP05_21 were recorded below the 1% trigger level throughout 2020. In GP05_20 elevated concentrations of Methane above the 1% trigger level were recorded during the June, September and December monitoring rounds, with concentrations of 1.6%v/v, 16%v/v and 7.1%v/v respectively.

Carbon Dioxide

5.3.11 Carbon Dioxide concentrations have generally varied with time since the commencement of the landfill gas monitoring programme in the perimeter monitoring wells within Area 2. Graphs indicating the Carbon Dioxide concentrations recorded over time and showing well specific trigger levels are presented in **Appendices 4-5** to **4-16**.

5.3.12 In all of the monitoring wells where trigger levels have been set, the Carbon Dioxide concentrations have all been recorded below the well-specific trigger level during 2020.

5.3.13 In GP09_18 the concentrations of carbon dioxide started rising in late 2016, the same as for methane (see above), but without exceeding the trigger level, However, the carbon dioxide concentrations appear to have stabilised during 2020 and have not exceeded the trigger level during any monitoring round.

5.3.14 At the remaining locations, the carbon dioxide concentrations recorded during 2020 are generally within the typical range for the datasets and are not indicating that adverse trends are developing,

5.4 Review of Risks and Future Monitoring

5.4.1 The data for GP09_18 and GP18_18A, B and C indicates continued elevated methane concentrations at this location. This will be discussed with NCC to identify an investigative process to determine the cause of the rising methane.

5.4.2 With the exception of GP09_18 (discussed above), the only monitoring locations that have consistently recorded significant Methane concentrations are GP06_24 since 2006 and GP06_25 since 2012. These wells are located some considerable distance away from the part of the Area 2 site that has to date been used for waste disposal. The elevated Methane concentrations recorded at GP06_24 were present at the time that the in-ground gas barrier was constructed (separating the Area 1 and Area 2 sites) and may therefore represent background concentrations, or natural gas in the Alluvium. However, this monitoring well has

been subsequently destroyed due to site activities during 2018, and therefore no further data can be collected at this location.

5.4.3 Landfill gas will continue to be monitored on a quarterly basis and gas conditions will continue to be reported to NRW on a quarterly basis in accordance with the Environmental Permit.

6 Landfill Gas Generation and Usage

6.1 Landfill Gas Utilisation Plant

6.1.1 Docksway Disposal Site has a Landfill Gas Utilisation Plant servicing both Area 1 and Area 2 landfills. It currently comprises one 1MW Jenbacher (320) engine together with one 1500m3/hr flare. Information from Infinis Energy indicates that the plant capacity was reduced in January 2014, with a 330kW Jenbacher (208) engine removed as a result of a reduction in gas availability at the site.

6.1.2 Infinis Energy are currently responsible for the general running and routine maintenance of the gas plant and has provided information to assist in the compilation of this section of the report. The Infinis annual report is presented as **Appendix 5**.

6.1.3 Monitoring of the plant performance and volumes of gas extracted from the gas utilisation plant has been undertaken on a regular basis since 2005 by Novera/Infinis, and the data collected over the last 12 months has been reported directly to NRW by Infinis.

6.2 Landfill Gas Extraction

6.2.1 In 2020, the total production of energy from the Landfill Gas Utilisation Plant was 4411MWh with a site efficiency of 33.8%. In 2019 by comparison, the total production of energy was 5126MWh with a site efficiency of 30.9%. The total energy produced, and efficiency has decreased slightly from 2019 to 2020.

6.2.2 Engine downtime in 2020 was 289 hours, compared to 962 in 2019 which represents a decrease in engine downtime. Engine operation time in 2020 was 8495 hours which is an increase from the 7798 hours in 2019.

6.2.3 The flare operated in 2020 during periods when the engine was not operational. The flare was operating for 339 hours during 2020 based on the availability of the engine, compared to 1107 hours in 2019. This is a decrease from 2019.

6.2.4 Environmental Performance Indicators, provided by Infinis Energy, indicate that there has been a decrease in Carbon Monoxide emissions in 2020 (1.7kg/MWh) compared to 2019 (15.7kg/MWh), and total Oxides of Nitrogen emissions also decreased in the same period (2.7kg/MWh in 2020, compared to 7.8kg/MWh in 2019).

6.2.5 Emissions data critically depends on a number of factors including run hours of engines and availability of landfill gas to them, and whilst they are presented as EPI they should be treated with caution. The Annual Report provided by Infinis is presented in **Appendix 5**.

6.3 Monitoring of Extracted Gas

6.3.1 The PPC Permit (LP3135SB) for the gas installation at the site requires that ‘emissions to air from the engine stacks, fugitive emissions, and odour are monitored and reported annually’. This data is collated and presented directly to NRW by Infinis Energy.

6.3.2 Flare monitoring is only required if the flare is in operation greater than 10% of the time. Infinis have indicated that the flare was not subject to emissions testing in 2020 as the flare did not exceed the 10% trigger level (in the preceding 12-month period).

6.3.3 Monitoring and reporting will continue by Infinis in accordance with the PPC Permit.

7 Annual Production/Treatment and Performance Parameters

7.1 Annual Production/Treatment

Table 7-1 Annual Production/Treatment Report by NCC and Infinis (Landfill Gas)

Leachate:	**kg/year**
Disposed of off-site (Area 2) (kg)	20,907,360
Disposed of to any onsite effluent treatment plant	None
Re-circulated into the waste mass	None
Surface water and/or groundwater:	**Cubic metres/year**
Disposed of off site	N/A
Disposed of to any onsite effluent treatment plant	None
Landfill Gas: (Whole site)	**Normalised cubic metres/year**
Combustion in flares	148,177
Combustion in gas engines	2,649,353
Other methods of gas utilisation	None

7.2 Performance Parameters

Table 7-2 Performance Parameters

Parameter	Frequency of Assessment	Annual Total	Unit
Potable Water Use	Annually	*1336*	Cubic metres
Energy Used (including for leachate treatment, excluding electricity generated)	Annually	138,800	kWh of electricity
Non Potable Water Use	Annually	0	Cubic metres

Italics – see below

7.2.1 NCC currently receives their water statement on a 6 monthly basis and has not currently received their statement for the period of October 2020 to January 2021 therefore the figure above is an estimate of the likely annual potable water use based on the previous 8 months of data (February to September 2020) which amounted to 891m^3.

7.3 Topographic Surveys

7.3.1 The surface of Area 2 of Docksway Disposal Site was surveyed during December 2020 and the results of the survey are presented in **Appendix 6**.

7.3.2 It has been calculated by NCC that 73,009m^3 of waste was placed in the non-hazardous Cells in Area 2 (12 month period December 2019 to December 2020), and this is similar to 2019 when 91,025m^3 of waste was placed in Cells 2 and 3B (in the 15 month period October 2018 to December 2019).

7.3.3 It has also been calculated by NCC that a total of 17,352m^3 of SNRHW was placed in Cell 3A (12 month period December 2019 to December 2020), which is a similar volume to 2019 when 22,996m^3 was placed in the 15 month period from October 2018 to December 2019.

7.3.4 As of December 2020, the cumulative waste volume deposited in Area 2 (excluding Cell 3A) was 1,169,302m^3, and in Cell 3A was 71,491m^3.

7.3.5 The maximum elevation of Area 2 was 31m (Cell 1) Above Ordnance Datum (mAOD) as of December 2020. The greatest level change was an increase of about 8m in Cell 4B.

7.3.6 The cross sections provided indicate that slope angles of the external waste slopes are in accordance with the permitted slope angles (no greater than 1:4).

8 Conclusions

8.1 Assessment of Environmental Performance Trends

8.1.1 This document reviews the environmental data from the last 12 months and also provides an indication of data trends both over the last 12 months and since the various monitoring programmes commenced.

8.1.2 Surface water monitoring indicates generally stable trends since the previous Environmental Performance Review, with no evidence of significant adverse trends developing. On the four occasions that SW26 was monitored in 2020, the recorded parameters were within the discharge consent limits. On the nine occasion that SW25 was monitored in 2020, the recorded parameters were within the discharge consent limits with the exception of Total Suspended Solids on three occasions. However in the most recent monitoring rounds the recorded TSS was within the discharge consent limits and therefore it is considered that there has been no significant deterioration of the surface water quality in the last 12 months.

8.1.3 Data from the groundwater monitoring wells in Area 2 indicate generally stable trends in the groundwater chemistry since the previous Environmental Performance Review. A small number of intermittent exceedances of compliance limits were recorded in some monitoring wells, however, these are not generally considered to represent a significant risk to the groundwater quality because they are not consistently exceeding the compliance limits at the current time. On the basis of the data available, it is considered that there has been no significant deterioration of the groundwater quality in the last 12 months and there is no indication of adverse trends developing.

8.1.4 The data indicates that during 2020 there have been intermittent exceedances of the permitted leachate levels (of 2m above the base) in Cells 1, 2,3 and 4 in Area 2. Leachate extraction continues at the site in order to address leachate heads at the site, and as such a total of 20,907 tonnes of leachate was removed during 20202 for offsite treatment and disposal.

8.1.5 The environmental monitoring data for LF08_07, C1D and C2B indicates that the leachate chemistry has been variable throughout the 12-month monitoring period in both Cells 1 and 2, although generally the data is within the typical range for each of the parameters and is not indicative of a significant change in the leachate quality in 2020. There is currently insufficient data to determine whether there are any trends developing from Cell 3 and from Cell 4.

8.1.6 External landfill gas concentrations at Area 2 are predominantly indicating generally stable trends in methane and carbon dioxide. However, the data for GP09_18 and GP18_18A, B and C still indicates continued elevated methane concentrations (as reported in previous reviews).

8.2 Future Monitoring Requirements

8.2.1 It is intended that the Docksway Disposal Site Area 2 monitoring programmes shall continue in line with the Environmental Permit requirements (and as approved by NRW), providing data which will enable the ongoing assessment of the environmental performance of the site and the provision of environmental performance reports on an annual basis.

9 References

[1] PBA (2011) Docksway Disposal Site, Newport. 2011 Monitoring Plan for Area 1. Peter Brett Associates, August 2011.

[2] PBA (2004). Docksway Disposal Site, Newport. Monitoring Plan for Area 2: Landfill Extension. Peter Brett Associates LLP report reference 14739/010B/CBH. October 2004.

[3] PBA (2010) Docksway Disposal Site, Newport. Review of the Hydrogeological Risk Assessment for Area 2. Peter Brett Associates, December 2010.

[4] PBA (2019) Docksway Disposal Site, Annual Environmental Review for Area 2 - 2019. Stantec, February 2020.

10 Essential Guidance for Report Readers

1) This report has been prepared within an agreed timeframe and to an agreed budget that will necessarily apply some constraints on its content and usage. The remarks below are presented to assist the reader in understanding the context of this report and any general limitations or constraints. If there are any specific limitations and constraints, they are described in the report text.

2) The opinions and recommendations expressed in this report are based on statute, guidance, and best practice current at the time of its publication. Stantec UK Ltd (Stantec) does not accept any liability whatsoever for the consequences of any future legislative changes or the release of subsequent guidance documentation, etc. Such changes may render some of the opinions and advice in this report inappropriate or incorrect and the report should be returned to us and reassessed if required for re-use after one year from date of publication. Following delivery of the report, Stantec has no obligation to advise the Client or any other party of such changes or their repercussions.

3) Some of the conclusions in this report may be based on third party data. No guarantee can be given for the accuracy or completeness of any of the third-party data used.

4) Historical maps and aerial photographs provide a “snapshot” in time about conditions or activities at the site and cannot be relied upon as indicators of any events or activities that may have taken place at other times. It is possible for developments to have occurred between surveys that are not shown or for the map record to have been censored for military security.

5) The absence of cavity records in the Stantec natural and mining cavities (non-coal) databases is not considered as conclusive as to the absence of these features and we do not warranty that the data is complete or error free.

6) The conclusions and recommendations made in this report and the opinions expressed are based on the information reviewed and/or the ground conditions encountered in exploratory holes and the results of any field or laboratory testing undertaken. There may be ground conditions at the site that have not been disclosed by the information reviewed or by the investigative work undertaken. Such undisclosed conditions cannot be considered in any analysis and reporting.

7) It should be noted that this report is a land condition assessment and does not purport to be an ecological, flood risk or archaeological survey and additional specific surveys may be required.

8) The identification of invasive and/or noxious plants such as Japanese Knotweed is outside the remit of our appointment.

9) This report has been written for the sole use of the Client stated at the front of the report in relation to a specific development or scheme. The conclusions and recommendations presented herein are only relevant to the scheme or the phase of project under consideration. This report shall not be relied upon or transferred to any other party without the expressed written authorisation of Stantec. Any such party relies upon the report at its own risk.

10) The interpretation carried out in this report is based on scientific and engineering appraisal carried out by suitably experienced and qualified technical consultants based on the scope of our engagement. We have not considered the perceptions of, for example, banks, insurers, other funders, lay people, etc., unless the report has been prepared specifically for that purpose. Advice from other specialists may be required such as the legal, planning and architecture professions, whether specifically recommended in our report or not.

11) Public or legal consultations or enquiries, or consultation with any Regulatory Bodies (such as the Environment Agency, Natural England or Local Authority) have taken place only as part of this work where specifically stated.

Figures

Site Grid Ref: ST 309 852

DOCKSWAY DISPOSAL SITE
NEWPORT

SITE LOCATION PLAN

Client
NEWPORT CITY COUNCIL

Date of 1st Issue	Drawn by
20.01.2020	davco
A4 Scale	Checked by
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Figure Number
1

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Tel: 01189 500 761

DOCKSWAY DISPOSAL SITE, NEWPORT

MONITORING POINT LOCATION PLAN FEBRUARY 2019

GW03_29
NCC1
GC99_09
LF11_01
NEW SITE OFFICES AND METEOROLOGICAL STATION
GP03_01
GW03_02
SW01A
200m Upstream
GW03_01
SW11
GW03_03
GC99_10
GW03_05
GP03_03a
GP03_02
GP03_13
GW07_04
LF11_02
SW07
SW23
NCC2
NCC3
NCC5
GP03_11
NCC6
GP03_04a
GW03_06a
LF11_07
LF03_01
LF03_04
LF03_03
LF11_03
GW09_15A
GP09_09
LF11_05
LF11_06
GP12_26
GP07_05
GW07_07
LF11_04
GP06_25
SW24
GP03_06
GW07_40
GW12_30
SW 25
GP12_27
GP06_08A
GW06_14A
GW06_39
GP05_14
GW09_31
C3_Asb
GP05_15
GP12_23
GW03_09
GP05_16
GW09_32
GP05_22
GW12_38
C1D
C1A
C1E
C2C
GP05_21
GW06_13
LF08_07
C1B
GP05_17
C2B
GW12_33
GP05_20
SW 26
GW06_37
GW06_36
GW09_35
C2A
GP18_18A
GP18_18B
GP18_18C
GP09_18
GW06_34
SW02
GW03_26
GW03_27

AREA 1
AREA 2
CELL 1
CELL 2
CELL 3A
CELL 3B
CELL 4A
CELL 4B
CELL 5

River Ebbw
Ebbw River (Afon Ebwy)

186000
185800
185600
185400
185200
185000
184800
184600
330400
330600
330800
331000
331200
331400

KEY
- LEACHATE WELLS
- GAS MONITORING BOREHOLE
- GRAVEL GROUNDWATER MONITORING BOREHOLE
- DISUSED MONITORING WELL
- LOST, BURIED OR DAMAGED WELLS
- SURFACE WATER MONITORING POINT
- RIVER EBBW/WATER BODIES
- CUT OFF WALL
- AREA 2 CELL BOUNDARIES

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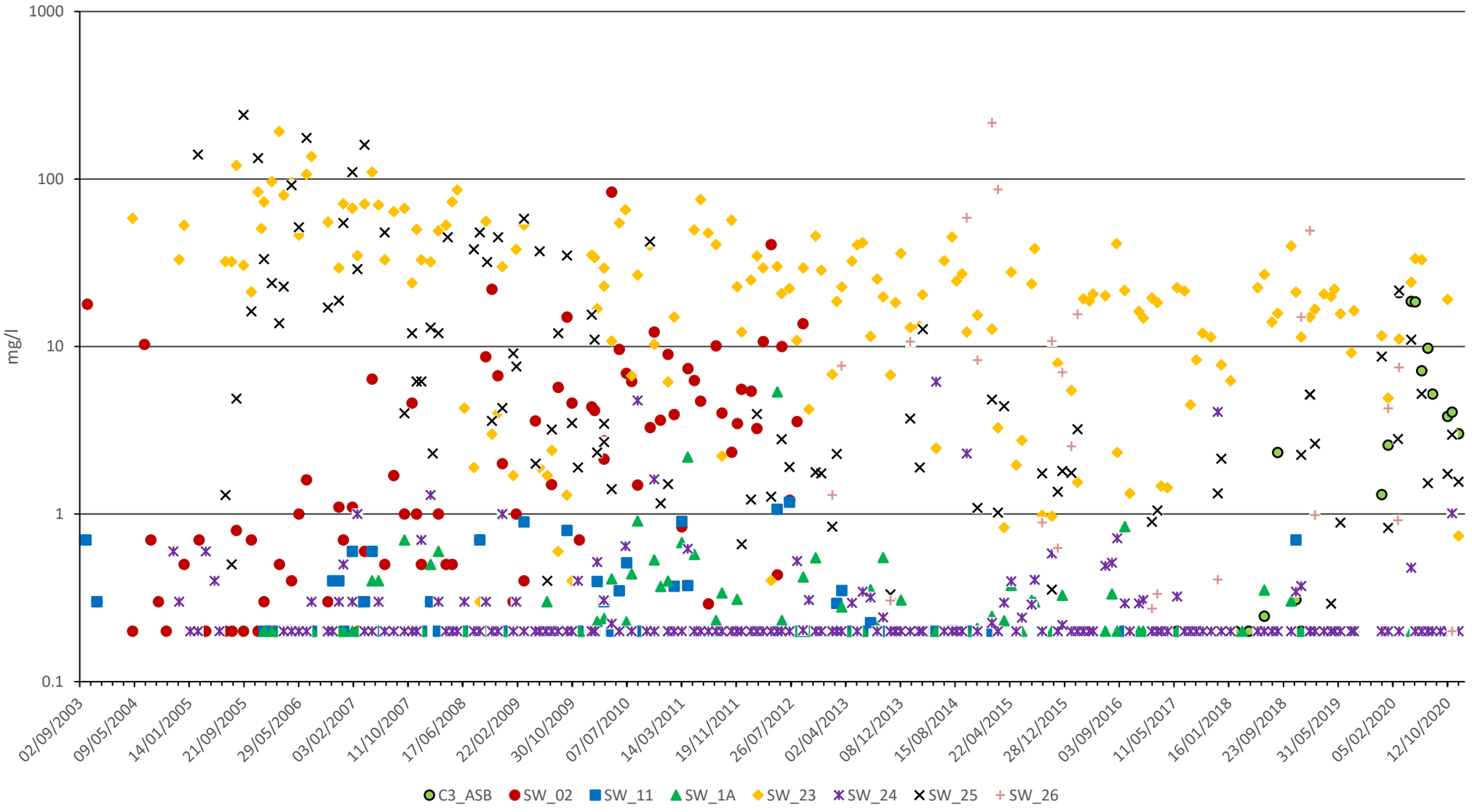
Appendix 1 Surface Water Chemistry Graphs



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Docksway Disposal Site

Ammonical Nitrogen in Surface Water

Date	February 2021
A4 Scale	nts
Drawn	NC
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Appendix

1-1

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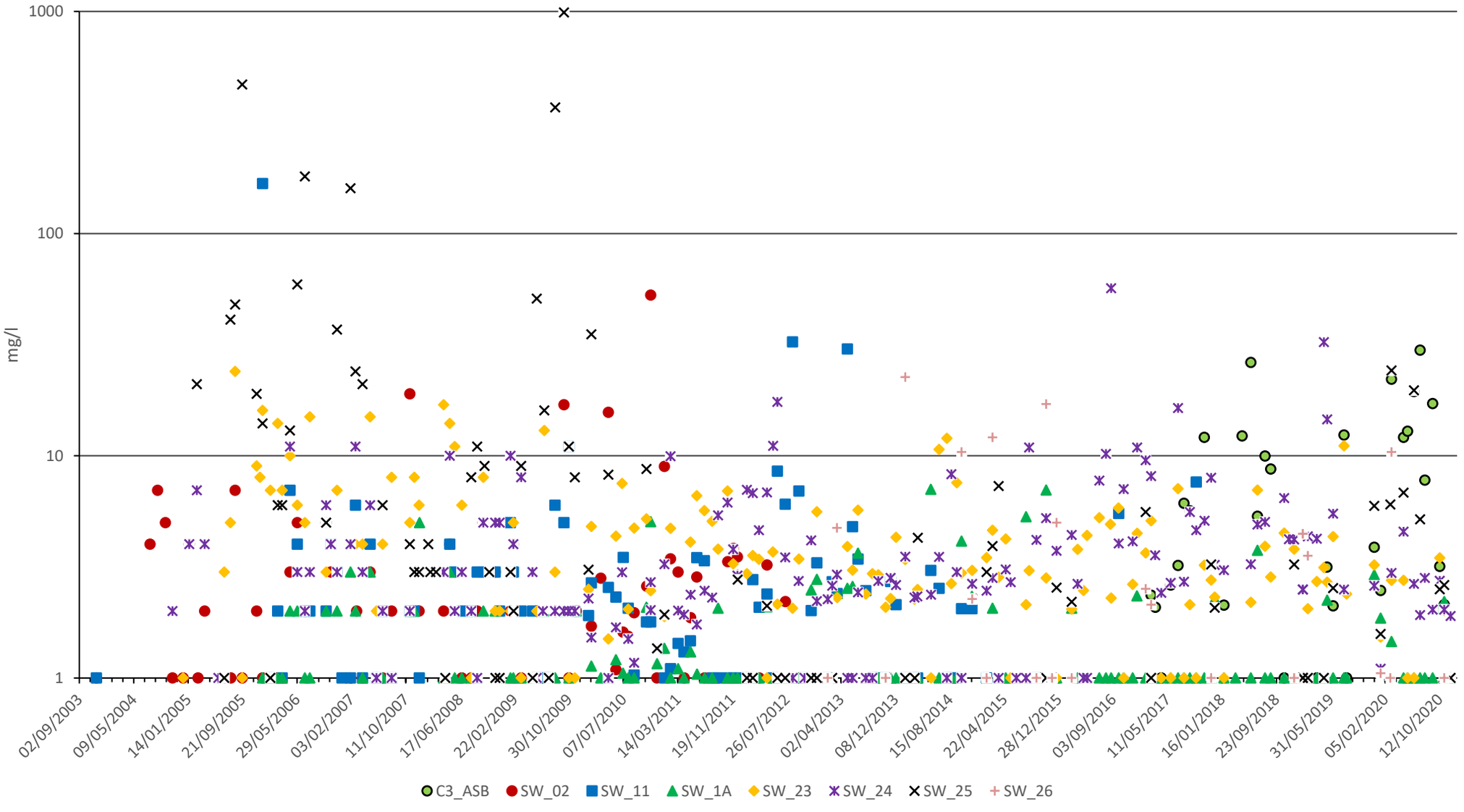

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Docksway Disposal Site

Biochemical Oxygen Demand in Surface Water

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-2

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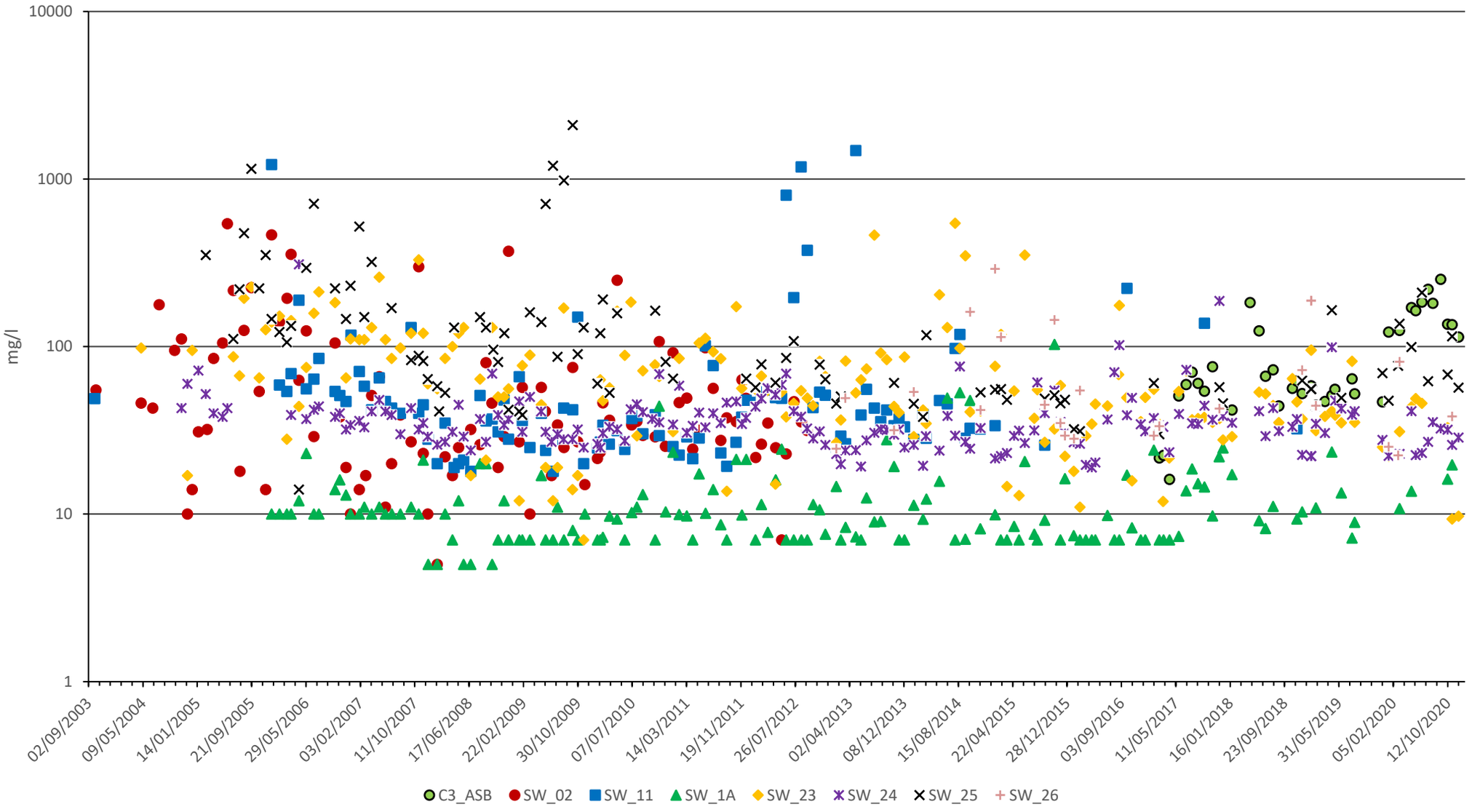

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Docksway Disposal Site

Chemical Oxygen Demand in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-3

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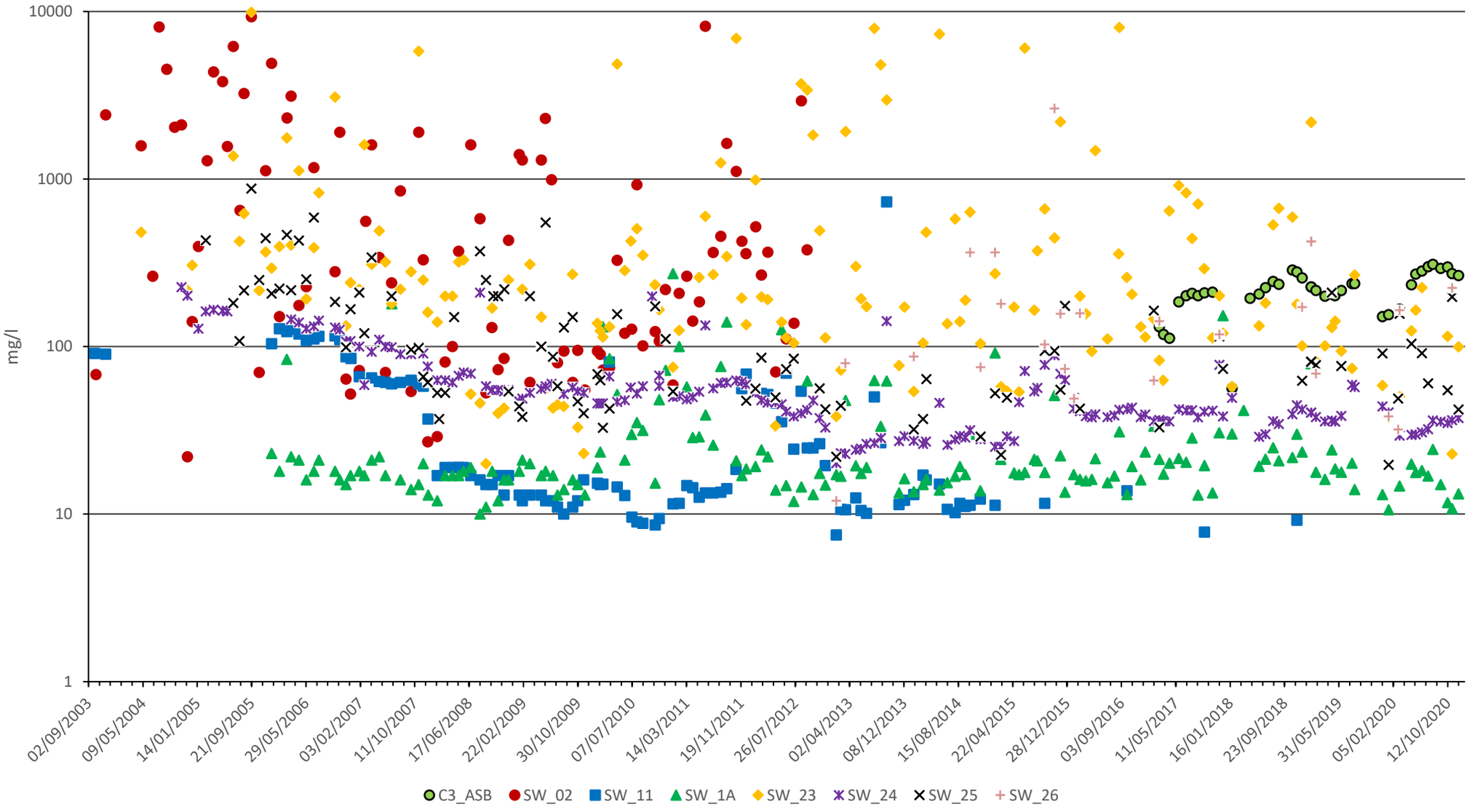

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Docksway Disposal Site

Chloride in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-4

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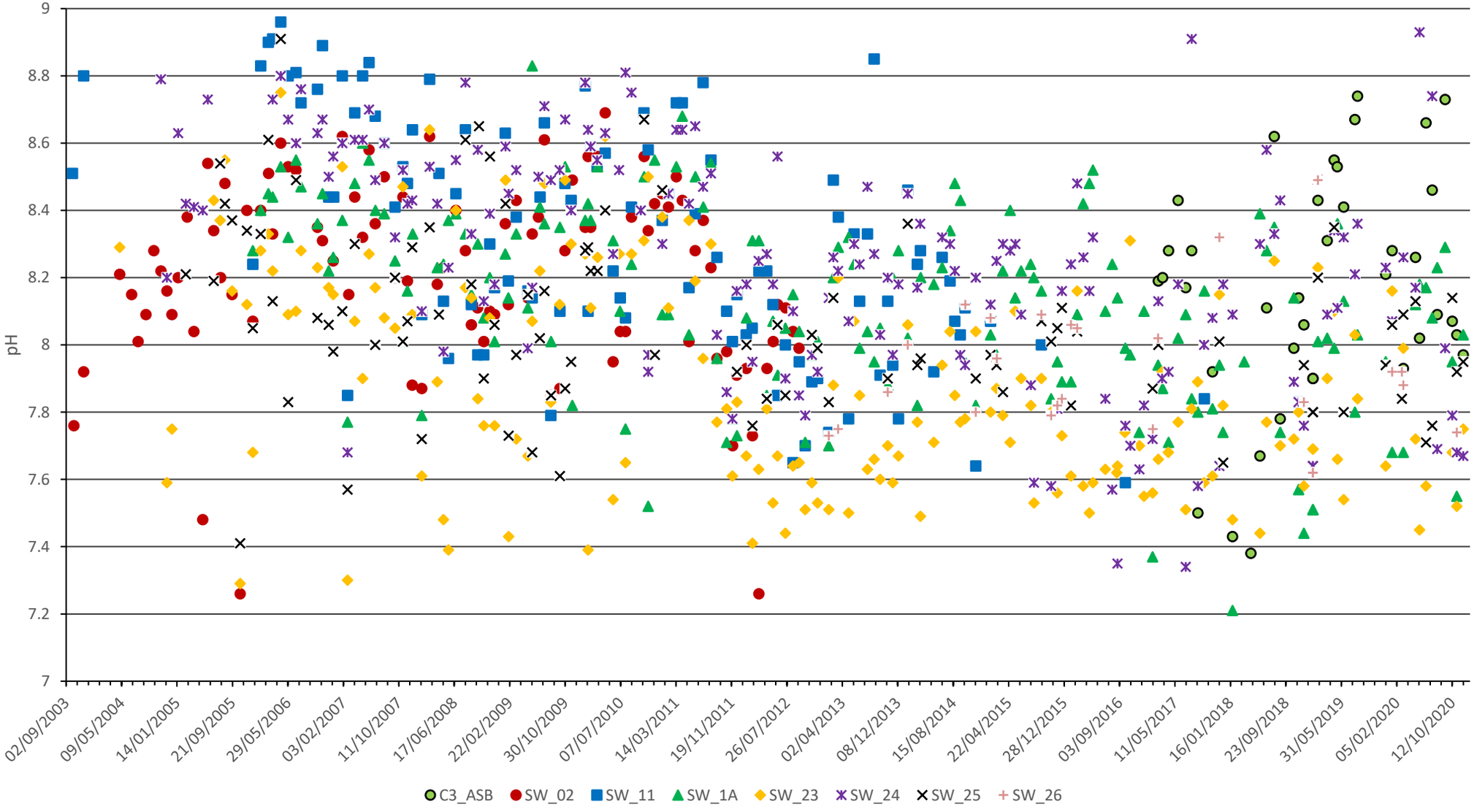

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Docksway Disposal Site

pH in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-5

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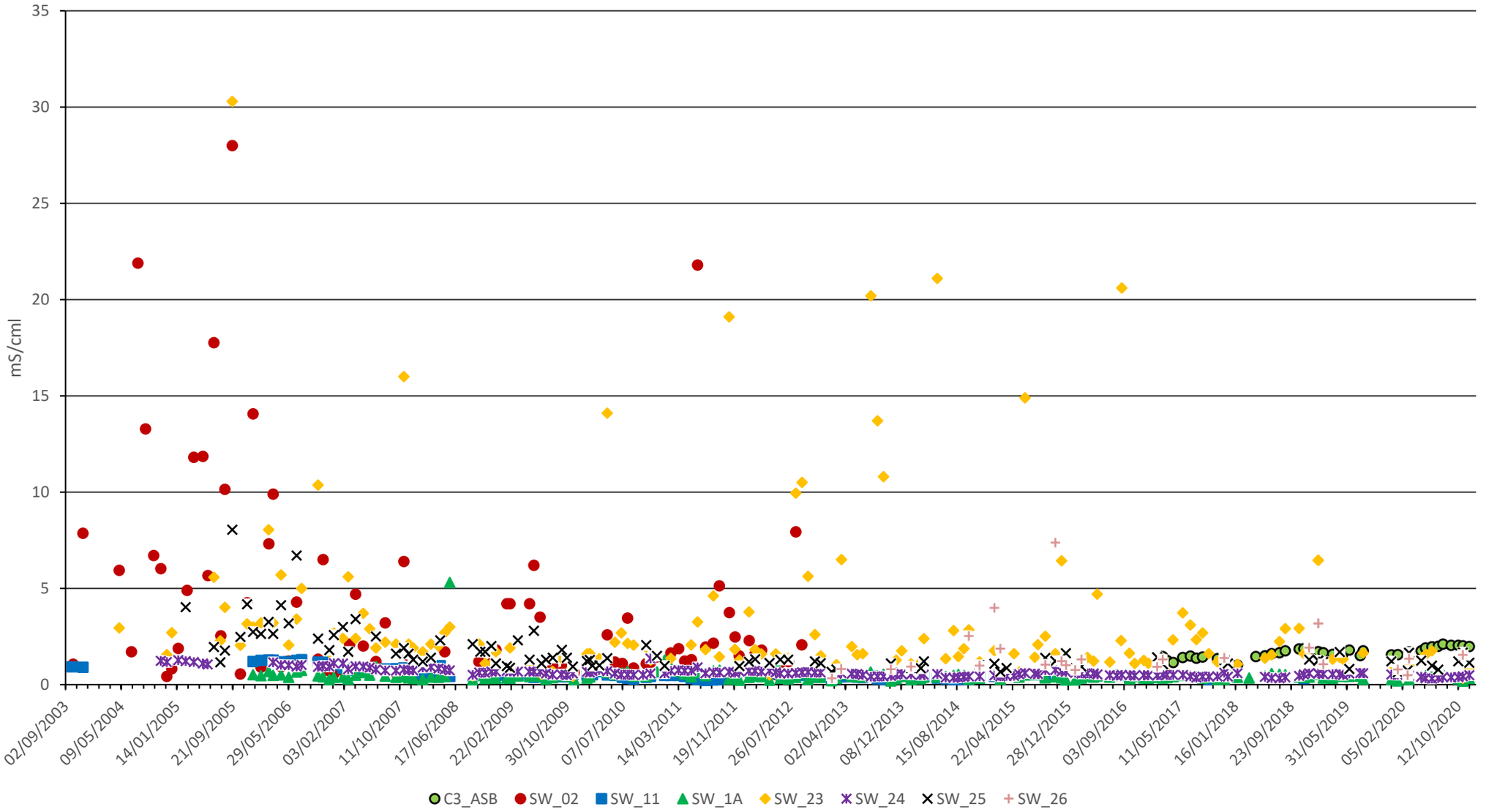

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Docksway Disposal Site

Electrical Conductivity in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-6

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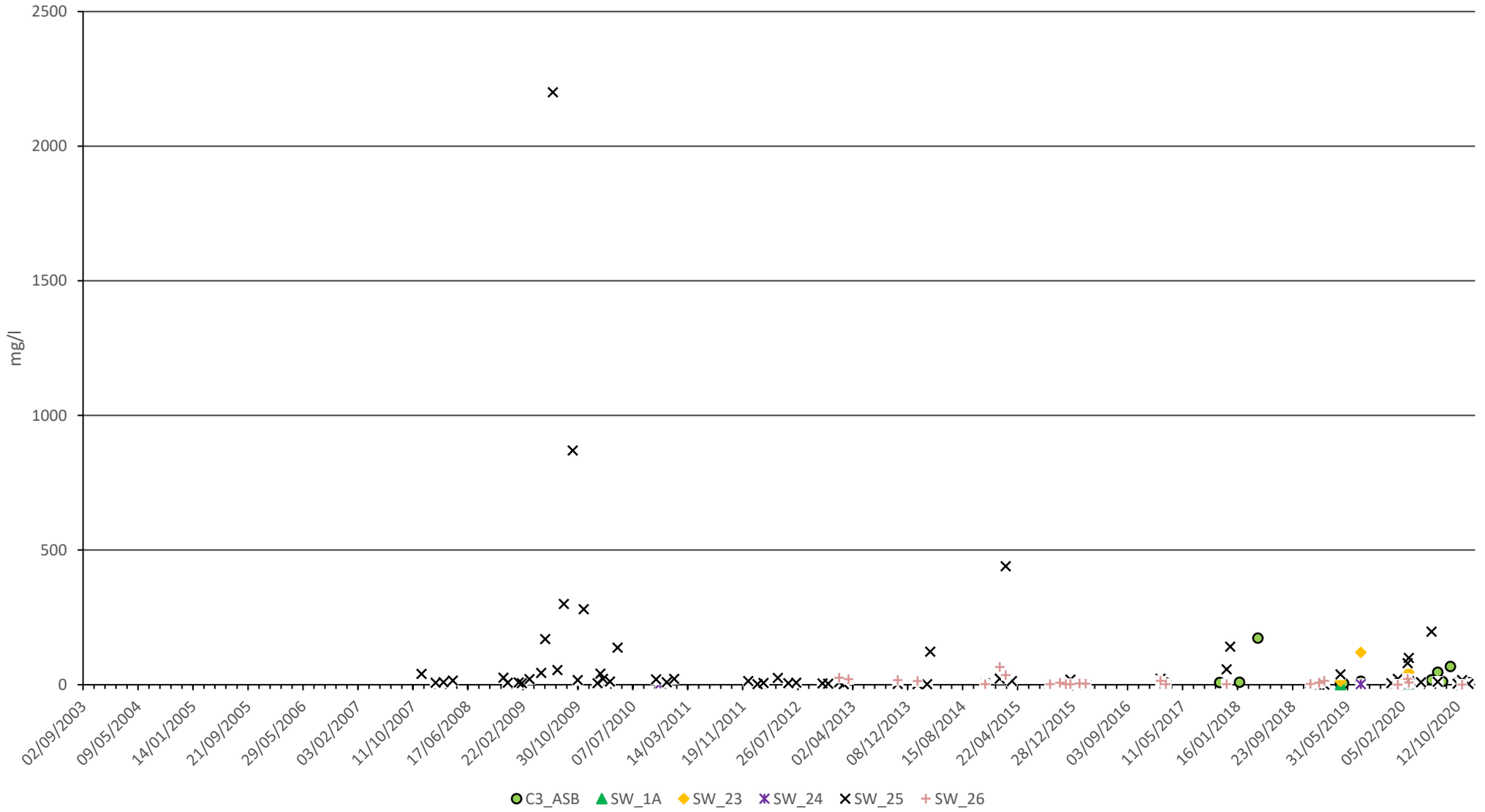

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Docksway Disposal Site

Total Suspended Solids in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-7

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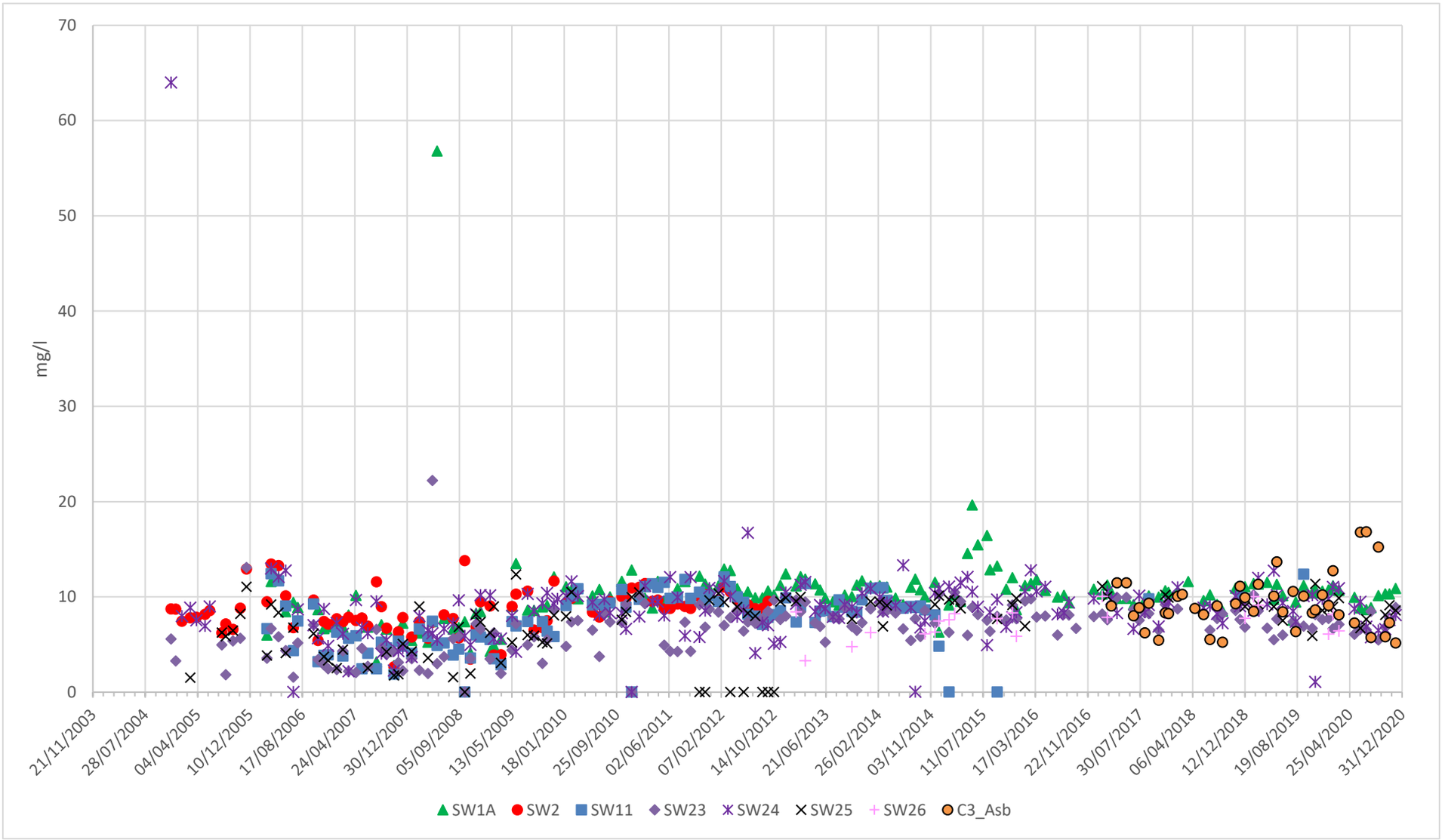

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Docksway Disposal Site

Dissolved Oxygen in Surface Water

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

1-8

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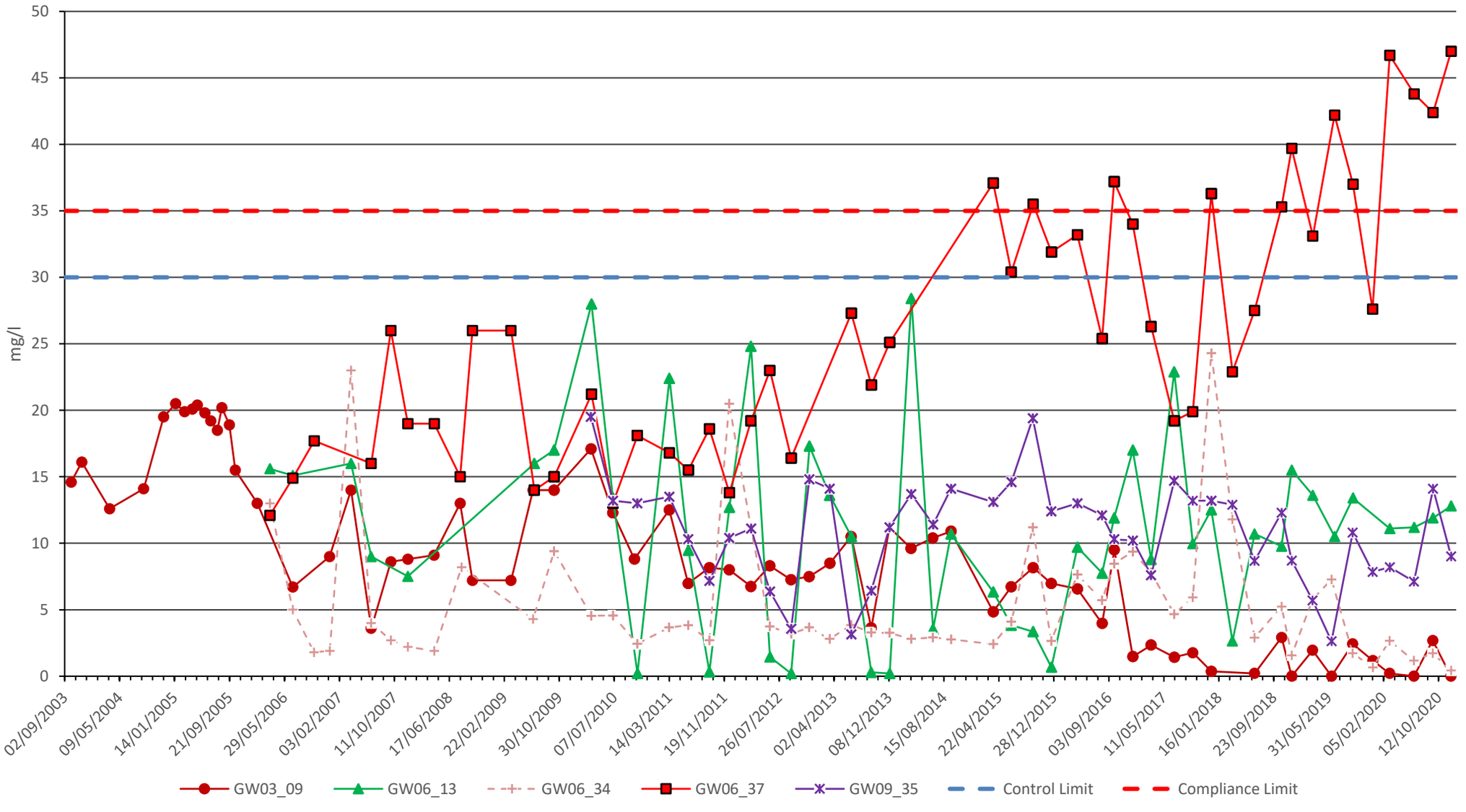
Appendix 2 Groundwater Chemistry Graphs



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Newport City Council

Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-1

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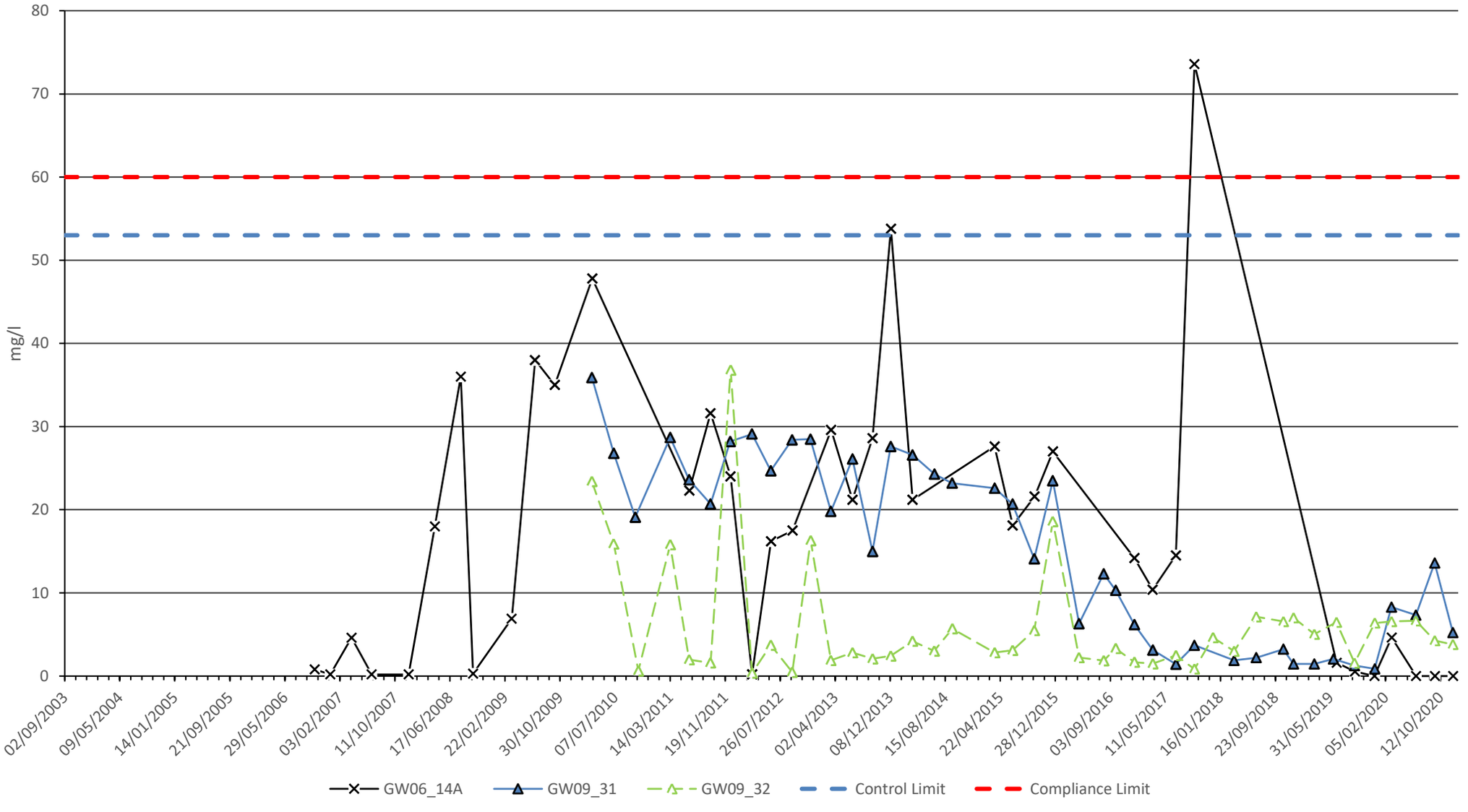

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

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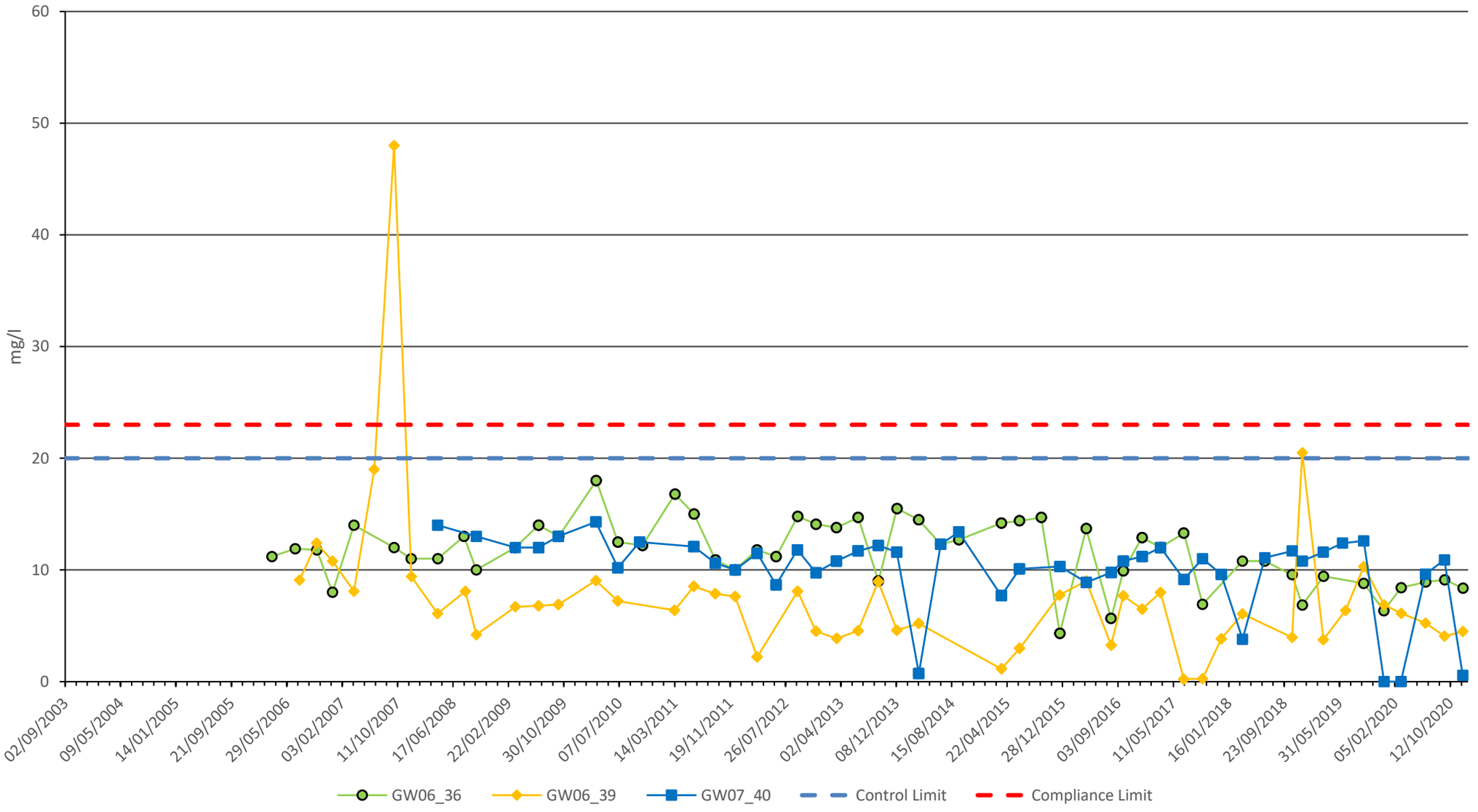

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-3

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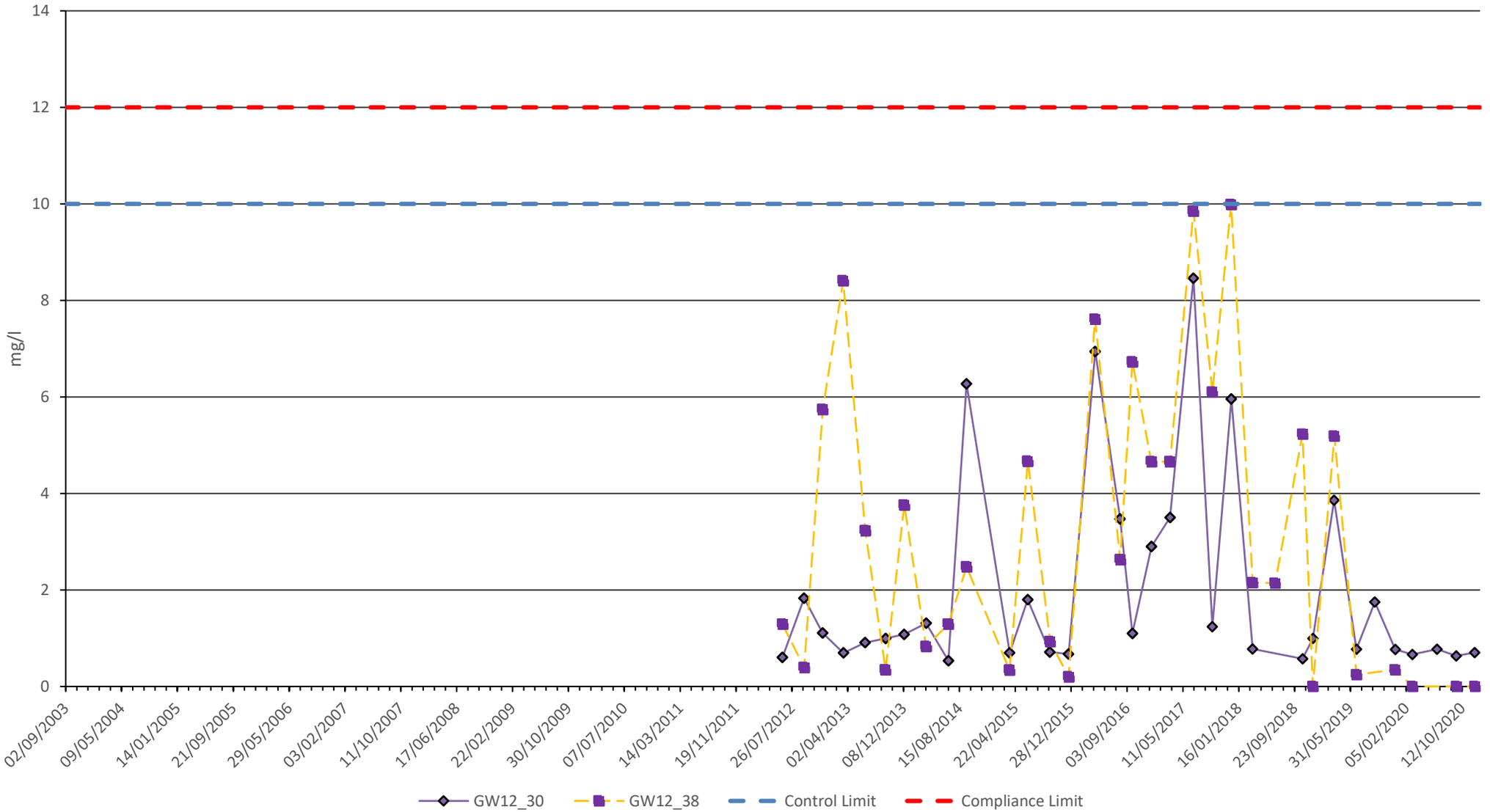

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-4

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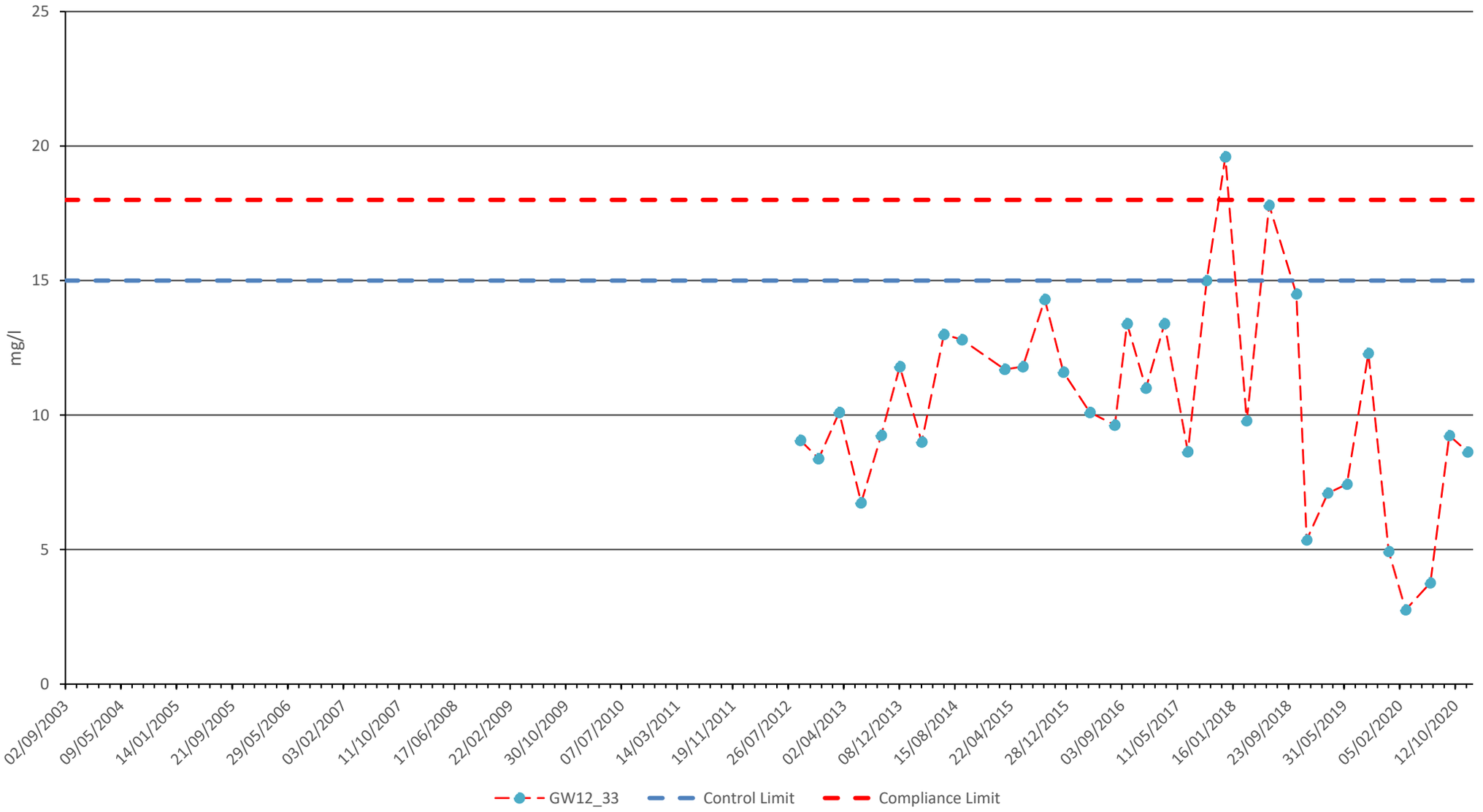

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-5

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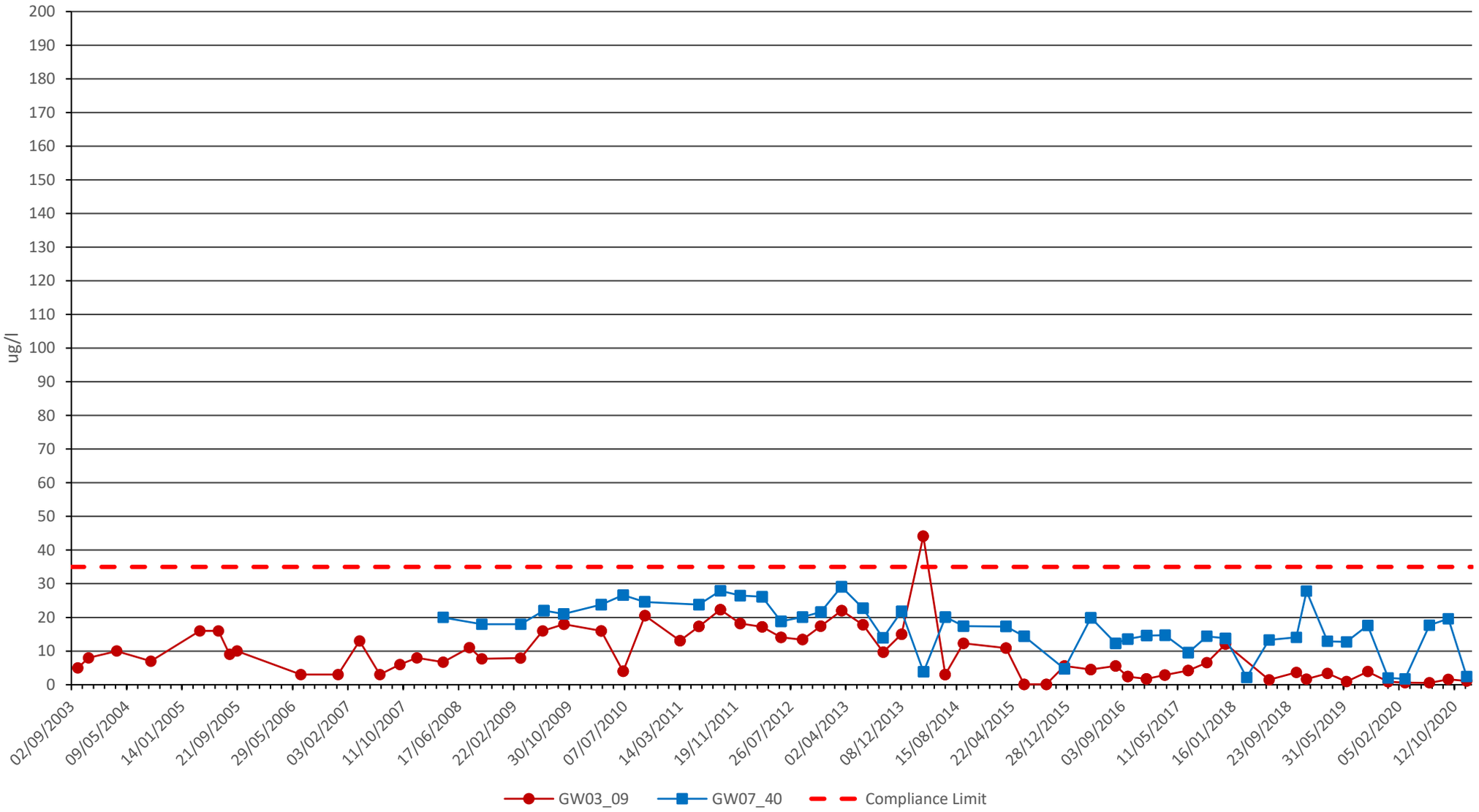

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Docksway Disposal Site

Arsenic in Groundwater

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-6

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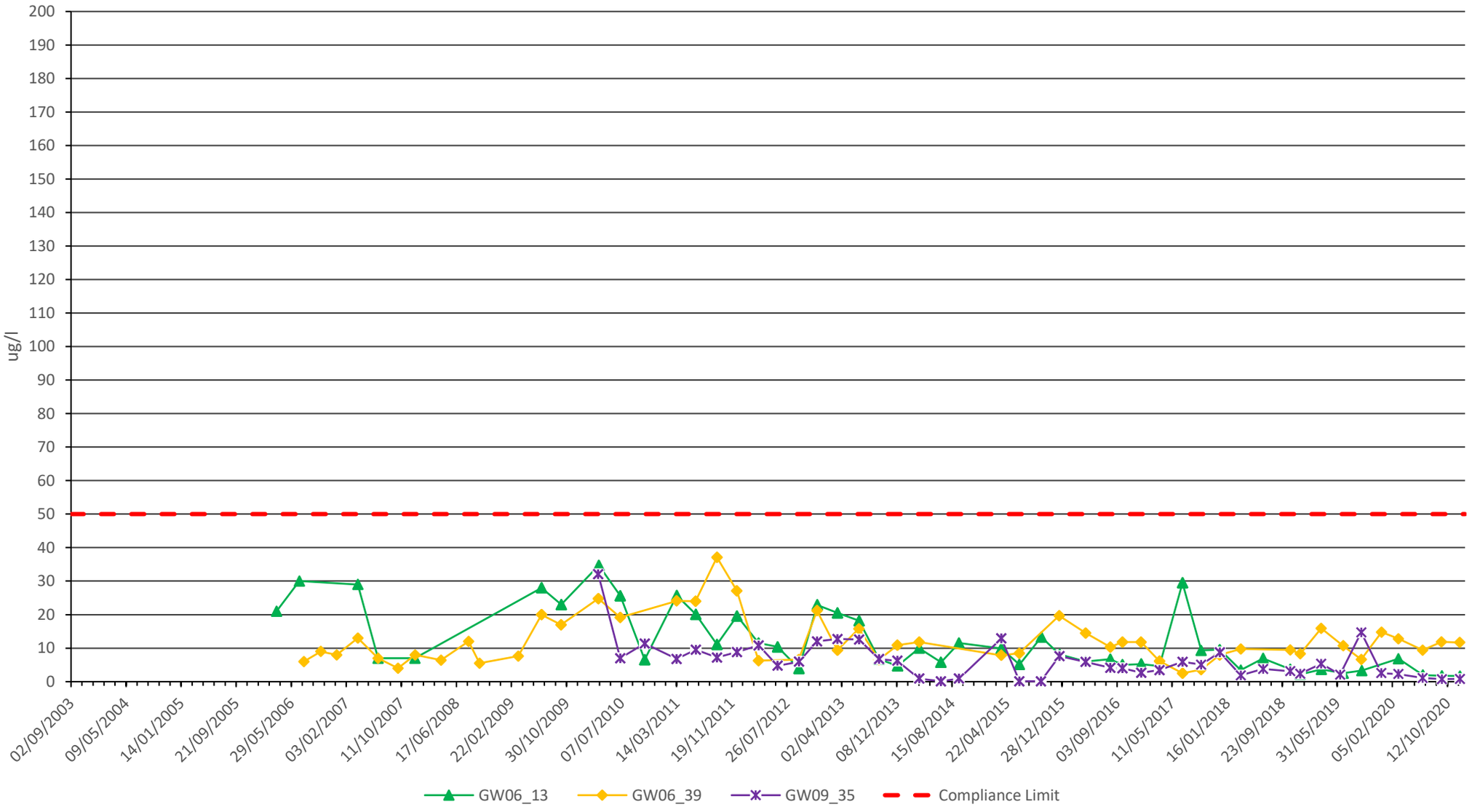

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-7

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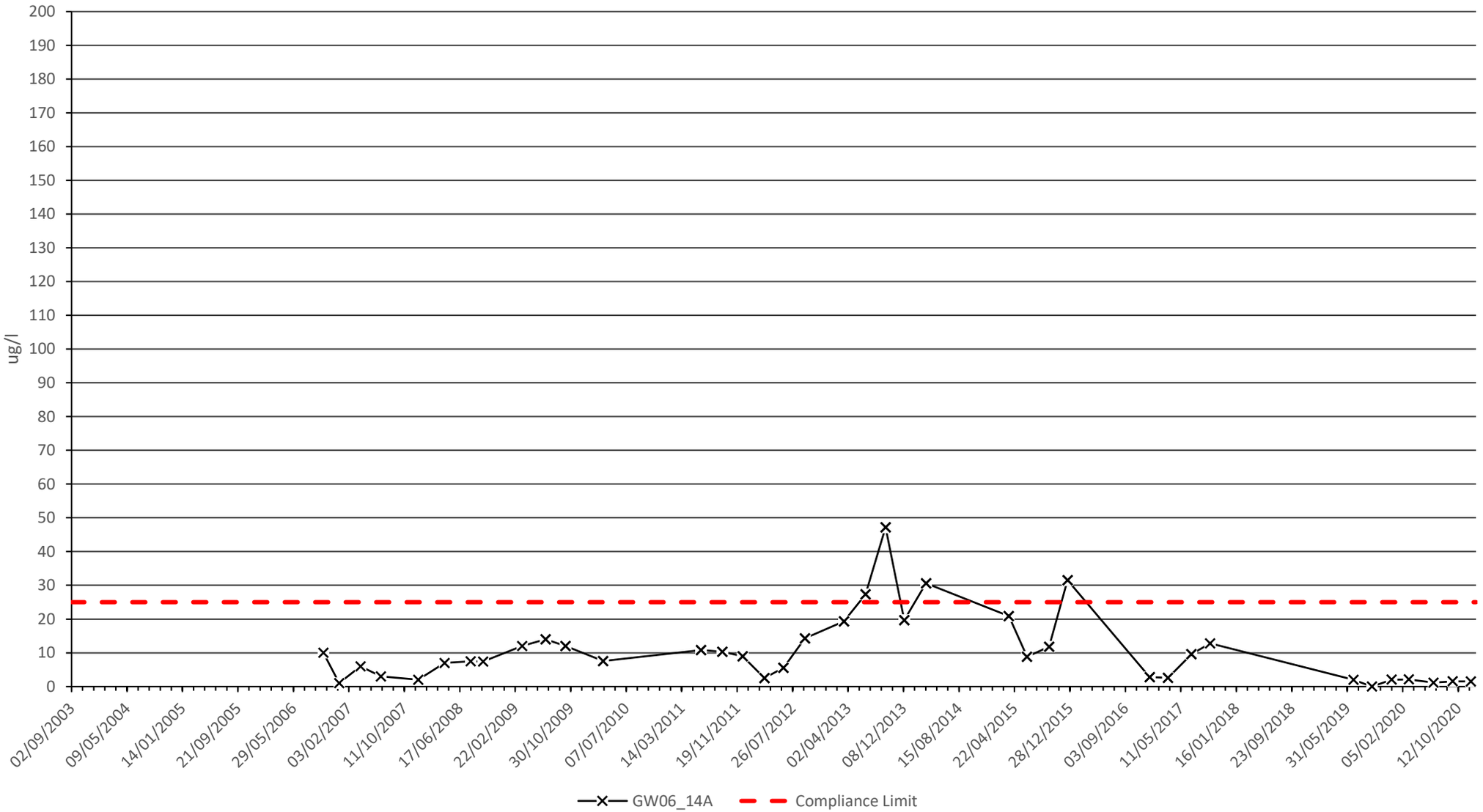

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-8

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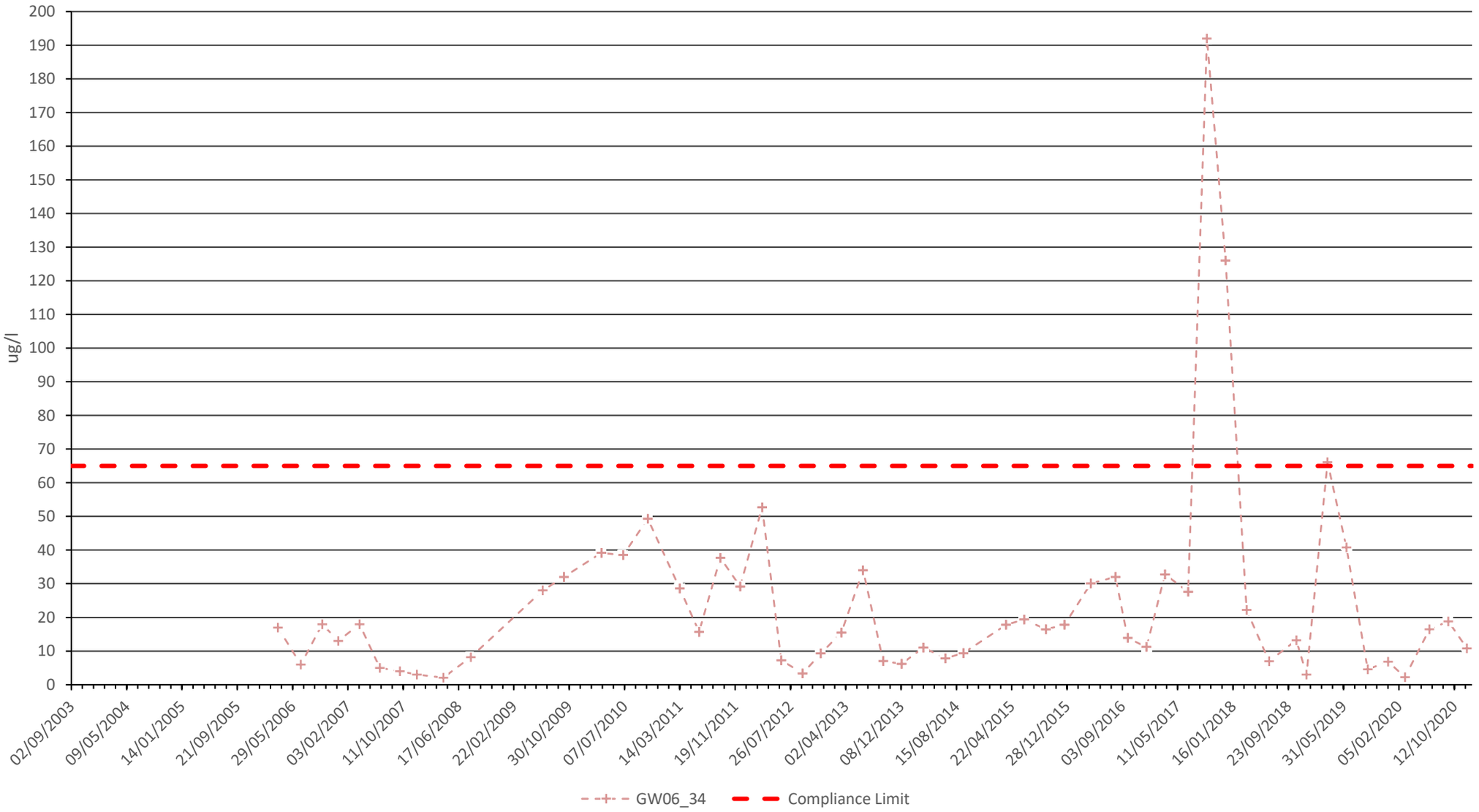

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-9

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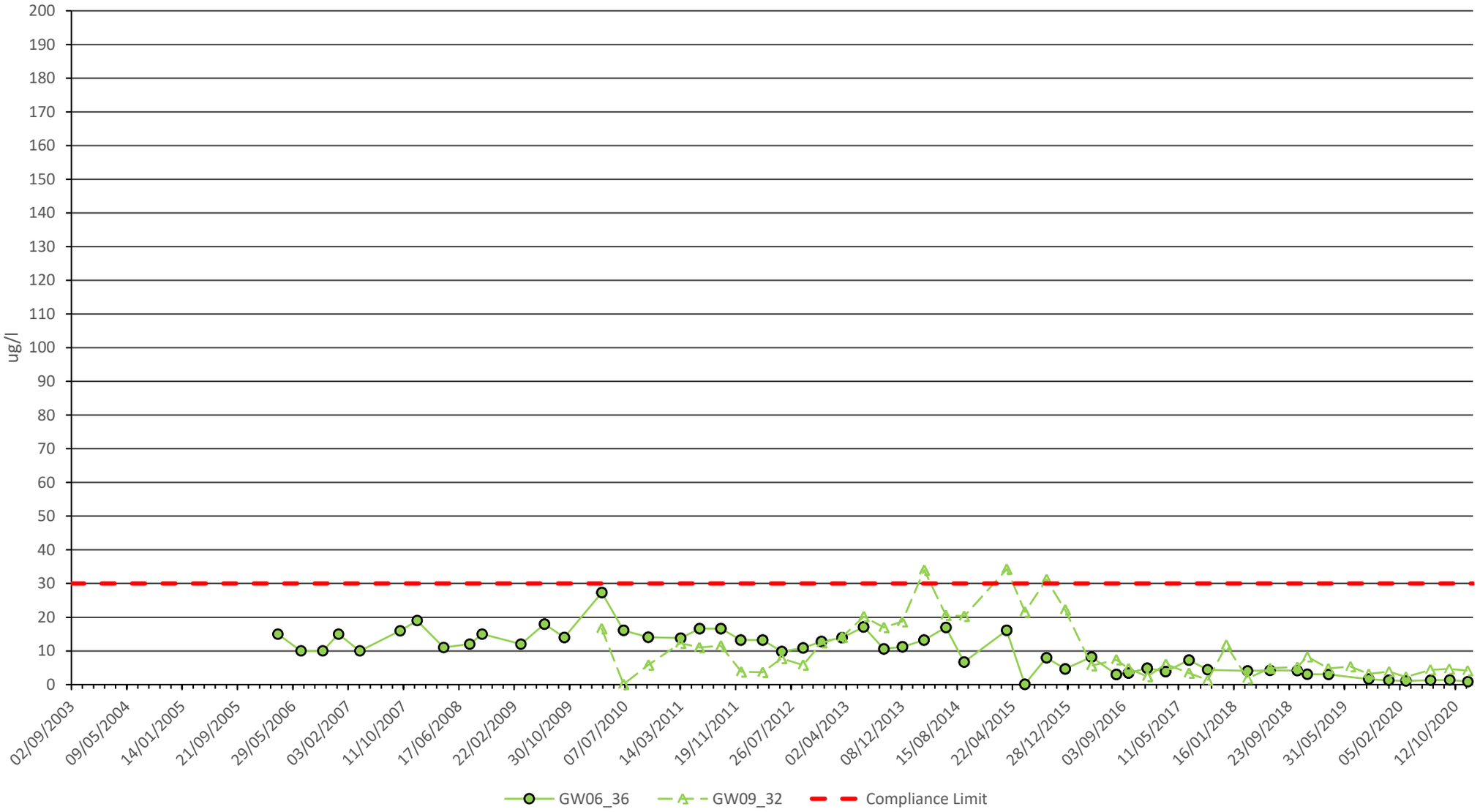

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-10

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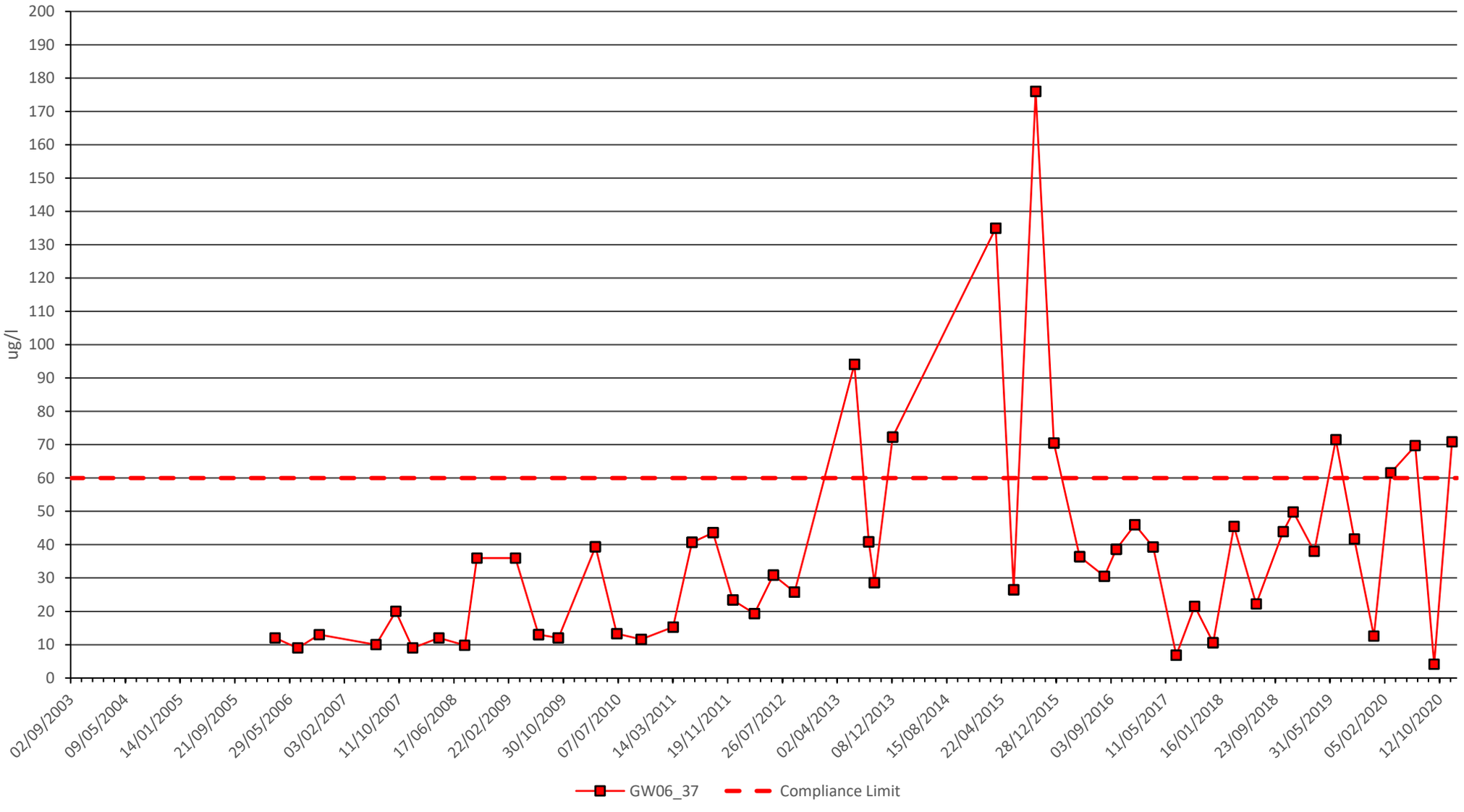

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

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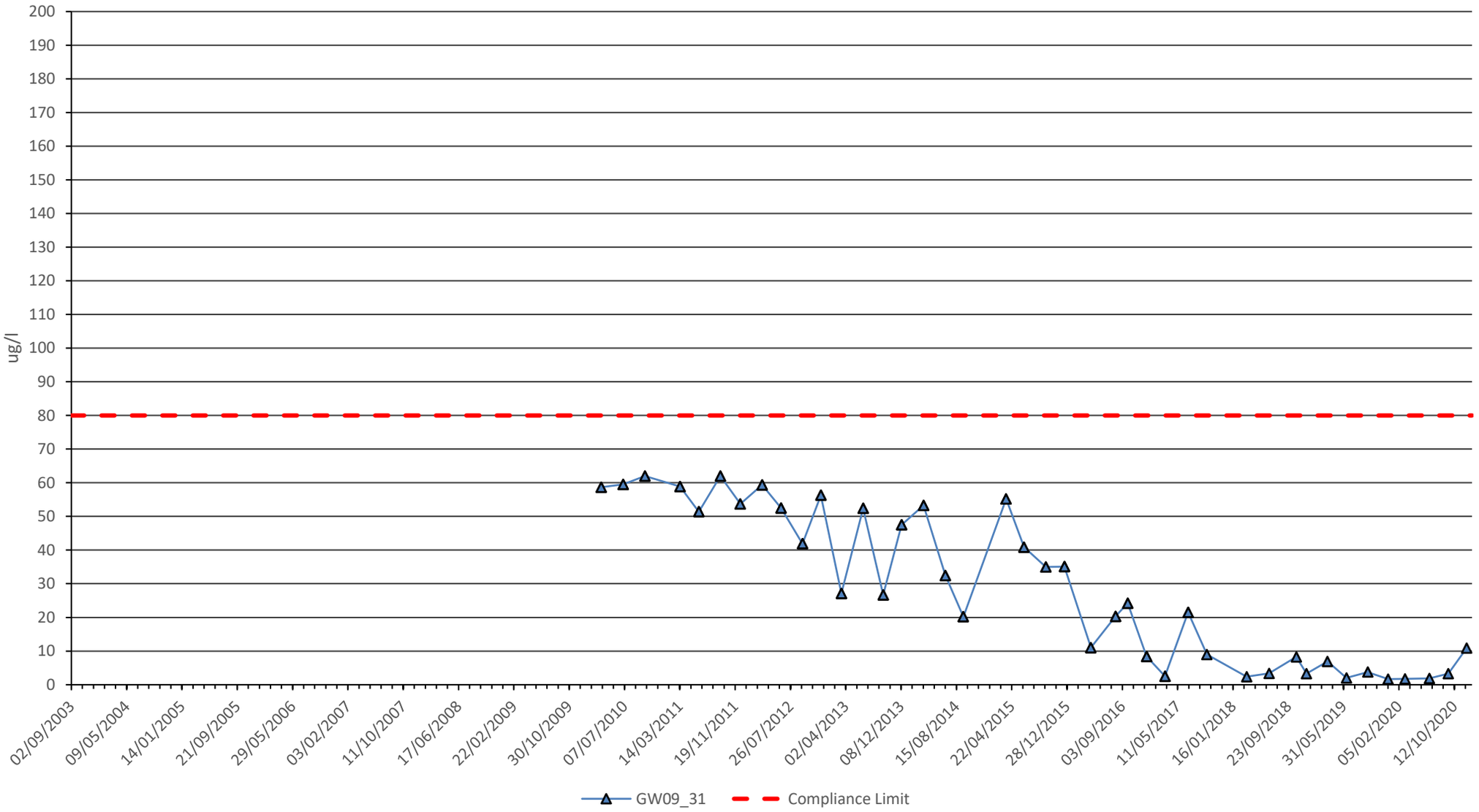

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

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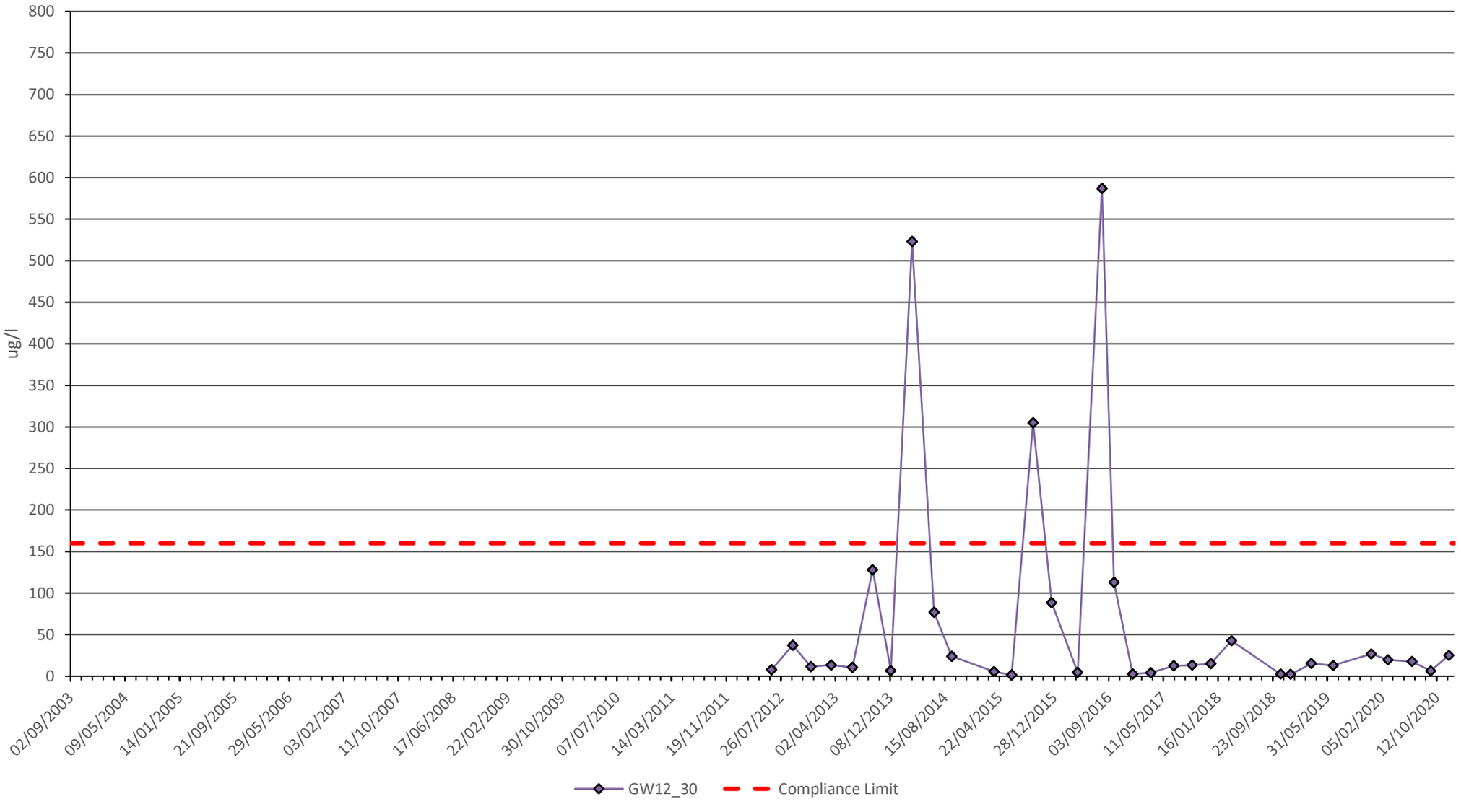

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-13

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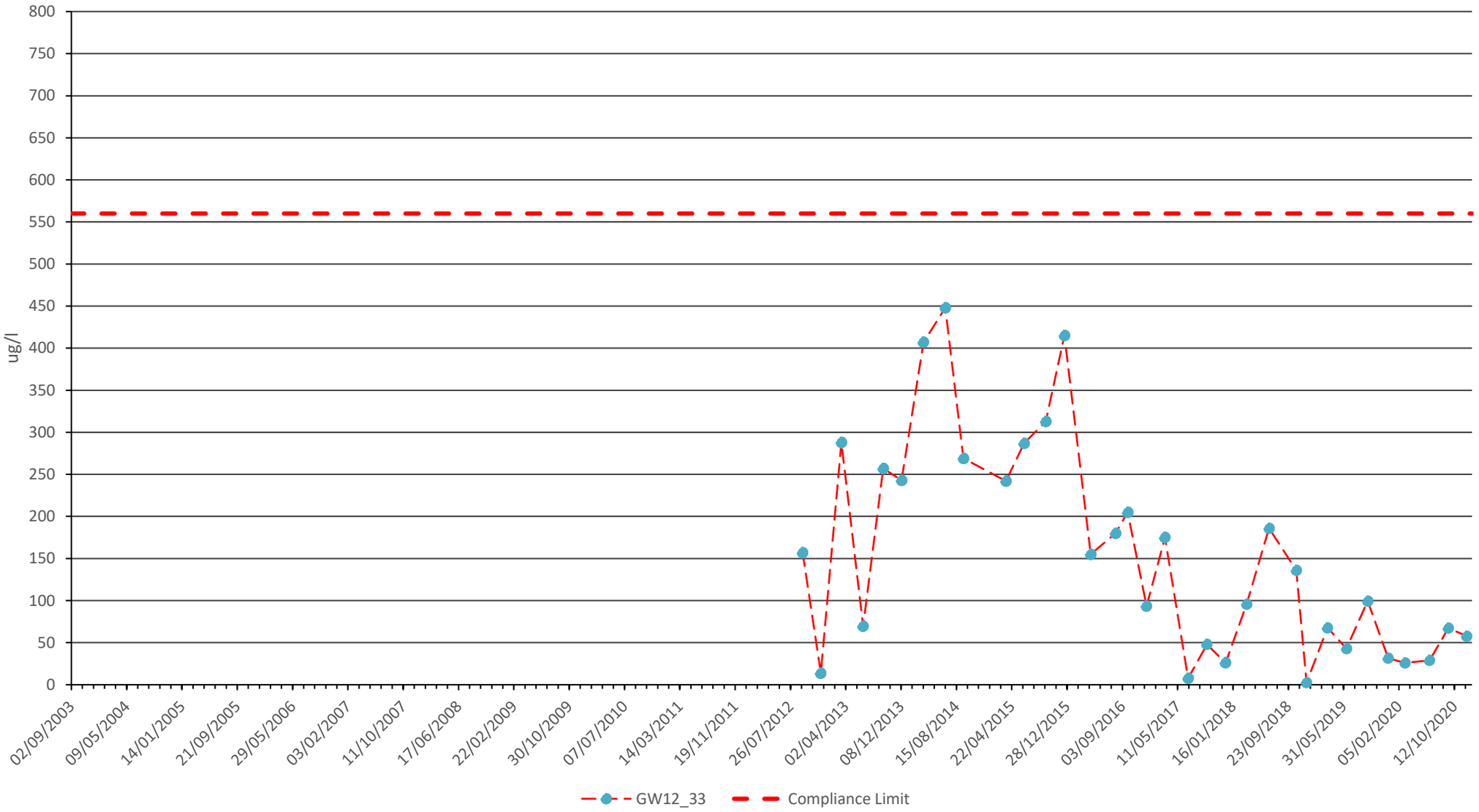

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-14

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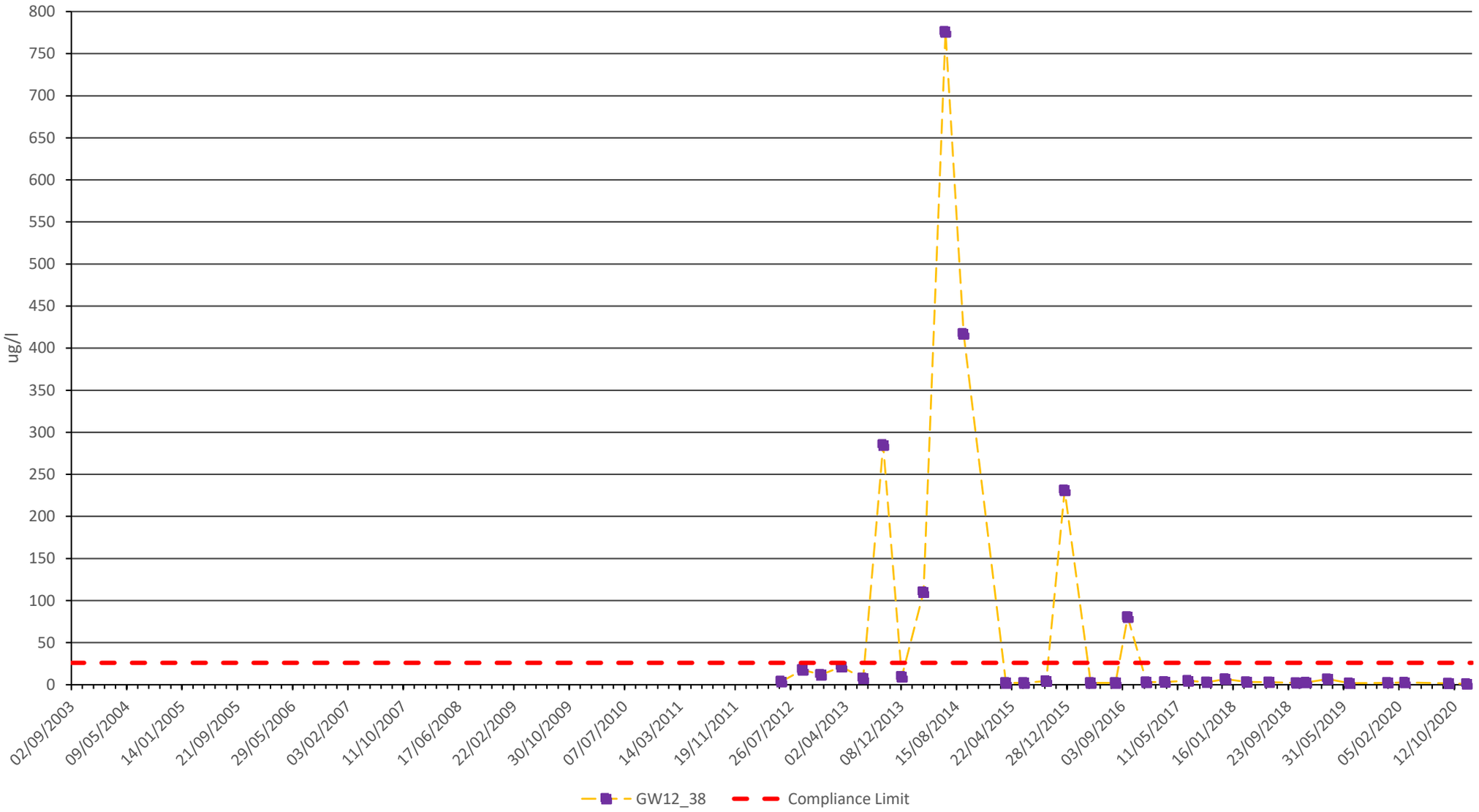

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-15

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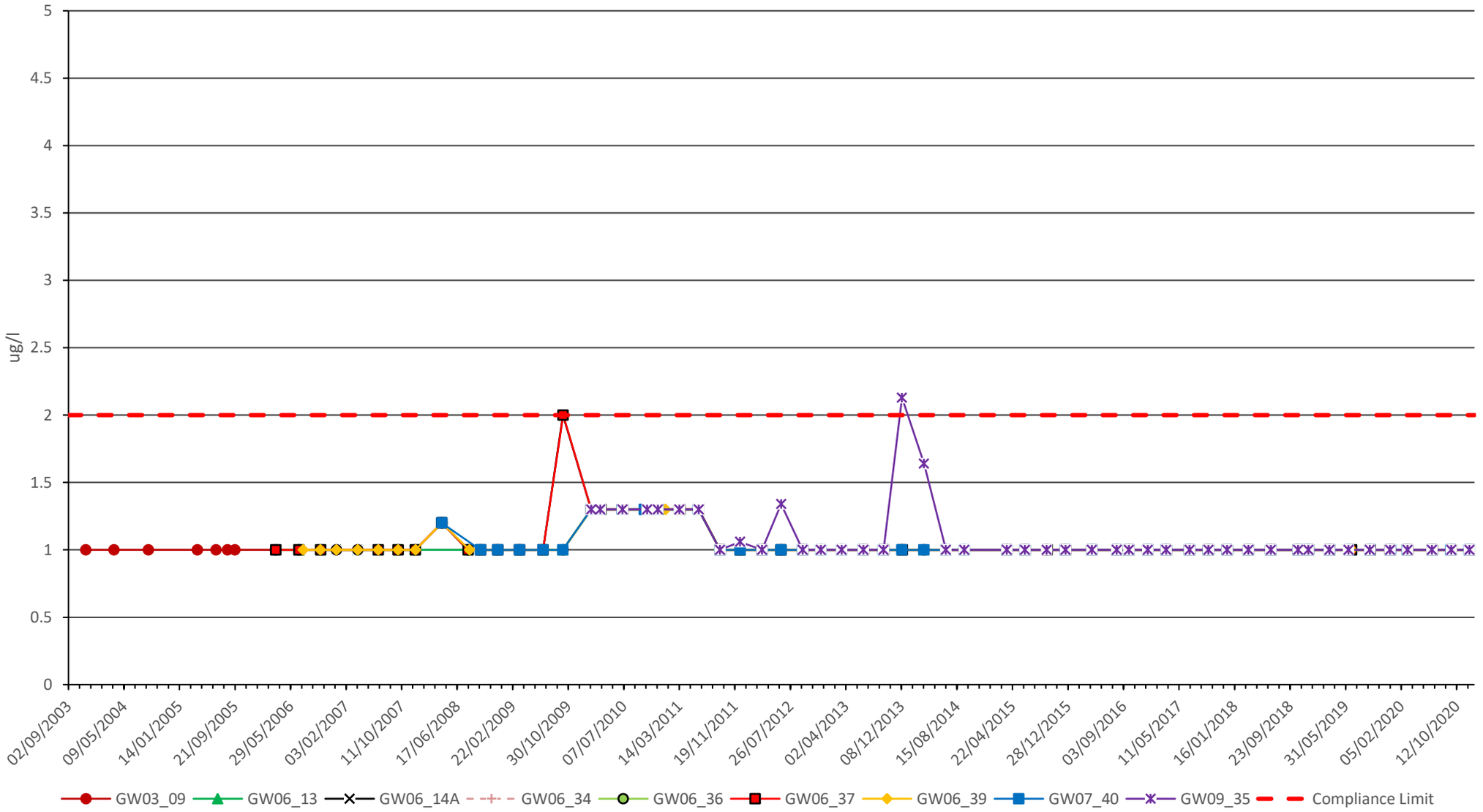

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-16

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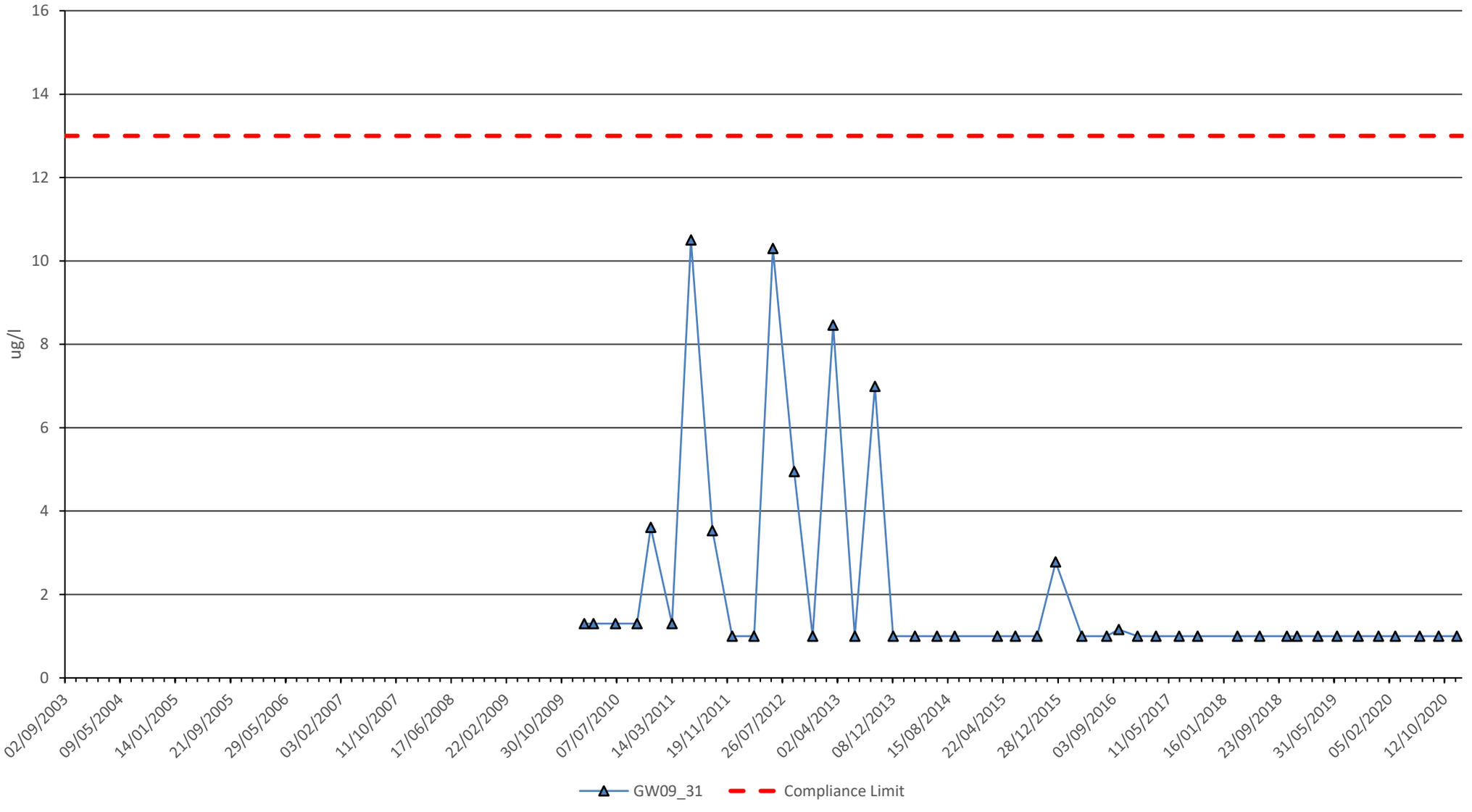

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

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2-17

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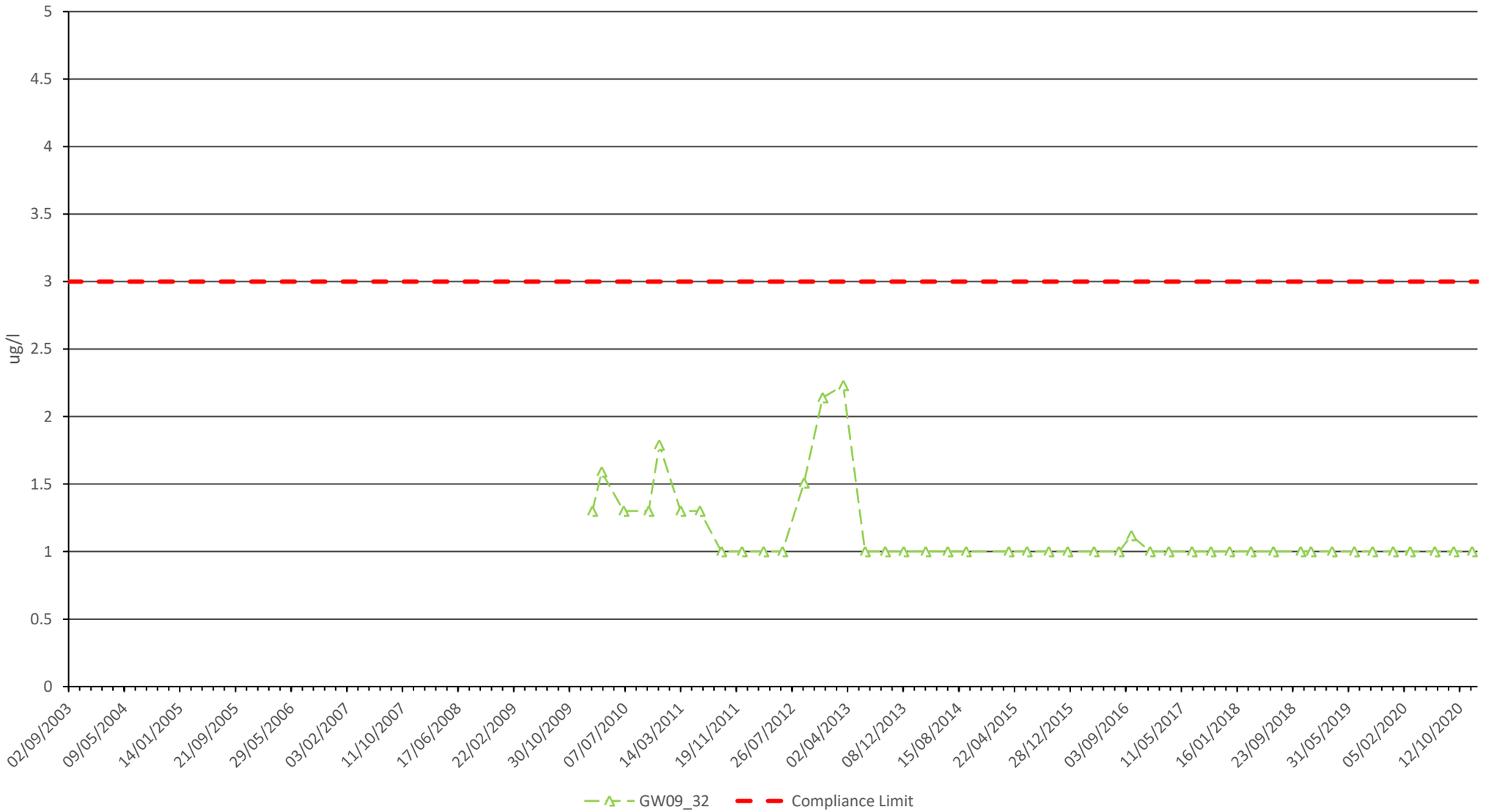

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

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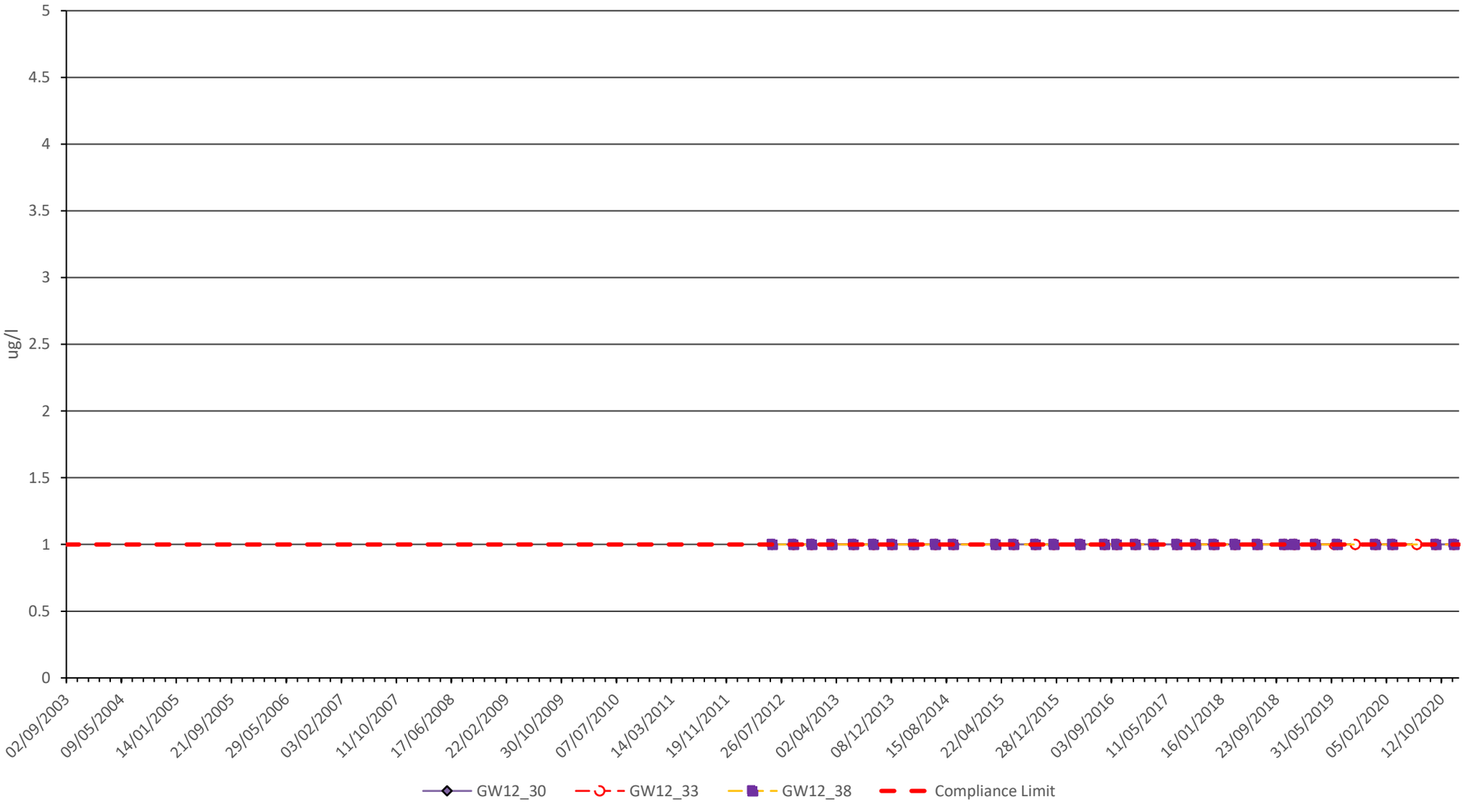

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

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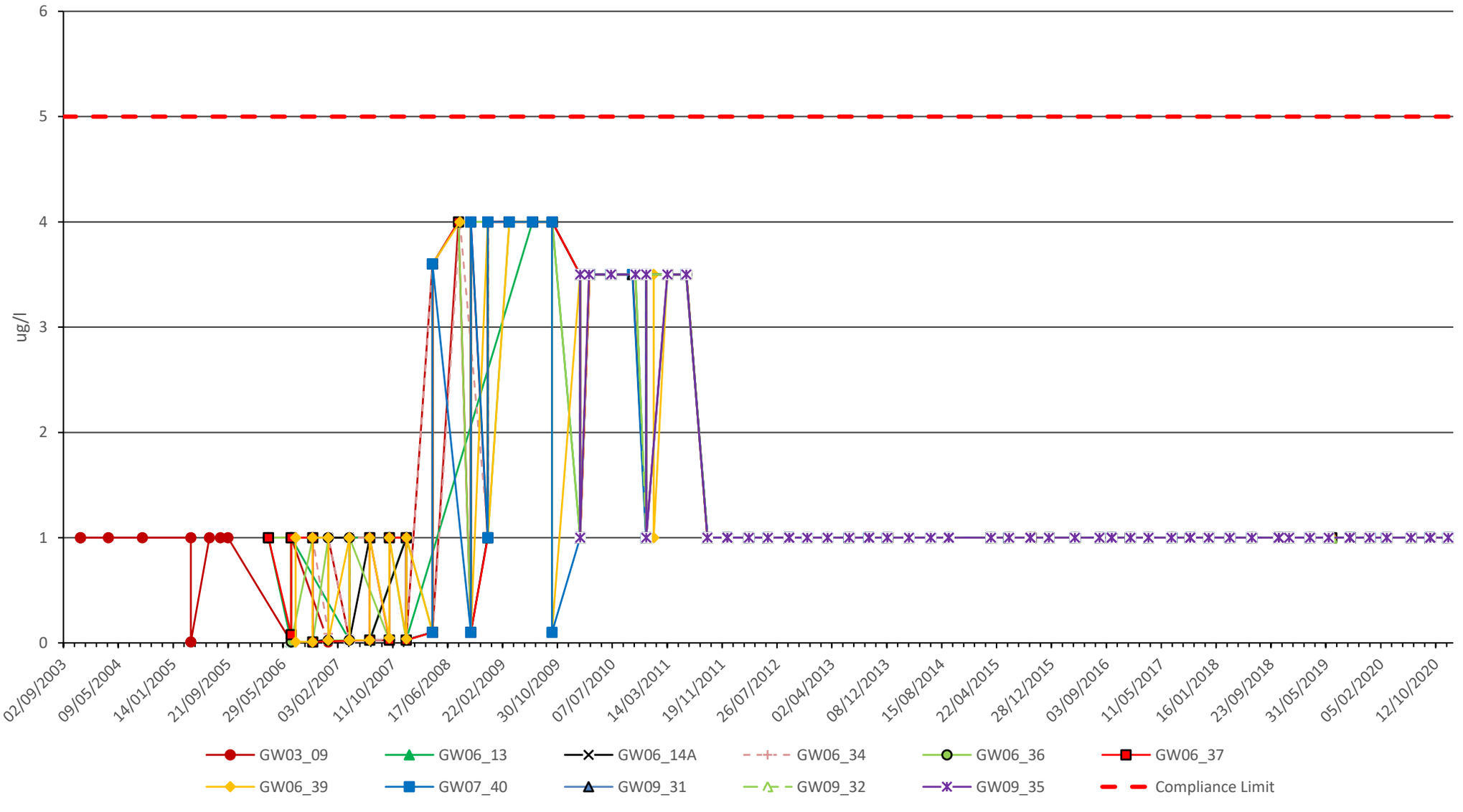

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Docksway Disposal Site

Naphthalene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-20

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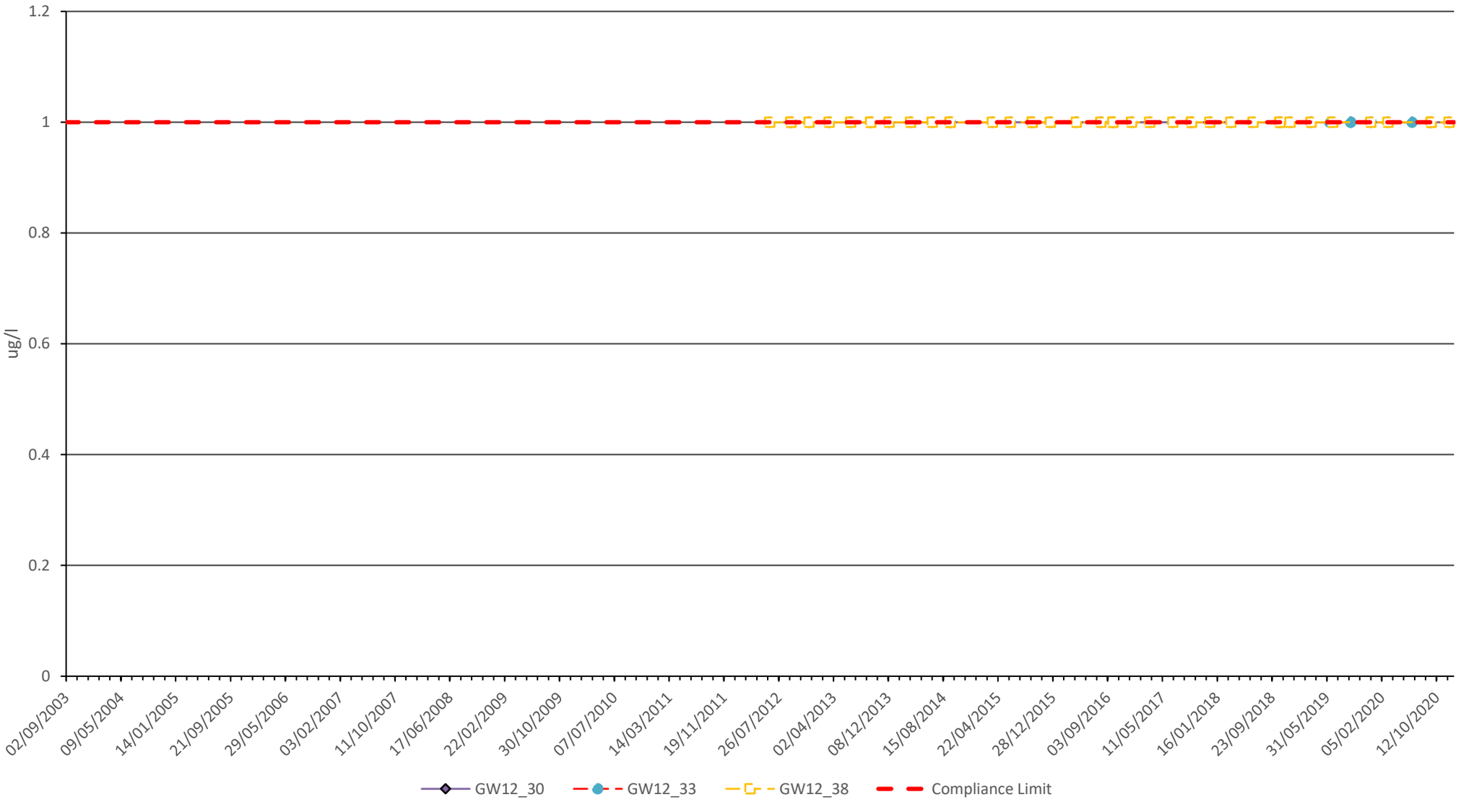

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Docksway Disposal Site

Naphthalene in Groundwater

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-21

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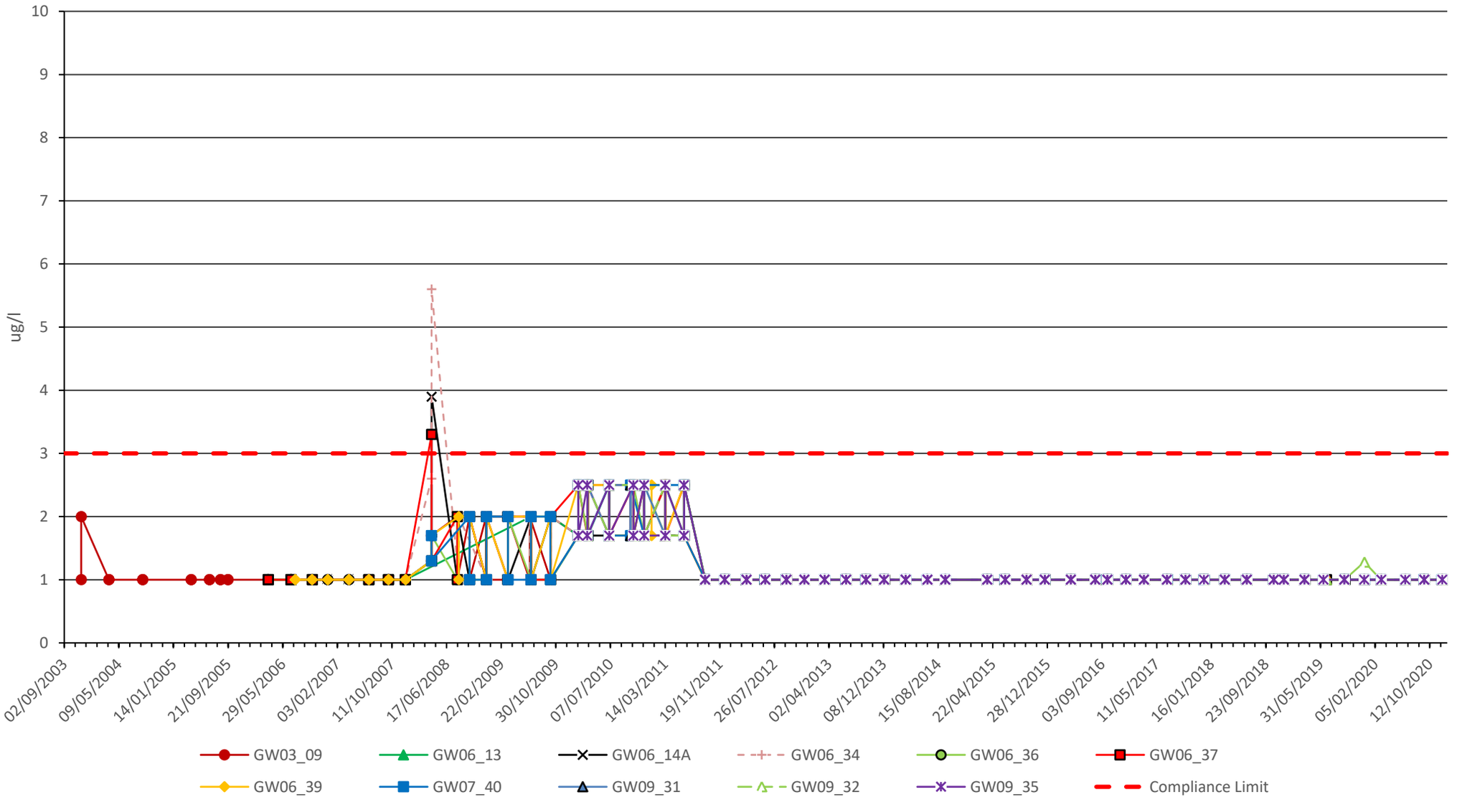

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Docksway Disposal Site

Xylene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-22

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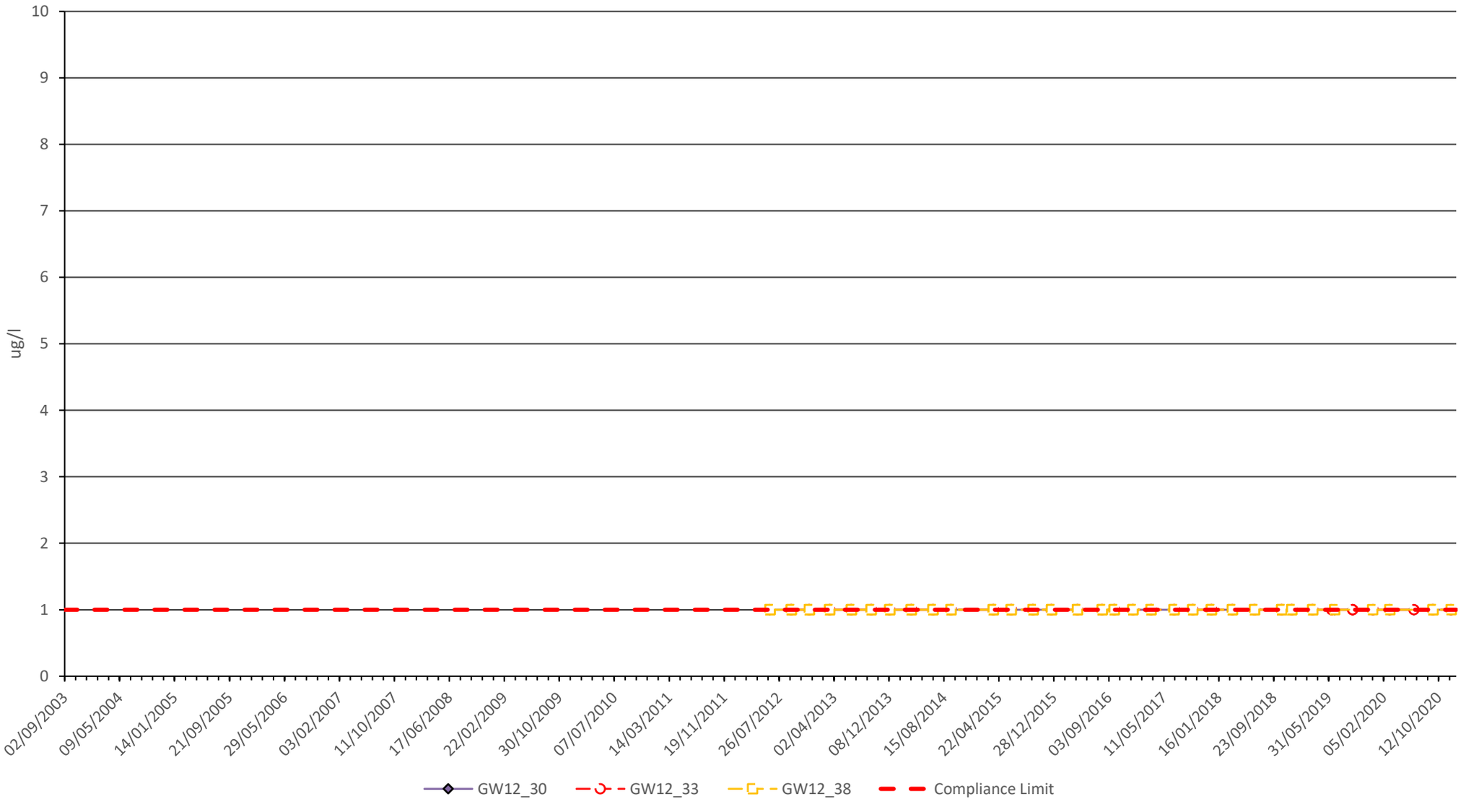

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Docksway Disposal Site

Xylene in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-23

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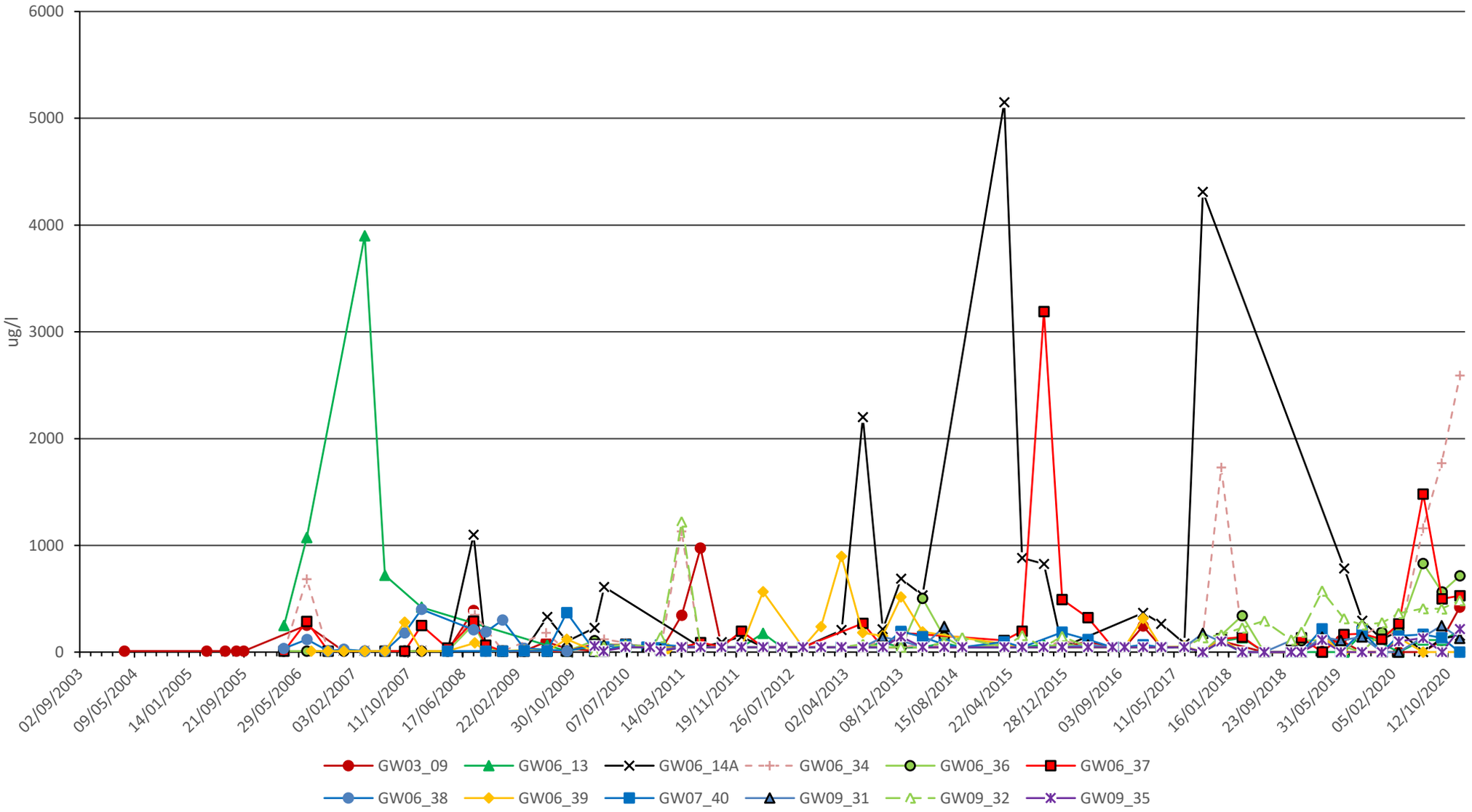

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Docksway Disposal Site

EPH in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-24

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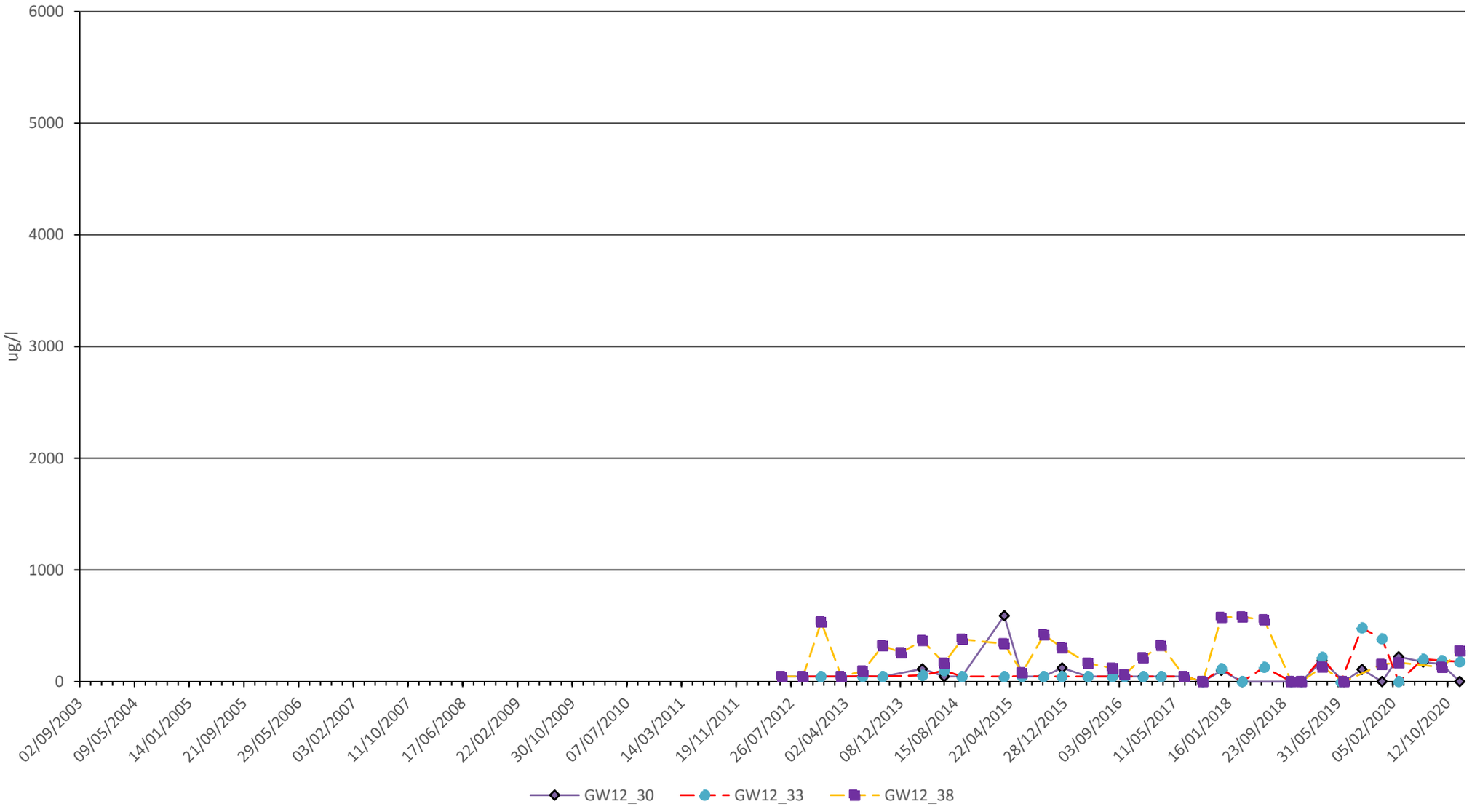

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Docksway Disposal Site

EPH in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-25

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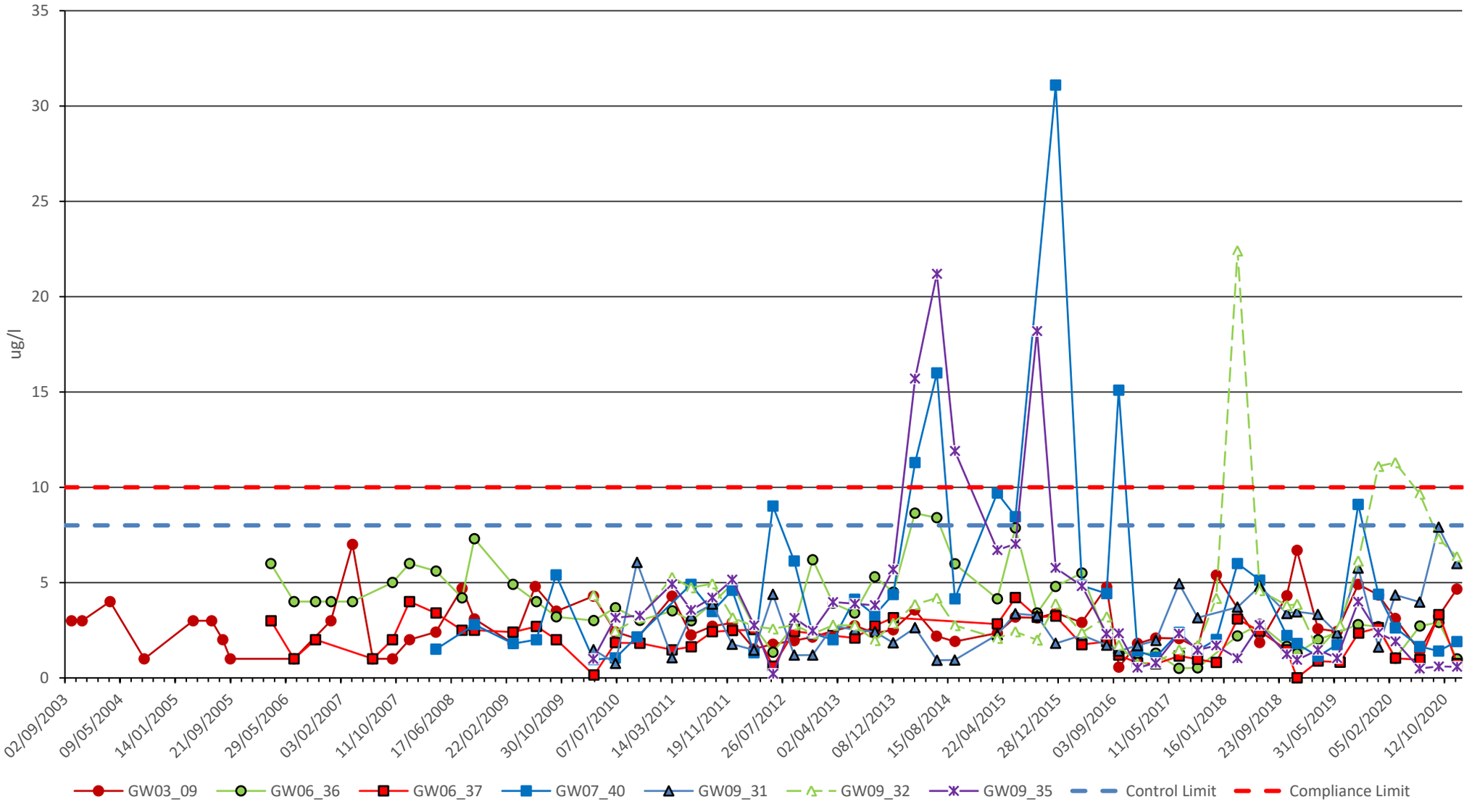

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-26

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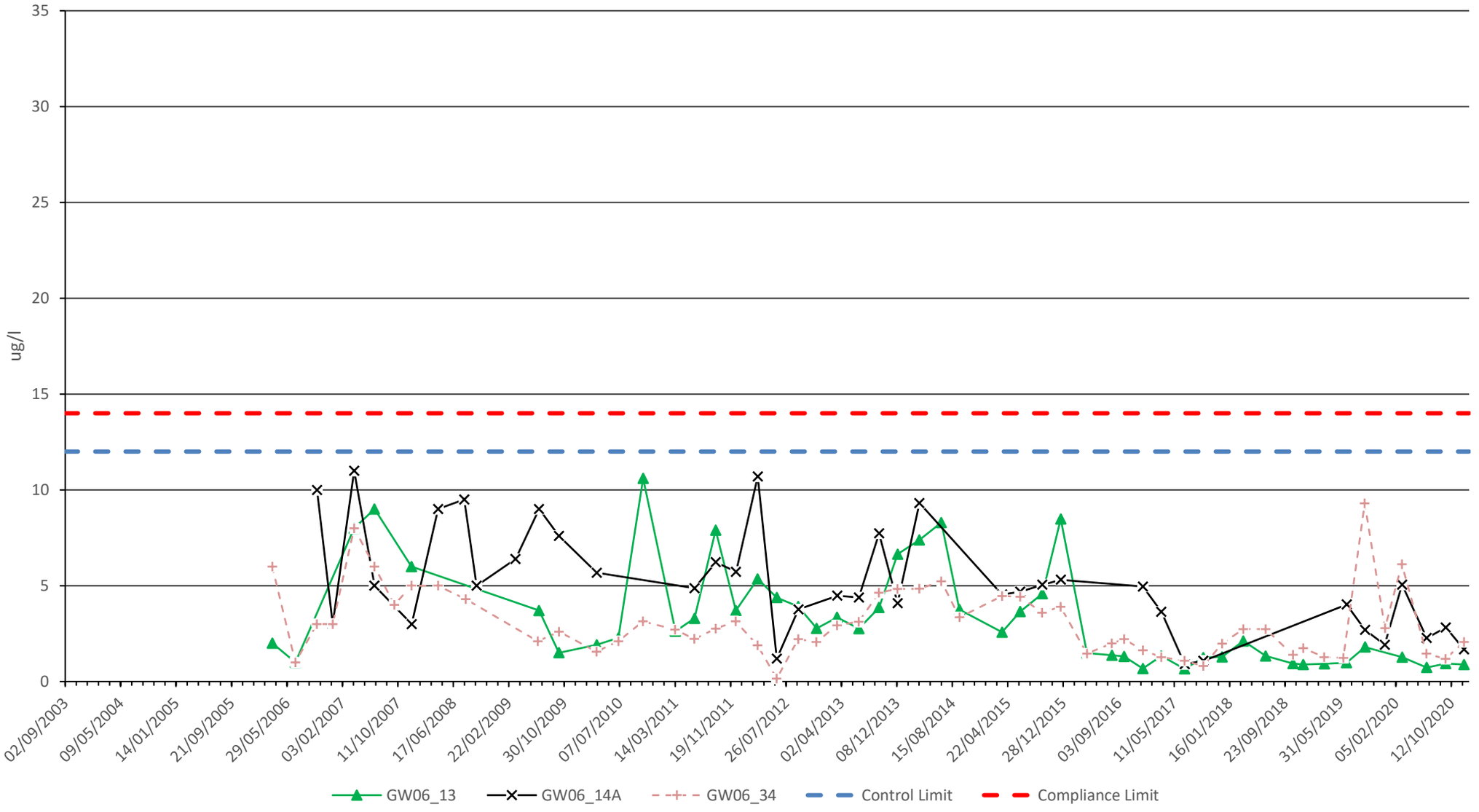

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-27

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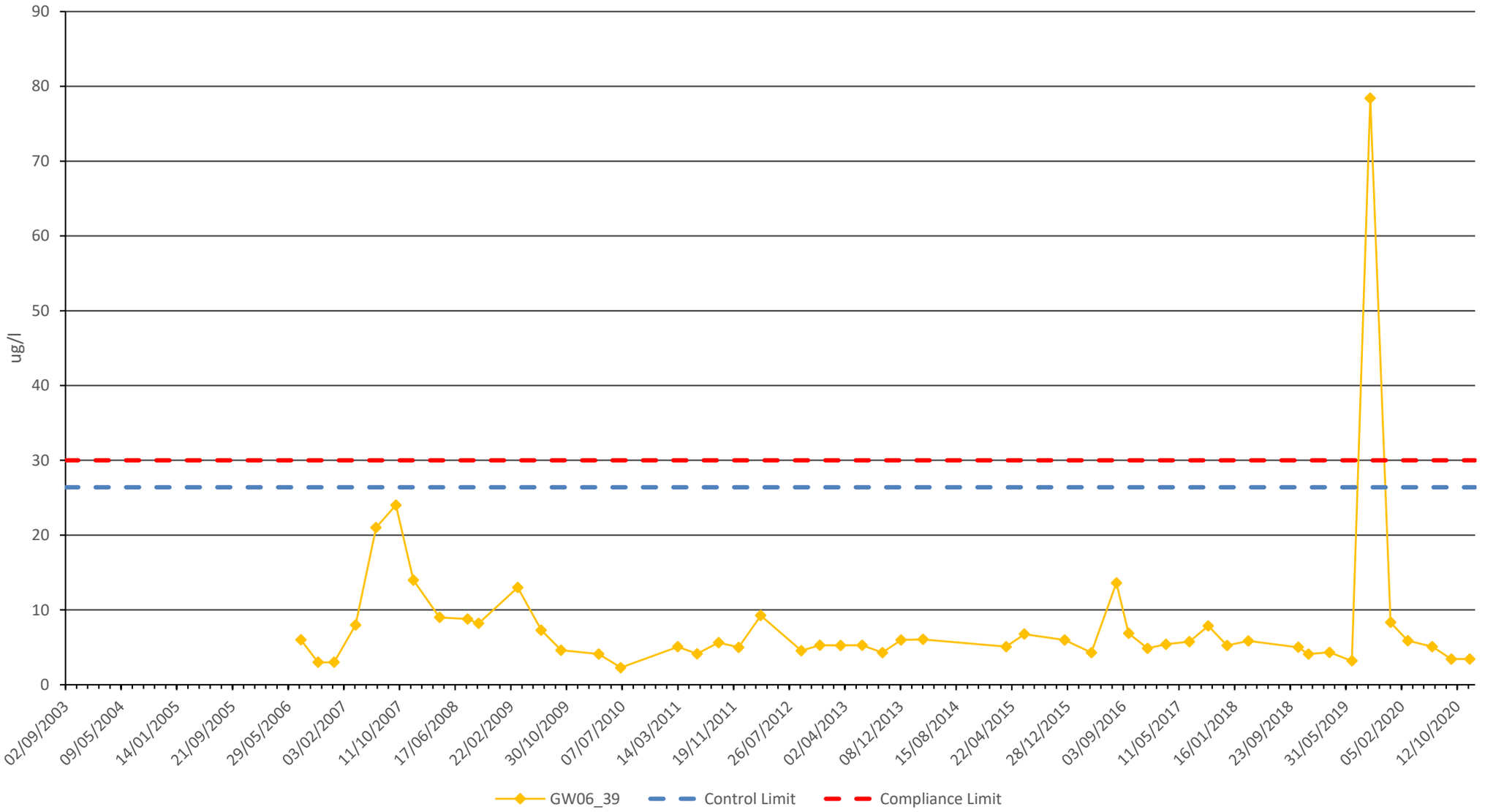

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-28

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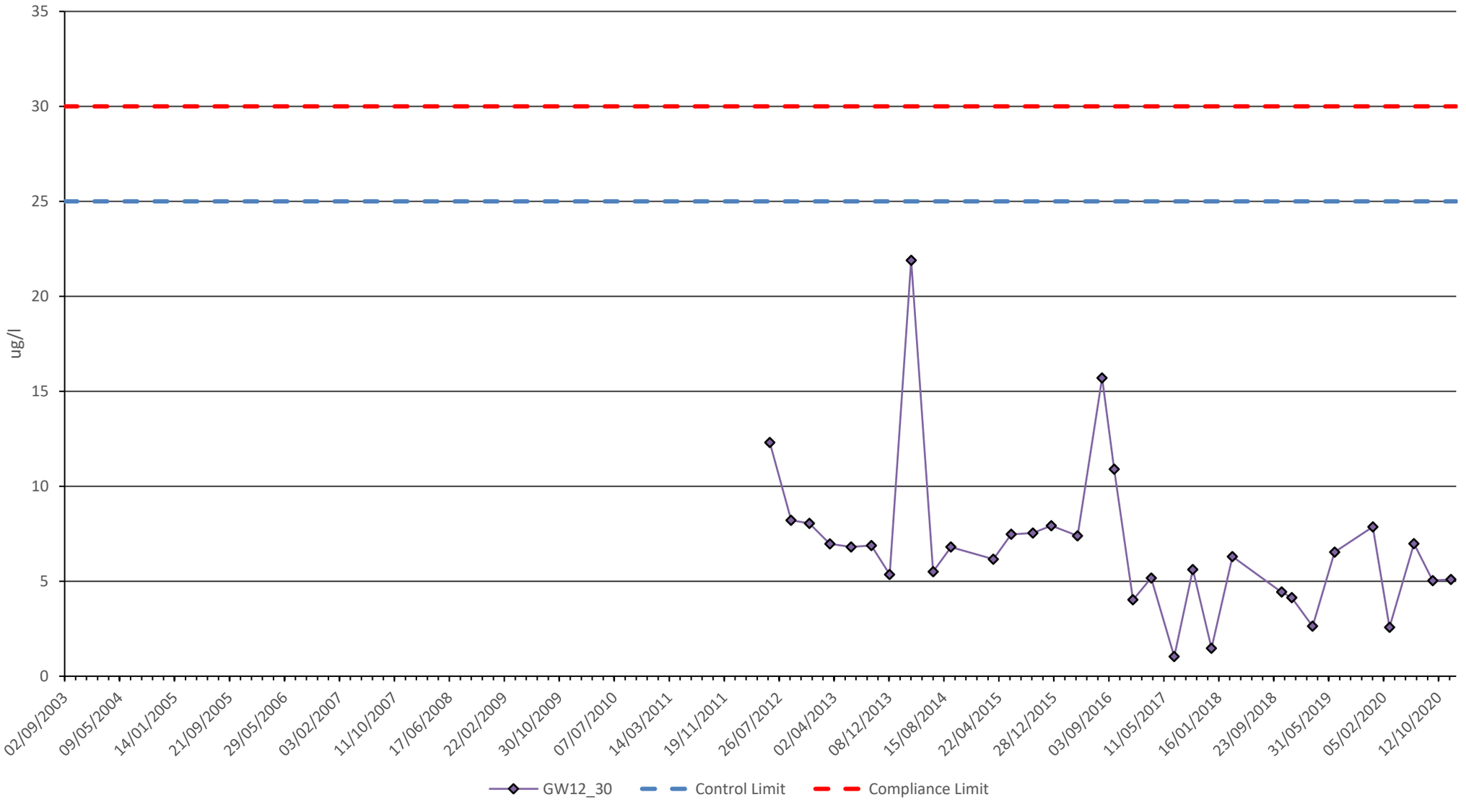

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-29

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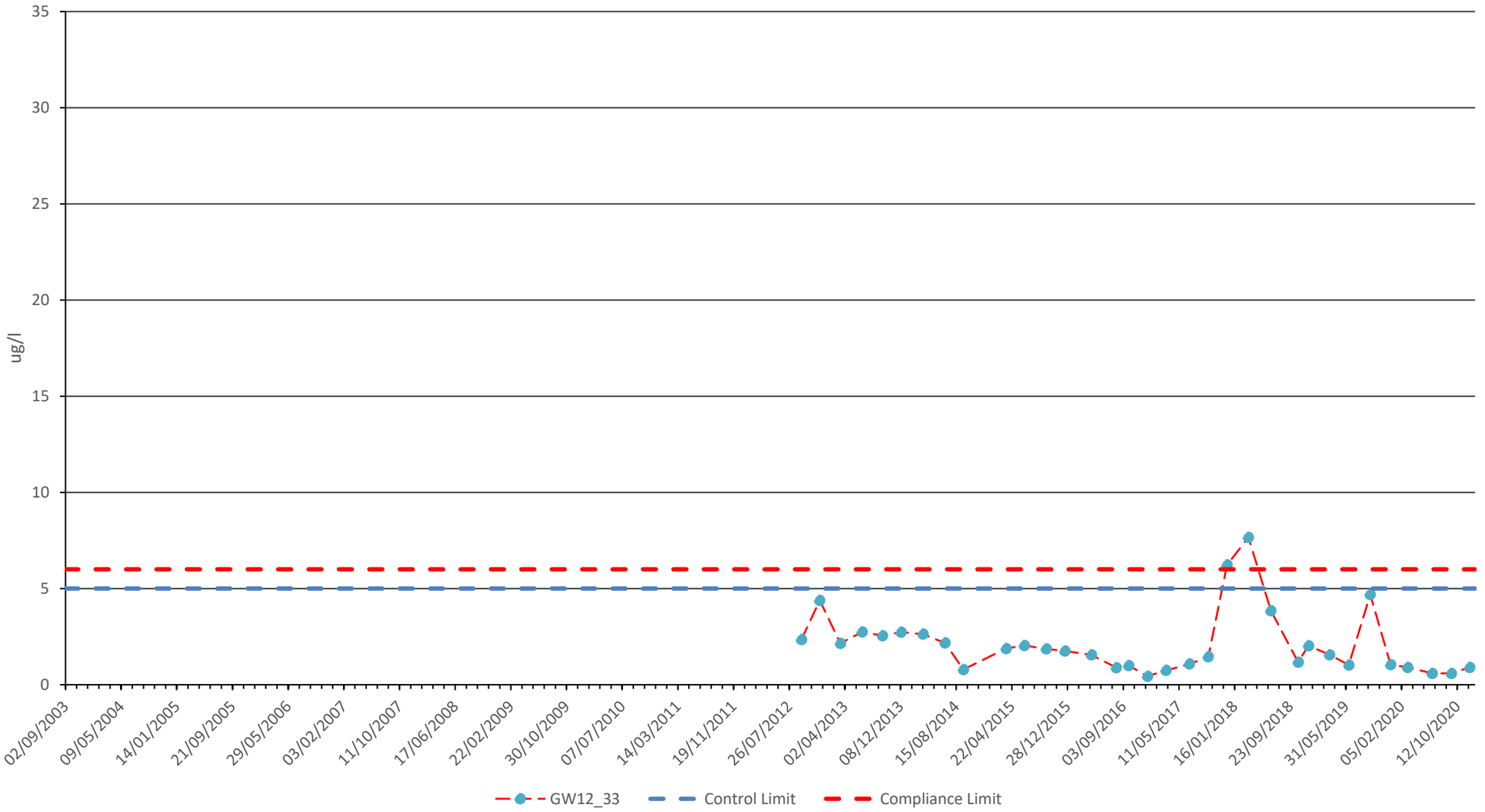

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-30

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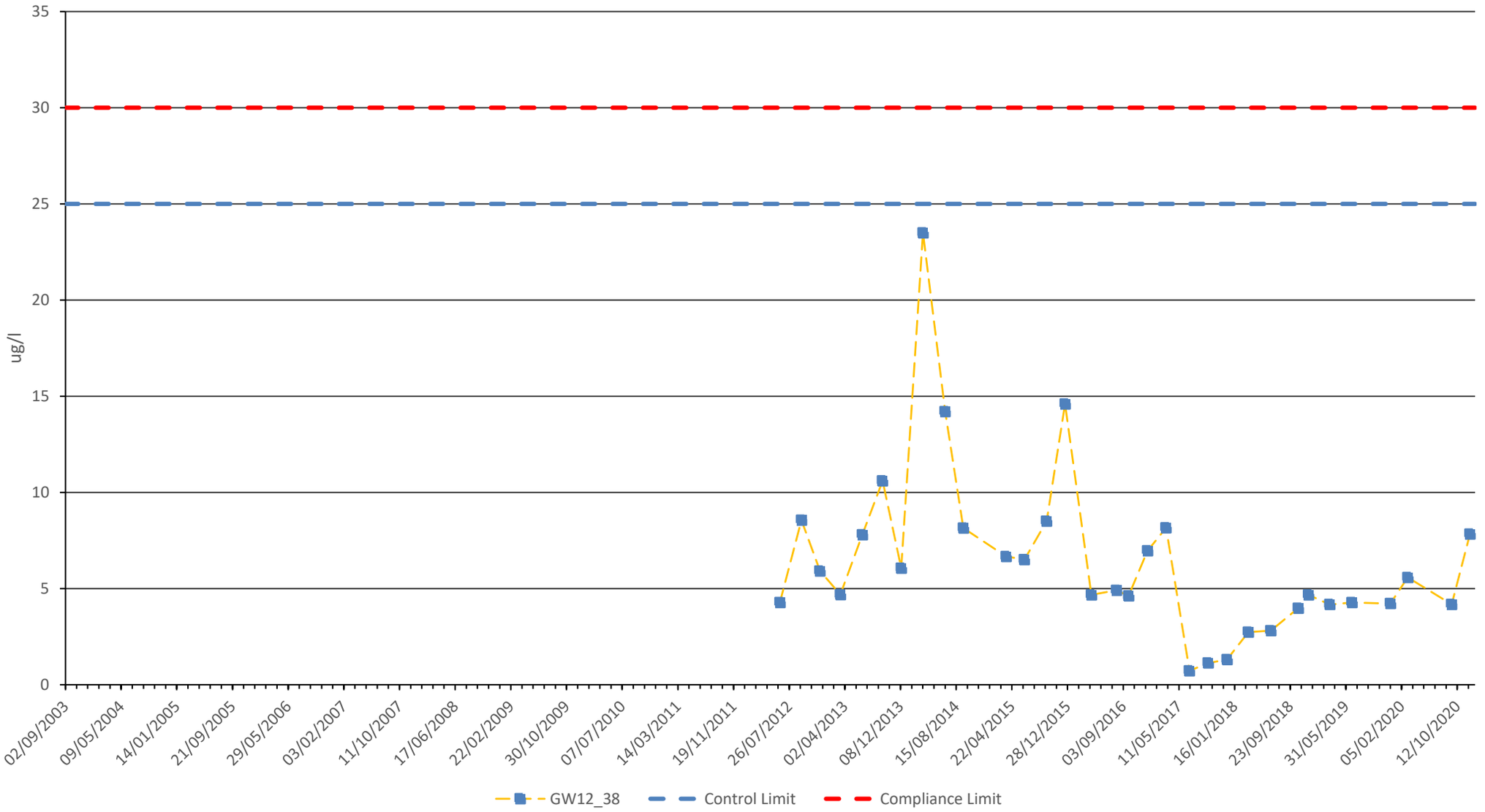

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-31

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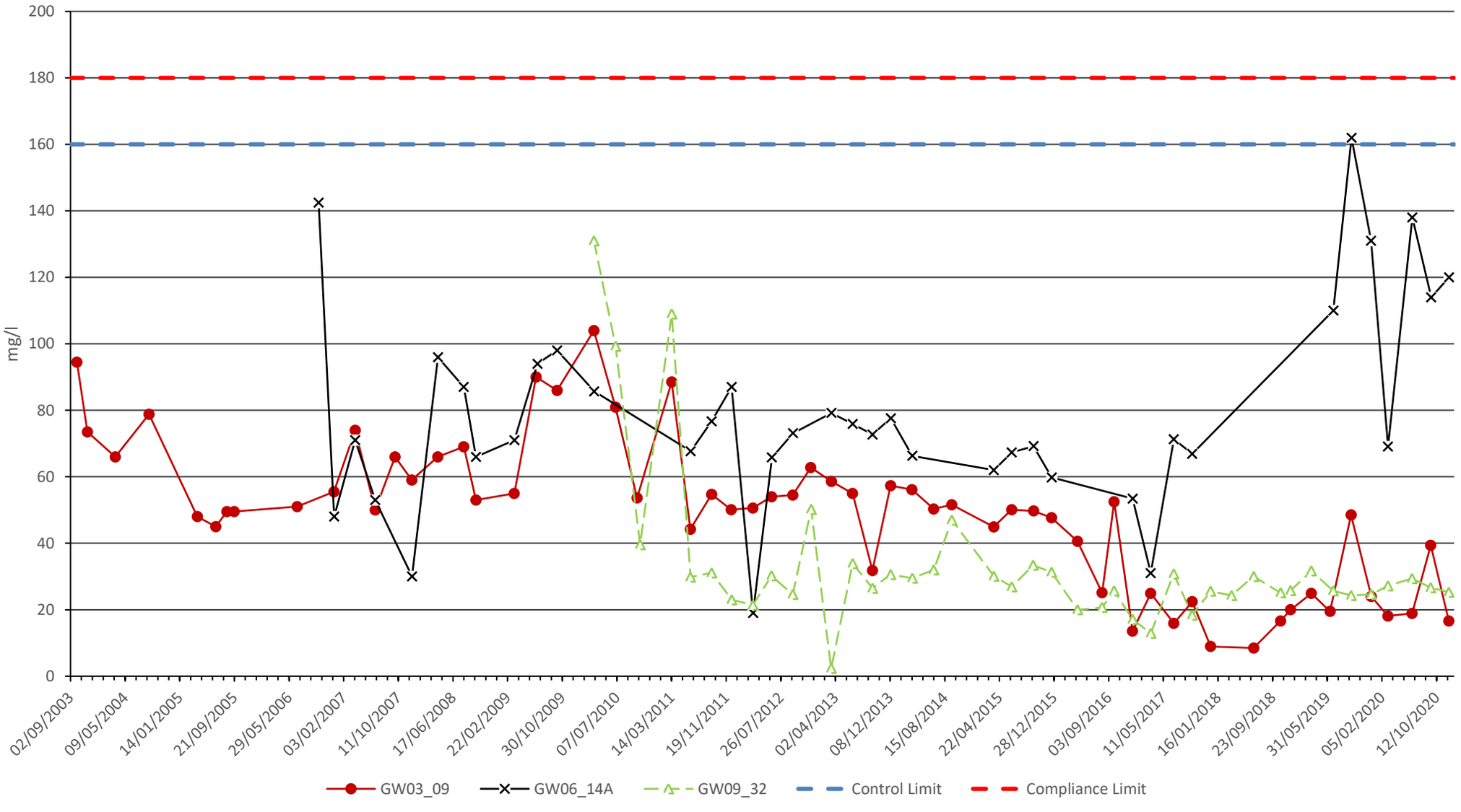

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Docksway Disposal Site

Potassium in Groundwater

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-32

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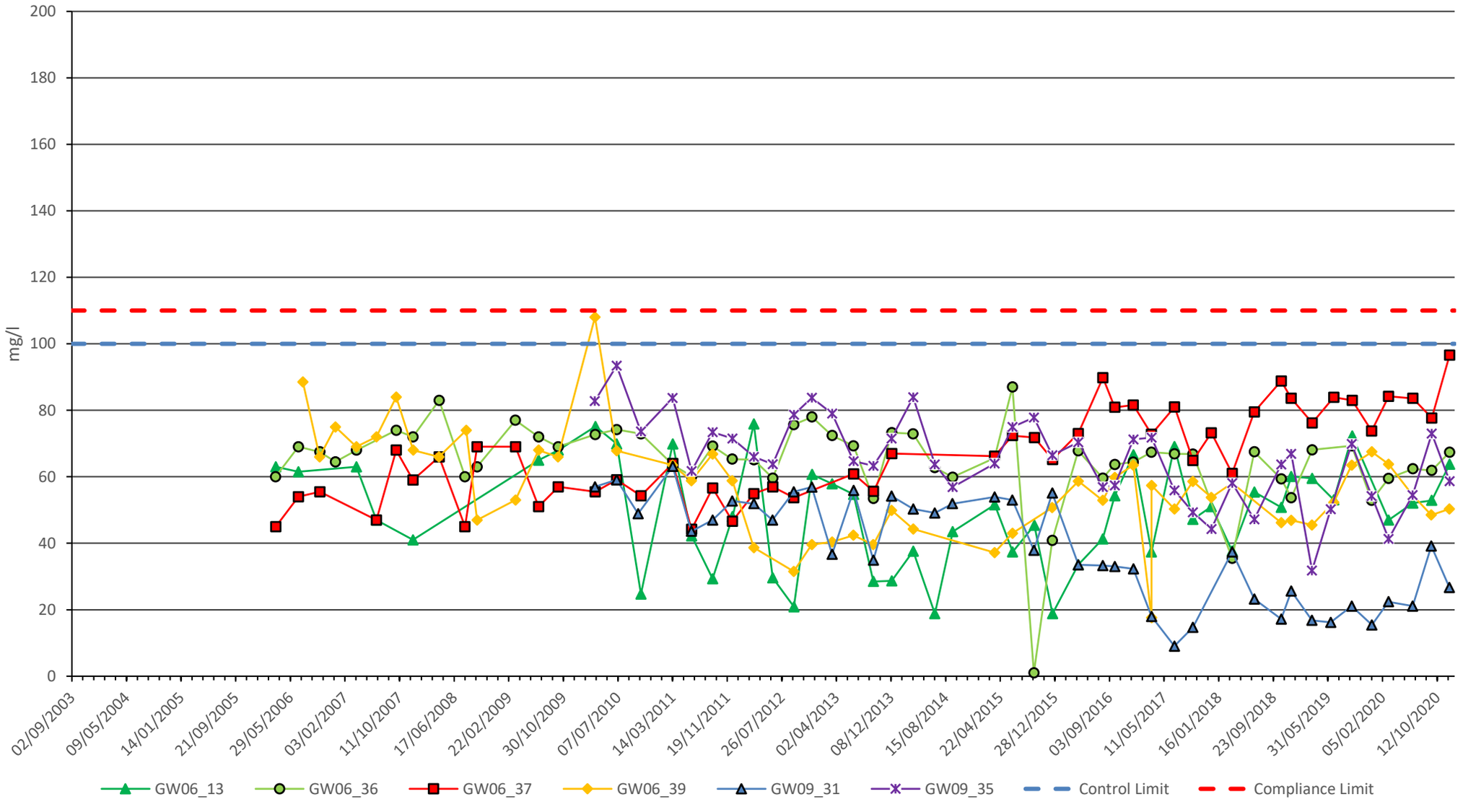

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Docksway Disposal Site

Potassium in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

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2-33

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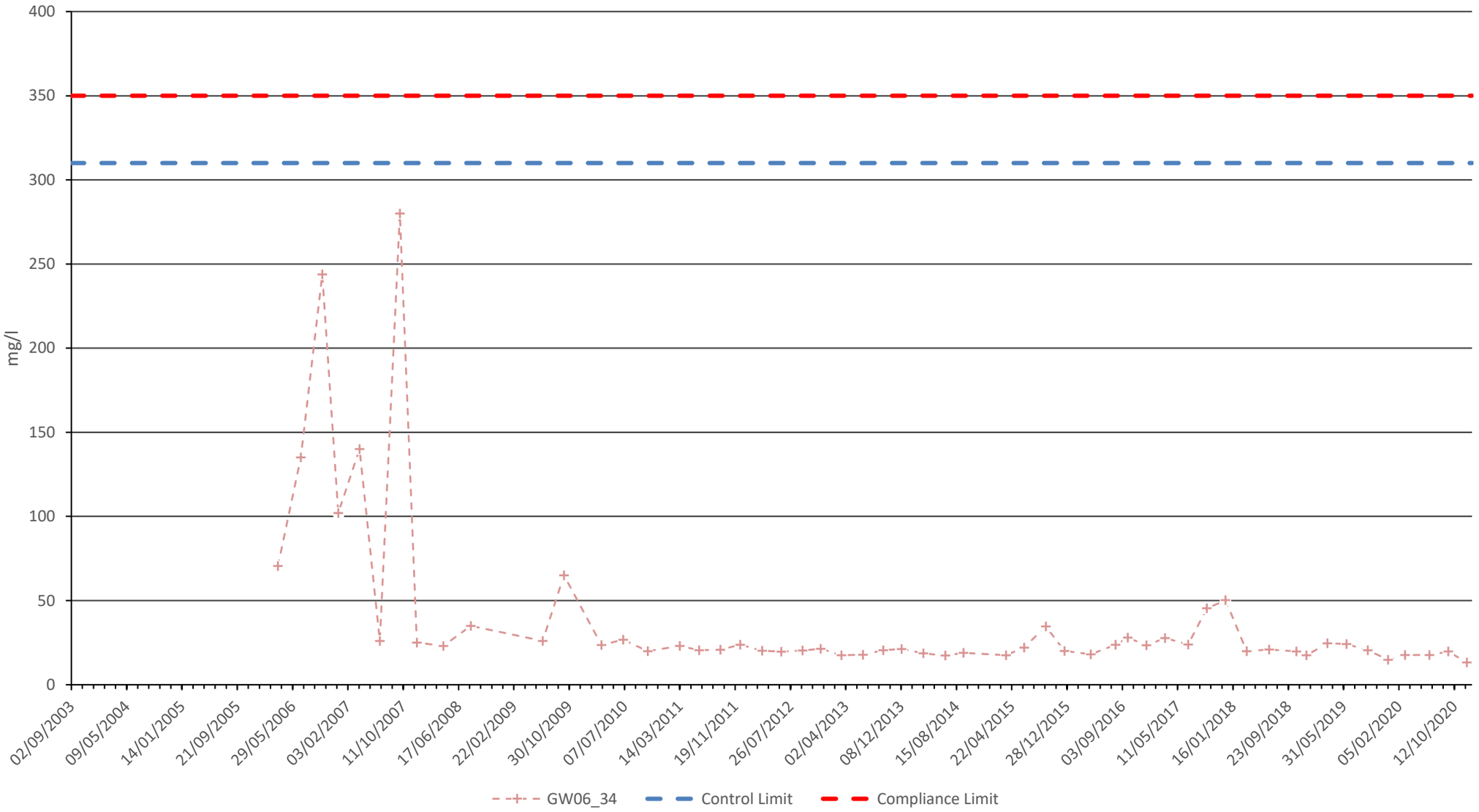

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Newport City Council

Docksway Disposal Site

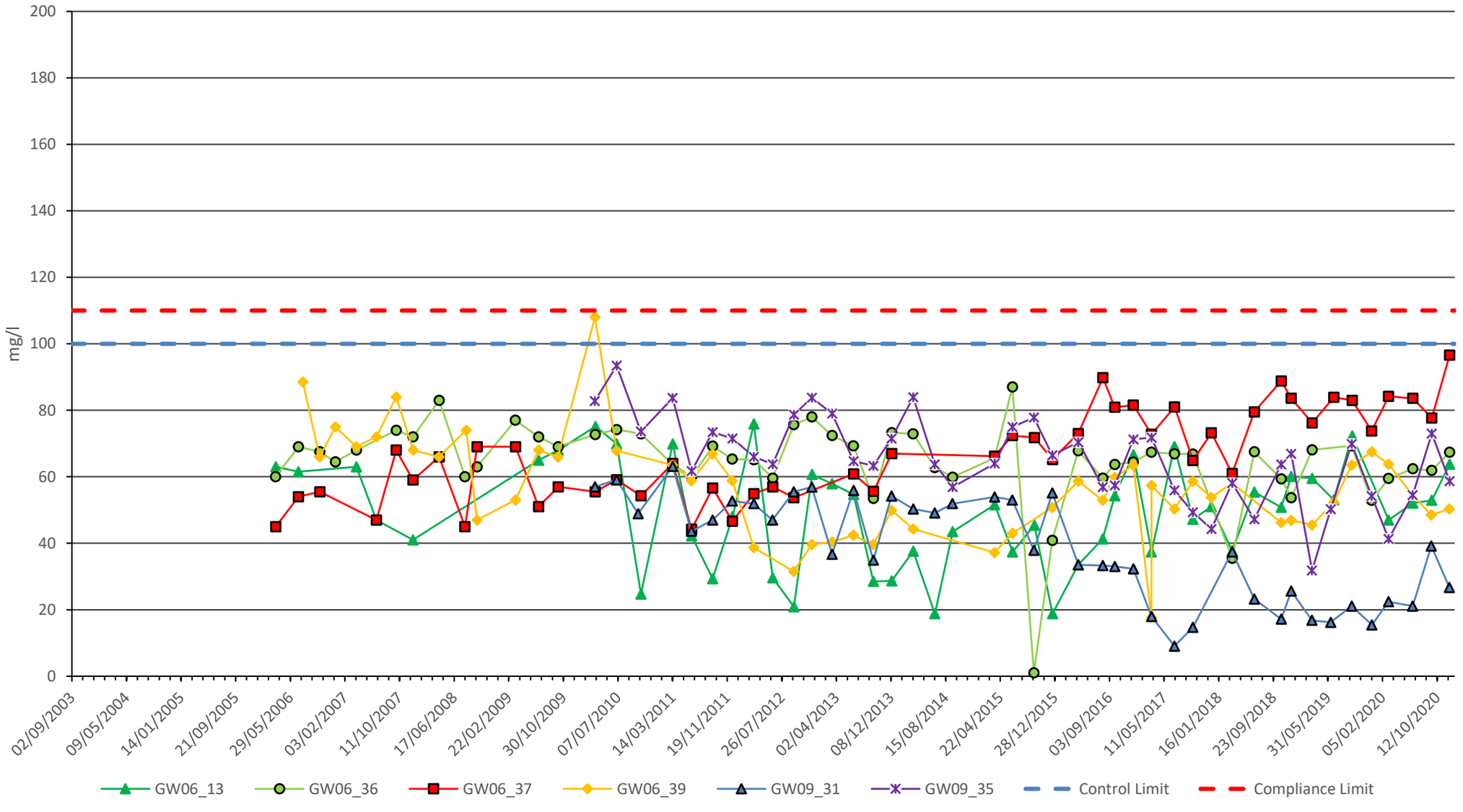
Potassium in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-34

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Groundwater\Excel\[2-34 Potassium.xlsm]Summary



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Docksway Disposal Site

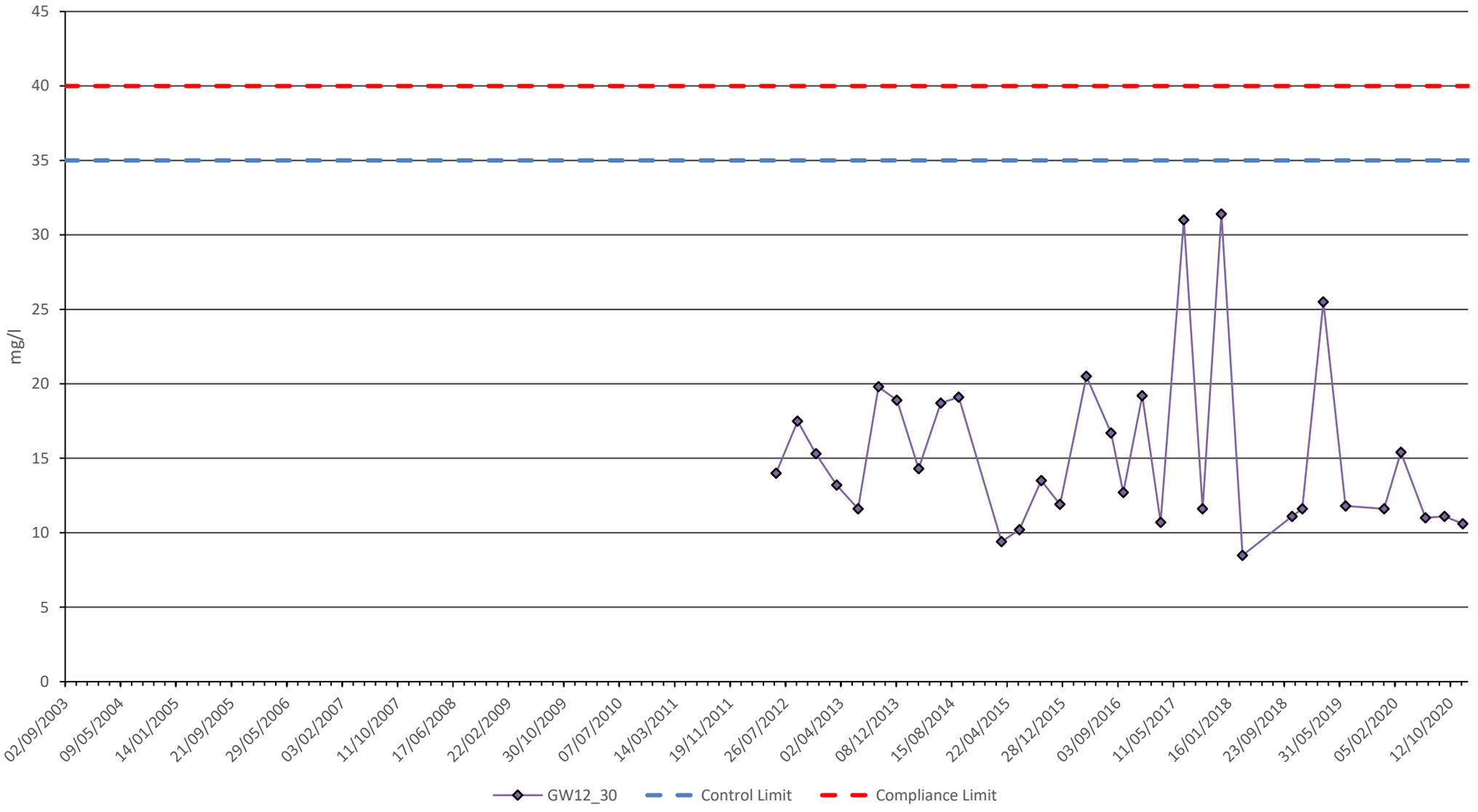
Potassium in Groundwater

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-35

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Data\Graphs\Groundwater\Excel\[2-35 Potassium.xlsm]Summary



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Docksway Disposal Site

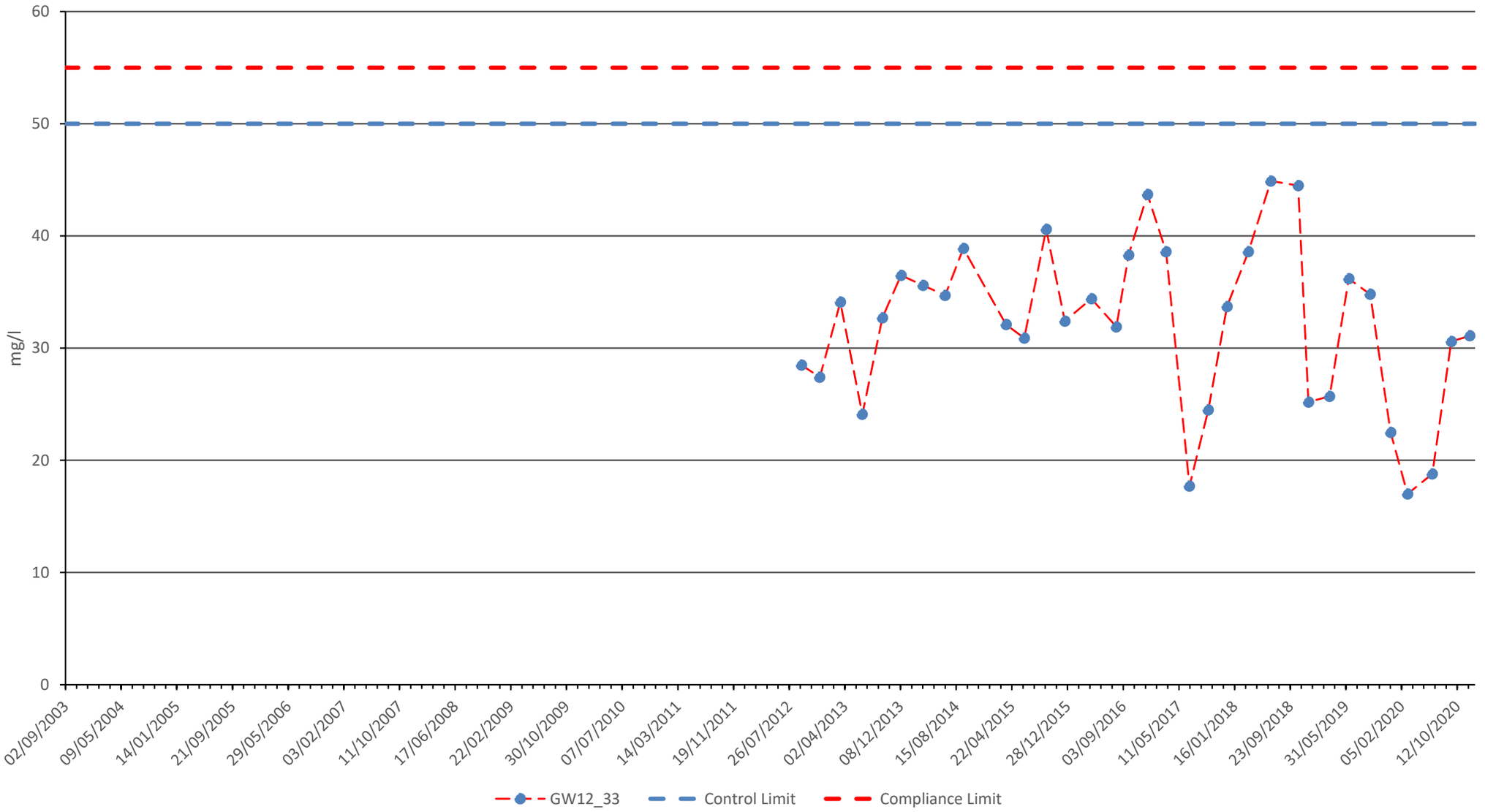
Potassium in Groundwater

Date	February 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-36

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Data\Graphs\Groundwater\Excel\[2-36 Potassium.xlsm]Summary



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Docksway Disposal Site

Potassium in Groundwater

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-37

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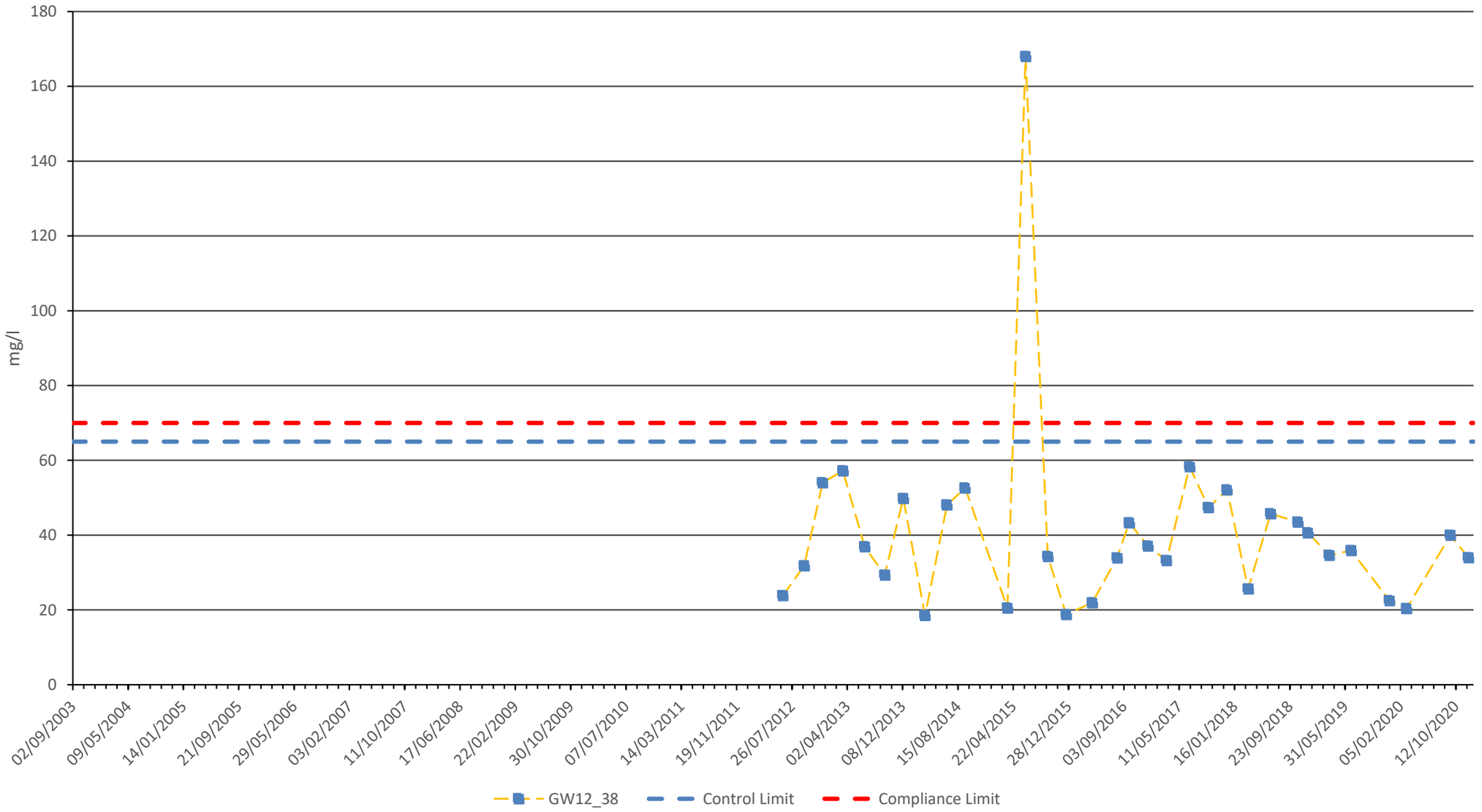

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Docksway Disposal Site

Potassium in Groundwater

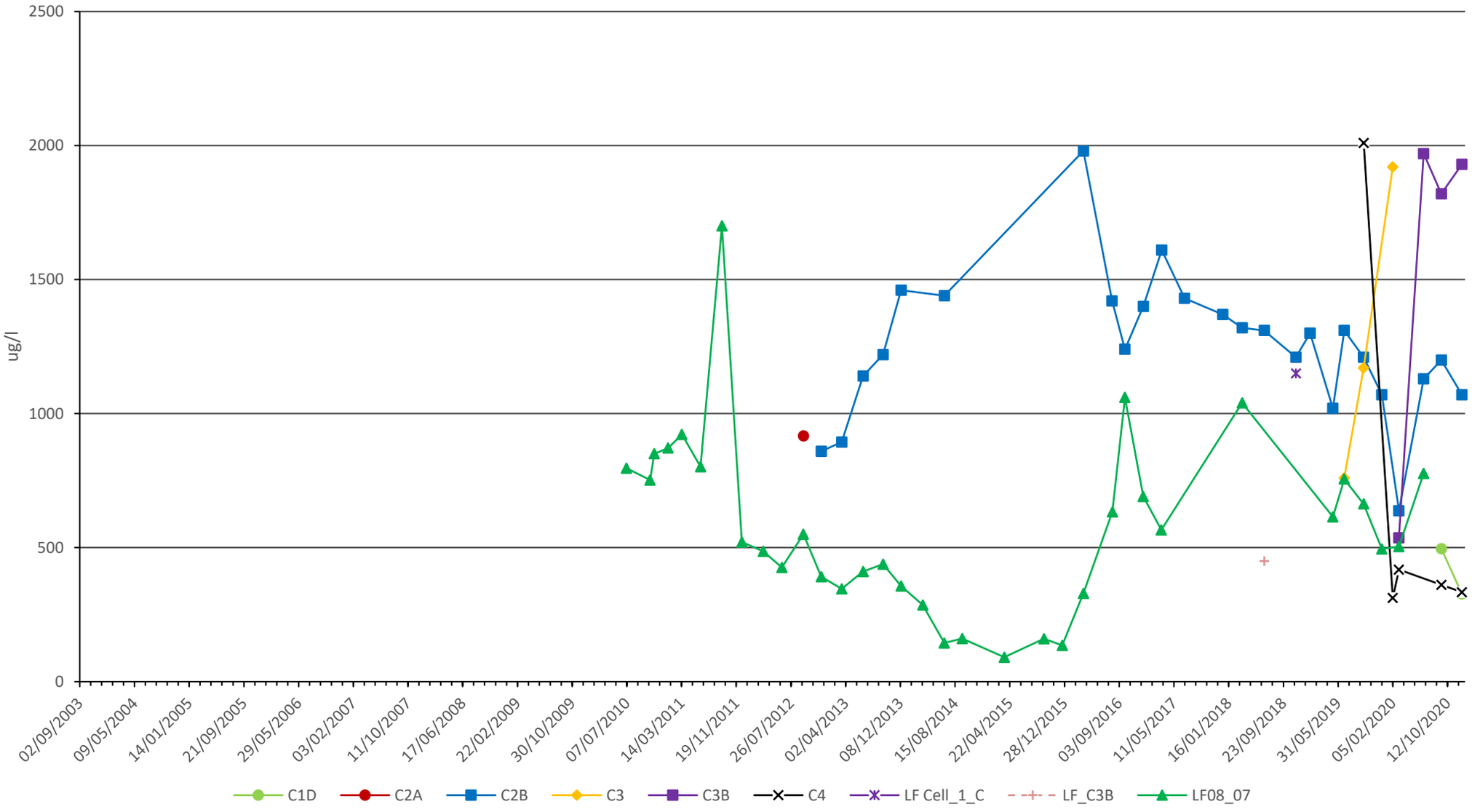
Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

2-38

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Groundwater\Excel\[2-38 Potassium.xlsm]Summary

Appendix 3 Leachate Chemistry Graphs



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Docksway Disposal Site

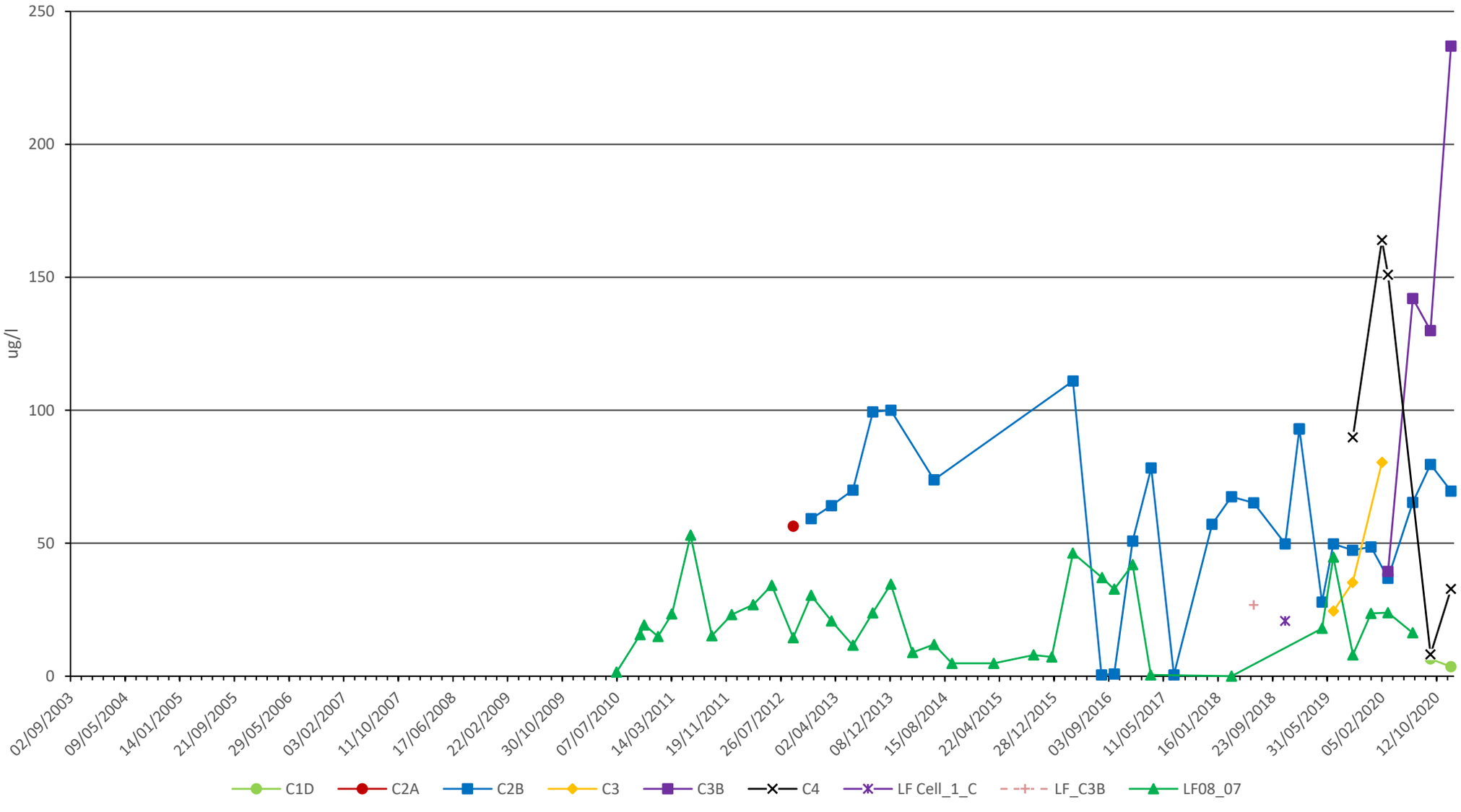
Ammoniacal Nitrogen in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-1

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-1 Ammoniacal Nitrogen.xlsm]Summary



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Docksway Disposal Site

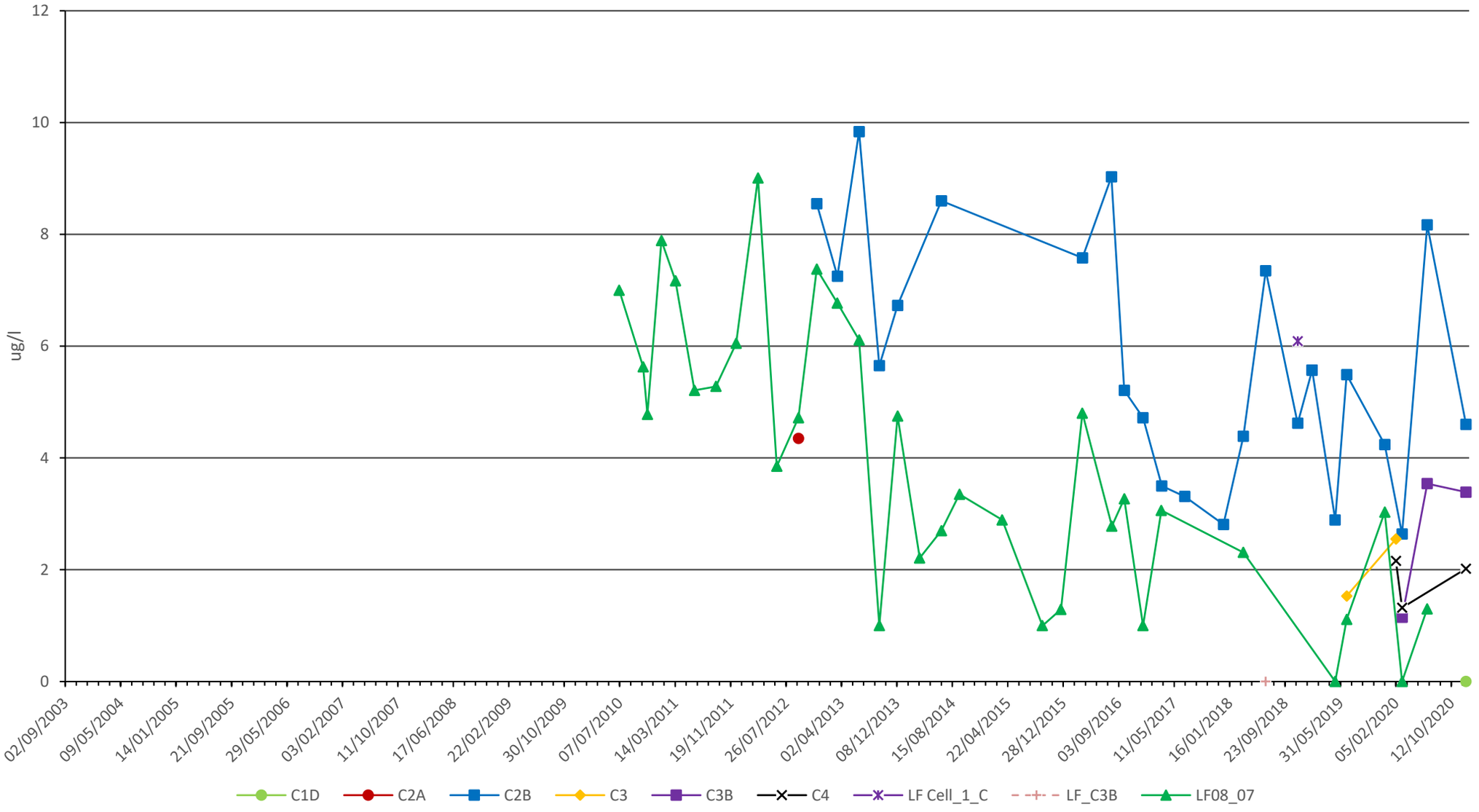
Arsenic in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-2

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-2 Arsenic.xlsm]Summary



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Docksway Disposal Site

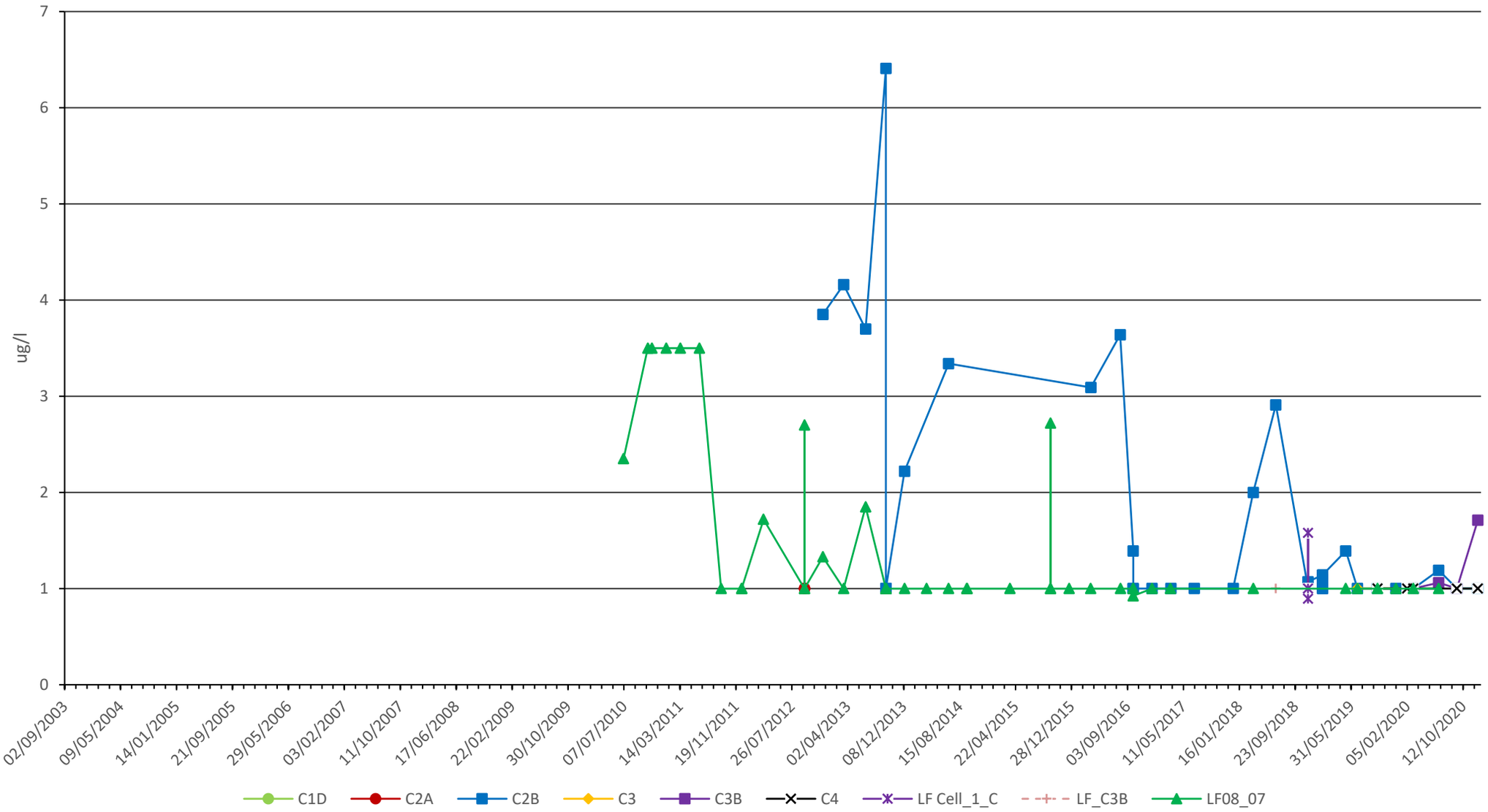
Benzene in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-3

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-3 Benzene.xlsm]Summary



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Docksway Disposal Site

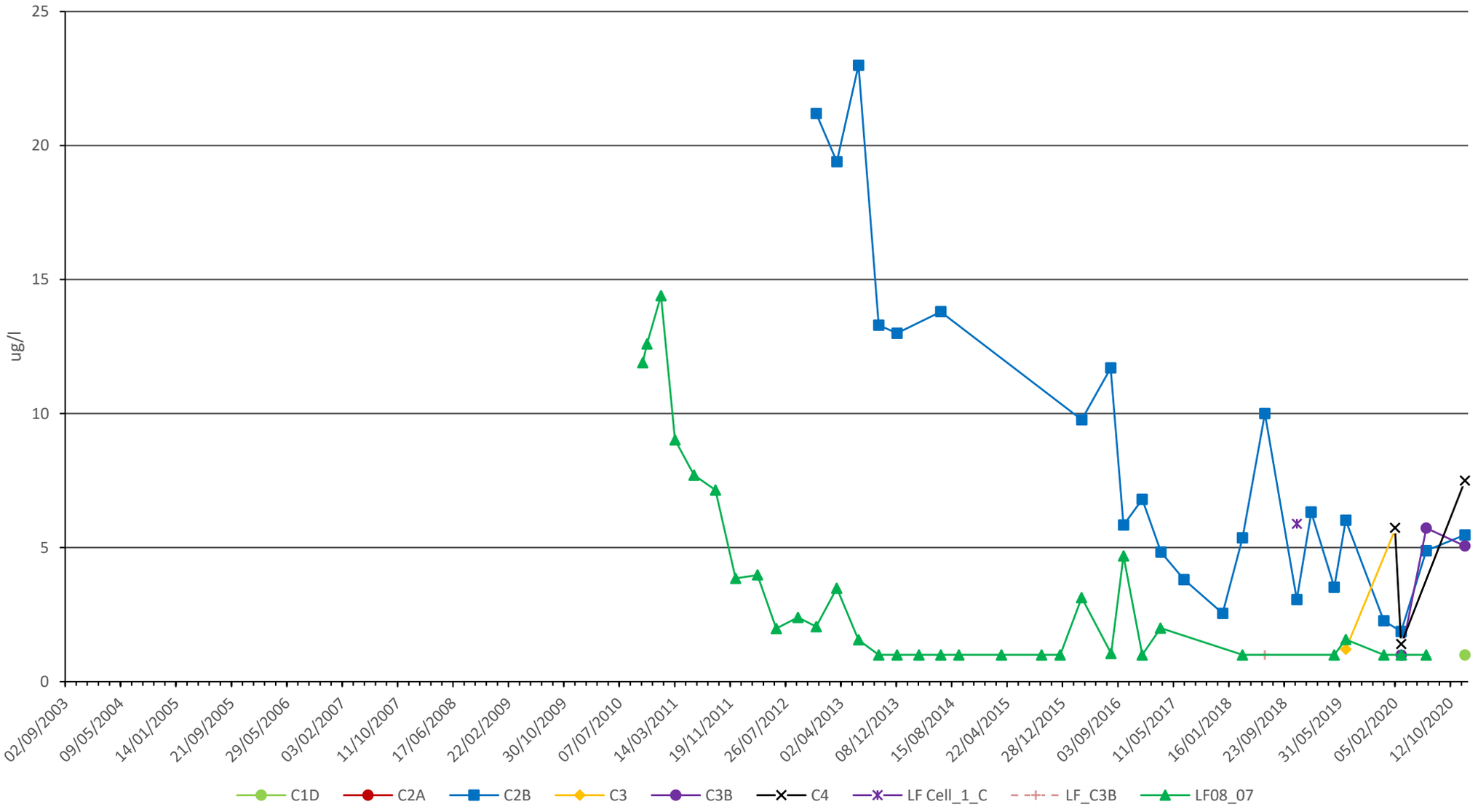
Naphthalene in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-4

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-4 Benzene.xlsm]Summary



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Docksway Disposal Site

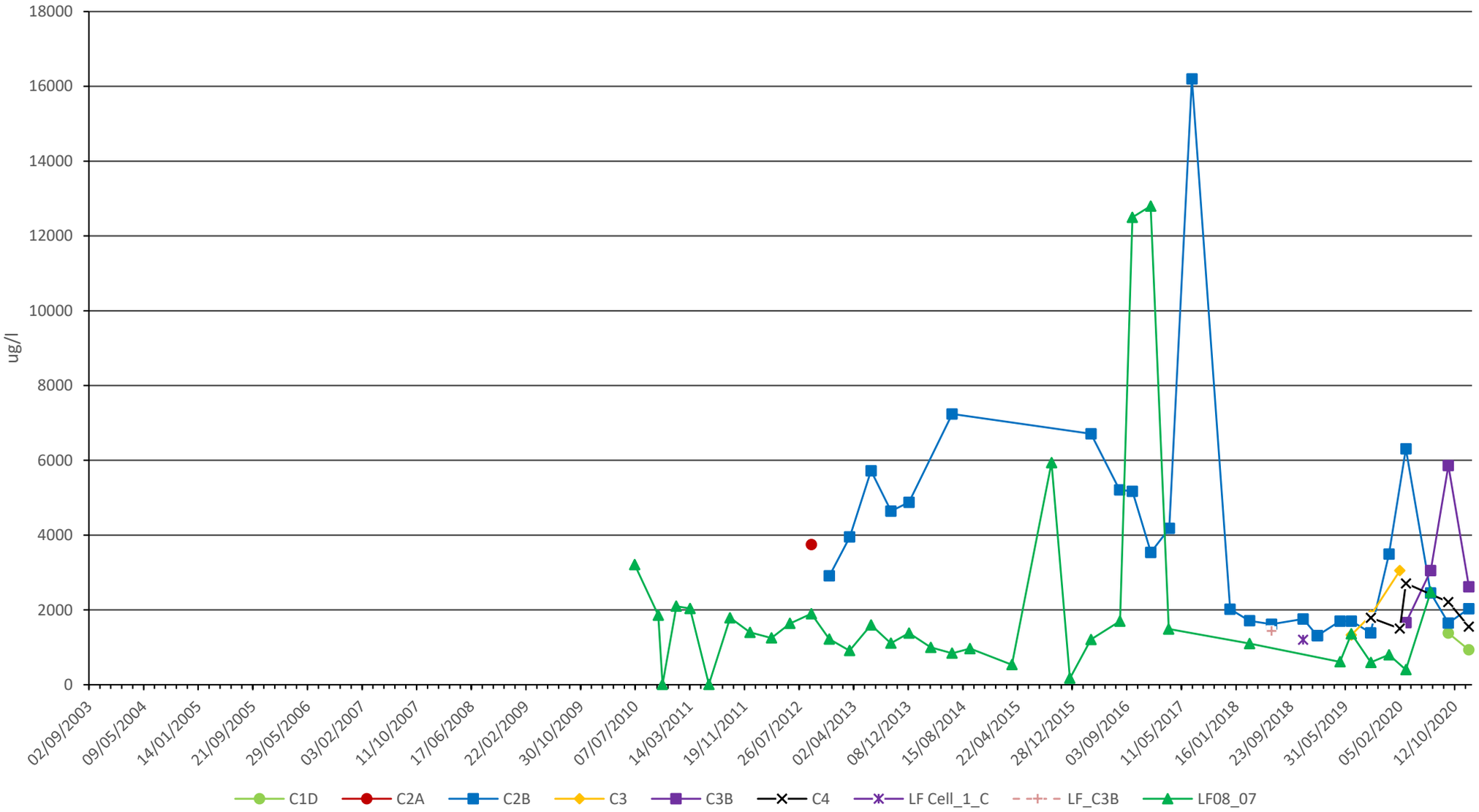
O-Xylene in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-4

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-5 o-Xylene.xlsm]Summary



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Docksway Disposal Site

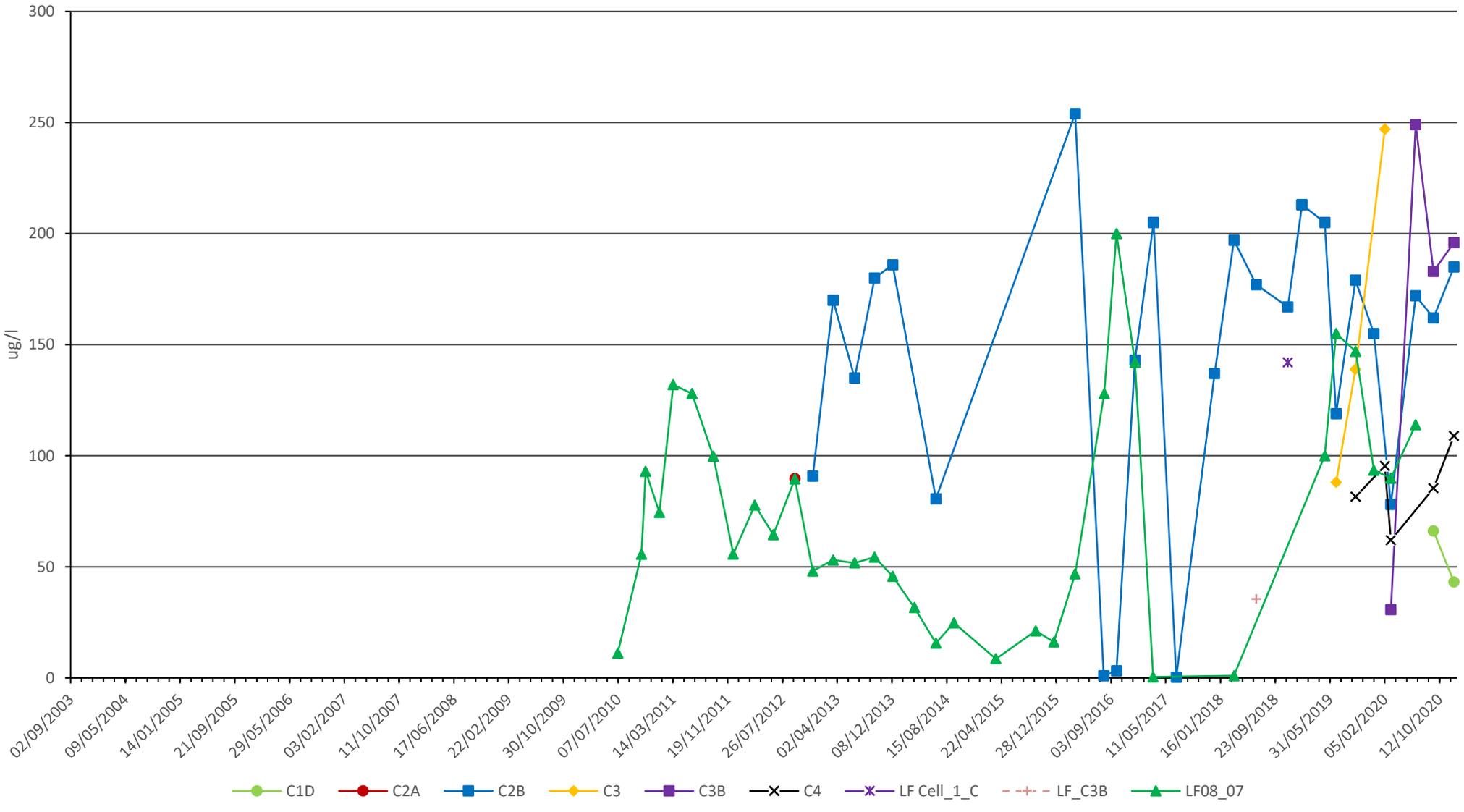
EPH in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-6

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-6 EPH.xlsm]Summary



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Docksway Disposal Site

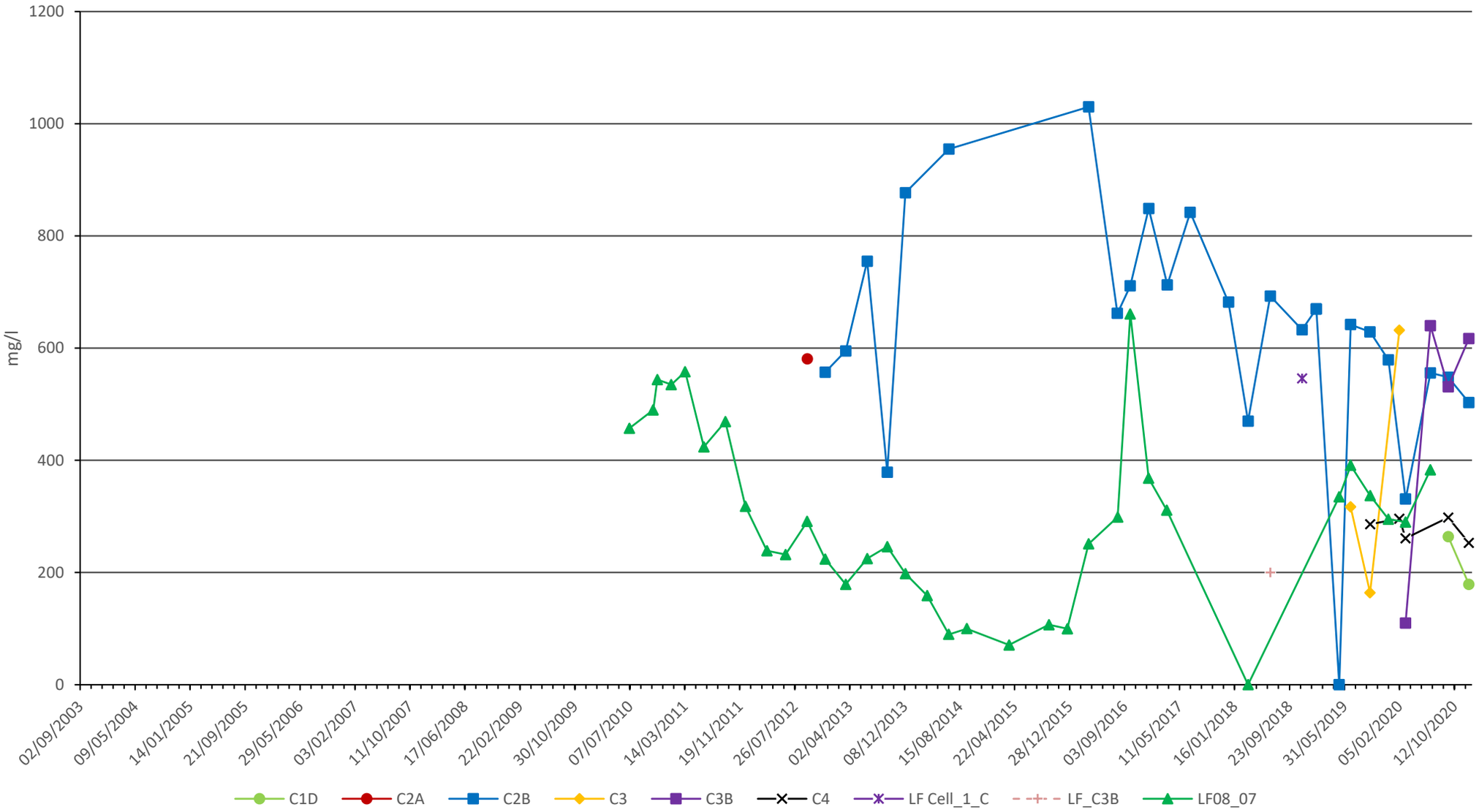
Nickel in Leachate

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-7

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-7 Nickel.xlsm]Summary



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Docksway Disposal Site

Potassium in Leachate

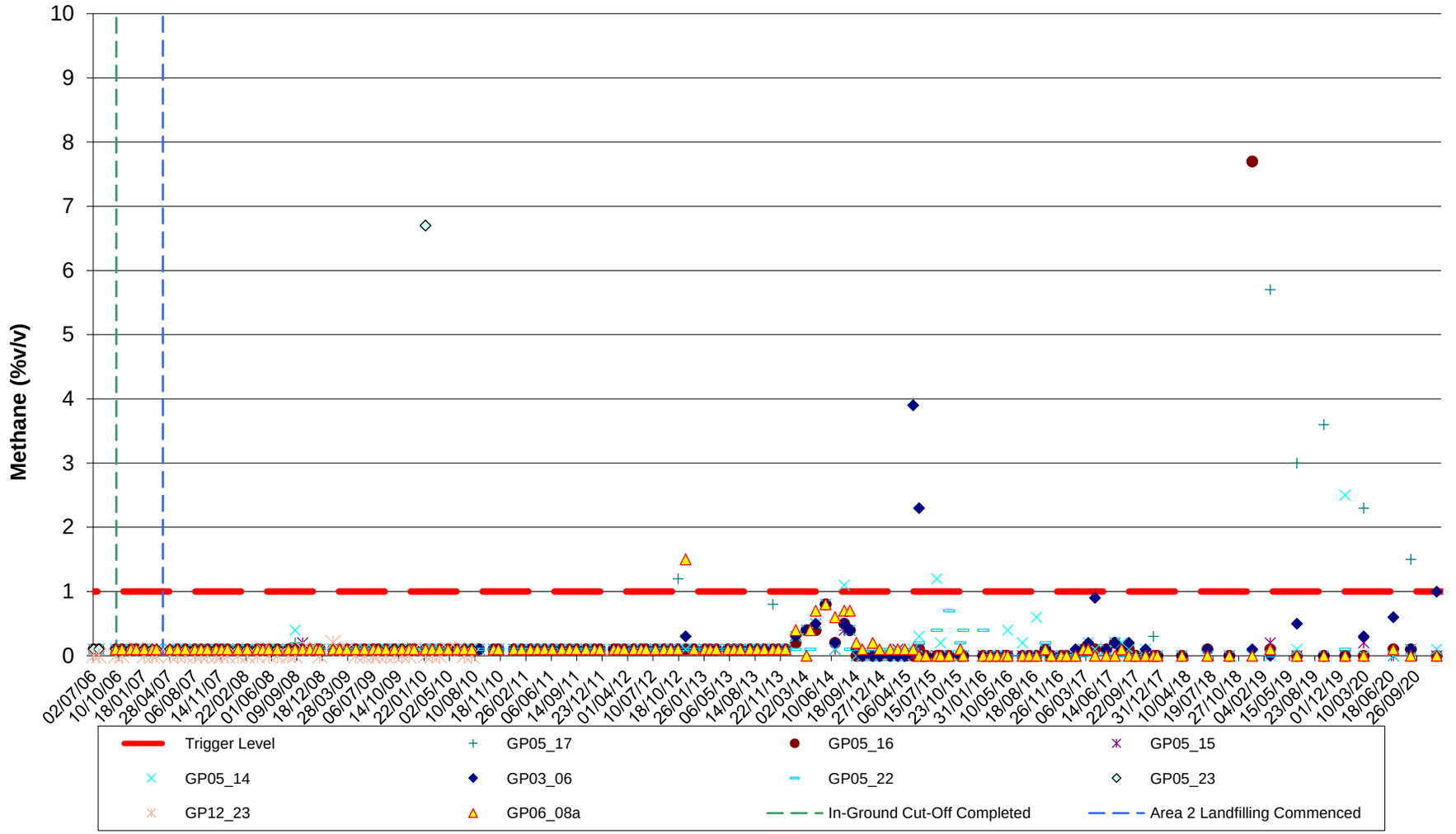
Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

3-8

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Leachate\Excel\[3-8 Potassium .xlsm]Summary

Appendix 4 Gas Concentrations Graphs



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Docksway Disposal Site

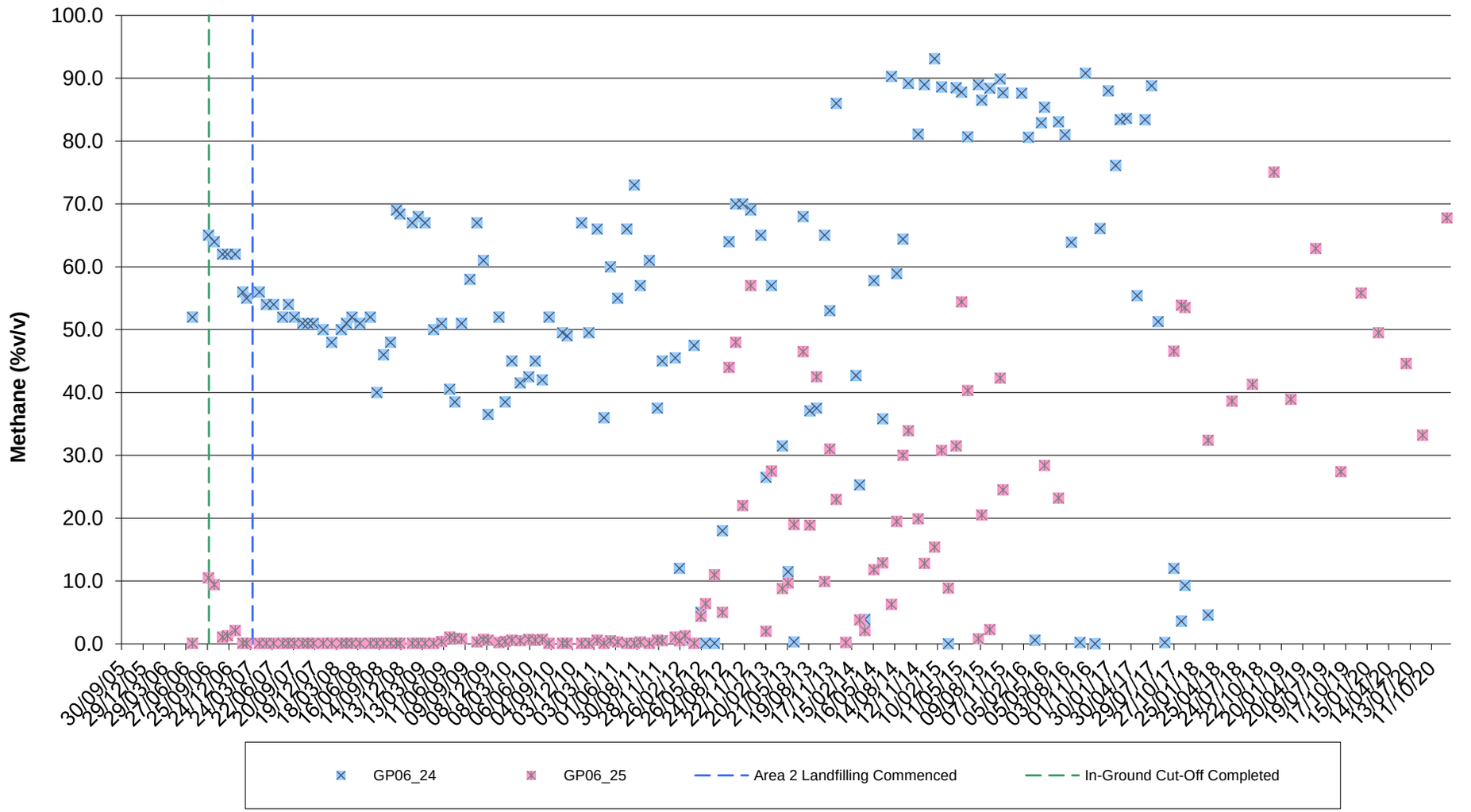
Methane Concentrations in Area 2 Gas Monitoring Wells (Excluding GP05_20, GP05_21, GP06_24, GP06_25, GP09_18)

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-1

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-1 CH4 But 20+21



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Newport City Council

Docksway Disposal Site

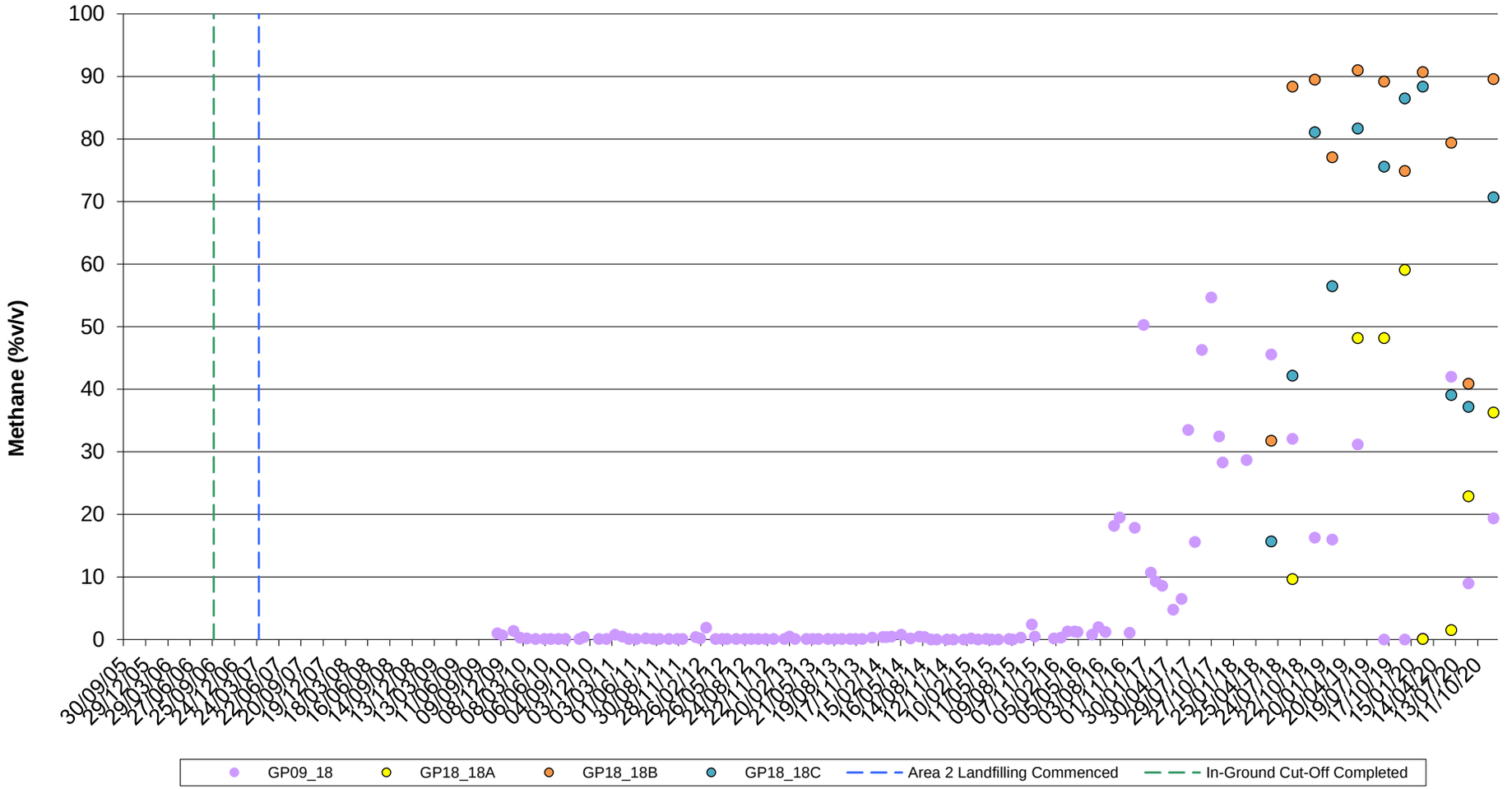
Recorded Methane Concentrations for GP06_24 and GP06_25

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-2

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-2 New Wells (CH4)



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Newport City Council

Docksway Disposal Site

Recorded Methane Concentrations for GP09_18, GP18_18A, GP18_18B and GP18_18C

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-3

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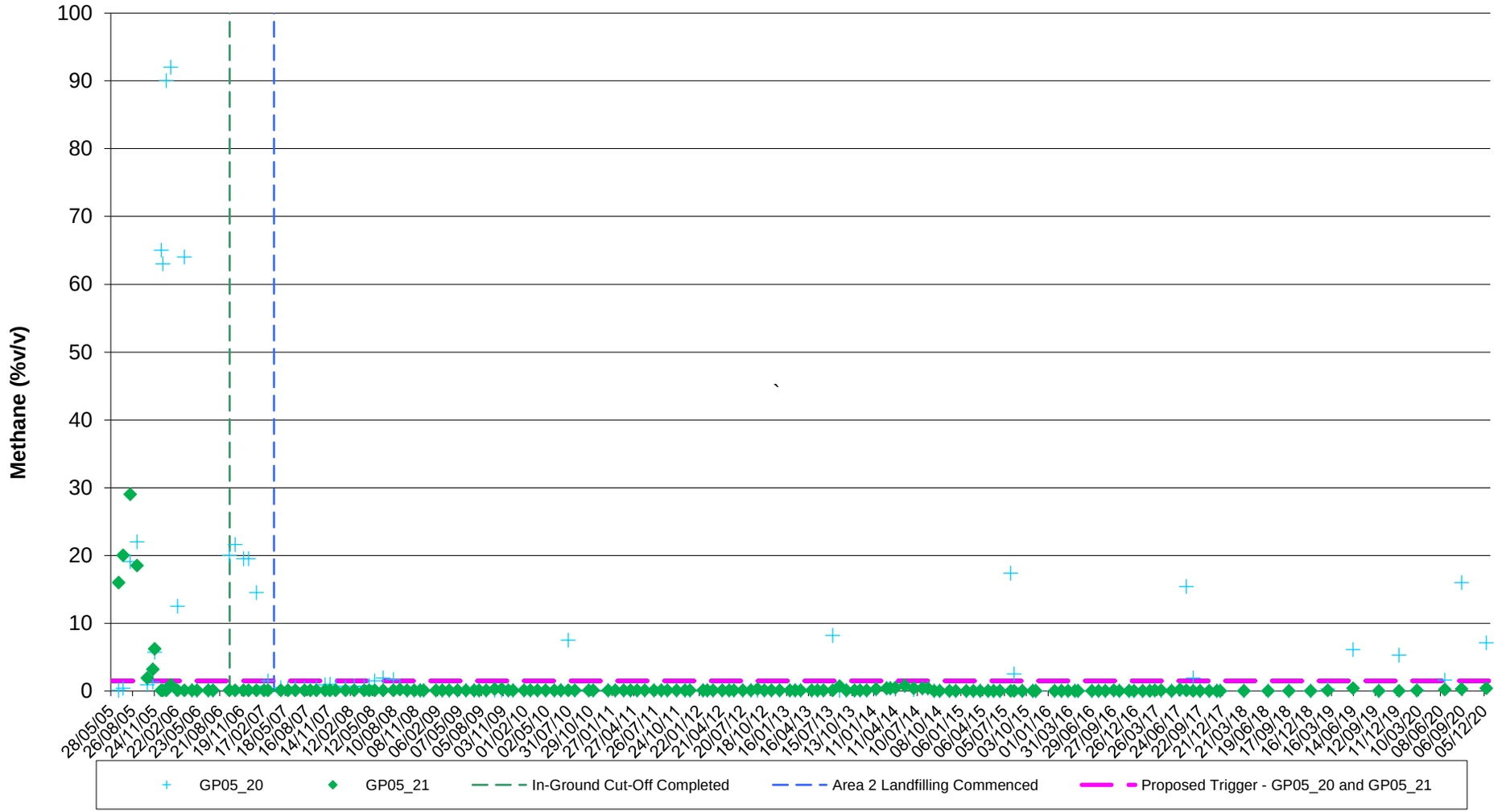

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Newport City Council

Docksway Disposal Site

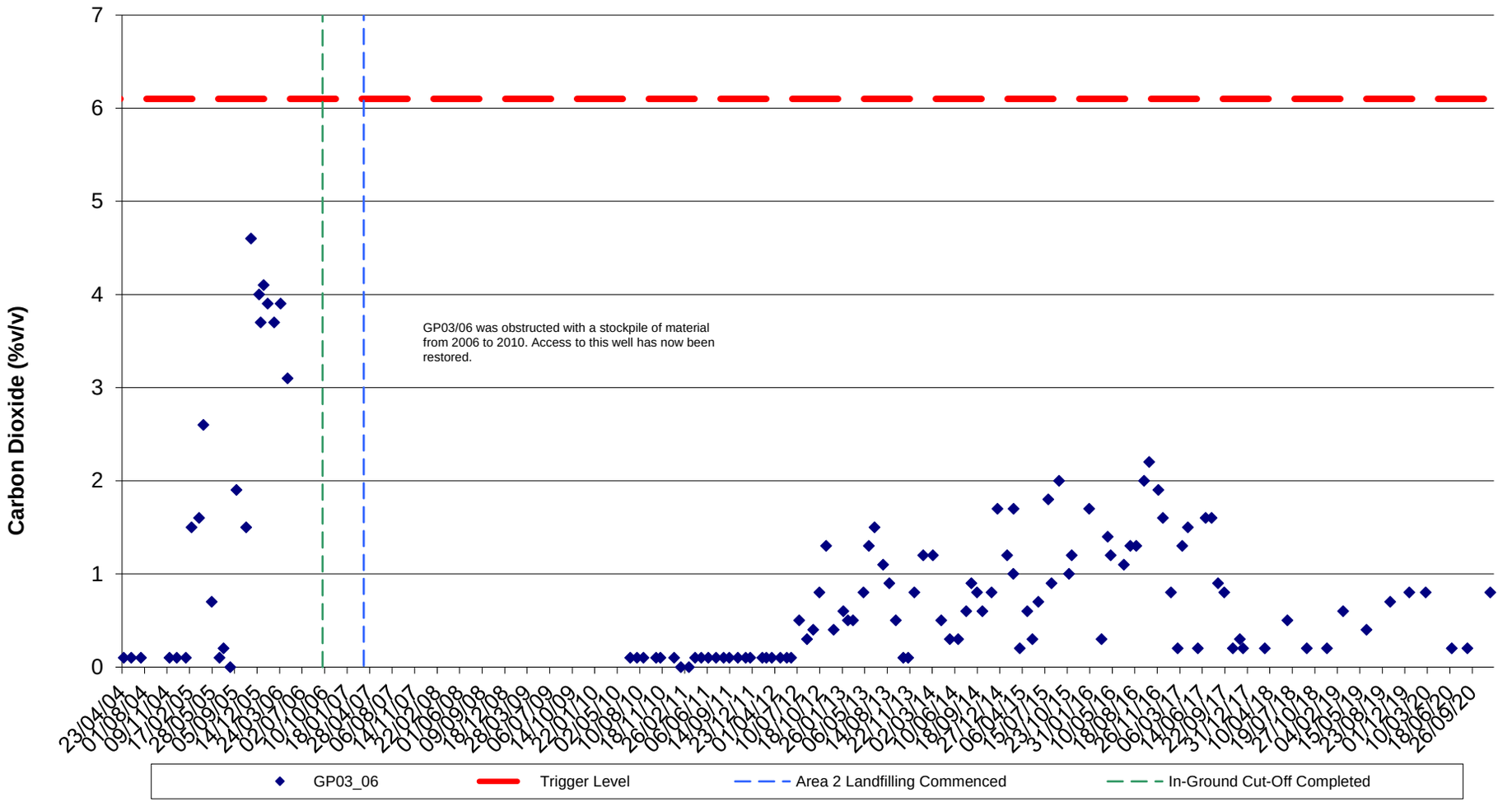
Recorded Methane Concentrations in GP05_20 and GP05_21

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-4

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-4 CH4 GP05_20+21



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Newport City Council

Docksway Disposal Site

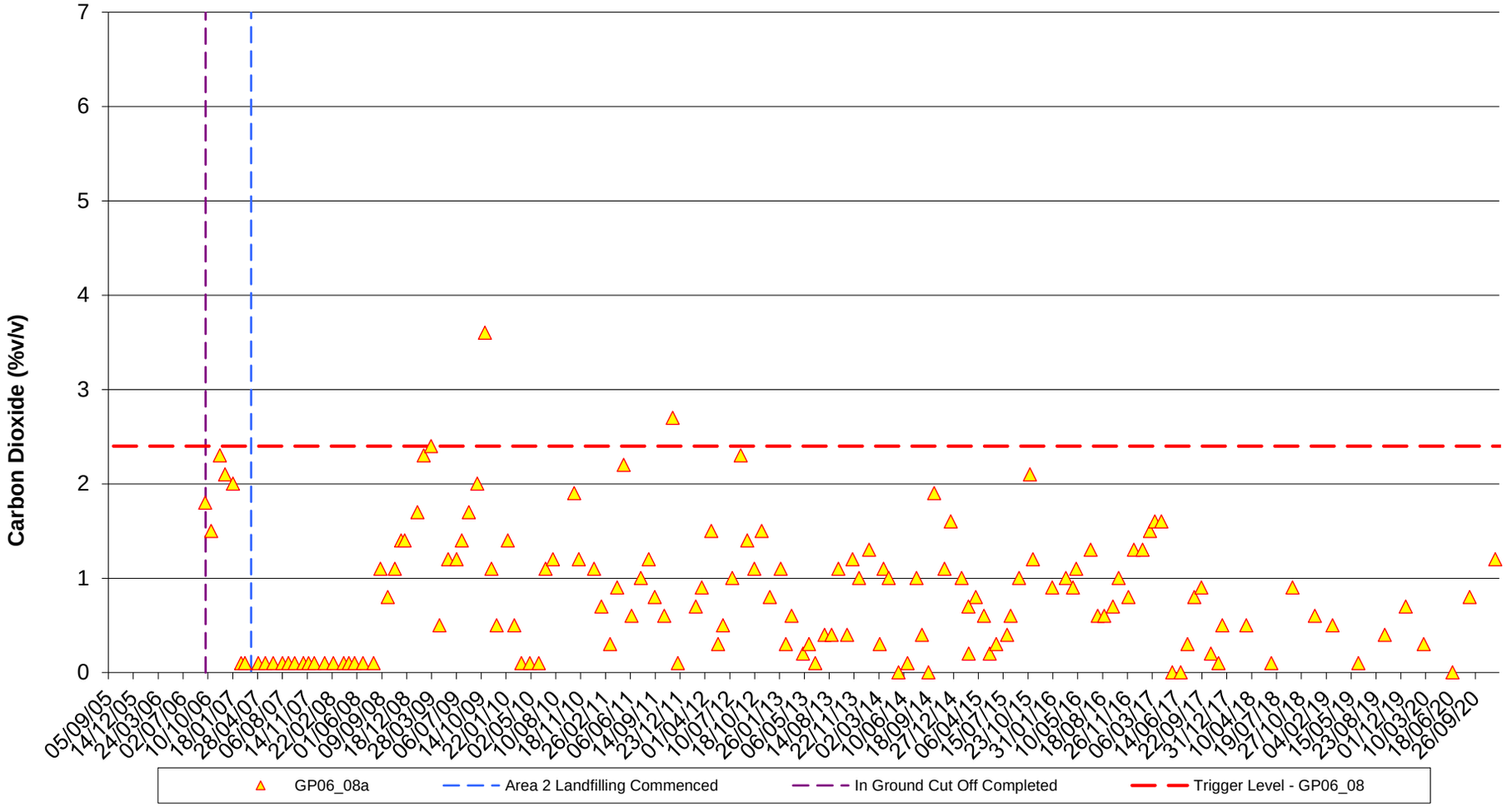
Recorded Carbon Dioxide Concentrations in GP03_06

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-5

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-5 CO2 GP03_06



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Newport City Council

Docksway Disposal Site

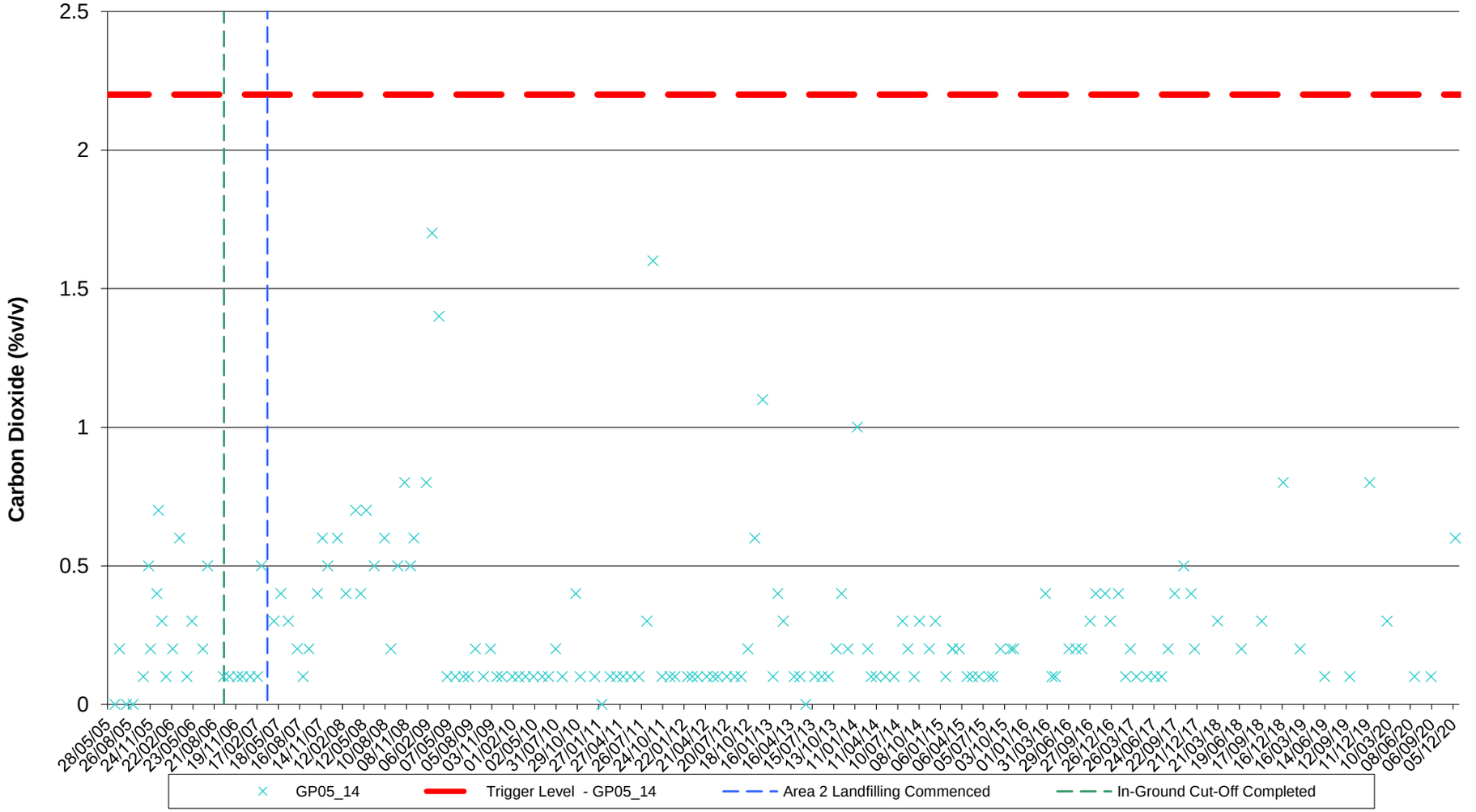
Recorded Carbon Dioxide Concentrations in GP06_08a

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-6

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-6 CO2 GP06_08a



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Docksway Disposal Site

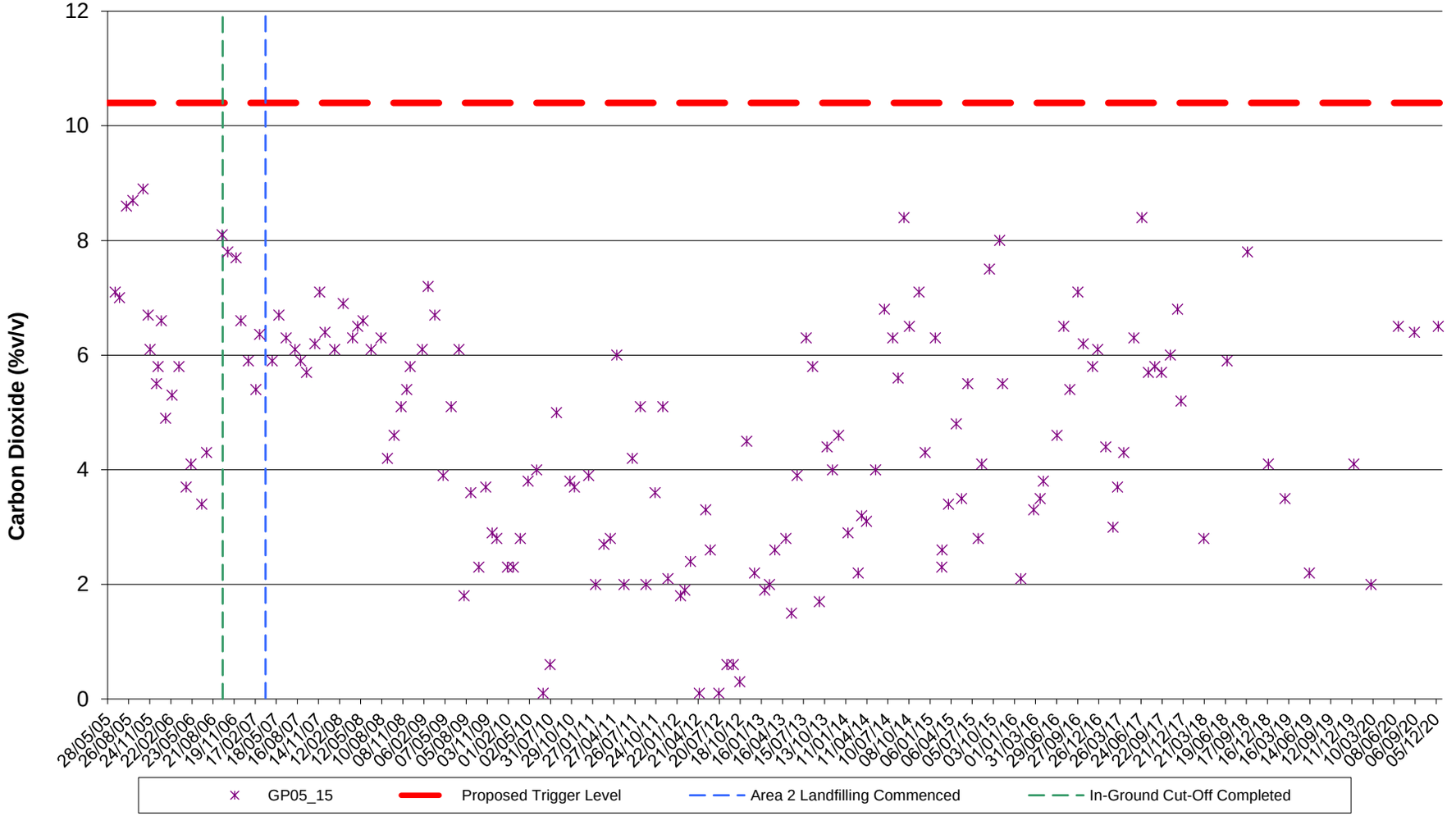
Recorded Carbon Dioxide Concentrations in GP05_14

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-7

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-7 CO2 GP05_14



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Docksway Disposal Site

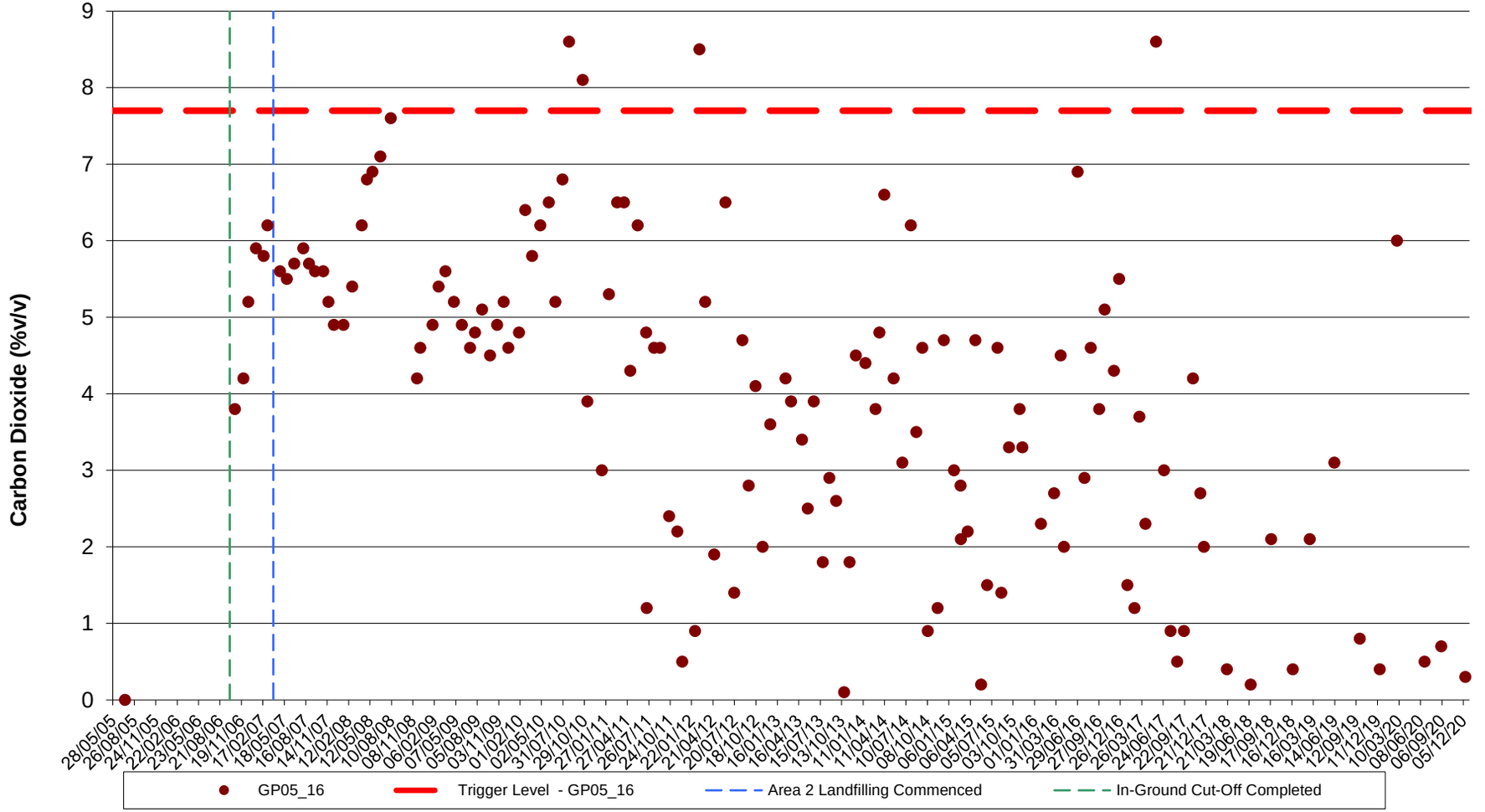
Recorded Carbon Dioxide Concentrations in GP05_15

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-8

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-8 CO2 GP05_15



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Docksway Disposal Site

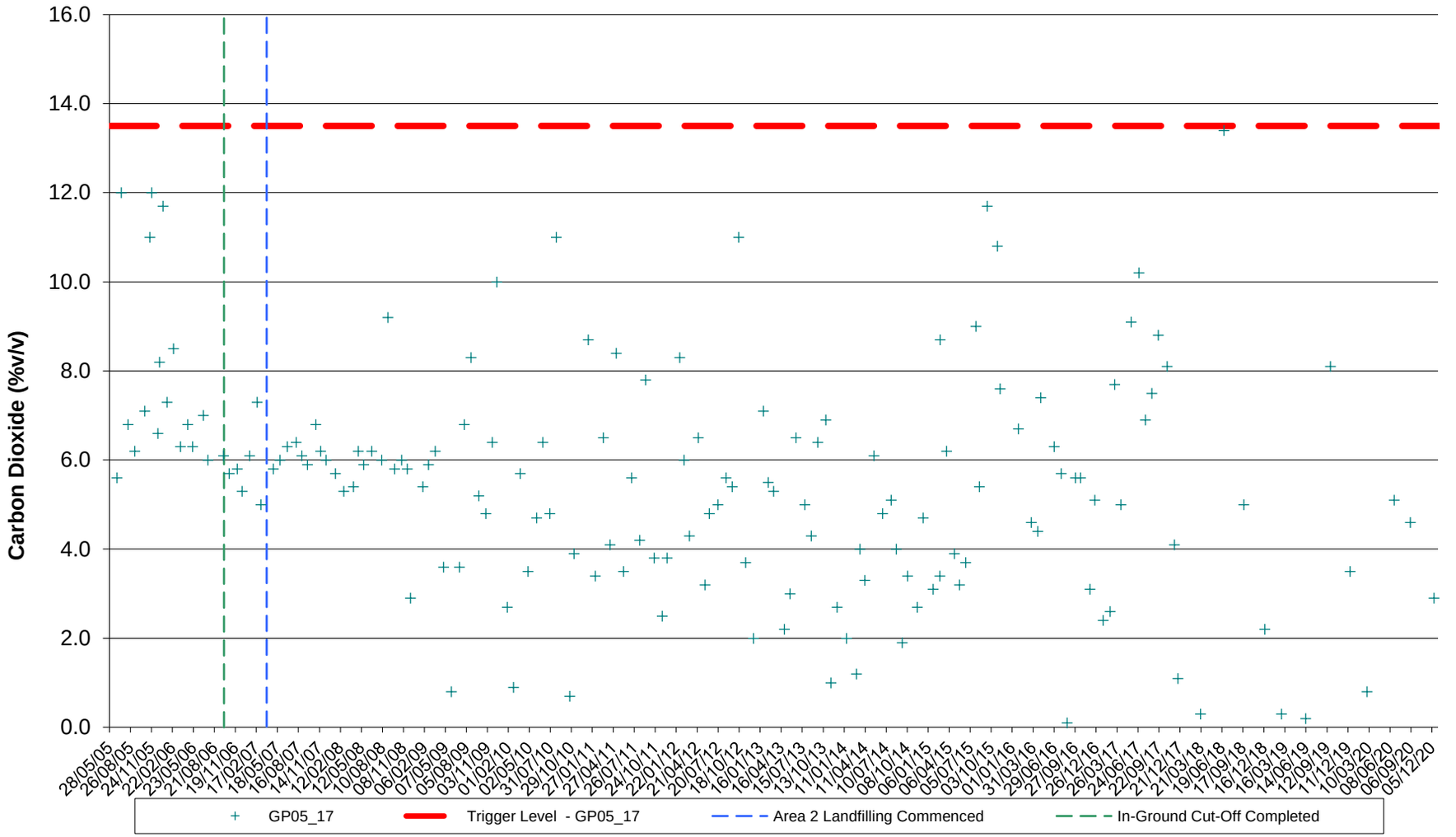
Recorded Carbon Dioxide Concentrations in GP05_16

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-9

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-9 CO2 GP05_16



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Docksway Disposal Site

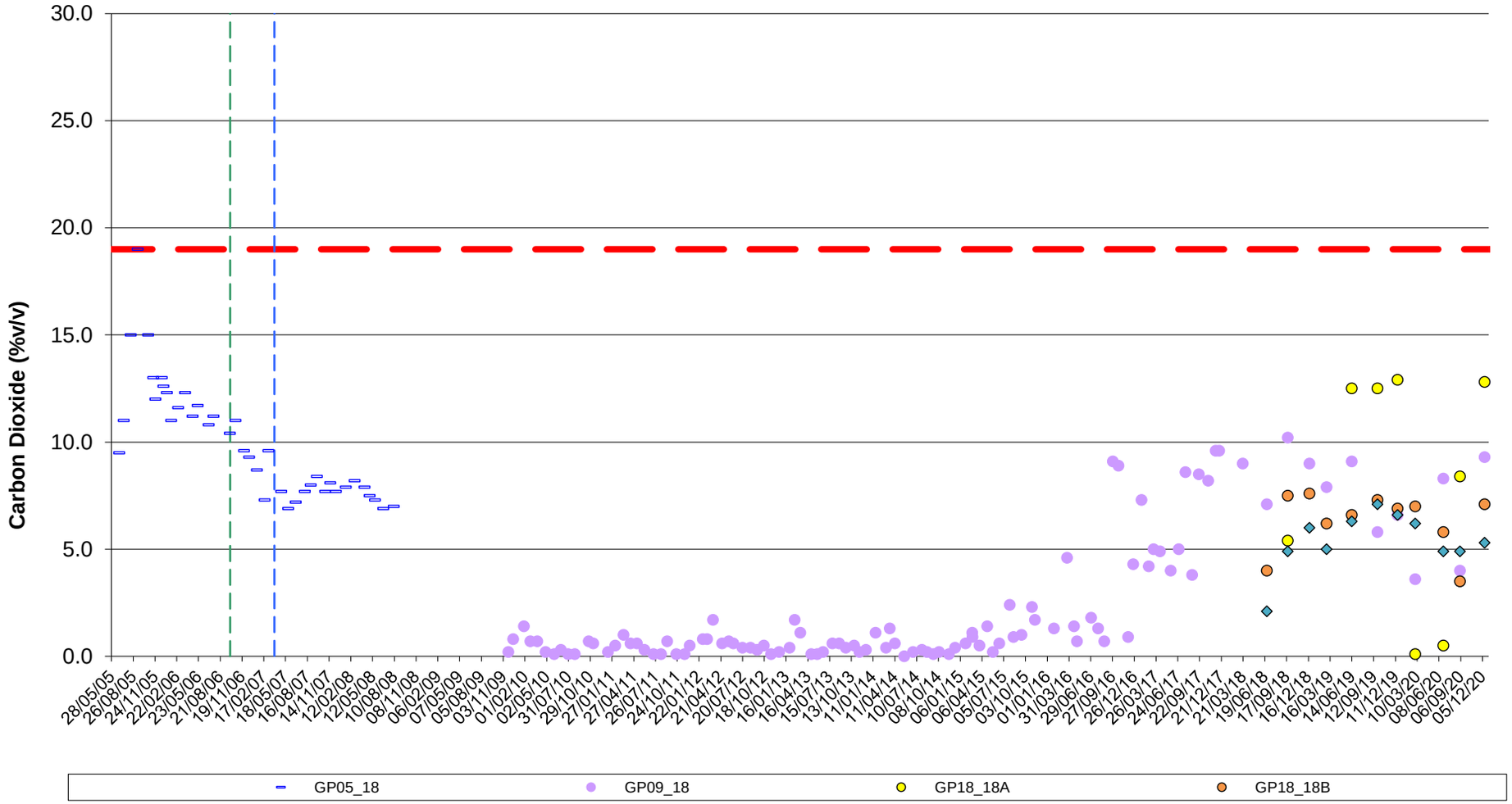
Recorded Carbon Dioxide Concentrations in GP05_17

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-10

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-10 CO2 GP05_17



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Docksway Disposal Site

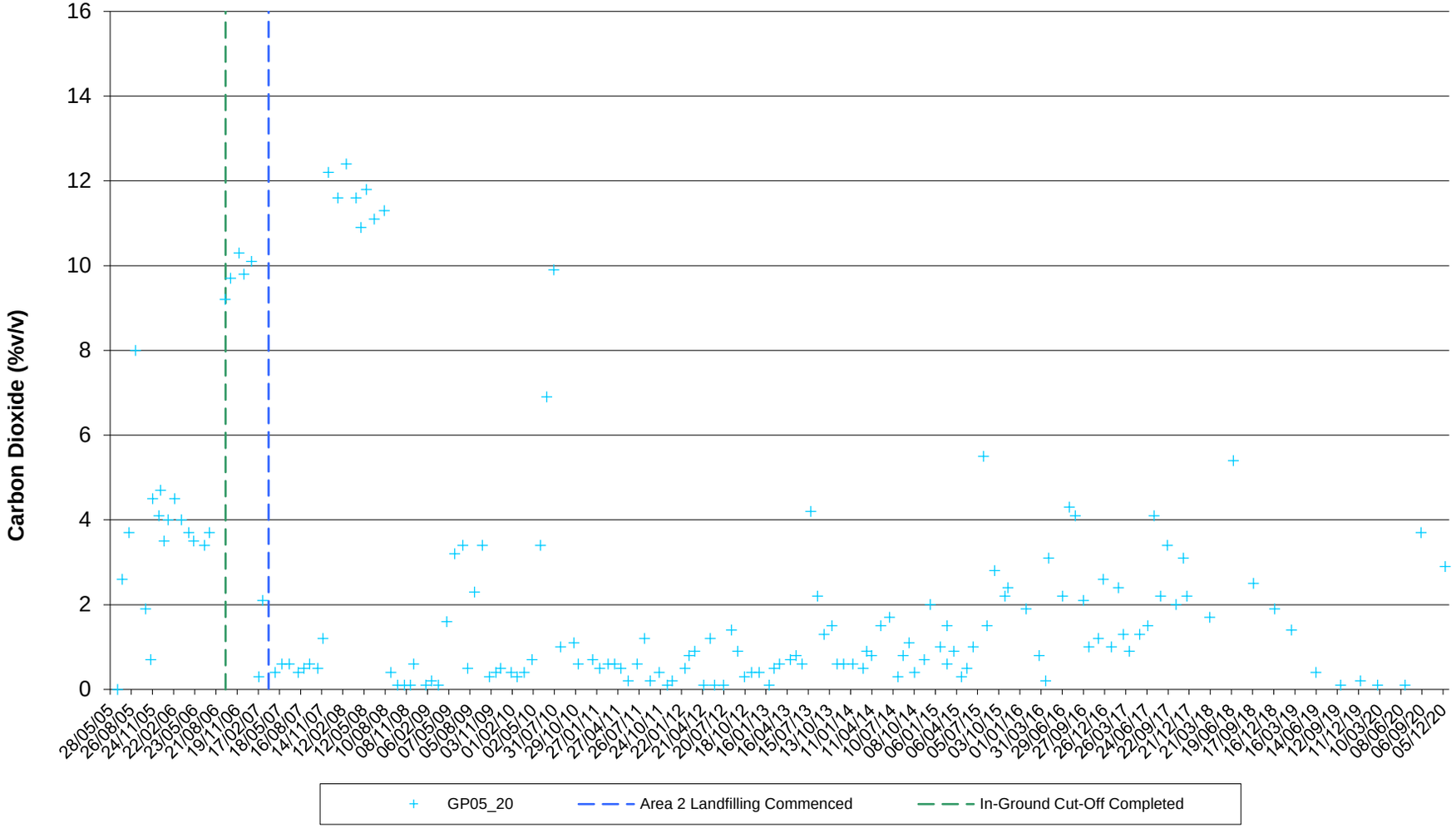
Recorded Carbon Dioxide Concentrations in GP05_18, GP09_18, GP18_18A, GP18_18B, GP18_18C

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-11

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-11 CO2 GP05_18



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Docksway Disposal Site

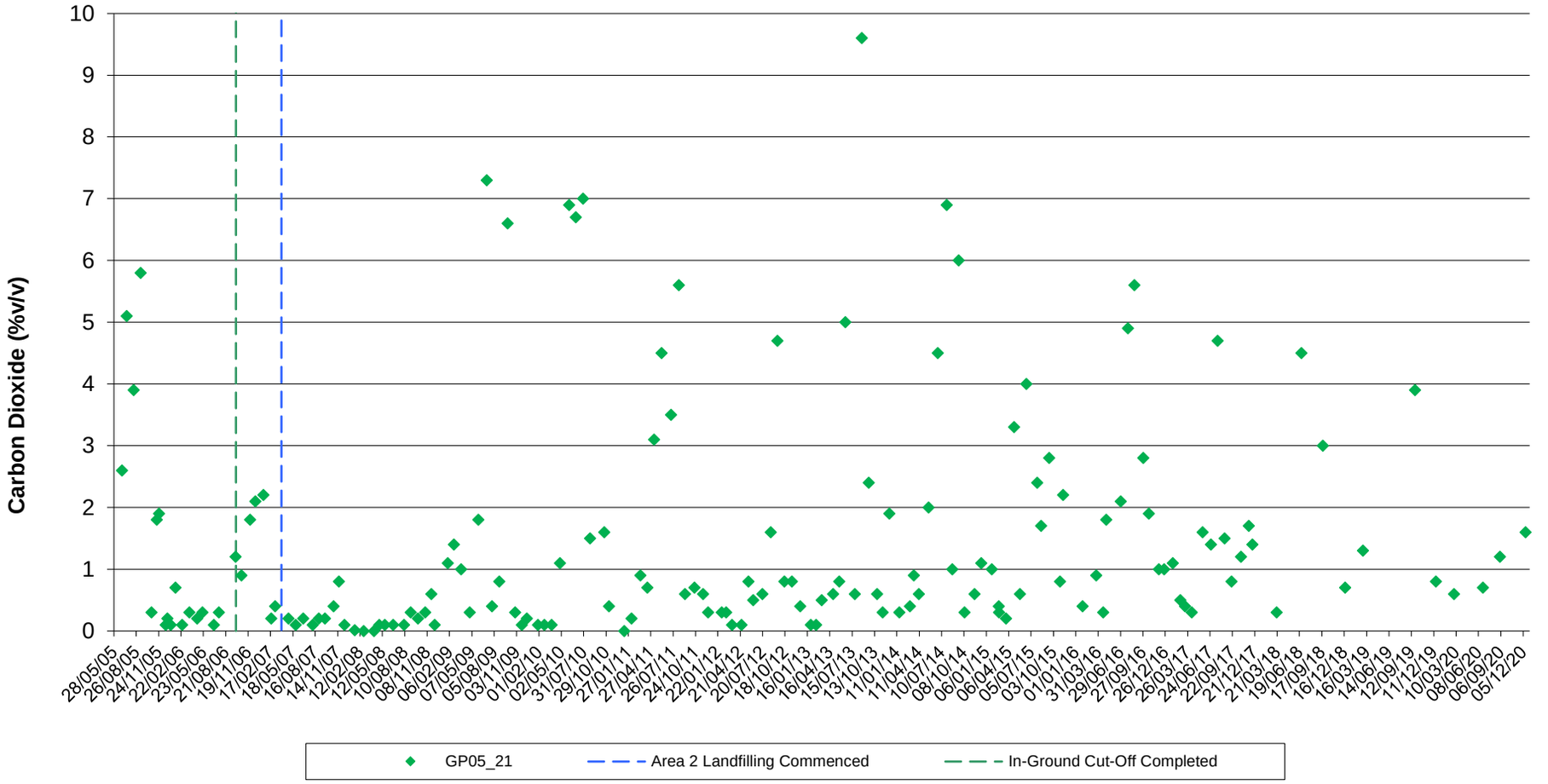
Recorded Carbon Dioxide Concentrations in GP05_20

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-12

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-12 CO2 GP05_20



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Docksway Disposal Site

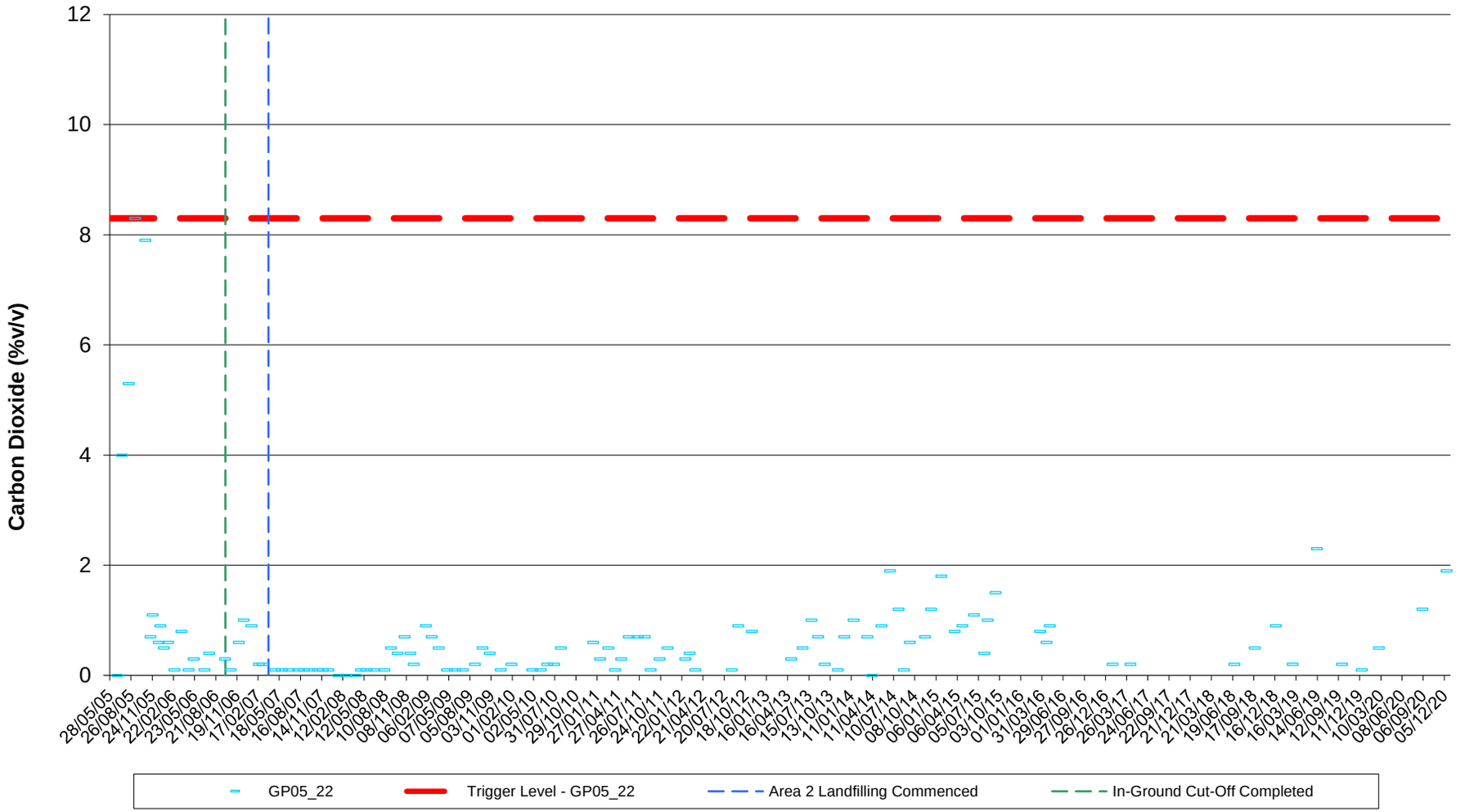
Recorded Carbon Dioxide Concentrations in GP05_21

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-13

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-13 CO2 GP05_21



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Docksway Disposal Site

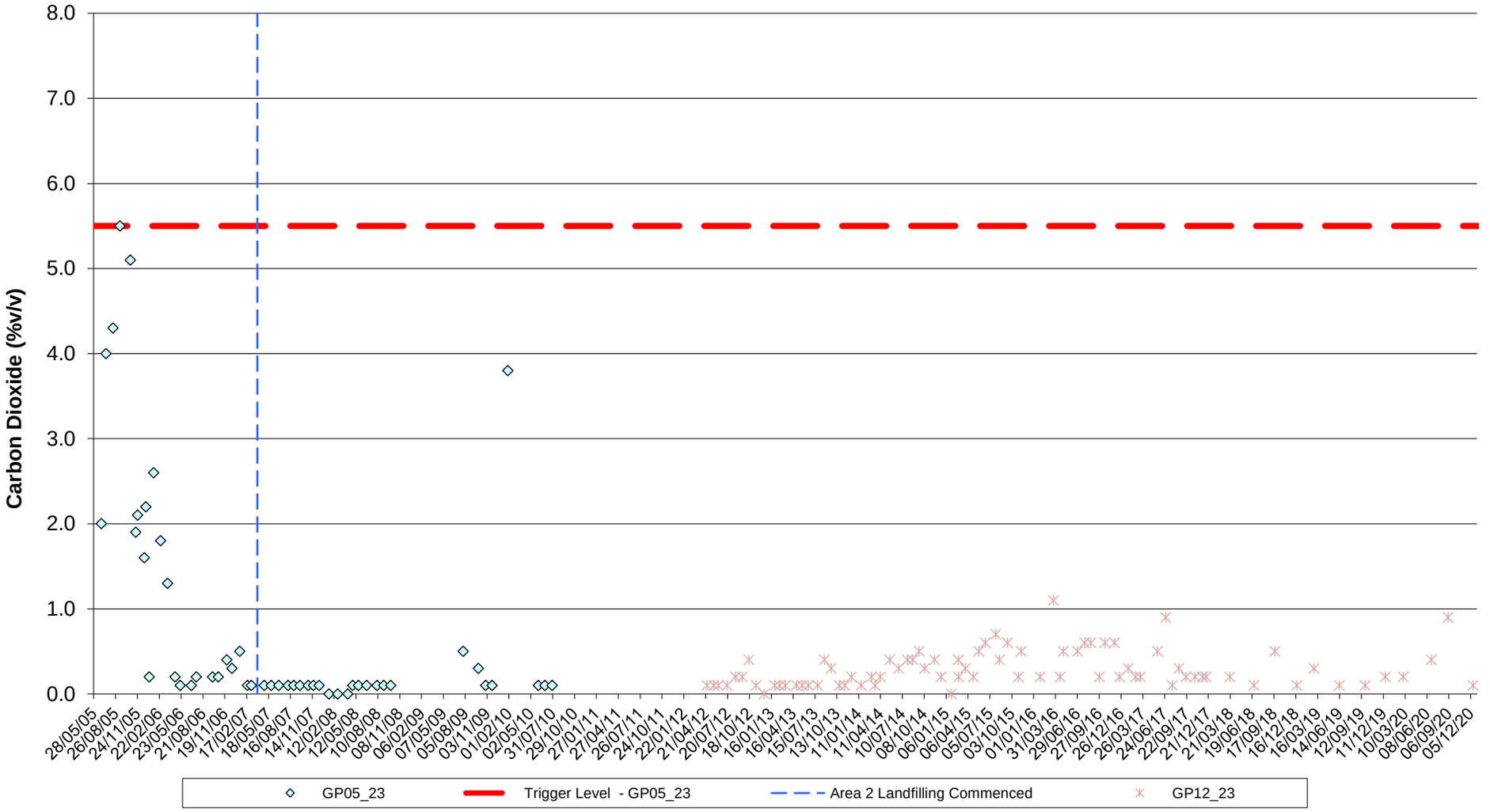
Recorded Carbon Dioxide Concentrations in GP05_22

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-14

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-14 CO2 GP05_22



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Docksway Disposal Site

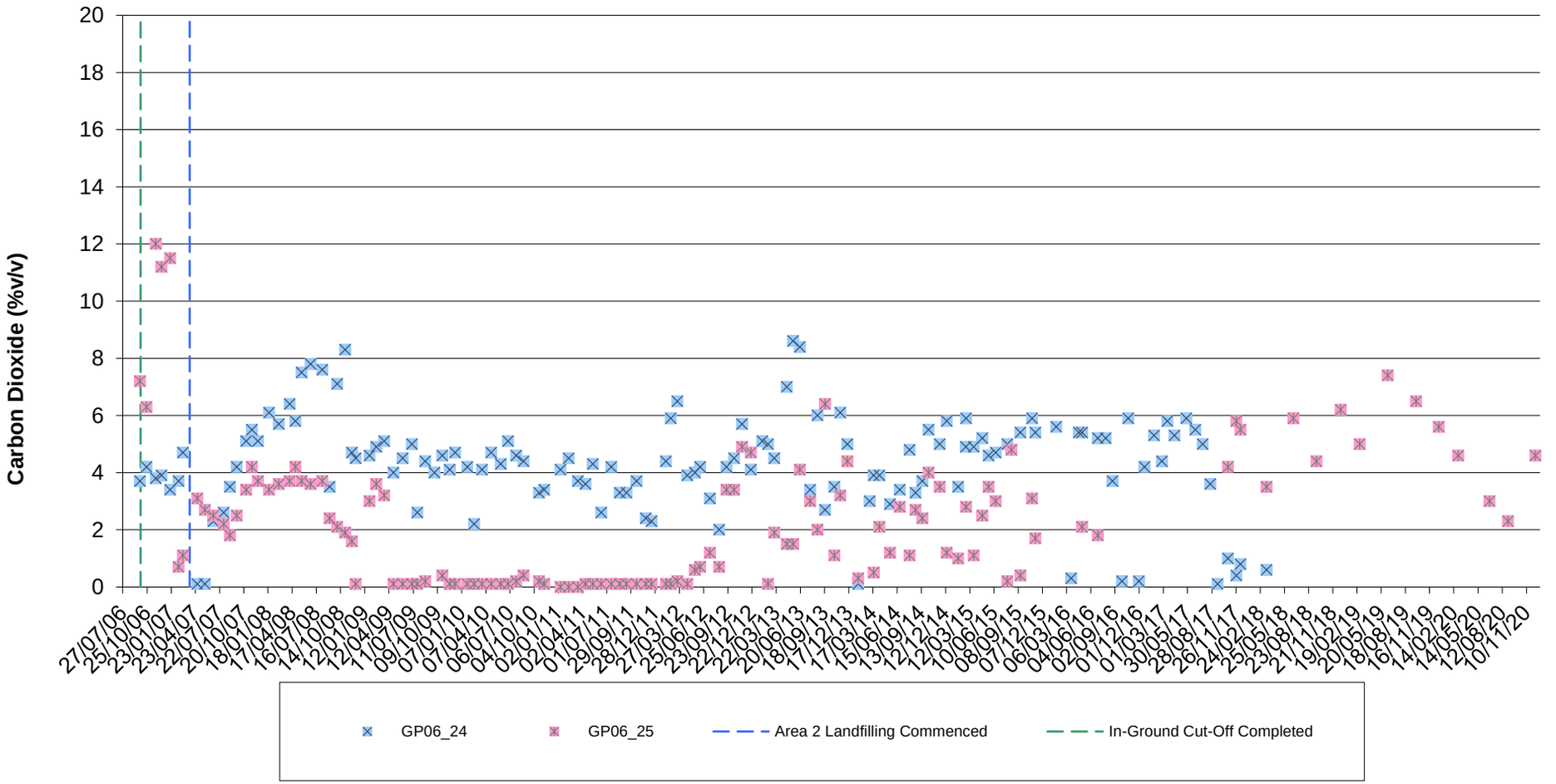
Recorded Carbon Dioxide Concentrations in GP05_23

Date	January 2021
A4 Scale	nts
Drawn	NH
Checked	VKR

Appendix

4-15

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-15 CO2 GP05_23



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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP06_24 and GP06_25

Date	January 2021
A4 Scale	nts
Drawn	NC
Checked	VKR

Appendix

4-16

J:\49428 Docksway - NCC\3503 AEPR Area 2 2020\Graphs\Gas\[Area 2 Gas Graphs STANTEC.xlsx]4-16 New Wells (CO2)

Appendix 5 Infinis Annual Report

Annual permit report

Installation	Docksway
Permit reference	LP3135SB
Reporting period	2020
Permit Operator	Novera Energy

Author: Sam Morris Date: 21/01/2021

Authorised to sign as representative of the Operator

Fugitive Emissions Review		Reporting period: 2020
Installation Name:	**Docksway Landfill gas utilisation plant**	**Permit reference LP3135SB**

Substances Released/Potentially	**Description of event and any contamination/decontamination of the site which has occurred**
Landfill gas	Details of any notifiable events have been submitted to NRW in accordance with our notification procedure
Spillages	No significant spillages, contamination or decontamination to report for this installation

Raw Materials (& Water) Assessment Table					
Site:	Docksway	**Reporting period:**	2020	**Permit Reference:**	LP3135SB

Raw Materials	Application	Current Measures to Ensure Efficiency and Waste Minimisation	Annual Quantity Used	Fate of Material	Environmental Impact Potential	Reason Alternatives are Not Practicable	Details of Process Modifications which Could Result in Savings
Landfill gas	Fuel for engines to produce electricity	Kilowatt generation from volumes processed is maximised through effective operation, maintenance and servicing of plant	Variable depending on site conditions	Combustion	Potentially flammable, explosive, toxic, asphyxiant, ecotoxic, corrosive and odorous, greenhouse gas	N/A - Combustion of landfill gas essential for environmental control	N/A - environmental benefits to be gained from conversion of methane to CO2
Lubricating oils	To ensure efficiency of utilisation plant is maintained in accordance with manufacturer's instructions	Efficient use of lubricating oil is maximised through oil analysis to identify requirement for oil changes	Oil used is continually under review as part of the budgeting process	Reprocessing	Ecotoxic and odorous	Specification determined by engine manufacturer to ensure maximum performance and efficiency	Oil used is speciaised for landfill gas fuel as recommended by the OEM. Oil change intervals are based on oil analysis therefore maximising efficiency and minimising use
Water	Coolant for engine block and domestic water supply	Cooling water is recirculated around the engines to maximise efficiency and minimise consumption	No water supply on site.	Treatment	Inert	N/A - Inert therefore best practicable environmental option	Re-use of water for coolant purposes ensures volumes used are as low as reasonably practicable. Cleaning practices assessed and minimal volumes used, cleaning practices are infrequent
	Hygiene purposes	handwashing and (where available) toilet facilities		where installed toilet waste is removed from site and treated as sewerage	Inert	n/a	n/a
Glycol	Antifreeze for use in coolant water	Glycol is recirculated around the engines to maximise efficiency and minimise consumption	Glycol contained within enclosed-loop system is drained into a container for re-use. OEM* recommends change of glycol every 20,000 hours. Infinis policy is to change following natural depletion or contamination.	Reprocessing	Toxic, ecotoxic	Specification determined by engine manufacturer to ensure maximum performance and efficiency	Antifreeze mix is specific to engine type and pre-determined by the OEM*. Levels are topped-up following natural depletion or contamination
Battery Acid	In batteries used for engine start-up and to provide back-up power to ensure rapid restart following any loss of mains power supply	Battery use is essential minimised to the applications listed (see left)		Recycled	Corrosive	Portable electrical supply required for start-up	Minimal use of battery during start-up only therefore opportunity for savings is insignificant

*OEM: Original Engine Manufacturer

Waste Minimisation, Recovery and Disposal Assessment

Installation Name:	Docksway Gas Utilisation Plant	**Permit Reference:**	LP3135SB	**Reporting period:**	2020

Waste Stream	**Application/Source**	**Current Measures to Ensure Efficiency and Waste Minimisation**	**Fate of Material**	**Reason Alternatives are Not Practicable**	**Details of Process Modifications which Could Result in Savings**
Oil Filters (205ltr Drum)	Engine maintenance	Predetermined by manufacturers' recommendations to ensure efficiency	Reprocessing	Oil and filtration devices predetermined by manufacturers to ensure efficiency	Not applicable: oil filters changed at pre-determined life based on oil analysis and differential pressure
Oil Contaminated Rags & Absorbents (205ltr Drum)	Engine maintenance and housekeeping	Control measures in place to prevent spillage	Reprocessing	As above	No further modifications considered possible: Preventative maintenance and procedural practices minimise spillage and the requirement for oil absorbancy products
Waste Engine Oil (Bulk)	Engine maintenance	Efficient use of lubricating oil is maximised through oil analysis to identify requirement for oil changes	Reprocessing	As above	No further modifications considered possible: Oil used is specific to the landfill gas fuel in use and as recommended by the OEM*. Oil change intervals are based on oil analysis therefore maximising efficiency and minimising use
Batteries	Engine maintenance	Recharged	Recycled	Batteries essential for engine start-up and ensuring rapid restart	Batteries only replaced when they no longer hold a charge. Maintenance practices are in place to lengthen battery life
Fluorescent Tubes	Lighting	Replacement when faulty or damaged	Reprocessing	Alternatives not considered practicable due to warm-up time of energy saving bulbs	Tubes are only replaced when they have expired
General Waste	Packaging	Waste streams which can be reprocessed or recycled are identified and segregation facilities provided where appropriate	Disposal	Materials not segregated/ reprocessed are produced in small quantities only making alternatives not viable	Not applicable as a result of small quantities only being produced
Waste water/effluent	Welfare facilities	Facilities are maintained to ensure minimal water usage	Road tanker to treatment plant	Connection to mains sewer not practical - quantities produced are small.	Not applicable as a result of small quantities only being produced

*Original Engine Manufacturer

Annual Reporting of Other Performance Indicators

Installation:	Docksway Landfill Gas Utilisation Plant	**Permit Reference:**	LP3135SB

Parameter	**2020**	**Units**
Flare operation hours	339	hrs
Gas engine downtime hours	289	hrs*
Gas engine operation hours	8495	hrs
Volume of landfill gas combusted	148,177	m3 (treated by flare)
	2,649,353	m3 (treated by engines)
	2,797,530	m3 (total treated by engines & flare)

Operator's Comments:
Please contact permit-compliance@infinis.com for any queries regarding the above

Reporting of Performance Indicators (Form Ref: PI1)

Installation:	Docksway Landfill Gas Utilisation Plant	**Permit Reference:**	LP3135SB

Annual Production/Treatment (MWh)	
Total production of energy	4411

Environmental Performance Indicators

Parameter	**Annual Average 2020**	**Units**	**Trends in Environmental Performance**	
			2018	**2019**
Total oxides of nitrogen (expressed as NO2) emission	2.7	Kg/MWh	2.1	1.5
Total carbon monoxide emission	1.7	Kg/MWh	4.6	3.0
Total engine downtime (downtime hrs/available operation time in hrs)	3.3	%	8.8	11.0

Reporting period	**Energy Imported (Primary Energy Usage) (MWh)**	**Parasitics (MWh)**	**Energy Exported (MWh)**	**Energy Used on Site (MWh)**	**Site Efficiency**
2020	5	268	4143	273	33.8

*site efficiency has been calculated as follows: ((Engine efficiency (%) x (gas to generation/total gas) x (power export / (power generation + imported power)).

Installation:	Docksway Landfill Gas Utilisation Plant	**Permit Reference:**	LP3135SB

Accident Management Plan Review	**2020**
Date of next review	
Reviewed monthly following a review of notifiable events	

Permit requires that the accident management plan is reviewed at least every 2 years and was last updated 07/07/20 Revision 5.

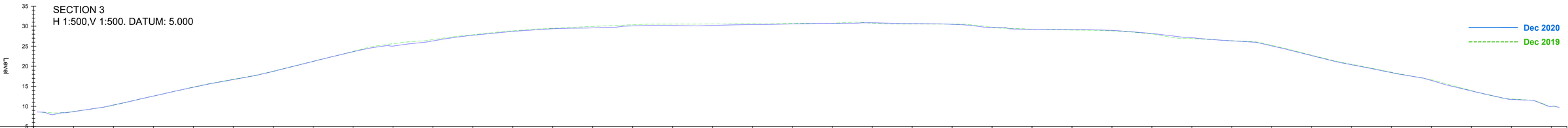
Operator's comments:
No accidents occurred during this period which would require amendment to the Accident Management Plan for this installation.

Installation:	Docksway Landfill Gas Utilisation Plant	**Permit Reference:**	LP3135SB
Emissions to Air Reporting	**2020**		
Report Submission Date		26-Oct-20	
Submitted to		Tyrone Ward & Elizabeth Parr	

Appendix 6 NCC Topographical Survey and Cross Sections

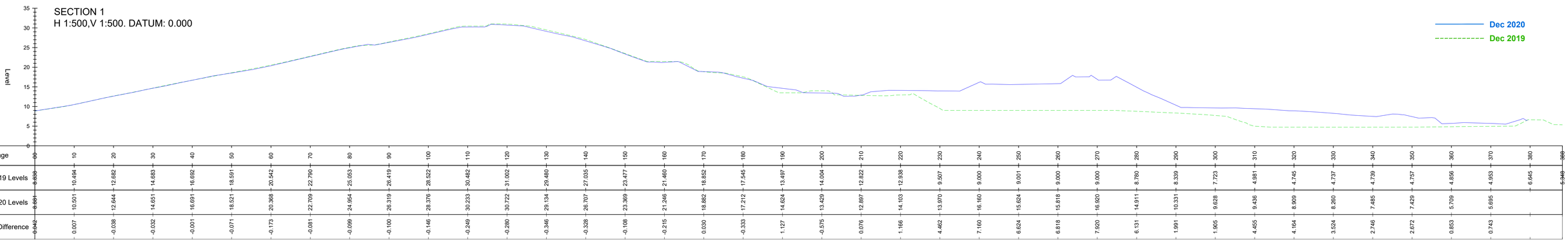
Chainage	60	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	357
Dec 2019 Levels	8.471	10.174	11.226	13.519	16.355	18.102	20.577	22.821	24.627	24.576	24.131	23.844	23.611	23.166	23.225	23.233	23.449	23.302	22.936	22.739	22.281	22.153	22.001	20.995	19.492	16.231	15.481	14.378	12.032	11.008	11.081	11.234	10.843	10.473	7.568		
Dec 2020 Levels	8.487	10.267	11.237	13.522	16.341	18.063	20.510	22.743	24.357	24.416	23.988	23.940	23.713	23.018	22.794	23.188	23.279	23.108	22.809	22.558	22.008	21.823	21.624	20.874	19.466	18.401	17.649	17.473	17.047	16.614	15.670	13.137	12.977	10.082	7.453		
Level Difference	-0.016	0.093	0.012	0.003	-0.013	-0.040	-0.067	-0.078	-0.270	-0.159	-0.143	0.096	0.102	-0.148	-0.431	-0.045	-0.170	-0.194	-0.127	-0.181	-0.273	-0.330	-0.377	-0.122	-0.026	2.170	2.168	3.095	5.015	5.607	4.589	1.903	2.134	-0.391	-0.114		

Refer to drawing number 1476 / Ph2/ AEPR 2020_02 for section key plan



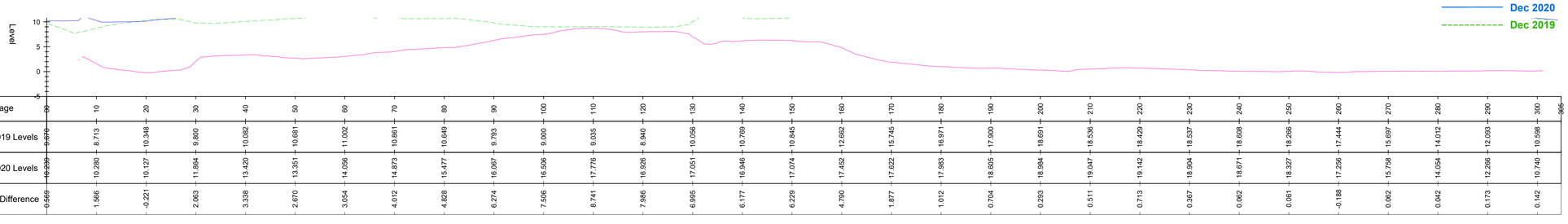
Chainage	60	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	384
Dec 2019 Levels	8.718	10.275	12.548	14.812	16.744	18.779	21.244	23.695	25.631	26.643	27.881	28.858	29.474	29.934	30.070	30.343	30.510	30.551	30.610	30.697	30.713	30.743	30.537	30.508	29.685	29.233	29.026	28.834	28.049	26.916	26.381	25.227	22.779	20.497	18.508	16.617	13.917	11.840	9.997	
Dec 2020 Levels	8.676	10.334	12.566	14.752	16.679	18.717	21.212	23.624	25.034	26.326	27.743	28.700	29.356	29.583	30.070	30.181	30.196	30.394	30.562	30.855	30.711	30.855	30.653	30.460	29.712	29.204	29.237	28.956	28.185	27.119	26.347	25.078	22.659	20.380	18.408	16.453	13.853	11.726	9.944	
Level Difference	-0.042	0.059	0.017	-0.060	-0.065	-0.062	-0.032	-0.070	-0.597	-0.318	-0.139	-0.158	-0.118	-0.351	-0.273	-0.329	-0.355	-0.216	-0.135	-0.002	0.113	0.116	-0.048	0.027	0.027	-0.029	0.211	0.122	0.136	0.203	-0.034	-0.149	-0.120	-0.117	-0.100	-0.164	-0.064	-0.114	-0.054	

Refer to drawing number 1476 / Ph2/ AEPR 2020_02 for section key plan



Chainage	60	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	388
Dec 2019 Levels	8.838	10.494	12.682	14.683	16.692	18.551	20.542	22.750	25.053	26.419	28.522	30.462	31.002	29.460	27.035	23.477	21.460	18.852	17.545	13.407	14.004	12.822	12.938	9.507	9.000	9.001	9.000	9.000	8.780	8.339	7.723	4.981	4.745	4.737	4.739	4.757	4.856	4.953	6.645	5.348
Dec 2020 Levels	8.891	10.501	12.644	14.651	16.691	18.521	20.368	22.709	24.954	26.319	28.376	30.233	30.722	29.134	26.707	23.369	21.246	18.882	17.212	14.824	13.429	12.897	14.103	13.970	16.160	15.624	15.818	16.920	14.911	10.331	9.628	9.436	8.909	8.260	7.485	7.429	5.709	5.695	0.743	
Level Difference	-0.042	0.007	-0.038	-0.032	-0.001	-0.071	-0.173	-0.081	-0.099	-0.100	-0.146	-0.249	-0.280	-0.346	-0.328	-0.108	-0.215	0.030	-0.333	1.127	-0.575	0.076	1.166	4.462	7.160	6.624	6.818	7.920	6.131	1.991	1.905	4.455	4.164	3.524	2.746	2.672	0.853	0.743		

Refer to drawing number 1476 / Ph2/ AEPR 2020_02 for section key plan



Chainage	60	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	305
Dec 2019 Levels	8.670	8.713	10.348	9.800	10.082	10.661	11.002	10.861	10.649	9.793	9.000	9.035	8.940	10.056	10.769	10.845	12.662	15.745	16.971	17.900	18.691	18.536	18.429	18.537	18.608	18.266	17.444	15.697	14.012	12.093	10.598	
Dec 2020 Levels	10.239	10.280	10.127	11.864	13.420	13.351	14.056	14.873	15.477	16.067	16.506	16.926	17.776	17.051	16.946	17.074	17.452	17.622	17.983	18.805	18.984	19.047	19.142	18.904	18.671	18.327	17.256	15.758	14.054	12.266	10.740	
Level Difference	-0.569	1.566	-0.221	2.063	3.338	2.670	3.054	4.012	4.828	6.274	7.506	8.741	7.886	6.995	6.177	6.229	4.790	1.877	1.012	0.704	0.293	0.511	0.713	0.367	0.062	0.061	-0.188	0.062	0.042	0.173	0.142	

Refer to drawing number 1476 / Ph2/ AEPR 2020_02 for section key plan

A1

NOTES

Refer to drawing number 1476 / Ph2/ AEPR 2019_02 for section key plan

Docksway Waste Disposal Site Waste Volume Summary 2020		
Period	Input Volume (m3)	Cumulative Volume (m3)
Up to Oct 2019		1096293
Dec 2019 - Dec 2020	73009	1169302
Total Waste Deposited 2019	73009	
Remaining Volume (@ 2m m3 capacity)	830698	

Docksway Waste Disposal Site Cell 3A Volume Summary (Asbestos)		
Period	Input Volume (m3)	Cumulative Volume (m3)
Up to and including Dec 2019		54139
Dec 2019 - Dec 2020	17352	71491

Rev	Details	Dr	Ch	Ap	Date

Streetscene
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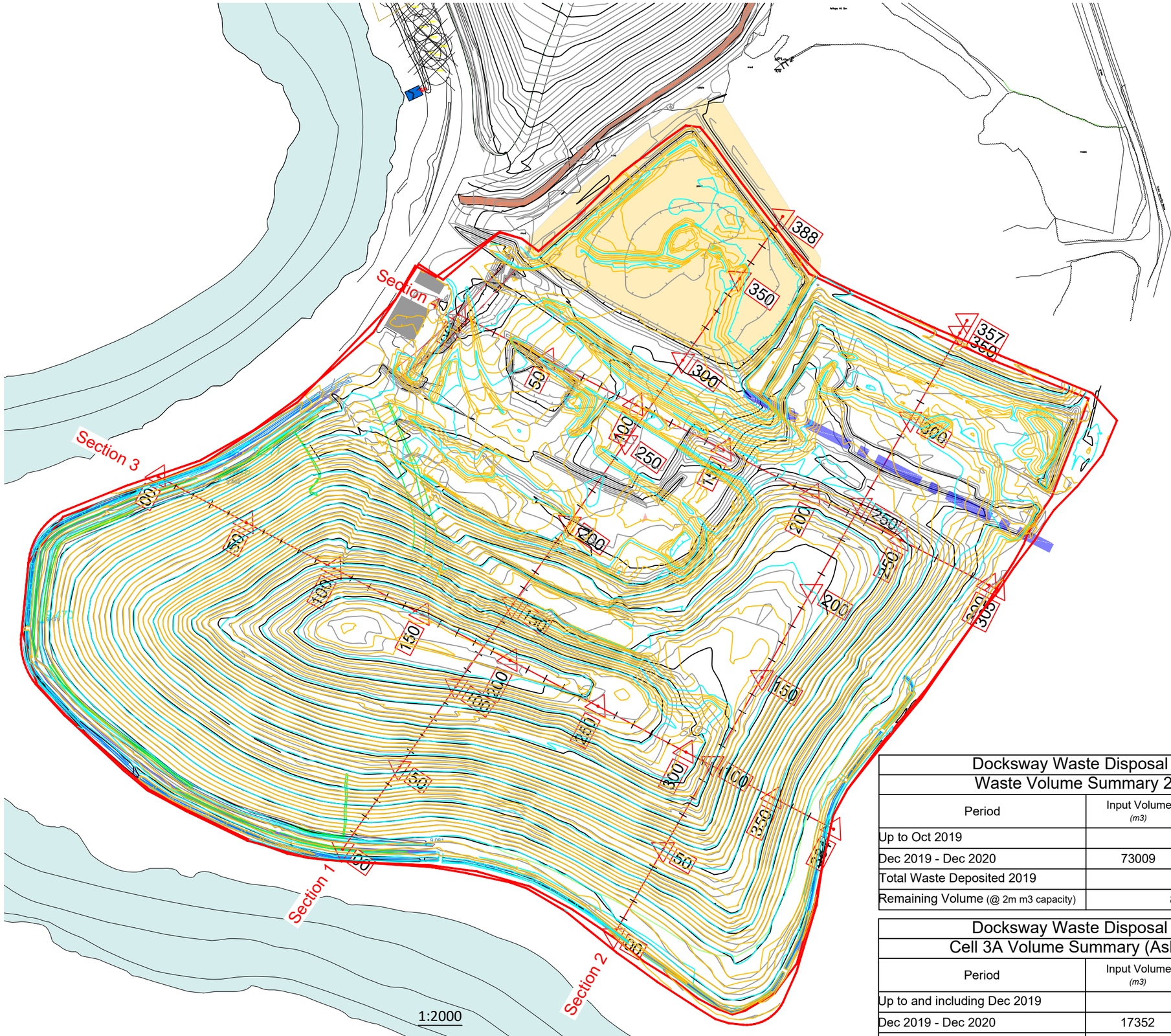
Newport City Council / Cyngor Dinas Casnewydd

Project
Docksway Waste Disposal Site

Cells 1 & 2 & 3 & 4 TOPO Survey Dec 2020

(Ph2 Waste Input Dec 2019 - Dec 2020)

File No.	JNA1476	Status:	For Consultation	
Drawn By	MDH	Checked By		Approved By	
Date	11.01.21	Date		Date	
Scales	1:2000			
Drawing No.	1476 / Ph2/ AEPR 2020_01			



Phase 2 Topo Survey Dec 2020

1:2000 @ A3

Docksway Waste Disposal Site Waste Volume Summary 2020		
Period	Input Volume *(m3)*	Cumulative Volume *(m3)*
Up to Oct 2019		1096293
Dec 2019 - Dec 2020	73009	1169302
Total Waste Deposited 2019	73009	
Remaining Volume (@ 2m m3 capacity)	830698	

Docksway Waste Disposal Site Cell 3A Volume Summary (Asbestos)		
Period	Input Volume *(m3)*	Cumulative Volume *(m3)*
Up to and including Dec 2019		54139
Dec 2019 - Dec 2020	17352	71491

NOTES A3

1. Refer to drawing number 1476 / Ph2/ AEPR 2020_01 for sections

Rev	Details	Dr	Ch	Ap	Date

Streetscene
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Project

Docksway Waste Disposal Site

Cells 1 & 2 & 3 & 4 TOPO Survey Dec 2020

Waste Input Oct 2019 - Dec 2020

File No. 1476		Status: Consultation			
Drawn	MDH	Checked		Approved	
Date	Feb 2020	Date		Date	
Scales	see drawing panes				

Drawing No. 1476/PH2/AEPR 2020_02