Docksway Disposal Site

Annual Environmental Review for Area 2 - 2023

On behalf of **Newport City Council**

NEWPORT CITY COUNCIL
CYNGOR DINAS CASNEWYDD

Project Ref: 332510236/3513 | Rev: 00 | Date: January 2024

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Document Control Sheet

Project Name: **Docksway Disposal Site**
Project Ref: **332510236/3513**
Report Title: **Annual Environmental Review for Area 2 - 2023**
Doc Ref: **332510236/3513/AEPR/AREA2/2023/Rev0**
Date: **February 2024**

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For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved
0	Jan 24	Draft for Issue - awaiting Topo	[redacted]	[redacted]	[redacted]
1	Feb 24	Final including Topo	[redacted]	[redacted]	[redacted]

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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 V005 (Jan 2022).

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 2023 to December 2023. 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 generally on a 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 should be 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 in **Figure 2**, and details are tabulated below:

Table 2-1 Details of Surface Water Locations Monitored during 2023

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 2023 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 six times (January, March, August, October, November, and December 2023) 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 occasions that SW_25 was sampled in 2023 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 2023, and the longer-term data does not indicate any developing adverse trends.
- The samples from SW_25 recorded pH values between 7.63 and 8.14 in 2023, which is within the acceptable range of between 6 and 9 set in the discharge consent and is similar to pH values previously recorded at this location.
- The concentrations of Total Suspended Solids (TSS) were generally recorded below the discharge consent limit of 60mg/l, with one exception in October when a concentration of 744mg/l was recorded. However, this is within the range of the overall data set which does not indicate any developing adverse trends.
- There is no limit value for Chloride in the discharge consent for SW_25. In 2021 the Chloride concentrations recorded appeared to indicate an increasing trend, and in 2022, the Chloride concentrations were significantly variable. The concentrations started to decrease at the end of 2022 with the concentrations in 2023 continuing to decrease. The Chloride concentrations in SW_25 were between 69.3mg/l and 143mg/l in 2023.

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 five times (March, April, October, November, and December 2023) 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 limit value for Ammoniacal Nitrogen in the discharge consent for SW_26. Concentrations recorded in 2023 generally remain slightly higher than seen in recent years, and are significantly variable, however they are within the range of the overall dataset with no indication of adverse trends developing.

- The results of the TSS testing undertaken on the samples obtained from SW_26 during 2023 recorded concentrations between the method detection limit (MDL) of <2mg/l, and 6.75mg/l, which is well below the discharge consent limit of 60mg/l.

- During 2023, 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 indication that there are any detrimental temporal trends with regard to surface water quality at this location with reference to the parameters tested and data reviewed.

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 2023, samples were taken from this location on twelve occasions and submitted to the laboratory for identification of the presence of asbestos fibres and other hydrochemistry parameters. The laboratory did not identify the presence of asbestos fibres on any of the twelve samples they received from C3_ASB. The hydrochemistry parameters are commented on below alongside other testing locations.

Commentary on Other Surface Monitoring Locations

Ammoniacal Nitrogen

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

2.2.13 SW_1A was sampled on five occasions (January, February, March, June, and September) during 2023. Concentrations of Ammoniacal Nitrogen in SW_1A have been recorded below the MDL (0.2mg/l) in the last 12 months with one exception in February when a concentration slightly above the MDL at 0.299 mg/l was recorded. This is consistent with the longer-term dataset.

2.2.14 SW_23 was sampled three times during 2023 and the Ammoniacal Nitrogen concentrations have shown significant variability, from 11.3mg/l in March 2023, to 41.7mg/l in September 2023. However, these are a decrease from the 158mg/l recorded in September 2022 and are consistent with the longer-term dataset.

2.2.15 Ammoniacal Nitrogen within C3_ASB was recorded on twelve occasions in 2023, with concentrations ranging from 0.2mg/l recorded in July, and 3.79mg/l recorded in February. The concentrations are within the range previously recorded at this location.

2.2.16 SW_24 was sampled on twelve occasions in 2023, with all concentrations recorded below the MDL (0.2mg/l), which is consistent with the trend for the 4 years previous.

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 The majority of locations appear to be displaying a generally uniform trend in BOD concentrations with the majority of results recorded at concentrations below 10mg/l. The exception to this is C3_ASB which has recorded slightly higher concentrations in the latter part of 2023 than in previous years, although the concentrations are within the range of the overall dataset.

2.2.19 In general, COD concentrations appear to be relatively consistent at all monitoring locations during 2023 with results generally below 150mg/l and within the range of the overall datasets.

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 stable trend of Chloride concentrations over the last 12 months and in the longer term, with concentrations at most locations predominantly below 150mg/l.

2.2.21 The exceptions to this are SW_1A where a concentration of 6020mg/l was recorded in February, which is the highest concentration ever recorded at this location. However, the recorded concentrations reduced significantly in the subsequent monitoring rounds, and there appears to be a trend developing of spikes in concentrations of Chloride followed by subsequently lower concentrations. Concentrations of Chloride also continued to fluctuate from month to month in SW_23 during 2023 (from about 125mg/l up to 1640mg/l), as was seen at this location during 2022.

2.2.22 Concentrations of Chloride at C3_Asb have also continued to fluctuate in 2023 between 41.2mg/l and 163mg/l, however the concentrations have significantly decreased since 2022, appearing to reverse a previously increasing trend.

pH

2.2.23 **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 7.5 and 8.5, which is within the normal range for all of the monitoring locations in the last 10 years.

2.2.24 The exception to this was within C3_ASB where the pH was recorded above 8.5 in June (8.85), July (9.31) and August (8.69), however the recorded concentrations have reduced in the next monitoring rounds to be within the previous pH range for this monitoring location.

Electrical Conductivity

2.2.25 **Appendix 1-6** presents Electrical Conductivity (EC) readings in each of the surface water monitoring locations since 2003. The data indicates a generally stable trend of EC, with readings generally below 5mS/cm at all monitoring locations in the last 12 months. The exceptions to this are in SW_23 with a reading of 5.56mS/cm in June, which is within the range of the overall dataset, and in SW_1A with a reading of 15.3mS/cm in February which is the highest EC ever recorded at this location. However, the EC did reduce in the following monitoring rounds to previous levels for this location.

Total Suspended Solids

2.2.26 **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

2.2.27 **Appendix 1-8** presents the Dissolved Oxygen (DO) concentrations recorded at the surface water monitoring locations. However, the monitoring field probe used to determine DO was not working for the majority of 2023 and therefore only December monitoring data from SW_24, SW_25, SW_26 and C3_ASB is presented on the graph in **Appendix 1-8,** the results of which are consistent with the overall dataset.

2.3 Review of Potential Risks and Further Monitoring

2.3.1 The environmental data obtained for January to December 2023 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 – 2022[4].

2.3.2 The data does indicate some variability in the recorded concentrations of Chloride particularly over the last couple of years where higher and more variable concentrations have been recorded. However, the concentrations recorded in this period are within the overall dataset and are not currently considered to be indicative of a significant decrease in surface water quality.

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 co-ordinates of each are presented in **Table 3-1** below.

Table 3-1 Groundwater Monitoring Well Locations

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

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 (in accordance with EA guidance), with other determinants having both control levels and compliance levels set.

Table 3-2 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 the majority of 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 2023. The limited exceptions to this are described below.

3.3.3 The first exception is at GW12_33 which has previously shown variable concentrations in 2021 and 2022 (including exceedances of the compliance limit). Although concentrations have generally returned to below the Compliance Limit (18mg/l) during 2023, the concentration of 15.6mg/l recorded in October, marginally exceeded the Control Limit of 15mg/l.

3.3.4 At GW06_37, the concentrations of Ammoniacal Nitrogen recorded in 2023 have all exceeded the compliance limits and continue a general trend that has been emerging at this location in previous years. The exception to this was in 2021 when the concentrations of Ammoniacal Nitrogen recorded at this location were all below the compliance limits.

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

Arsenic

3.3.6 **Appendices 2-6** to **2-15** present the recorded Arsenic concentrations for the current Area 2 groundwater monitoring locations. Arsenic concentrations were below the Compliance Limits in all locations during 2023 with no distinct adverse trends developing.

Benzene, Naphthalene and o-Xylene

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

3.3.8 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 MDL.

3.3.9 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

3.3.10 **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 2023.

3.3.11 The exceptions to this was in GW06_36 on one monitoring occasion (March 2023) with a concentration of 1,250µg/l. There are no compliance limits for EPH, and in isolation the concentration of EPH recorded at GW06_36 in March 2023 is not indicative of a deterioration in groundwater quality.

Nickel and Potassium

3.3.12 **Appendices 2-26** to **2-37** present the results of Nickel and Potassium concentrations in the monitoring wells.

3.3.13 Nickel and Potassium concentrations at the majority of the compliance wells have generally remained consistent throughout the 12-month monitoring period, with no recorded Compliance Limit exceedances.

3.3.14 The exception to this was Nickel at GW09_32where a concentration of 9.02µg/l was recorded in October which marginally exceeds the Control Limit of 8µg/l; however it doesn't exceed the Compliance Limit. In the subsequent monitoring round, the Nickel concentration at this location was recorded below the Control Limit.

3.4 Review of Potential Risks and Future Monitoring

3.4.1 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 no significant deterioration in water quality since the previous Annual Environmental Review for Area 2 – 2022[4].

3.4.2 During 2023, 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.

3.4.3 Ammoniacal Nitrogen in GW06_37 continues to be above the Compliance Limit in 2023, however the concentrations are not replicated in either groundwater monitoring well GW06_13 or GW06_36 which are the closest locations to GW06_37. Therefore, this appears to be a very localised effect, and will continue to be reviewed in 2024.

4 Leachate Monitoring

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 when access to the monitoring locations has not been possible. As such, for this period of reporting, leachate levels have been monitored at four locations in Cell 1, two locations in Cell 2, two locations in Cell 3, and two locations within Cell 4. Leachate samples have been recovered for analytical testing (similarly when access permits) on a quarterly basis at LF08_07 located within Cell 1, C2C within Cell 2, C3B within Cell 3 and C4B within 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 1-4

Monitoring Round in 2023	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)	C3A (Cell 3)	C3B (Cell 3)	C4B (Cell 4)	C4A (Cell 4)
January	***2.54***	***2.65***	***2.79***	n/a	***2.23***	***2.85***	n/a	***4.50***	***2.87***	***3.99***	***4.07***	***2.79***
February	***2.69***	***3.62***	***2.64***	n/a	***2.39***	***3.34***	n/a	***4.81***	***2.87***	***3.61***	***2.97***	***2.94***
March	***2.78***	***3.89***	***2.78***	n/a	***2.46***	***2.69***	n/a	***2.94***	***2.89***	***3.61***	***2.97***	***2.99***
April	***2.66***	***4.40***	***2.80***	n/a	***2.35***	***2.17***	n/a	***3.91***	***2.84***	***3.12***	***3.57***	1.85
May	***2.69***	***4.65***	1.75	n/a	***2.39***	***2.08***	n/a	***4.26***	***2.85***	***3.73***	***2.89***	0.56
June	0.49	***3.53***	1.70	n/a	0.46	1.90	n/a	***3.70***	***2.70***	***3.68***	***2.64***	0.89
July	0.55	***4.41***	1.60	n/a	0.33	***2.59***	n/a	***3.76***	***2.87***	***3.68***	***3.32***	1.15
August	1.24	***3.96***	1.92	n/a	0.99	***2.36***	n/a	***3.38***	***2.90***	***3.74***	***2.80***	1.51
September	1.50	n/a	1.84	n/a	1.28	3.42	n/a	***4.53***	***3.08***	***3.86***	***4.49***	1.93
October	1.51	n/a	1.92	n/a	1.76	***3.83***	n/a	***4.45***	***3.86***	***4.30***	***4.69***	***3.09***
November	***2.16***	n/a	***3.17***	n/a	1.88	***4.04***	n/a	***4.53***	***4.20***	***4.30***	***3.43***	***2.72***
December	1.94	***5.42***	***3.19***	n/a	1.97	***3.27***	n/a	4.40	***4.27***	***4.71***	***2.72***	***3.70***
Leachate removed from Area 2 during 2023 = 18,484,580kg												

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

Leachate Chemistry

4.1.3 The frequency of leachate sampling required by the Environmental Permit is quarterly. In 2023, samples were obtained from Cell 1, Cell 2, Cell 3 and Cell 4 on four occasions (March, June, September and December). Throughout the whole monitoring period, samples were taken from C2C rather than C2B within Cell 2 as C2B could not be sampled due to an obstruction.

Ammoniacal Nitrogen

4.1.4 **Appendix 3-1** presents the results of Ammoniacal Nitrogen concentrations. The Ammoniacal Nitrogen concentrations recorded in Area 2 leachate during 2023 are as follows:

- Cell 1 between 573mg/l and 673mg/l.
- Cell 2 between 1210mg/l and 1720mg/l.
- Cell 3 between 333mg/l and 818mg/l.
- Cell 4 between 378mg/l and 852mg/l.

4.1.5 Generally, the results do not appear to show any distinct trend, with the exception of C4B which has shown some higher concentrations in 2023 compared to previous years, however as Cell 4 is a relatively new cell, there is limited data currently available to determine any trends.

Arsenic

4.1.6 **Appendix 3-2** presents the results of Arsenic concentrations over time in leachate in Area 2, and the concentrations recorded in 2023 are as follows:

- Cell 1 between 15.2ug/l and 23.9ug/l.
- Cell 2 between 23.1ug/l and 56.9ug/l.
- Cell 3 between 9.97ug/l and 20.8ug/l.
- Cell 4 between 3.84ug/l and 7.17ug/l.

4.1.7 The results for all Cells are generally within the range of the overall datasets for these locations. The exception to this is in Cell 2 in March where the concentration was measured at 56.9ug/l, which is the highest in the limited dataset.

Benzene

4.1.8 **Appendix 3-3** presents the results of Benzene concentrations in leachate from Area 2 and the concentrations recorded during 2023 are as follows:

- Cell 1, between 4.69ug/l and 6.14ug/l.
- Cell 2, between 3.92ug/l and 9.04 ug/l.
- Cell 3, between 3.27ug/l and 4.15ug/l.
- Cell 4, between 3.01ug/l and 4.93ug/l.

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

Naphthalene

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

4.1.11 Naphthalene concentrations in Cell 1 for 2023 have been recorded between the MDL (<1ug/l) and 1.38ug/l which is in the range of the overall dataset.

4.1.12 Naphthalene concentrations in Cell 2 for 2023 ranged between the MDL and 3.37ug/l, which is within the range of the overall dataset.

4.1.13 The Naphthalene concentrations in Cell 3 and Cell 4 were recorded below the MDL during all monitoring rounds.

o-Xylene and EPH

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

4.1.15 Concentrations of o-Xylene in Cell 1 leachate have been recorded between 1.63ug/l and 2.52ug/l, in Cell 2 leachate between 5.10ug/l and 6.29ug/l, in Cell 3 leachate between 5.59ug/l and 7.11ug/l, and in Cell 4 leachate between 2.90 and 4.66ug/l.

4.1.16 Concentrations of EPH in Cell 1 were recorded between 661ug/l and 1280ug/l, in Cell 2 between 1610ug/l and 3060ug/l, in Cell 3 between 713ug/l and 2320ug/l, and in Cell 4 between 1480ug/l and 1830ug/l.

4.1.17 The data for o-Xylene and EPH are within the range of the overall datasets with no district tends developing in any of the Cells.

Nickel and Potassium

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

4.1.19 During 2023, Nickel concentrations were recorded in Cell 1 between 77.6ug/l and 85.9ug/l, in Cell 2 between 96.5ug/l and 152ug/l, in Cell 3 between 45.6ug/l and 83ug/l, and in Cell 4 between 90.6ug/l and 247ug/l.

4.1.20 The values for Nickel within Cell 1 and Cell 2 are all within the range of the overall datasets with no distinct trends developing. Cell 3 has shown a generally decreasing trend in the Nickel concentration and Cell 4 shows a slightly increasing trend in the Nickel concentration. However the datasets for Cell 3 and Cell 4 are limited as they are both relatively new Cells.

4.1.21 The Potassium concentrations during 2023 were recorded in Cell 1 between 271mg/l and 315mg/l, in Cell 2 between 465mg/l and 648mg/l, in Cell 3 between 124mg/l and 285mg/l, and in Cell 4 between 246mg/l and 626mg/l.

4.1.22 These values for Potassium are all within the range of the overall datasets with generally no distinct trends developing within the data.

Review of Potential Risks and Future Monitoring

4.1.1 The environmental monitoring data for LF08_07, C2C, C3B and C4B indicates that the leachate chemistry has been variable throughout the 12-month monitoring period in all four Cells, although generally the concentrations are within the range of the overall dataset for each of the parameters and the data is not indicative of a significant change in the leachate quality in Area 2 during 2023.

4.1.2 The data indicates that during 2023 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 thirteen 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 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	-
GP18_18B	331028	184798	Converted to interceptor well
GP18_18C	331032	184795	Destroyed by site activity in 2021.
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 3.6.1 (d) of the Environmental Permit.

5.2.2 Trigger Levels for all the Area 2 wells have previously been submitted to and accepted by NRW.

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_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_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 detect Methane above the trigger level of 1% during 2023, with the exception of GP05_17, where Methane was recorded above the trigger level in March, recording a concentration of 2%. However, subsequent monitoring of this location recorded Methane below the 1% trigger level. The concentration of methane in GP05_17 has fluctuated since early 2019.

5.3.3 **Appendix 4-2** presents the Methane concentrations in GP06_24 (now destroyed) and GP06_25, constructed on the Area 2 side of the in-ground barrier installed between Area 1 and Area 2. GP06_25 was monitored on three occasions during 2023, as the well was recorded as flooded in December, so no readings could be taken. The Methane concentrations were recorded between 13.4% and 19.6%, which are within the range of the overall dataset. The methane concentrations at this location have fluctuated significantly since the start of 2012 however, the concentrations recorded in 2023 indicate an overall decreasing trend since the end of 2018.

5.3.4 **Appendix 4-3** presents the methane concentrations at GP09_18 and three surrounding monitoring wells GP18_18A, GP18_18B and GP18_18C, however GP18_18B and GP18_18C have been destroyed due to site activity. Following a period of significant variability and significantly elevated concentrations of methane at this location between 2017 and 2021, the remaining monitoring boreholes are now recording significantly lower and consistent concentrations of methane, generally below 1%.

5.3.5 In 2023, GP09_18 recorded Methane concentrations of between 0% and 1%, and GP18_18A recorded methane concentrations of between 0% and 0.6%.

5.3.6 **Appendix 4-4** indicates that concentrations of Methane in GP05_20 and GP05_21 were all recorded below the 1.5% trigger level during 2023.

Carbon Dioxide

5.3.7 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**.

5.3.8 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 2023 and are generally within the range of the overall datasets.

Review of Risks and Future Monitoring

5.3.9 The gas data that has been recorded and reviewed for the perimeter monitoring wells during 2023 does not indicate any significant changes or the development of significant adverse trends since the previous AEPR report.

5.3.10 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 1500m^3/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 2023, the total production of energy from the Landfill Gas Utilisation Plant was 4049MWh with a site efficiency of 34.5%. In 2022 by comparison, the total production of energy was 4038MWh with a site efficiency of 34.5%, showing that the total energy produced, and efficiency has stayed consistent from 2022 to 2023.

6.2.2 Energy downtime in 2023 was 359 hours, compared to 405 in 2022 which shows a decrease in engine downtime. Engine operation time in 2023 was 8401 hours which is a marked increase from the 4038 hours in 2022.

6.2.3 The flare operated in 2023 during periods when the engine was not operational. The flare was operating for 163 hours during 2023 based on the availability of the engine, which is a decrease from the 277 hours recorded in 2022.

6.2.4 Environmental Performance Indicators, provided by Infinis Energy, indicate that there has been a decrease in Carbon Monoxide emissions in 2023 (3.8kg/MWh) compared to 2022 (4.1kg/MWh), and total Oxides of Nitrogen emissions has stayed at the same level as 2022 (1.6kg/MWh).

6.2.5 Emissions data critically depends on a number of factors including run hours of the 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 2023 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)	18,484,580
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	65,200
Combustion in gas engines	2,526,761
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	3,039*	Cubic metres
Energy Used (including for leachate treatment, excluding electricity generated)	Annually	352,410	kWh of electricity
Non-Potable Water Use	Annually	None	Cubic metres
*amount used in the last 12 months to 25/09/2023			

7.3 Topographic Surveys

7.3.1 The surface of Area 2 of Docksway Disposal Site was surveyed during November 2023 and the results of the survey are presented in **Appendix 6**.

7.3.2 It has been calculated by NCC that 58,677m^3 of waste was placed in the non-hazardous Cells in Area 2 (11 month period December 2022 to November 2023), which is a decrease from 2022 when 102,046m^3 of waste was placed.

7.3.3 It has also been advised by NCC that no SNRHW (asbestos) was placed in Cell 3A (11 month period December 2022 to November 2023), which is a decrease from 2022 when 14,615m^3 was placed.

7.3.4 As of November 2023, the cumulative waste volume deposited in Area 2 (excluding Cell 3A) was 1,422,602m^3, and in Cell 3A was 95,985m^3.

7.3.5 The maximum elevation of Area 2 was around 31m (Cells 1 and 2) Above Ordnance Datum (mAOD) as of November 2023. The greatest level change was an increase of about 5.7m in Cell 2.

7.3.6 The cross sections provided indicate that slope angles of the external waste slopes are generally 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 occasion that SW_25 was monitored in 2023, the recorded parameters were within the discharge consent limits, apart from one occasion (October 2023) when Total Suspended was recorded at 744mg/l, above the discharge consent limit of 60mg/l. However, this number significantly decreased (below the consent limit) by the next monitoring round and is not considered to be indicative of an adverse trend. On the three occasions that SW26 was monitored in 2023, the recorded parameters were within the discharge consent limits.

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. The exception to this is Ammoniacal Nitrogen in GW06_37 which continued to exceed the Compliance Limit in 2023 (as it has in previous years).

8.1.4 The data indicates that during 2023 there have been persistent 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 18,484,580 kg of leachate was removed during 2023 for offsite treatment and disposal.

8.1.5 The environmental monitoring data for LF08_07, C2B and C2C, C3B and C4B indicates that the leachate chemistry has been variable throughout the 12-month monitoring period in all four Cells, 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 2023.

8.1.6 External landfill gas concentrations at Area 2 are predominantly indicating generally stable trends in methane and carbon dioxide.

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] Stantec (2023) Docksway Disposal Site, Annual Environmental Review for Area 2 - 2022. Stantec, February 2023.

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

0 1000 2000

metres

Site Grid Ref: ST 309 852

DOCKSWAY DISPOSAL SITE NEWPORT

SITE LOCATION PLAN

Client: NEWPORT CITY COUNCIL

Date of 1st issue: 20.01.2020	Drawn by: davco
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Figure Number: 1	

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user name: cotton, david

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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
SW11
GW03_03
GC99_10
GW09_15A
GP09_09
GW03_05
GP03_03a
GP03_02
GP03_13
GW07_04
LF11_02
SW07
SW23
NCC2
NCC3
NCC5
GP03_11
NCC6
GP03_04a
GW03_06a
GW03_27
GW03_26
LF11_07
LF03_01
LF03_04
LF03_03
LF11_03
LF11_05
LF11_06
GP12_26
GP07_05
GW07_07
LF11_04
GP06_25
SW24
GP03_06
GW07_40
GW12_30
SW25
GP12_27
GP06_08A
GW06_14A
GW06_39
GP05_14
C3_Asb
GW09_31
GP05_15
GP12_23
GW03_09
GP05_16
GW09_32
GP05_17
GW12_33
GP18_18A
GP18_18B
GP18_18C
GP09_18
GW06_34
SW02
GP05_22
GW12_38
C1D
C1A
C1E
C2C
C1B
C2B
C2A
GP05_21
GW06_13
LF08_07
GP05_20
SW 26
GW06_37
GW06_36
GW09_35
GW03_10A
CELL 1
CELL 2
CELL 3A
CELL 3B
CELL 4A
CELL 4B
CELL 5
AREA 1
AREA 2
River Ebbw
Ebbw River (Afon Ebwy)
Tredegar Pill
Refuse Tip
Mud
Drain
Mean High Water
Mean Low Water
Alexandra Docks North Dock
NEWPORT (CASNEWYDD)
Timber Yard
Saw Mill
Maesglas Industrial Estate
Allotment Gardens
Upper Great Spillett Reen
Maes-glas Reen
Dolphins
Jetty
Storage Shed
Tanks
Lighting Tower
Timber Terminal
Depot
Transformer
Boiler House
Workshop
Slipway
Jetty (disused)
Pumping Station
Electricity Sub Station
Bollard
Fuel Tank
Tank
Level
Issues
ETL

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

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

Client	Newport City Council / Cyngor Dinas Casnewydd
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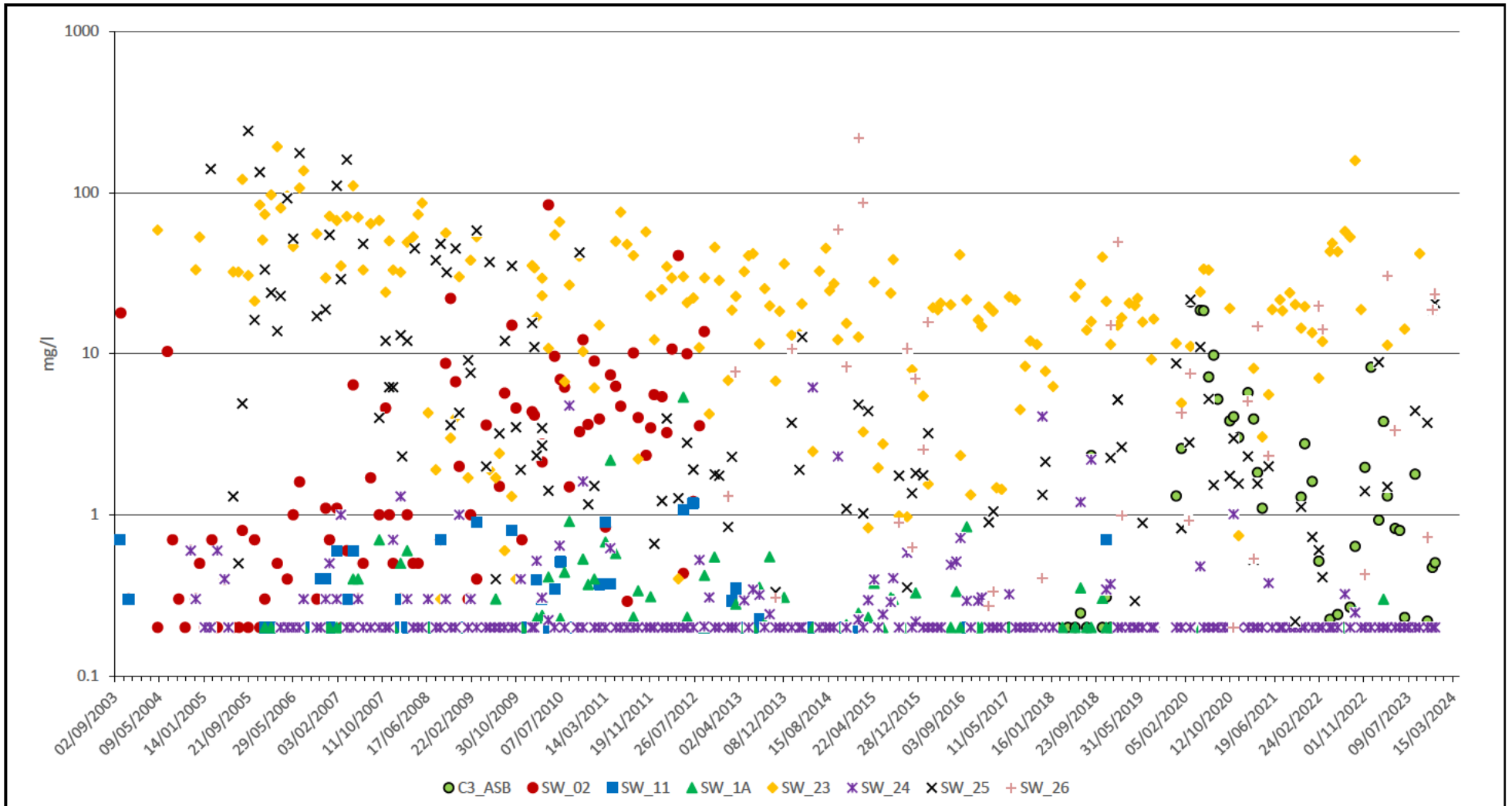
Appendix 1 Surface Water Chemistry Graphs



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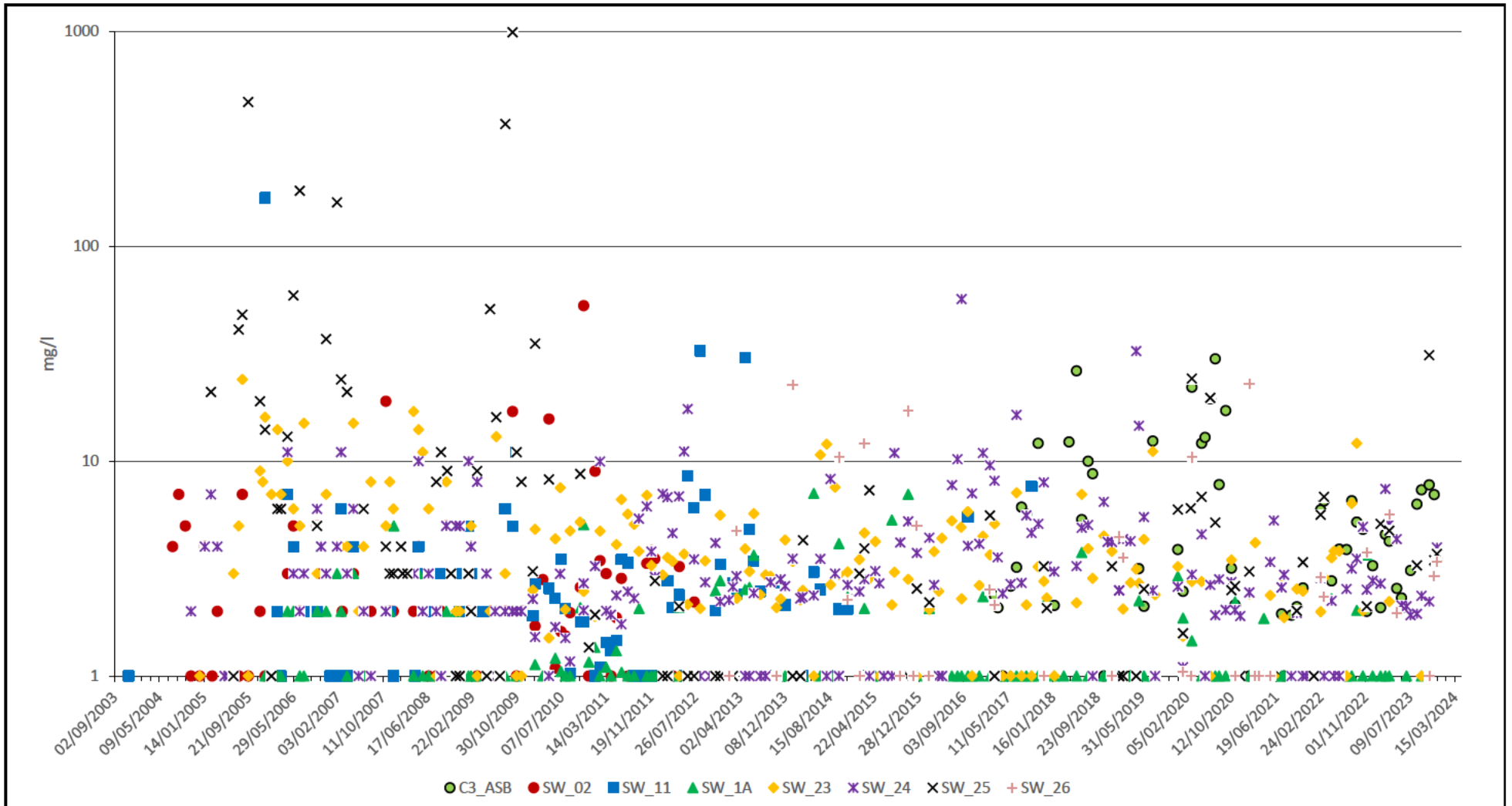
Docksway Disposal Site

Ammonical Nitrogen in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	1-1

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Surface Water\Excel\[1-1 Ammonical Nitrogen SW.xlsm]Summary



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Docksway Disposal Site

Biochemical Oxygen Demand in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

1-2

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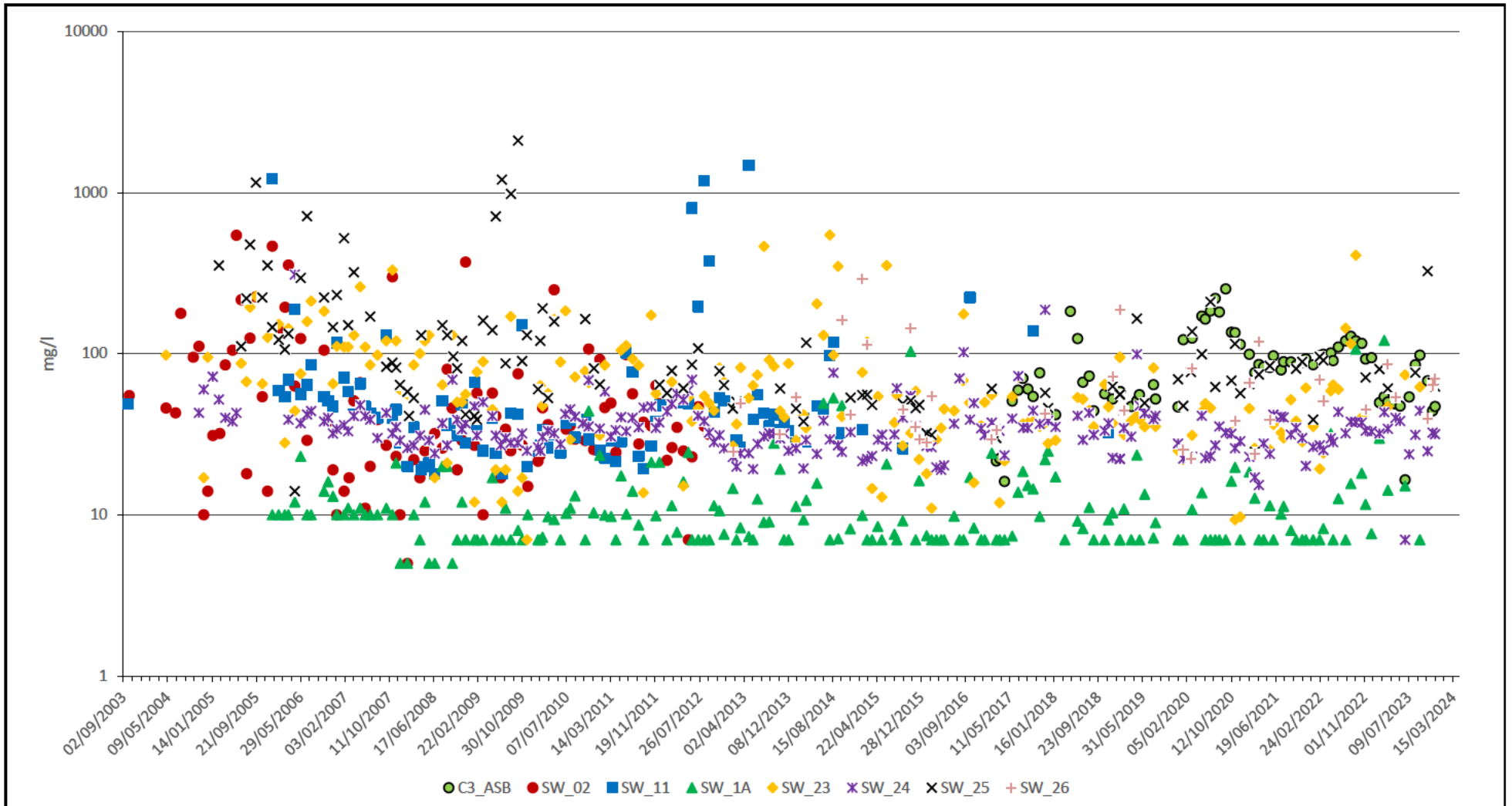

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Docksway Disposal Site

Chemical Oxygen Demand in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	1-3

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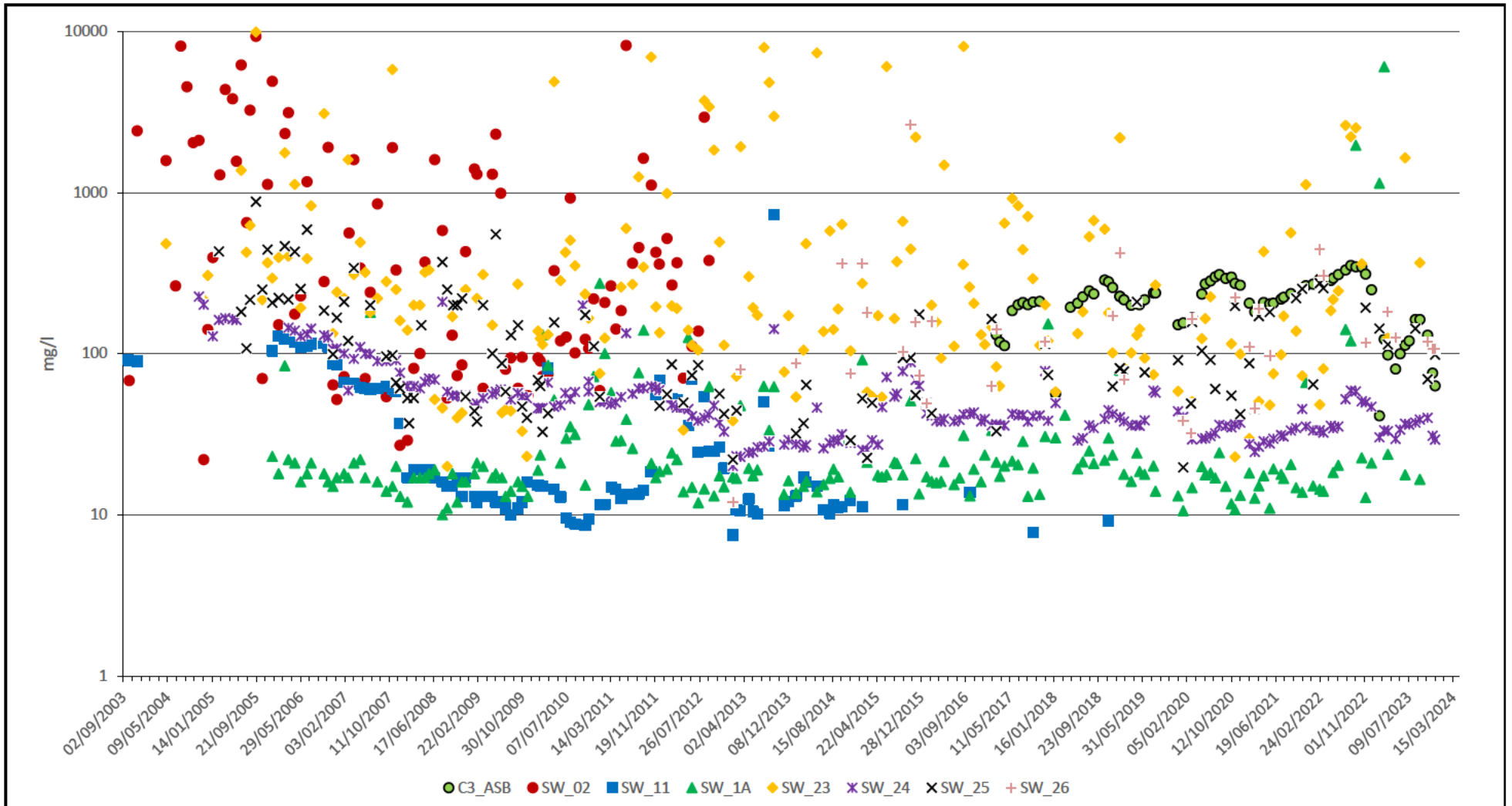

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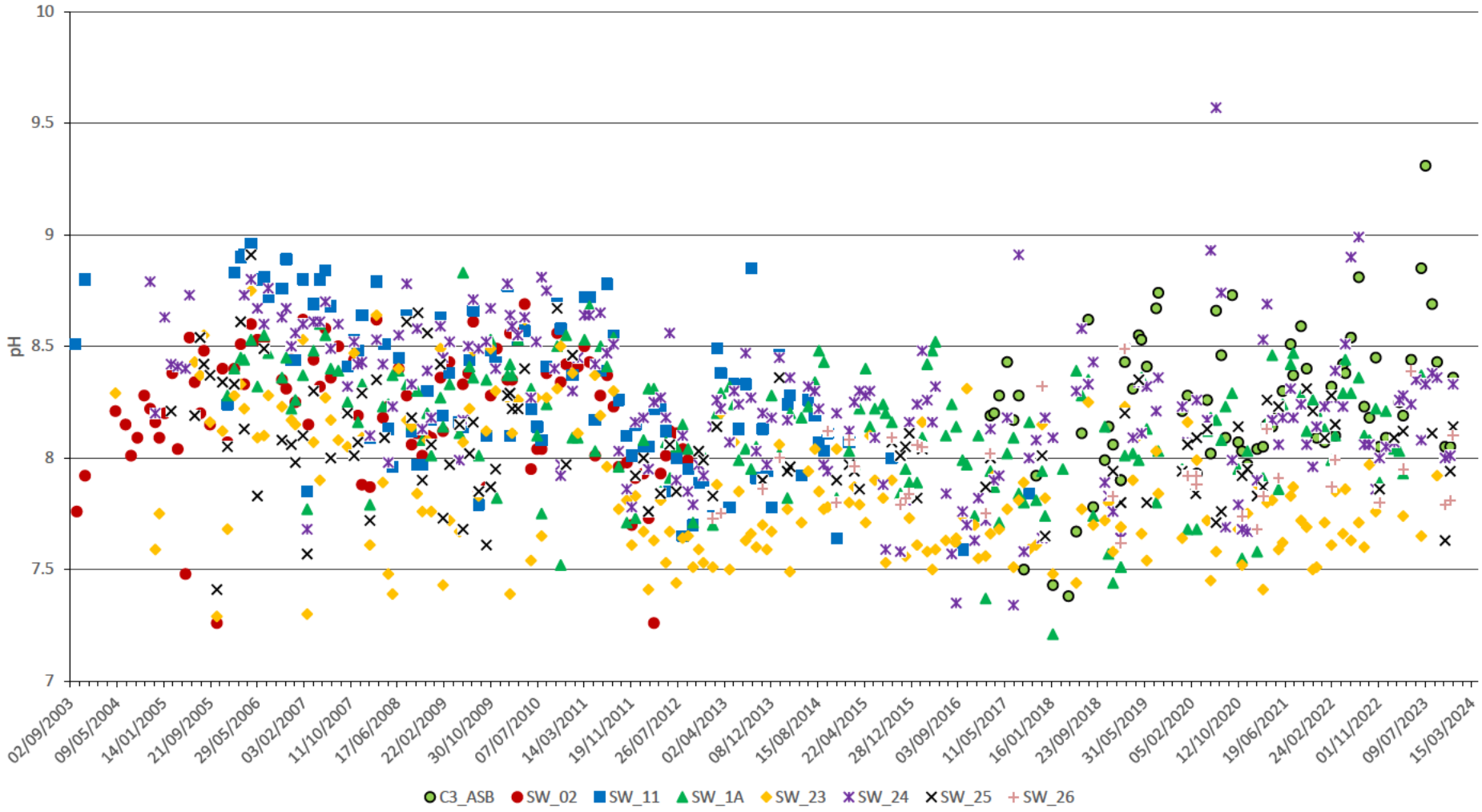
Docksway Disposal Site

Chloride in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	1-4

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Surface Water\Excel\[1-4 Chloride SW.xlsm]Summary



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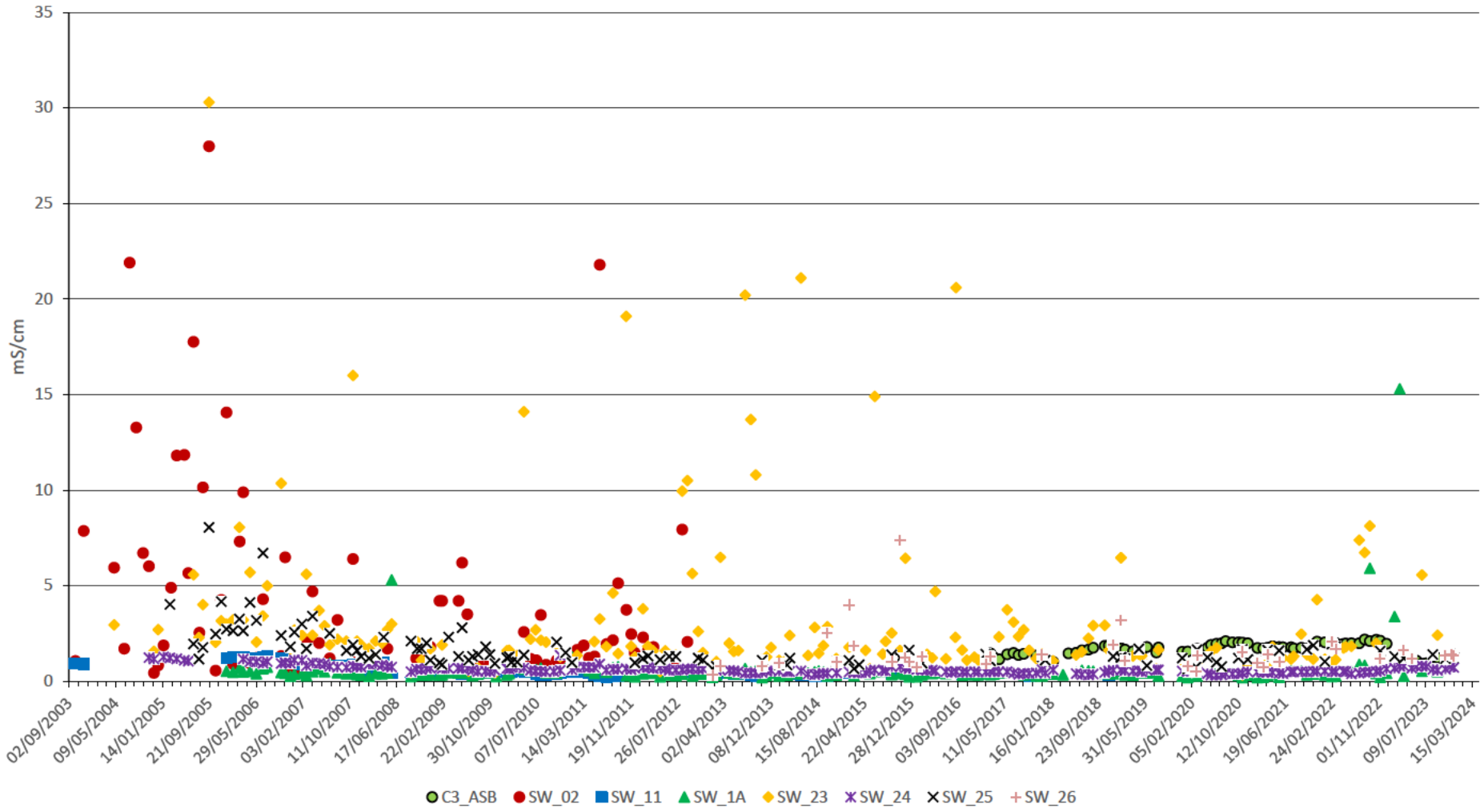
Docksway Disposal Site

pH in in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	1-5

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Surface Water\Excel\[1-5 pH SW.xlsm]Summary



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Docksway Disposal Site

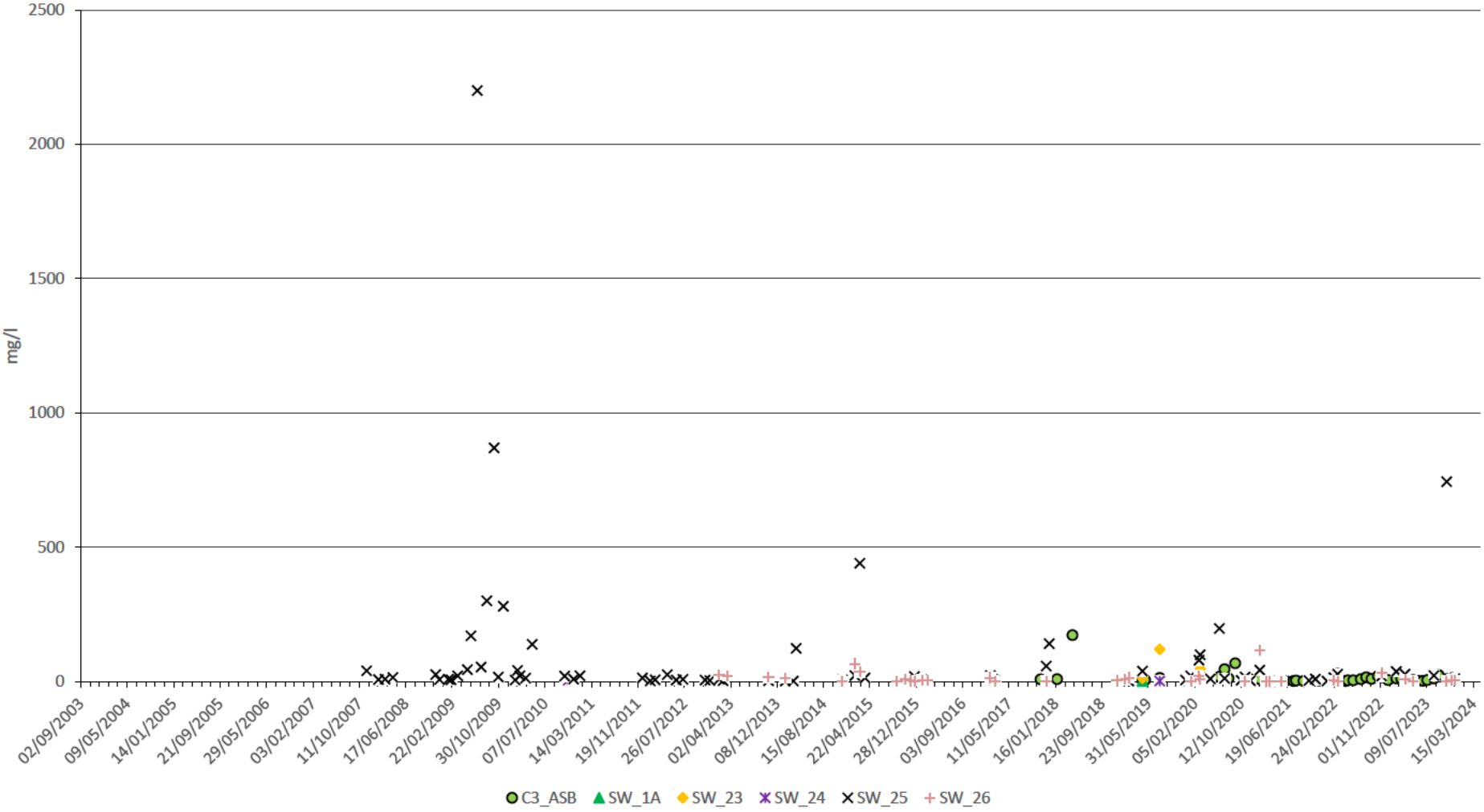
Electrical Conductivity in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

1-6

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Surface Water\Excel\[1-6 Electrical Conductivity SW.xlsm]Summary



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Docksway Disposal Site

Total Suspended Solids in Surface Water

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	1-6

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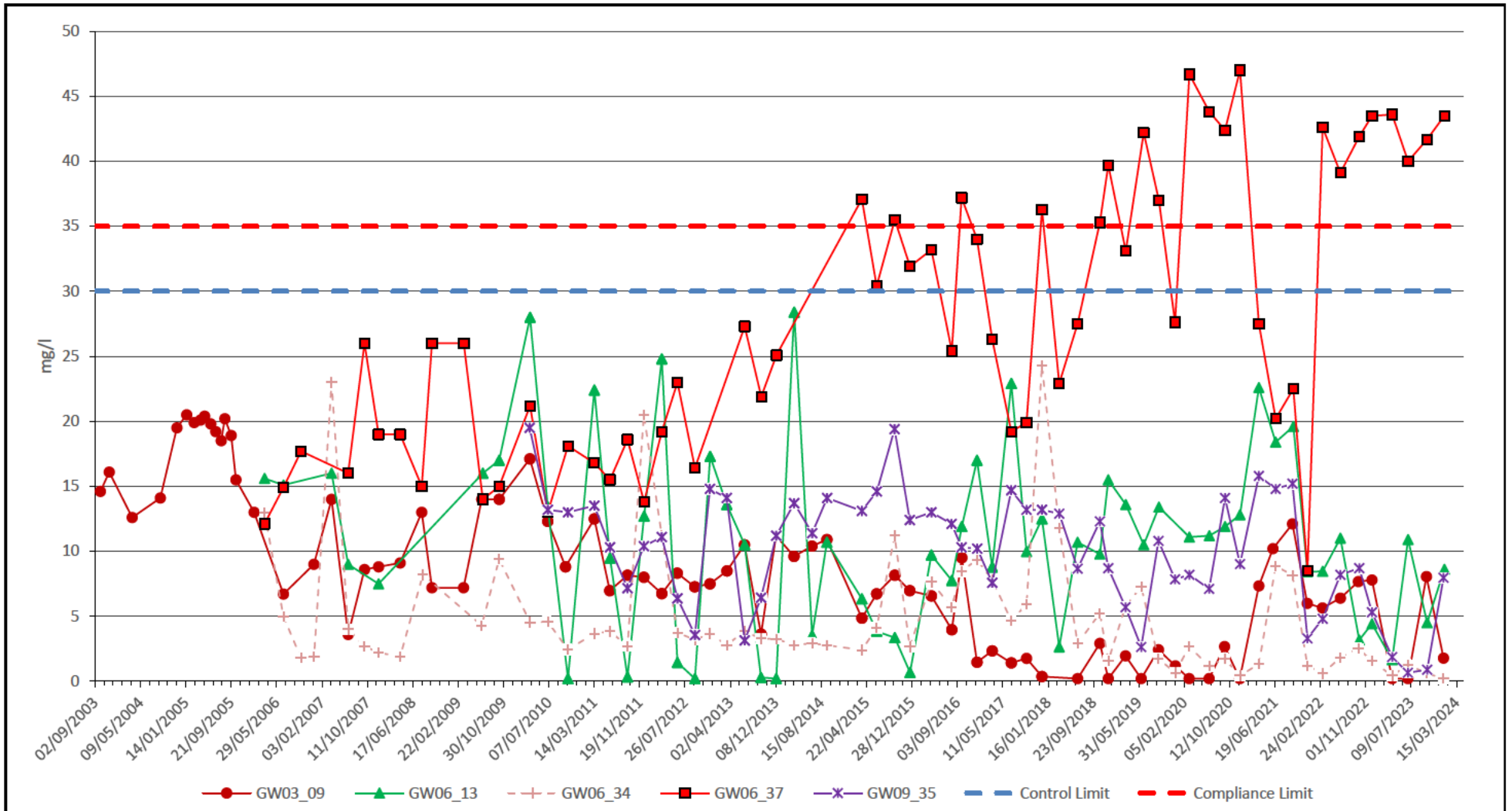
Appendix 2 Groundwater Chemistry Graphs



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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-1

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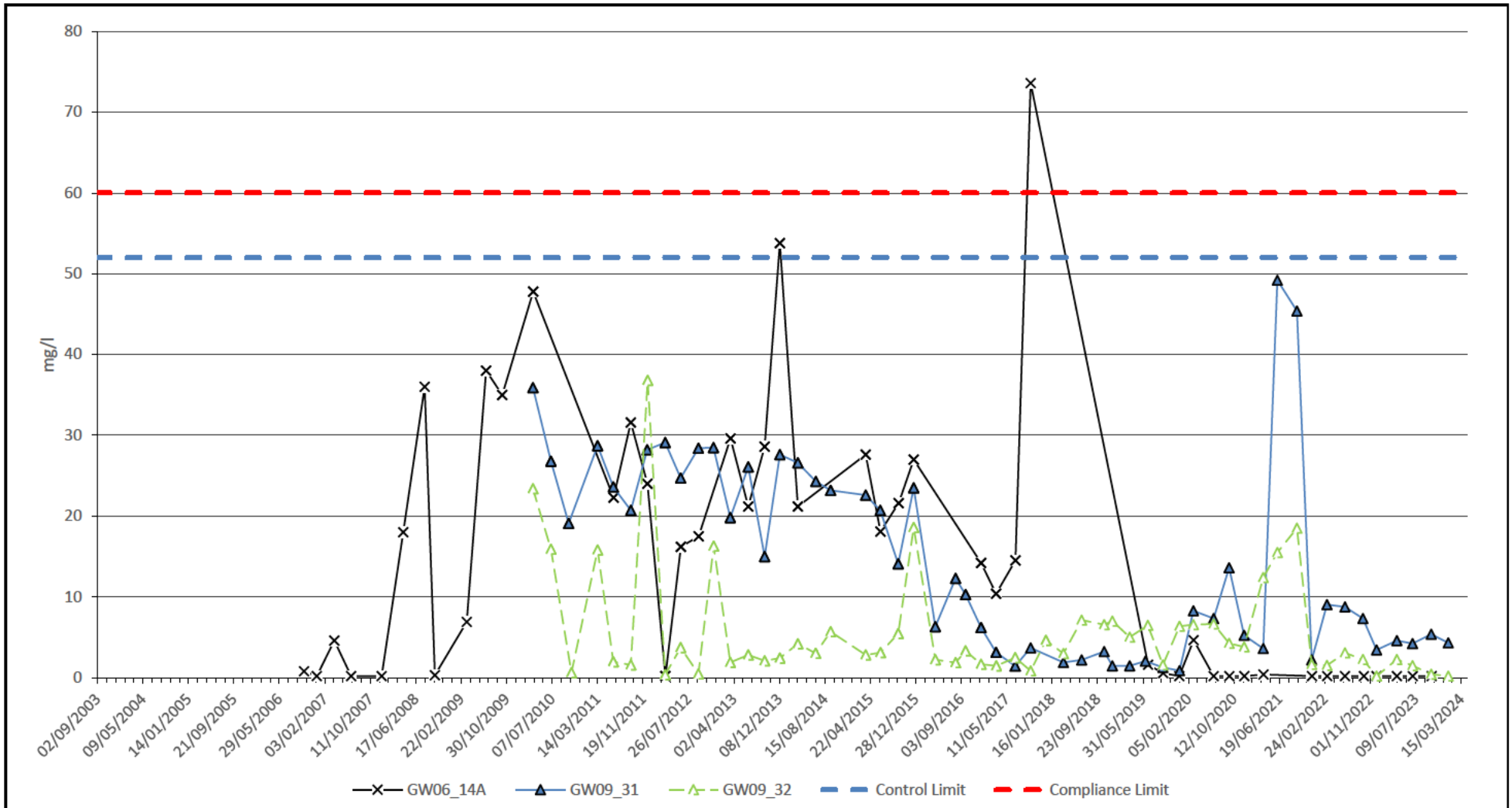

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

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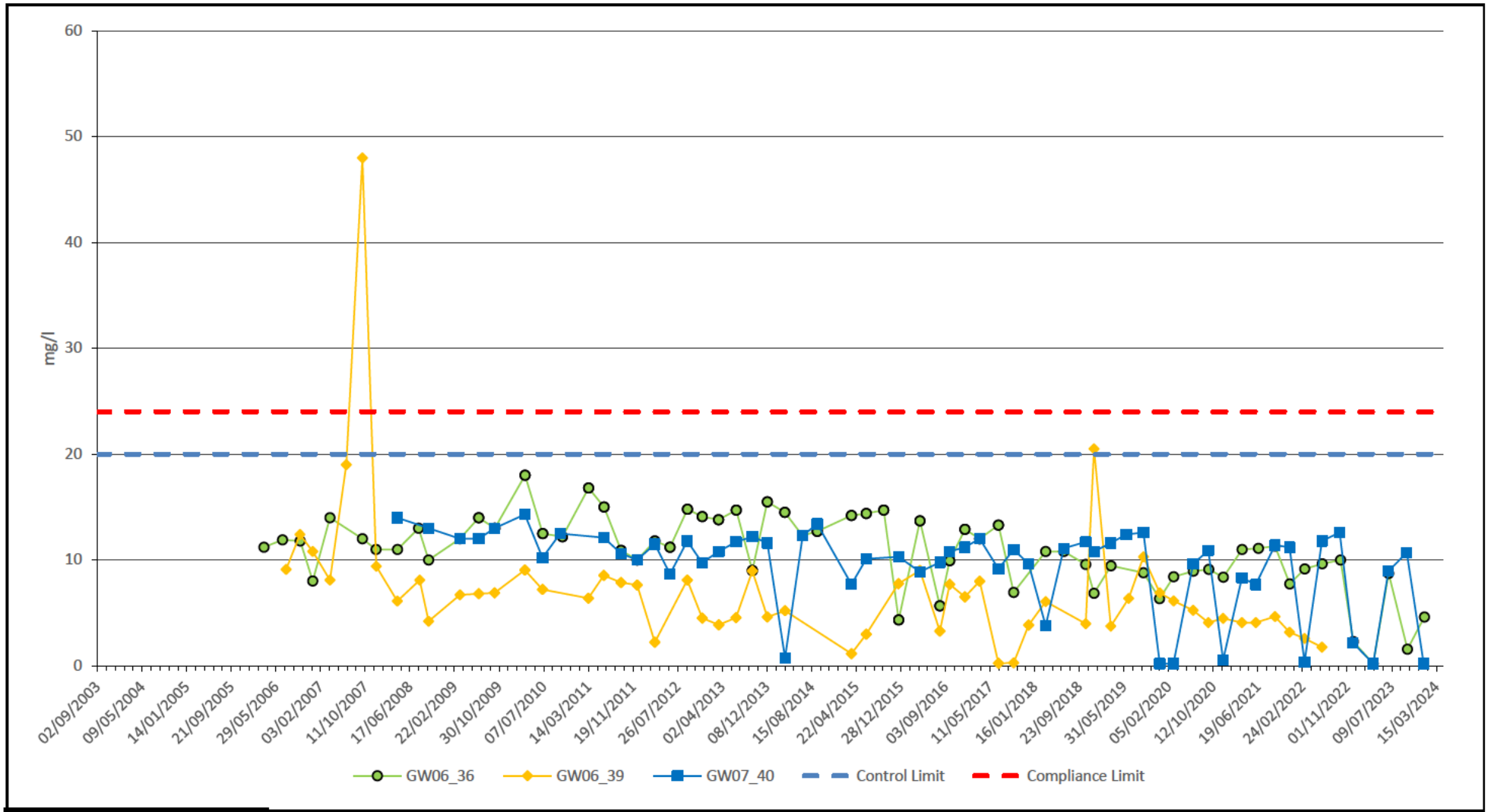

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-3

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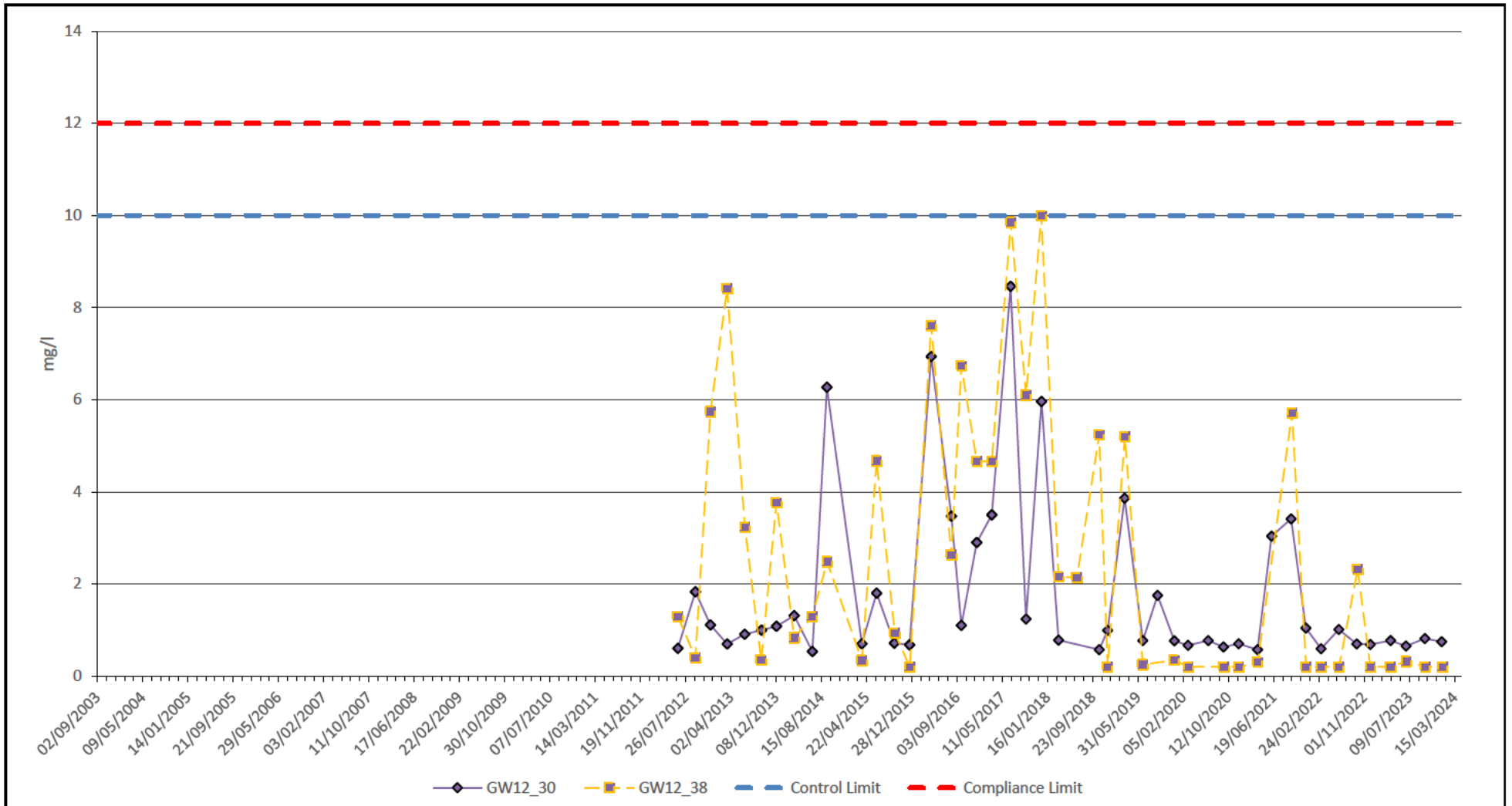

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

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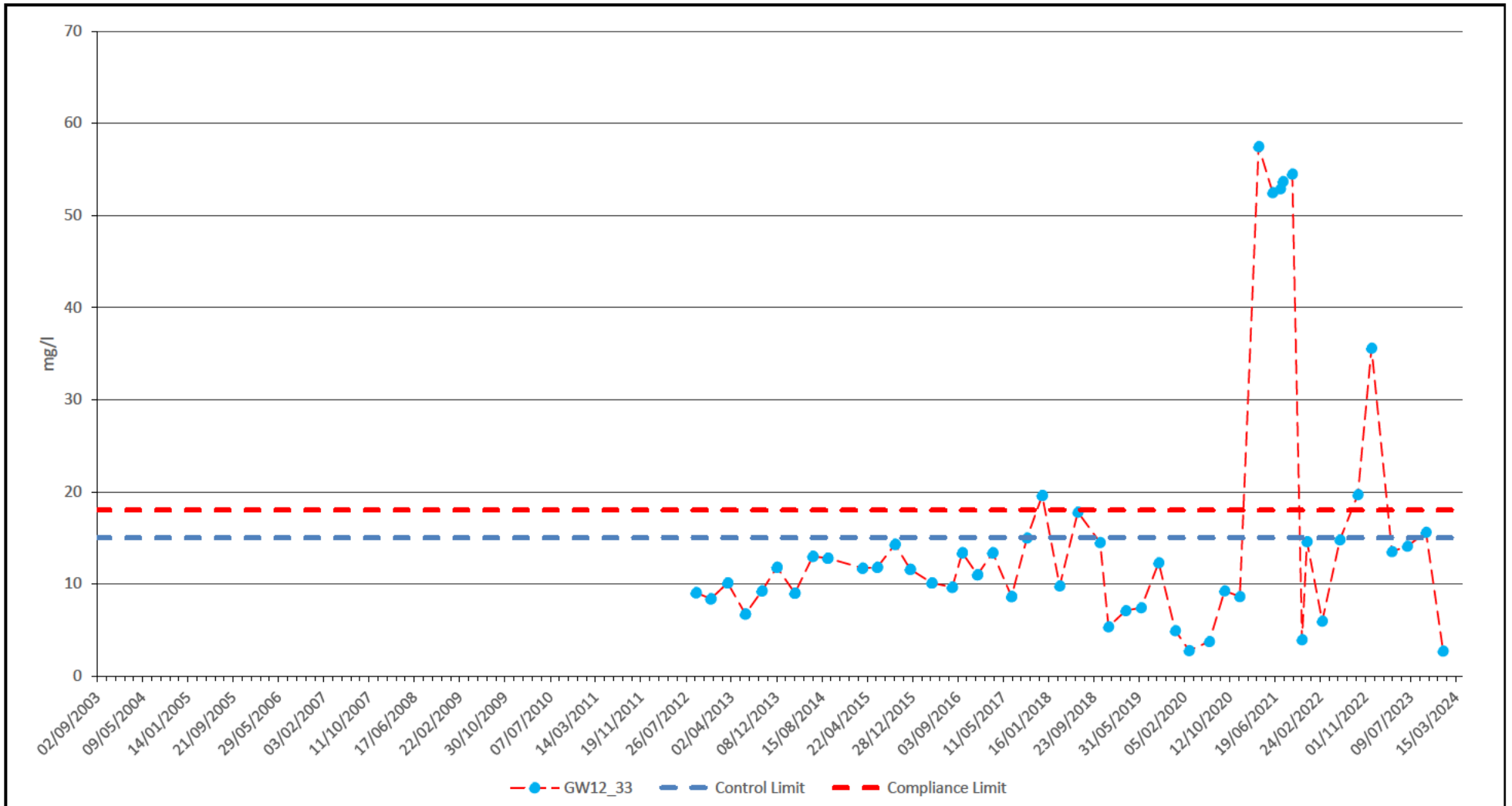

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Docksway Disposal Site

Ammoniacal Nitrogen in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-5

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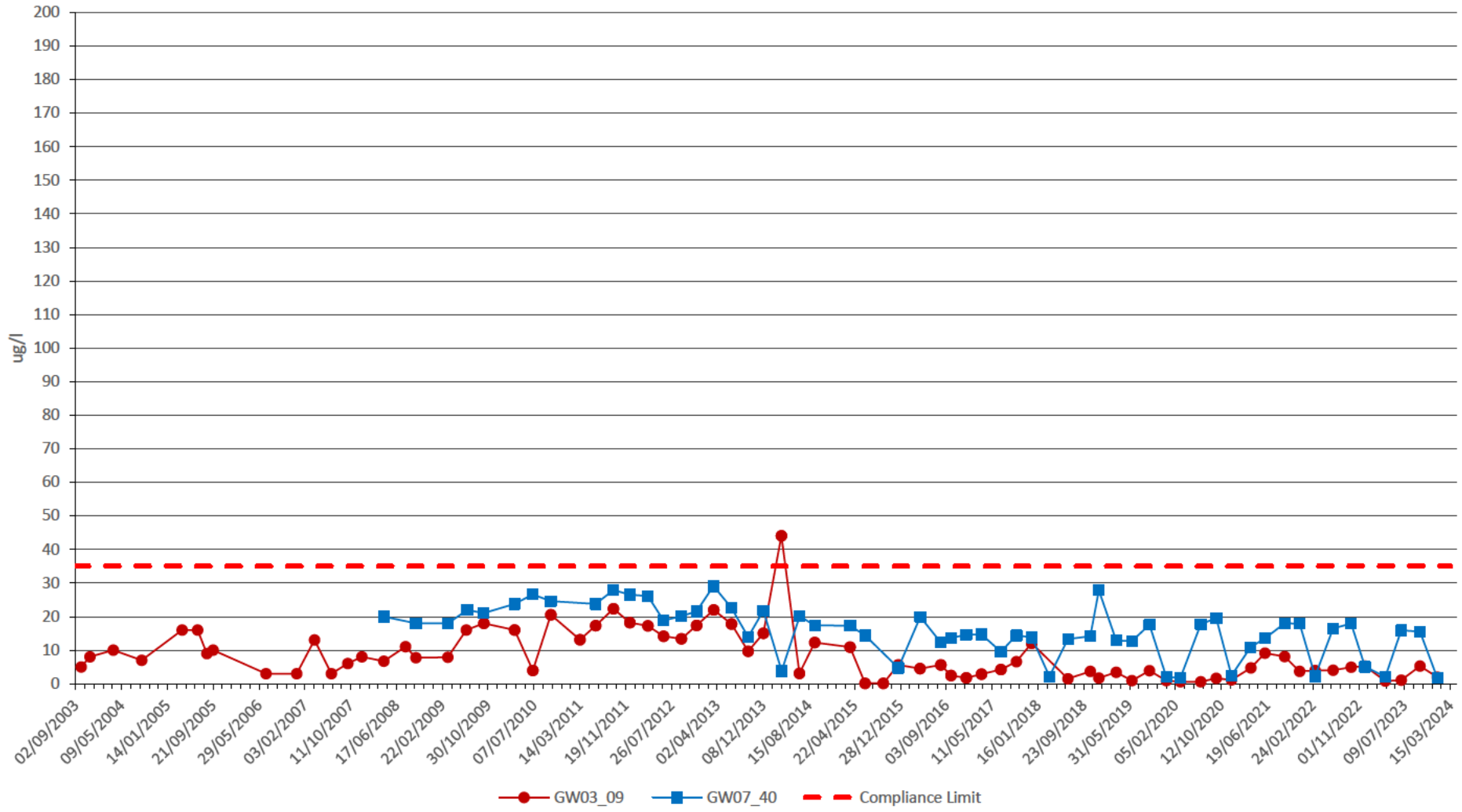

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-6

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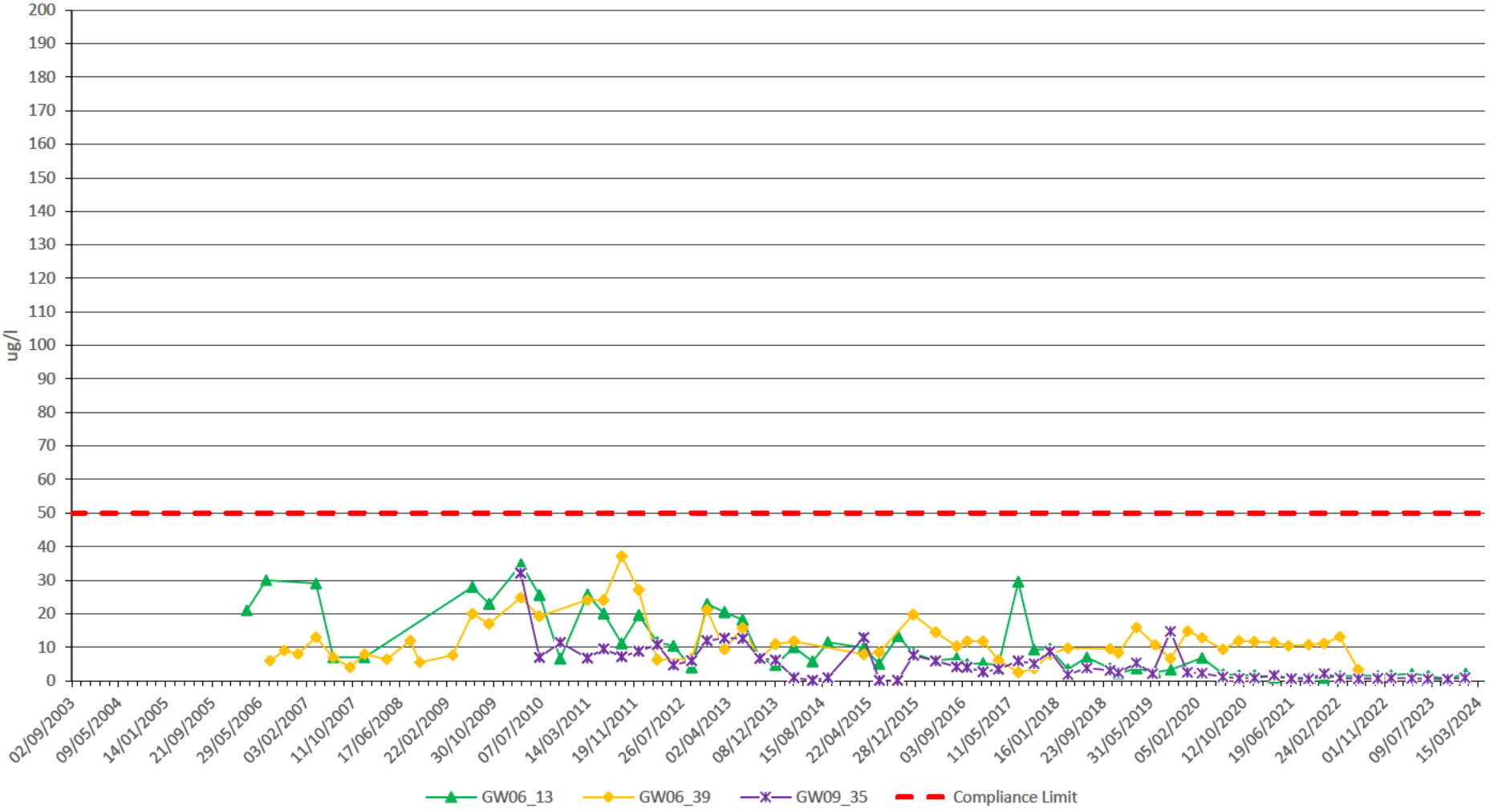

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-7

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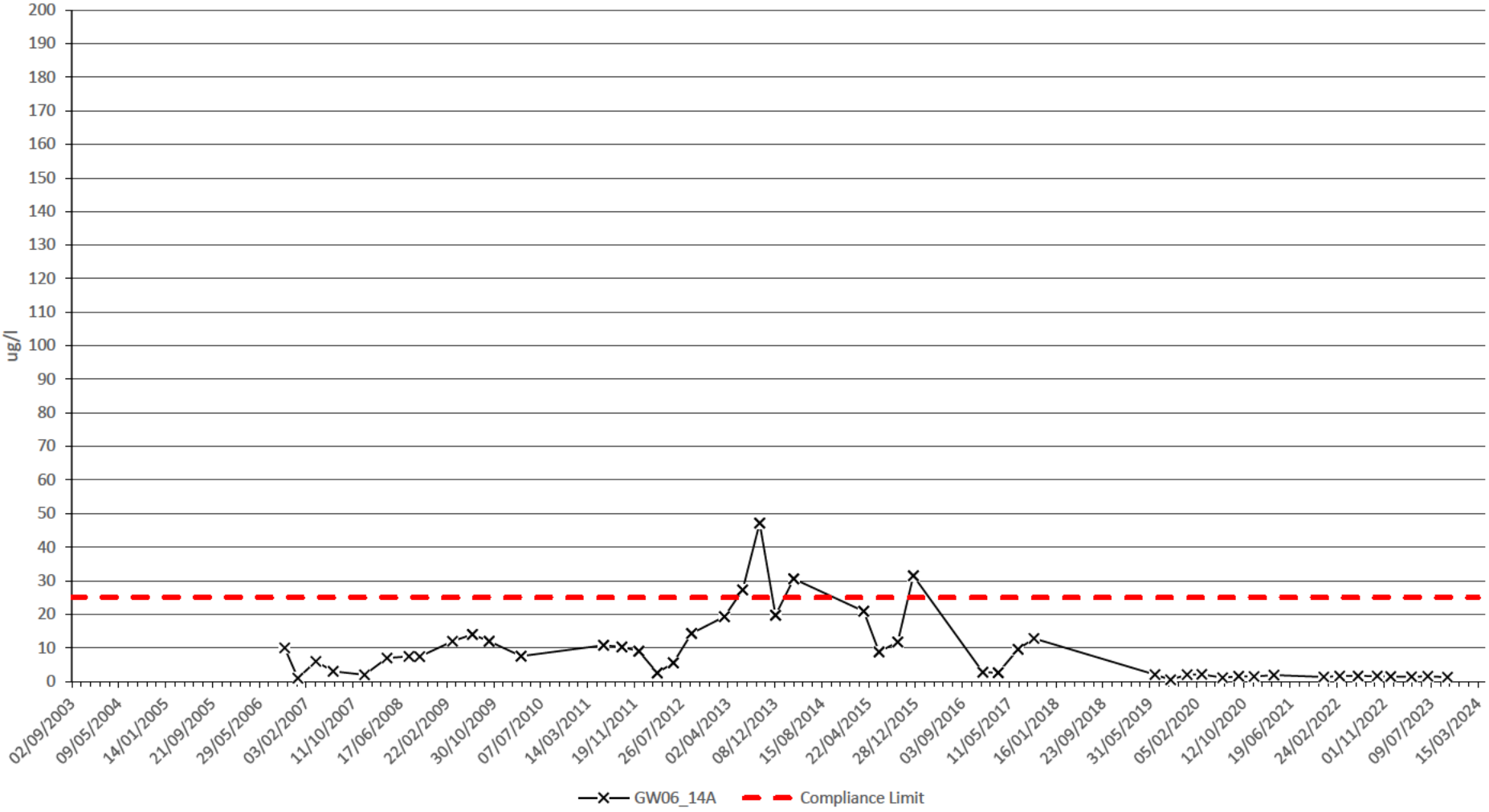

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
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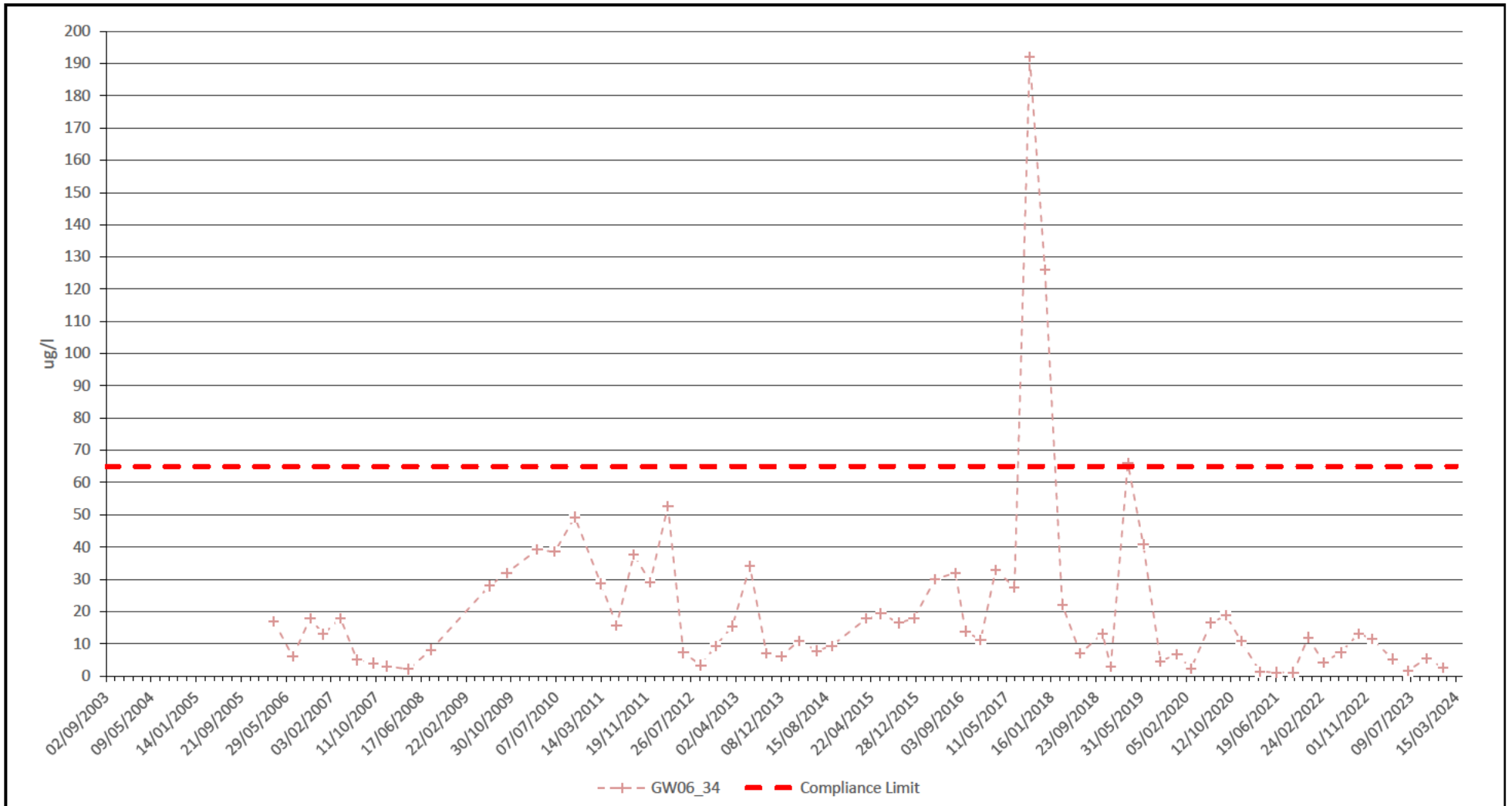

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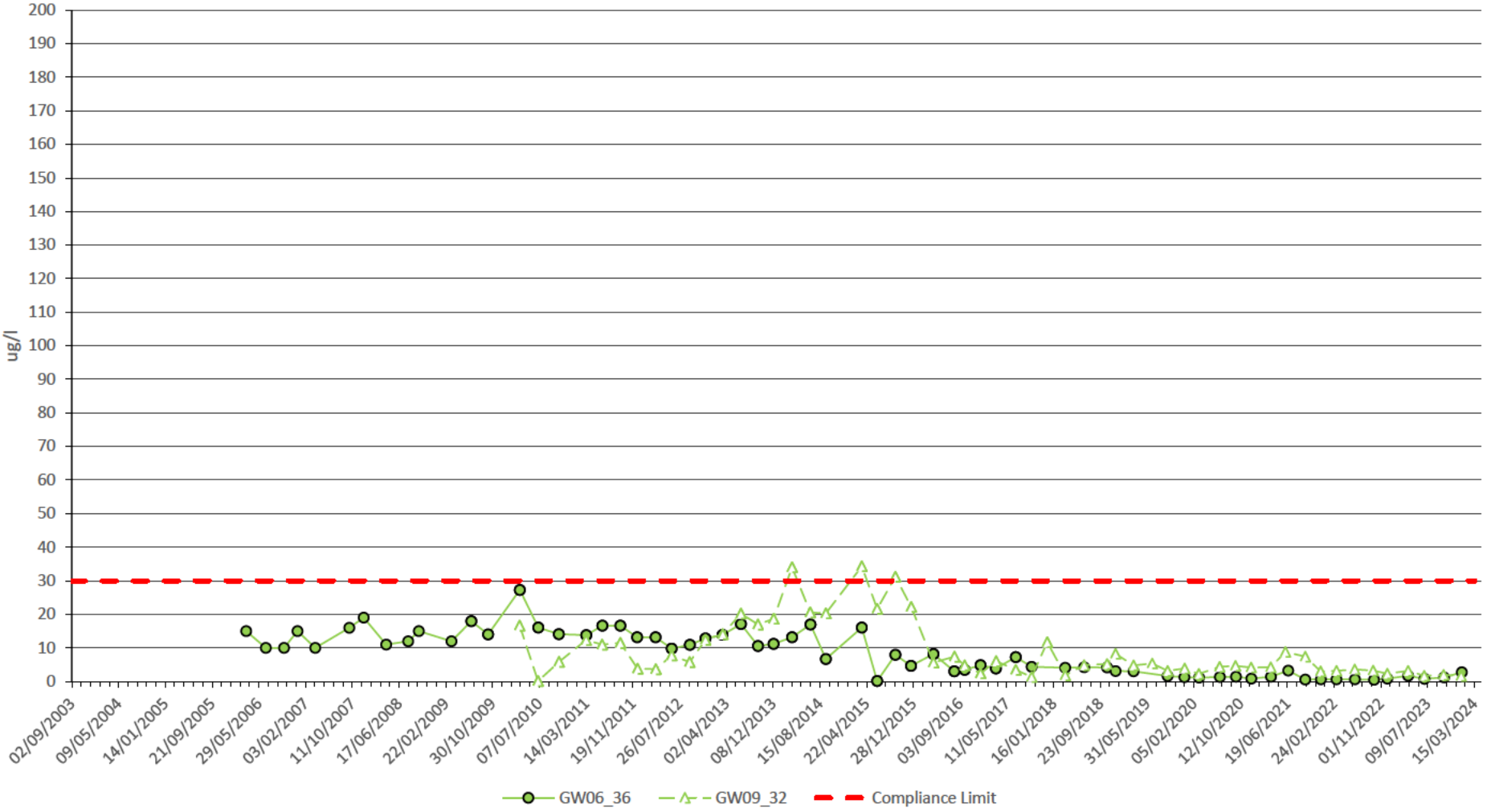

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
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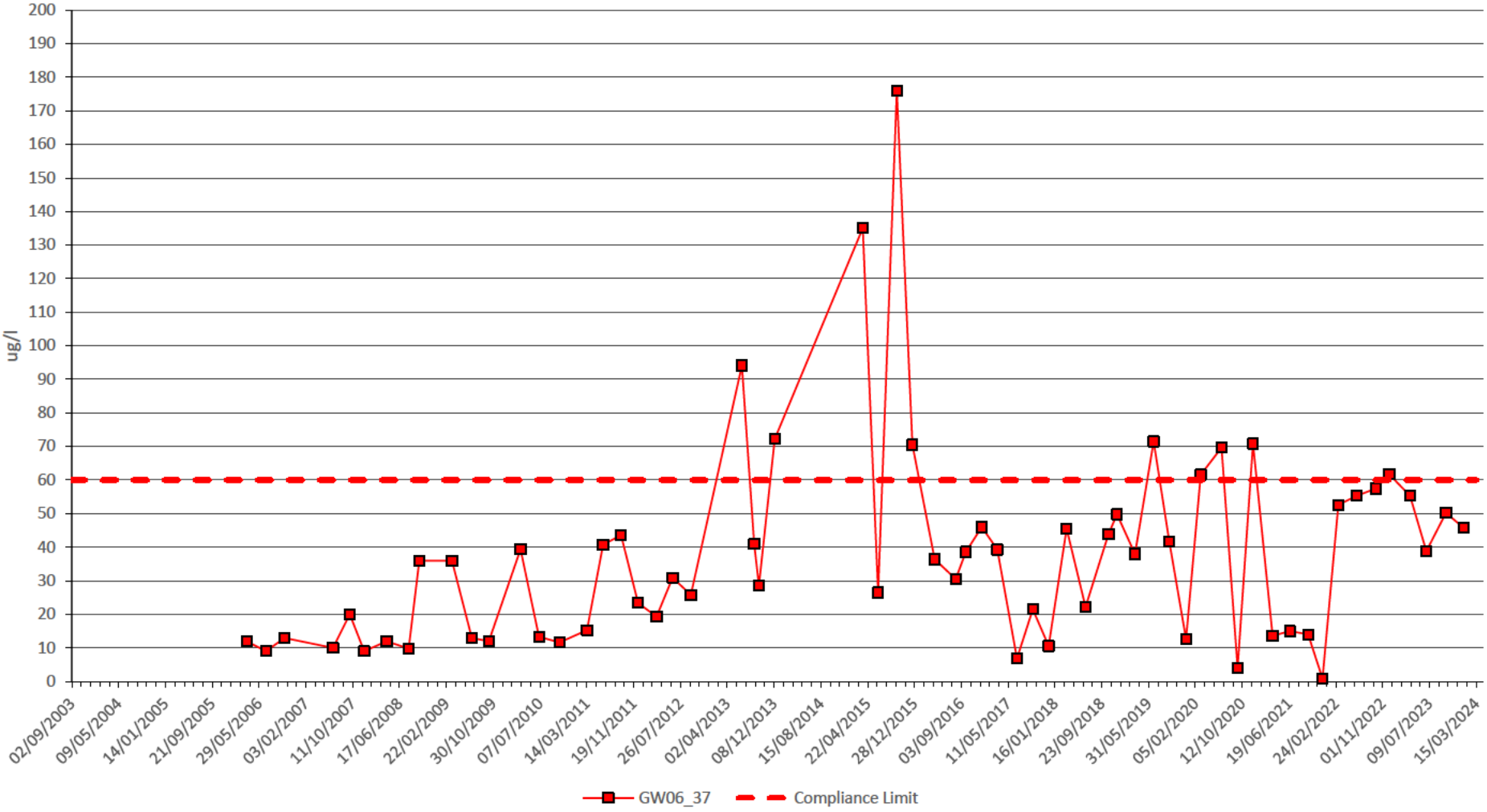

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Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
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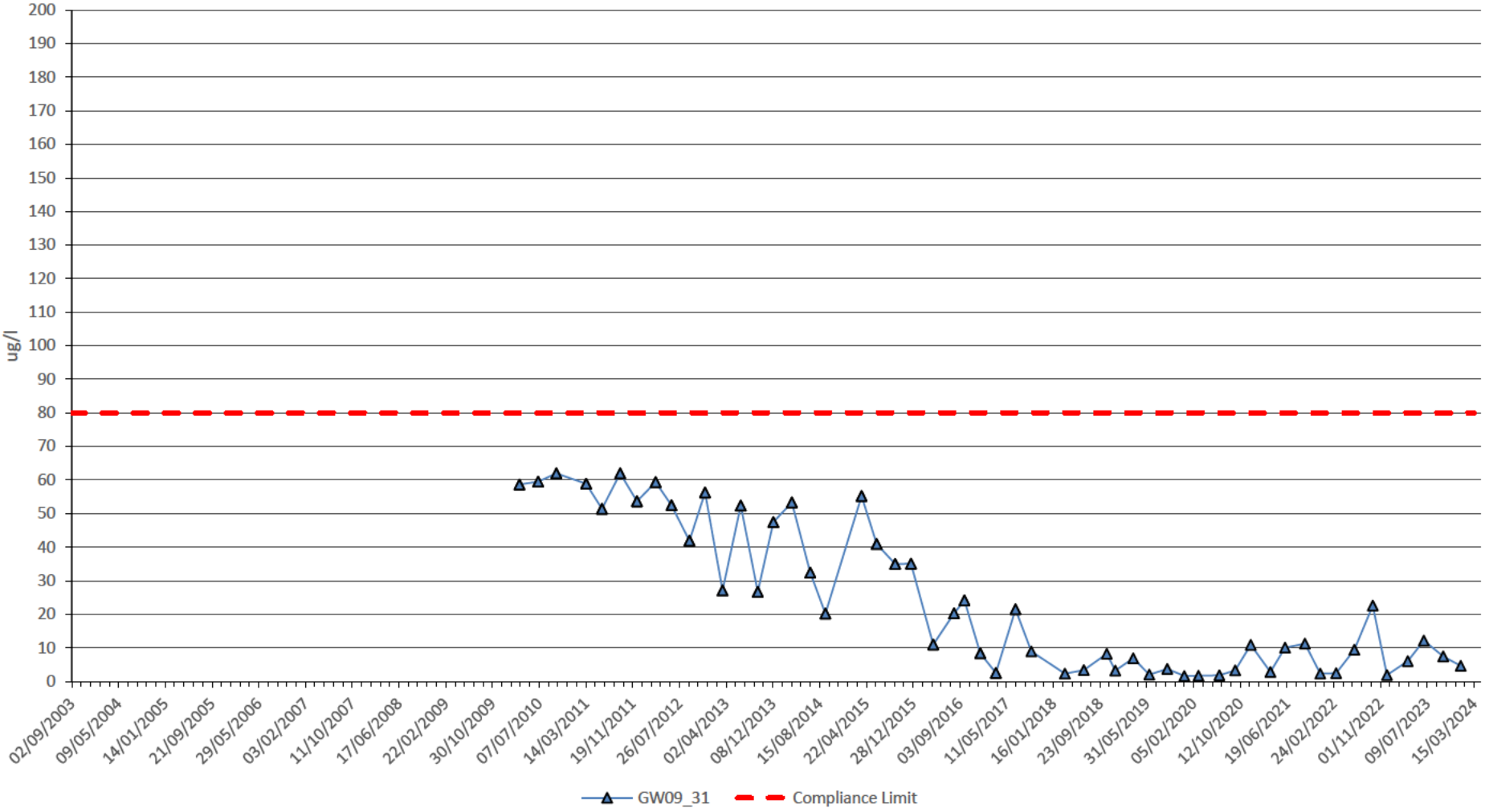

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Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
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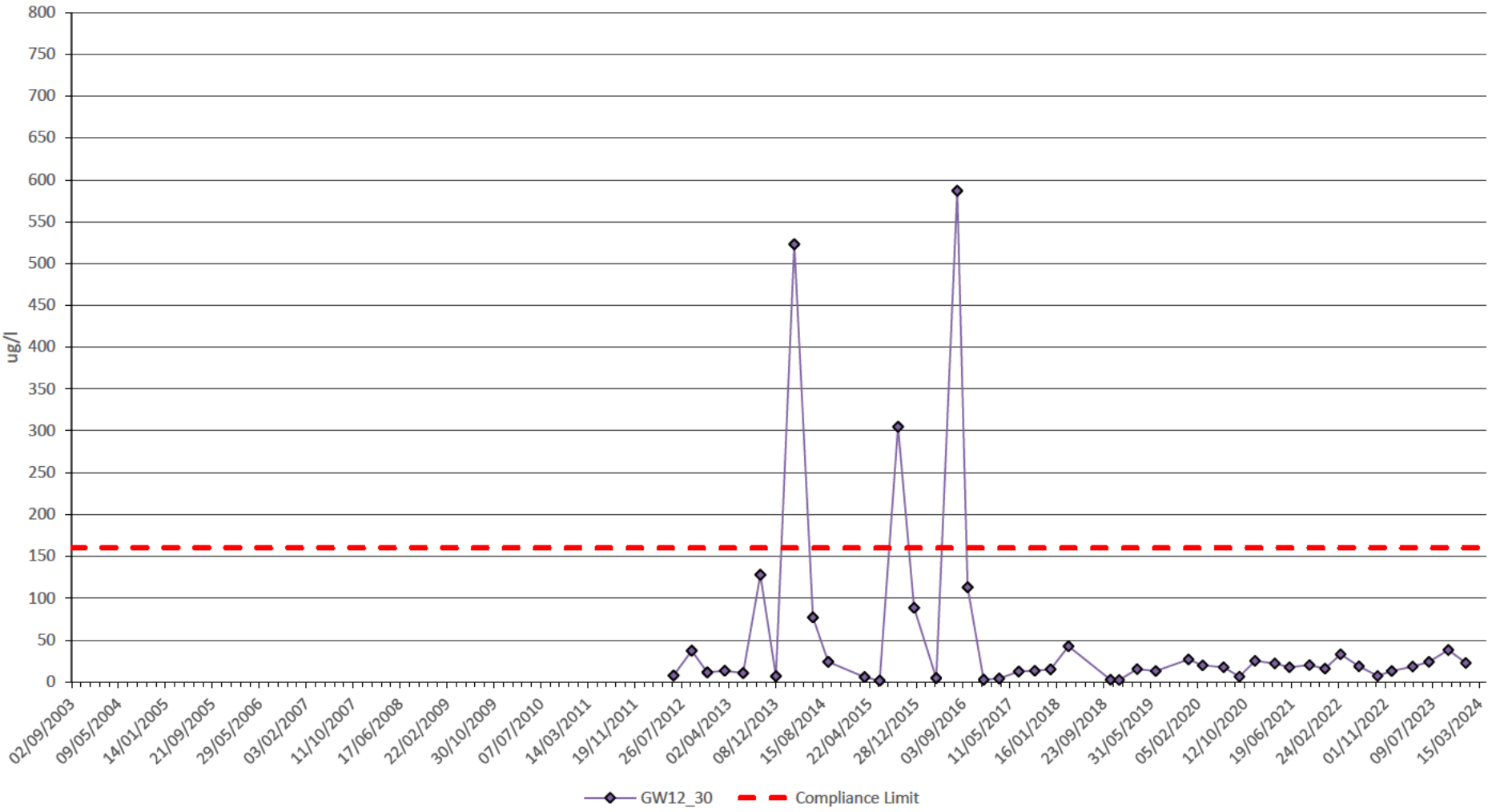

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Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
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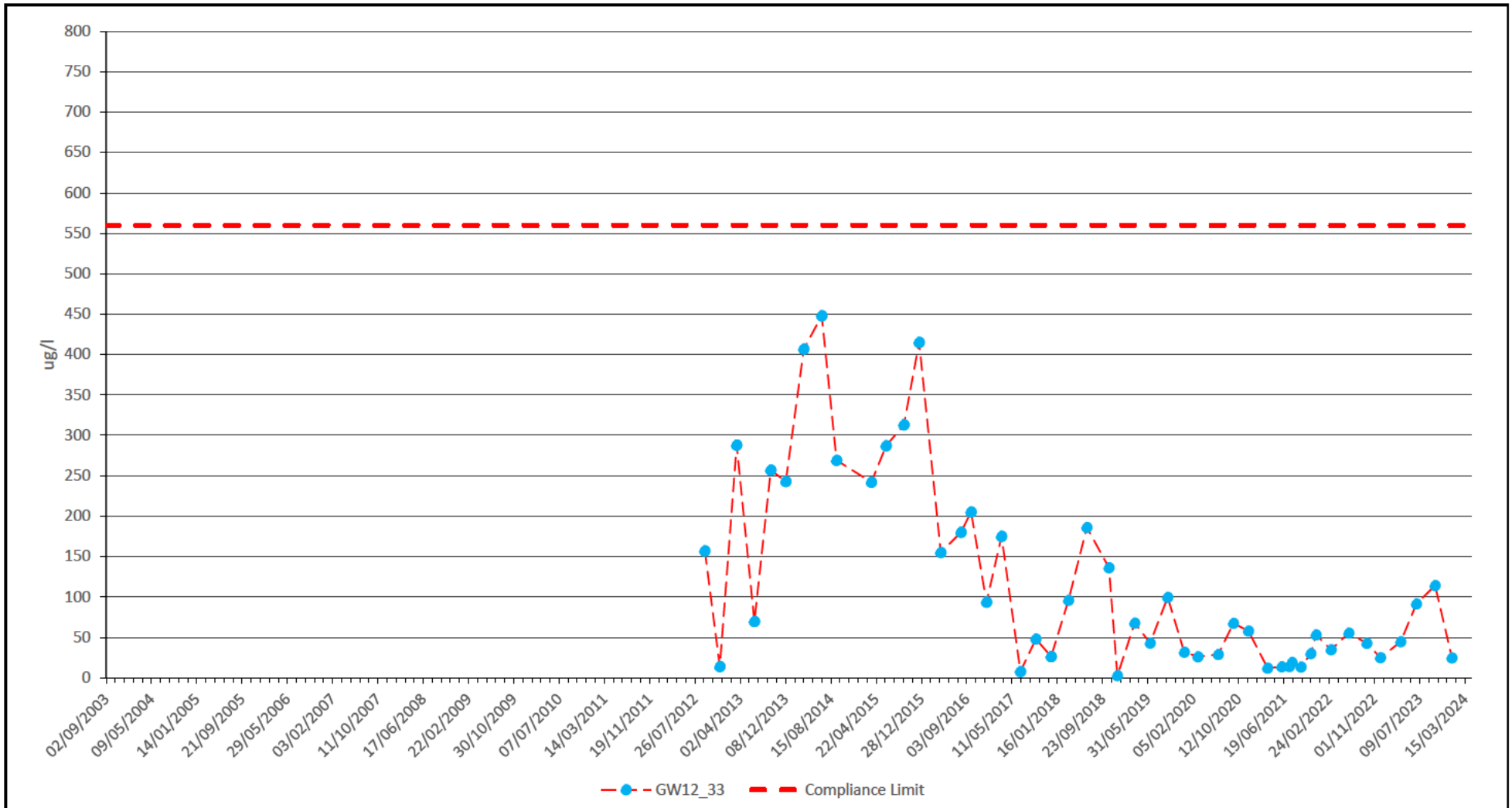

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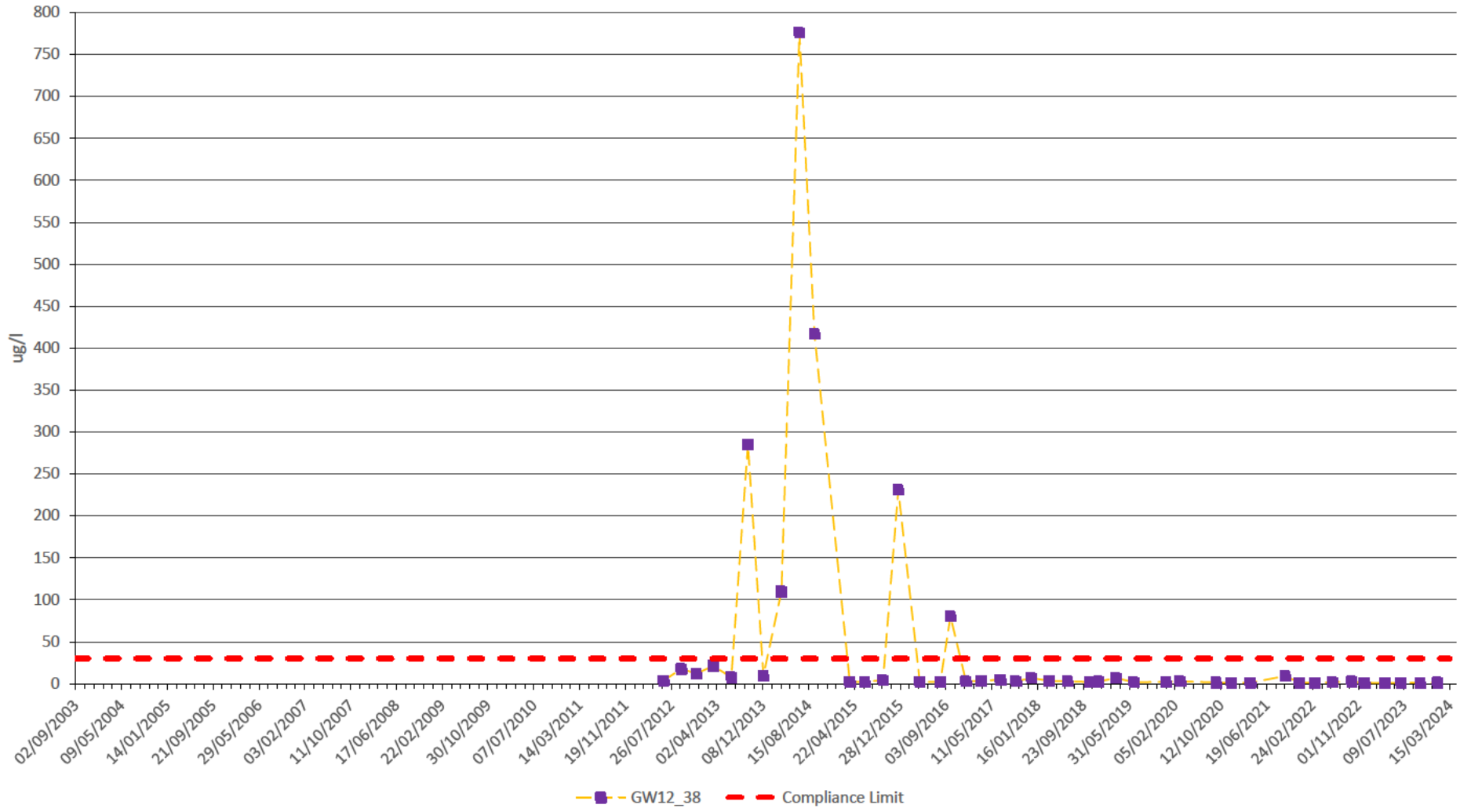

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Docksway Disposal Site

Arsenic in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-15

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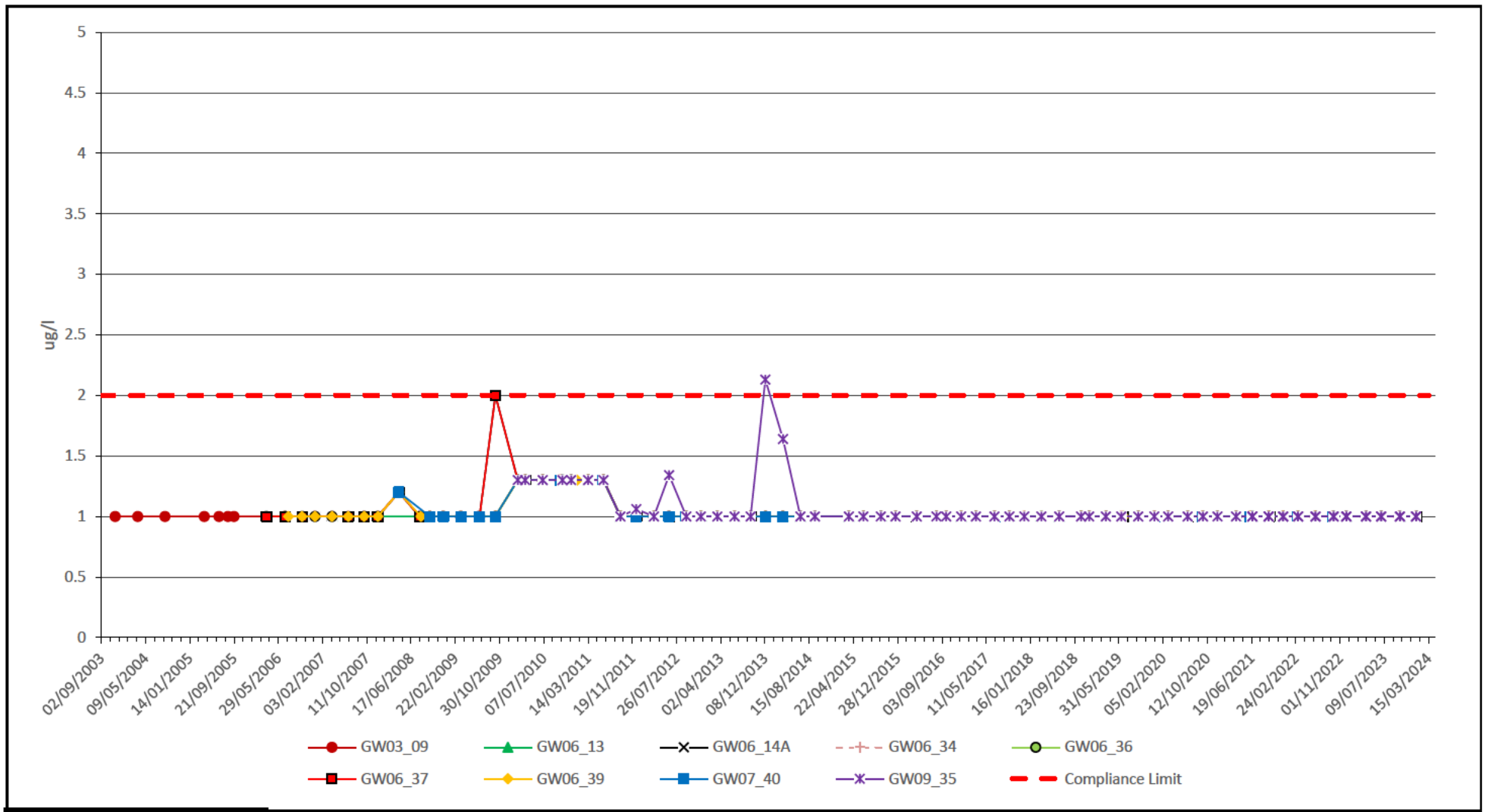

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-16

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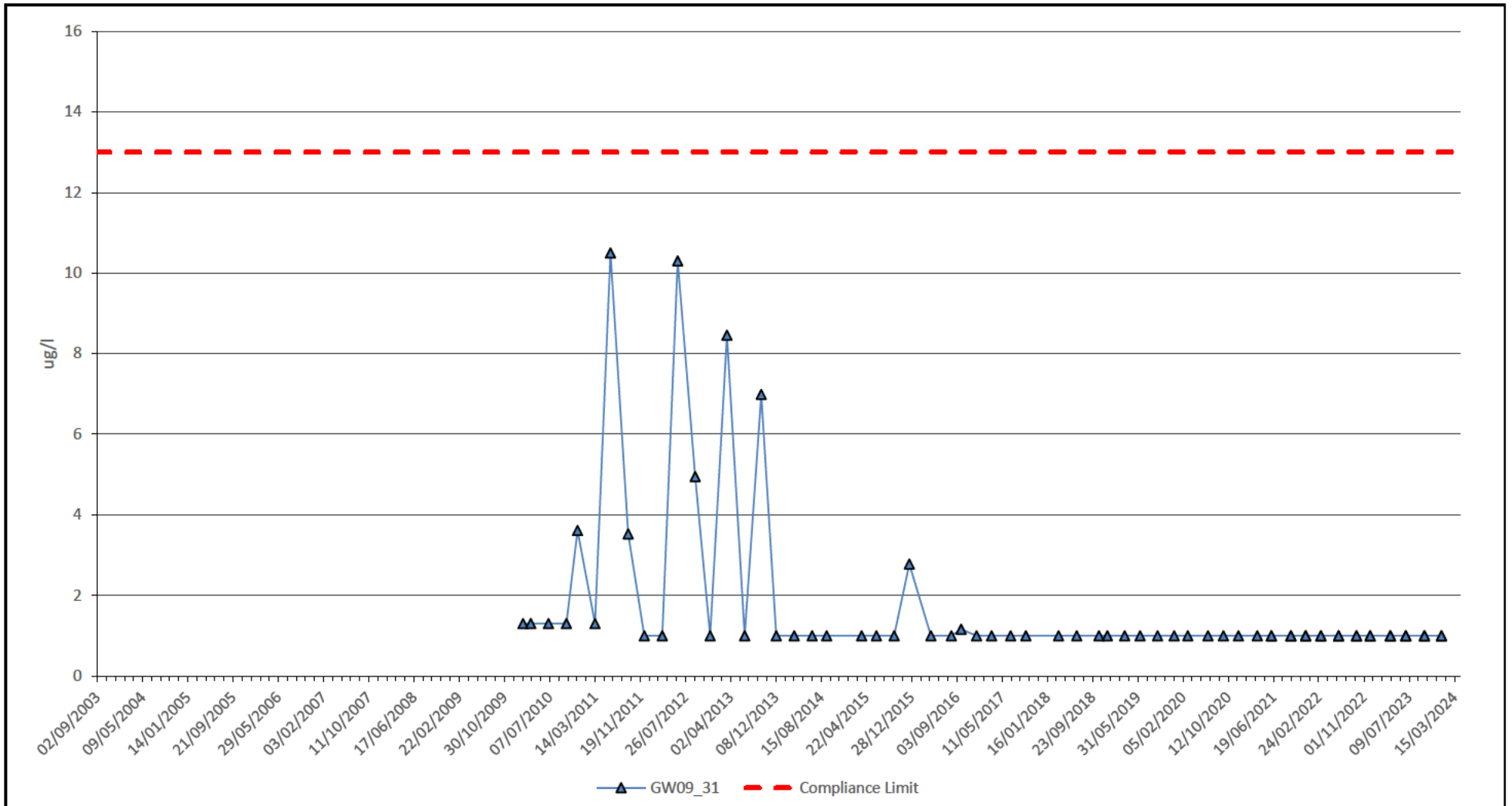

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-17

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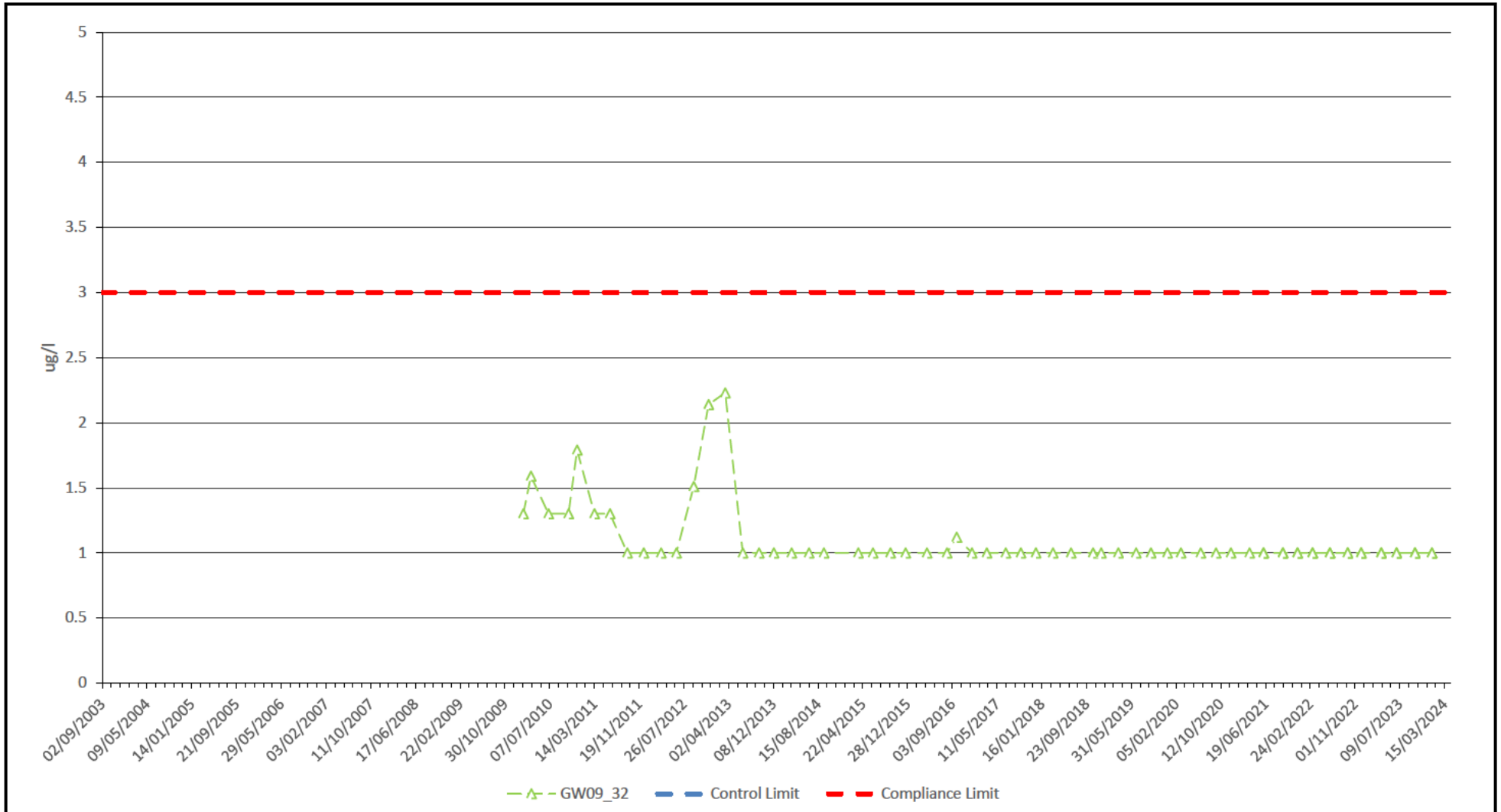

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-18

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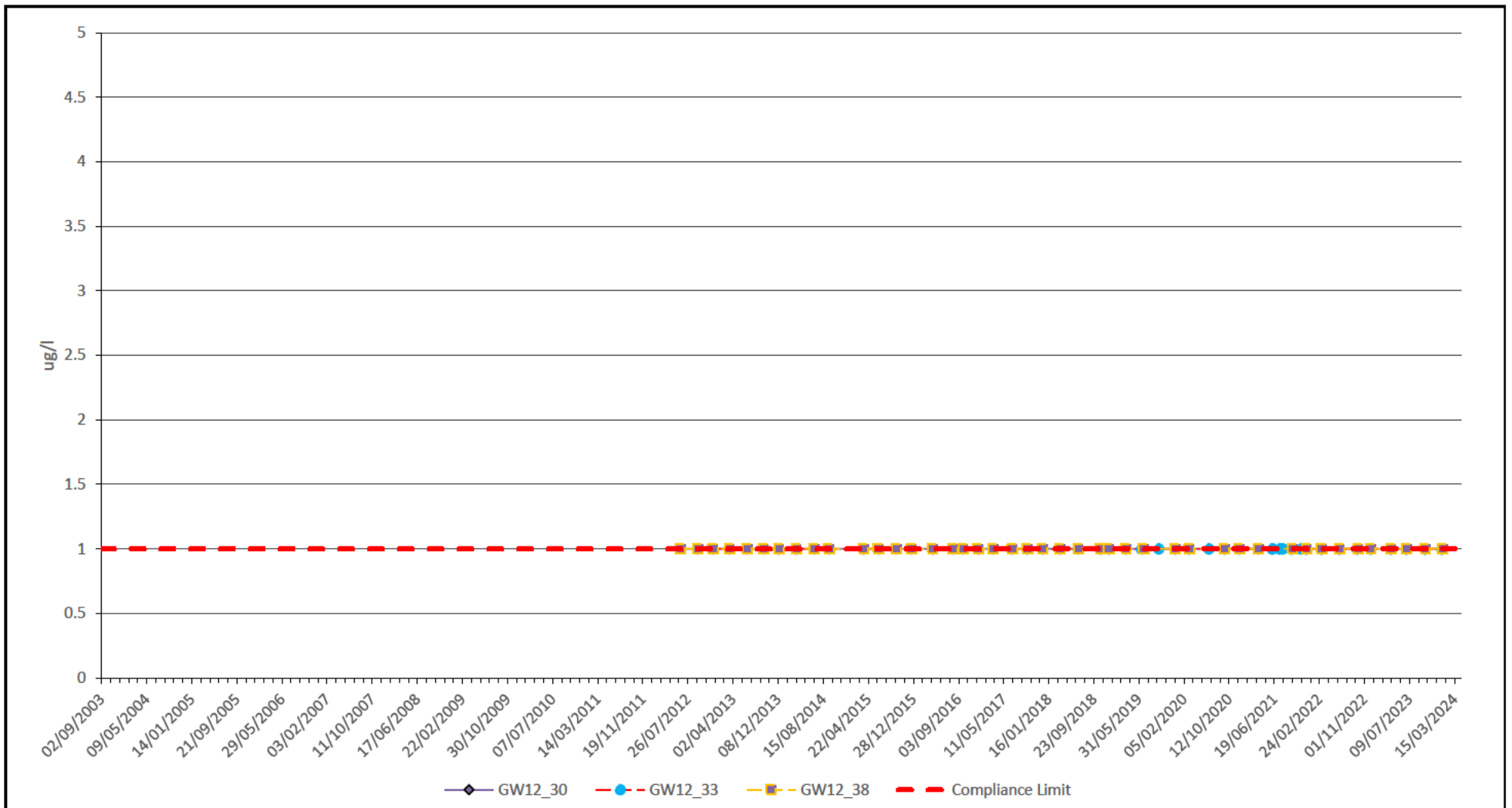

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Docksway Disposal Site

Benzene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

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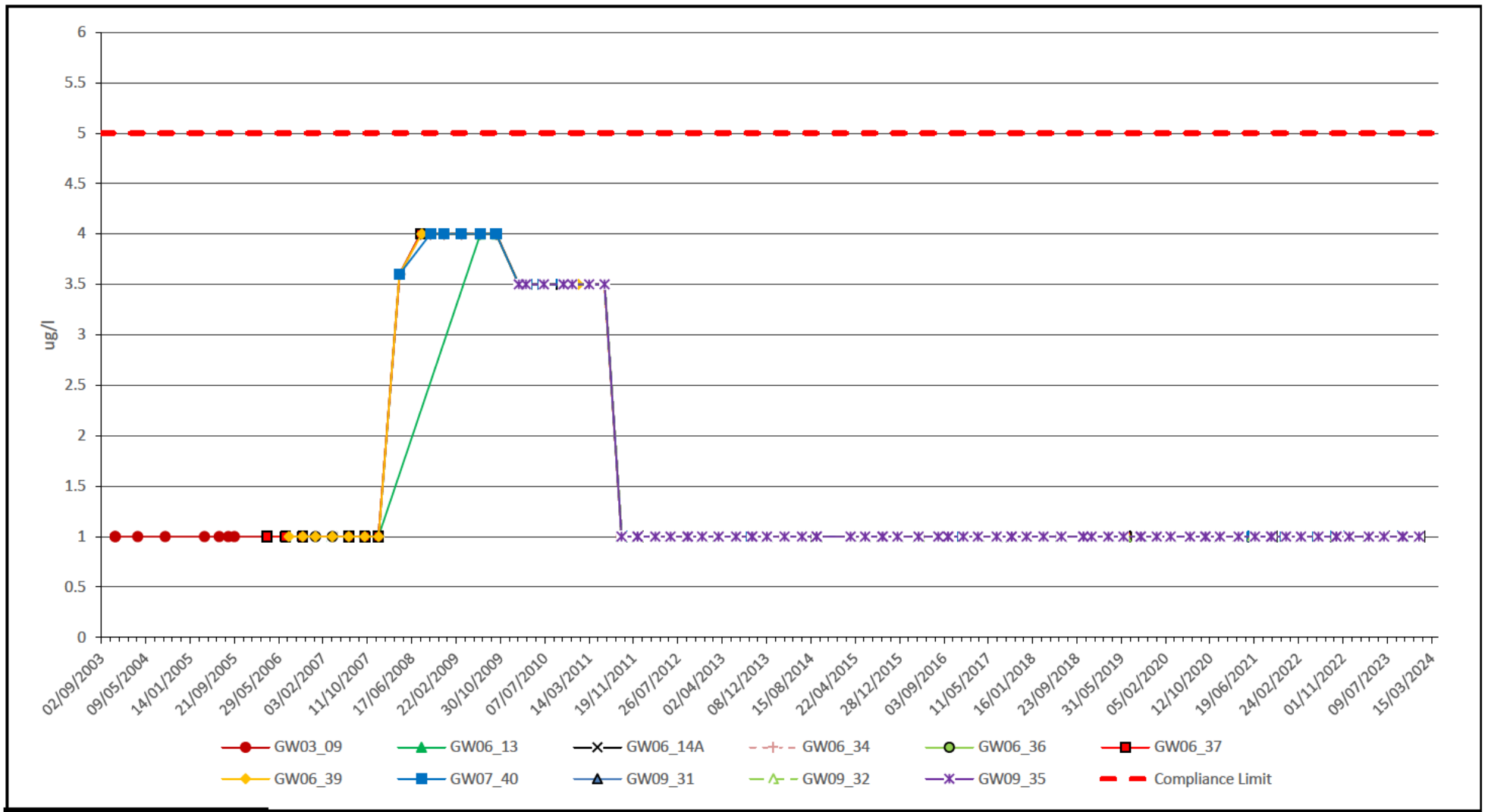

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Docksway Disposal Site

Naphthalene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-20

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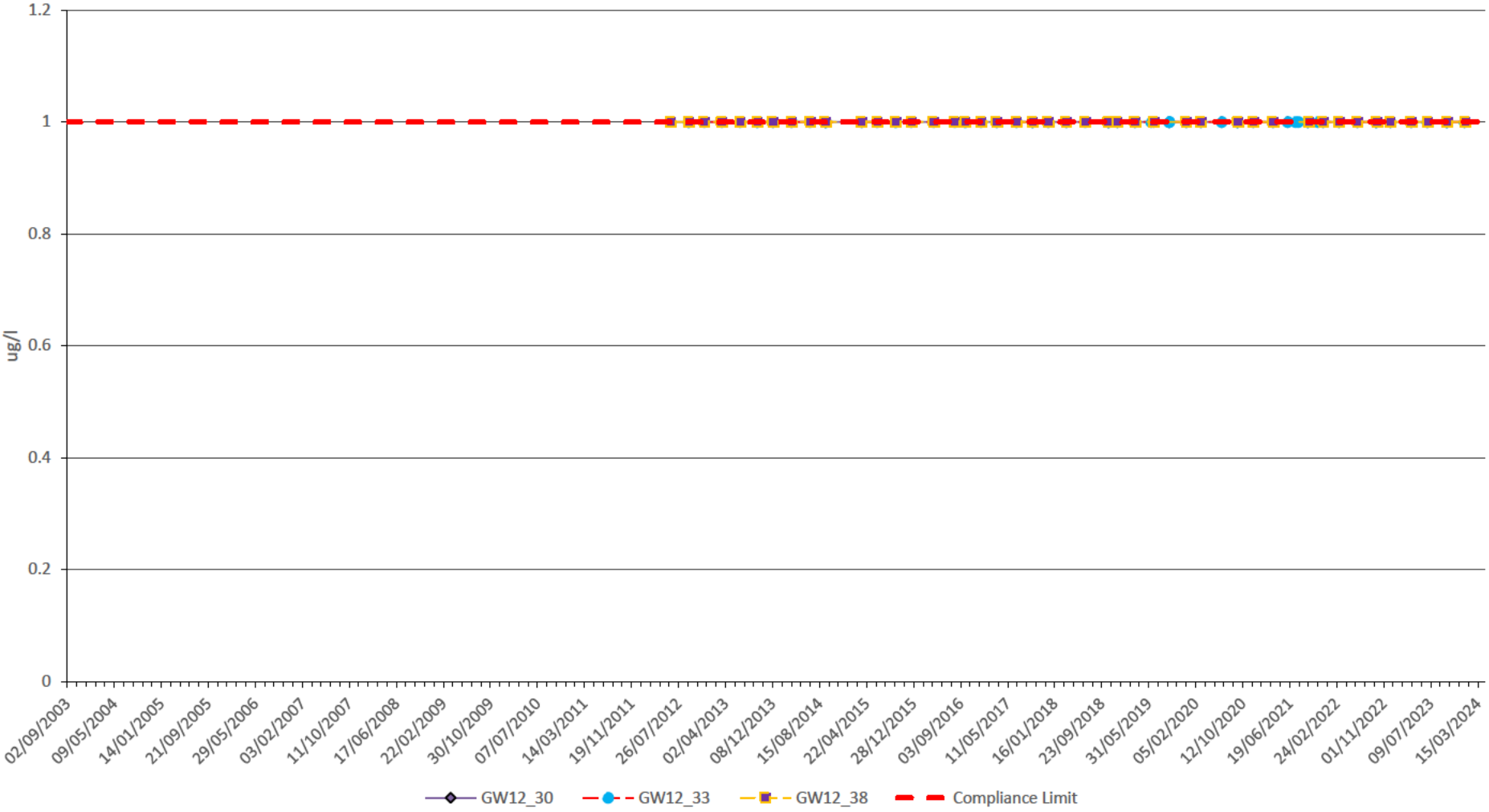

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Docksway Disposal Site

Naphthalene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-21

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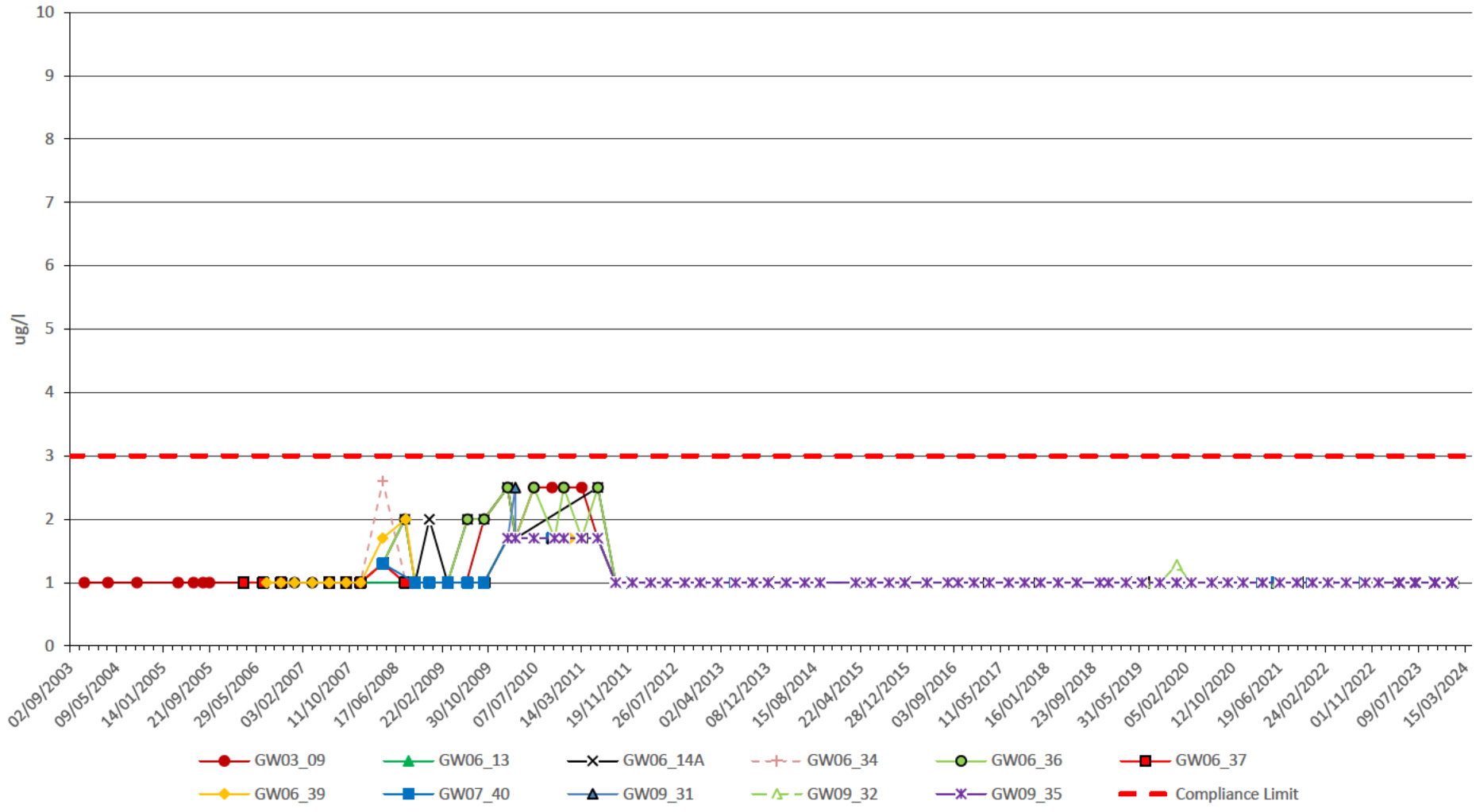

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Docksway Disposal Site

Xylene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-22

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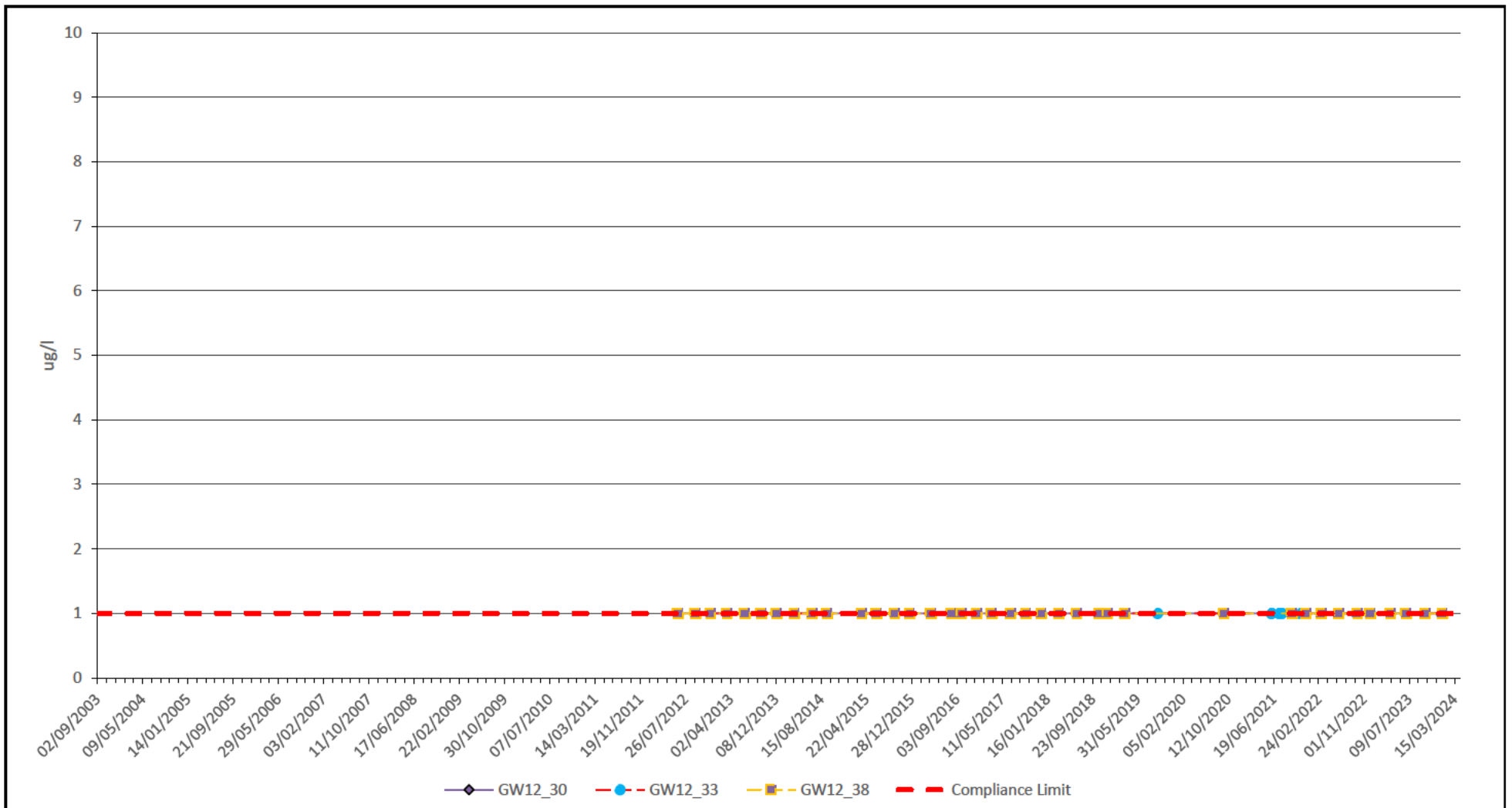

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Docksway Disposal Site

Xylene in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-23

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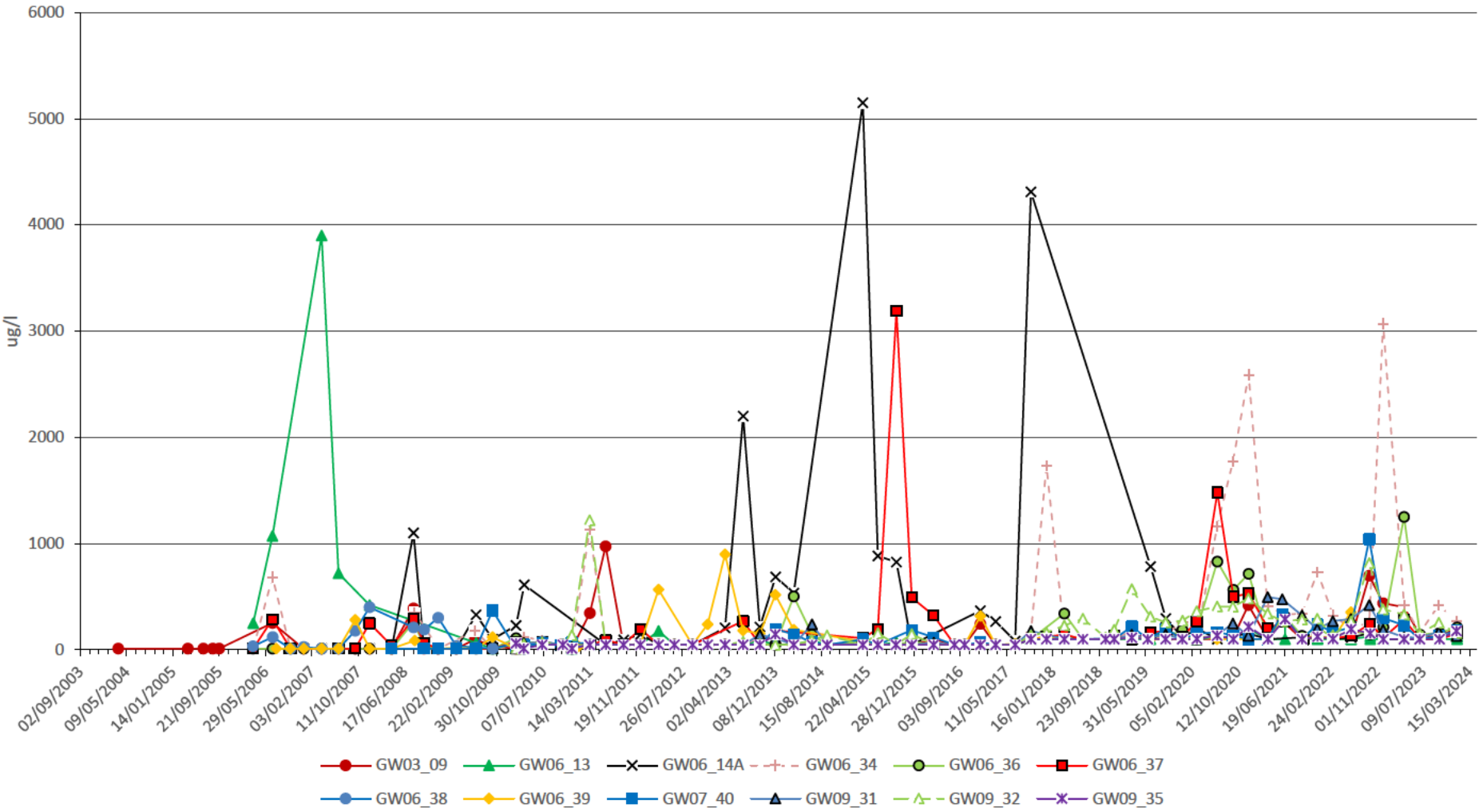

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Docksway Disposal Site

EPH in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-24

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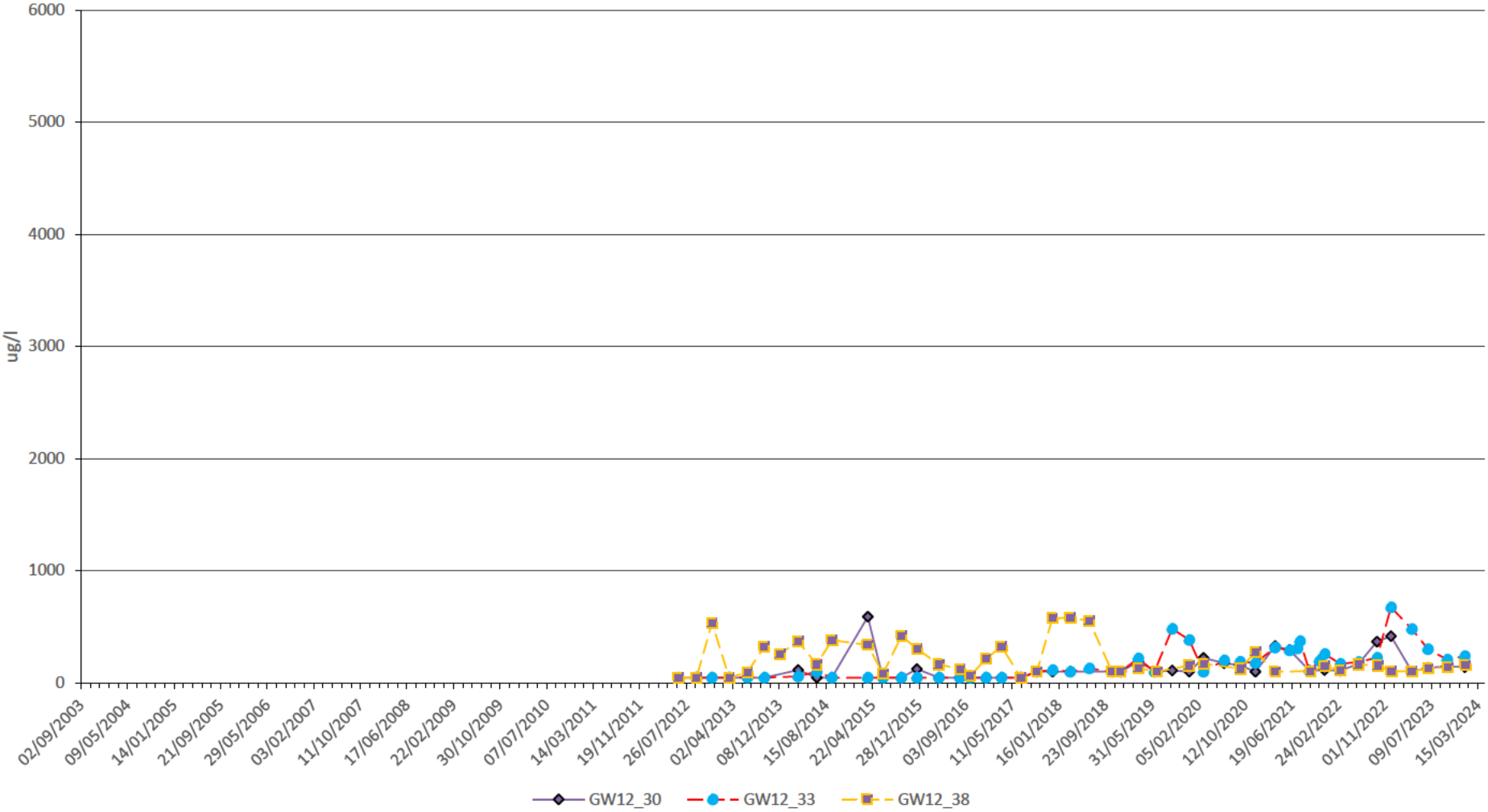

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Docksway Disposal Site

EPH in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-25

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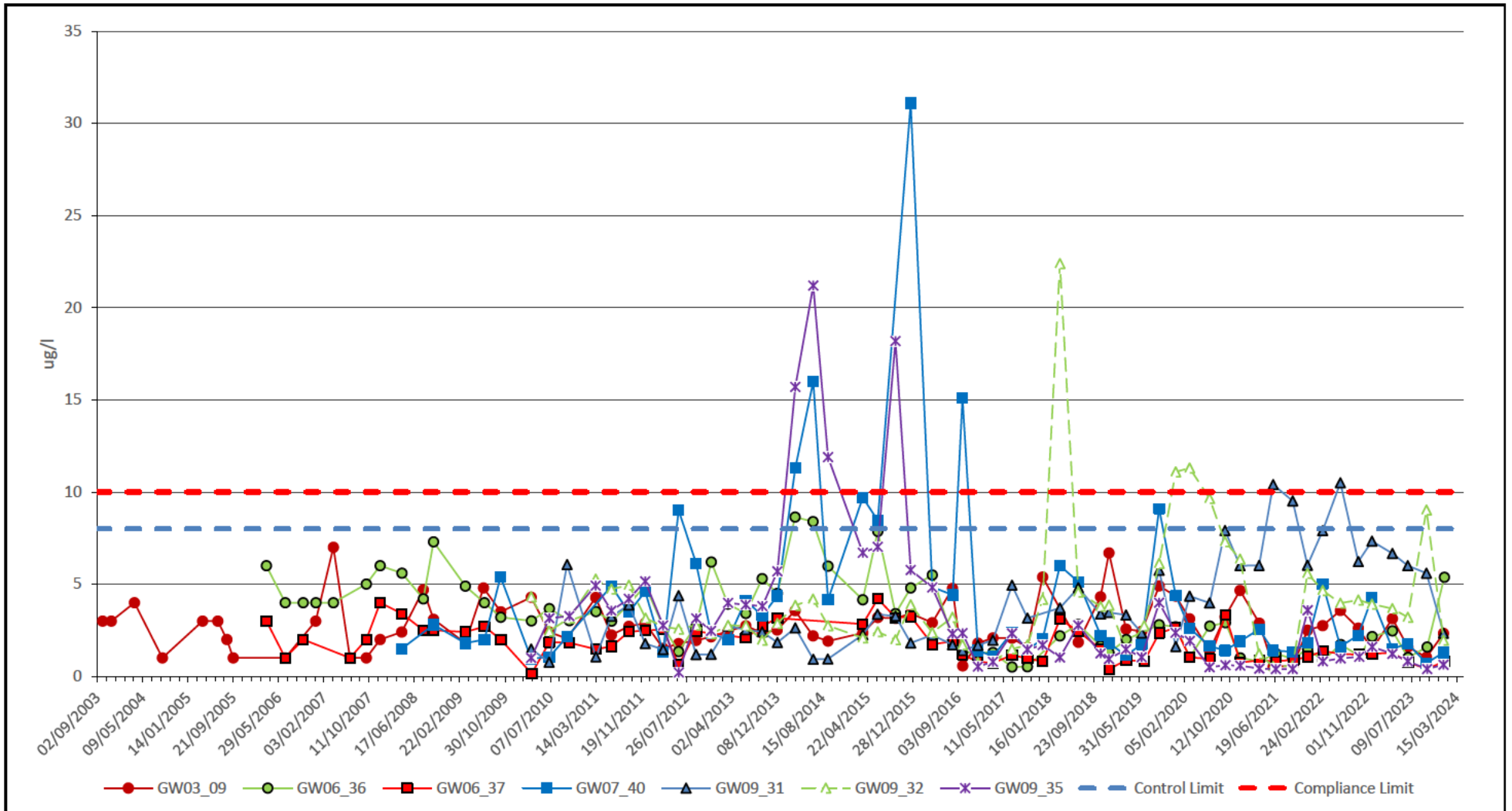

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-26

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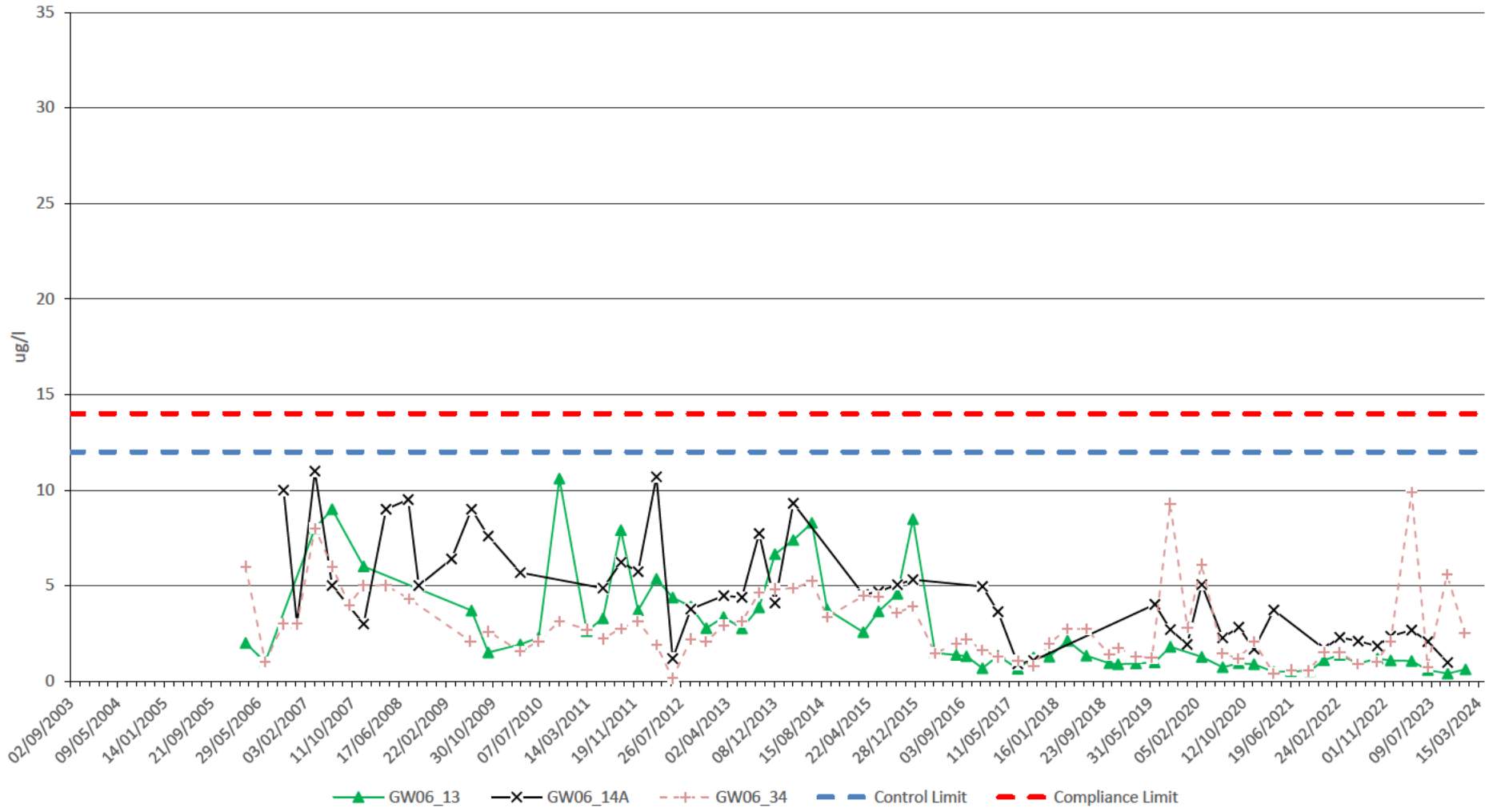

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-27

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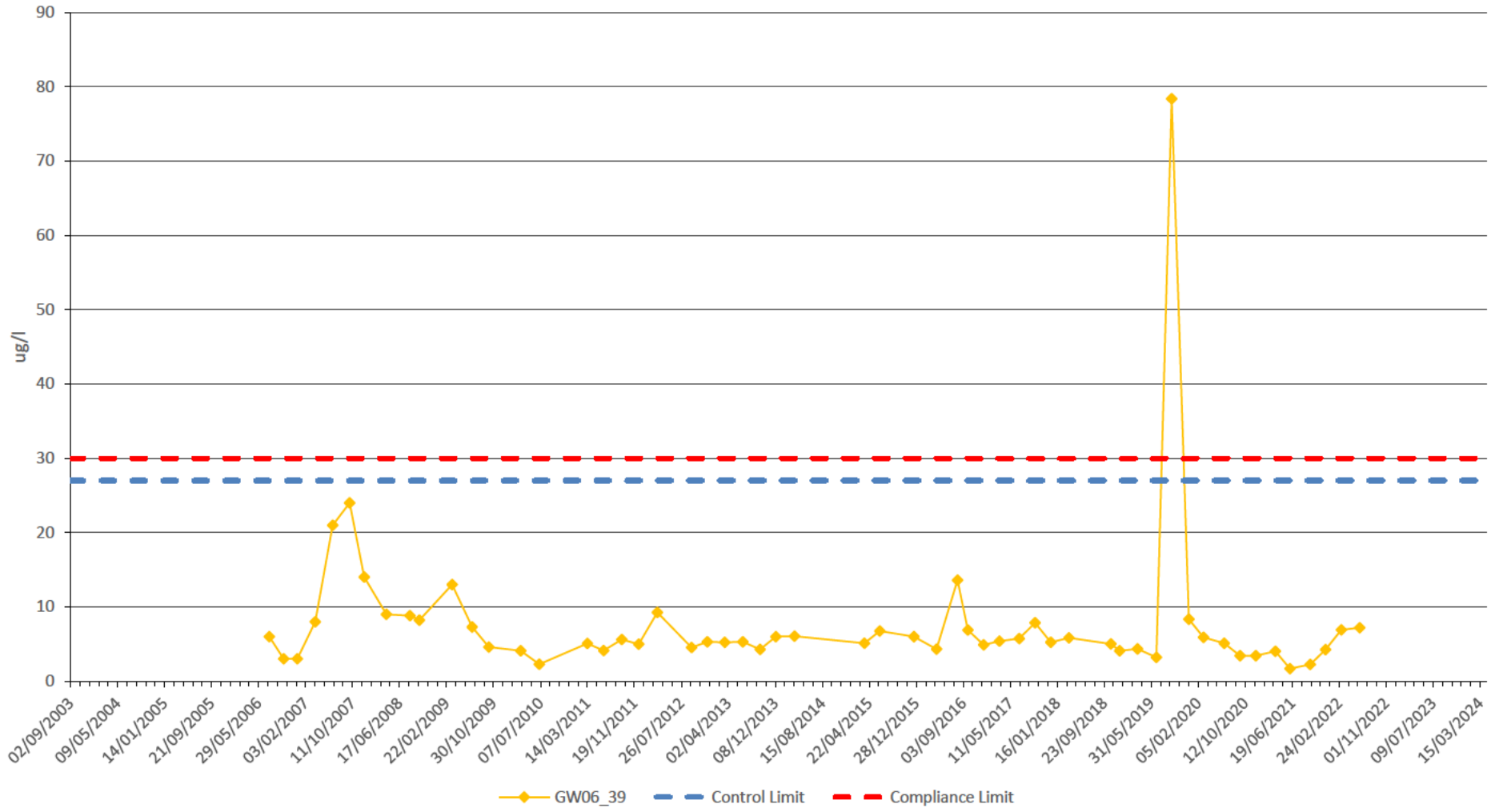

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-28

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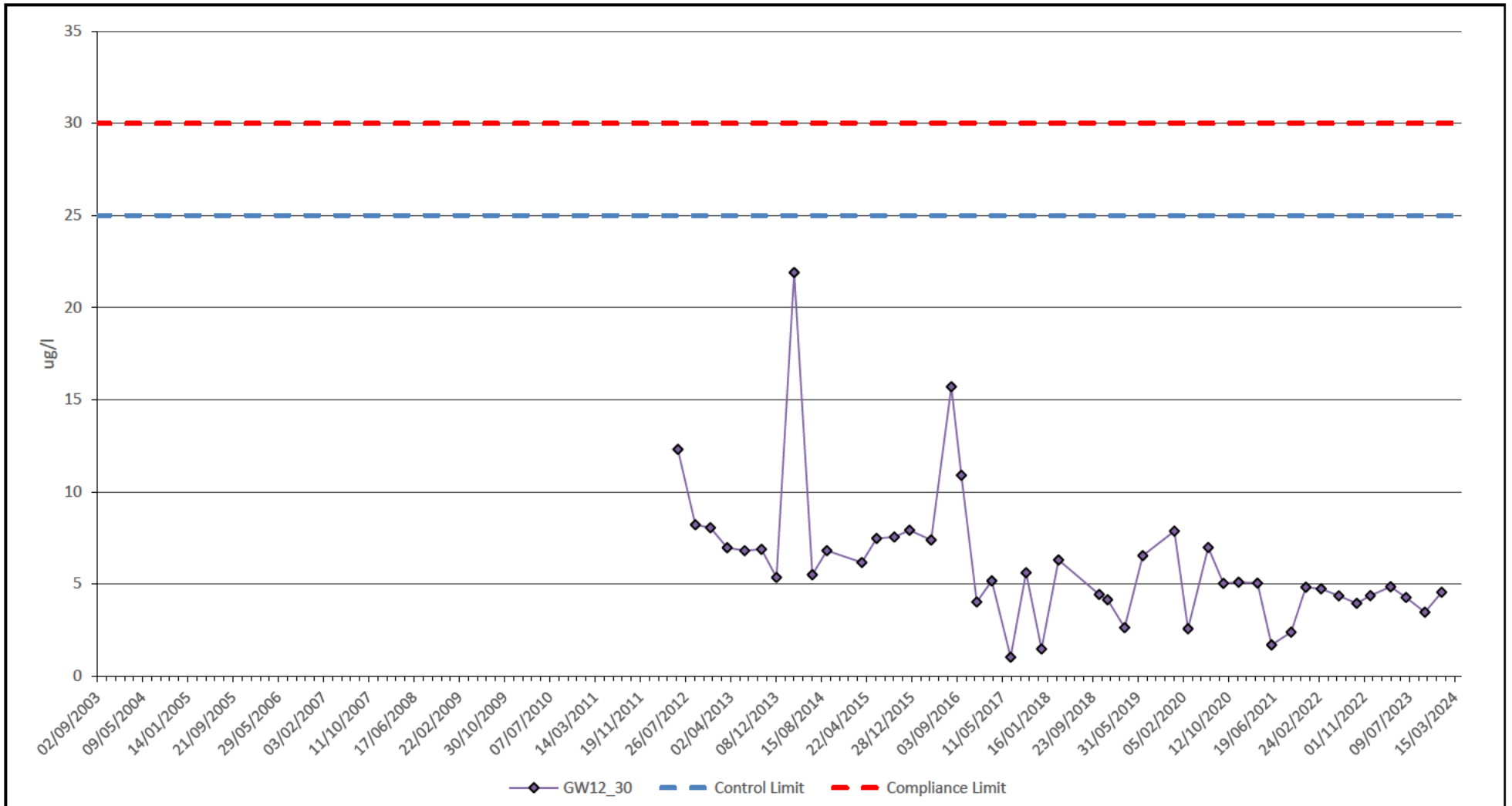

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-29

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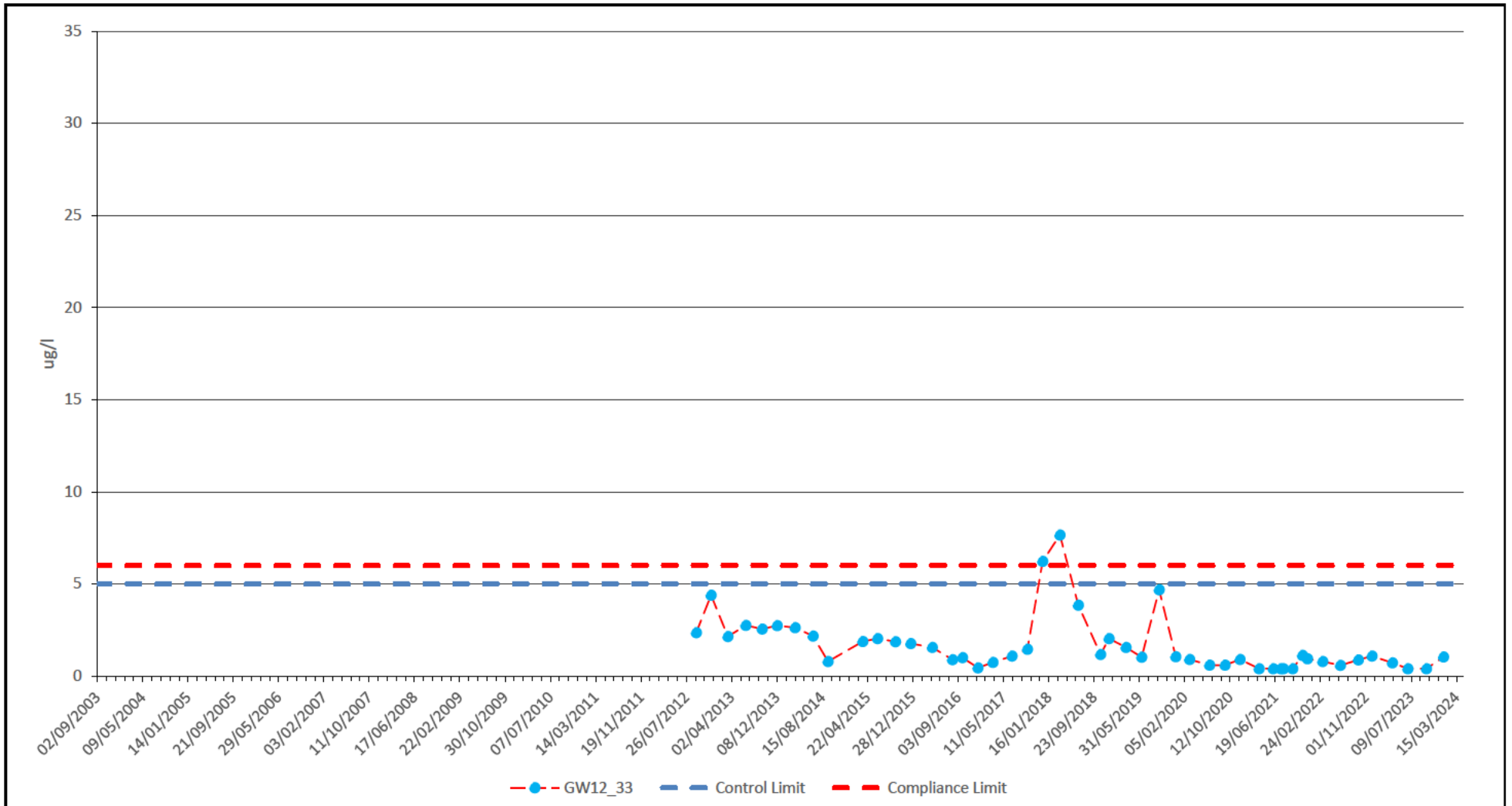

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-30

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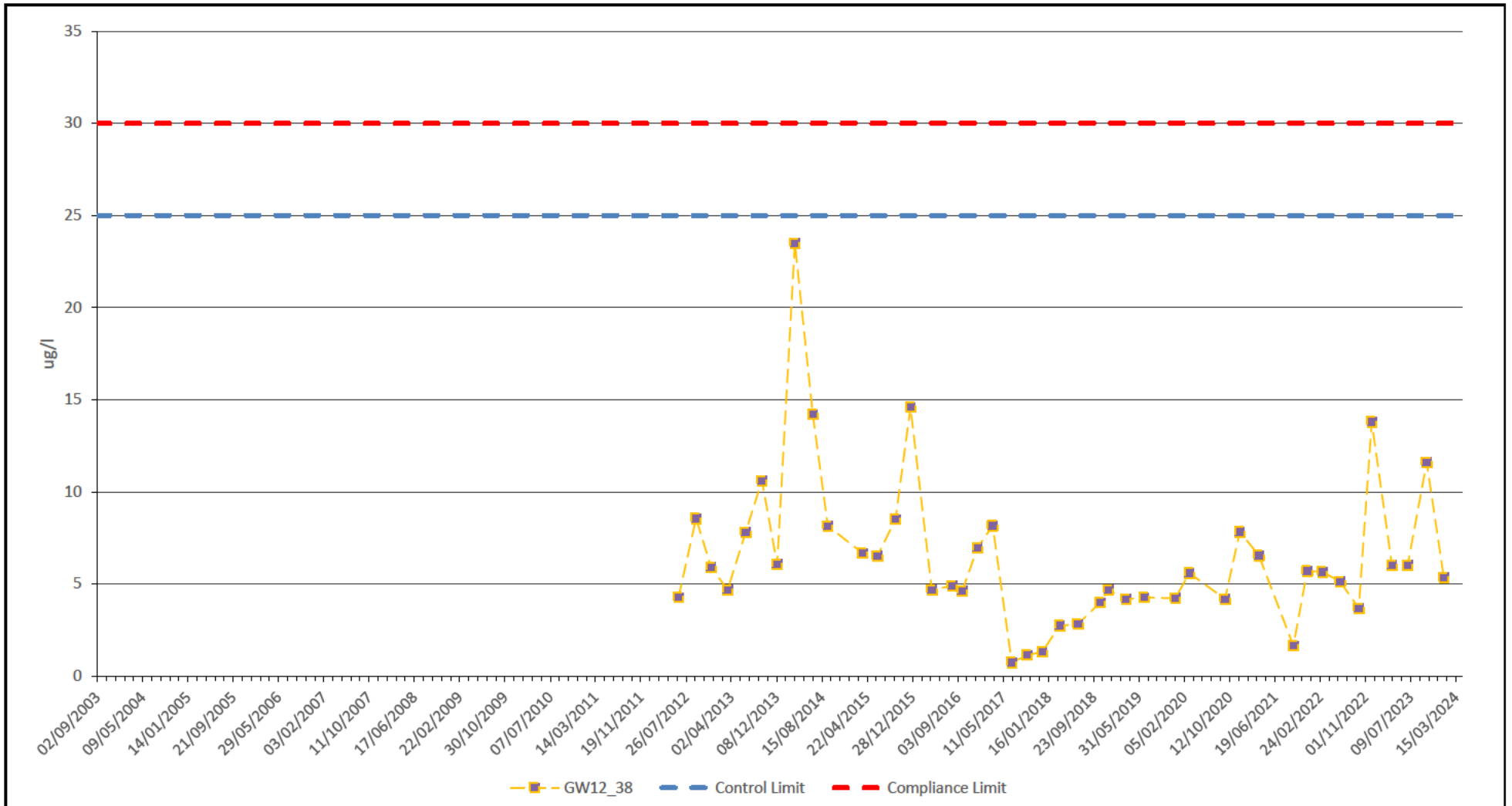

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Docksway Disposal Site

Nickel in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-31

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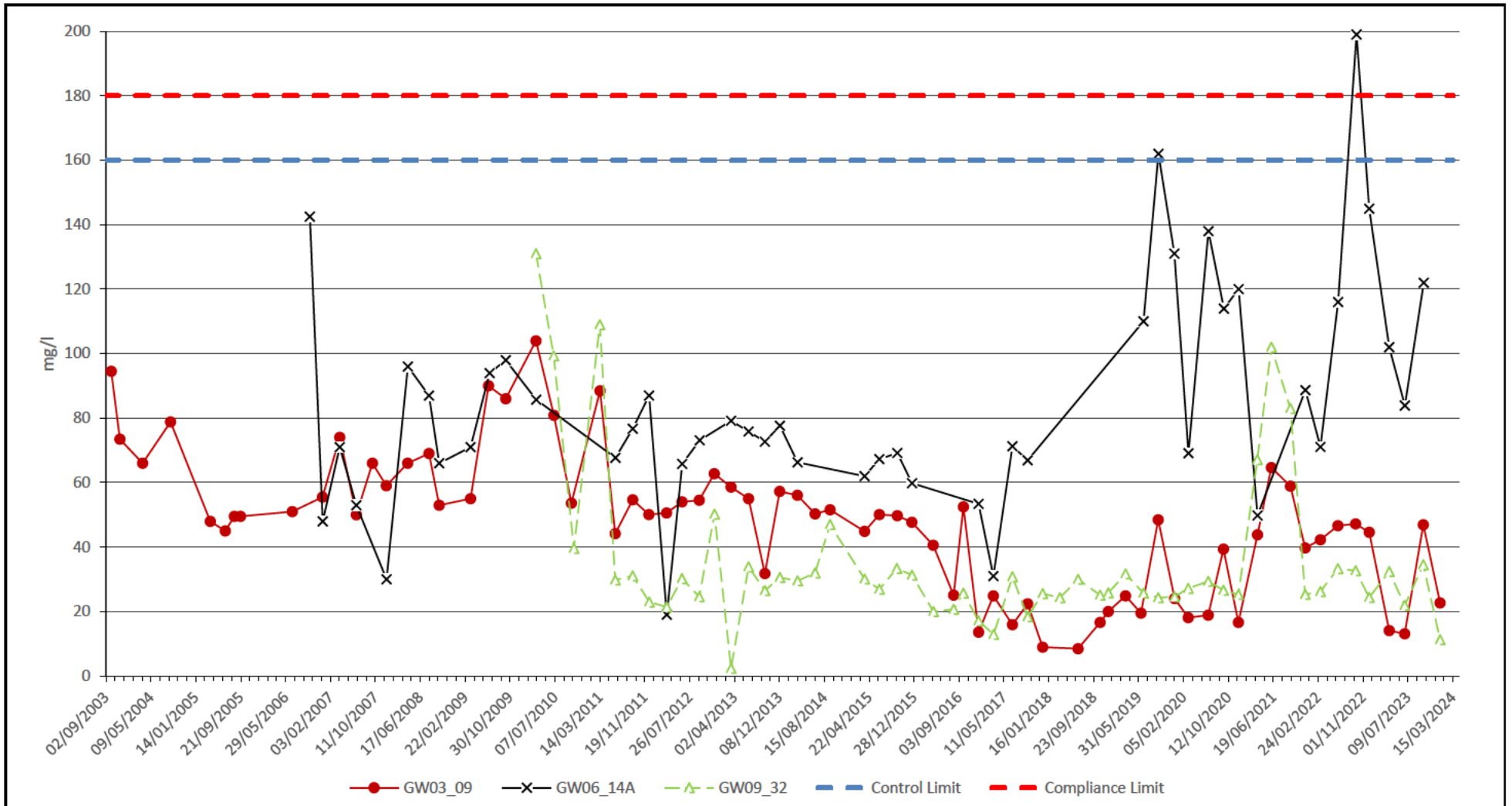

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Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

2-32

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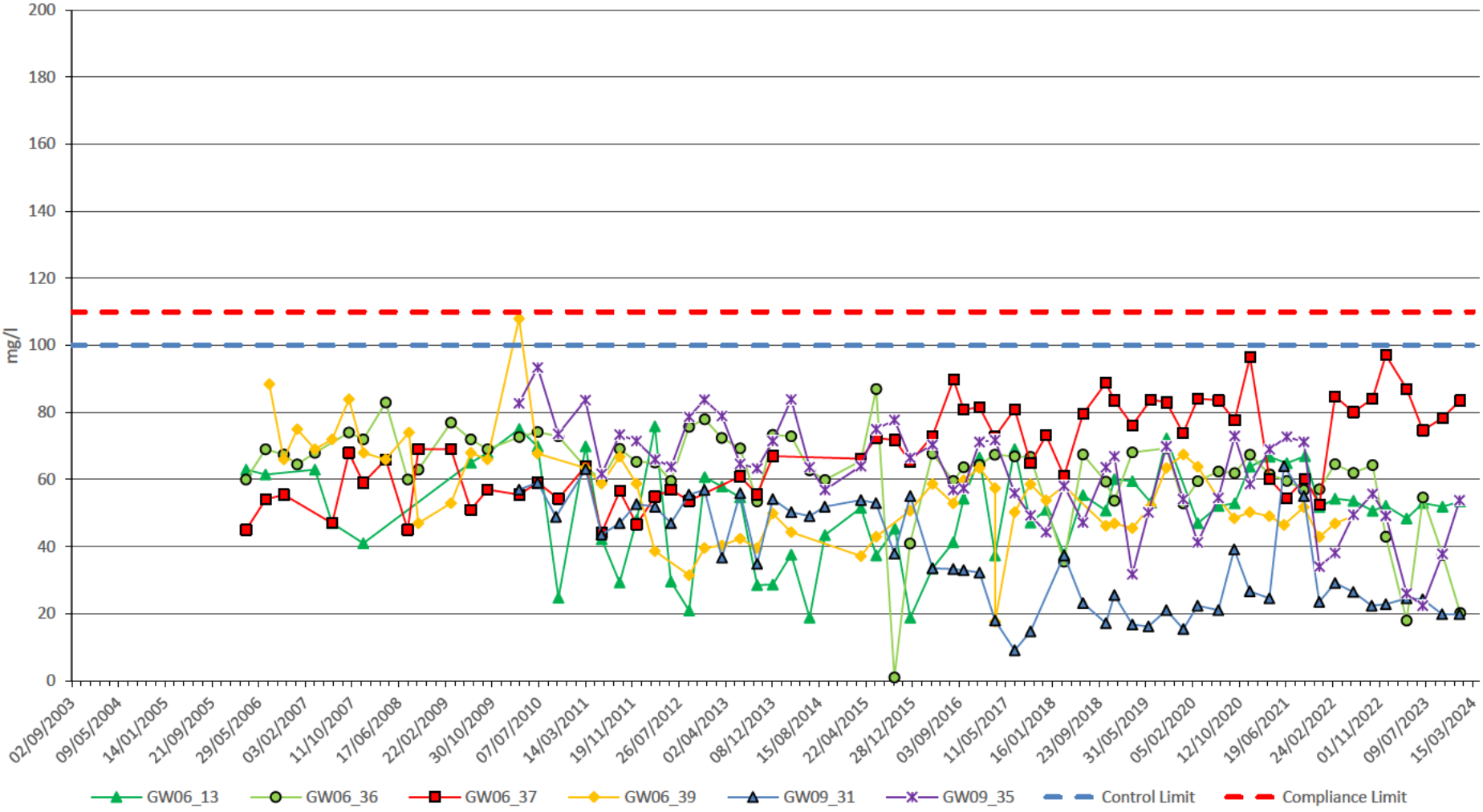

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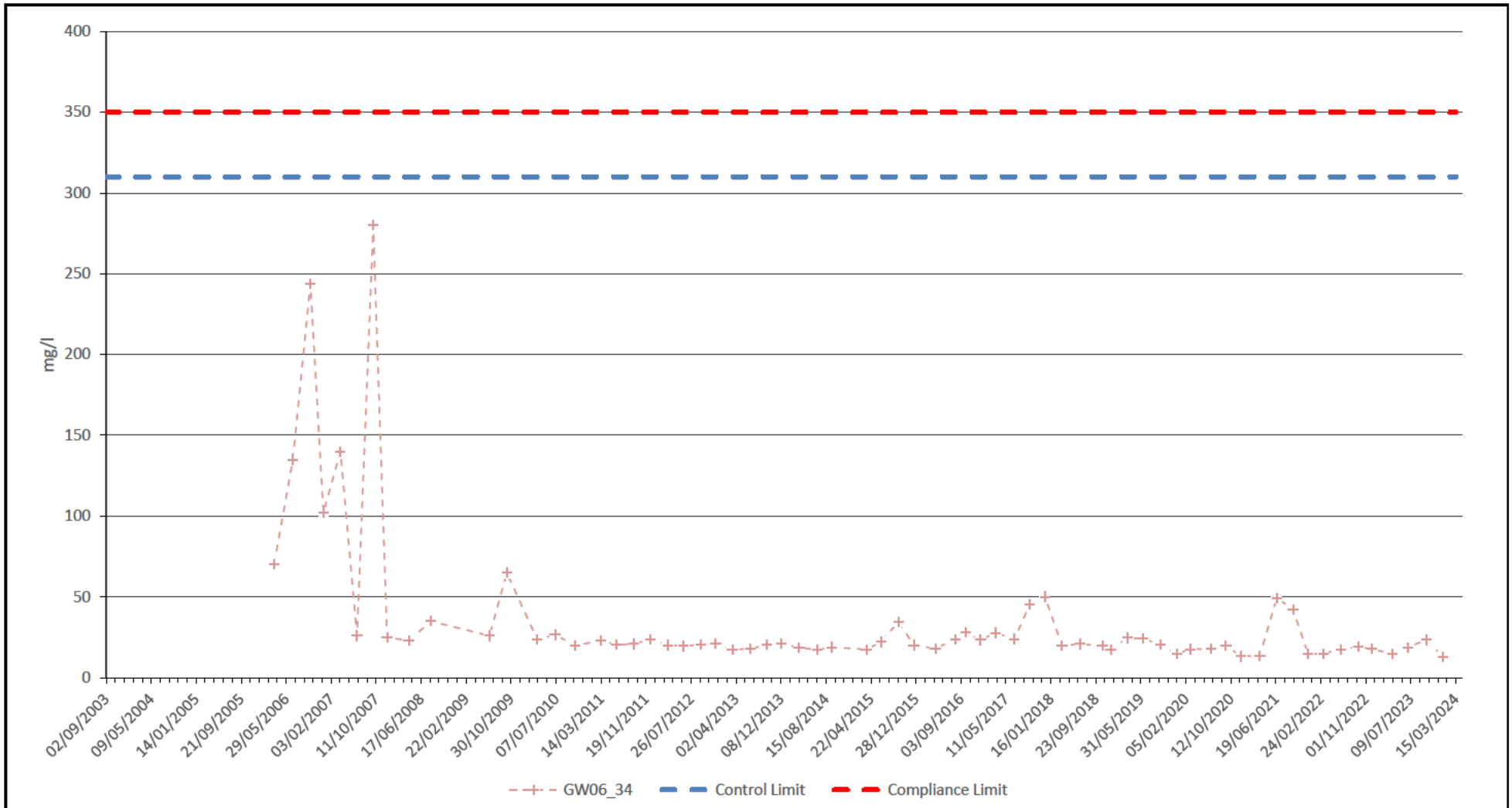
Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-33

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Groundwater\Excel\[2-33 Potassium.xlsm]Summary



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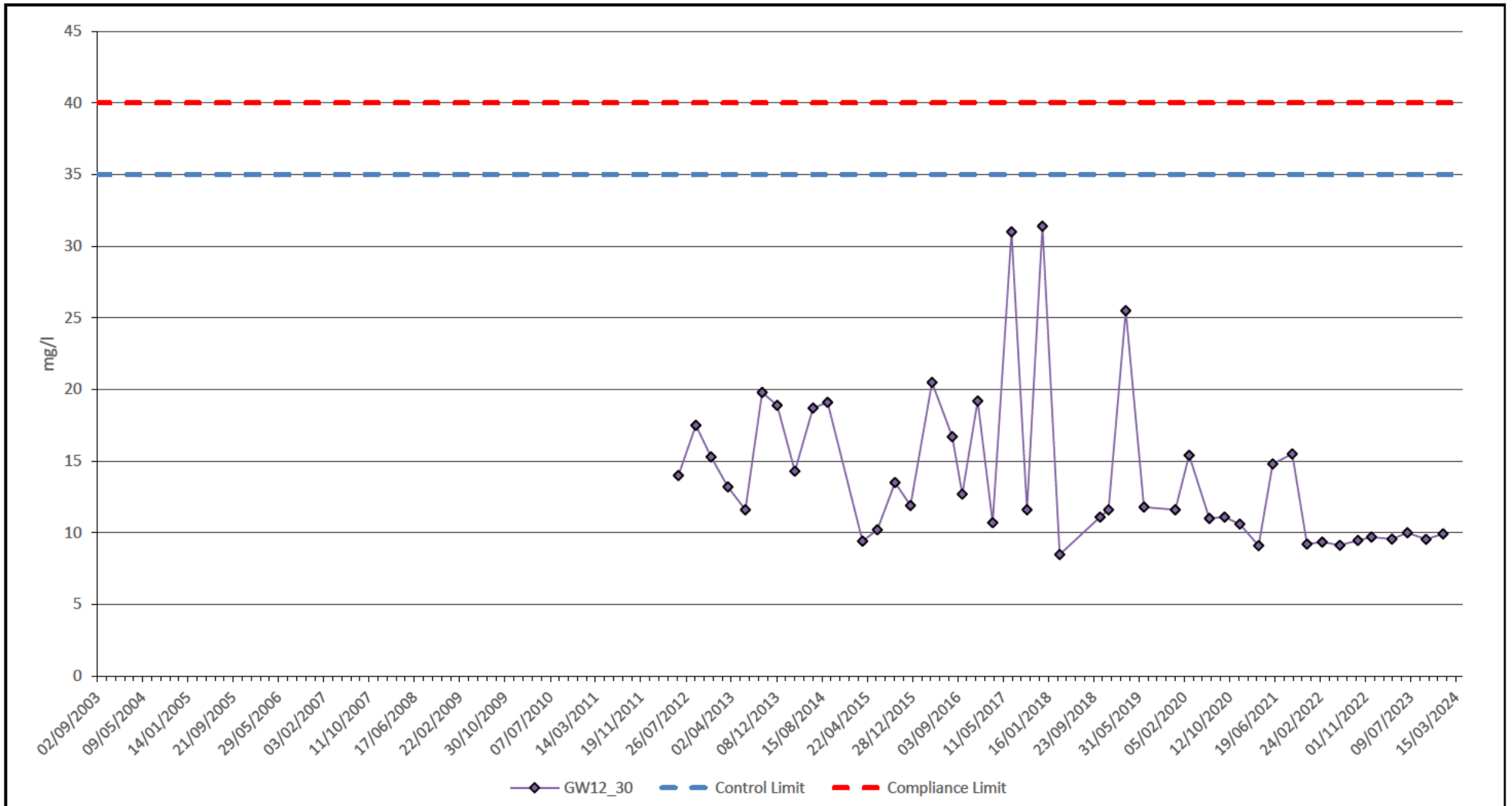
Newport City Council

Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-34

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Groundwater\Excel\[2-34 Potassium.xlsm]Summary



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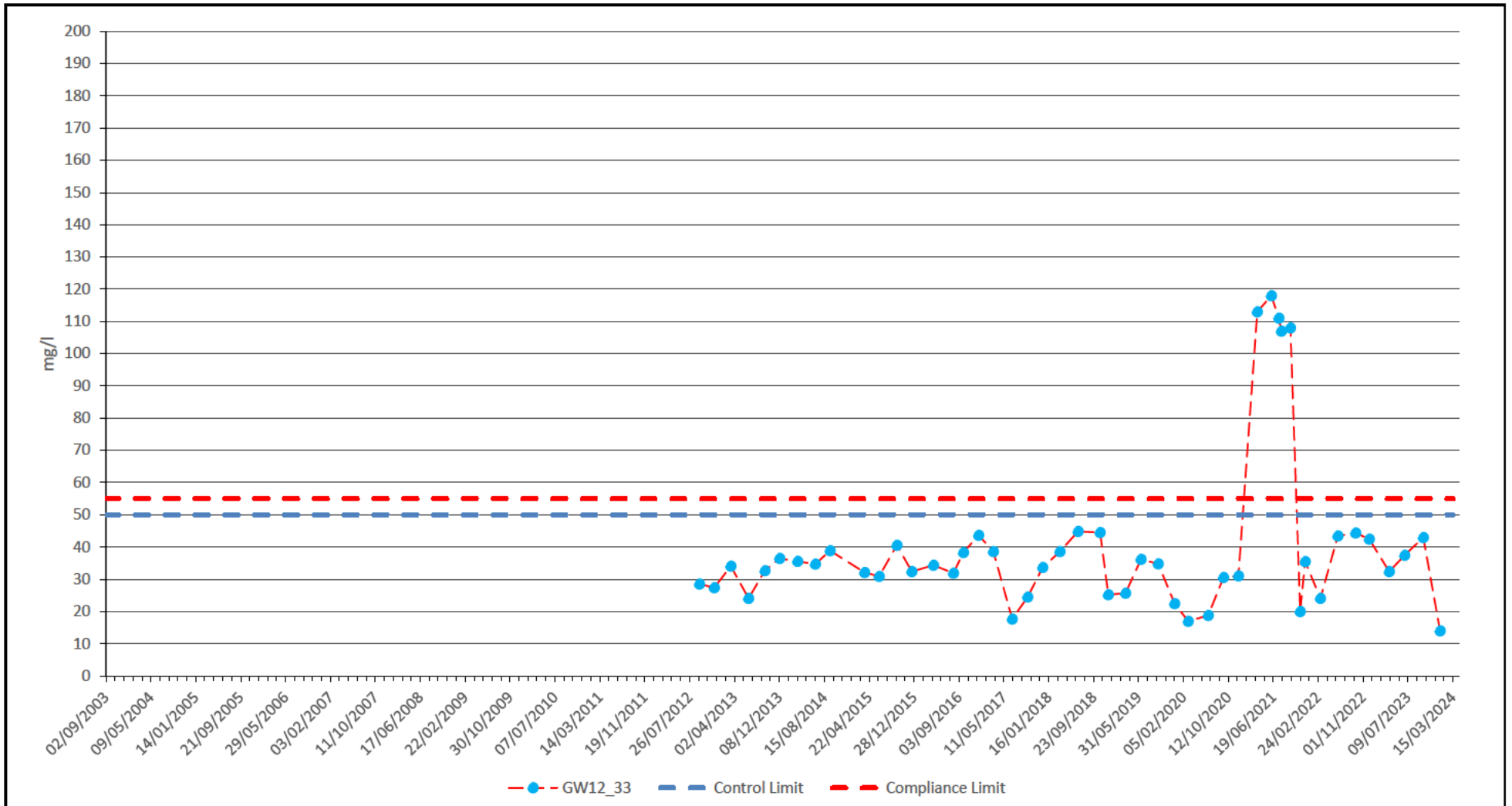
Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-35

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Groundwater\Excel\[2-35 Potassium.xlsm]Summary



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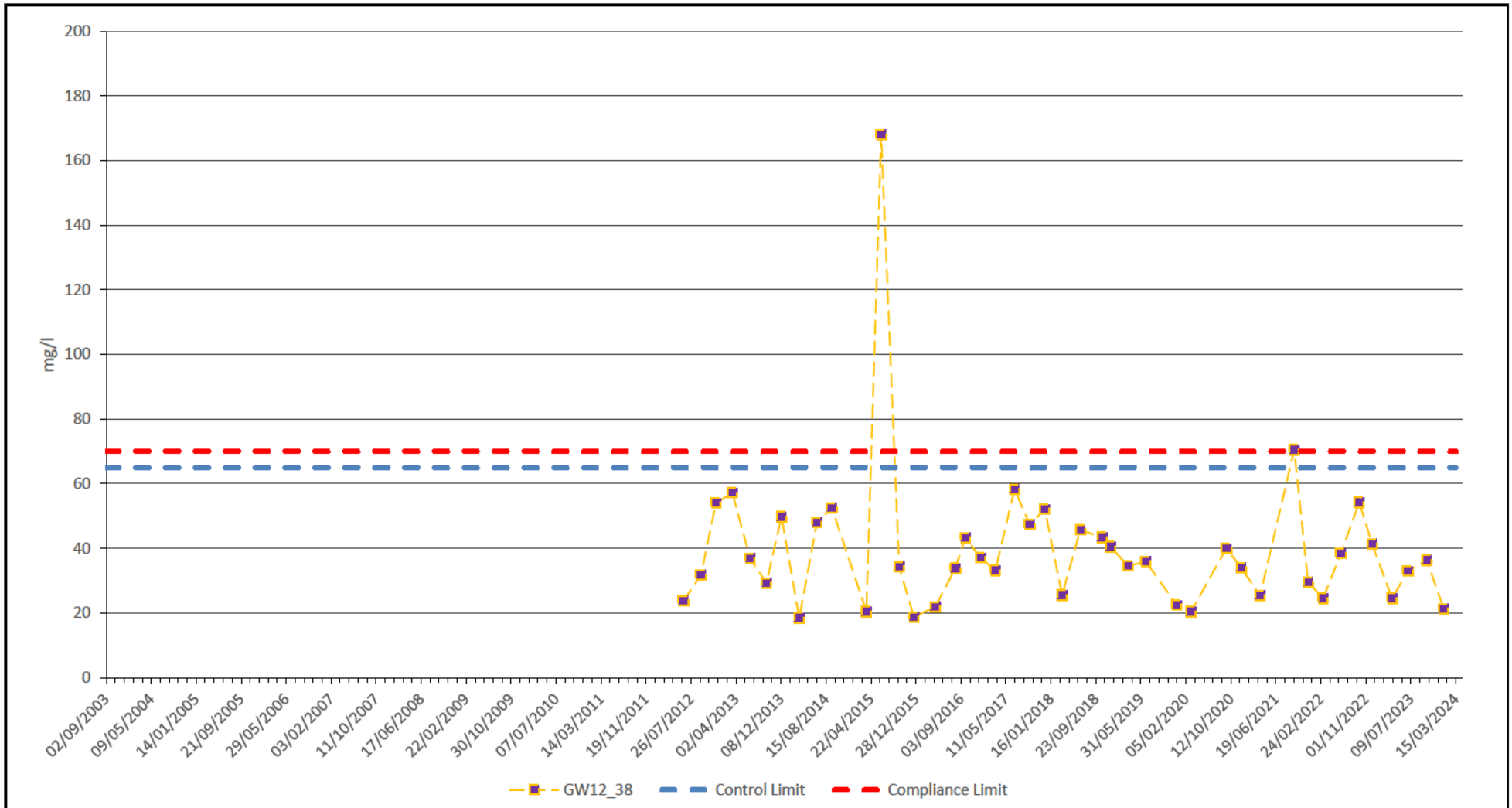
Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-36

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Groundwater\Excel\[2-36 Potassium.xlsm]Summary



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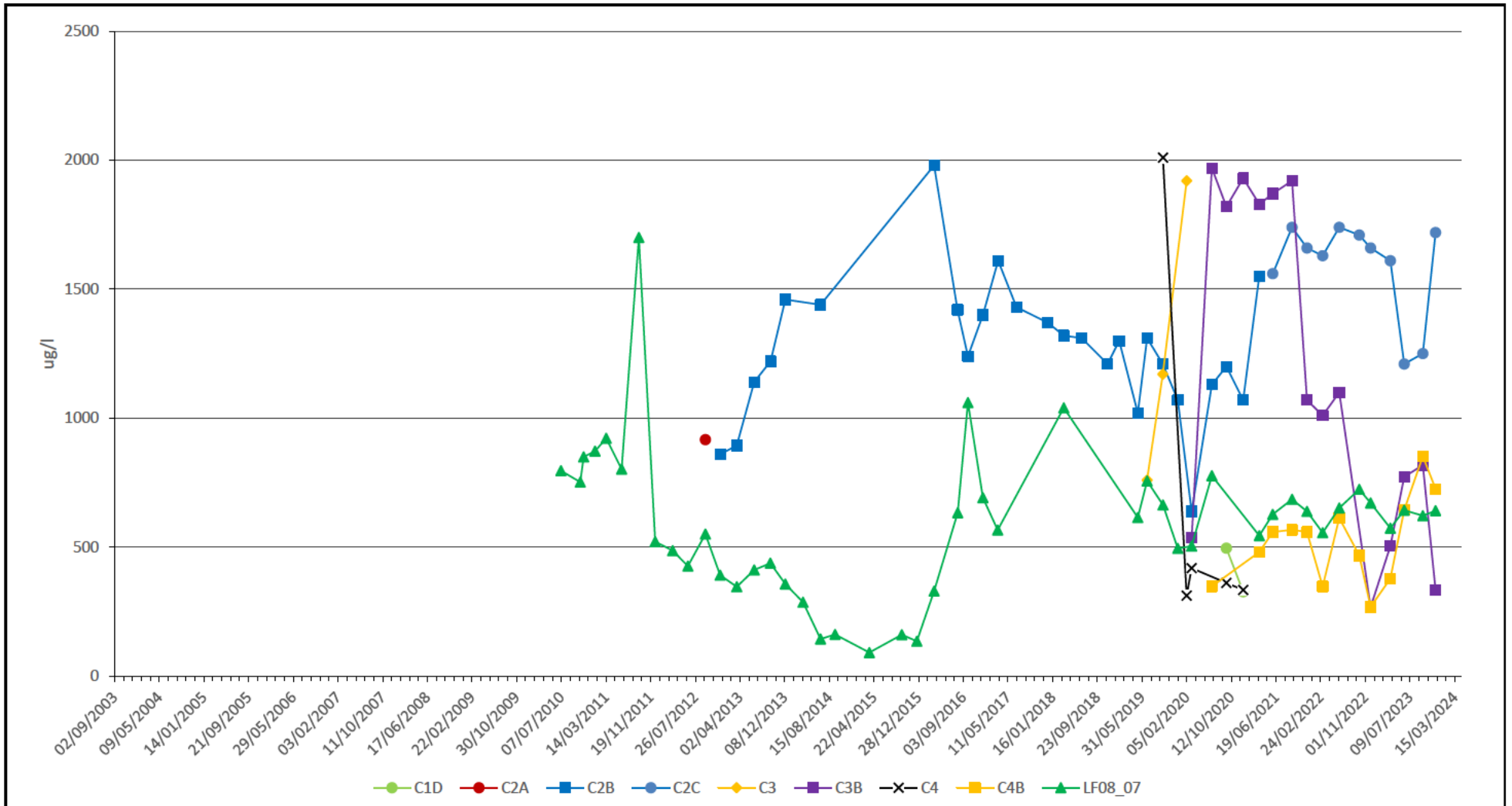
Docksway Disposal Site

Potassium in Groundwater

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	2-37

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Groundwater\Excel\[2-37 Potassium.xlsm]Summary

Appendix 3 Leachate Chemistry Graphs



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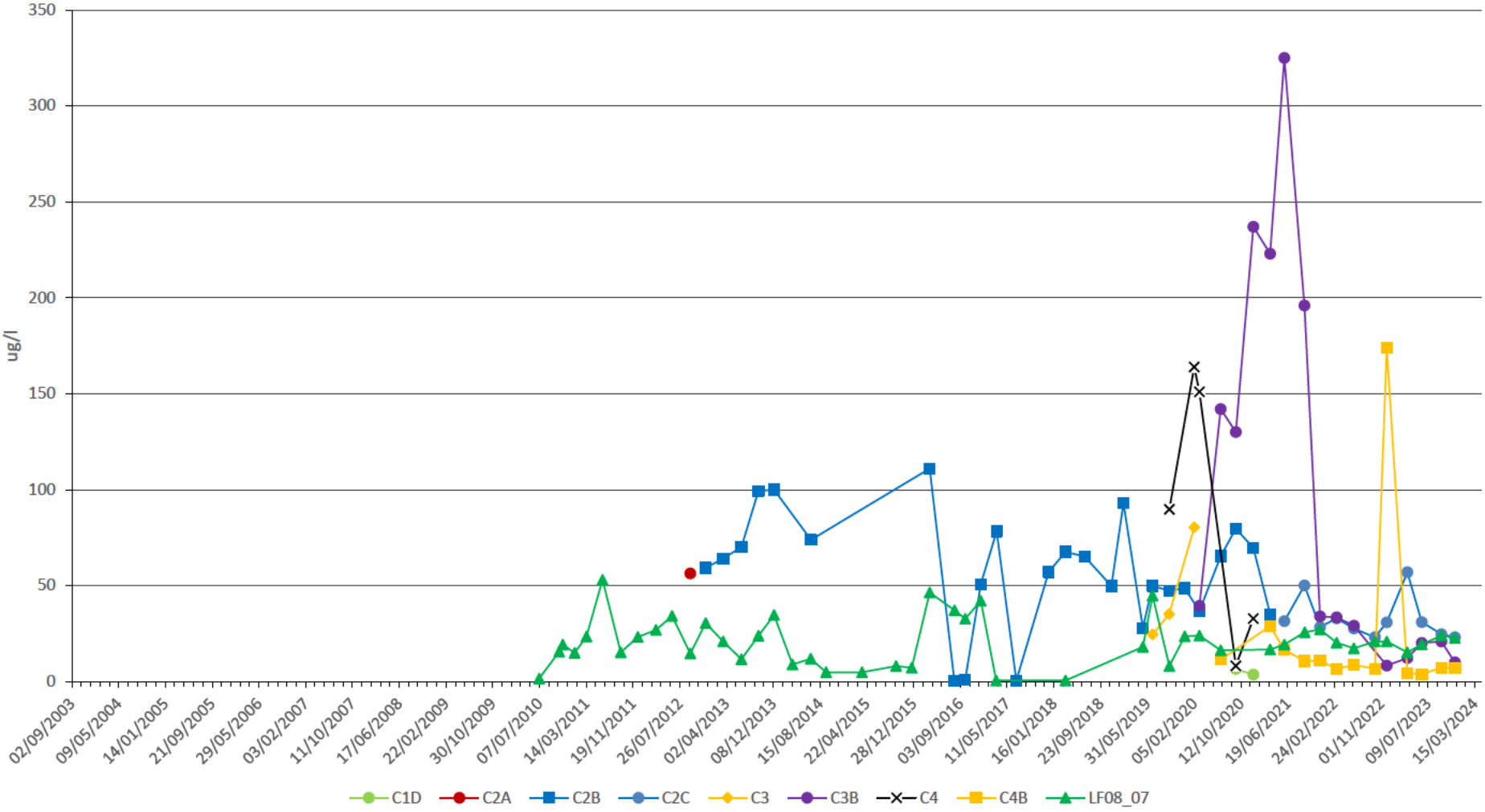
Docksway Disposal Site

Ammoniacal Nitrogen in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-1

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-1 Ammoniacal Nitrogen LCH.xlsm]Summary



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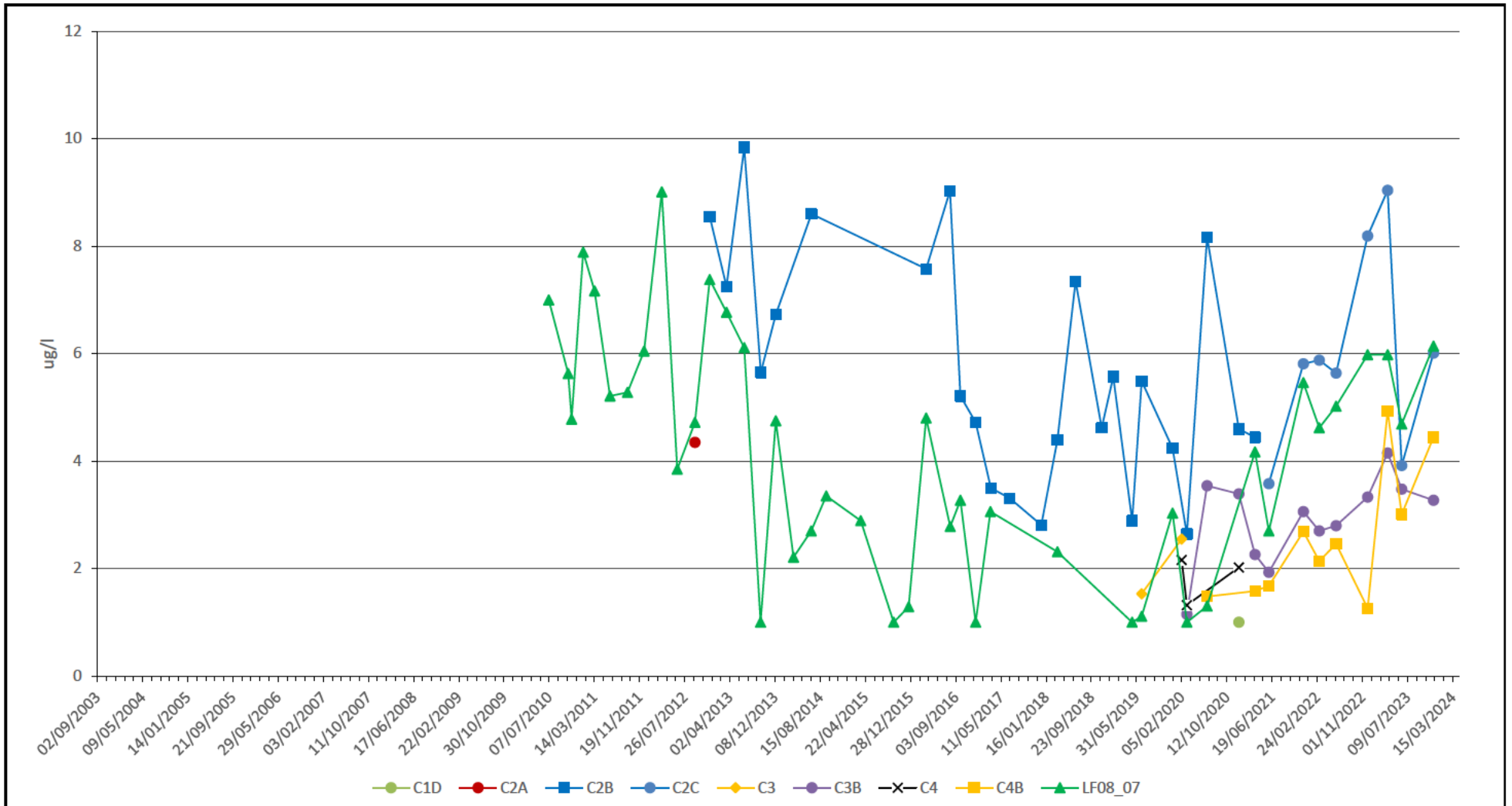
Docksway Disposal Site

Arsenic in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-2

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-2 Arsenic LCH.xlsm]Summary



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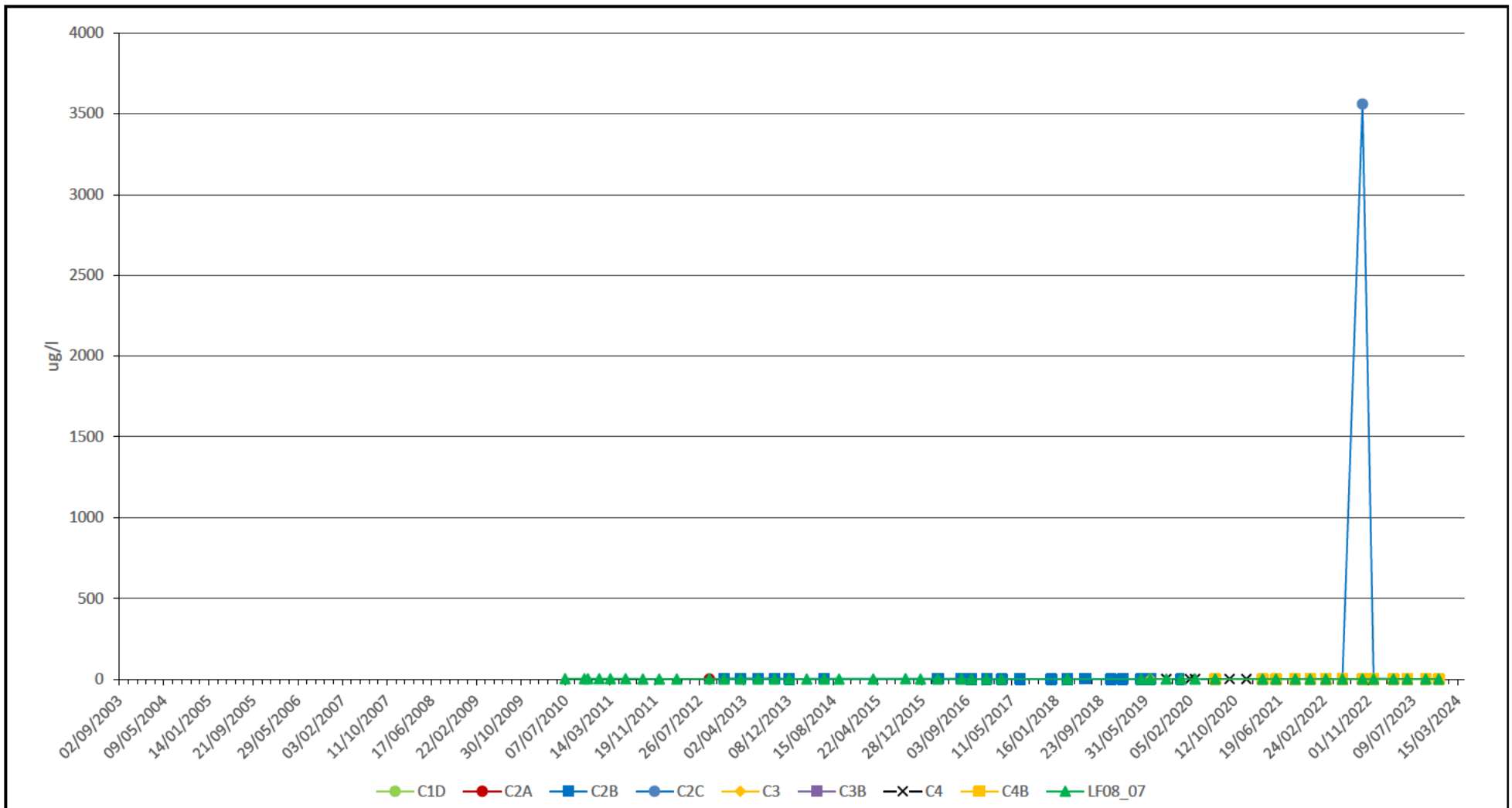
Docksway Disposal Site

Benzene in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-3

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-3 Benzene LCH.xlsm]Summary



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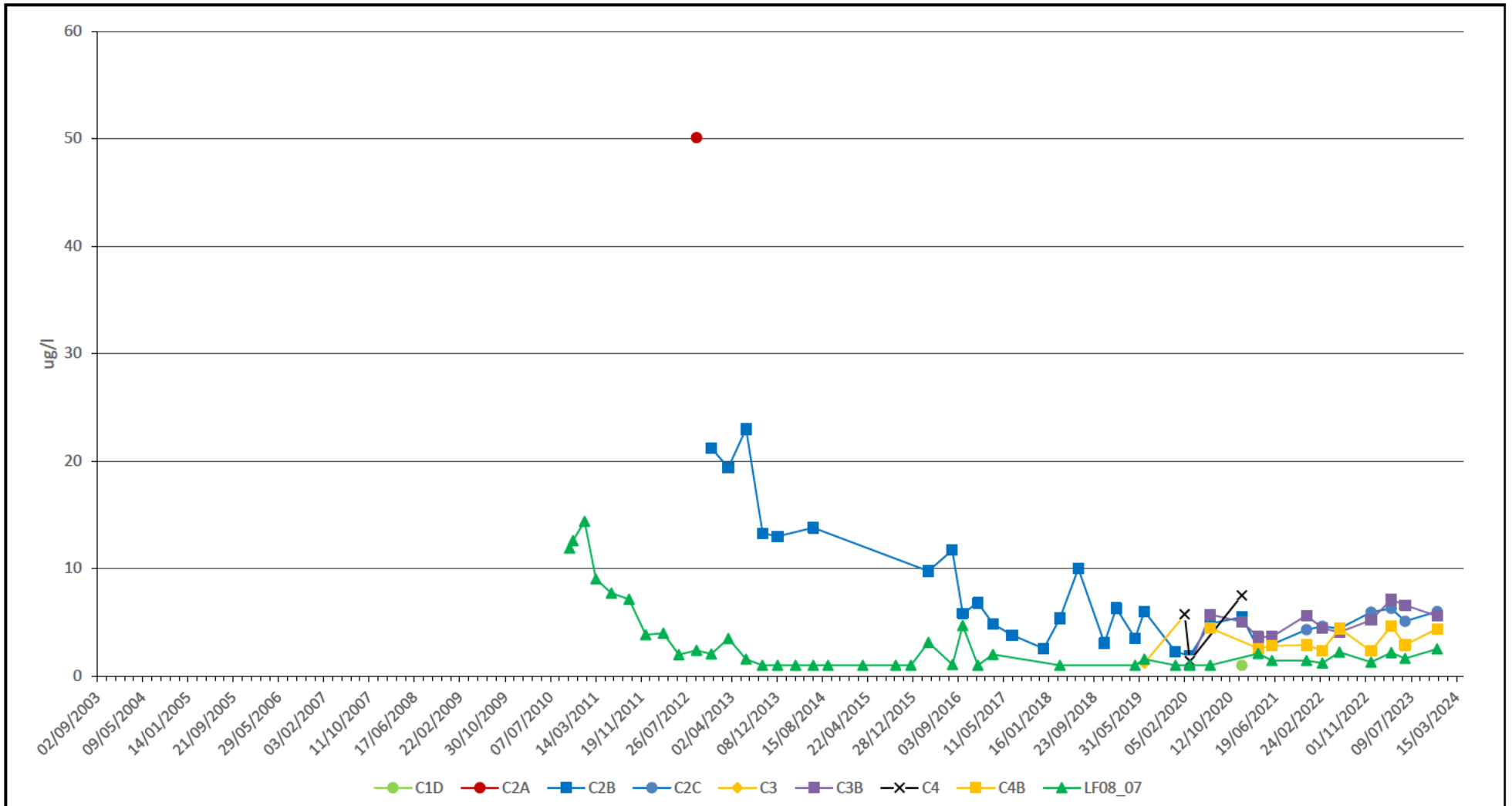
Docksway Disposal Site

Naphthalene in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-4

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-4 Naphthalene LCH.xlsm]Summary



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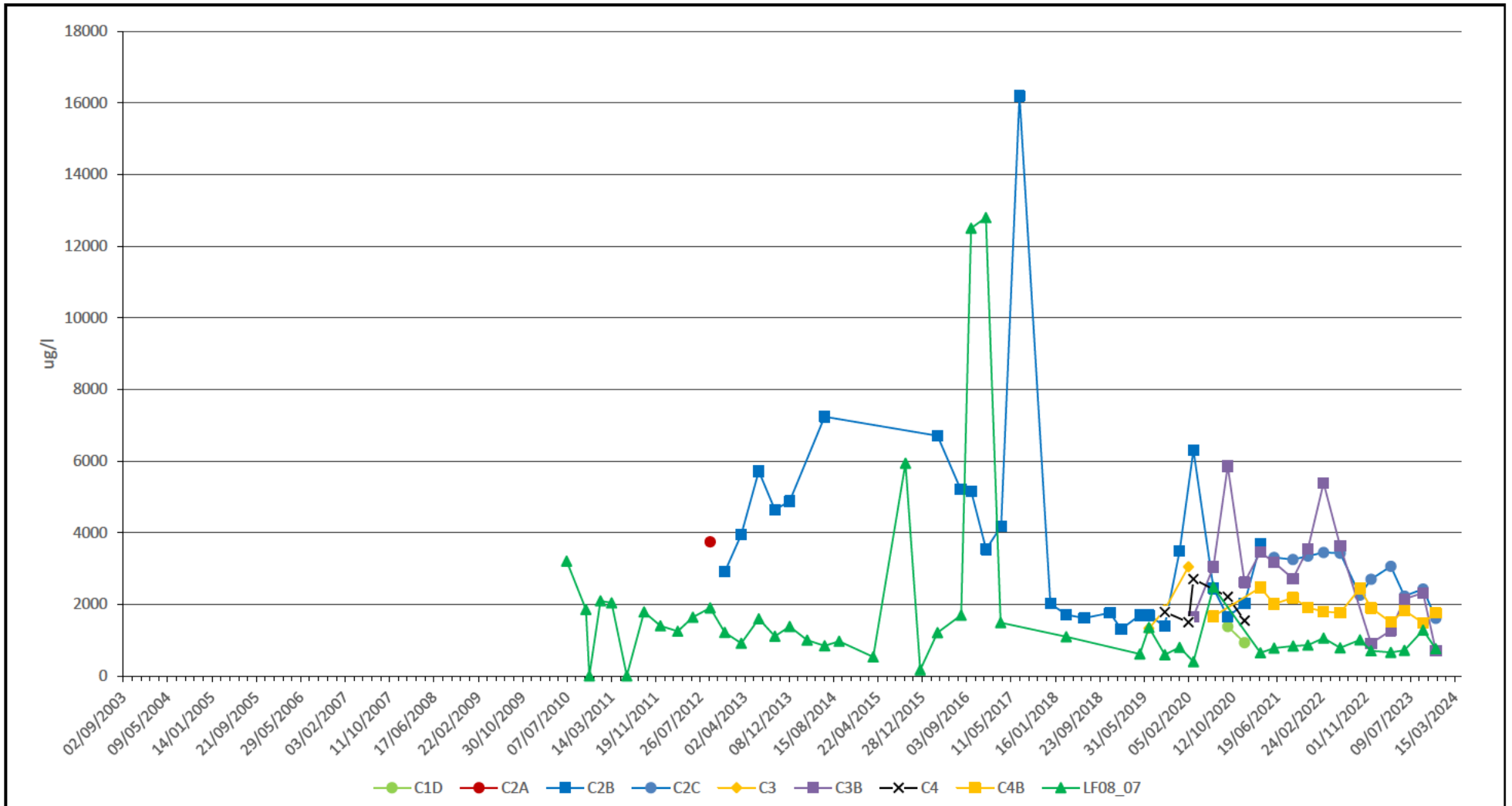
Docksway Disposal Site

o-Xylene in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-5

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-5 o-Xylene LCH.xlsm]Summary



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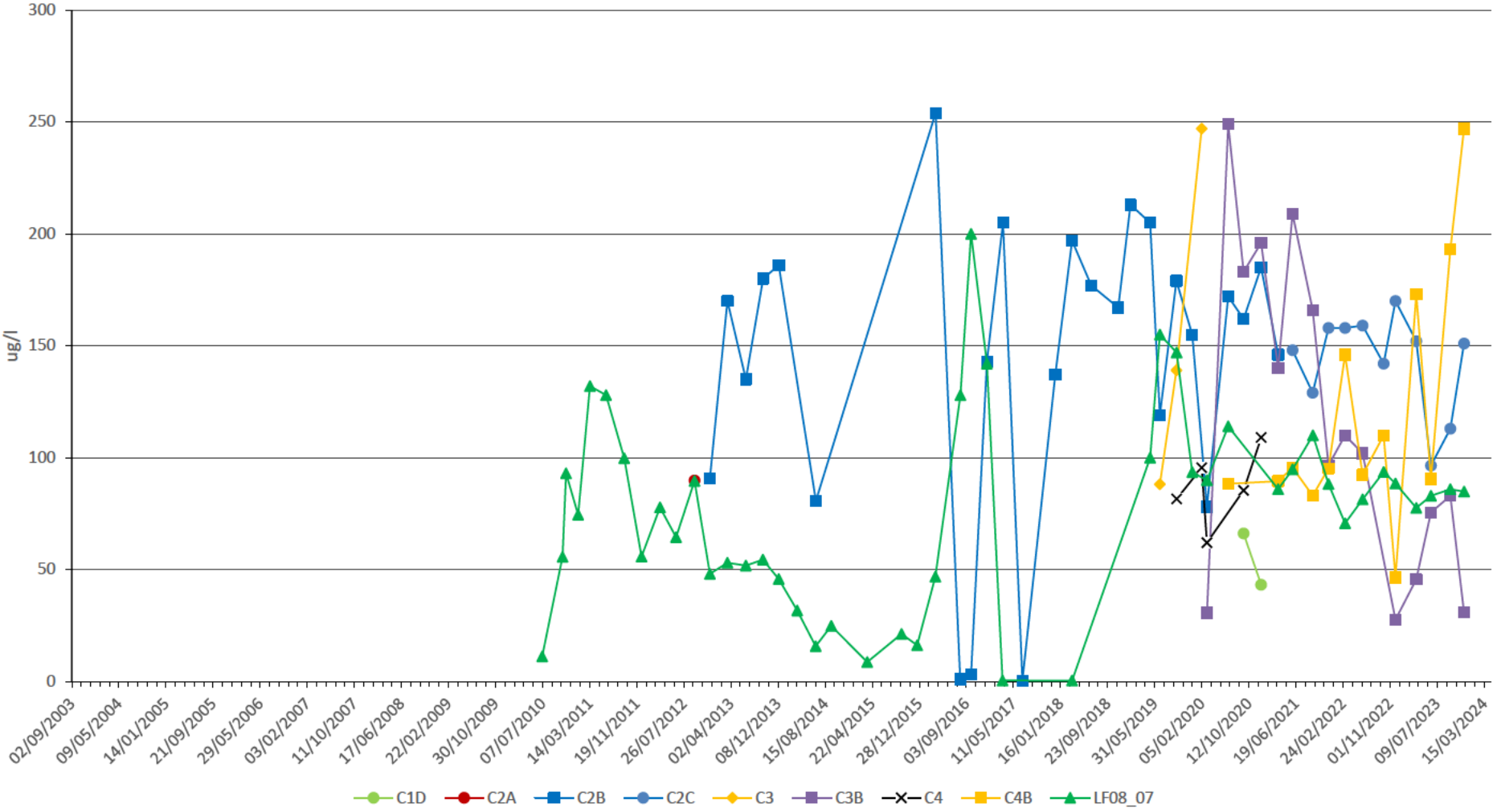
Docksway Disposal Site

EPH in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-6

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-6 EPH LCH.xlsm]Summary



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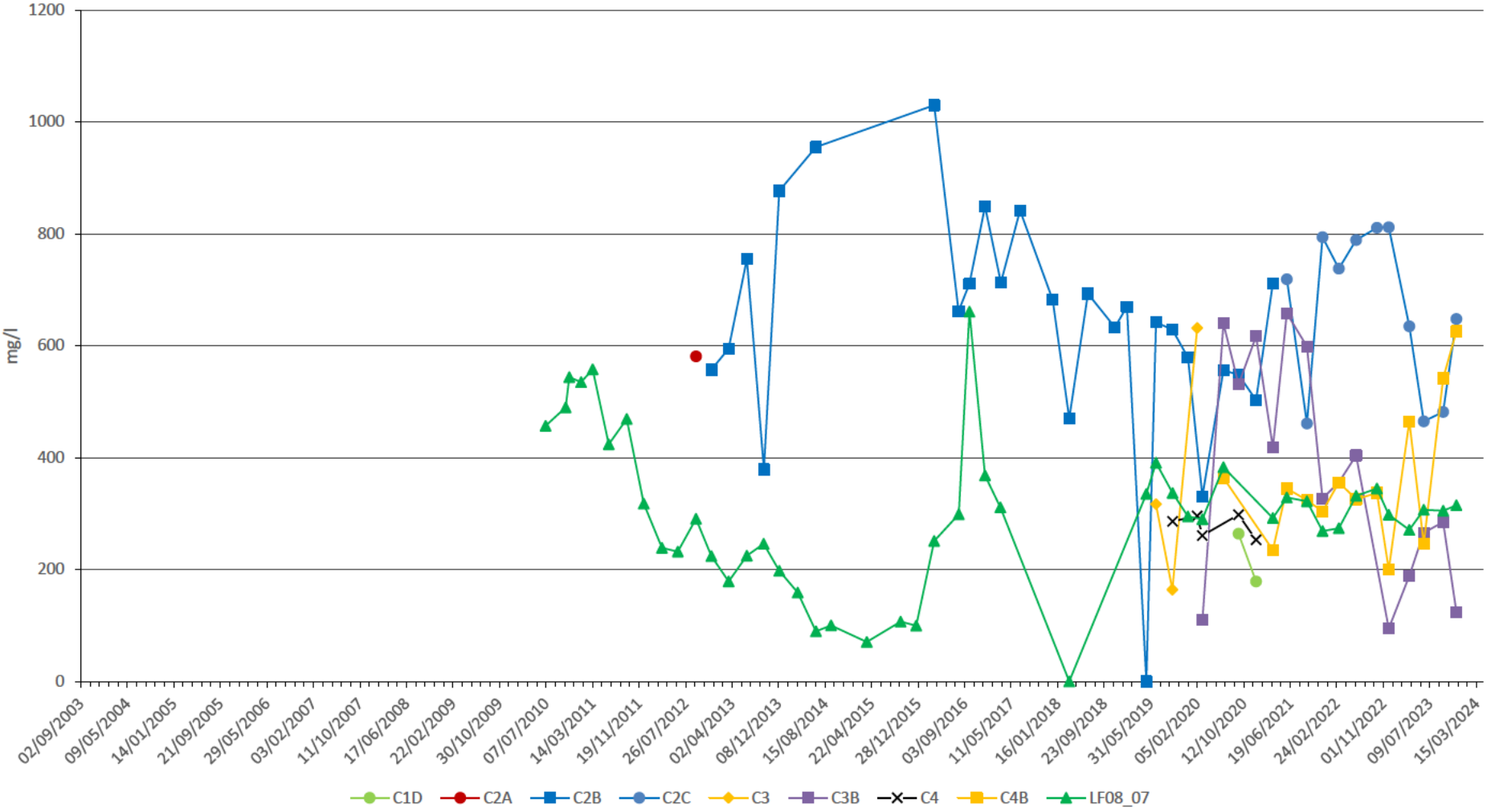
Docksway Disposal Site

Nickel in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-7

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-7 Nickel LCH.xlsm]Summary



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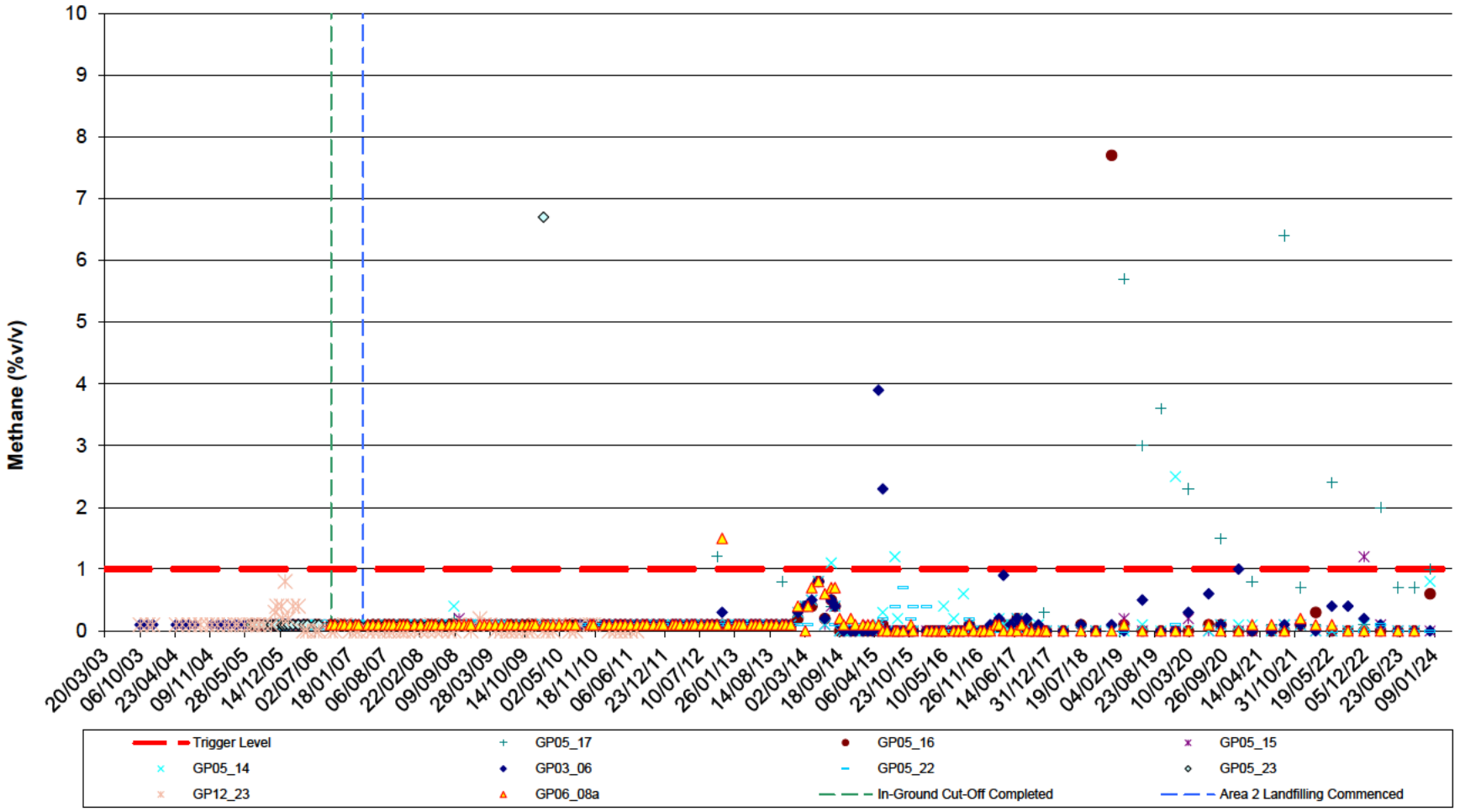
Docksway Disposal Site

Potassium in Leachate

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	3-8

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Leachate\Excel\[3-8 Potassium LCH.xlsm]Summary

Appendix 4 Gas Concentrations Graphs



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Docksway Disposal Site

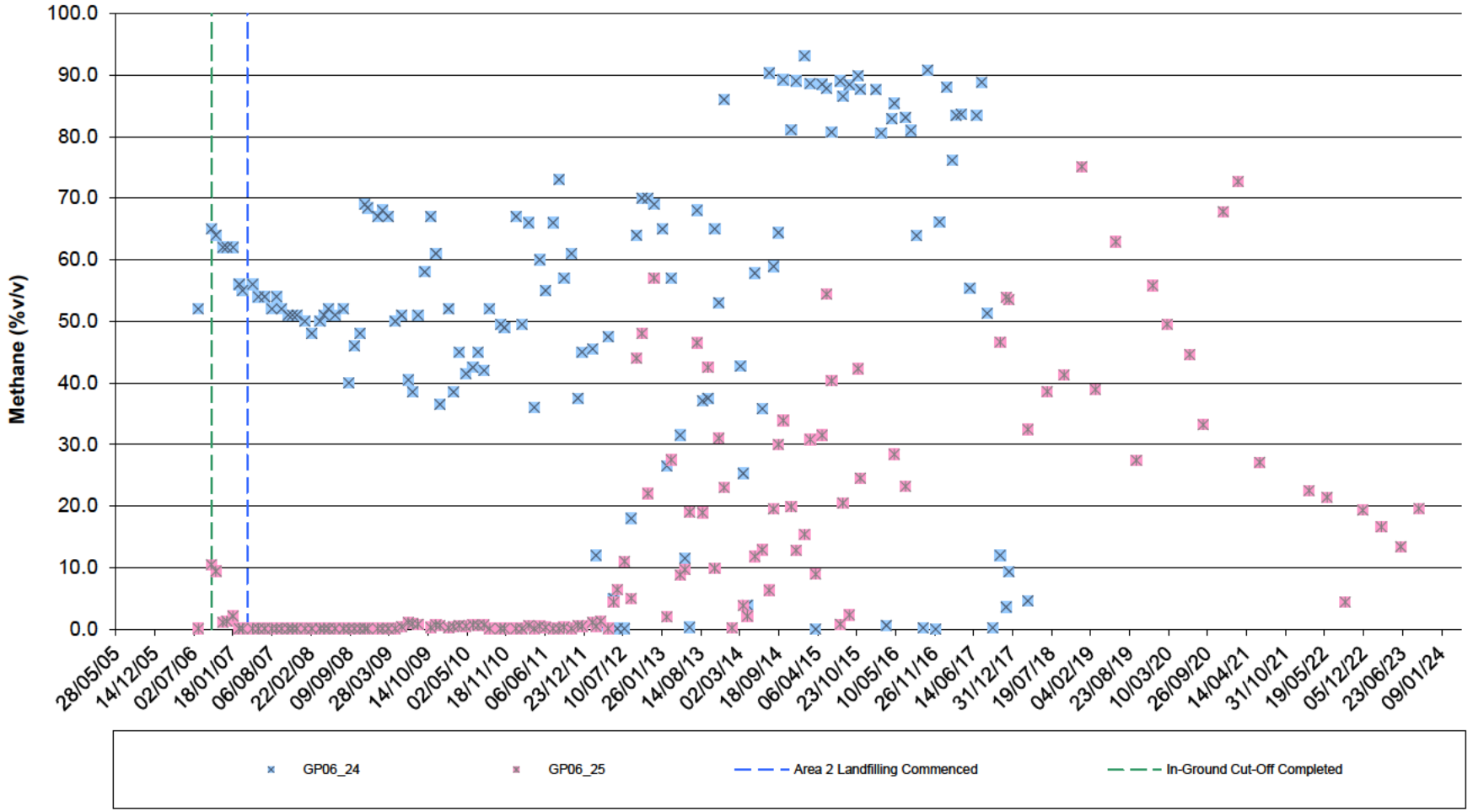
Methane Concentrations in Area 2 Gas Monitoring Wells (Excluding GP05_20, GP05_21, GP06_24, GP06_25, GP09_18)

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-1

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-1 CH4 But 20, 21, 24, 25, 18



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Newport City Council

Docksway Disposal Site

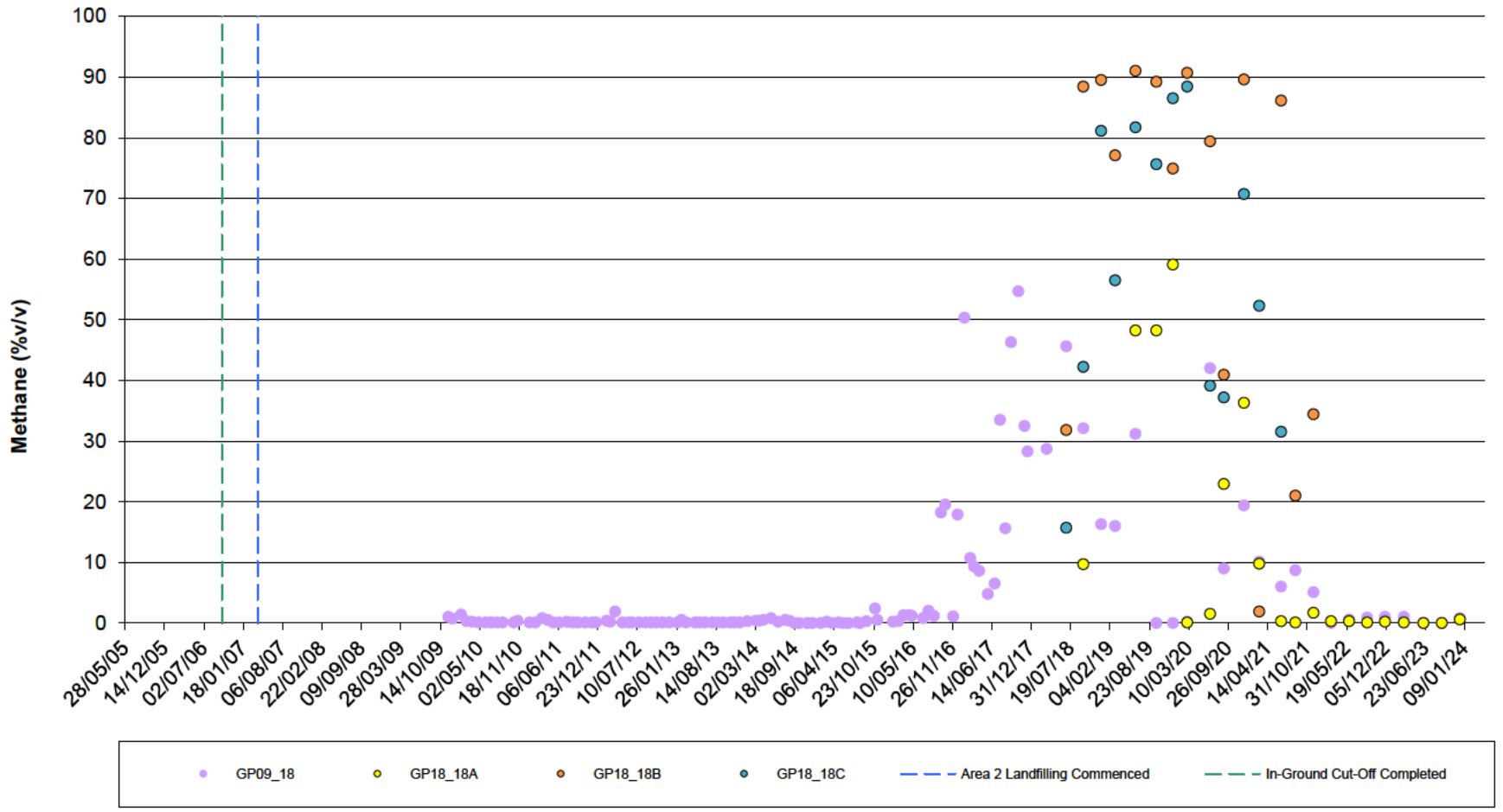
Recorded Methane Concentrations for GP06_24 and GP06_25

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-2

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-2 New Wells (CH4)



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Docksway Disposal Site

Recorded Methane Concentrations for GP09_18, GP18_18A, GP18_18B and GP18_18C

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	4-3

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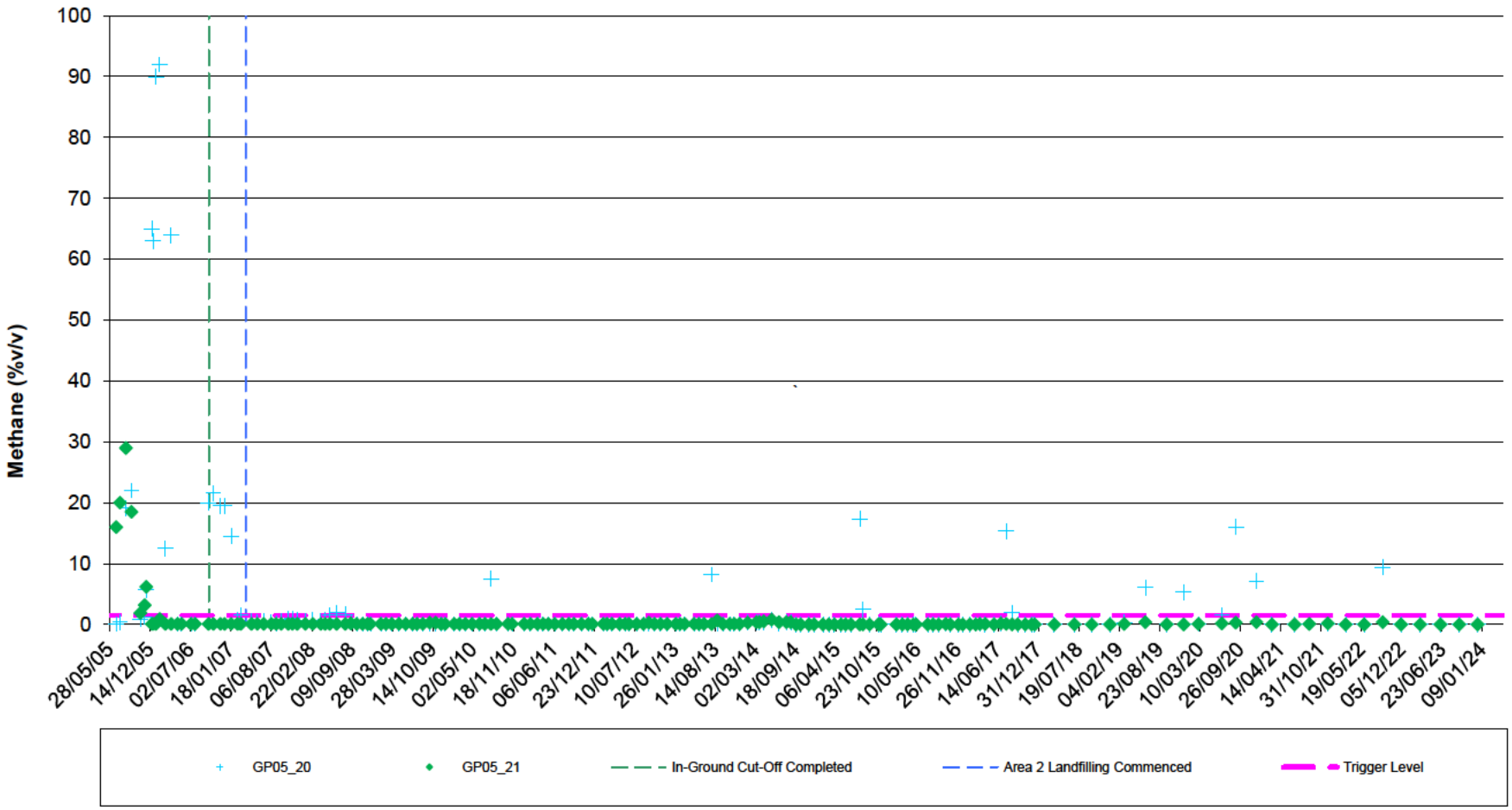

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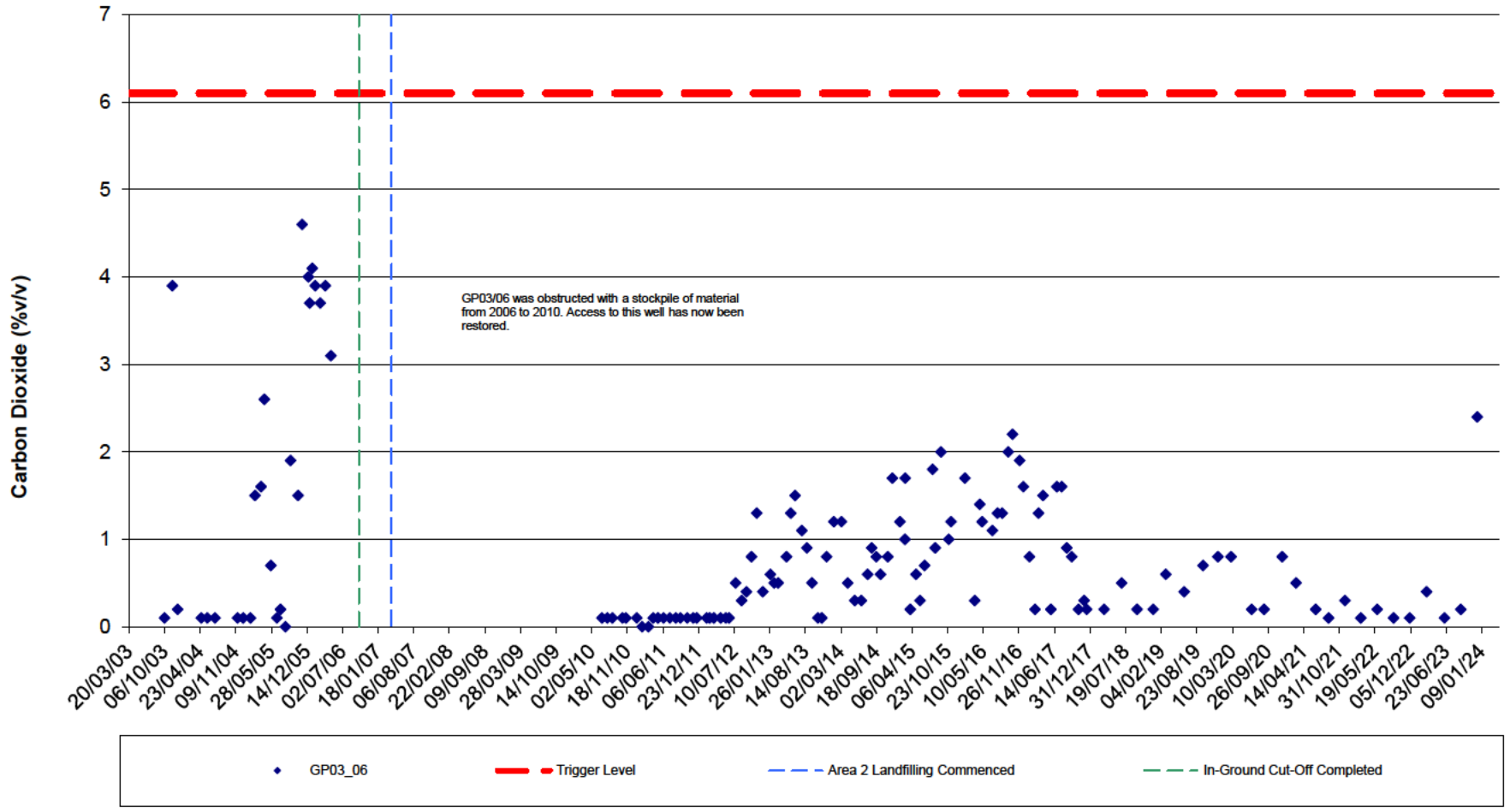
Newport City Council

Docksway Disposal Site

Recorded Methane Concentrations in GP05_20 and GP05_21

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	4-4

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-4 CH4 GP05_20+21



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Docksway Disposal Site

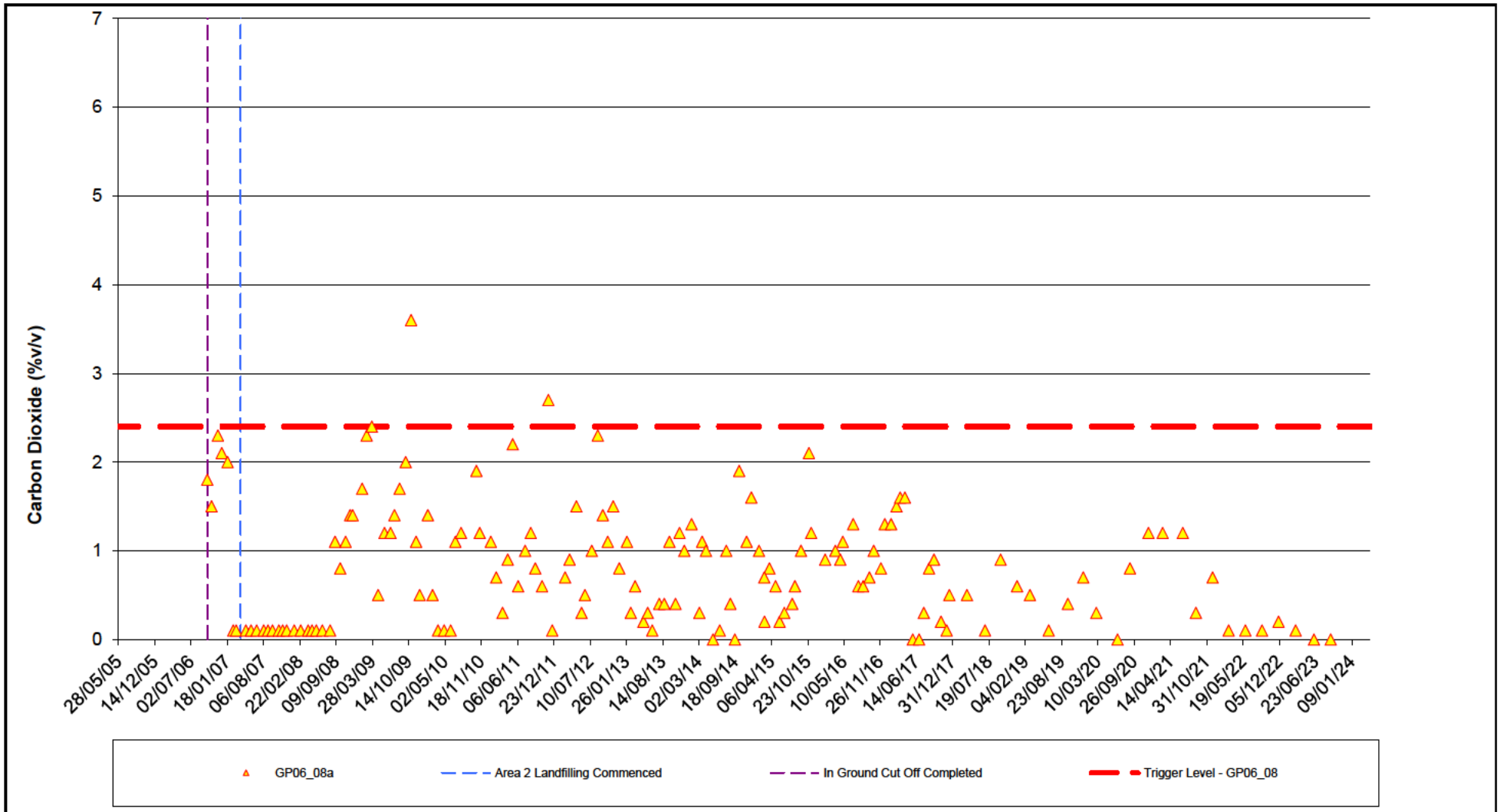
Recorded Carbon Dioxide Concentrations in GP03_06

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-5

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-5 CO2 GP03_06



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Docksway Disposal Site

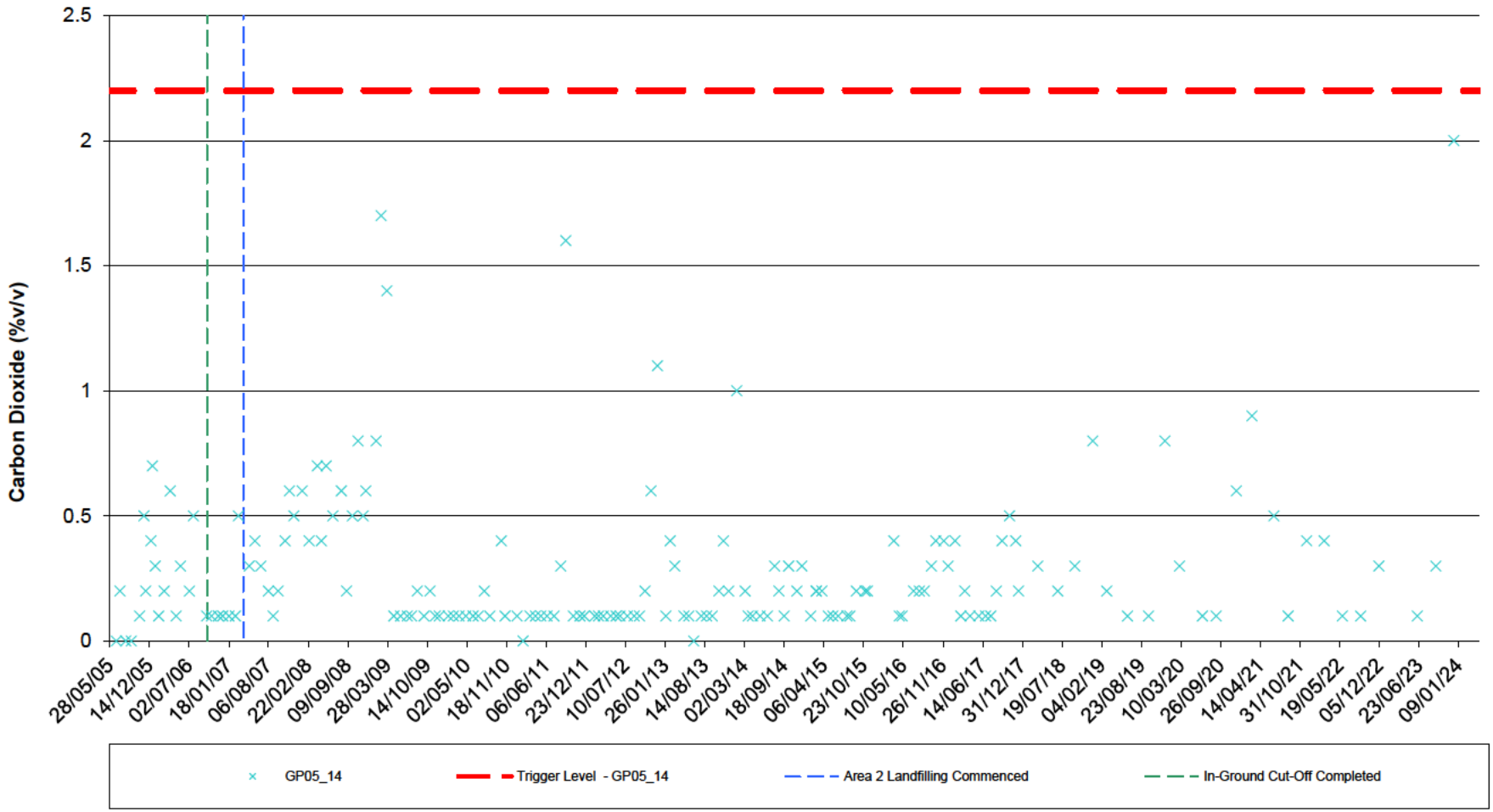
Recorded Carbon Dioxide Concentrations in GP06_08a

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-6

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-6 CO2 GP06_08a



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Docksway Disposal Site

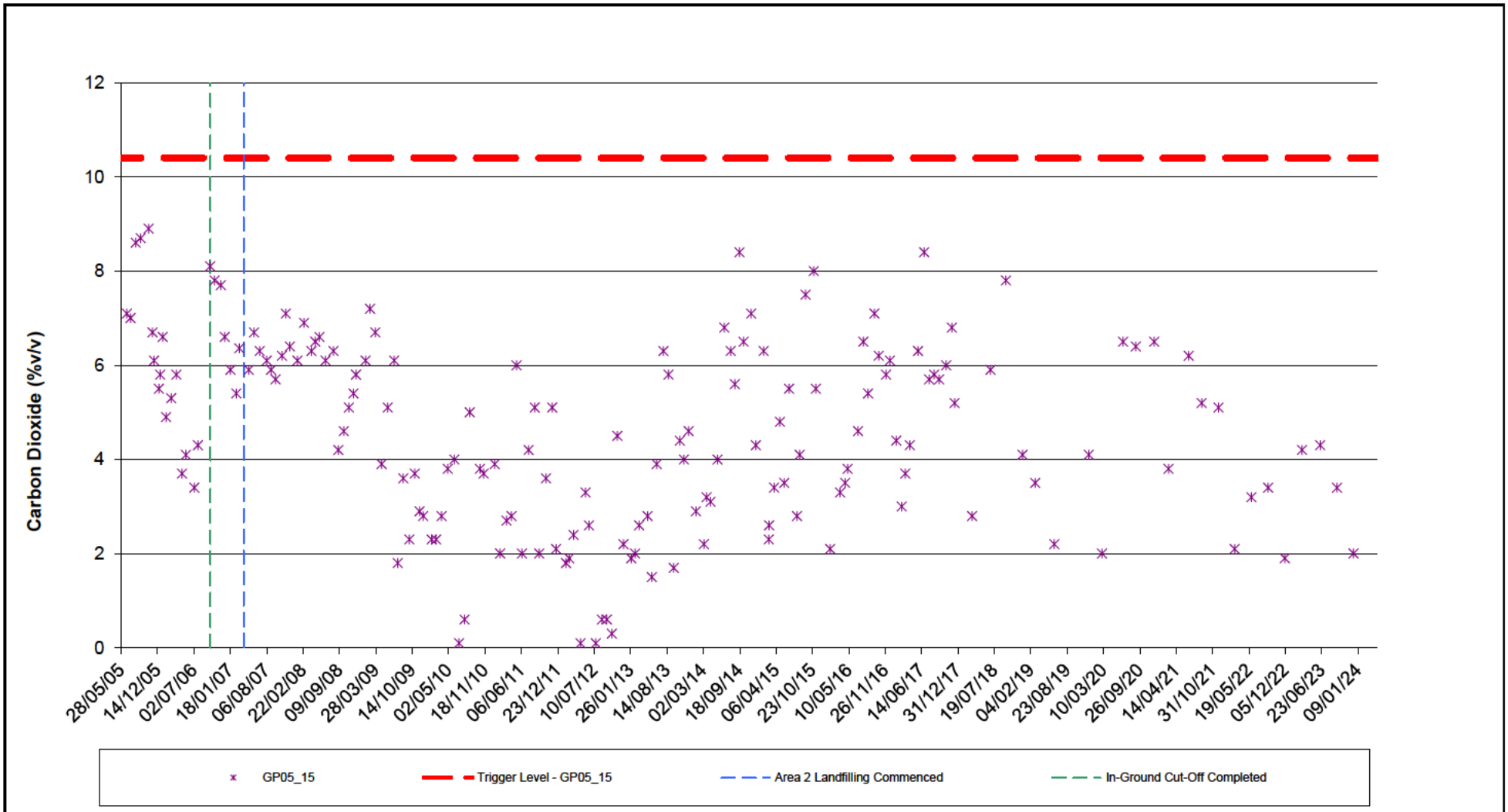
Recorded Carbon Dioxide Concentrations in GP05_14

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-7

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-7 CO2 GP05_14



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Docksway Disposal Site

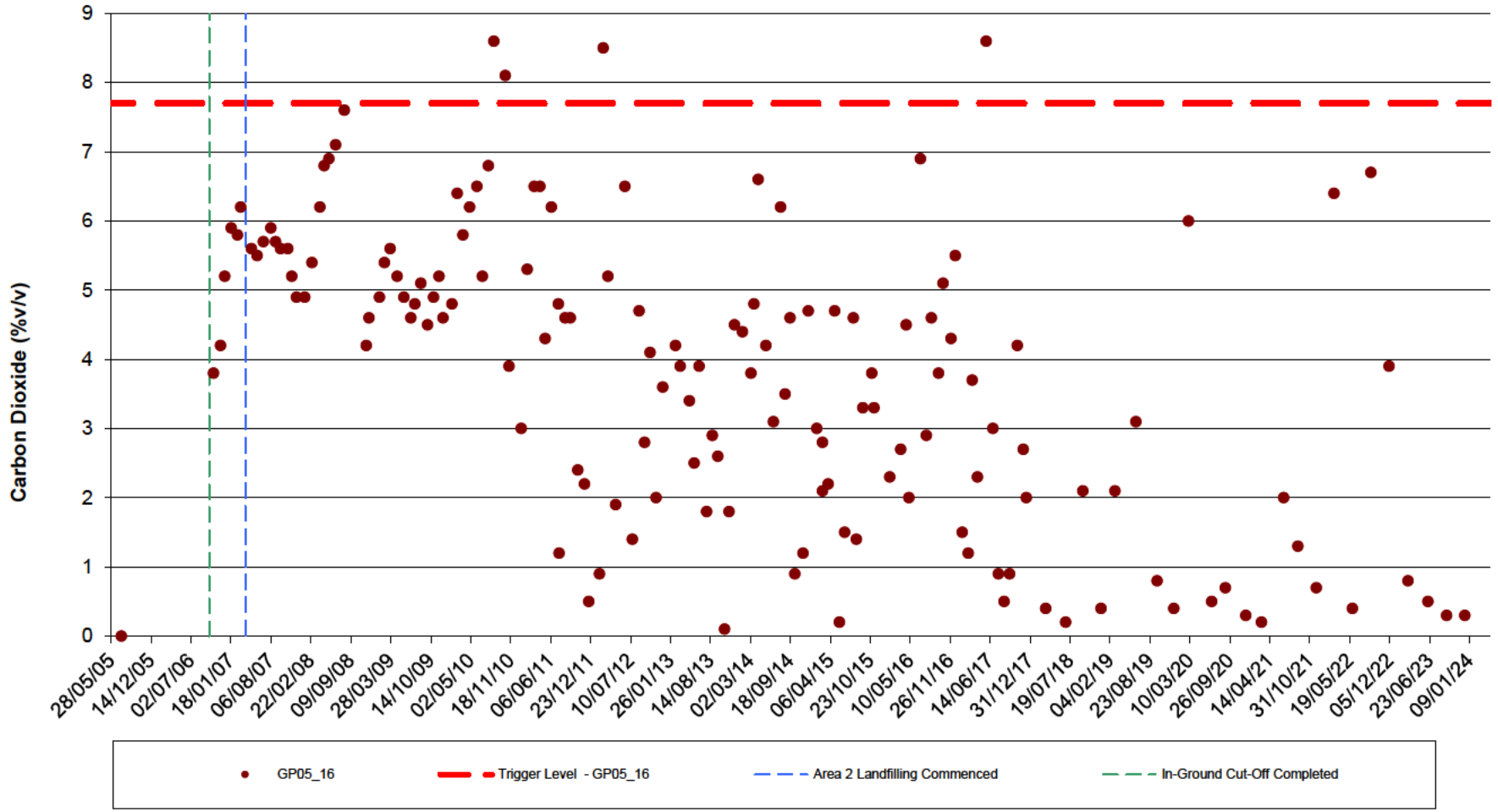
Recorded Carbon Dioxide Concentrations in GP05_15

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-8

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-8 CO2 GP05_15



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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_16

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-9

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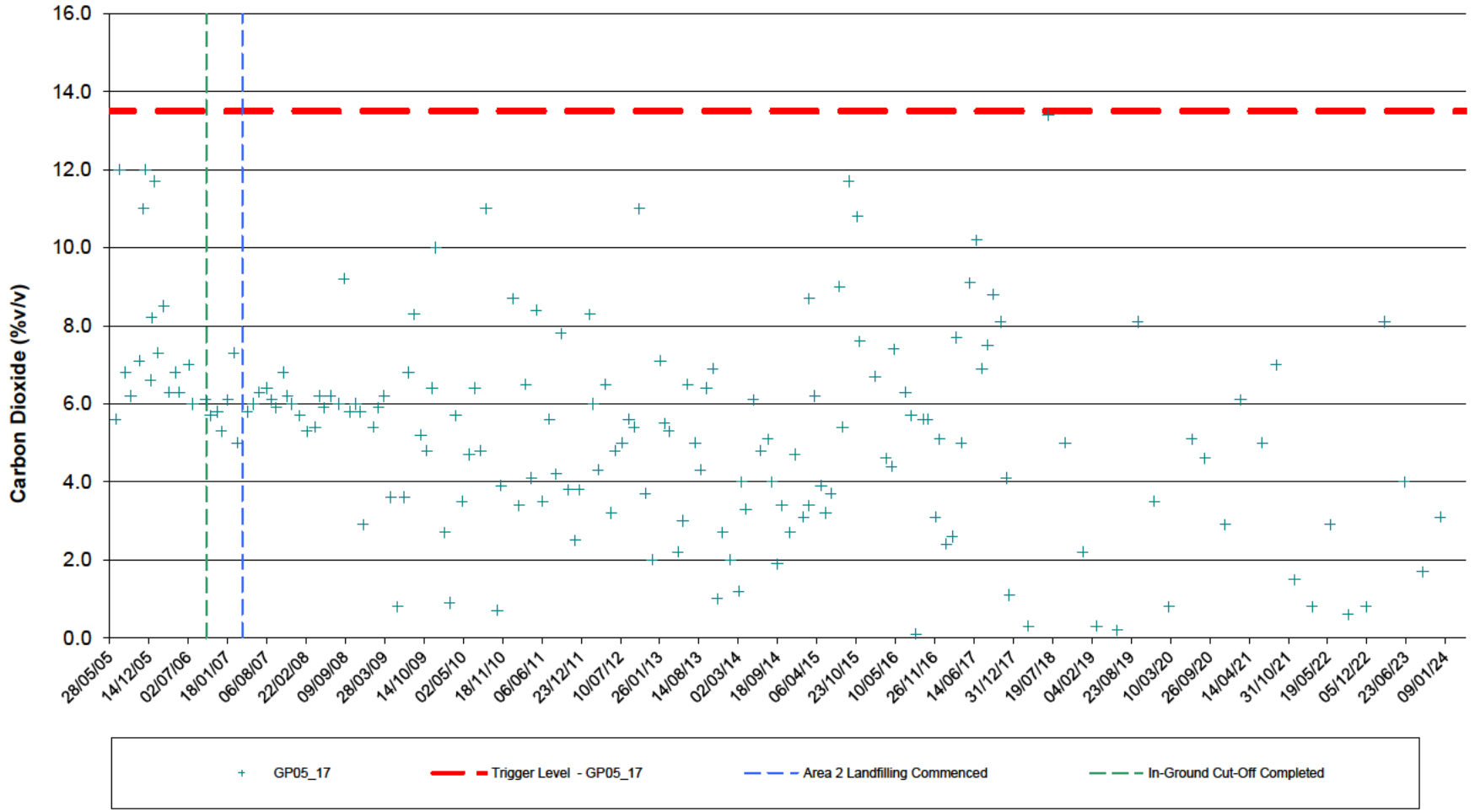

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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_17

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-10

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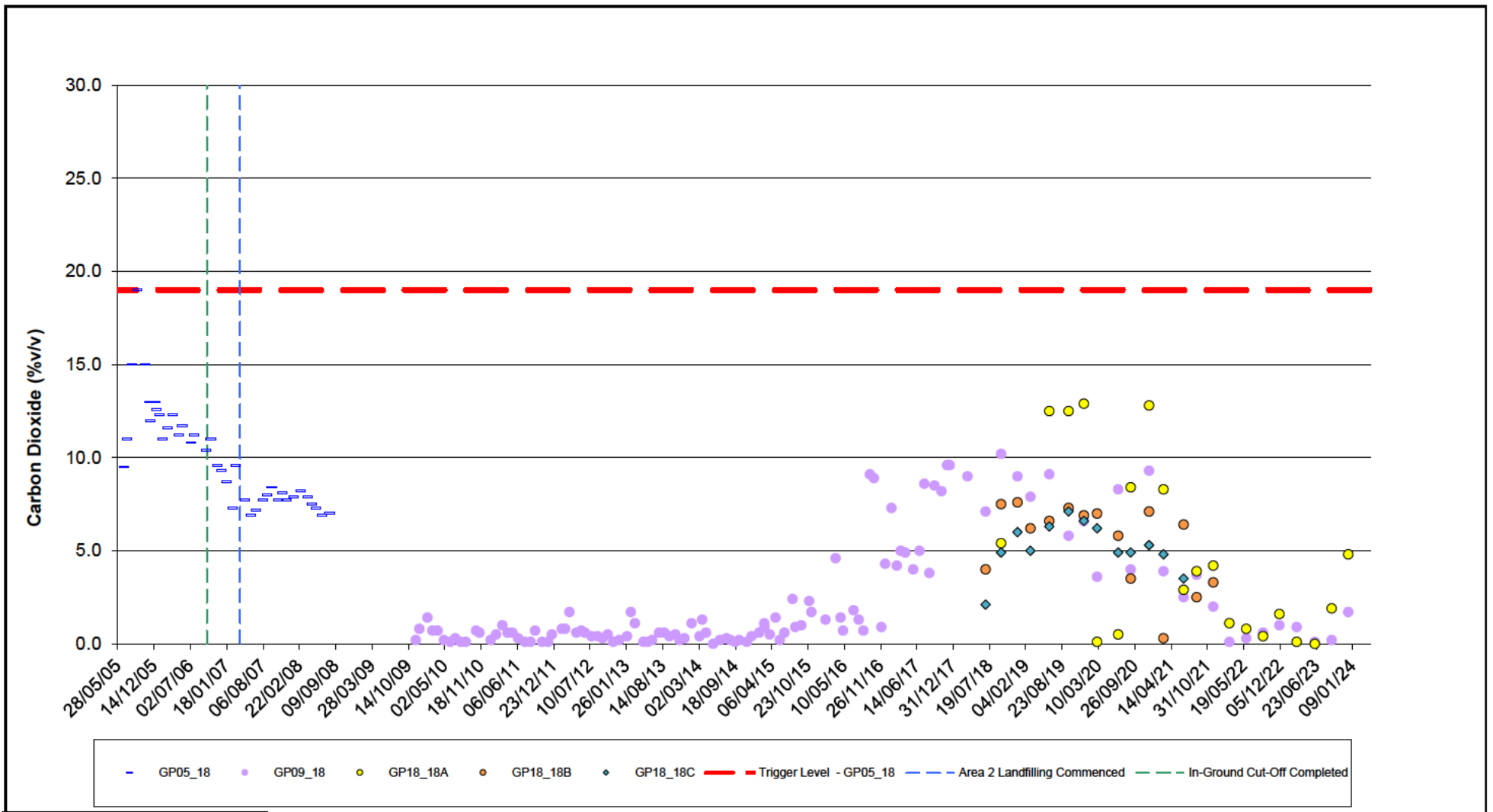

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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_18, GP09_18, GP09_18A, GP09_18B and GP09_18C

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-11

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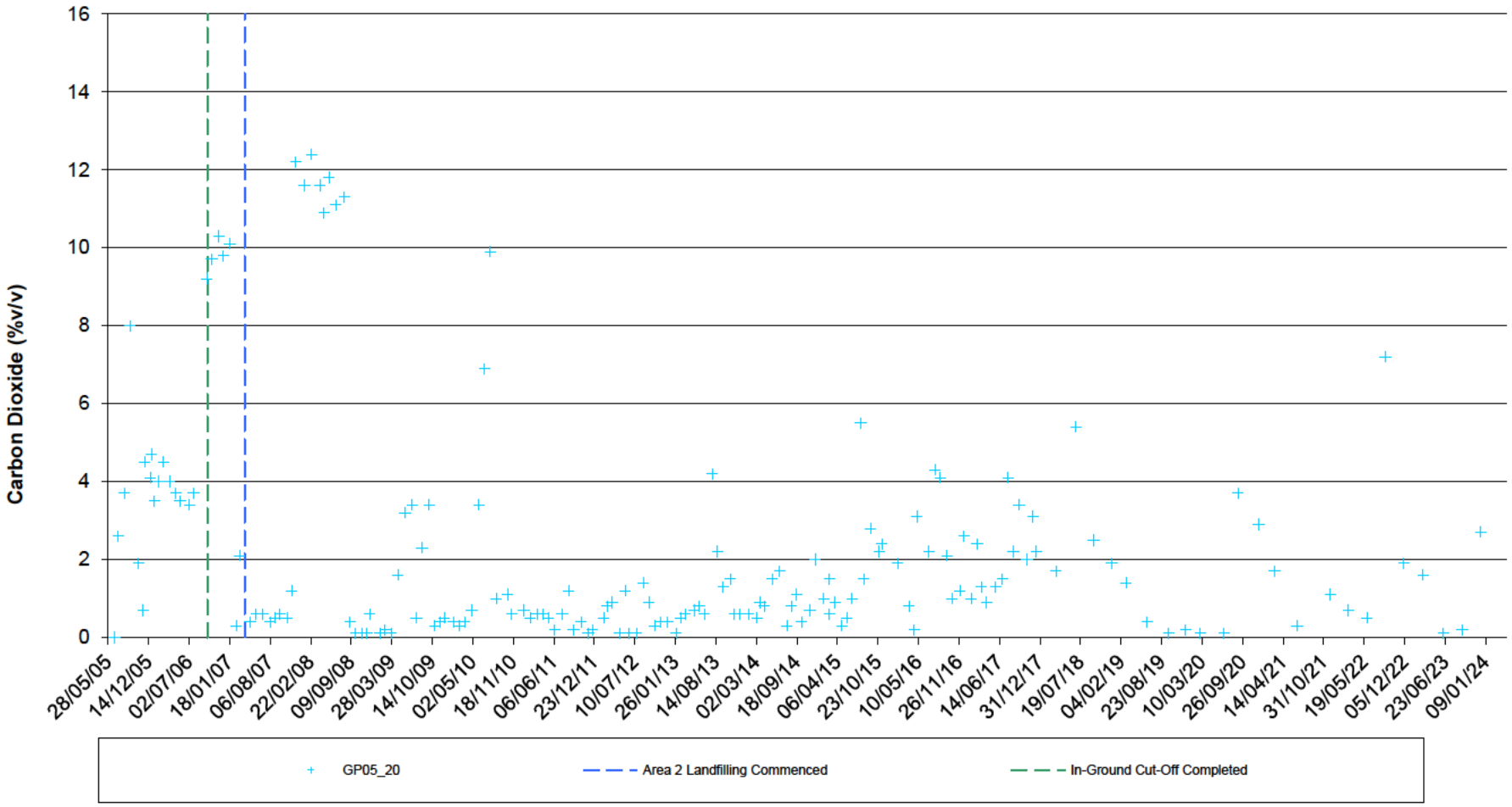

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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_20

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-12

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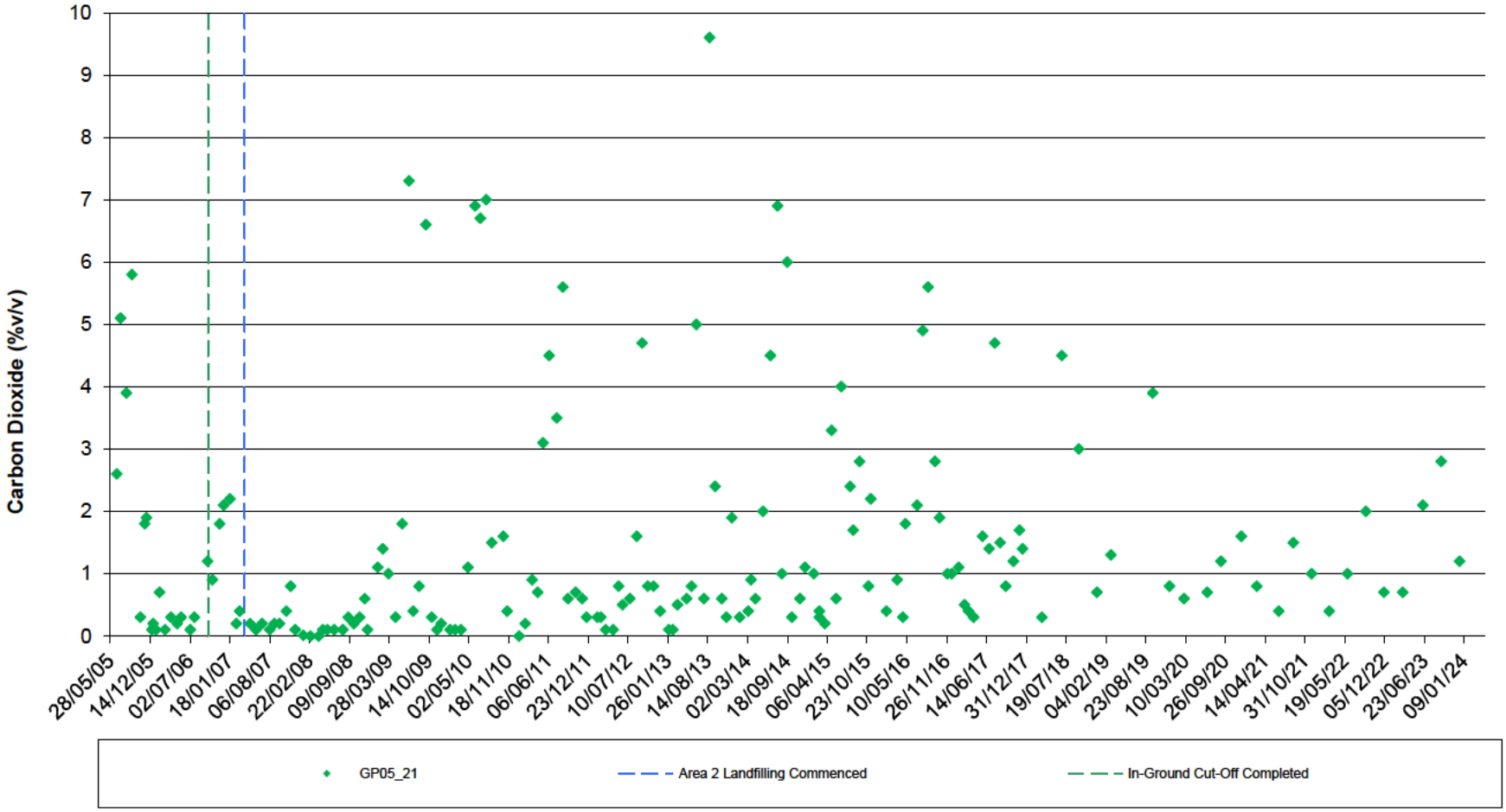

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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_21

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-13

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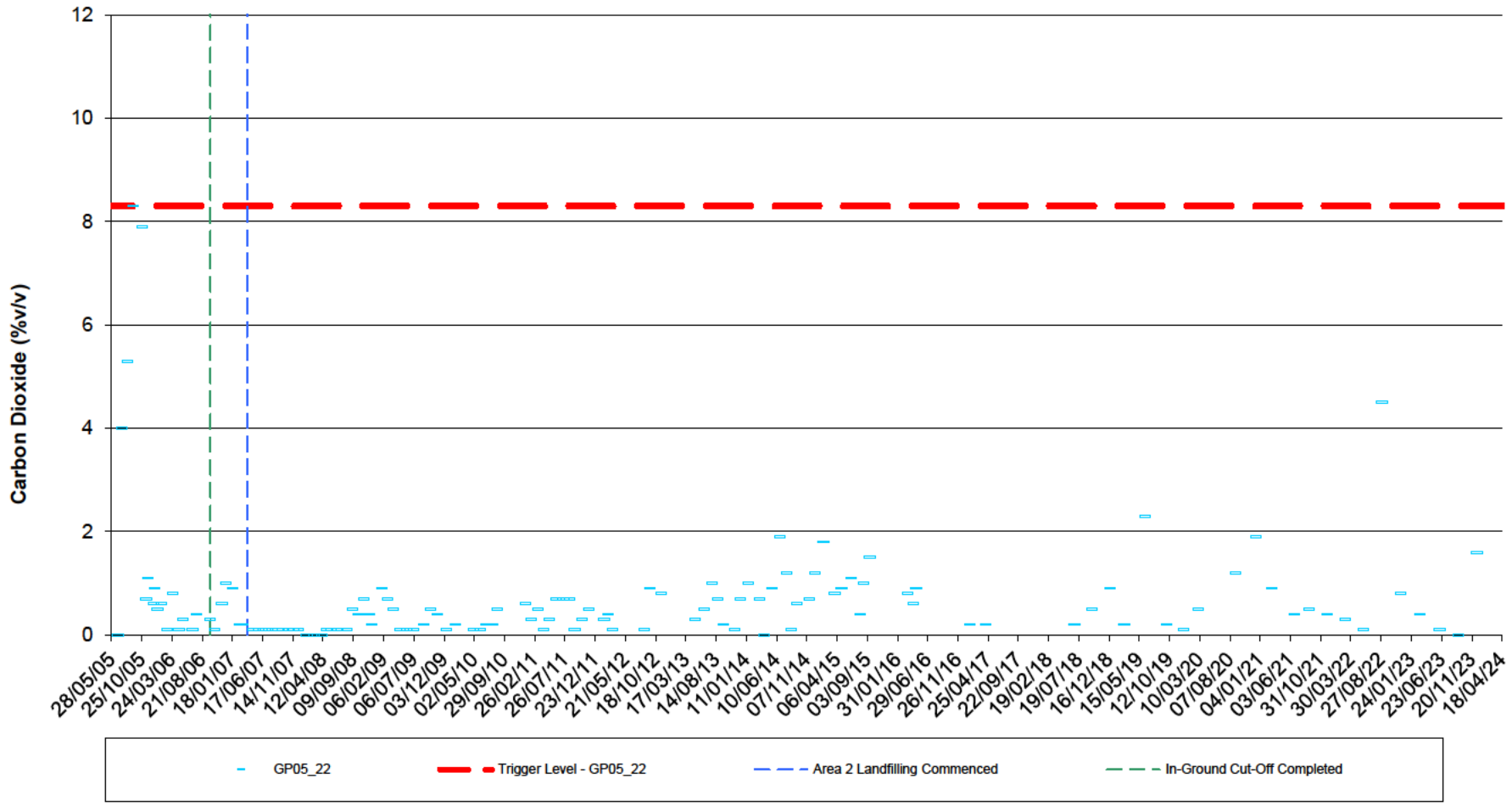

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Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_22

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC

Appendix

4-14

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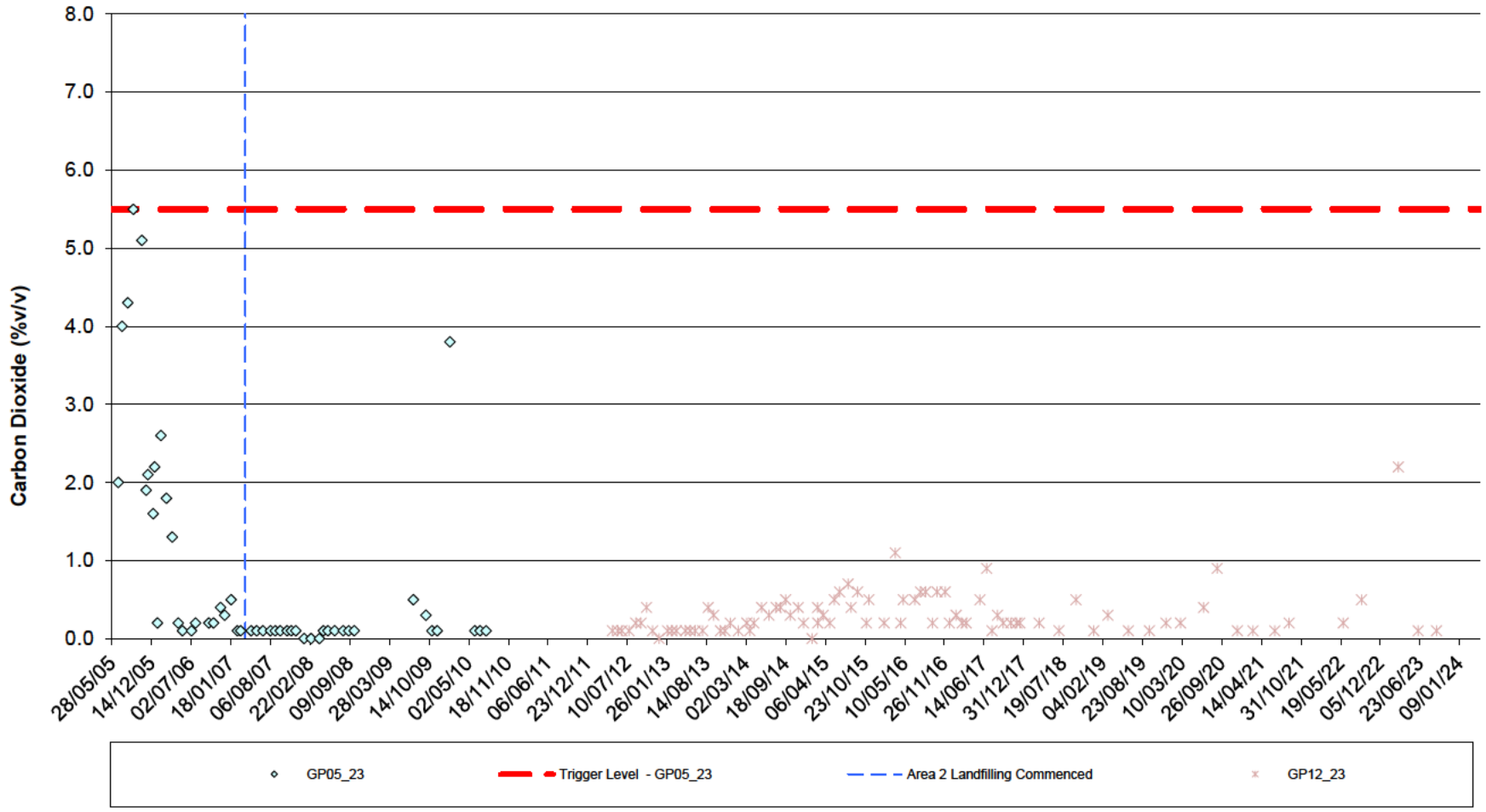

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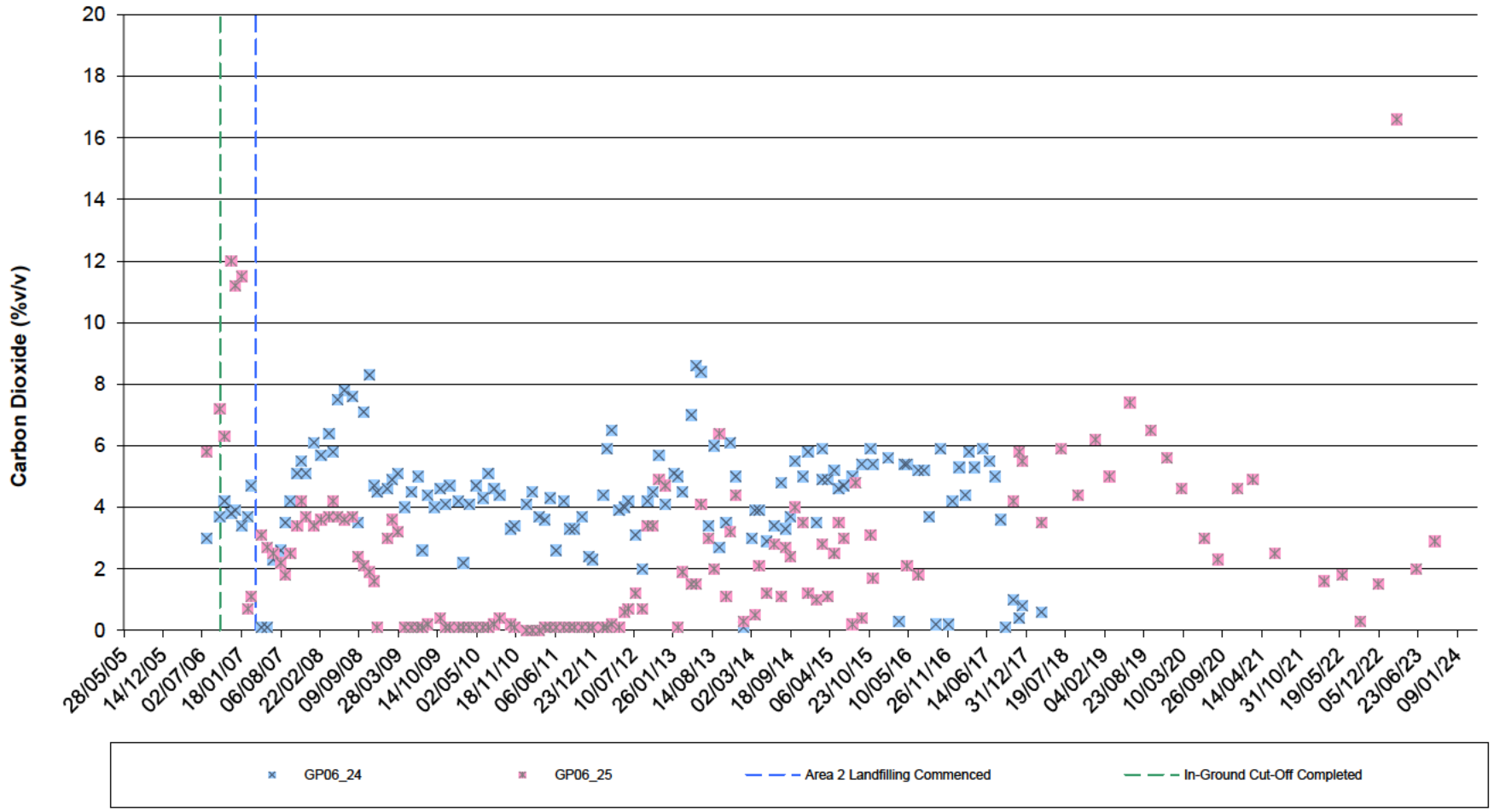
Docksway Disposal Site

Recorded Carbon Dioxide Concentrations in GP05_23 and GP12_23

Date	January 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	4-15

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.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 2024
A4 Scale	nts
Drawn	CB
Checked	NC
Appendix	4-16

J:\49428 Docksway - NCC\AEPR Area 2 2023\Data\Graphs\Gas\[Area 2 gas graphs STANTEC templates.xlsx]4-16 New Wells (CO2)

Appendix 5 Infinis Annual Report

Annual permit report

Installation	Docksway
Permit reference	LP3135SB
Reporting period	2023
Permit Operator	Novera Energy

Author: [redacted]

Date: 10 January 2024

Authorised to sign as representative of the Operator

Fugitive Emissions Review (4.1.4)		**Reporting period: 2023**
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 (S4.2 / 2.4)					
Site:	Docksway	**Reporting period:**	2023	**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 (2.6.2)

Installation Name:	Docksway Gas Utilisation Plant	**Permit Reference:**	LP3135SB	**Reporting period:**	2023

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 (4.1.3)

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

Parameter	**2023**	**Units**
Flare operation hours	163	hrs
Gas engine downtime hours	359	hrs*
Gas engine operation hours	8401	hrs
Volume of landfill gas combusted	65,200	m3 (treated by flare)
	2,526,761	m3 (treated by engines)
	2,591,961	m3 (total treated by engines & flare)

Operator's Comments:
Gas volumes have remained consistant during 2023 due to infrastructure improvements on site improving efficiency. Please contact permit-compliance@infinis.com for any queries regarding the above.

Reporting of Performance Indicators (Form Ref: PI1) Condition 2.7.1 (Table S3)

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

Annual Production/Treatment (MWh) (Form E1 - Table S3)	
Total production of energy	4049

Environmental Performance Indicators (Form PI1 S3)

Parameter	**Annual Average 2023**	**Units**	**Trends in Environmental Performance**	
			2021	**2022**
Total oxides of nitrogen (expressed as NO2) emission	1.6	Kg/MWh	7.0	1.6
Total carbon monoxide emission	3.8	Kg/MWh	13.6	4.1
Total engine downtime (downtime hrs/available operation time in hrs)	4.1	%	4.9	4.6

Condition 2.7.1 / 4.1.3 (Schedule 4)

Reporting period	**Energy Imported (Primary Energy Usage) (MWh)**	**Parasitics (MWh)**	**Energy Exported (MWh)**	**Energy Used on Site (MWh)**	**Site Efficiency**
2023	7	269	3780	276	34.5

*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	**2023**
Date of next review	
Reviewed monthly following a review of notifiable events	

(Permit condition 2.8.1)

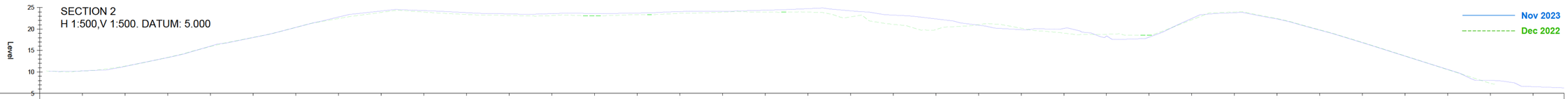
Operator's comments:
No accidents occurred during this period which would require amendment to the Accident Management Plan for this installation.

Installation: Docksway Landfill Gas Utilisation Plant	**Permit Reference:** LP3135SB
Emissions to Air Reporting (4.1.2.1) **2023**	
Annual Report Submission Date	18-Apr-23
Submitted to	Luke Barton & Liz Parr

Emission reports required by the permit (condition 4.1.2 / 4.1.3) were submitted to the relevant officer in 2023. The results indicated compliance with the levels noted in the permit.

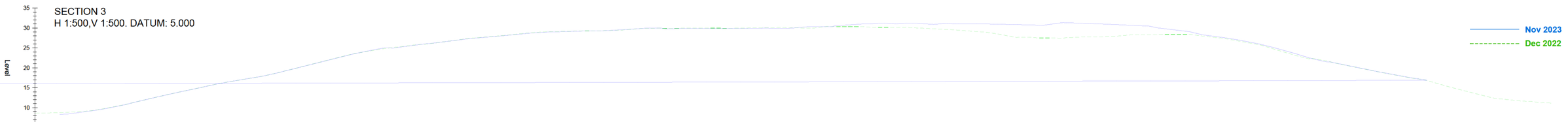
Appendix 6 NCC Topographical Survey and Cross Sections

SECTION 2
H 1:500,V 1:500. DATUM: 5.000



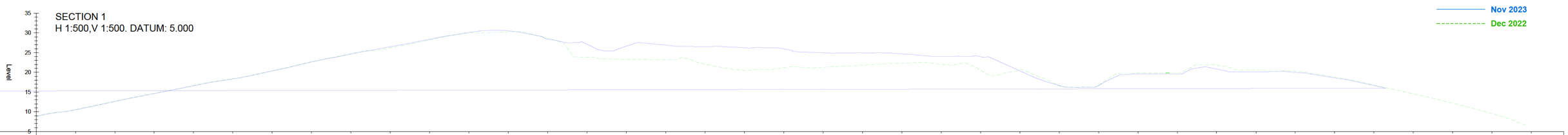
Chainage	00	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	357
Dec 2022 Levels		10.231	11.370	13.396	15.625	18.060	20.399	22.457	23.891	23.972	23.403	23.189	23.140	23.126	23.377	23.684	23.939	23.965	23.964	23.842	23.116	21.033	20.205	19.065	18.773	18.576	18.120	22.161	23.997	22.463	19.832	16.884	13.741	10.528	7.342		
Nov 2023 Levels		10.239	11.299	13.360	16.019	18.030	20.390	22.807	24.218	24.311	23.832	23.555	23.610	23.654	23.739	24.081	24.181	24.402	24.764	24.268	23.261	20.911	19.868	20.145	18.380	18.120	22.462	23.812	22.364	19.758	16.627	13.692	10.565	8.047	6.570	6.299	
Level Difference		0.007	-0.071	-0.036	0.394	-0.030	-0.009	0.349	0.327	0.339	0.429	0.366	0.470	0.528	0.362	0.398	0.241	0.438	0.801	1.427	2.145	2.499	-0.122	-0.337	1.079	-0.393	-0.455	0.321	-0.185	-0.098	-0.075	-0.068	-0.049	0.056	0.705		

SECTION 3
H 1:500,V 1:500. DATUM: 5.000



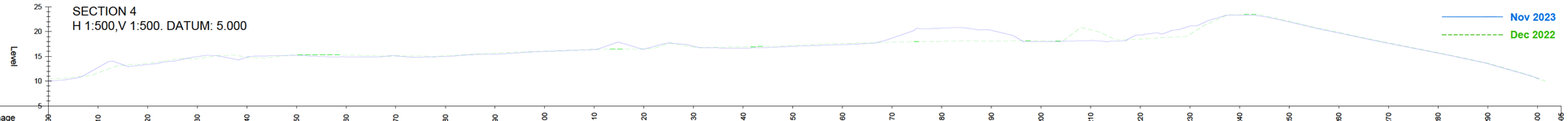
Chainage	00	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	384
Dec 2022 Levels	8.669	8.945	10.274	12.535	14.733	16.717	18.561	21.083	23.669	25.139	26.207	27.502	28.390	29.108	29.288	29.712	29.923	29.950	30.035	30.053	30.362	30.134	30.059	29.544	28.653	27.596	27.636	27.557	28.310	28.288	26.984	24.786	22.341	20.279	18.303	16.397	13.708	11.888		
Nov 2023 Levels		8.634	10.212	12.535	14.718	16.726	18.551	21.045	23.530	24.992	26.235	27.438	28.315	29.015	29.248	29.750	29.834	29.891	29.881	30.008	30.460	31.090	31.214	31.065	30.973	30.754	31.267	30.877	30.263	28.851	27.214	25.128	22.272	20.314	18.349	16.439	13.678	11.675	11.304	11.249
Level Difference	-0.035	-0.311	-0.062	0.000	-0.014	0.009	-0.010	-0.038	-0.039	-0.146	0.029	-0.064	-0.075	-0.092	-0.041	0.038	-0.089	-0.059	-0.154	-0.055	0.098	0.956	1.155	1.521	2.320	3.158	3.631	3.320	1.953	0.562	0.230	0.341	-0.069	0.035	0.046	0.042	-0.030	-0.213		

SECTION 1
H 1:500,V 1:500. DATUM: 5.000



Chainage	00	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 2022 Levels	8.853	10.584	12.638	14.642	16.642	18.341	20.351	22.684	24.701	26.189	28.229	30.023	30.229	28.599	23.852	23.315	23.201	22.071	20.487	21.152	21.268	21.819	22.287	22.052	20.538	20.729	16.585	16.697	19.805	19.908	21.950	20.553	20.288	18.807	16.788	14.525	12.181	9.552		
Nov 2023 Levels		10.476	12.608	14.618	16.599	18.328	20.343	22.643	24.643	26.476	28.382	30.067	30.503	28.371	27.118	26.638	26.909	26.509	26.224	25.945	24.948	24.932	24.692	24.028	23.955	20.370	16.673	16.639	19.579	19.541	20.841	20.153	19.994	18.607	16.643	14.417	12.121	9.449	7.298	6.422
Level Difference		-0.107	-0.030	-0.024	-0.043	-0.013	-0.008	-0.041	-0.059	0.287	0.153	0.045	0.276	-0.228	3.266	3.324	3.708	4.438	5.738	4.793	3.680	3.113	2.405	1.976	3.417	-0.355	0.087	-0.058	-0.226	-0.367	-1.109	-0.399	-0.292	-0.200	-0.145	-0.108	-0.060	-0.102		

SECTION 4
H 1:500,V 1:500. DATUM: 5.000



Chainage	00	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 2022 Levels	10.376	11.694	13.591	14.550	14.844	15.285	15.264	15.117	15.123	15.657	16.026	16.383	16.533	16.876	16.848	17.184	17.604	17.868	18.020	18.074	18.129	20.350	18.477	19.447	23.447	22.099	19.836	17.717	15.740	13.601	10.522	
Nov 2023 Levels	10.054	12.749	13.347	14.948	14.822	15.188	14.864	15.000	14.972	15.418	16.009	16.372	16.435	17.037	16.651	17.013	17.378	18.688	20.687	20.245	17.990	18.210	19.314	21.113	23.257	21.947	19.718	17.632	15.662	13.548	10.627	
Level Difference	-0.322	1.055	-0.244	0.397	-0.022	-0.097	-0.399	-0.027	-0.152	-0.240	-0.017	-0.011	-0.098	0.161	-0.197	-0.172	-0.226	0.820	2.667	2.171	-0.139	-2.141	0.837	1.666	-0.190	-0.152	-0.118	-0.085	-0.079	-0.052	0.105	

Docksway Waste Disposal Site Cell 3A Volume Summary (Asbestos)		
Period	Input Volume (m3)	Cumulative Volume (m3)
Up to and including Dec 2022		95985
Dec 2022 - Nov 2023	0	95985

Docksway Waste Disposal Site Waste Volume Summary 2023		
Period	Input Volume (m3)	Cumulative Volume (m3)
Up to Dec 2022		1363925
Dec 2022 - Nov 2023	58677	1422602
Total Waste Deposited 2023	58677	
Remaining Volume (@ 2m m3 capacity)	577398	

A1

NOTES

Refer to drawing number 1476 / Ph2/ AEPR 2023_02 for section key plan

Rev	Details	Dr	Ch	Ap	Date

Streetscene
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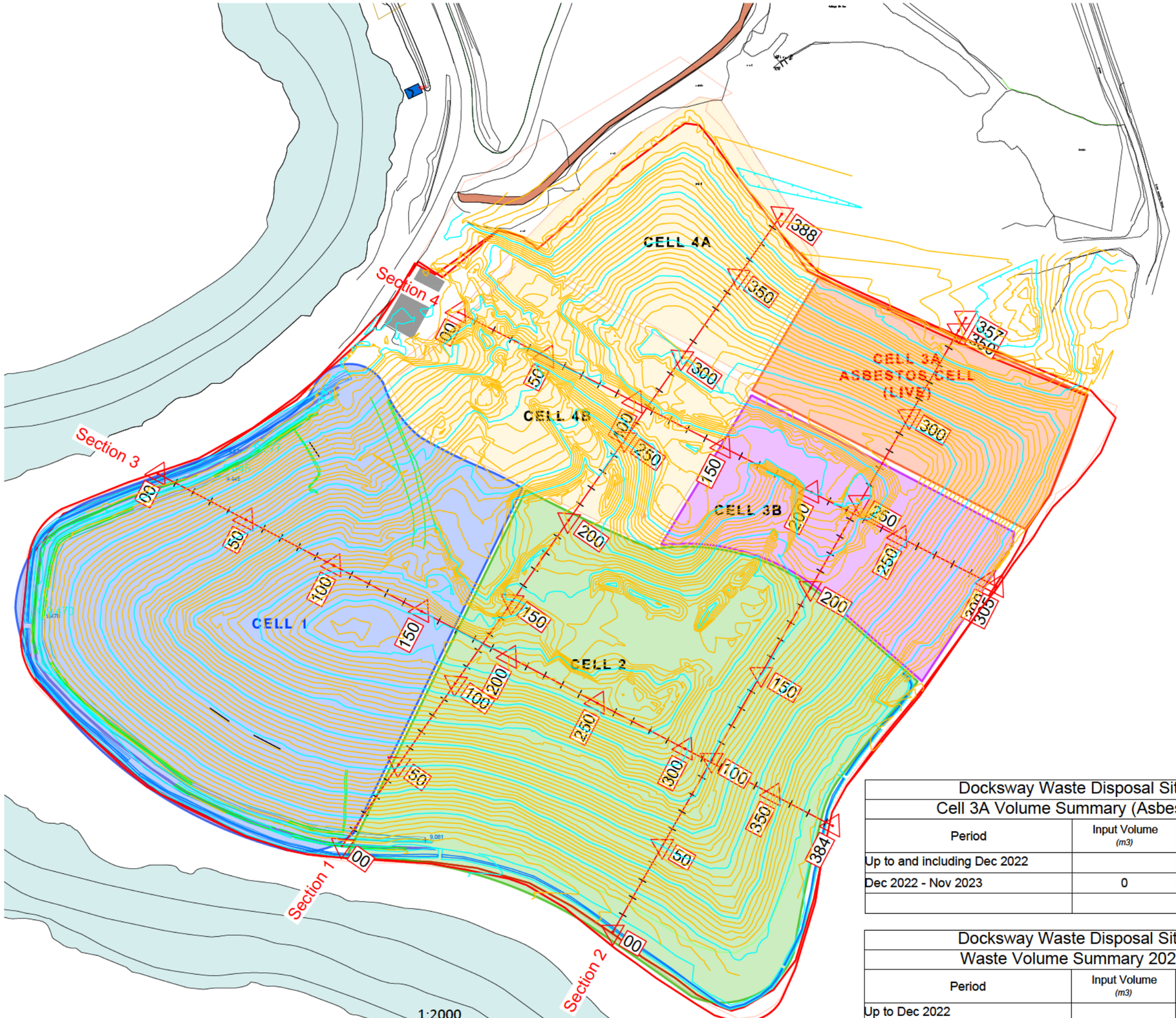
Newport City Council / Cyngor Dinas Casnewydd

Project
Docksway Waste Disposal Site

Cells 1 & 2 & 3 & 4 TOPO Survey Nov 2023

(Ph2 Waste Input Dec 2022 - Nov 2023)

File No.	JNA1476	Status:	For Consultation
Drawn By	MDH	Checked By	
Approved By			
Date	30.01.24	Date	
Date			
Scales	1:2000		
Drawing No.	1476 / Ph2 / AEPR 2023_01		



Phase 2 Topo Survey Dec 2023

1:2000 @ A3

Docksway Waste Disposal Site		
Cell 3A Volume Summary (Asbestos)		
Period	Input Volume *(m3)*	Cumulative Volume *(m3)*
Up to and including Dec 2022		95985
Dec 2022 - Nov 2023	0	95985

Docksway Waste Disposal Site		
Waste Volume Summary 2023		
Period	Input Volume *(m3)*	Cumulative Volume *(m3)*
Up to Dec 2022		1363925
Dec 2022 - Nov 2023	58677	1422602
Total Waste Deposited 2023	58677	
Remaining Volume (@ 2m m3 capacity)	577398	

NOTES A3

1. Refer to drawing number 1476 / Ph2/ AEPR 2023_01 for sections

Rev	Details	Dr	Ch	Ap	Date

Streetscene

[redacted]
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Newport City Council Cyngor Dinas Casnewydd

Project

Docksway Waste Disposal Site

Cells 1 & 2 & 3 & 4 TOPO Survey Nov 2023

Waste Input Dec 2022 - Nov 2023

File No. 1476		Status: Consultation			
Drawn	MDH	Checked		Approved	
Date	30.01.2024	Date		Date	
Scales	see drawing panes				
Drawing No.	1476/PH2/AEPR 2023_02				