JULY 2023

WEST CULBURRA MIXED USE DEVELOPMENT

FIRST SIX MONTHLY CONCEPT APPROVAL BASELINE AQUATIC ECOLOGY DATA REPORT

Frontis. Sampling the intertidal saltmarsh zone at site SWB2-I

REPORT PREPARED FOR SEALARK PTY LTD

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1. INTRODUCTION

State Significant Development Application SSD3846 is a concept proposal for a staged, residential and commercial development located on the northern side of Culburra Road between the Crookhaven River Estuary and Lake Wollumboola. The concept proposal was approved with conditions, including the undertaking of an 18 month water quality and aquatic ecology baseline monitoring program to be submitted to the Department of Planning and Environment.

Marine Pollution Research Pty Ltd (MPR) was commissioned by the proponent Sealark Pty Ltd to prepare the baseline aquatic ecology monitoring methodology report for the Approved Conditions of Consent (CoCs) C17 and C18 in 2022, noting that the Aquatic Ecology monitoring program would not include the Condition C18d oyster lease water quality sampling which was to be undertaken by Martens & Associates Pty Ltd, who were commissioned to undertake all relevant water quality monitoring as described in the companion Water Quality Methodology Report (Martens & Associates 2022). Final Aquatic Ecology (MPR 2022) and Water Quality Methodology reports were reviewed and endorsed by the Environmental Representative (ER) on 16 November 2022 and the 18 month monitoring program commenced on 1st December 2022.

The Conditions of Consent include a requirement for two progress reports at six monthly intervals, each required within two months after each six months data acquisition. This present report summarises the first six month Aquatic ecology data acquisition, documents methodology appropriateness and discusses methodology changes during the period and recommended methodology changes for on-going monitoring.

As per the Approved Methodology Report, the sampling program is made up of four main components; Estuarine Intertidal Habitat Monitoring, Subtidal Seagrass Monitoring, Crookhaven Estuary Aquaculture Oyster Monitoring and Lake Wollumboola Freshwater Biota Monitoring. Estuarine monitoring is undertaken bi-monthly and Freshwater monitoring is seasonal. Over the course of the 18 month monitoring period estuarine sampling is to take into account at least three wet weather events and freshwater sampling is to encompass at least two wet weather events.

Table 1 below shows the completed monitoring to date and projected monitoring through to the end of the18 month period.

Table 1 Aquatic Ecology monitoring schedule. Green highlight shows completed field sampling. Note that for oyster chemical analysis the laboratory results do not come available for up to 4 weeks post sample delivery.

2. AQUATIC ECOLOGY - FIRST SIX MONTHS SAMPLING RESULTS

Section 2.1 provides available climate and hydrology data preceding and during the six months sampling period and **Sections 2.2 to 2.4** provide summaries of aquatic ecology sampling data for the first six months of sampling. Each of these sections also provide summaries of methodology changes and/or additional methodology detail not provided in the approved methodology report.

2.1 Available Climate Information

Appendix Tables A1 and A2 provide daily rainfall data for the Culburra STP gauge for 2022 through to June 2023, and daily rainfall is shown graphically on **Figures 1 and 2** below. **Figure 3** shows monthly total rainfall compared to long term monthly averages.

Overall, the year leading up to the start of the monitoring period in December 2022 was very wet, with above average monthly rainfall for eight months in 2022 enduring more rainy days per month. This pattern effectively reversed for November 2022 through to June 2023, with overall lower monthly rainfalls and overall, less rainy days per month. Whilst monthly totals were still greater than long term average for January, February and April 2023, most of the monthly rain for each of these months fell over fewer days than in the previous wet year. For February 2023, there was a single day record of 253 mm recorded at 9am on the 9th from a single storm that started around 6pm on the previous day.

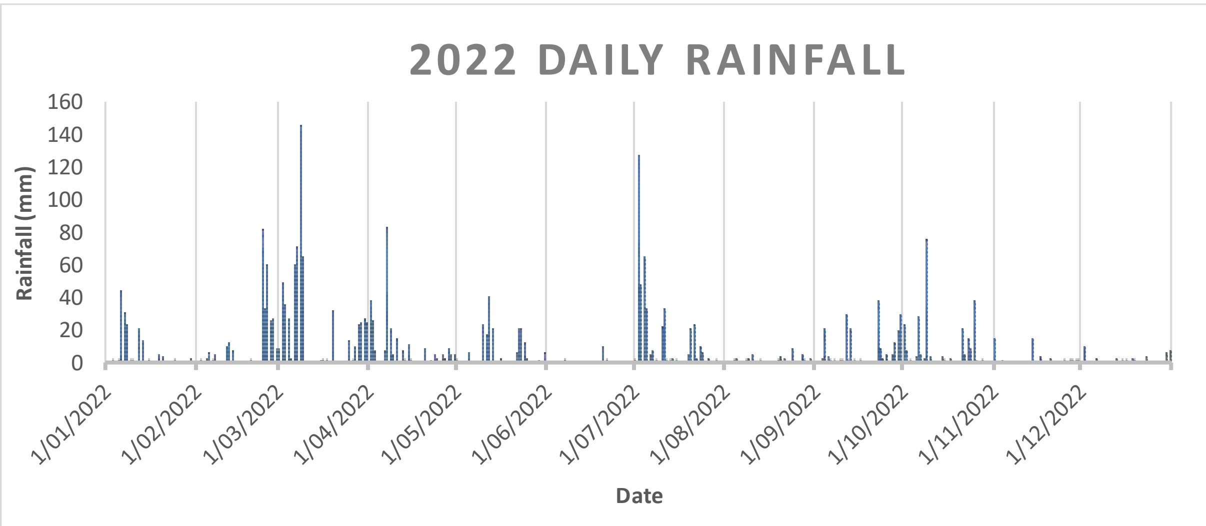


Figure 1 2022 Daily Rainfall - Culburra STW Gauge

In terms of water levels for Crookhaven River estuary and Lake Wollumboola there are three available automatic level gauges operated by the Water Division of the NSW Department of Planning and Environment (DPE); a river water level gauge at Greenwell

Point (Gauge 215417), a lake water level gauge at the north end of Lake Wollumboola (Gauge 215454) and a tide level gauge at Crookhaven Heads that provides both measured tide levels plus residual levels (i.e., the height difference of the actual tide from predicted lunar tide).

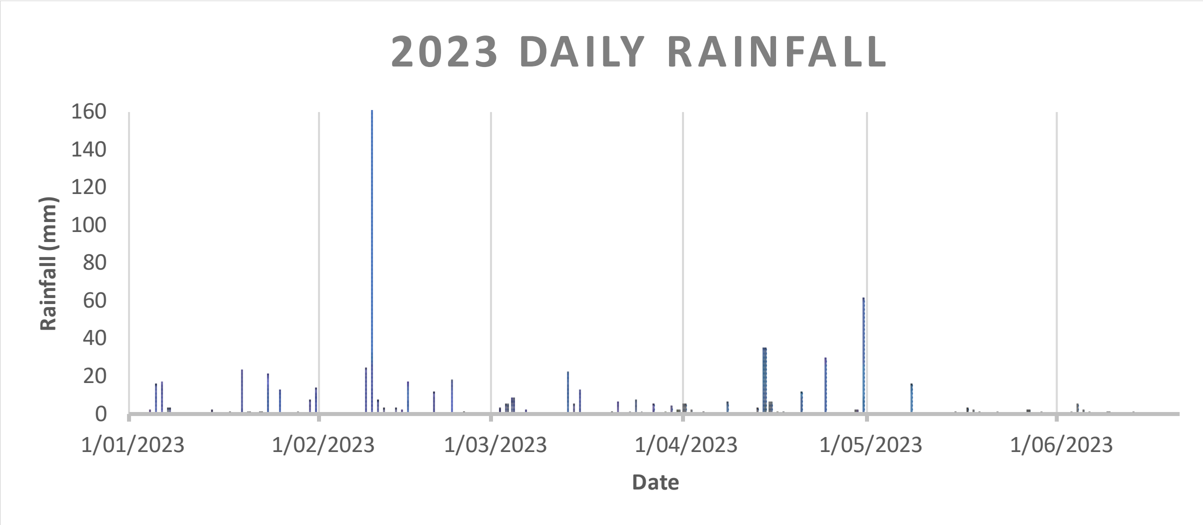


Figure 2 2023 Daily Rainfall - Culburra STW Gauge. Note 9 Feb total is 253mm

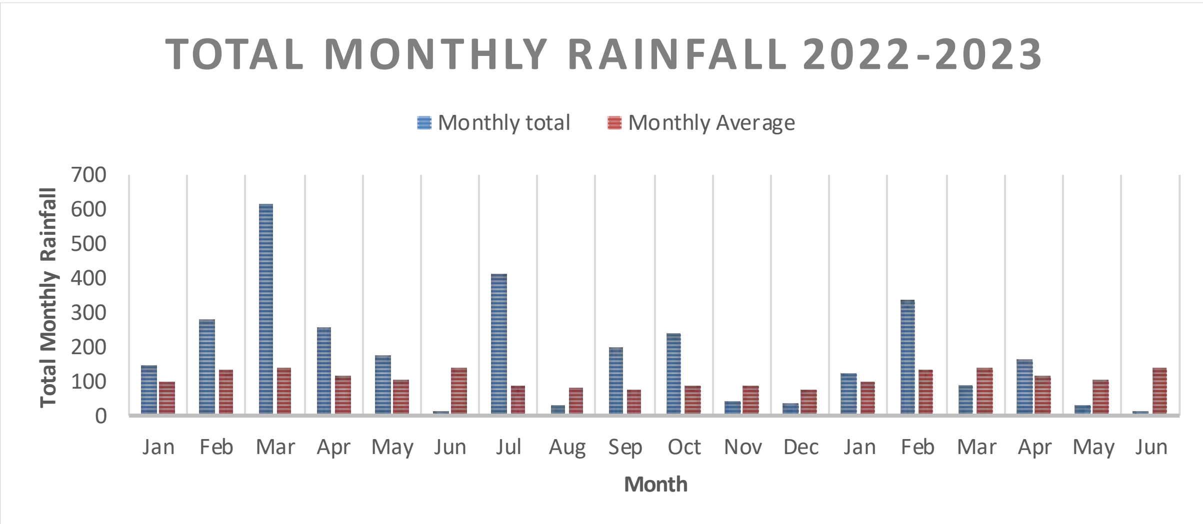


Figure 3 Monthly Total and Monthly Average Rainfall - Culburra STW 2022 to 2023

Appendix B provides the present accumulated data from the Crookhaven Heads and Lake Wollumboola Gauges to date as collected from the on-line gauge data and there is a currently a request to DPE for historic data for these two gauges for missing data. Whilst Greenwell Point Gauge data was not collected to date on the basis that the Crookhaven gauge residual data provide an indication of flood contribution, it is considered that these data should also be collected from the real time data available on the web and that previous data be sourced from DPE to provide a better basis for interpreting ecological variation against river flood behaviour

2.2 Estuarine Intertidal Habitat Monitoring

2.2.1 Monitoring Methodology Refinement

Section 2.1 of the Aquatic Ecology Methodology Report provides an overall description of the intertidal habitat monitoring program and **Figure 2** for that report indicated the overall Site Locations but did not define the sub-site locations as provided in **Table 1** for that report. **Figure 4** below shows the adopted sub-site locations. It became clear during initial sampling that all Swale sub-sites were not actual surface swales and were in some cases shallow sub-surface discharges, so to avoid confusion the sub-sites were redesignated as ***In-line sites*** **(I)** for sites most likely to drain sub-catchments and **Ridge sites (R)** for the sub-sites located on the boundary between sub-catchments.

Whilst the overall methodology for the Intertidal Estuarine Habitat surveys remains as approved, the following additional detail arising from the actual first six-monthly sampling program are provided to supplement the approved methodology:

- The two 2m ladder transects separated by a 2m space configuration is retained and set up as per the approved methods but the configuration is now described as four fixed line intercept transects set 2m apart providing an overall fixed 6m wide plot for placement of random quadrats. This adjustment allowed for a more representative landscape mapping of the sub-site intertidal zones without increasing potential trampling impact. These plots still retain variable offshore lengths determined by local sub-site tidal zoning.

The distinctions between two monthly and before/during and after sampling requirements for all the intertidal monitoring parameters were not all provided in the Approved methodology and these are now clarified as follows:

- The Intertidal Point Intercept Habitat Transect and Plot Quadrat Sampling requirements are undertaken two monthly, meaning that all transects and quadrats will be sampled nine times (*9 by 2 month terms*) over the 18 month period, with each sampling occurring within each designated two-monthly term (**Table 2)**.
- The Intertidal Transect Height Profile, Plot Shade/Drip Line measurements and Landscape Mosaic assessments were scheduled to be undertaken at the beginning and end of the 18 month program and this has now been regularised and expanded to be undertaken three times (*3 by 6 month terms*) over the 18 month period (**Table 3**).

Figure 4 Final Adopted Intertidal Habitat Site Locations

Table 2 Intertidal Point Intercept Transect & Quadrat Sampling									
Site	**Term 1**	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**	**Term 7**	**Term 8**	**Term 9**
	Dec-Jan	Feb-Mar	Apr-May	Jun-Jul	Aug-Sep	Oct-Nov	Dec-Jan	Feb-Mar	Apr-May
CUP1-I	15/2/2023	5/4/2023	16/5/2023						
CUP1-R	16/2/2023	5/4/2023	4/5/2023						
CUP2-I	15/2/2023	5/4/2023	4/5/2023						
CUP2-R	7/2/2023	3/4/2023	4/5/2023						
BB1-I	15/2/2023	3/4/2023	5/5/2023	12/7/2023					
BB1-R	15/2/2023	3/4/2023	5/5/2023	12/7/2023					
BB2-I	15/2/2023	3/4/2023	3/5/2023	12/7/2023					
BB2-R	15/2/2023	29/3/2023	3/5/2023	12/7/2023					
SWB1-I	14/2/2023	21/3/2023	3/5/2023	12/7/2023					
SWB1-R	14/2/2023	21/3/2023	2/5/2023	11/7/2023					
SWB2-I	8/2/2023	6/3/2023	2/5/2023	11/7/2023					
SWB2-R	8/2/2023	20/3/2023	2/5/2023	11/7/2023					
SEB1-I	2/2/2023	1/3/2023	12/4/2023	10/7/2023					
SEB1-R	6/2/2023	2/3/2023	12/4/2023	10/7/2023					
SEB2-I	7/2/2023	2/3/2023	1/5/2023	11/7/2023					
SEB2-R	6/2/2023	2/3/2023	1/5/2023	10/7/2023					
CDN1-I	28/2/2023	14/4/2023	24/5/2023						
CDN1-R	28/2/2023	14/2/2023	24/5/2023						
CDN2-I	27/2/2023	11/4/2023	17/5/2023						
CDN2-R	27/2/2023	11/4/2023	17/5/2023						

Table 3 Sampling Dates for Intertidal Transect Height Profiles, Mosaic and Shade/Drip Line Surveys						
Intertidal Sub-Site	Transect Height Profiles			Mosaic/Landscape and Shade/Drip Line Surveys		
	Term 1 Dec-May	**Term 2** Jun-Nov	**Term 3** Dec-May	**Term 1** Dec-May	**Term 2** Jun-Nov	**Term 3** Dec-May
CUP1-I	18/1/2023			15/2/2023		
CUP1-R	18/1/2023			16/2/2023		
CUP2-I	18/1/2023			15/2/2023		
CUP2-R	18/1/2023			7/2/2023		
BB1-I	11/4/2023			15/2/2023		
BB1-R	11/4/2023			15/2/2023		
BB2-I	11/4/2023			15/2/2023		
BB2-R	29/3/2023			15/2/2023		
SWB1-I	21/3/2023			14/2/2023		
SWB1-R	21/3/2023			14/2/2023		
SWB2-I	6/3/2023			8/2/2023		
SWB2-R	20/3/2023			8/2/2023		
SEB1-I	1/3/2023			2/2/2023		
SEB1-R	2/3/2023			6/2/2023		
SEB2-I	2/3/2023			7/2/2023		
SEB2-R	2/3/2023			6/2/2023		
CDN1-I	28/2/2023			28/2/2023		
CDN1-R	28/2/2023			28/2/2023		
CDN2-I	28/2/2023			27/2/2023		
CDN2-R	27/2/2023			27/2/2023		

The methodology for *line point intercept measurements* is clarified as follows:

- For each line transect the start to stop points of vegetation assemblages are recorded based on main species present and then all plants noted within this assemblage are listed.
- For this process a master species list has been constructed with two letter plant codes to facilitate monitoring and data presentation. The present working Species and Code Key is provided as **Table C1** in **Appendix C** and this table will continue to expand and be refined as new species are encountered and others are confirmed.
- Refinement of the species list will also include specific distinction between local indigenous plants and weed species.

The methodology for *landscape mosaic descriptions* is clarified as follows:

- For each of the 6m wide landscape plots initial definition of the main plant assemblages within the plot are determined by dominant zone species and/or dominant abiotic factors such as bare sediment.
- Once the assemblages are determined and described, the cross-over points for each of the four fixed transects for each of the assemblages are plotted directly onto squared graph paper and a six-meter survey staff is then deployed across the four shore-normal transects (i.e., laid shore parallel) to enable measurements to 'join the dots" on the graph paper for the assemblage limits between the fixed transect measurements.
- The sketches are later digitised to produce the landscape mosaics for each sub-site plot. Each landscape plot is accompanied by a drone photo of each sub-site plot plus site photographs looking up and down the plot areas.

Methodology for *intertidal plot quadrat density* is clarified as follows:

- Whilst the transect point-intercept analysis monitors progression or receding vegetation or assemblages over time, density change within these riparian, saltmarsh and inshore mangrove assemblages and zones is assessed via three haphazardly placed quadrats within each zoned area within the plot mosaic (i.e, riparian edge, saltmarsh, saltmarsh-to upper mangrove and upper mangrove zoned habitats):
- The quadrat is 1m x 1m square with a 5x5 grid (i.e., 25 squares). Density is recorded via the following density scale:
  - In quadrats with only one individual, a density value of 0.1 is recorded.
  - Quadrats with species < 30% coverage (< 8 squares) is density value One.
  - Cover between 30 and 60% (9 to 16 squares) is density value Two.
  - Density value Three for coverage greater than 60% (17 or more squares).
  - Crab holes, mangroves seedlings, saplings and adults are individually counted within each quadrat.
  - Mangrove pneumatophore cover is determined by a count of occupied grid squares with values recorded as 0 to 25.

With regard to post wet weather sampling of intertidal habitats the overall trigger for addition sampling is clarified as follows:

- Following any days or continuous days where there is more than 20mm rainfall recorded, a representative number of intertidal site riparian slopes are inspected against the previous site mosaic and height profile data for evidence of erosion or deposition.

- If there is erosion/deposition noted this will trigger a full check of all sites for erosion/deposition which will be documented/described as field notes for the next scheduled transect height and mosaic study.
- Assessment for possible erosion/deposition will also be facilitated by up and down slope transect photography undertaken for each bimonthly intertidal sampling event. Note that this refinement was made in March 2023 so that there are missing photographs for some transects in the first and second bi-monthly terms.

2.2.2 Estuary Intertidal Height Profiles

The first term intertidal height profile diagrams are provided in **Appendix C-2**. The present profiles are shown as heights relative to the start peg heights as the peg AHD heights are yet to be determined. This will be done during the second term monitoring. Further analysis will include providing key plant and assemblage zonation limits for each of the profiles.

2.2.3 Estuary Intertidal Landscape (Mosaic) Diagrams & Site Photographs

The first term (Dec 22 to May 23) mosaic (landscape) diagrams are provided in **Appendix C-3** with accompanying drone photographs of the plots. **Appendix C-3** also provides the available up and down slope transect photographs for the first two bi-monthly terms. The tables below each plot provide the plant/abiotic descriptions utilised for distinguishing between mosaic-plot assemblages. Note that whilst there is some *zonation consistency* from upslope to down slope for the mosaic plots, there is presently *no assemblage consistency* for colour schemes between plots as for each of the mosaic plots colours have been allocated to provide definitive contrasts.

Further analysis will be undertaken when monitoring results for the second 6-month term have been obtained and plotted when changes in assemblage cover over time can be calculated.

Appendix C4 provides before and after transect riparian edge photographs for the SEB Ridge and In-line sites that were utilised as a check of potential riparian edge erosion following the combined high rainfall events in February/March 2023. These photographs combined with the wider check visits to other sites confirmed that there were no observable erosion or sedimentation events to trigger additional transect height surveys - as per the approved methodology.

2.2.4 Bimonthly Intertidal Habitat Vegetation & Abiotic Variation Dec 22 to May 23

On the basis that there have been no observed weather-related variations for each of the intertidal sub-sites over the first three bi-monthly monitoring terms, it is postulated that there should either be little or minor variation in overall intertidal transect species cover or density over this period, there could be some consistent season-related variation for particular species over time or there may be consistent variation associated with wrack accumulation.

In order to test this preliminary assumption, initial assessment of the intertidal transect bimonthly point intercept data has included summing of transect lengths occupied by keystone plant and abiotic factors along each of the replicate transect lines and summing plus averaging replicate quadrat density results. These data were then averaged across the replicates, and the results are shown in the following bar graph plots (**Figure 5 to 24 f**or sub-site vegetation mean zone length data results and **Figures 25 to 44** for sub-site mean zone vegetation density data results). Note that individual sub-site graphs show replicate averages and do not include error bars at this stage.

For this preliminary analysis it is noted that for the most part there is minor variation for most saltmarsh plant species and abiotic factors analysed that at least indicates sampling consistency over time. More detailed pattern analysis will be required to determine how or whether the variation in intertidal plant cover relates to seasonal and/or wrack smothering factors.

Further, once the riparian species taxonomy has been confirmed, the riparian plant data will be able to be analysed for weed species presence and cover over time.

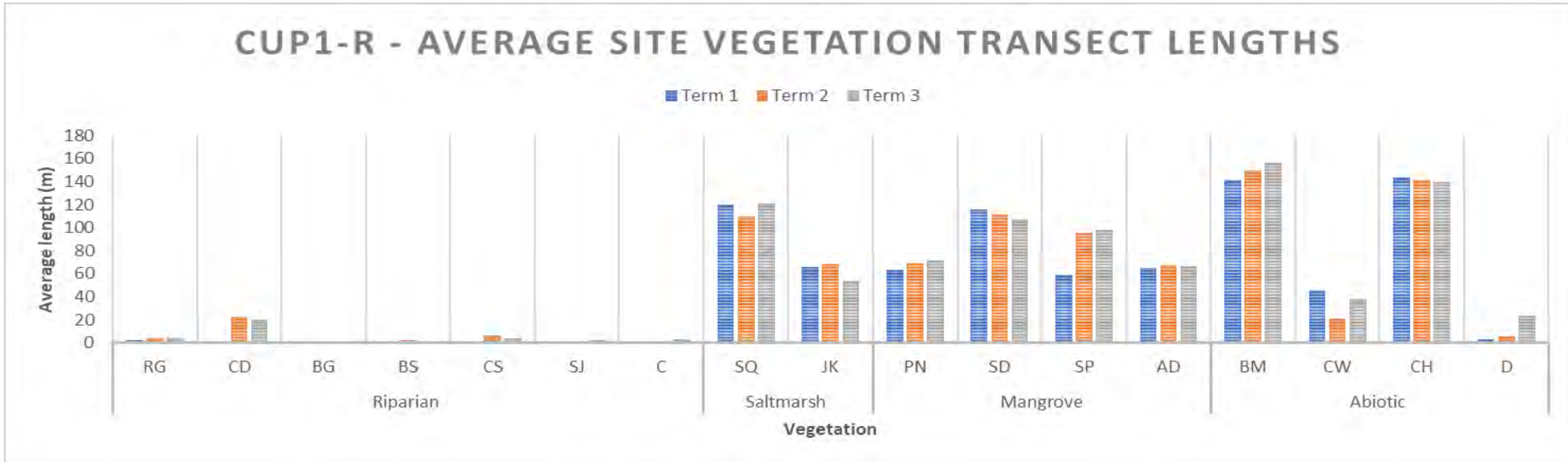


Figure 5 Mean vegetation zone length at CUP1-R

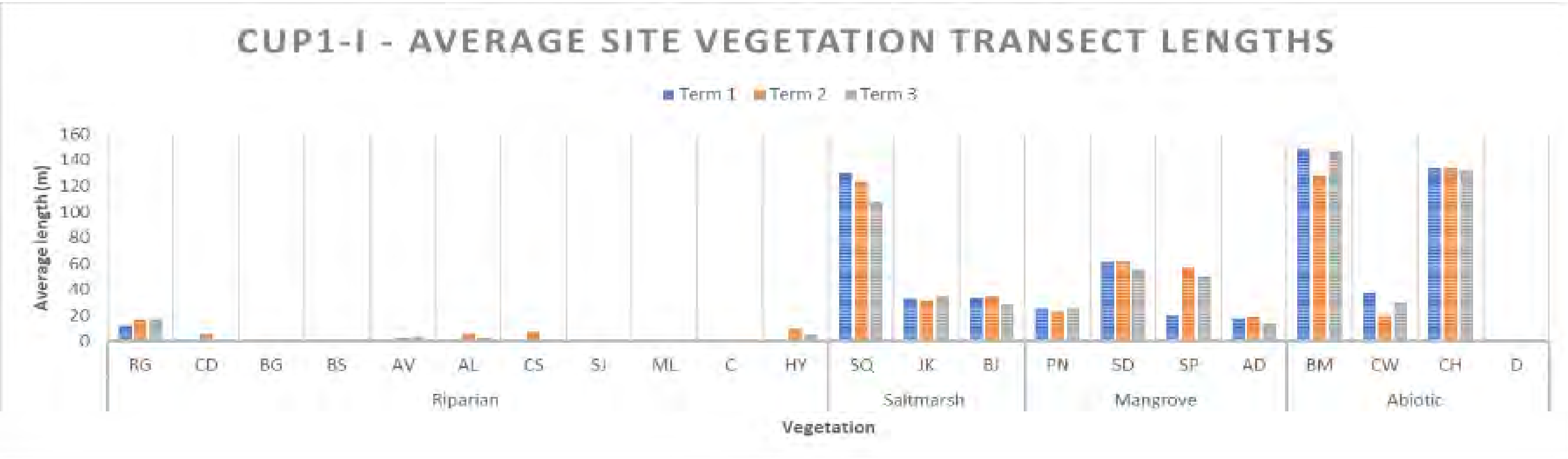


Figure 6 Mean vegetation zone length at Cup1-I

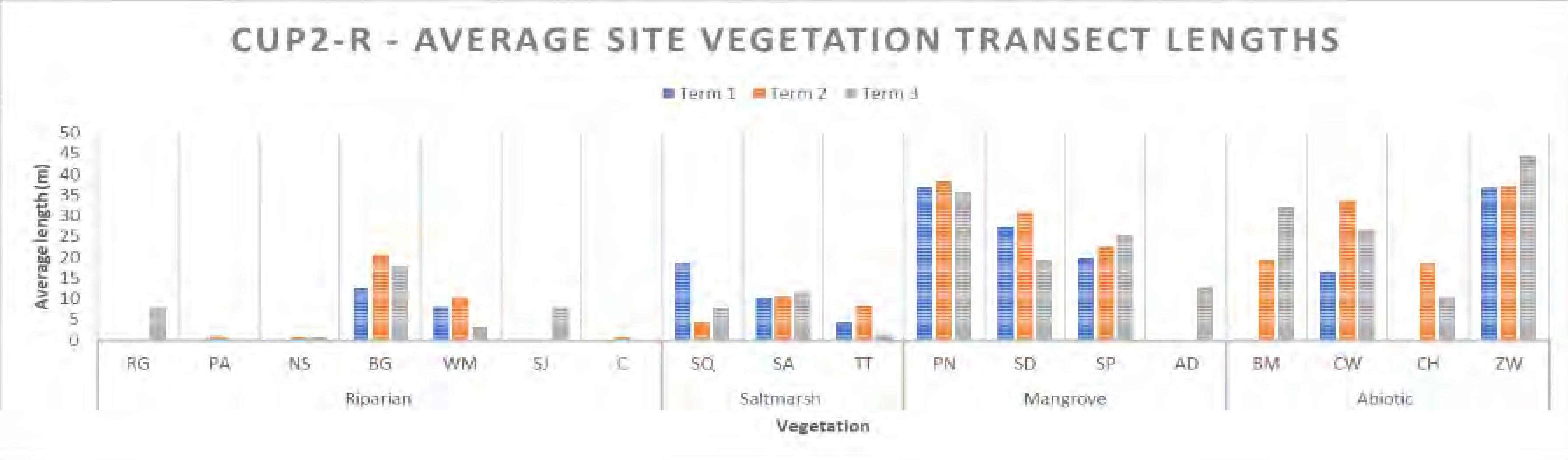


Figure 7 Mean vegetation zone length at CUP2-R

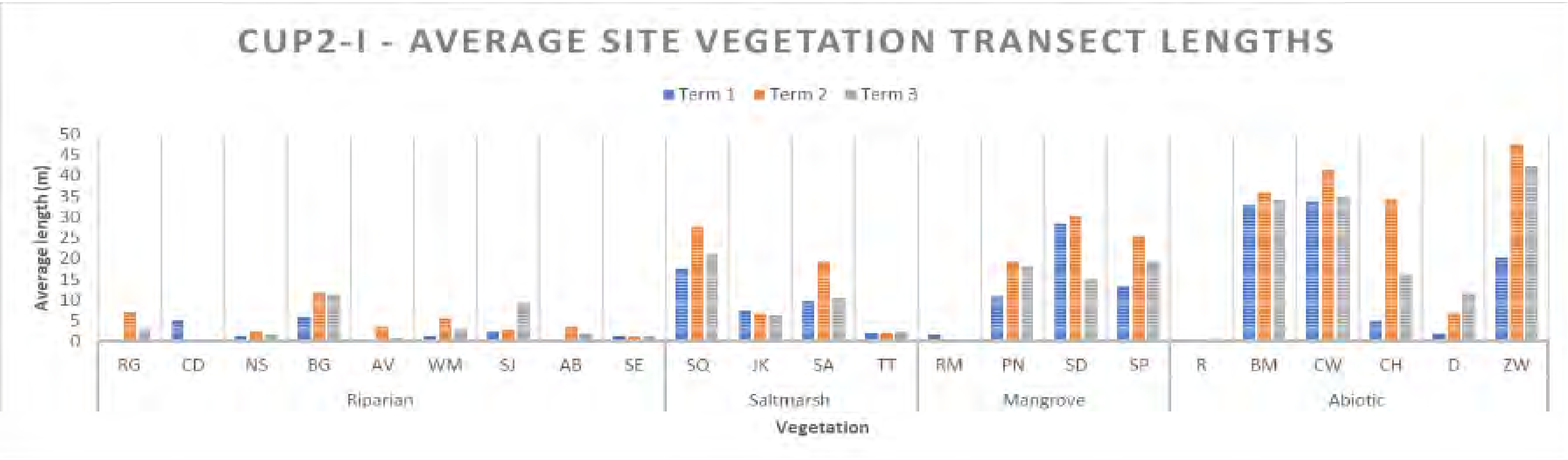


Figure 8 Mean vegetation zone length at CUP2-I

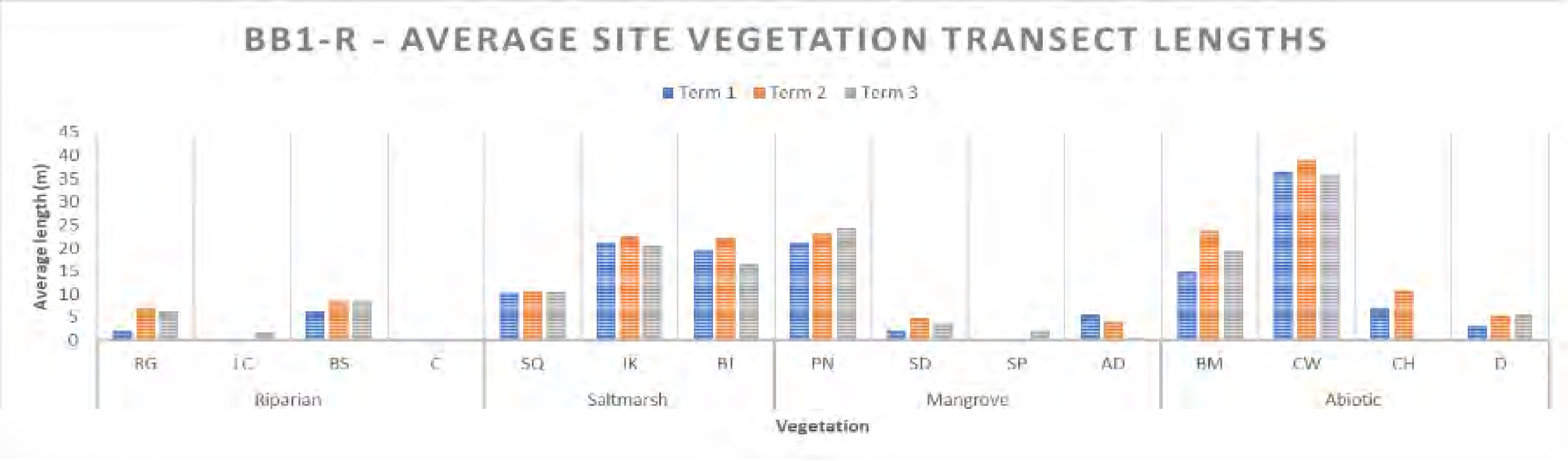


Figure 9 Mean vegetation zone length at BB1-R

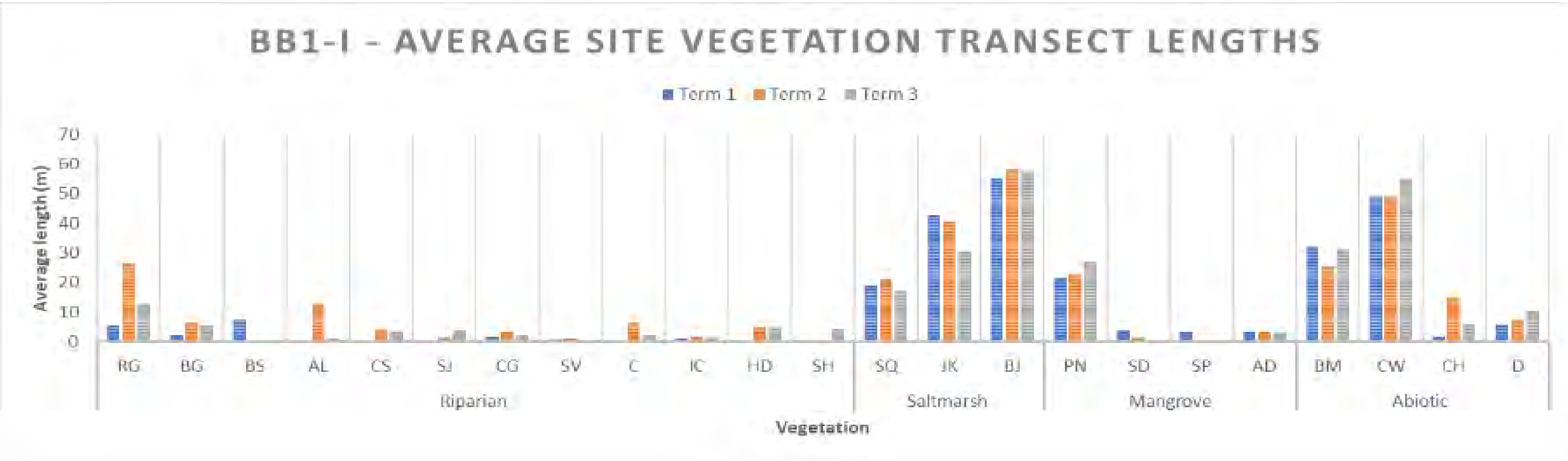


Figure 10 Mean vegetation zone length at BB1-I

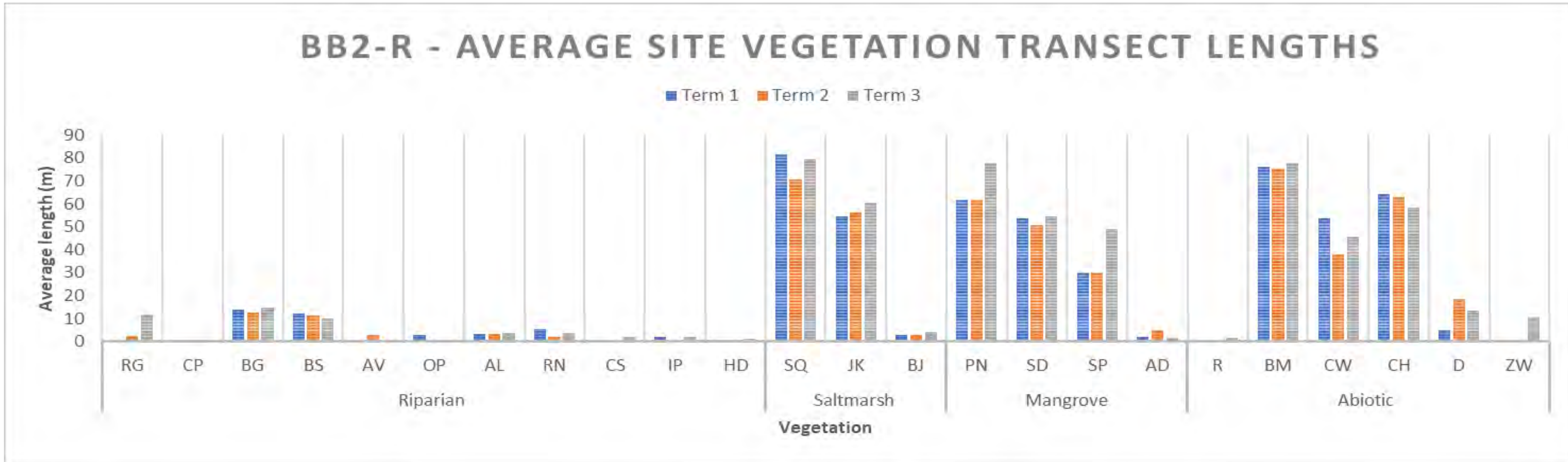


Figure 11 Mean vegetation zone length at BB2-R

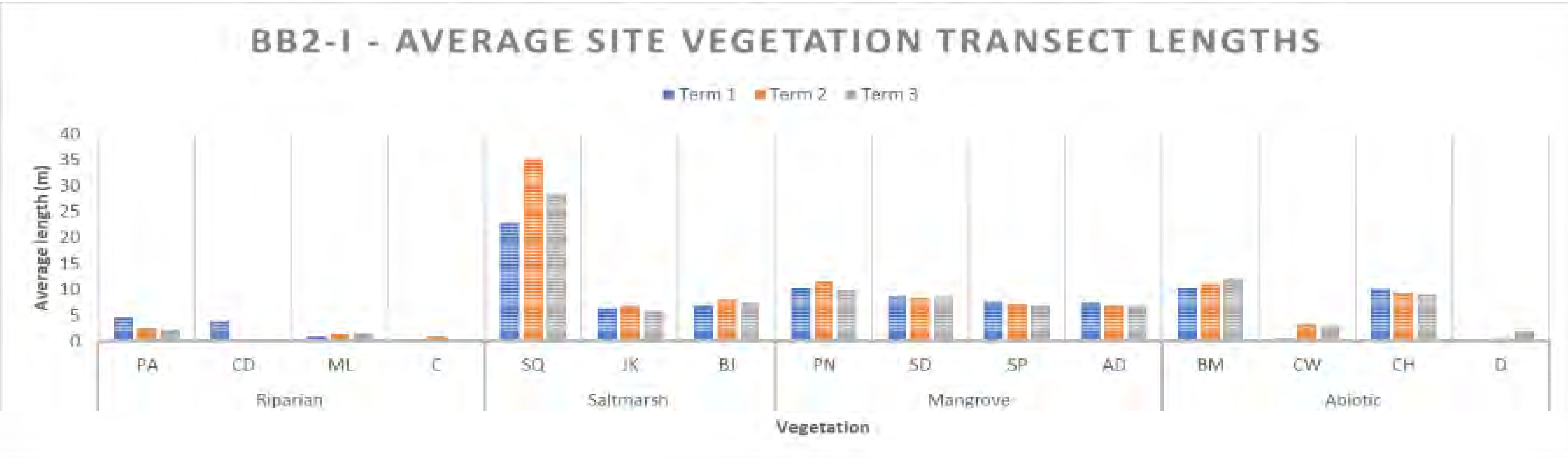


Figure 12 Mean vegetation zone length at BB2-I

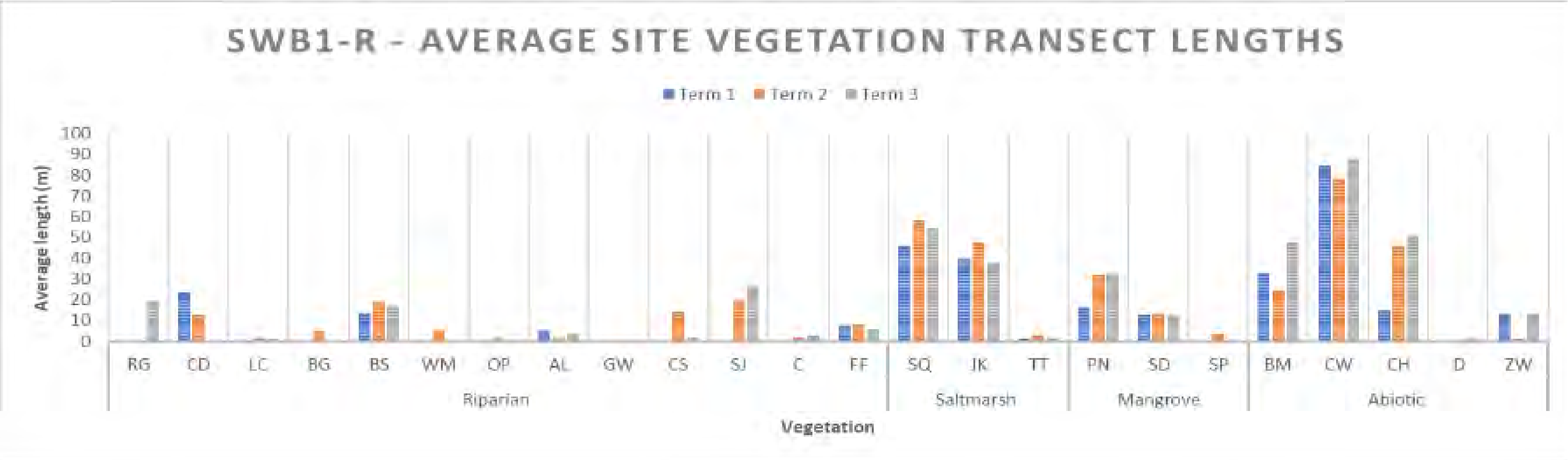


Figure 13 Mean vegetation zone length at SWB1-R

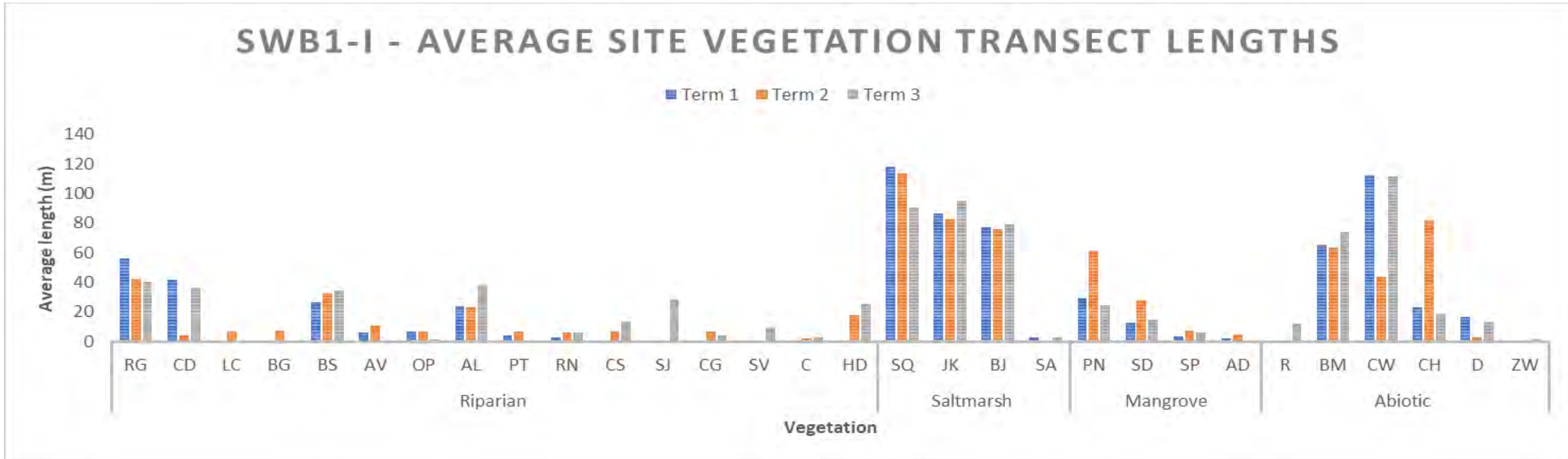


Figure 14 Mean vegetation zone length at SWB1-I

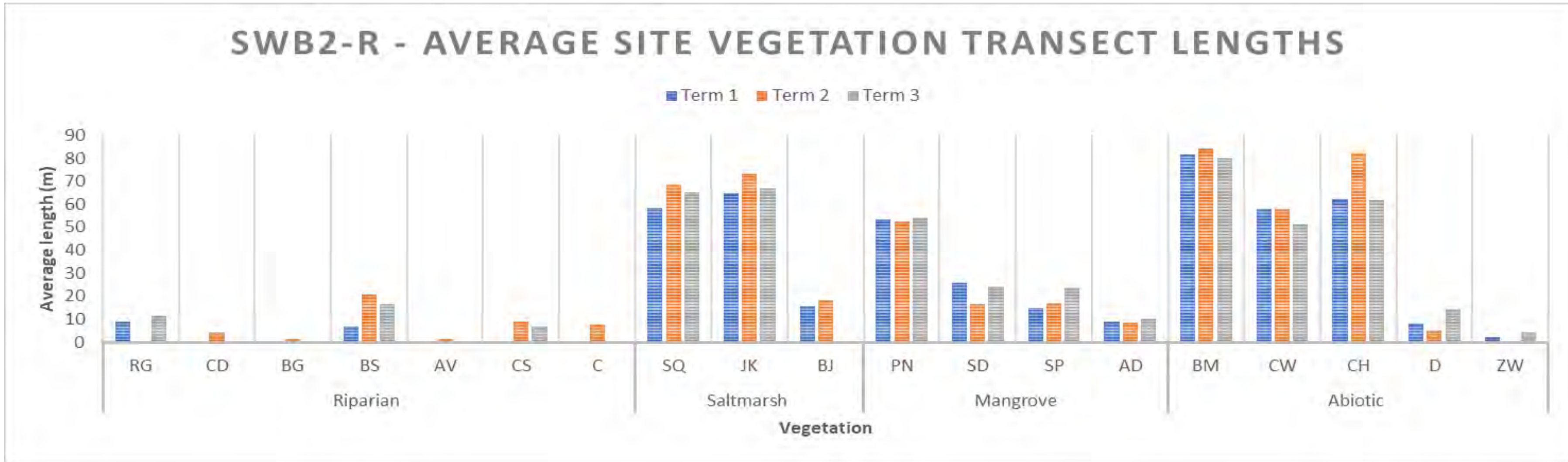


Figure 15 Mean vegetation zone length at SWB2-R

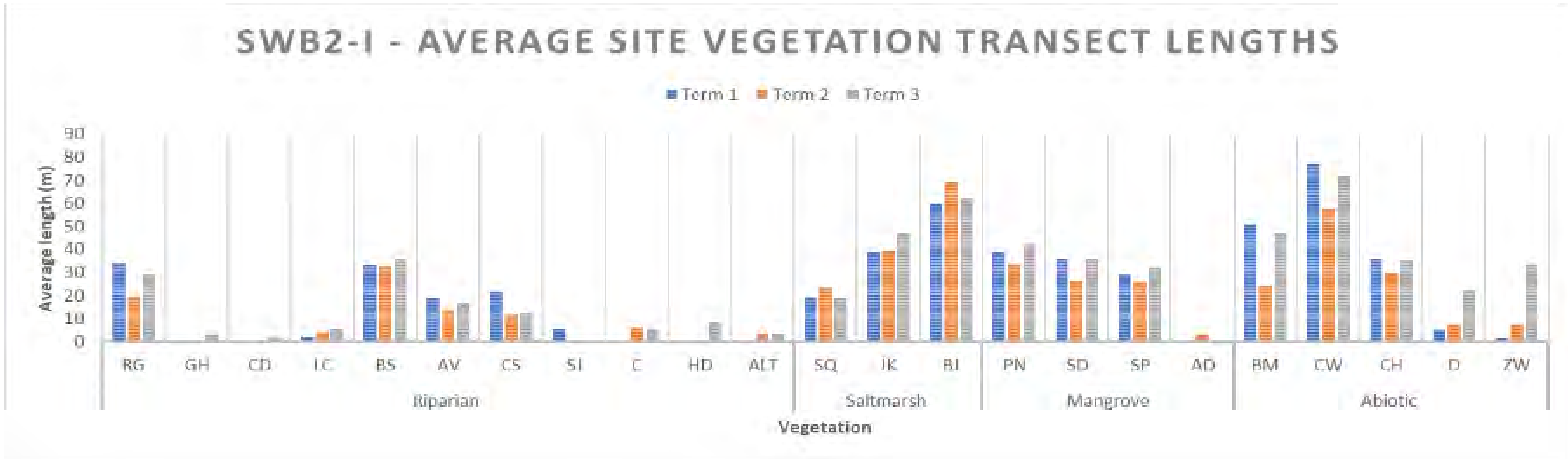


Figure 16 Mean vegetation zone length at SWB2-I

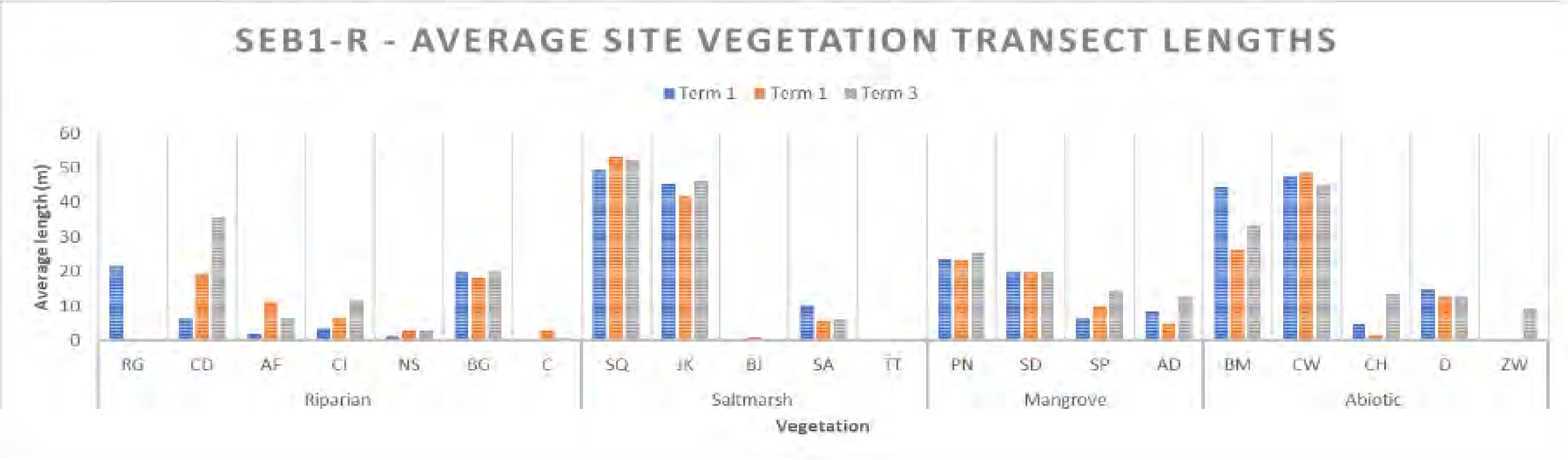


Figure 17 Mean vegetation zone length at SEB1-R

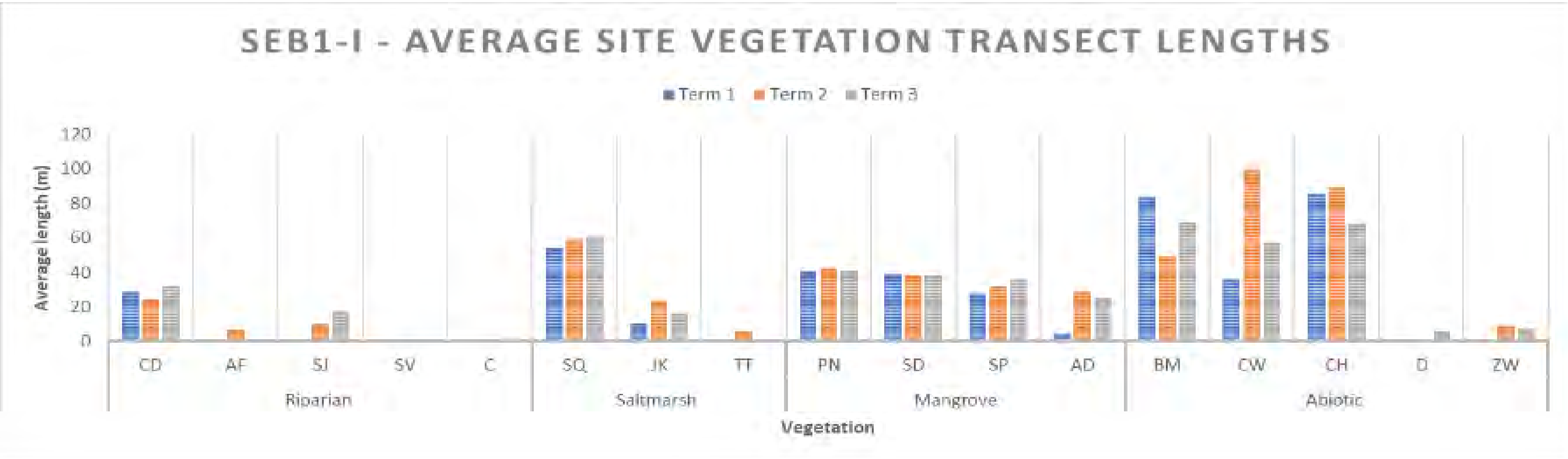


Figure 18 Mean vegetation zone length at SEB1-I

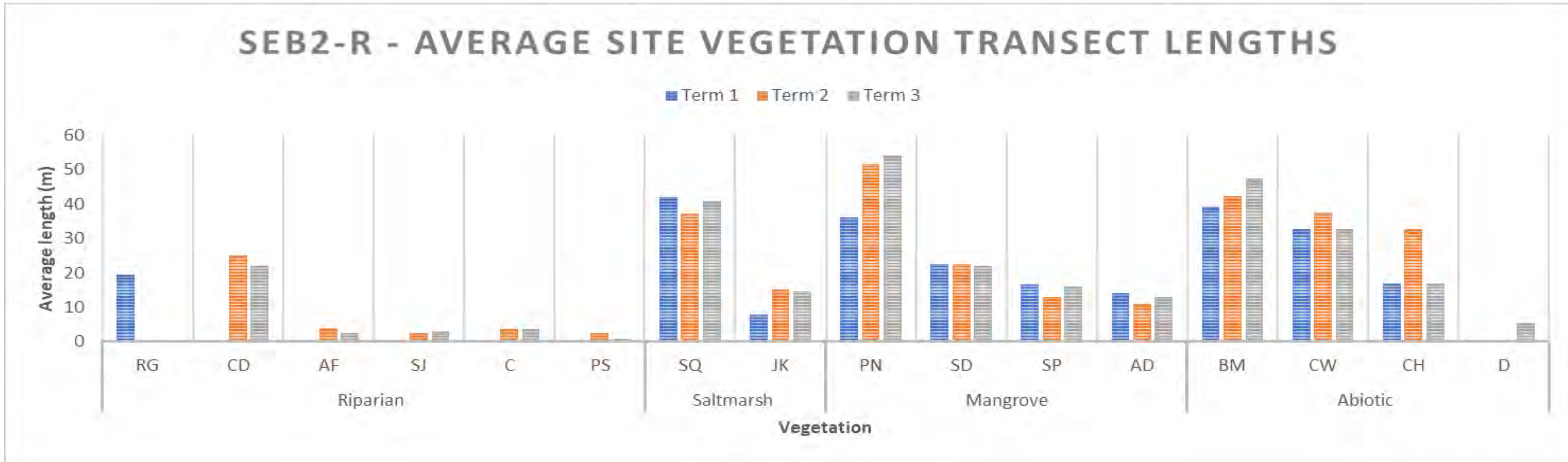


Figure 19 Mean vegetation zone length at SEB2-R

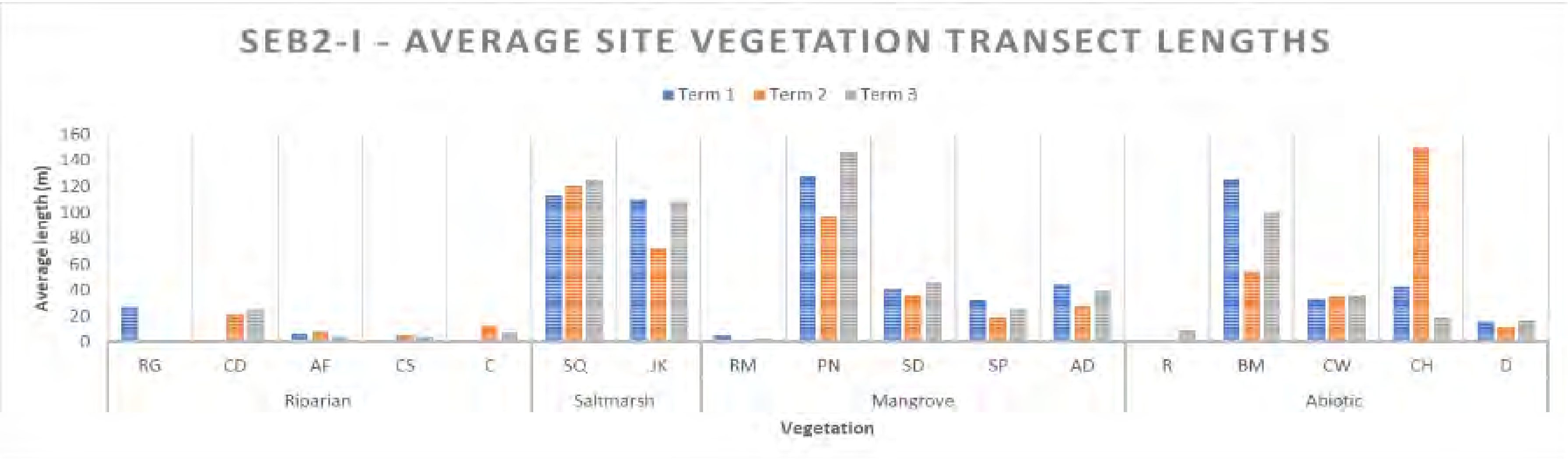


Figure 20 Mean vegetation zone length at SEB2-I

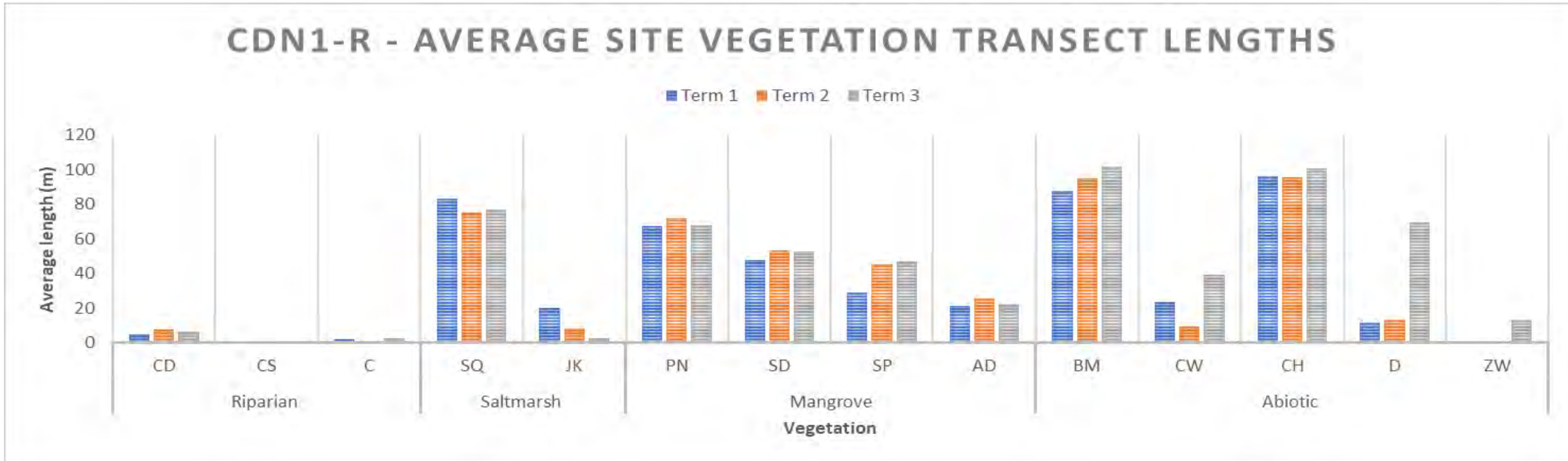


Figure 21 Mean vegetation zone length at CDN1-R

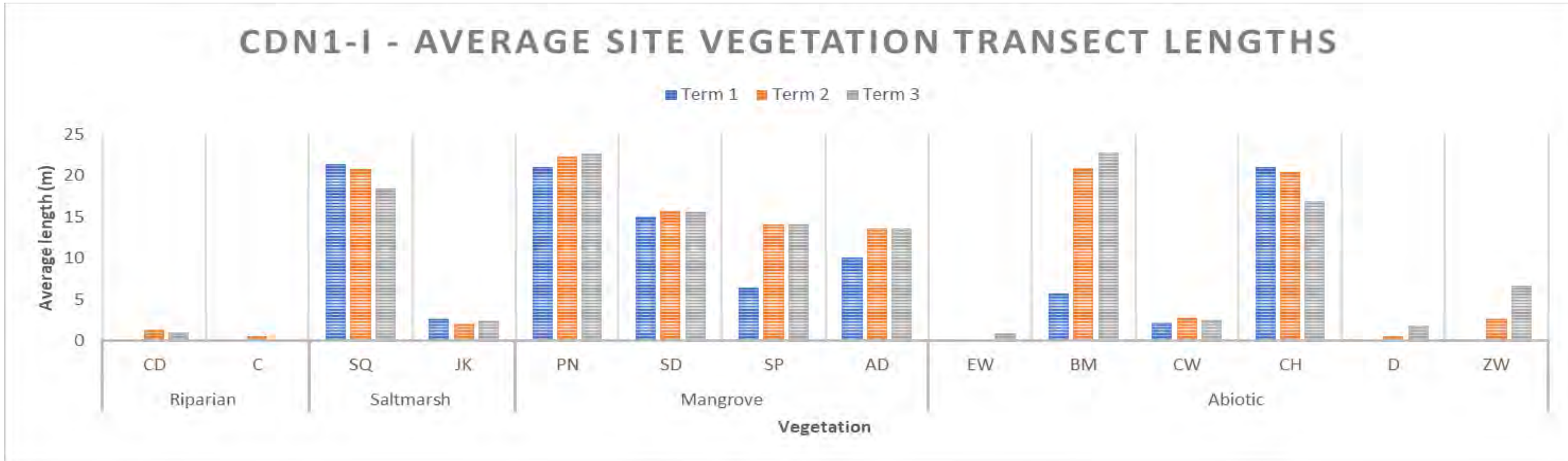


Figure 22 Mean vegetation zone length at CDN1-I

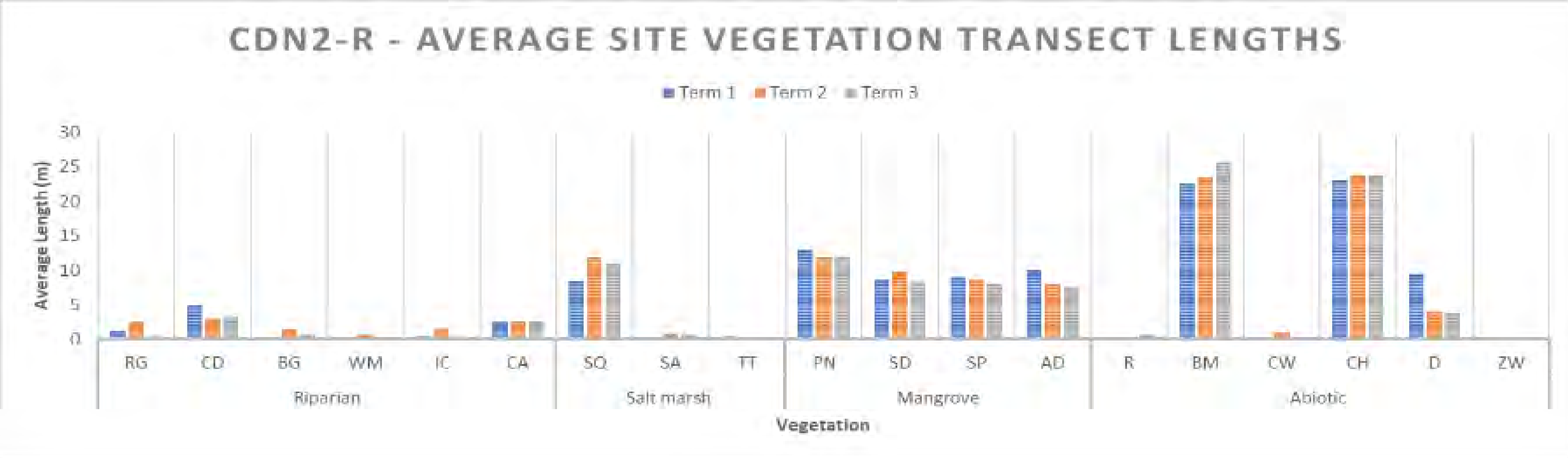


Figure 23 Mean vegetation zone length at CDN2-R

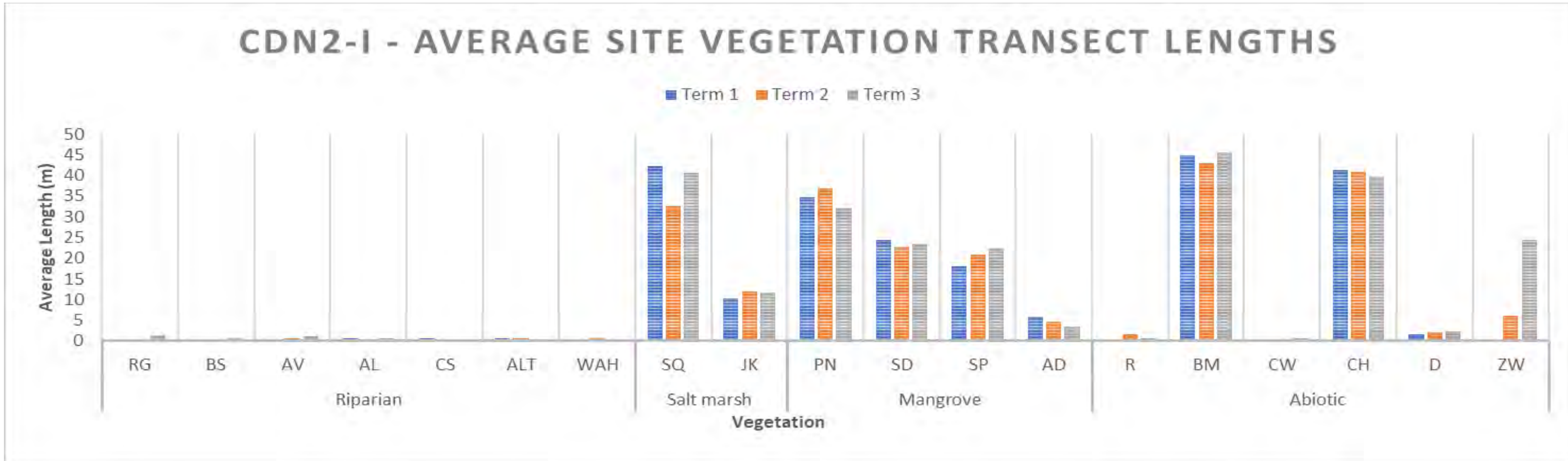


Figure 24 Mean vegetation zone length at CDN2-I

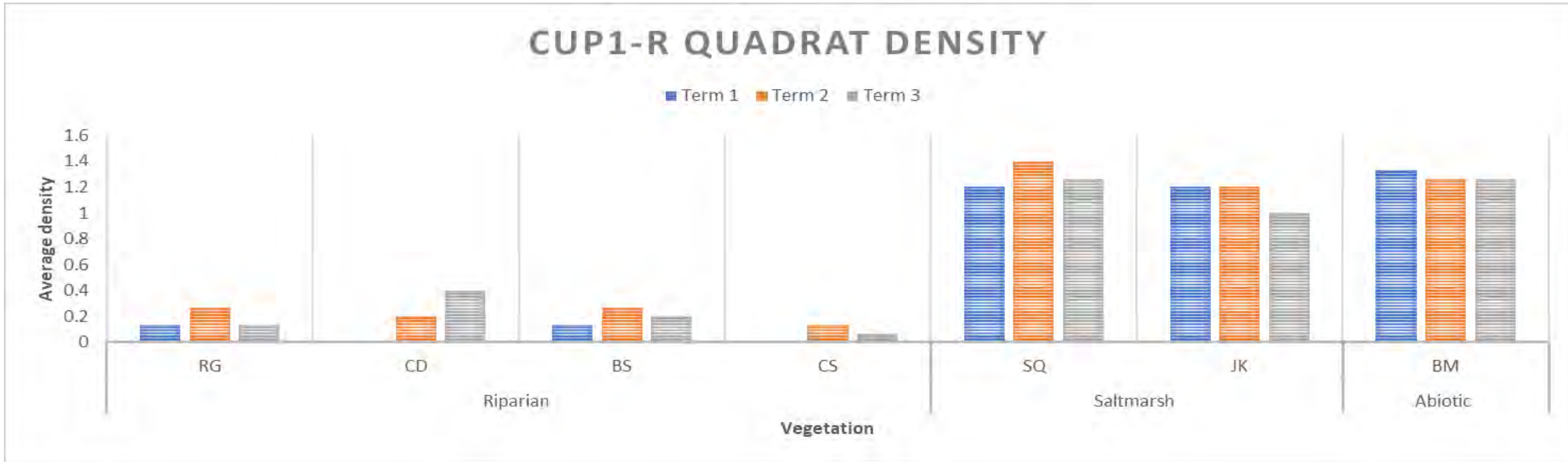


Figure 25 Mean vegetation zone density at CUP1-R

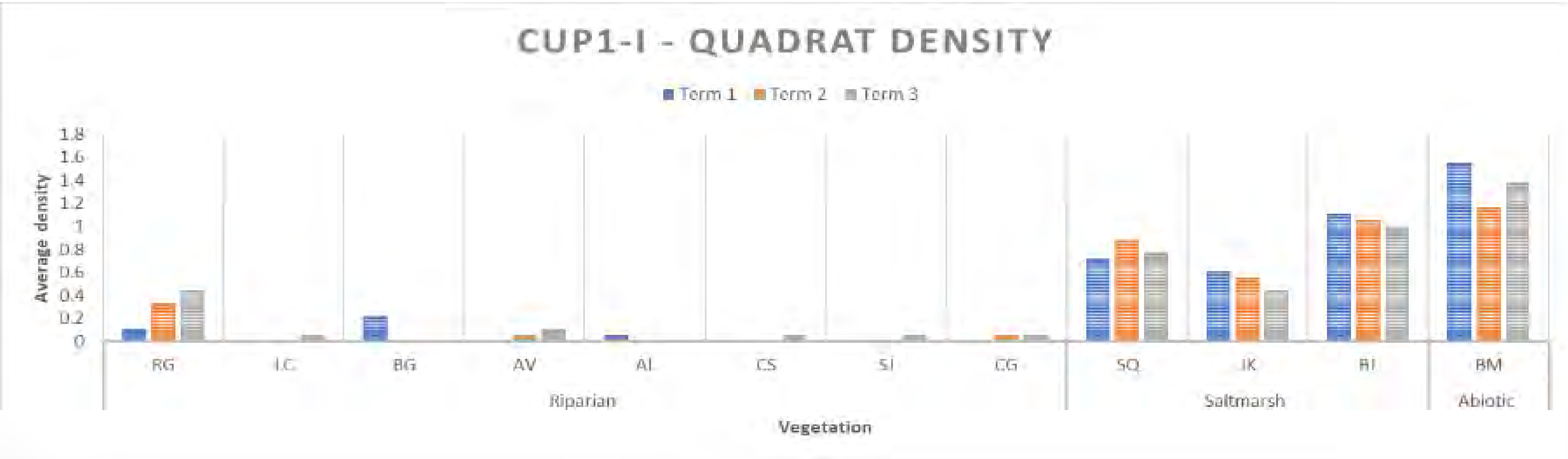


Figure 26 Mean vegetation zone density at CUP1-I

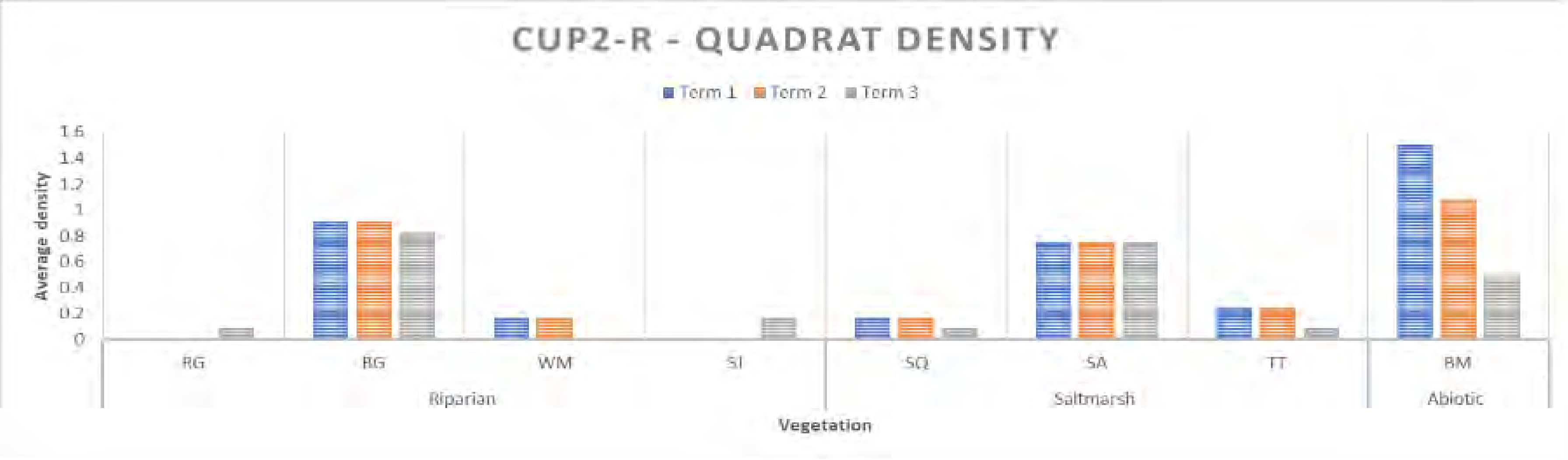


Figure 27 Mean vegetation zone density at CUP2-R

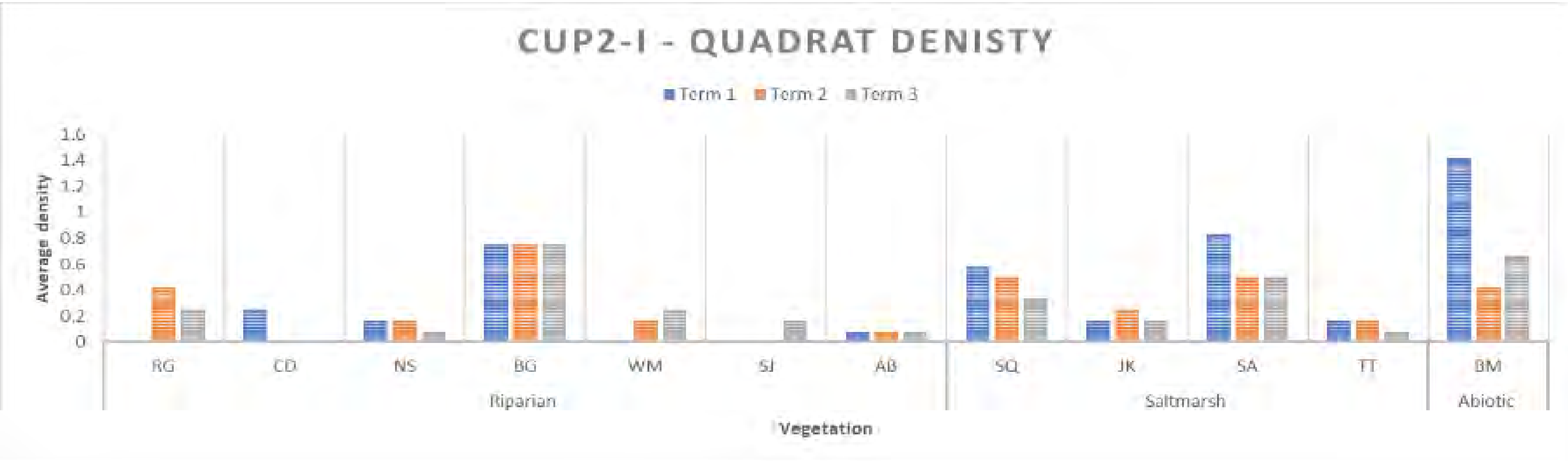


Figure 28 Mean vegetation zone density at CUP2-I

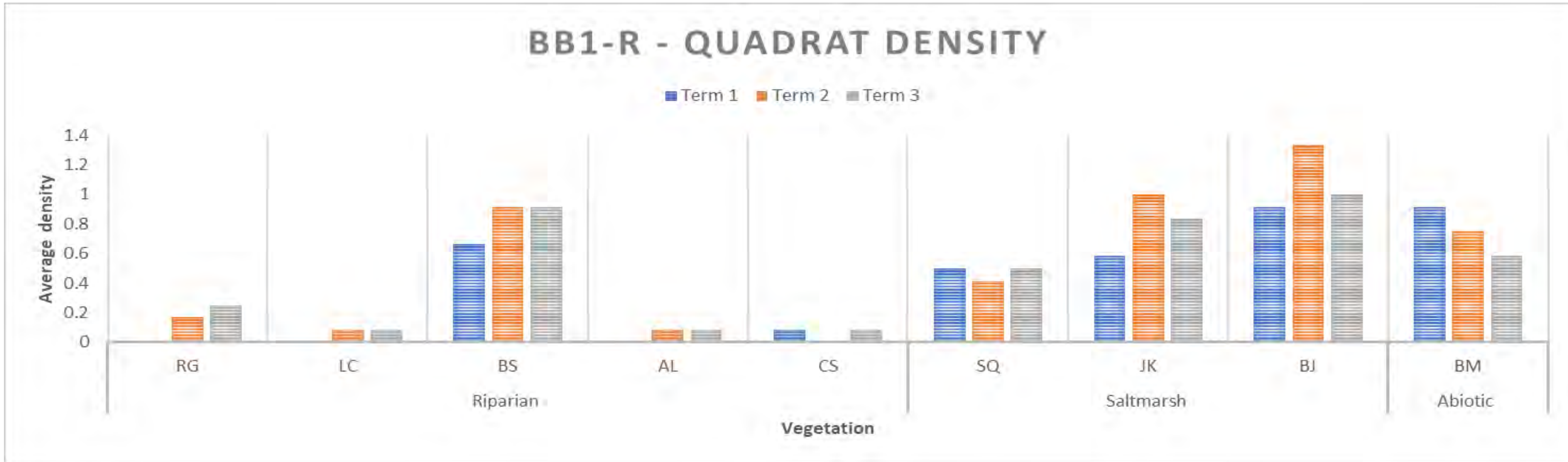


Figure 29 Mean vegetation zone density at BB1-R

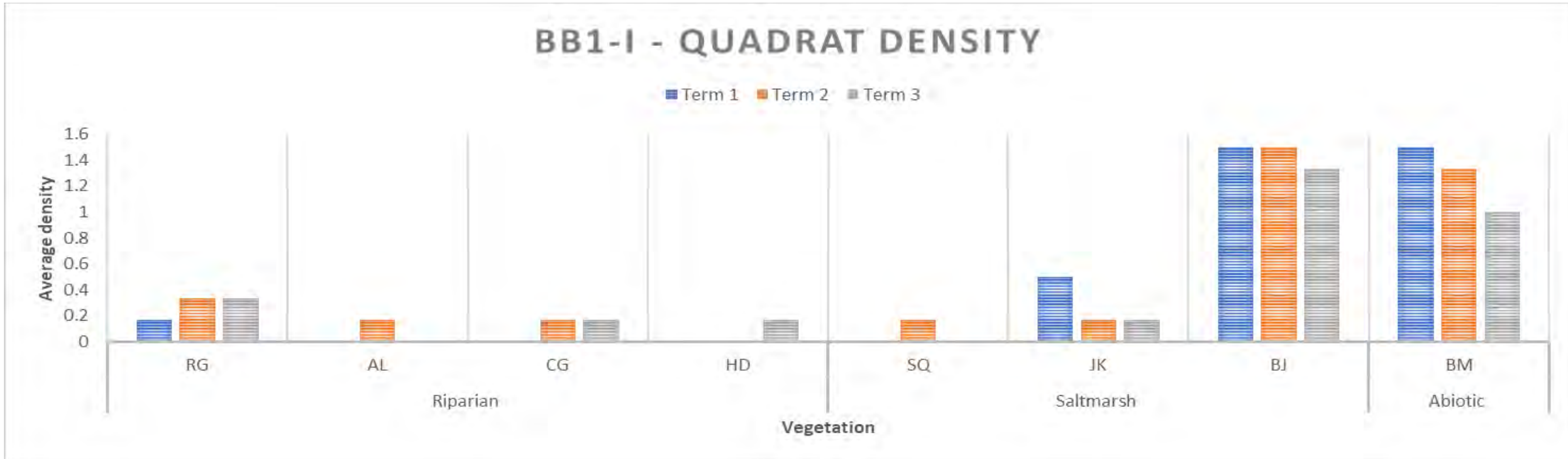


Figure 30 Mean vegetation zone density at BB1-I

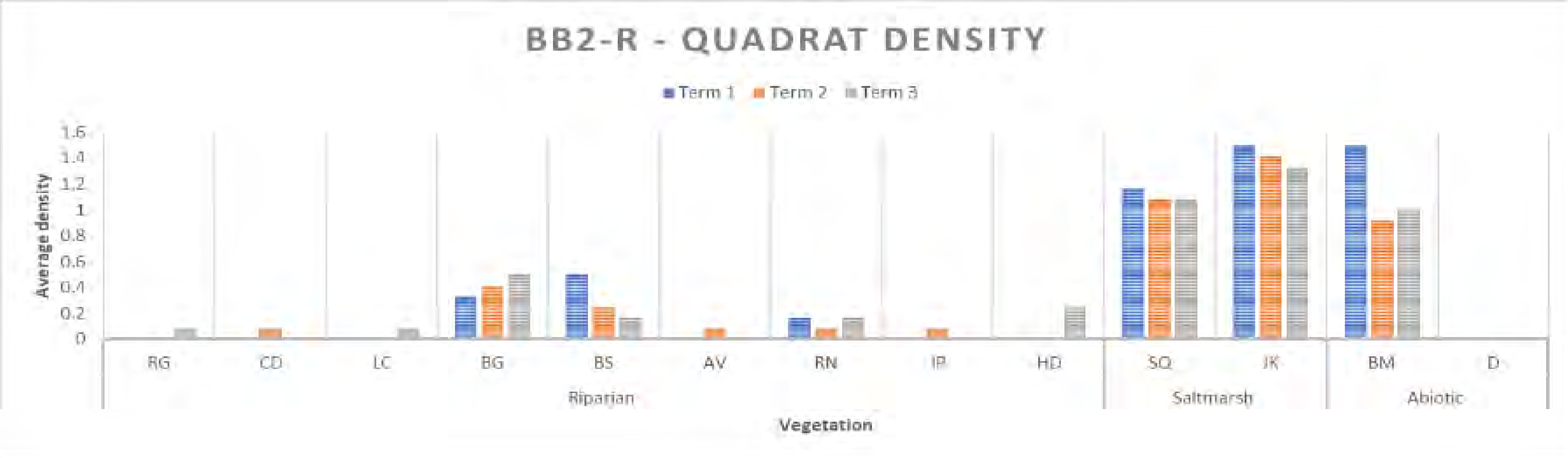


Figure 31 Mean vegetation zone density at BB2-R

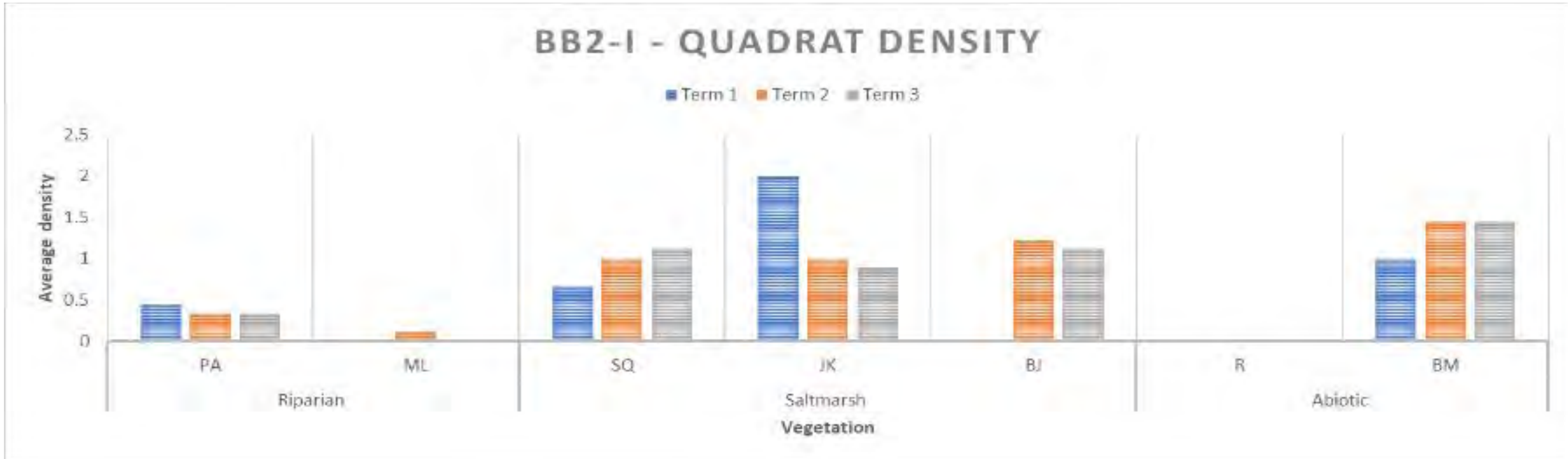


Figure 32 Mean vegetation zone density at BB2-I

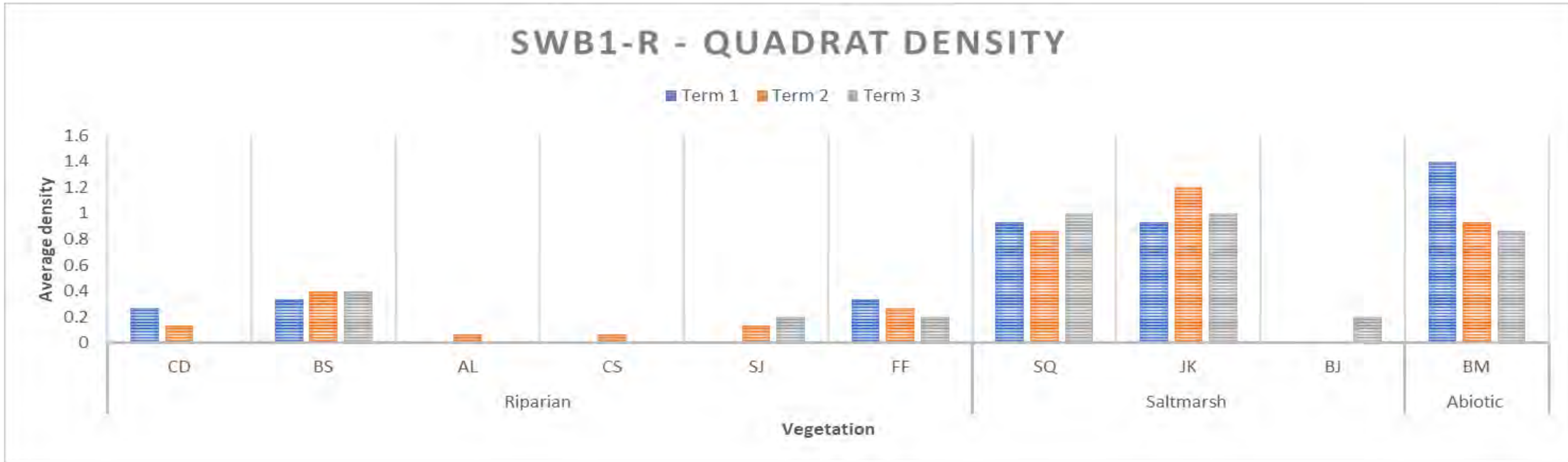


Figure 33 Mean vegetation zone density at SWB1-R

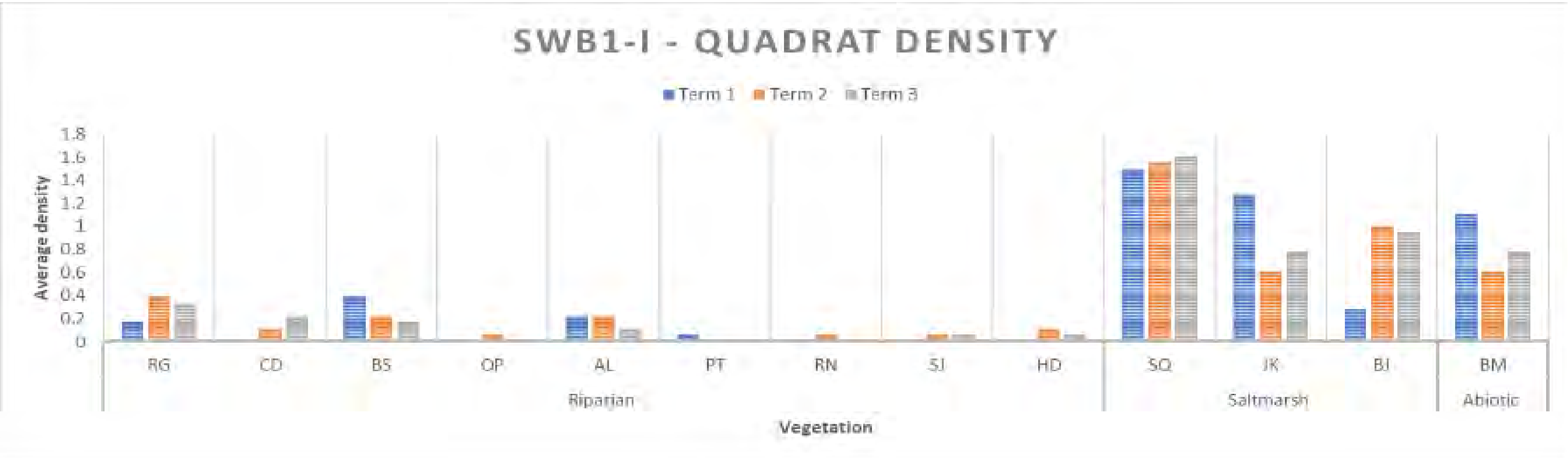


Figure 34 Mean vegetation zone density at SWB1-I

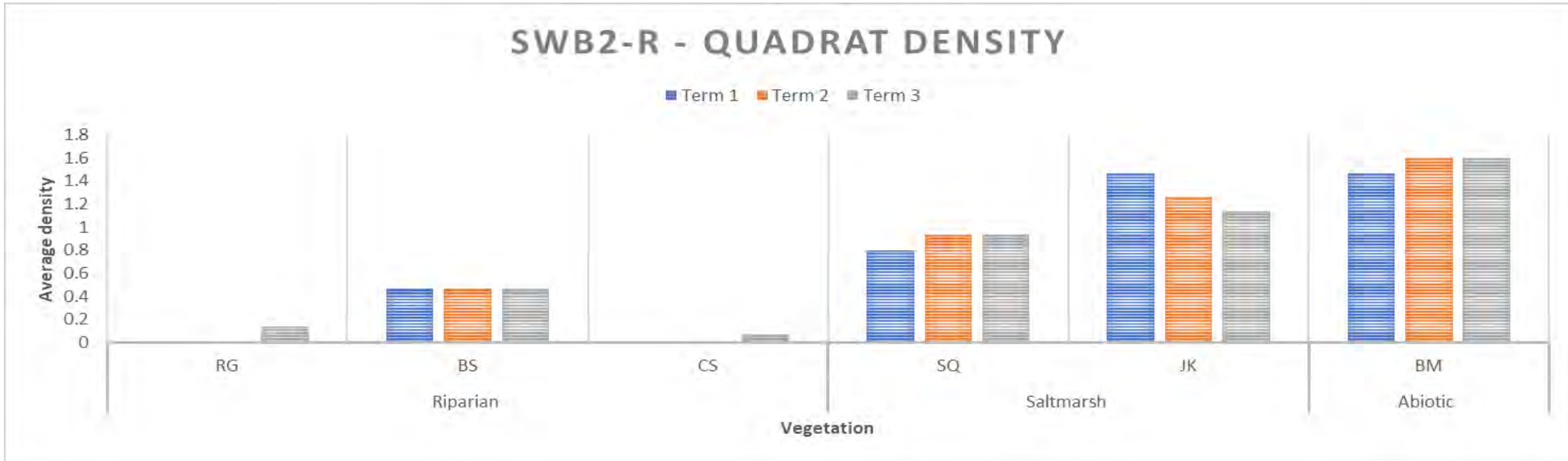


Figure 35 Mean vegetation zone density at SWB2-R

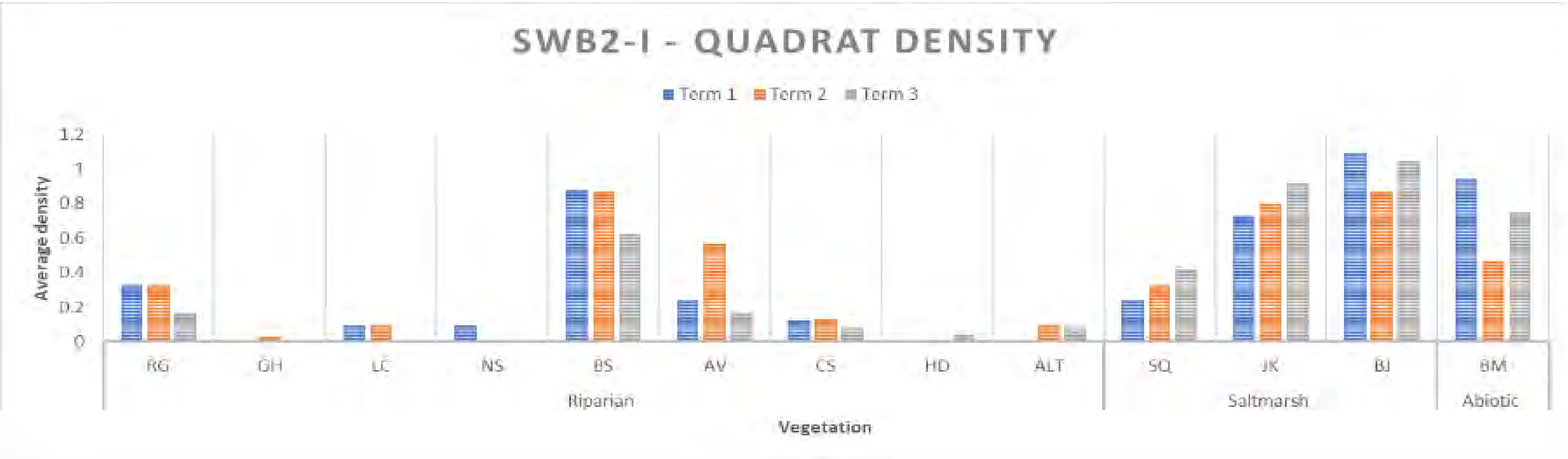


Figure 36 Mean vegetation zone density at SWB2-I

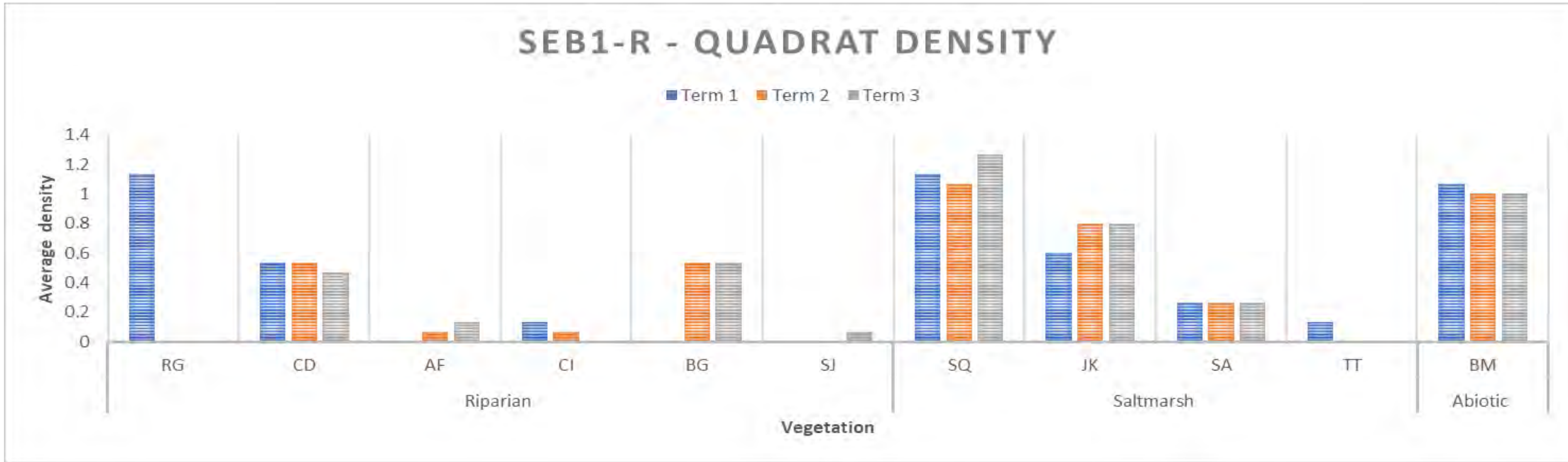


Figure 37 Mean vegetation zone density at SEB1-R

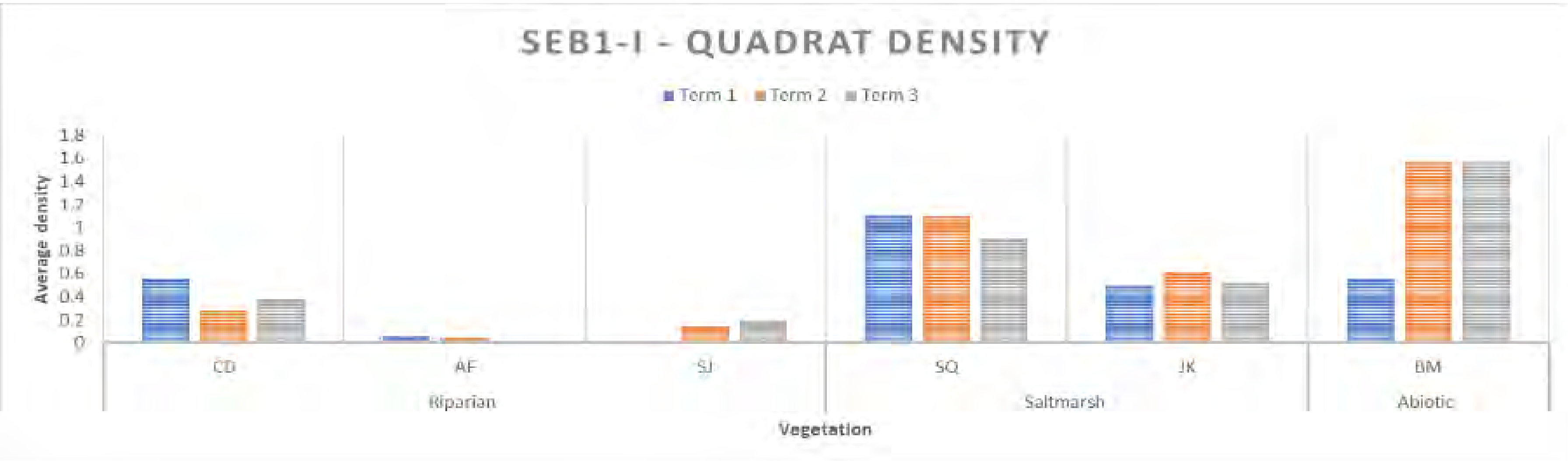


Figure 38 Mean vegetation zone density at SEB1-I

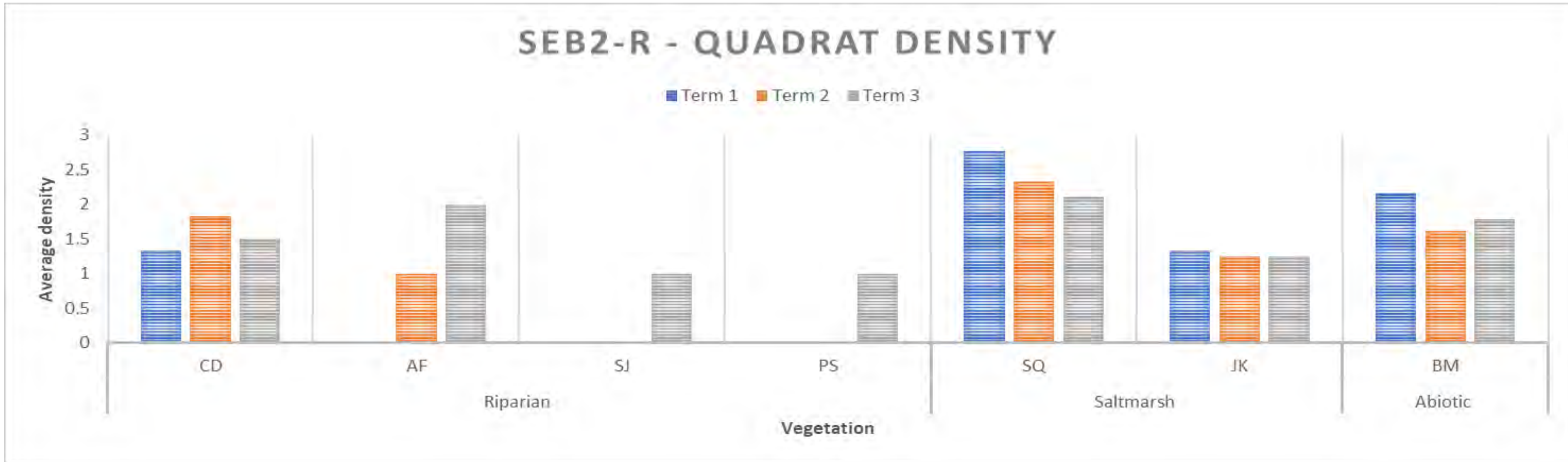


Figure 39 Mean vegetation zone density at SEB2-R

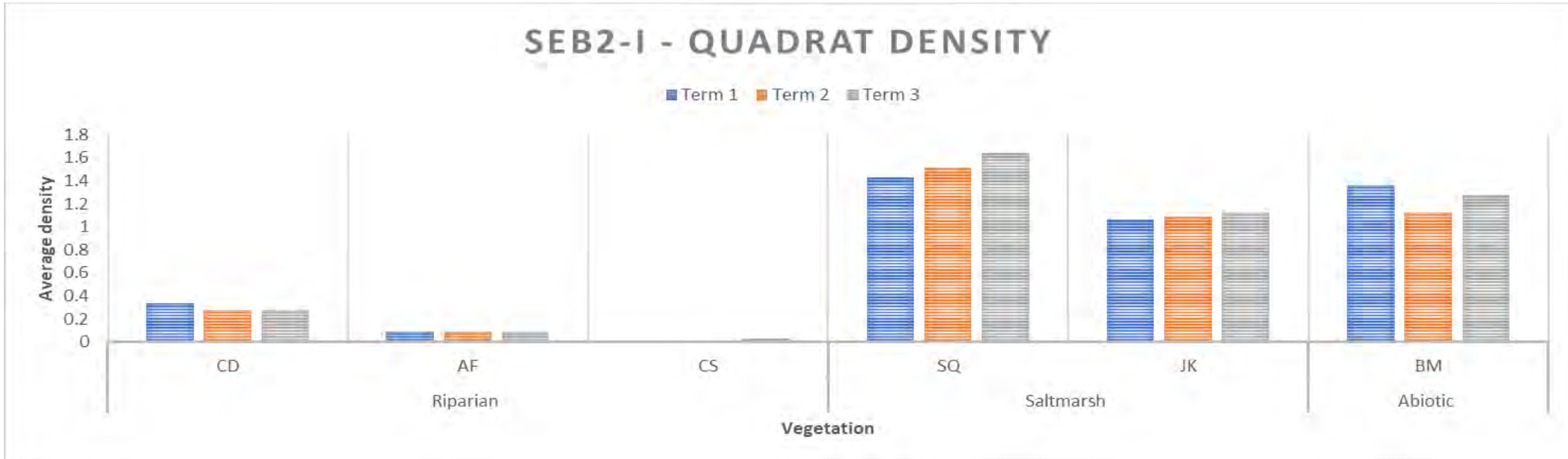


Figure 40 Mean vegetation zone density at SEB2-I

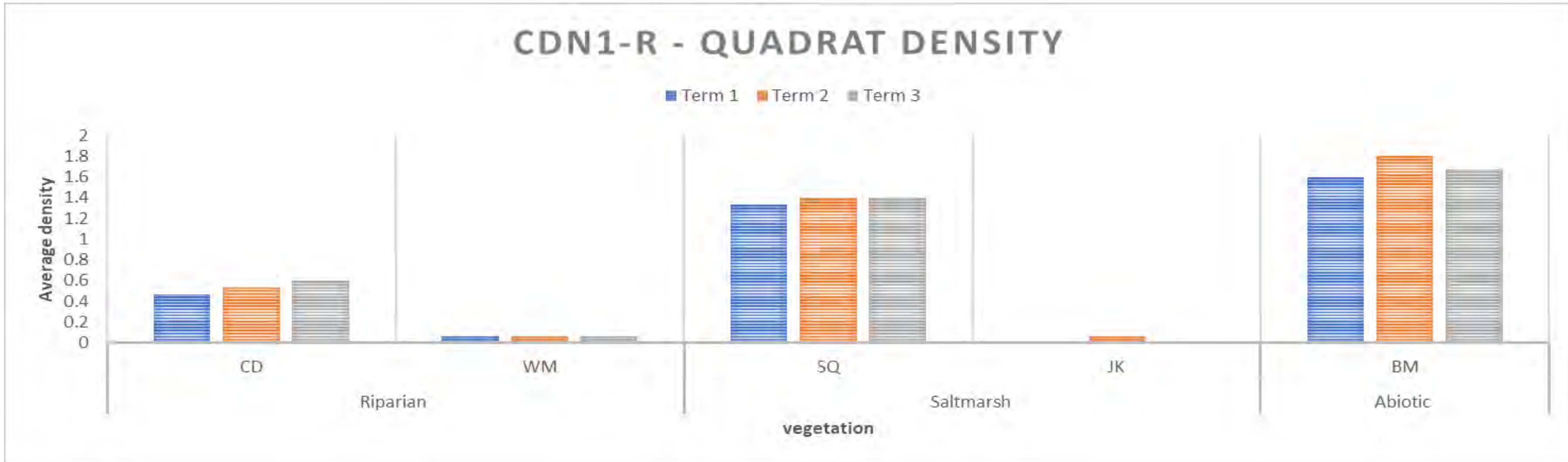


Figure 41 Mean vegetation zone density at CDN1-R

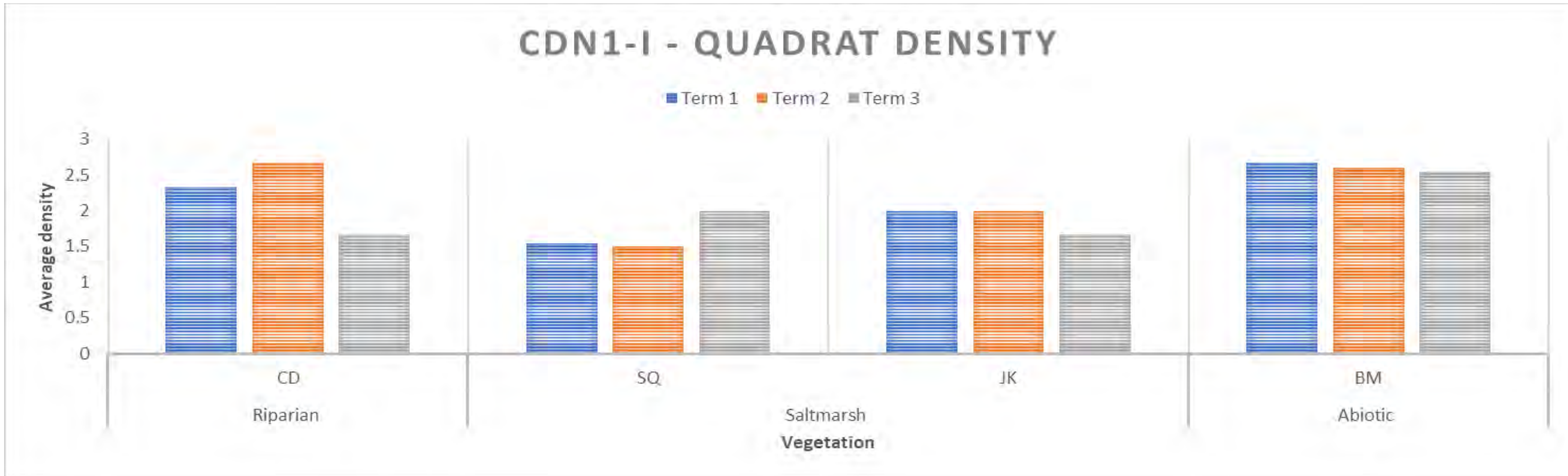


Figure 42 Mean vegetation zone density at CDN1-I

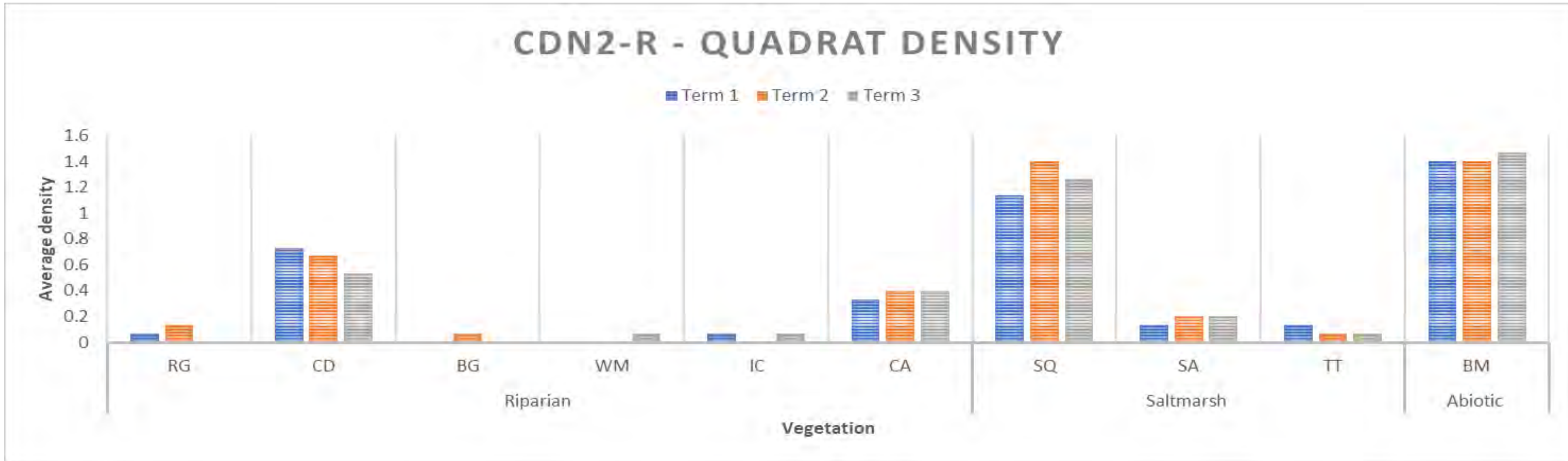


Figure 43 Mean vegetation zone density at CDN2-R

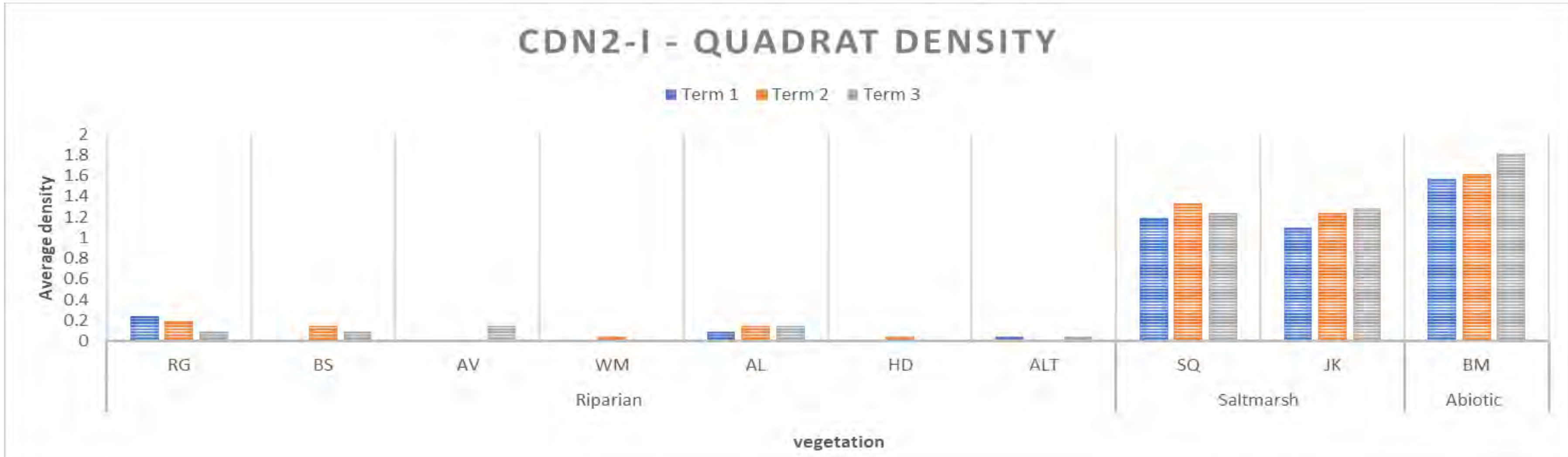


Figure 44 Mean vegetation zone density at CDN2-I

2.3 Estuarine Seagrass Monitoring

Section 2.1 of the Aquatic Ecology Methodology Report provides an overall description of the seagrass habitat monitoring program and **Figure 2** for that report indicated the overall Site Locations as they related to the then proposed oyster monitoring sites. As the oyster monitoring sites were subsequently adjusted in consultation with Crookhaven Oyster farmers, there were some minor adjustments to the seagrass monitoring sites and **Figure 45** below shows the final adopted seagrass monitoring site locations plus the final agreed oyster monitoring sites.

2.3.1 Monitoring Methodology Assessment

Whilst there are no changes to the Approved Seagrass monitoring program arising from its implementation over the first three bi-monthly monitoring terms the practical implementation of the program has included the following additional set up and analysis details which are provided here to supplement the Approved methods:

- Seagrass blades are replicated by using polypropylene ribbon, which is 5mm wide, <1mm thick and is cut to 30cm lengths. Four of these 30cm "seagrass blades" are then bundled together and cable tied to a piece of dowel, mimicking a single *Zostera* shoot.
- To calculate the epiphytic sediment and algae weights all 16 artificial seagrass leaves from each replicate are scraped clean using a razor blade with the total wet epibiota and sediment washed into a pre-weighed dry foil dish.
- The wet weight of each foil dish was recorded, and foil dishes were then placed in a laboratory oven at 70˚C for 24 hours.
- Once oven dried the dishes are weighed again.
- The oven dried samples in the foil dishes are then placed into a scientific muffle furnace at 500˚C for 2 hours, burning off all organic matter. The final ash weight of samples is then measured.
- The algae to inorganic epiphyte biomass proportions are calculated as follows:
  - Total organic weight (algae) = Dry weight – Ash weight.
  - Total Sediment weight = Ash weight.
  - Theses sediment and organic weights were then expressed as gm/cm^2 seagrass surface.

2.3.2 Subtidal Seagrass ASU Monitoring Results

Table 4 provides the dates for Seagrass ASU deployment and retrieval for the first six month sampling period and the pilot study plus the formal three bi-monthly subtidal seagrass monitoring period data are provided in **Appendix D.**

Seagrass Blade Mean Algae and Sediment results are shown graphically in **Figures 46 & 47**. Note missing data for site SWB1 where the ASUs were removed/stolen.

Table 4 Seagrass ASU Sampling Timetable

Term 1		**Term 2**		**Term 3**	
Dec-Jan		Feb-Mar		Apr-May	
In	Out	In	Out	In	Out
7/12/2022	17/1/2023	6/3/2023	4/4/2023	4/4/2023	23/5/2023
Term 4		**Term 5**		**Term 6**	
Jun-Jul		Aug-Sep		Oct-Nov	
In	Out	In	Out	In	Out
23/5/2023	4/7/2023				
Term 7		**Term 8**		**Term 9**	
Dec-Jan		Feb-Mar		Apr-May	
In	Out	In	Out	In	Out

Figure 45 Combined Seagrass Sampling Sites (red) and Oyster Monitoring Sites (blue) as adjusted following consultations with Crookhaven Oyster Farmers. Trial ASUs at SWB1 were stolen/removed twice and this site may have to be re-located.

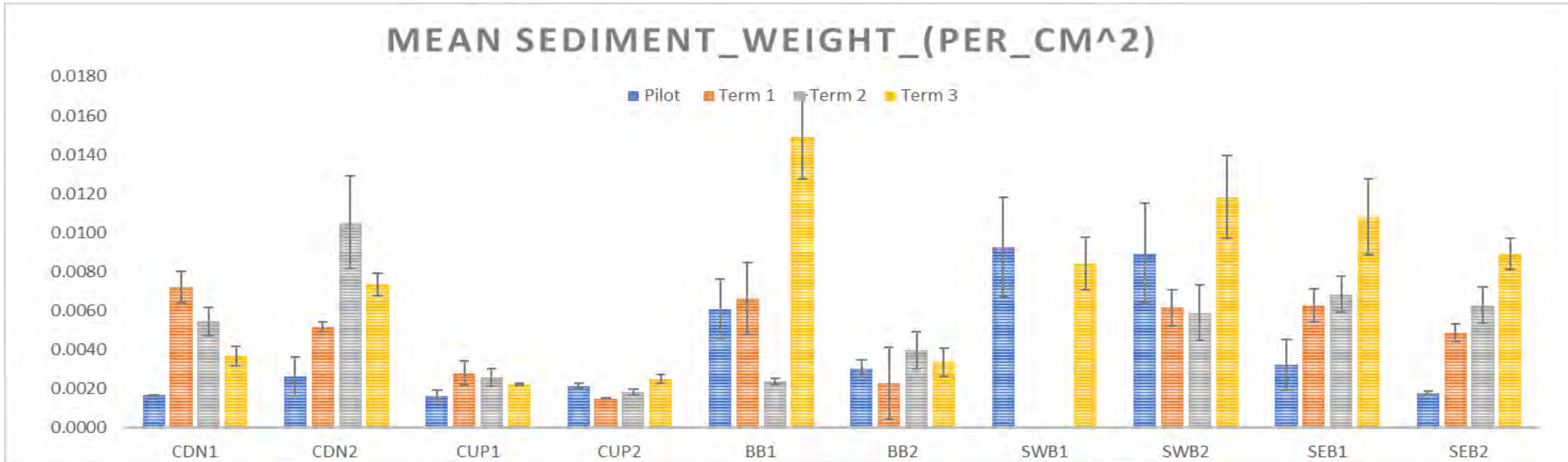


Figure 46 Seagrass Blade Mean Sediment weight

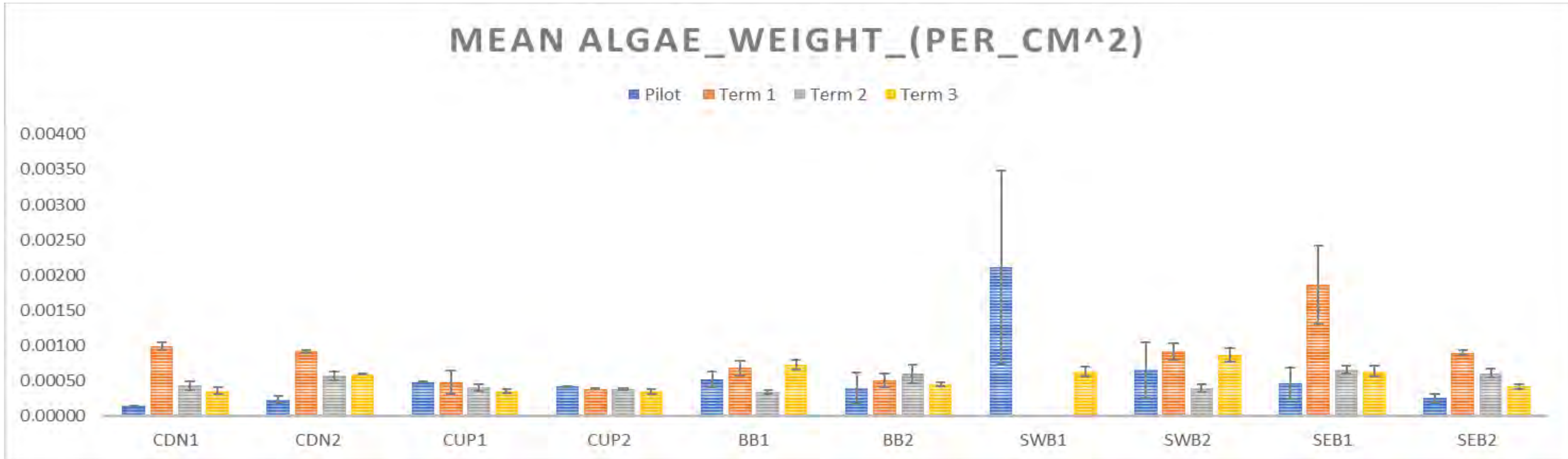


Figure 47 Seagrass Blade Mean algae weight

2.4 Crookhaven Estuary Aquaculture Oyster Monitoring

Section 2.4 of the Aquatic Ecology Methodology Report provides an overall description of the oyster monitoring program and **Figure 2** for that report indicated the Site Locations as they related to the then proposed oyster monitoring sites.

Following commencement of the Aquatic Ecology Monitoring program and as per Condition C18 (e), the oyster monitoring component of the project was presented to Crookhaven/Shoalhaven oyster industry representatives who made a number of recommendations to alter the oyster monitoring program including retention of 12 sites rather than the 10 sites recommended, adjusting the actual site locations *in situ* and duplicating the recommended Sydney Rock Oyster Monitoring program to include Pacific Oysters.

These recommendations were accepted and final site selection and site establishment was then undertaken in direct partnership with the oyster farmers, who placed suitable infrastructure to hold sample containers to mimic normal farming practice, provided oyster farming containers for the trials (**Figure 48**) and have supplied the necessary oysters for each bi-monthly trial.

Figure 48 Monitoring Sites for Sydney Rock Oyster and Pacific Oysters Cages were established at purpose-built monitoring sites (left) or at the end of existing commercial sites (right). The sites were established by the Oyster Farmers.

Figure 49 below shows the original lease siting for the pilot study shore and lease wild oyster sampling and **Figure 50** below shows the final adopted methodology lease sampling site locations as per Oyster Farmer recommendations,

2.4.1 Crookhaven Estuary Aquaculture Oyster Monitoring Results

Table 5 shows the oyster deployment and recovery dates for the first six months sampling program and the Oyster Monitoring Data and Laboratory Analysis results are provided in **Appendix E** with Oyster Condition Index Data provided in Tables **E1 to E3** and Laboratory Certificates of Analysis (COAs) provided as **Appendix E4**.

Table 5 Oyster Deployment Timetable

Term 1		**Term 2**		**Term 3**	
Dec-Jan		Feb-Mar		Apr-May	
In	Out	In	Out	In	Out
20/10/2022	24/1/2023	22/3/2023	7/3/2023	22/3/2023	9/5/2023
Term 4		**Term 5**		**Term 6**	
Jun-Jul		Aug-Sep		Oct-Nov	
In	Out	In	Out	In	Out
Term 7		**Term 8**		**Term 9**	
Dec-Jan		Feb-Mar		Apr-May	
In	Out	In	Out	In	Out

As per the Approved Wet Weather Methodology, the Second Term Deployed Oyster batch was left *in situ* for an extra week (making total deployment 8 weeks instead of 7 weeks) to account for a wet weather event. This delayed the deployment and eventual collection of the Term 3 oysters and as a result Condition Index processing for Term 3 deployed oysters was still underway at end of June 23 and laboratory results for Term 3 oysters are also not available to include in this draft report.

Inspection of the Laboratory COAs for the Term 1 and 2 results show that whilst PAH and Organochloride results have all been below laboratory detection limits for the entire sampling period, metals were detected. Accordingly, for this preliminary data report the mean metal concentrations have been graphed for Terms 1 and 2 (see **Figures 51 to 6**4 below). For each bar graph the grey and yellow lines show the mean concentrations for the "before deployment" oysters and the bar graphs indicate the mean concentrations post deployment on a site by site basis. Note also that for this preliminary presentation values less than detection have been set at half detection for mean calculations.

Figure 49 Original Proposed Lease and Shoreline Oyster Sampling Locations used for the Pilot Study Wild Oyster Sampling

Figure 50 Final Adjusted Lease Oyster Deployment Locations (blue dots) as recommended by Oyster Farmers. Red dots show corresponding Seagrass ASU sites.

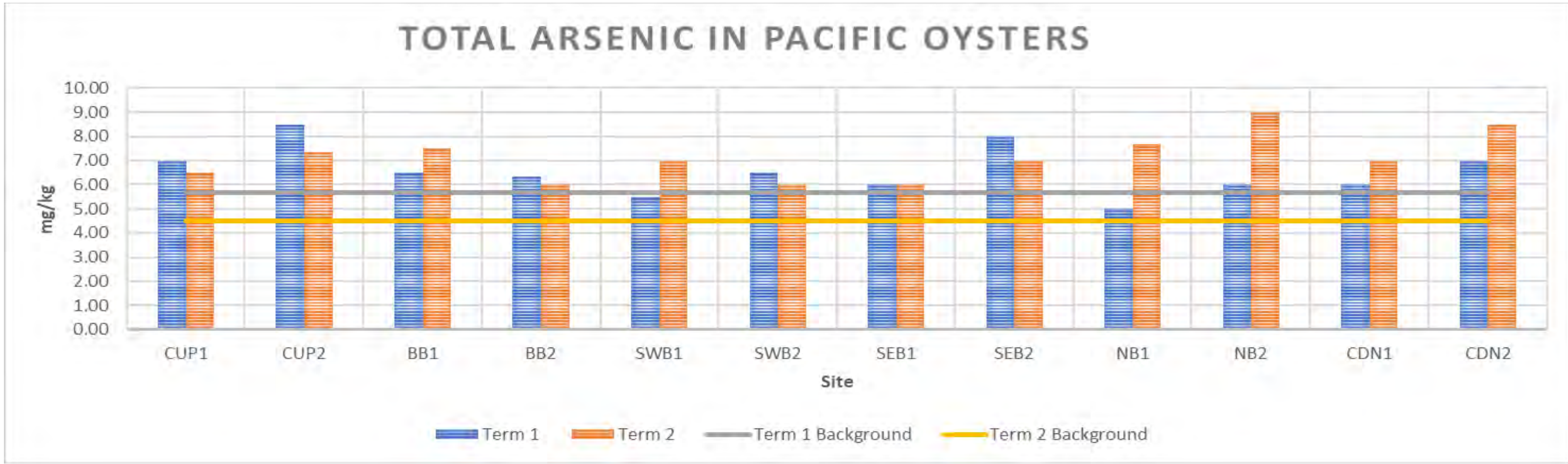


Figure 51 Mean total arsenic concentration in pacific oysters

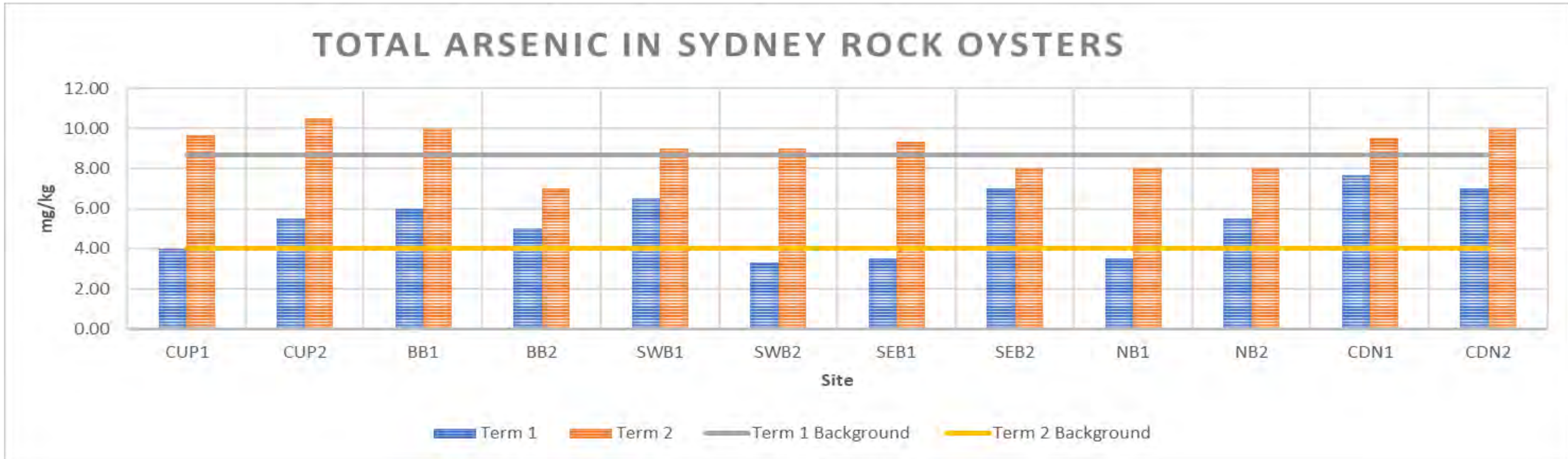


Figure 52 Mean total arsenic concentration in Sydney rock oysters

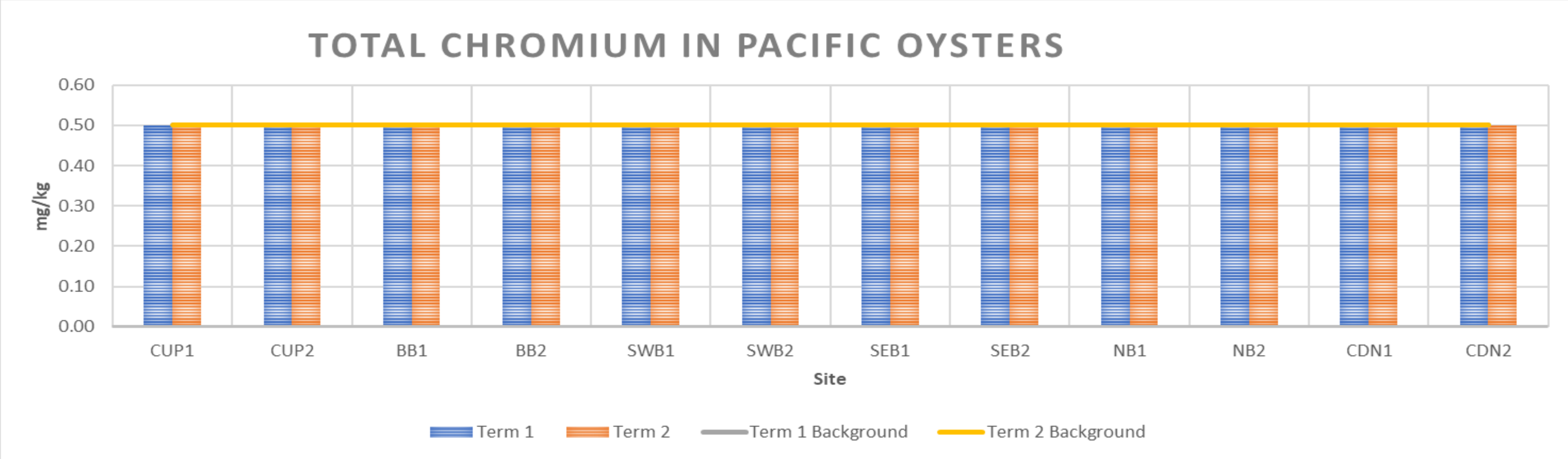


Figure 53 Mean total chromium concentration in pacific oysters

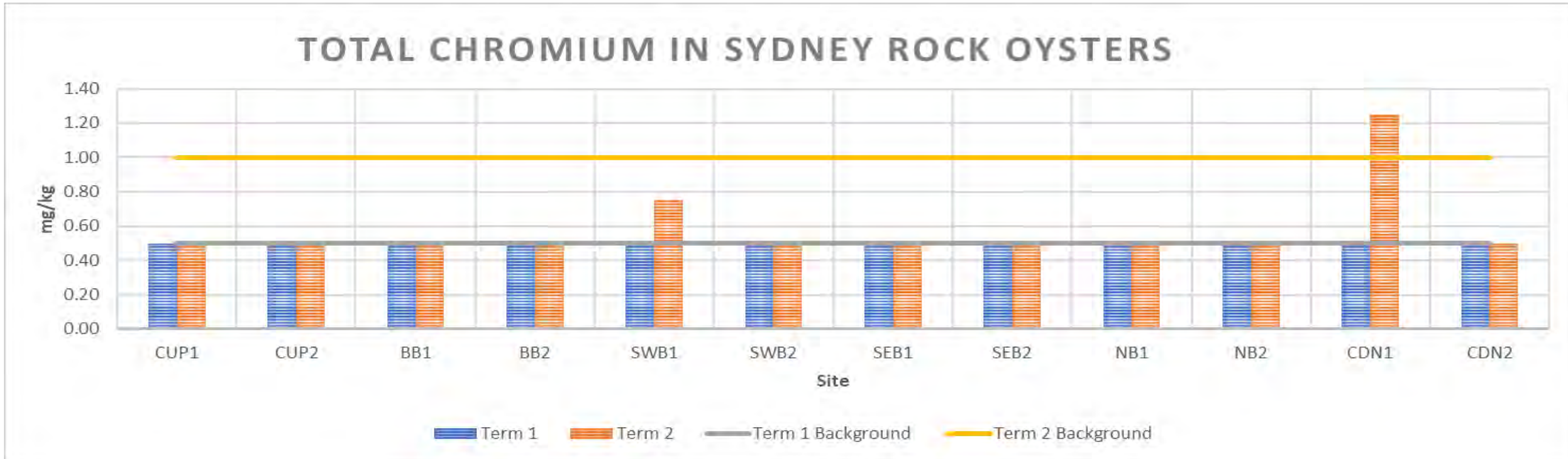


Figure 54 Mean total chromium concentration in Sydney rock oysters

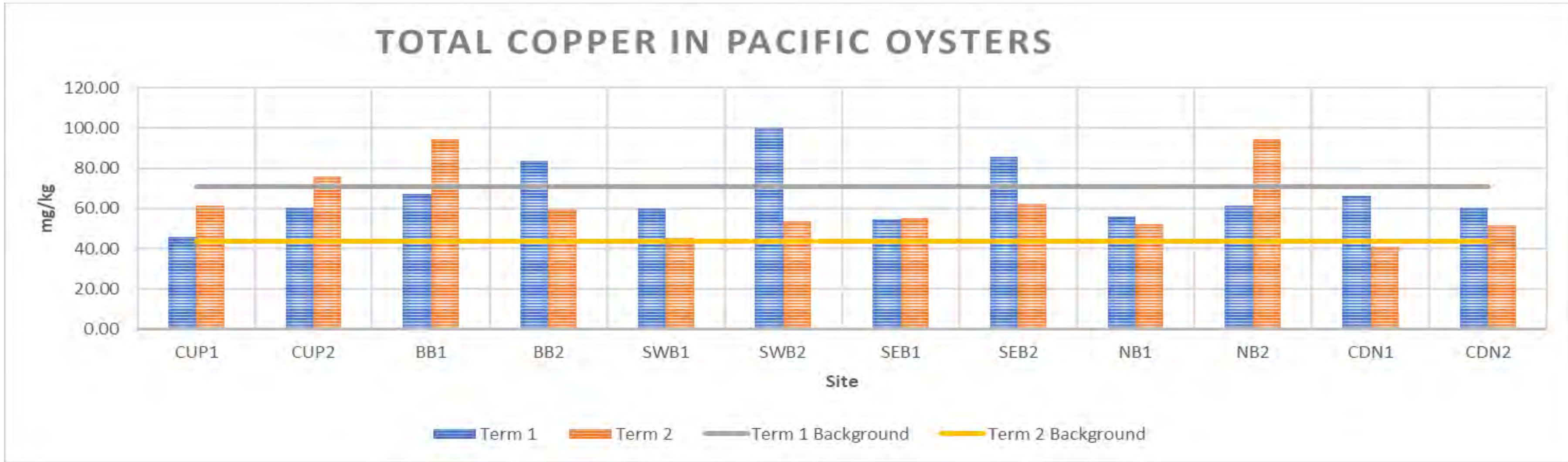


Figure 55 Mean total copper concentration in pacific oysters

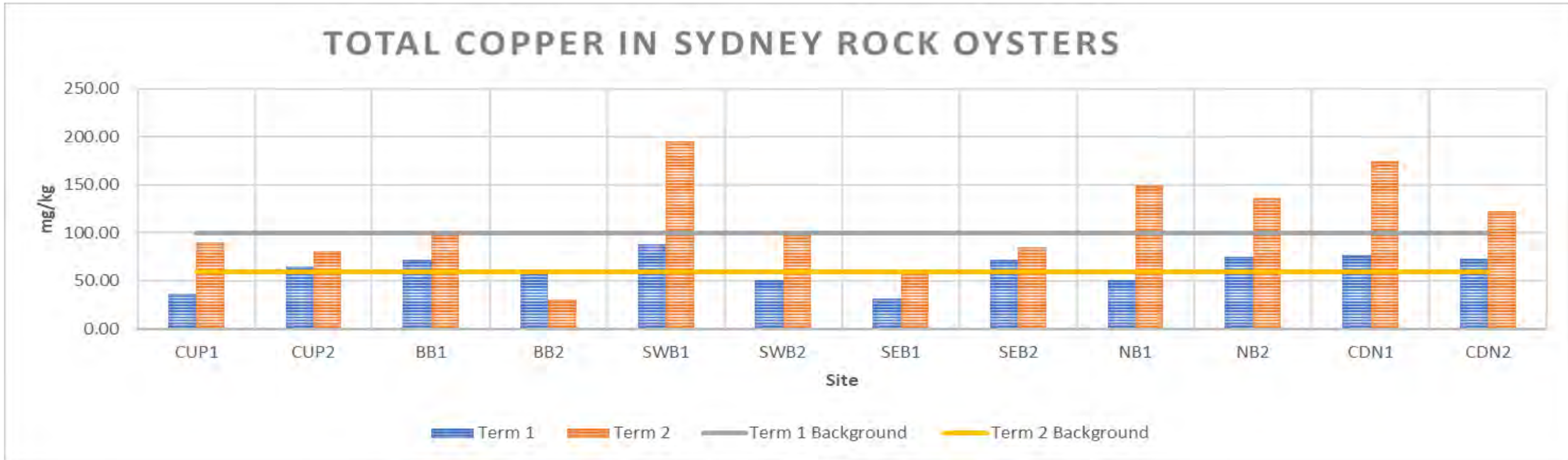


Figure 56 Mean total copper concentration in Sydney rock oysters

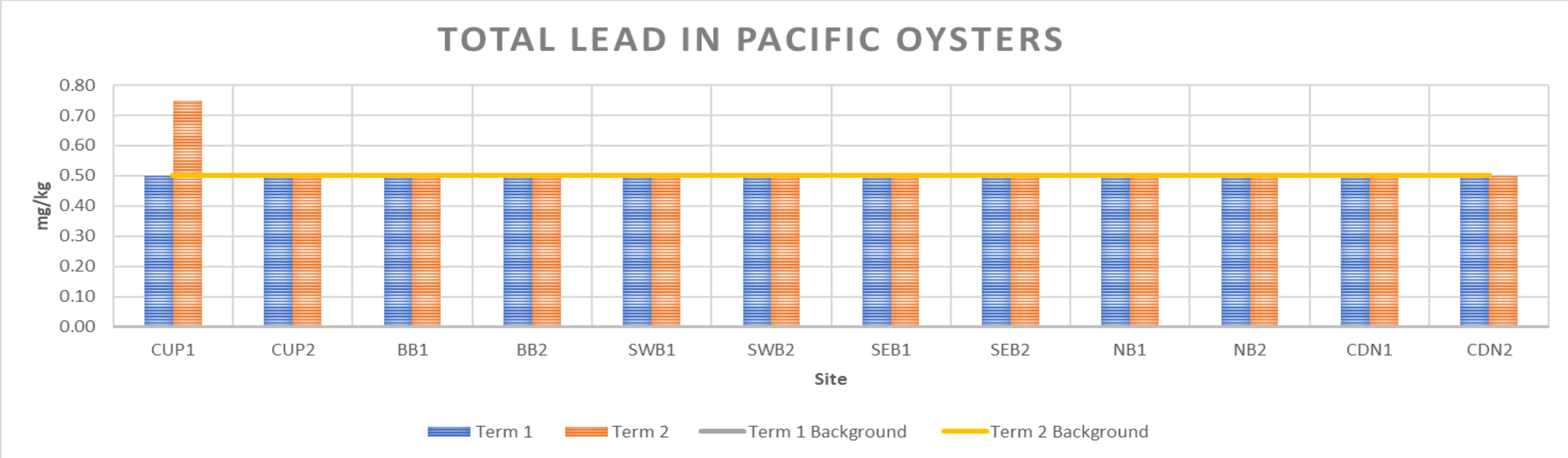


Figure 57 Mean total lead concentration in pacific oysters

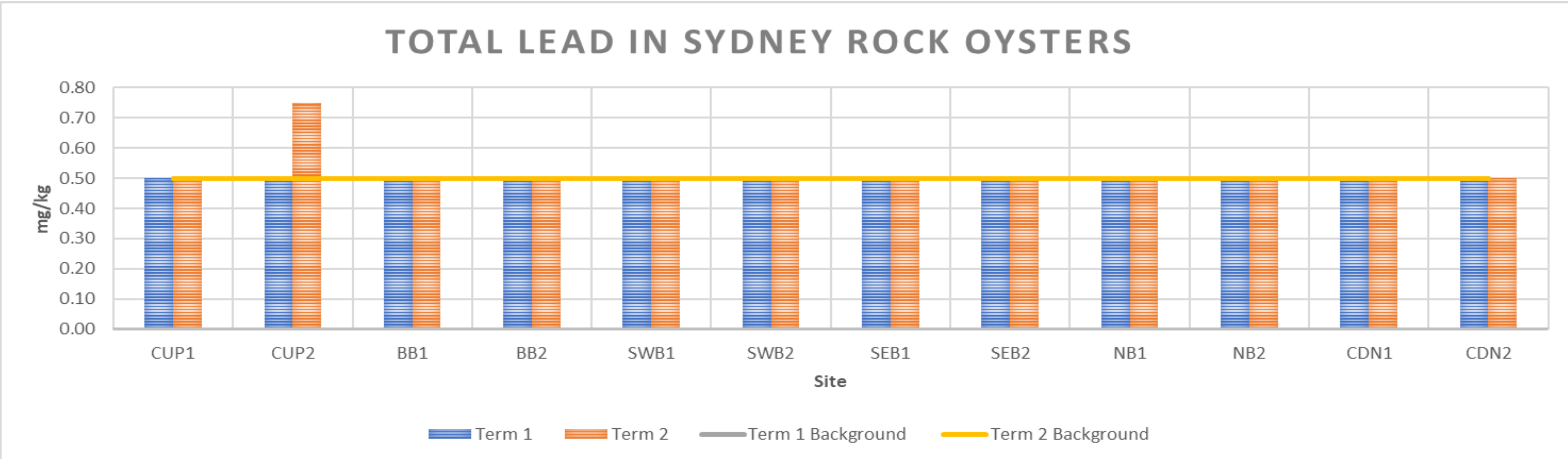


Figure 58 Mean total lead concentration in Sydney rock oysters

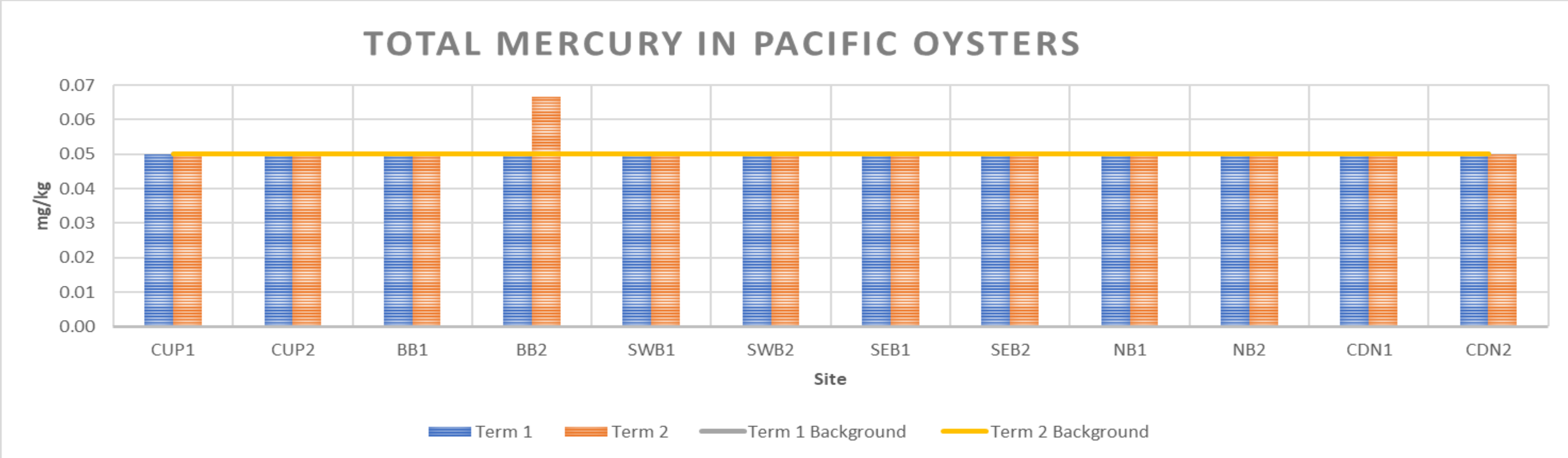


Figure 59 Mean total mercury concentration in pacific oysters

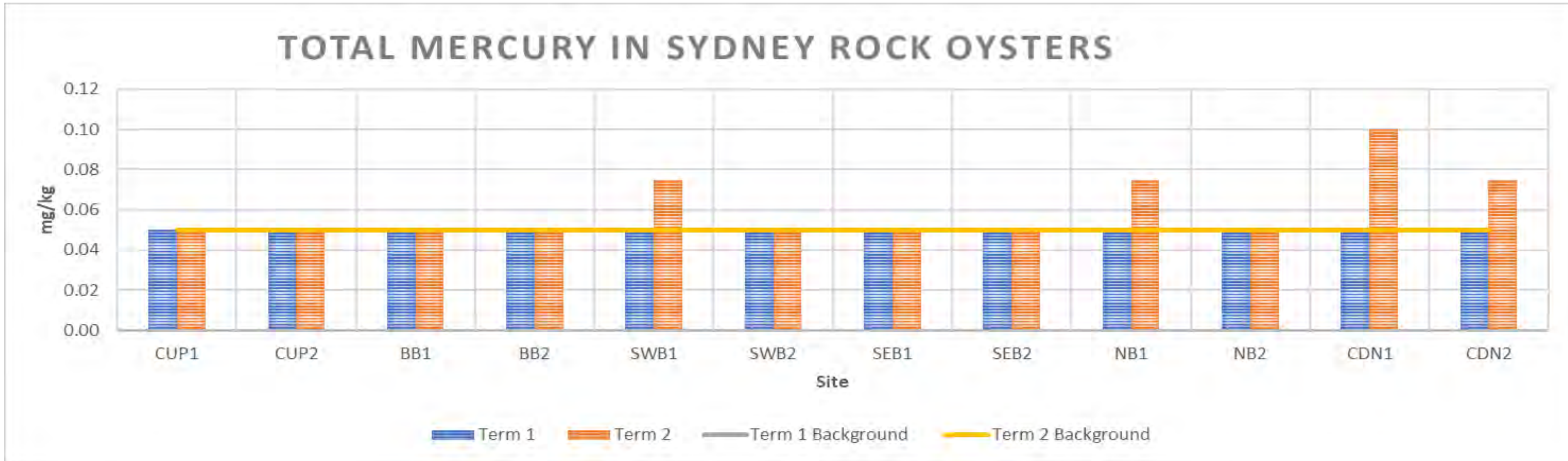


Figure 60 Mean total mercury concentration in Sydney rock oysters

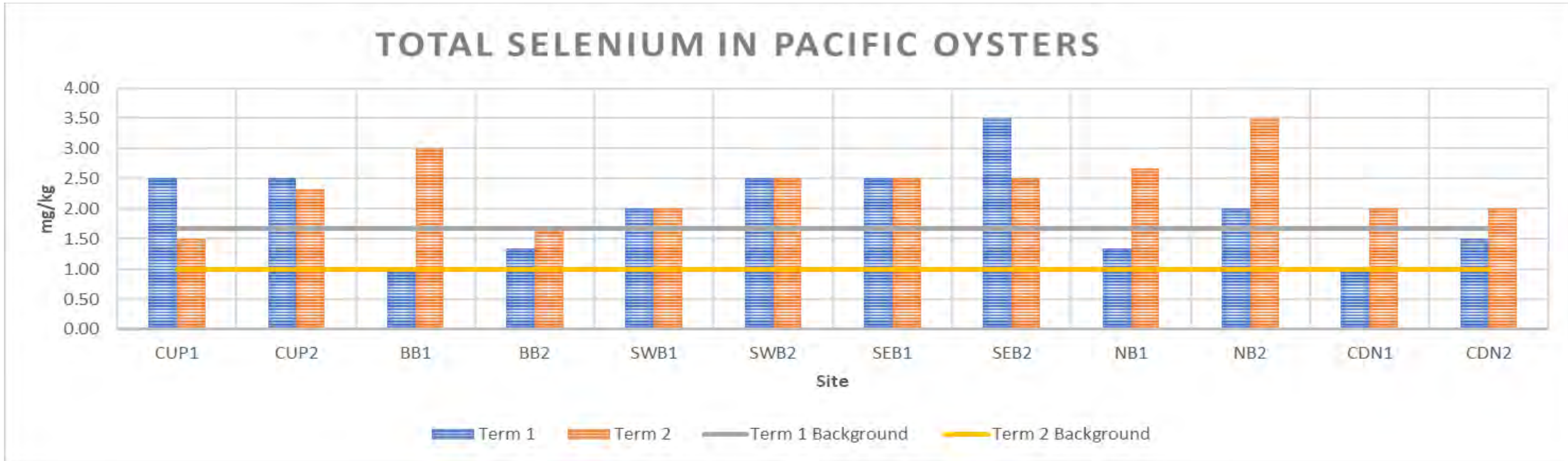


Figure 61 Mean total selenium concentration in pacific oysters

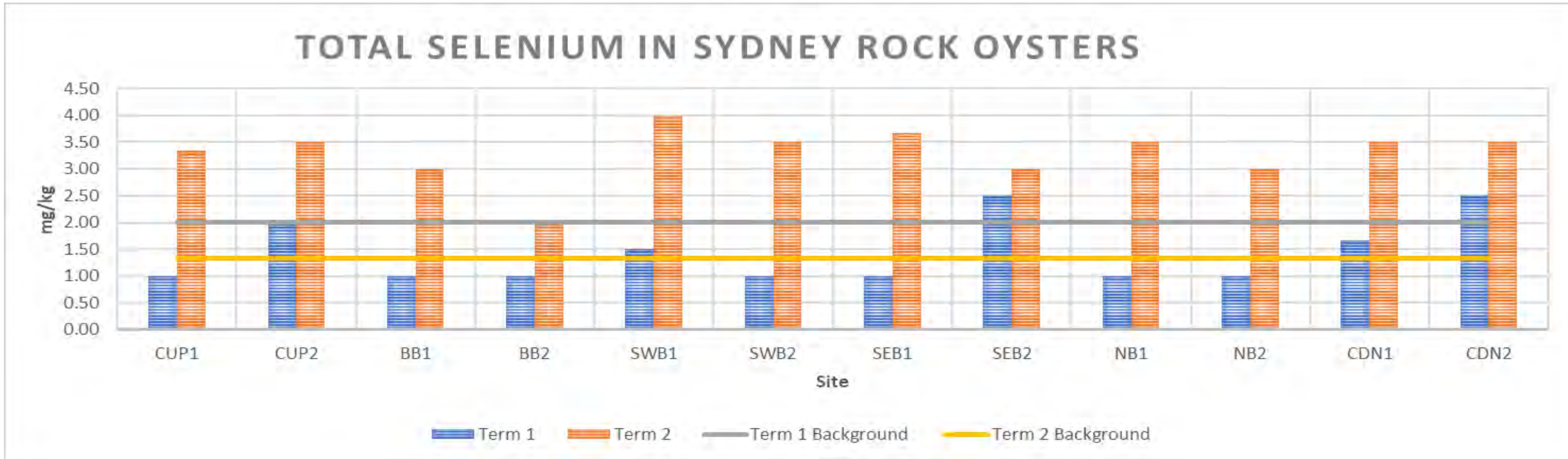


Figure 62 Mean total selenium concentration in Sydney rock oysters

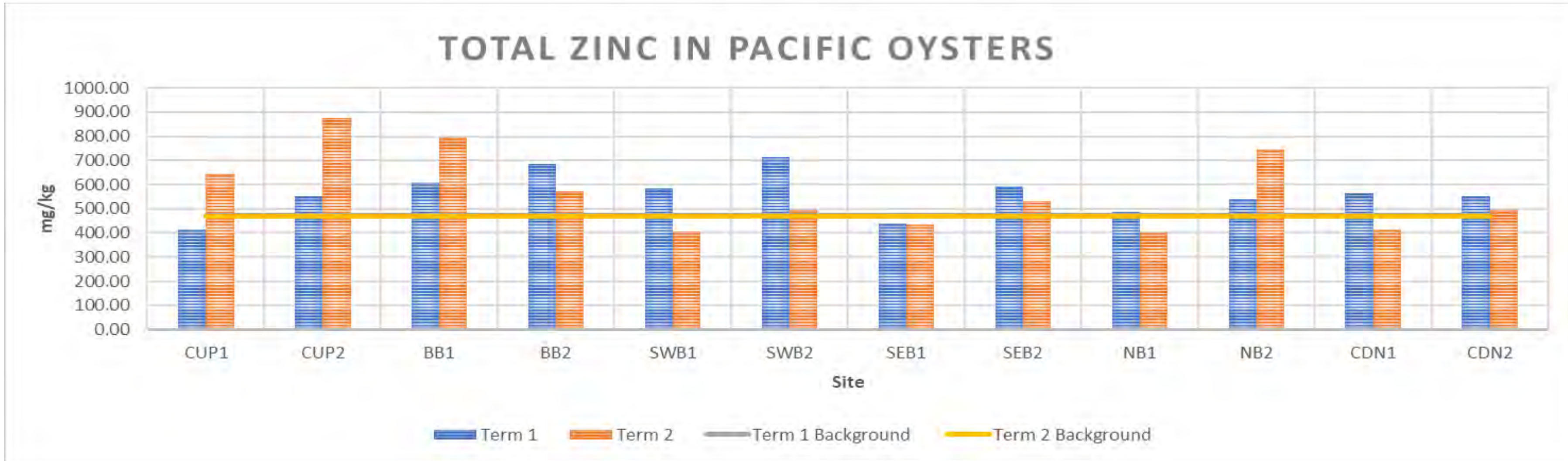


Figure 63 Mean total zinc concentration in pacific oysters

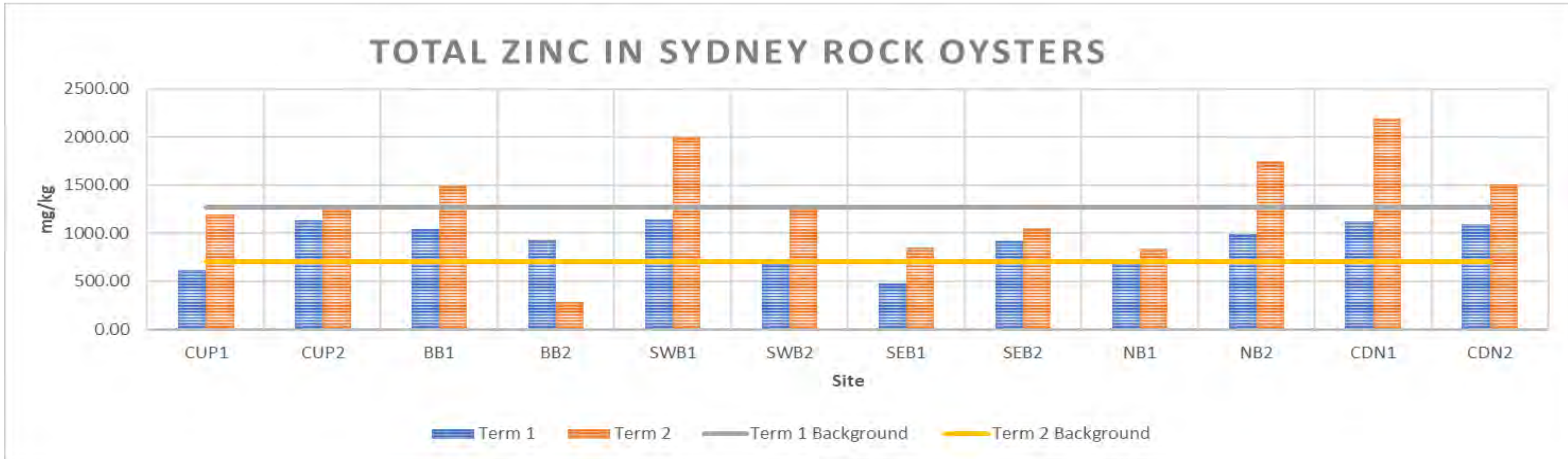


Figure 64 Mean total zinc concentration in Sydney rock oysters

2.5 Lake Wollumboola Freshwater Biota Monitoring

Section 2.3 of the Approved Aquatic Ecology Methodology Report provides the rationale and methodology for the adopted Freshwater Biota monitoring program from six sites in three creeks, and, for clarity, the final adopted sampling sites are shown in **Figure 65** below.

Section 2.5.1 below proposes recommended changes to the Lake Wollumboola Freshwater Biota Monitoring program following completion of the first 6 monthly monitoring period. **Section 2.5.2** provides the results summary for the water quality profiling data, and results summaries for the Artificial Sampling Unit (ASU) macroinvertebrate and Electrofishing monitoring components are contained in **Section 2.5.3** and **Section 2.5.4** respectively.

Sampling is required to be undertaken seasonally. **Table 6** below provides the deployment dates for Freshwater ASUs and **Table 7** provides dates for Seasonal Electrofishing.

Table 6 Freshwater ASU Seasonal Timetable					
Term 1 Summer		**Term 2 Autumn**		**Term 3 Winter**	
16 Dec-15 Mar		16 Mar-15 Jun		16 Jun-15 Sep	
In	Out	In	Out	In	Out
21/12/2022	17/1/2023	1/3/2023	26/4/2023	9/6/2023	
Term 4 Spring		**Term 5 Summer**		**Term 6 Autumn**	
16 Sep-15Dec		16 Dec-15 Mar		16 Mar-15 Jun	
In	Out	In	Out	In	Out

Table 7 Freshwater Electrofishing Seasonal Timetable					
Term 1 Summer		**Term 2 Autumn**		**Term 3 Winter**	
16 Dec-15 Mar		16 Mar-15 Jun		16 Jun-15 Sep	
Start	Finish	Start	Finish	Start	Finish
27/3/2023	28/3/2023	4/7/2023	5/7/2023		
Term 4 Spring		**Term 5 Summer**		**Term 6 Autumn**	
16 Sep-15Dec		16 Dec-15 Mar		16 Mar-15 Jun	
Start	Finish	Start	Finish	Start	Finish

2.5.1 Monitoring methodology refinement

Analysis of Terms 1 and 2 ASU macroinvertebrate community results indicate high variation among site replicate samples with only very few colonising taxa dominated by bloodworms (sub-families Chironominae and Tanypodinae; see **Table 11** in **Section 2.5.3**):

- Of the 16 macroinvertebrate taxa recorded from the ASU monitoring program, replicate diversity (richness or number of taxa per chopstick bundle) ranged between 0 taxa and 7 taxa.
- Overall, the most commonly occurring macroinvertebrates were bloodworms, which comprised greater than 90% of the abundance for 47 of the 57 replicate samples.
- The remainder of taxa were infrequently encountered and present in very small quantities (generally less than 2 specimens per sample when present).

It is therefore recommended that following changes are made to the existing approved macroinvertebrate sampling program:

- Extending the seasonal deployment time for ASUs from two months to three months to allow for increased colonisation by stream macroinvertebrates,
- Undertake additional quantitative macroinvertebrate sweep netting of available detritus habitats at each site, comprising three 20 second timed replicate samples per site, to complement the ASU sampling program.
- Whilst the aquatic habitats are limited to emergent macrophytes (mostly *Baumea juncea*), trailing bank vegetation (*Gahnia* leaves and stem structures) and detritus reservoirs (mostly Casuarina and *Gahnia* leaves and sticks), they are generally consistently available among all three creeks.

Figure 65 Final adopted Freshwater Monitoring Site Locations.

2.5.2 Water quality metering

Appendix Tables F1.1 to **F1.3** provide the full water quality profiling data for each creek, and **Tables 8** to **10** below summarise the individual site water quality statistics for surface, middle and bottom readings in each depth profile for the deeper sites (i.e., excluding WCUp and SCUp) including means (± standard deviation SD). Note that profiling was undertaken on six occasions between December 2022 and July 2023, and WCUp was dry on two of those occasions (24th January and 5th July 2023).

Table 8 Wattle Creek Site Water Quality Summary Data Results

Site		Temp °C	Cond µS/cm	Sal ppt	DO %sat	DO mg/l	pH Units	Turb ntu
WCUp	Min	12.51	400	0.19	40.0	3.73	5.66	0.10
	Max	28.35	504	0.32	119.4	9.37	6.59	4.90
	Mean	19.8	467.7	0.2	62.2	5.6	5.9	1.4
	SD	5.1	41.5	0.0	33.6	2.8	0.3	1.9
WCDn	Min	11.07	844	0.54	9.3	0.85	5.72	0.60
	Max	27.43	2609	1.30	65.8	7.00	6.54	64.90
	Mean	18.2	1521.4	0.8	28.4	2.7	6.1	30.7
	SD	5.1	526.0	0.2	14.7	1.6	0.3	18.7

Table 9 Downs Creek Site Water Quality Summary Data Results

Site		Temp °C	Cond µS/cm	Sal ppt	DO %sat	DO mg/l	pH Units	Turb ntu
DCUp	Min	10.98	411	0.21	12.2	1.11	6.72	0.6
	Max	23.40	1784	0.91	99.1	10.81	7.73	22.9
	Mean	17.7	882.4	0.5	50.2	4.9	7.1	7.0
	SD	4.4	316.7	0.2	24.4	2.8	0.3	6.0
DCDn	Min	10.71	270	0.12	6	1	5	5
	Max	20.30	807	0.40	80	9	7	24
	Mean	16.5	480.1	0.3	37.6	3.8	6.1	14.4
	SD	3.6	170.8	0.1	25.2	2.8	0.4	5.4

Table 10 South Creek Site Water Quality Summary Data Results

		Temp °C	Cond µS/cm	Sal ppt	DO %sat	DO mg/l	pH Units	Turb ntu
SCUp	Min	10.4	211	0.1	15.1	1.43	5.36	10
	Max	24.09	342	0.28	51	5.7	5.84	75.8
	Mean	16.5	281.8	0.2	30.7	3.1	5.7	26.2
	SD	5.0	46.4	0.1	13.4	1.6	0.2	20.3
SCDn	Min	11.09	911	0.31	27.9	2.58	4.38	0.8
	Max	22.69	3487	1.85	76.4	8.38	5.8	61.3
	Mean	17.8	1858.1	1.0	57.0	5.5	5.2	10.7
	SD	4.5	928.6	0.5	11.9	1.6	0.5	14.8

2.5.3 Artificial Sampling Unit (ASU) macroinvertebrate monitoring results

The Term 1 and Term 2 ASU full macroinvertebrate results are provided in **Appendix Tables F2.1** and **F2.2** respectively. Note that upstream Wattle Creek ASUs were dry during the first term.

Figure 66 below shows the mean (± standard error SE) replicate total abundance of macroinvertebrate specimens for each site and the mean replicate macroinvertebrate taxa diversity (richness) is shown in in **Figure 67**.

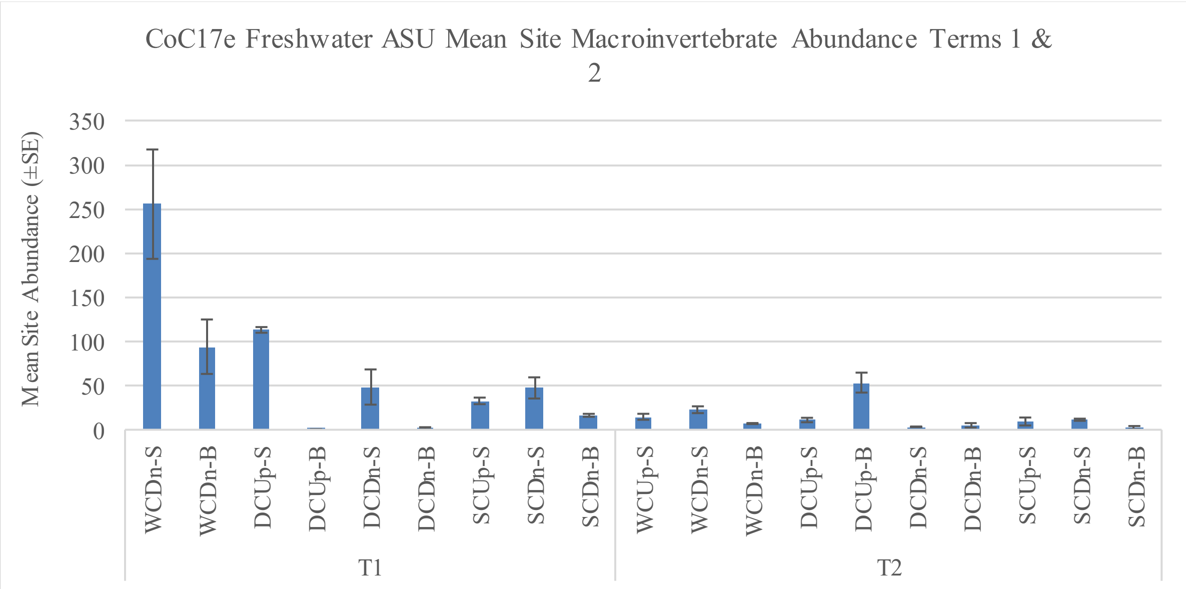


Figure 66 Mean replicate total abundance of macroinvertebrate specimens per site

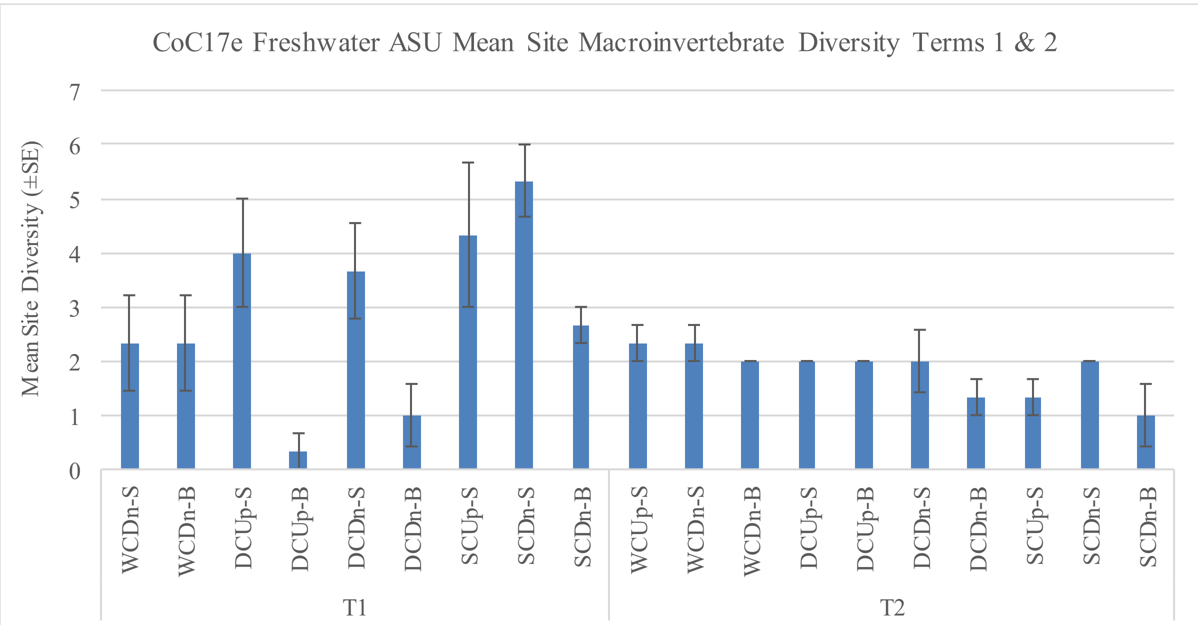


Figure 67 Mean replicate macroinvertebrate taxa diversity

Table 11 below provides the grouped ASU replicate results for abundance, taxa diversity and percentage of Chironomidae (bloodworms) compared to total abundance.

Table 11 Grouped Replicate ASU Macroinvertebrate Results Terms 1 & 2										
	Term 1									
	WCUp-S	WCDn-S	WCDn-B	DCUp-S	DCUp-B	DCDn-S	DCDn-B	SCUp-S	SCDn-S	SCDn-B
Total Abundance	Dry	766	282	339	1	145	5	98	142	49
Total No. of taxa		4	5	6	1	5	2	8	8	4
Chironomidae %		99%	99%	98%	100%	92%	60%	85%	87%	92%
	Term 2									
	WCUp-S	WCDn-S	WCDn-B	DCUp-S	DCUp-B	DCDn-S	DCDn-B	SCUp-S	SCDn-S	SCDn-B
Total Abundance	44	68	21	33	160	10	15	28	34	7
Total No. of taxa	3	3	3	2	2	4	2	2	2	2
Chironomidae %	98%	99%	90%	100%	100%	80%	100%	100%	100%	100%

2.5.4 Electrofishing results

The full Term 1 and Term 2 electrofishing fish catch and measurement data are provided in **Appendix Table F3**. Electrofishing fishing effort comprised three replicated 3-minute shots at each site for each survey period, and **Table 12** below shows the summary occurrence results for the undertaken in Term 1 (27th and 28th March 2023) and Term 2 (4th and 5th July 2023).

Table 12 Electrofishing Fish Catch Summary Results

		Site	Replicate	Empire Gudgeon *Hypseleotris compressa*	Striped Gudgeon *Gobiomorphus australis*	Common Jollytail *Galaxias maculatus*	Plague Minnow *Gambusia holbrooki*	Short-Finned Eel *Anguilla australis*	Tadpole
Term 1	Wattle Creek	WCUp	1	0	0	0	0	0	0
		WCUp	2	0	0	2	0	0	0
		WCUp	3	0	0	1	1	0	0
		WCDn	1	1	1	1	0	0	0
		WCDn	2	2	3	3	1	1	0
		WCDn	3	3	8	2	2	0	0
	Downs Creek	DCUp	1	18	8	1	1	0	0
		DCUp	2	6	9	1	0	0	0
		DCUp	3	18	8	0	0	0	0
		DCDn	1	7	5	0	0	1	0
		DCDn	2	14	6	1	0	0	0
		DCDn	3	13	7	0	0	0	0
	South Creek	SCUp	1	1	0	0	9	0	1
		SCUp	2	0	0	0	7	0	0
		SCUp	3	0	2	4	1	0	0
		SCDn	1	6	11	0	0	0	0
		SCDn	2	10	8	0	1	0	0
		SCDn	3	6	4	0	0	1	0
Term 2	Wattle Creek	WCUp	1	Dry					
		WCUp	2						
		WCUp	3						
		WCDn	1	0	0	3	1	0	0
		WCDn	2	0	0	2	2	0	0
		WCDn	3	5	10	1	1	1	0
	Downs Creek	DCUp	1	5	9	0	0	1	0
		DCUp	2	6	6	0	0	1	0
		DCUp	3	55	16	0	0	2	0
		DCDn	1	32	29	1	0	0	0
		DCDn	2	8	23	0	0	0	0
		DCDn	3	4	31	5	0	0	0
	South Creek	SCUp	1	0	0	0	14	0	0
		SCUp	2	0	0	0	3	0	0
		SCUp	3	0	0	0	7	0	0
		SCDn	1	0	12	1	9	0	0
		SCDn	2	12	7	1	1	0	0
		SCDn	3	8	24	0	1	2	0

APPENDICES

A Site Rainfall 2022 -2023

B Crookhaven River Tide & Lk Wollumboola water level data

C Estuary Intertidal Monitoring Data
- C1 Intertidal Species Codes
- C2 Intertidal Height Profiles
- C3 Intertidal Mosaic Plots & Transect Photos
- C4 Intertidal Transect Dripline Results
- C5 Pre to Post Wet Weather Site Photos

D Subtidal Seagrass Monitoring Data

E Oyster Monitoring Data
- E1 Condition Index Data - Pilot Study
- E2 Before Deployment Oyster Condition Indices
- E3 After Deployment Oyster Condition Indices
- E4 Pilot Study Wild SRO Flesh Metal Results
- E5 Laboratory Analysis Reports

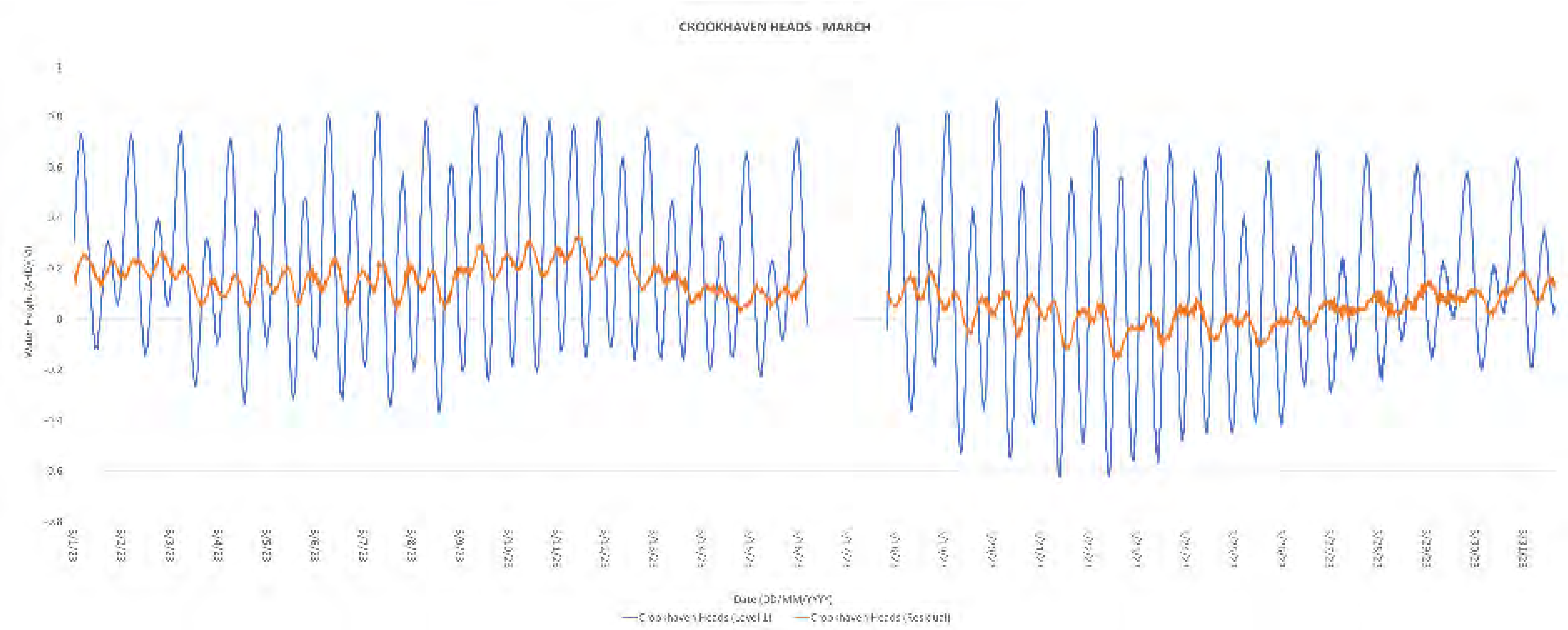
F Freshwater Monitoring Data
- F1.1 Wattle Creek Water Quality Data
- F1.2 Downs Creek Water Quality Data
- F1.3 South Creek Water Quality Data
- F2.1 ASU Macroinvertebrate Data Term 1
- F2.2 ASU Macroinvertebrate Data Term 2
- F3.0 Electrofishing Catch Results

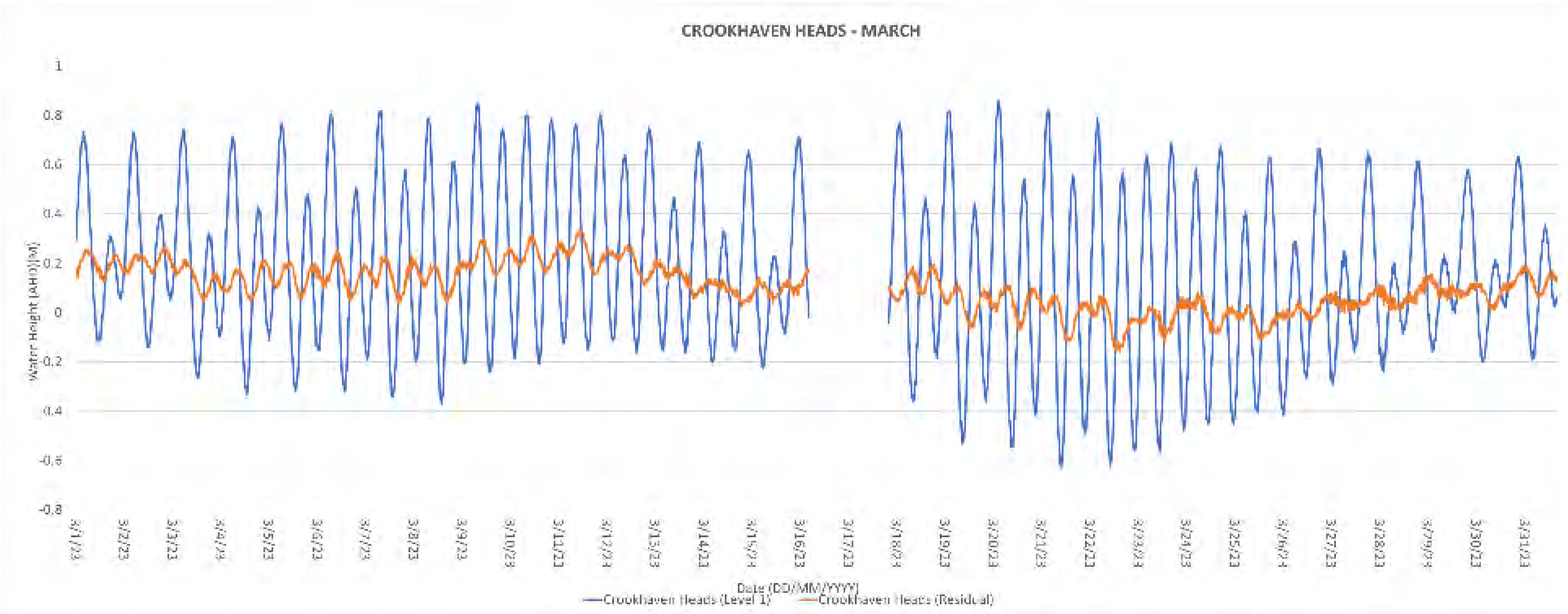
APPENDIX A
SITE RAINFALL 2022 TO JUNE 2023

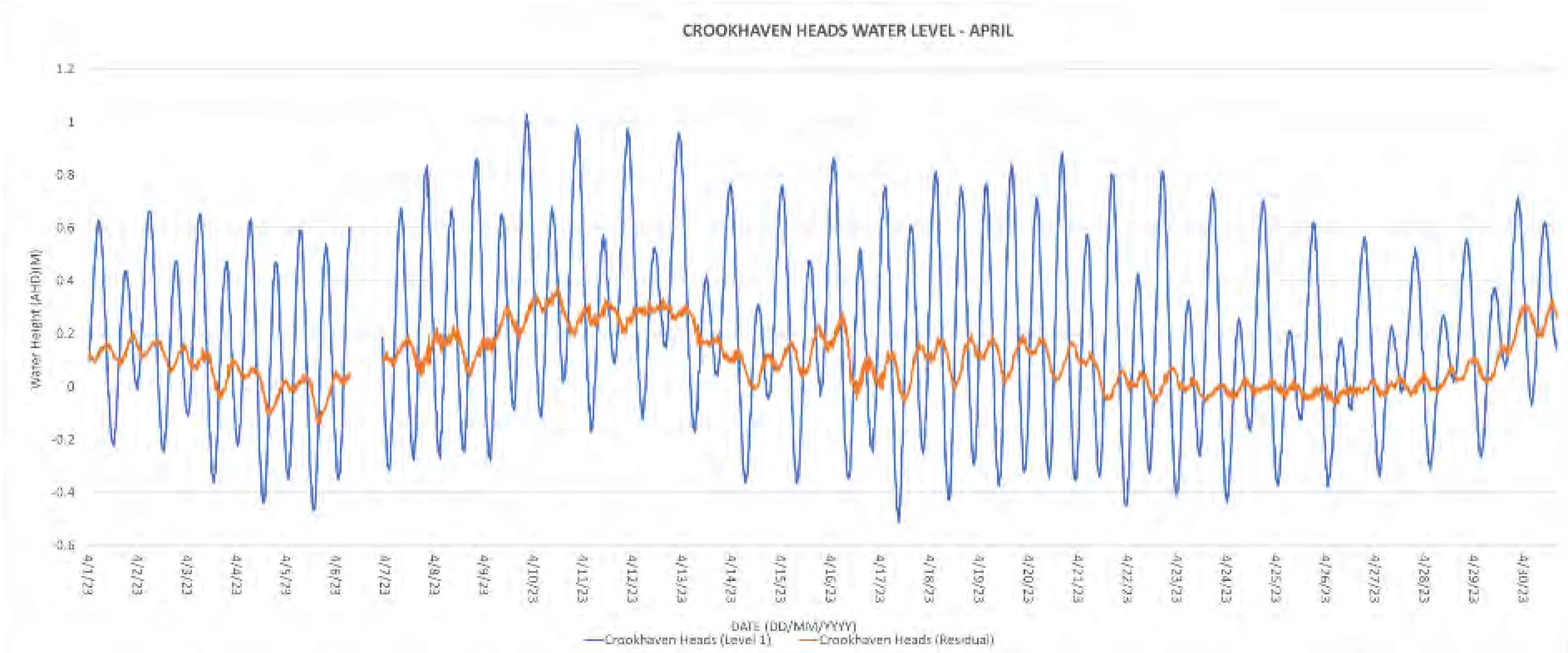
A1 2022-2023 Daily Rainfall

Date	2022												2023					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1st	0	0	8	37	1	0	0.8	0	0	22	15	0	0	0	0	4.6	0	0
2nd	0	0.8	49	25	0	0	127	0	0	7	0	9.4	0	0	2.8	1.8	0	0
3rd	0.6	0	35	7.2	0	0	48	0	1.5	0.4	0	0	0	0	5	0	0	1
4th	0	1.8	26	0	0	0	64	1	21	0	1.4	0	1.6	0	8.6	0.6	0	5
5th	0.8	6.2	2.4	0	6	0	33	1.6	3.2	3	0	0	15	0	0	0	0	1.6
6th	44	0.8	60	6.8	0	0	4.6	0	0.8	28	0	2.2	17	0	2.2	0	0	0.6
7th	30	4	71	83	0	0.2	6.5	0	0.8	5	0	0	3	0	0	0	0	0
8th	23	0	145	21	0	0	0.6	1	0	2	0	0	0	24	0	6.4	16	0
9th	0.1	0	65	4	0	0	0	1.6	0.8	75	0	0	0	253	0	0	0	0.4
10th	1	0	0	14	24	0	22	4.4	1	3	0	0	0	7	0	0	0	0
11th	0	9.6	0	0	16	0	33	0	29	0	0	0	0	2.5	0	0	0	0
12th	20	12	0	6.4	40	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0
13th	13	6.8	0	0.4	20	0	0.4	1	21	0	0	1.6	0	2.4	22	3	0	0.2
14th	0	0	0	10	0	0	2.2	0	0.2	3.2	14	0	1.6	1.8	4.8	35	0	0
15th	1	0	1.4	1	0	0	0.3	0	0	0.1	0	0.4	0	17	12	6	0.4	0
16th	0	0	0.6	0	1.6	0	0	0	1.2	0	0	0.3	0	0	0	0.5	0	0
17th	0	0	0.4	0	0	0	0	0	0	2	3.2	0	0.6	0	0	0.8	2.8	0
18th	0	0	0	0	0	0	0	0	0	0	0	2.5	0	0	0	0	2.2	0
19th	5	0.8	31	0	0	0	4.4	0.4	0	0	0	0.3	23	11	0	0	0.5	0
20th	2.8	0	0	7.6	0	9	21	3.4	0	0	2.1	0	0.8	0	0.3	11	0	0
21st	0	0	0	0	6	0.5	23	1.6	0	21	0	0	0	0	6.2	0	0	
22nd	0	0	0	1.4	20	0	2.4	0	38	4.5	0	0	1	17	0	0	0.8	
23rd	0	82	0	5	20	0	9.6	0	7.8	15	0	3.4	21	0	0.6	0	0	
24th	1.2	33	0	2	11	0	6	7.6	2	8	0	0	0	0.4	7.4	30	0	
25th	0	60	13	0	2.6	0	0	0	5	37	0.2	0	13	0	0.5	0	0	
26th	0	26	1	5	0	0	1.6	0	0	1.4	0	0	0	0	0	0	0	
27th	0	27	9	2	0	0	0	4	4.5	0	1	0	0	0	5	0	2	
28th	0	8.2	23	7.6	0	0	0	0.8	11	1.2	0.1	0	1	0	0	0	0	
29th	0		25	4.2	1.4	0	0.8	0	20	0	0.4	0	0		0.4	1.4	1	
30th	1.5		26	4	0	0	0	1.6	29	0	0.2	5.6	6.8		3.8	61	0	
31st	0		24		5.4		0	0		0		7	14		2		0	
Monthly total	144	279	616	255	176	9.7	411	30	198	239	37	33	119	337	84	162	25	8.8
Monthly Average	98	130	140	112	105	139	84	79	73	87	85	73	98	130	140	112	105	139

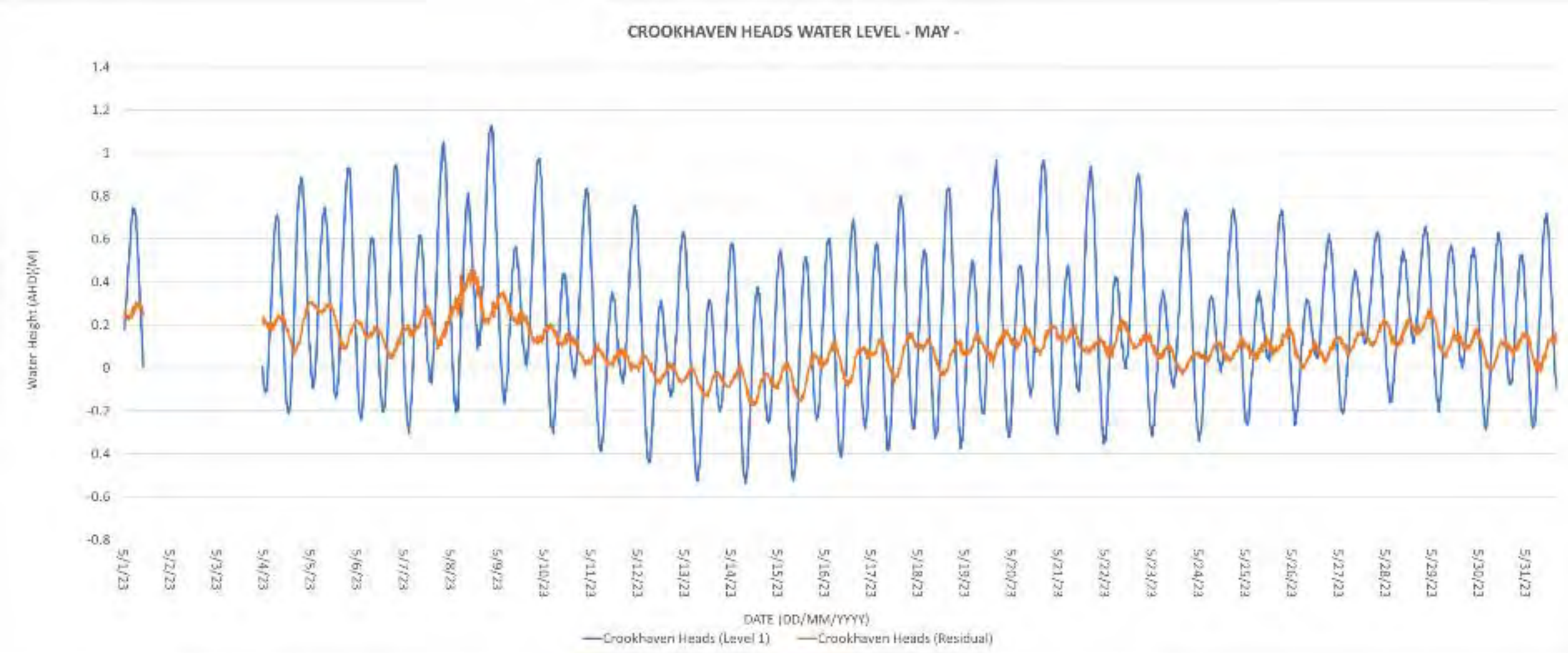
APPENDIX B
CROOKHAVEN RIVER TIDE AND LK WOLLUMBOOLA WATER LEVEL DATA

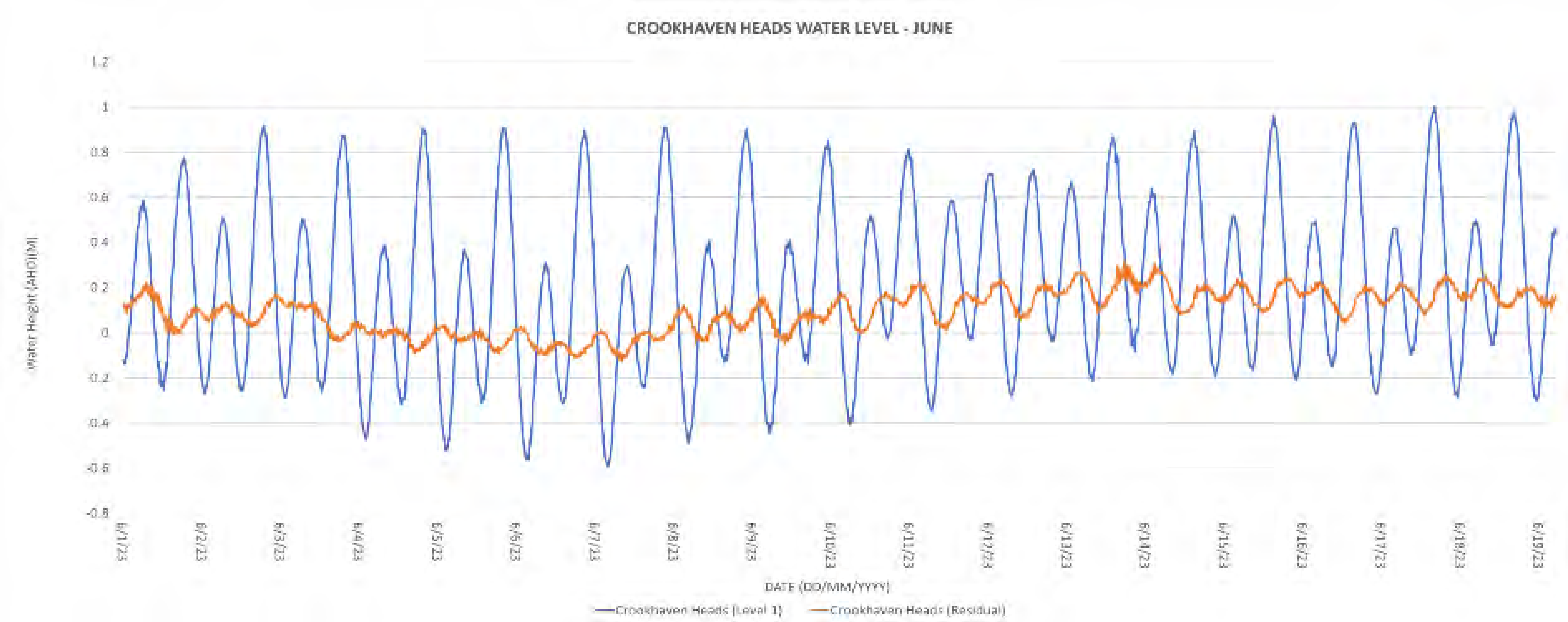


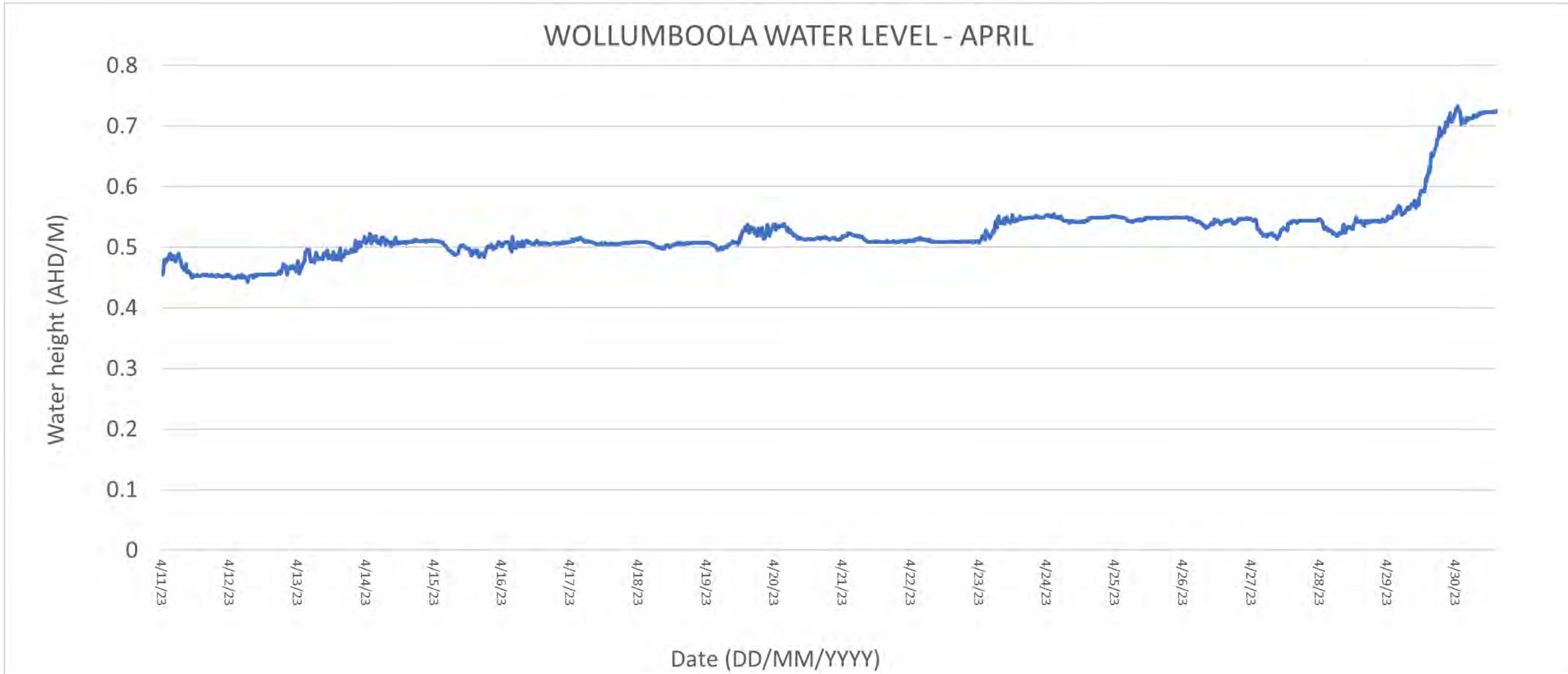

CROOKHAVEN HEADS - MARCH
Water Height [AHD][M]
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
3/1/23
3/2/23
3/3/23
3/4/23
3/5/23
3/6/23
3/7/23
3/8/23
3/9/23
3/10/23
3/11/23
3/12/23
3/13/23
3/14/23
3/15/23
3/16/23
3/17/23
3/18/23
3/19/23
3/20/23
3/21/23
3/22/23
3/23/23
3/24/23
3/25/23
3/26/23
3/27/23
3/28/23
3/29/23
3/30/23
3/31/23
Date (DD/MM/YYYY)
Crookhaven Heads (Level 1)
Crookhaven Heads (Residual)



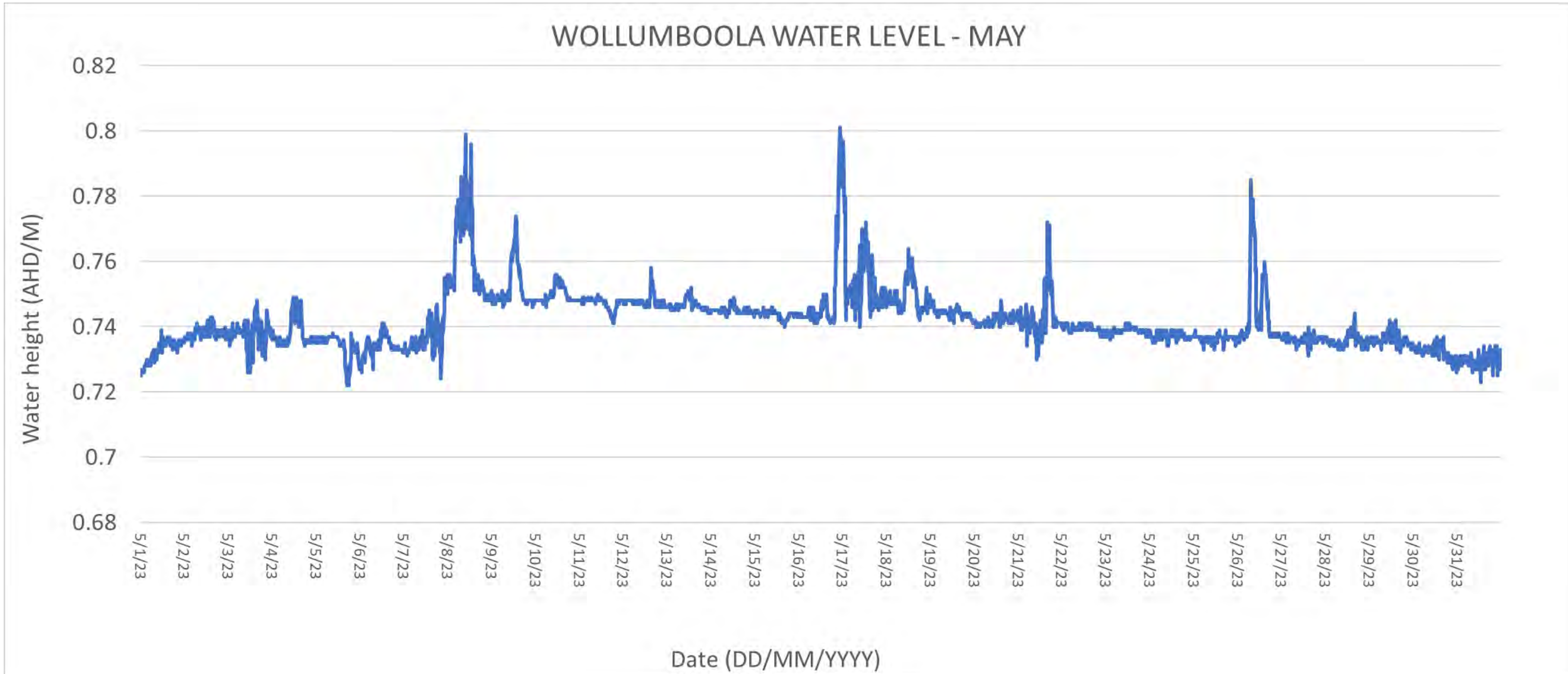
CROOKHAVEN HEADS WATER LEVEL - APRIL
Water Height (AHD)(M)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
4/1/23
4/2/23
4/3/23
4/4/23
4/5/23
4/6/23
4/7/23
4/8/23
4/9/23
4/10/23
4/11/23
4/12/23
4/13/23
4/14/23
4/15/23
4/16/23
4/17/23
4/18/23
4/19/23
4/20/23
4/21/23
4/22/23
4/23/23
4/24/23
4/25/23
4/26/23
4/27/23
4/28/23
4/29/23
4/30/23
DATE (DD/MM/YYYY)
Crookhaven Heads (Level 1)
Crookhaven Heads (Residual)

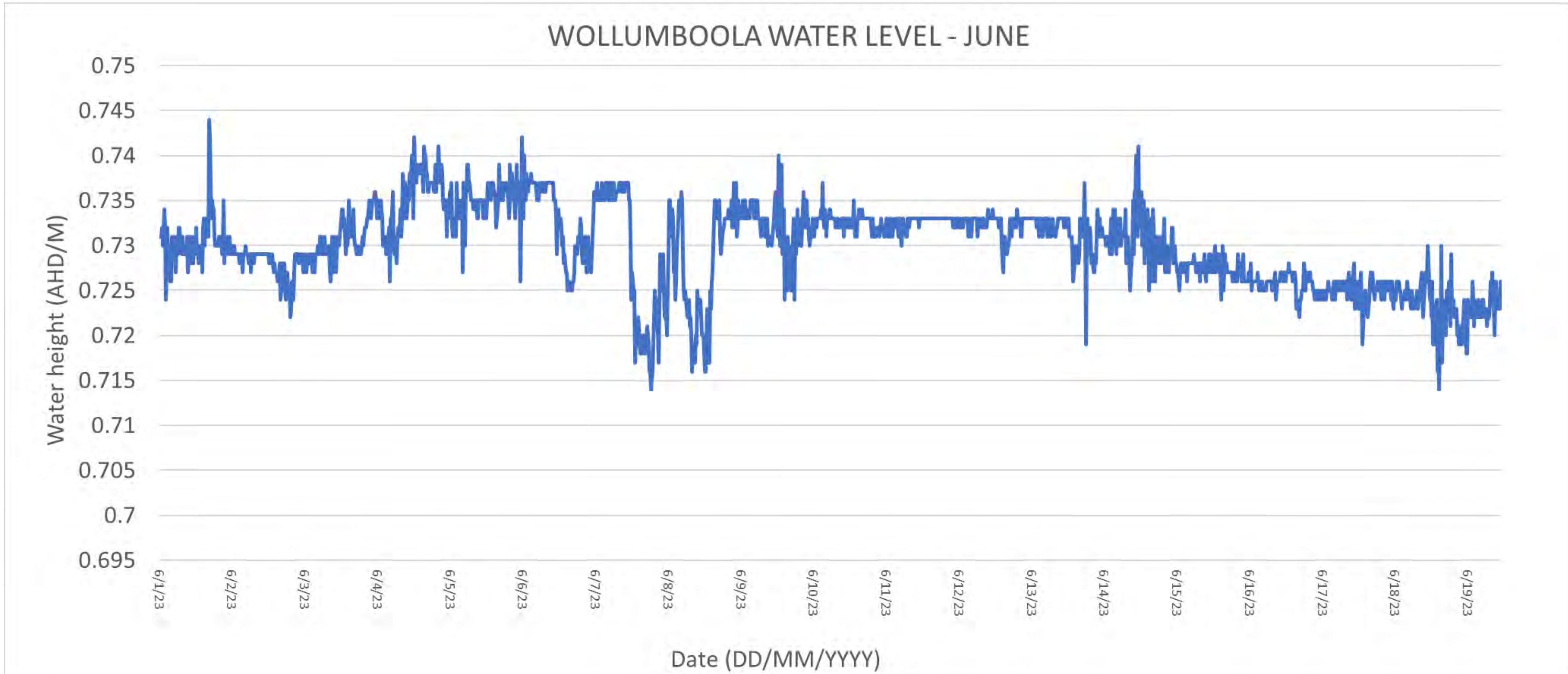

CROOKHAVEN HEADS WATER LEVEL - MAY -
Water Height (AHD)(M)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
5/1/23
5/2/23
5/3/23
5/4/23
5/5/23
5/6/23
5/7/23
5/8/23
5/9/23
5/10/23
5/11/23
5/12/23
5/13/23
5/14/23
5/15/23
5/16/23
5/17/23
5/18/23
5/19/23
5/20/23
5/21/23
5/22/23
5/23/23
5/24/23
5/25/23
5/26/23
5/27/23
5/28/23
5/29/23
5/30/23
5/31/23
DATE (DD/MM/YYYY)
Crookhaven Heads (Level 1)
Crookhaven Heads (Residual)


CROOKHAVEN HEADS WATER LEVEL - JUNE
Water Height (AHD(M))
DATE (DD/MM/YYYY)
Crookhaven Heads (Level 1)
Crookhaven Heads (Residual)



WOLLUMBOOLA WATER LEVEL - APRIL
Water height (AHD/M)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
4/11/23
4/12/23
4/13/23
4/14/23
4/15/23
4/16/23
4/17/23
4/18/23
4/19/23
4/20/23
4/21/23
4/22/23
4/23/23
4/24/23
4/25/23
4/26/23
4/27/23
4/28/23
4/29/23
4/30/23
Date (DD/MM/YYYY)


WOLLUMBOOLA WATER LEVEL - MAY
Water height (AHD/M)
0.82
0.8
0.78
0.76
0.74
0.72
0.7
0.68
5/1/23
5/2/23
5/3/23
5/4/23
5/5/23
5/6/23
5/7/23
5/8/23
5/9/23
5/10/23
5/11/23
5/12/23
5/13/23
5/14/23
5/15/23
5/16/23
5/17/23
5/18/23
5/19/23
5/20/23
5/21/23
5/22/23
5/23/23
5/24/23
5/25/23
5/26/23
5/27/23
5/28/23
5/29/23
5/30/23
5/31/23
Date (DD/MM/YYYY)


WOLLUMBOOLA WATER LEVEL - JUNE
Water height (AHD/M)
0.75
0.745
0.74
0.735
0.73
0.725
0.72
0.715
0.71
0.705
0.7
0.695
6/1/23
6/2/23
6/3/23
6/4/23
6/5/23
6/6/23
6/7/23
6/8/23
6/9/23
6/10/23
6/11/23
6/12/23
6/13/23
6/14/23
6/15/23
6/16/23
6/17/23
6/18/23
6/19/23
Date (DD/MM/YYYY)

APPENDIX C
ESTUARY INTERTIDAL MONITORING DATA

C1 INTERTIDAL SPECIES CODES

C2 INTERTIDAL HEIGHT PROFILES

C3 INTERTIDAL MOSAIC PLOTS & TRANSECT PHOTOS

C4 INTERTIDAL TRANSECT DRIPLINE RESULTS

C5 PRE TO POST WET WEATHER SITE PHOTOS

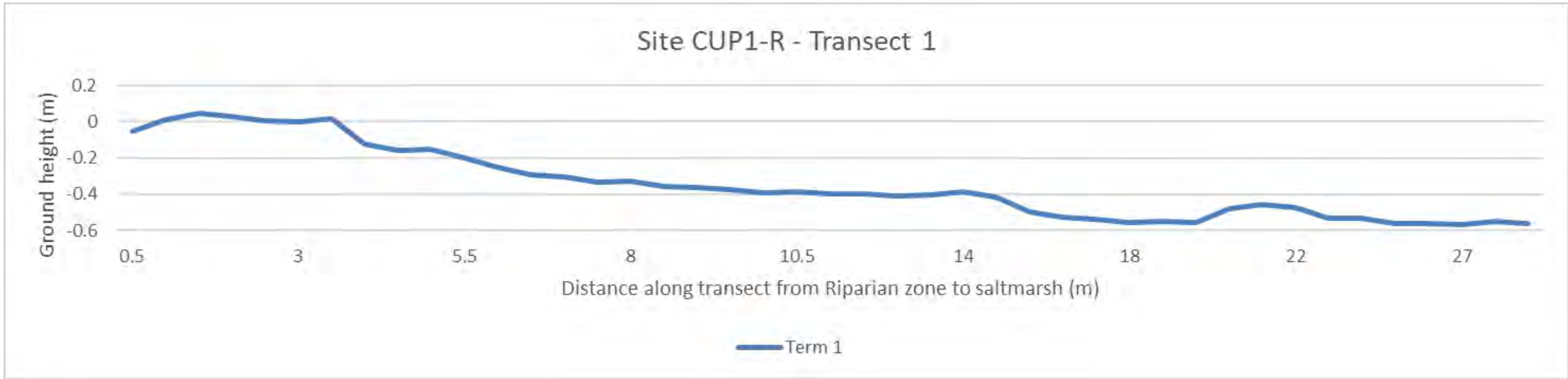
APPENDIX C 1
WORKING CODES FOR INTERTIDAL TRANSECTS

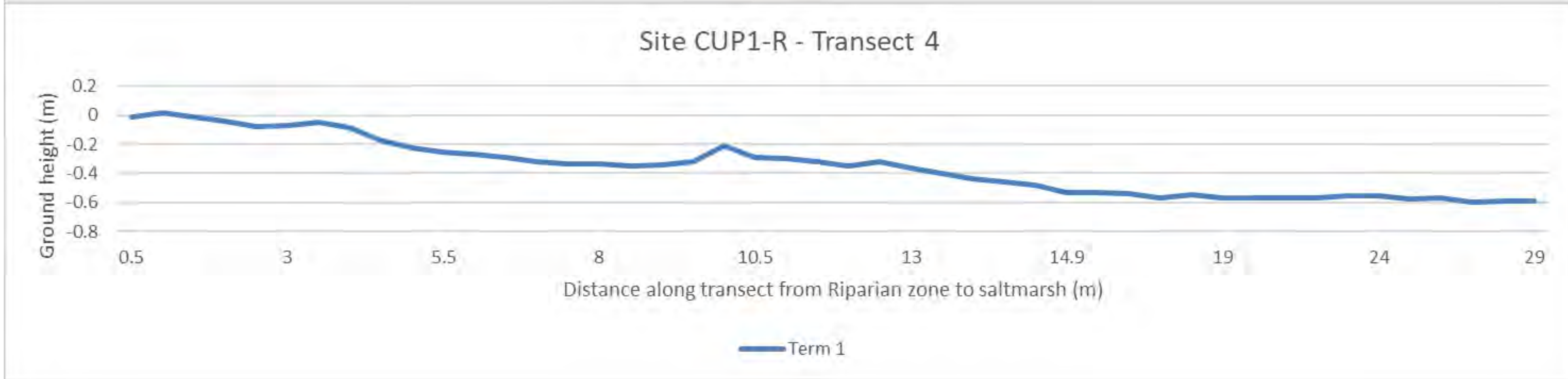
Yellow highlight indicates tentative IDs

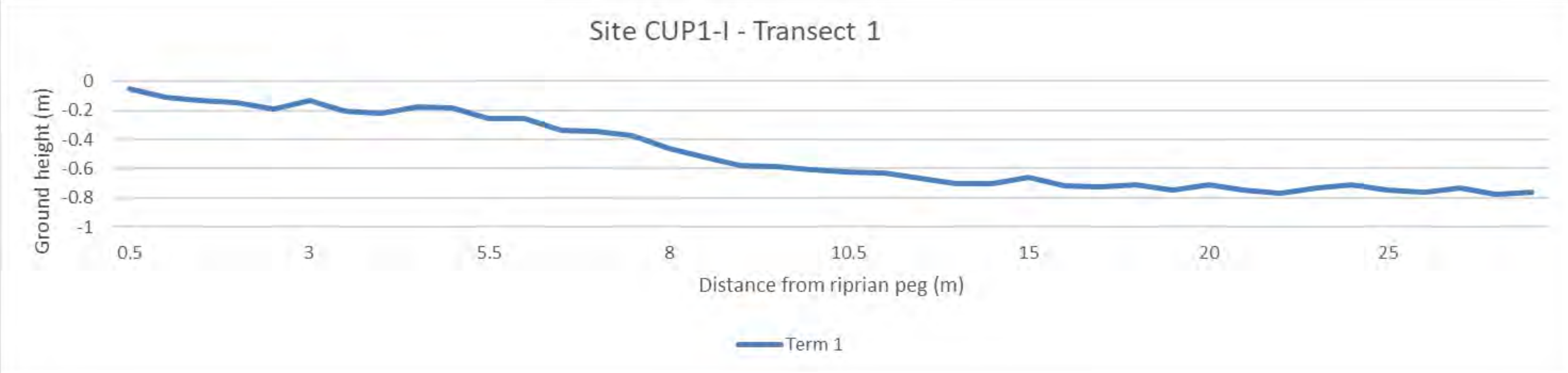
Vegetation Type	Species	Coding
Mangrove	*Avicennia marina*	AM
	River Mangroves	RM
Intertidal	*Sporobolus virginicus*	SQ
	Juncus kraussii	JK
	Baumea juncea	BJ
	Sarcocornia quinqueflora	SV
	Suaeda australis	SA
Riparian	*Asparagus sp.*	AF
	Lobelia	AL
	Alternanthera	ALT
	Viola hederacea	AV
	Buffalo grass - Stenotaphrunisp	BG
	Sellieria sp.	BS
	Carpobrotus	CA
	Cynodon dactylon	CD
	Cogon grass (need to check ID)	CG
	Cape Ivy - Delairea odorata	CI
	Edrastina	ED
	French Flax	FF
	Ghania sp.	GH
	Glassworts	GW
	Hydrocotyle	HD
	Hypochaeris	HY
	Ichnocarpes	IC
	Ipomoea	IP
	Lantana camara	LC
	Mikania micrantha	MK
	Nightshade - Solanumincanum	NS
	Oplismenus	OP
	Phragmites australis	PA
	Parsonsia straminea	PS
	Pittostrum	PT
	Rhagodia candolleana	RC
	Riparian Grass	RG
	Ranunculus	RN
	Spreading nut heads - Sphaeromorphae australis	SH
	Star jasmin	SJ

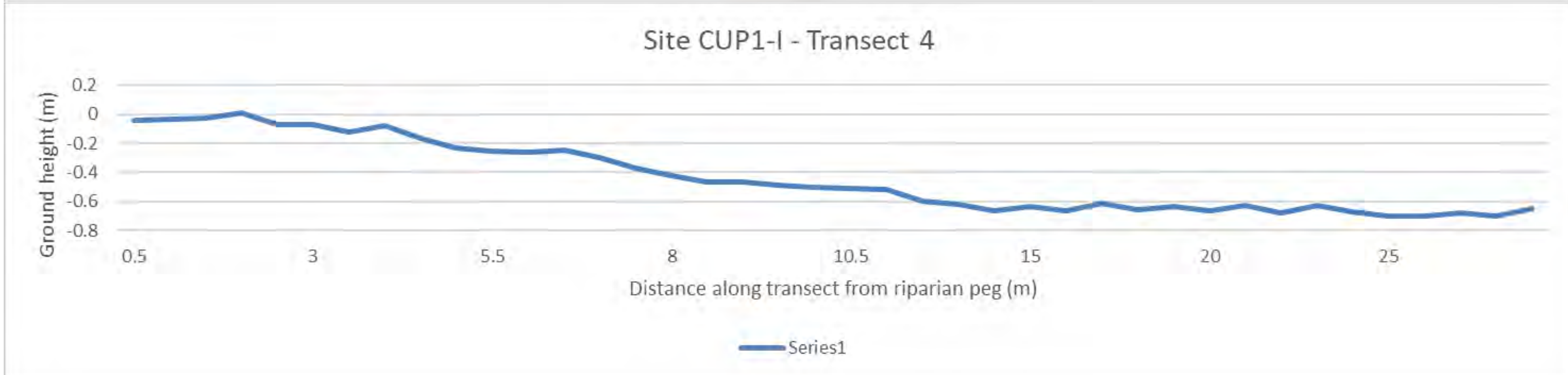
	Common Sowthistle - Sonchus	SO
	Sea primrose	SP
	Stinkvine	SV
	Tetragonia tetragonoides	TT
	Wahlenbergia - check I naturalist	WAH
	Climbing dayflower.Commelina.sp	WM
Trees	*African boxthorn*	AB
	Casuarina glauca	C
	Cyprus.sp.	CP
	Casuarina sappling	CS
	Melaleuca	ML
Abiotic	*Bare Mud*	BM
	Casuarina wrack	CW
	Debris	D
	Eucalyptus leaf wrack	EW
	Rubbish	R
	Zostera wrack	ZW

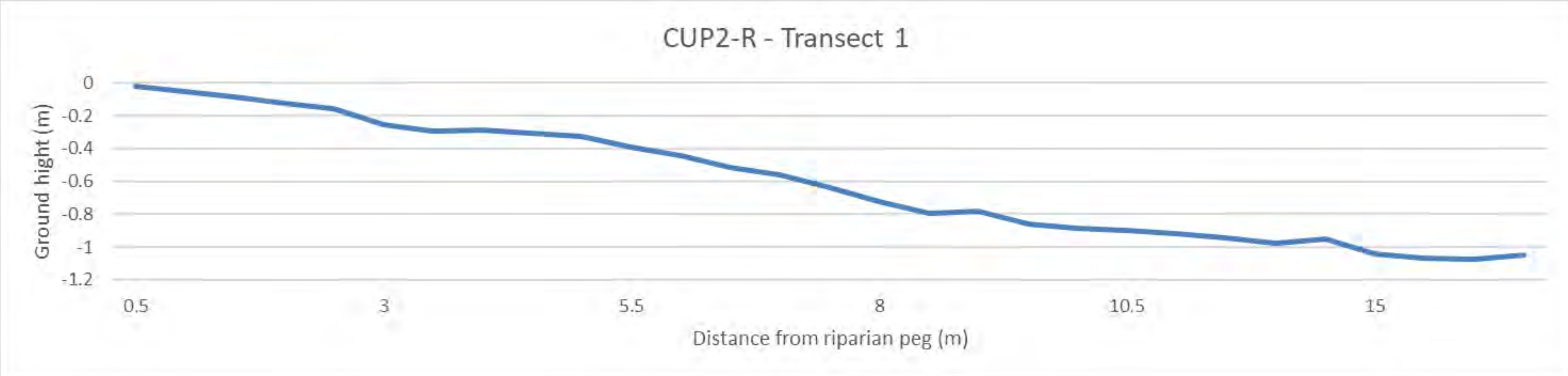
APPENDIX C2
INTERTIDAL HEIGHT PROFILES

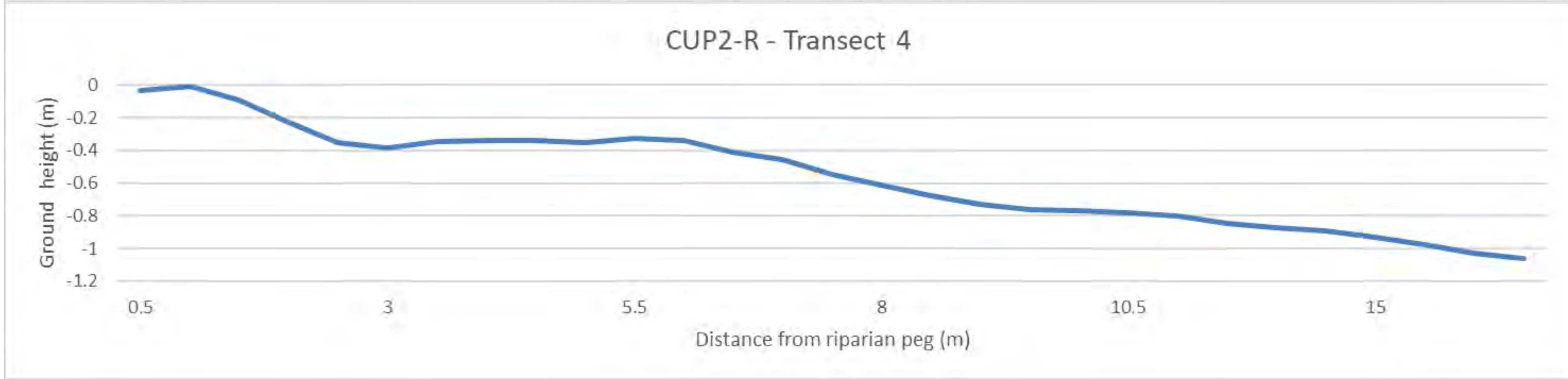


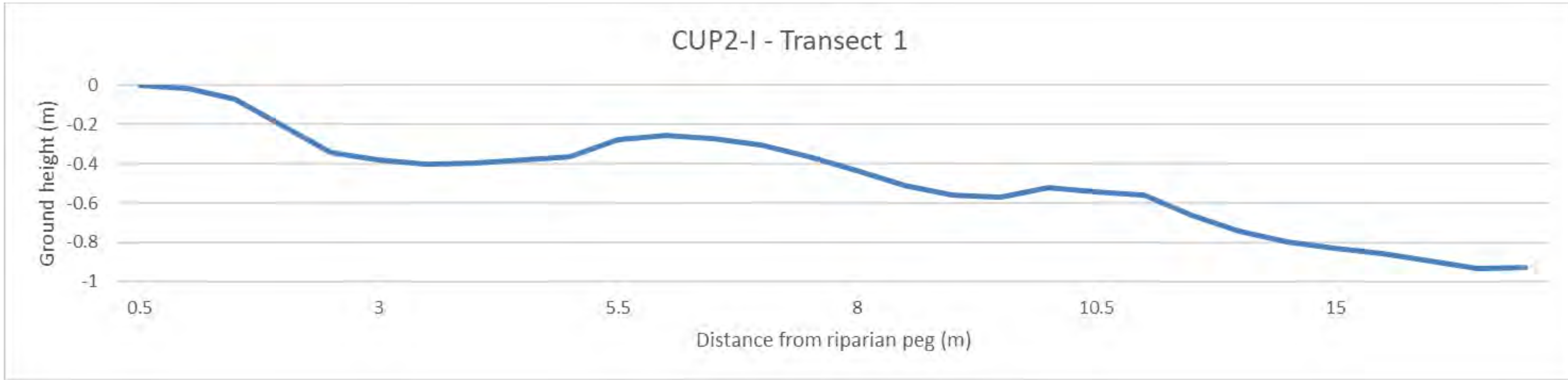


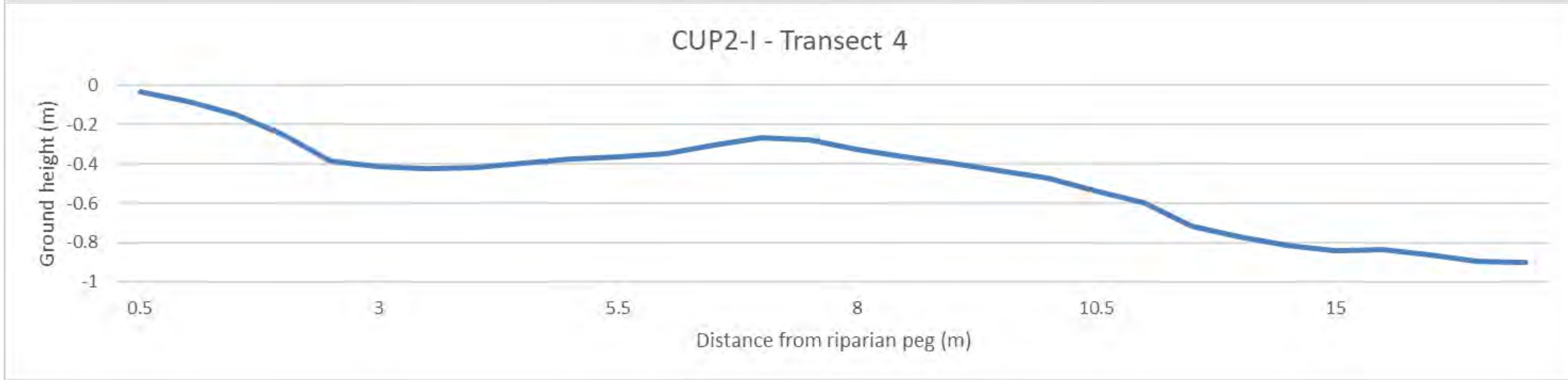

Site CUP1-I - Transect 1
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
-1
0.5
3
5.5
8
10.5
15
20
25
Distance from riprian peg (m)
Term 1

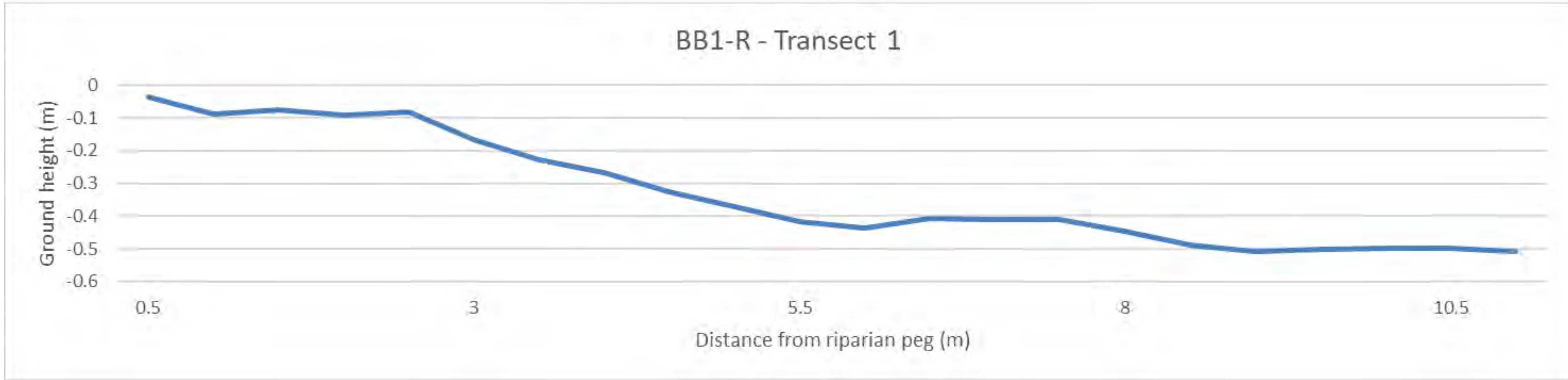

Site CUP1-I - Transect 4
Ground height (m)
0.2
0
-0.2
-0.4
-0.6
-0.8
0.5
3
5.5
8
10.5
15
20
25
Distance along transect from riparian peg (m)
Series1

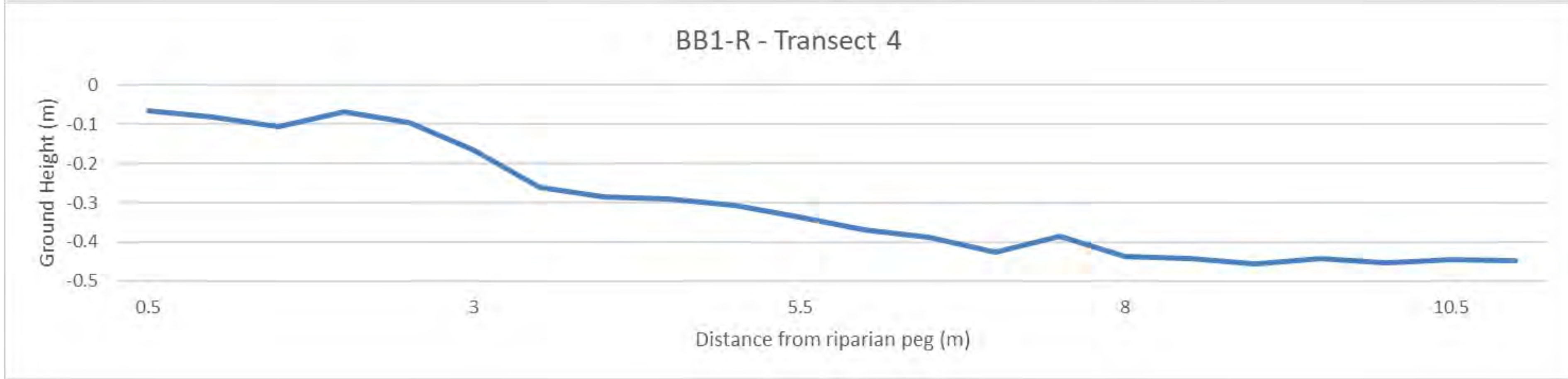

CUP2-R - Transect 1
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
Ground hight (m)
0.5
3
5.5
8
10.5
15
Distance from riparian peg (m)

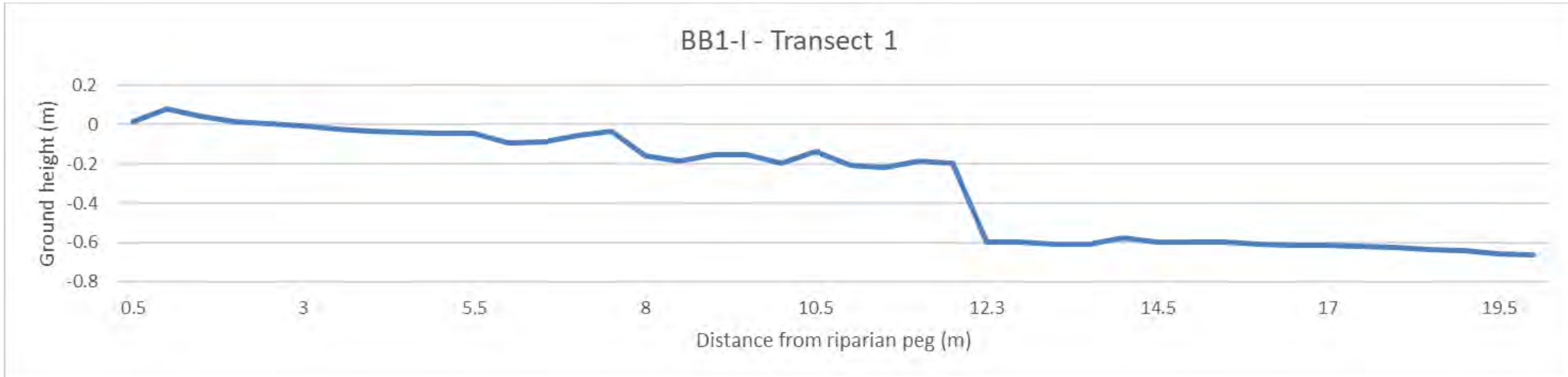

CUP2-R - Transect 4
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
Ground height (m)
0.5
3
5.5
8
10.5
15
Distance from riparian peg (m)

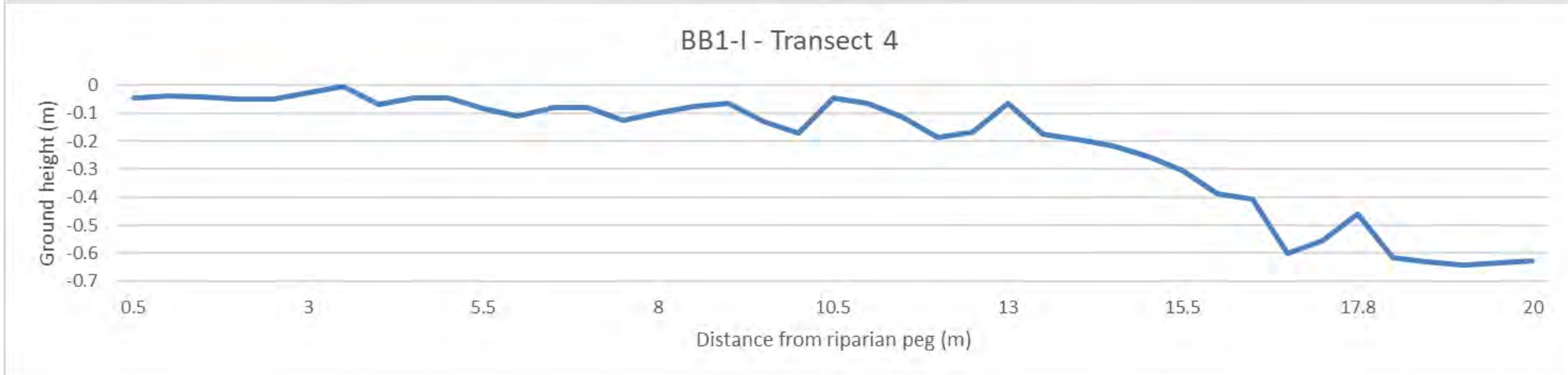

CUP2-I - Transect 1
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
-1
0.5
3
5.5
8
10.5
15
Distance from riparian peg (m)

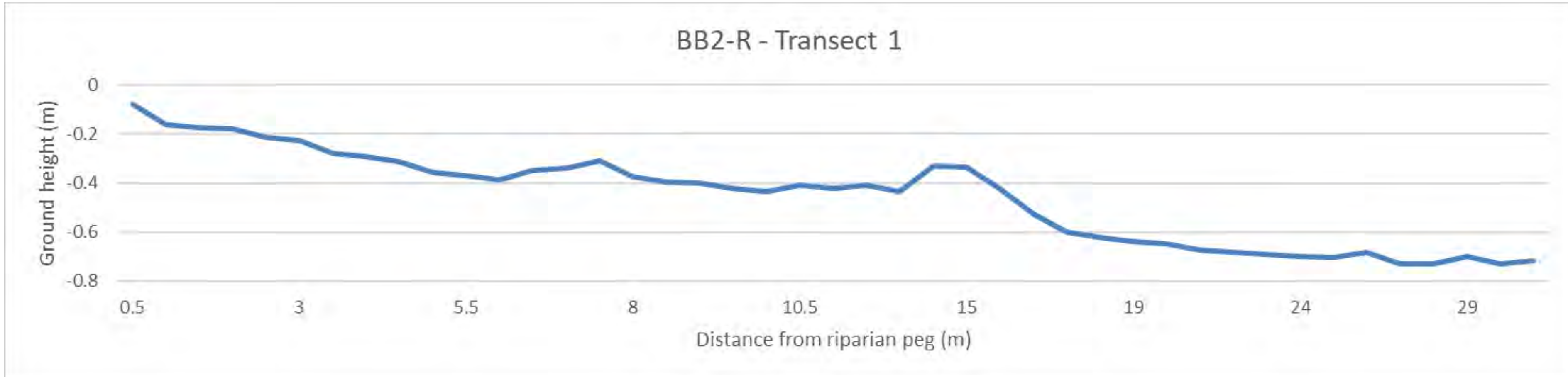

CUP2-I - Transect 4
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
-1
0.5
3
5.5
8
10.5
15
Distance from riparian peg (m)

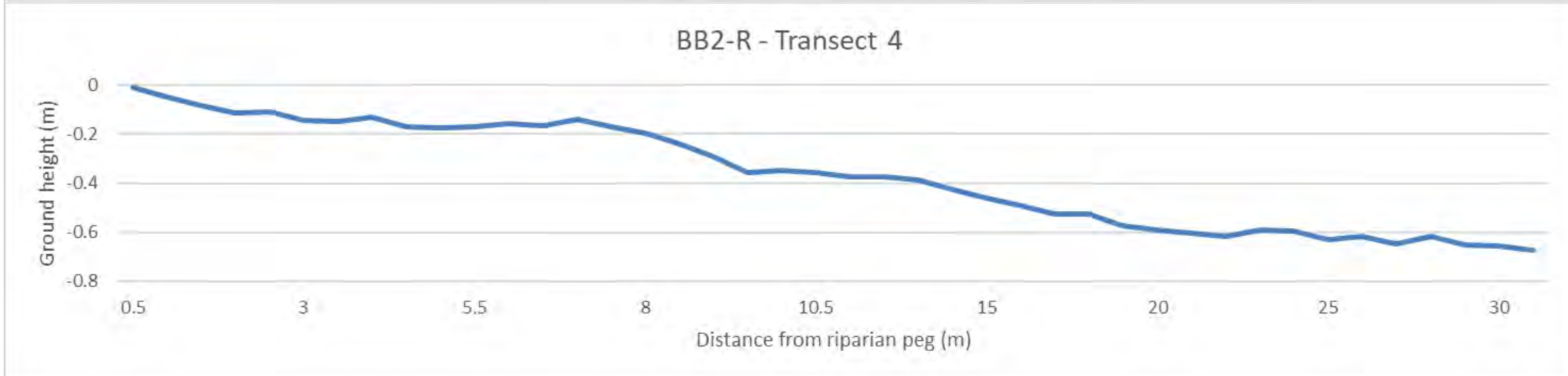

BB1-R - Transect 1
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
Distance from riparian peg (m)

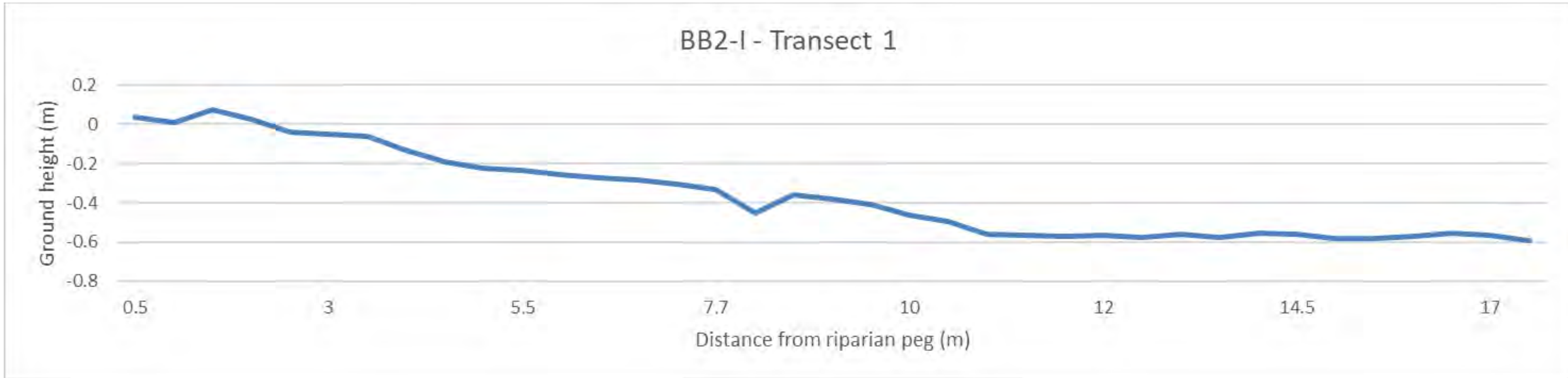

BB1-R - Transect 4
Ground Height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
0.5
3
5.5
8
10.5
Distance from riparian peg (m)

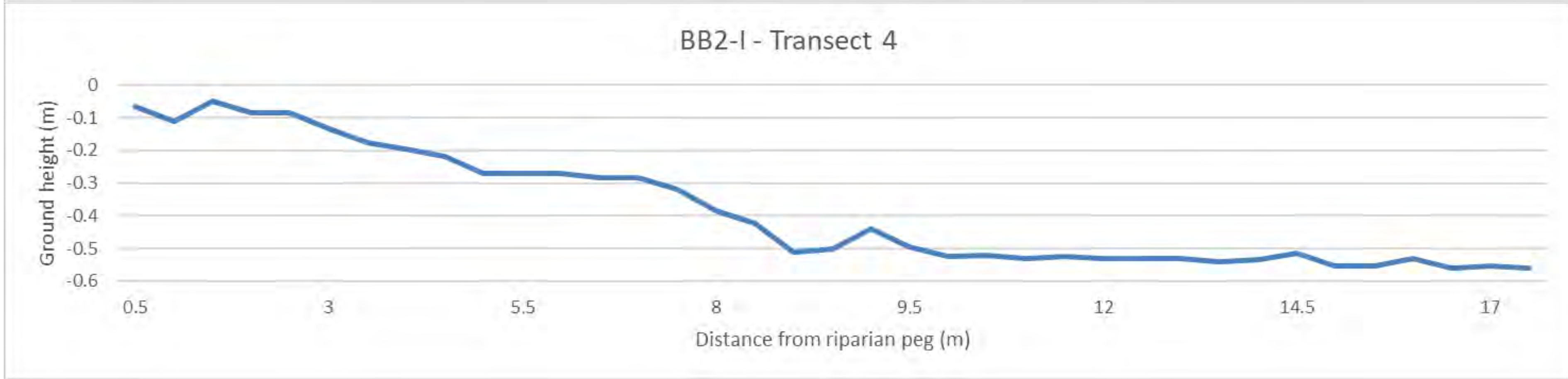

BB1-I - Transect 1
0.2
0
-0.2
-0.4
-0.6
-0.8
Ground height (m)
0.5
3
5.5
8
10.5
12.3
14.5
17
19.5
Distance from riparian peg (m)

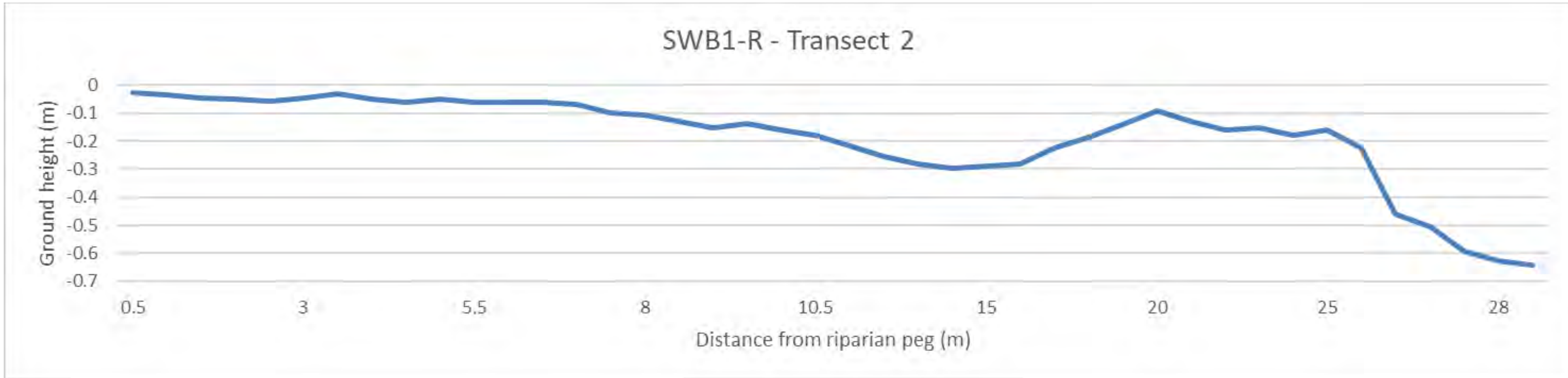

BB1-I - Transect 4
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
Ground height (m)
0.5
3
5.5
8
10.5
13
15.5
17.8
20
Distance from riparian peg (m)

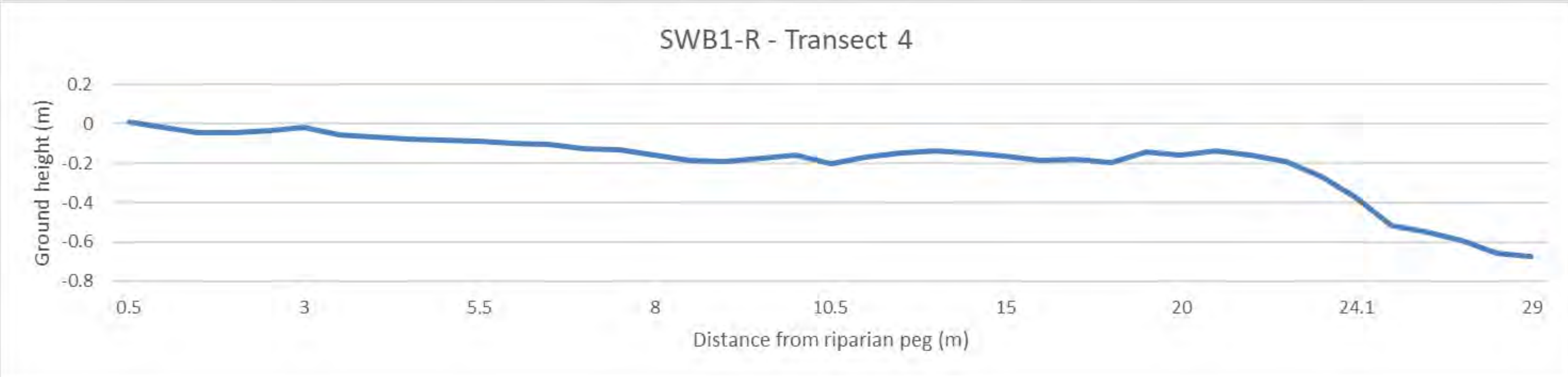

BB2-R - Transect 1
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
0.5
3
5.5
8
10.5
15
19
24
29
Distance from riparian peg (m)

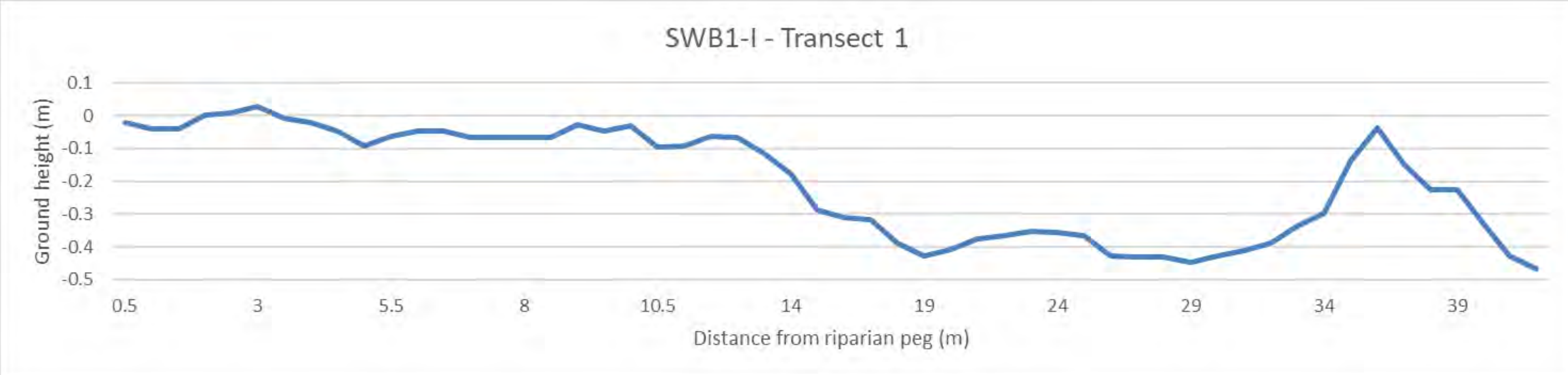

BB2-R - Transect 4
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
0.5
3
5.5
8
10.5
15
20
25
30
Distance from riparian peg (m)

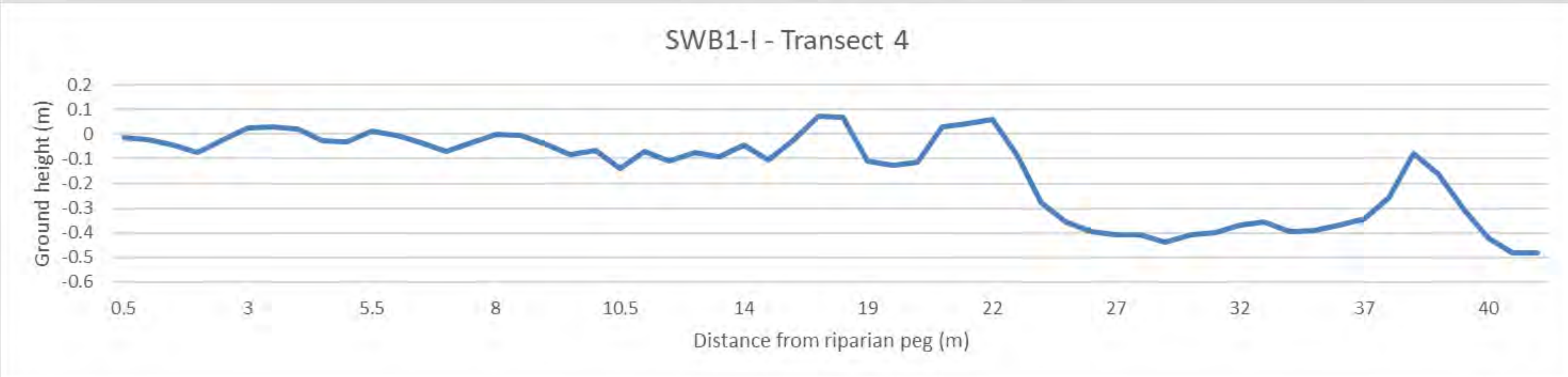

BB2-I - Transect 1
Ground height (m)
0.2
0
-0.2
-0.4
-0.6
-0.8
0.5
3
5.5
7.7
10
12
14.5
17
Distance from riparian peg (m)

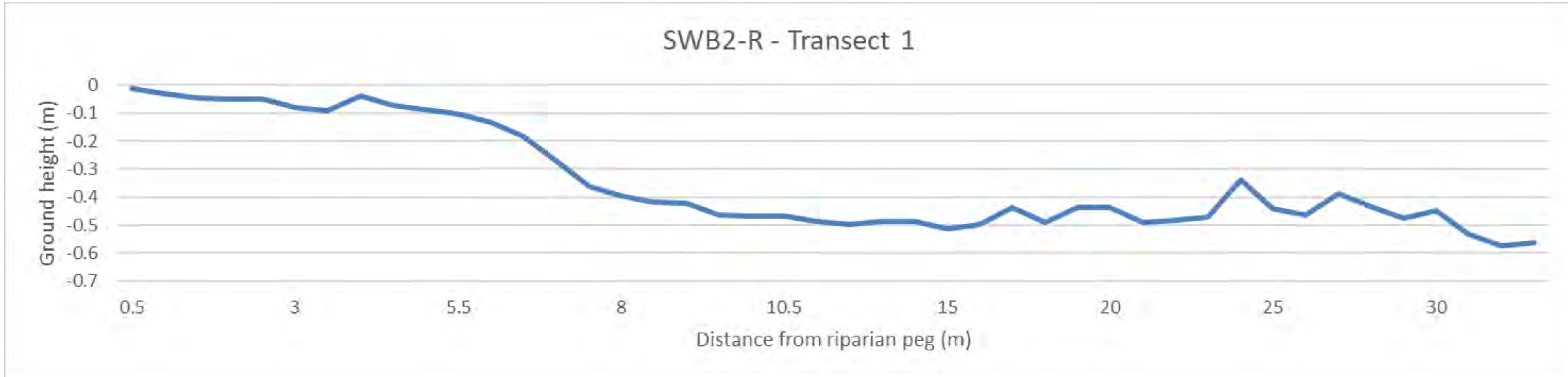

BB2-I - Transect 4
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
9.5
12
14.5
17
Distance from riparian peg (m)

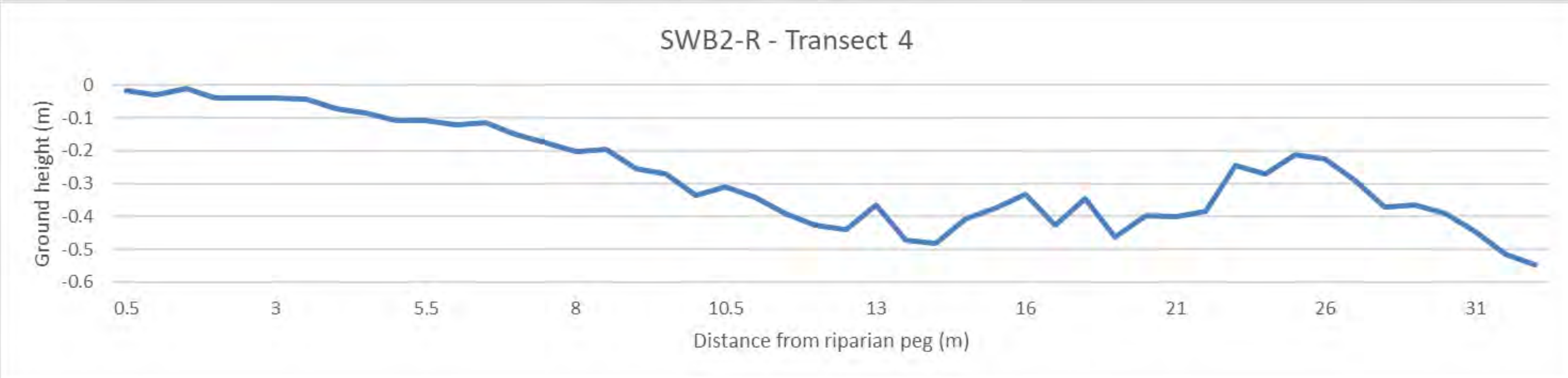

SWB1-R - Transect 2
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0.5
3
5.5
8
10.5
15
20
25
28
Distance from riparian peg (m)

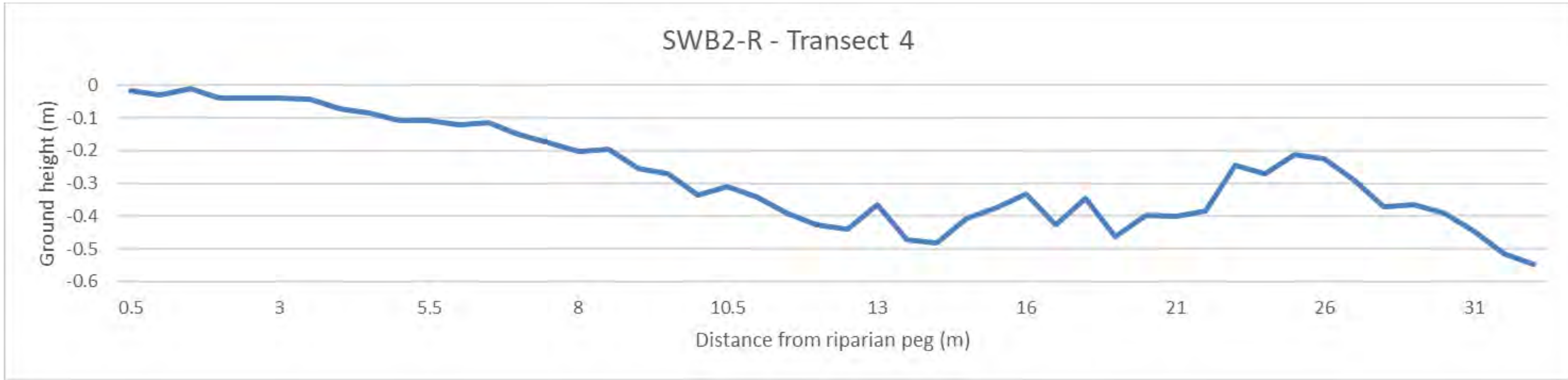

SWB1-R - Transect 4
Ground height (m)
0.2
0
-0.2
-0.4
-0.6
-0.8
0.5
3
5.5
8
10.5
15
20
24.1
29
Distance from riparian peg (m)

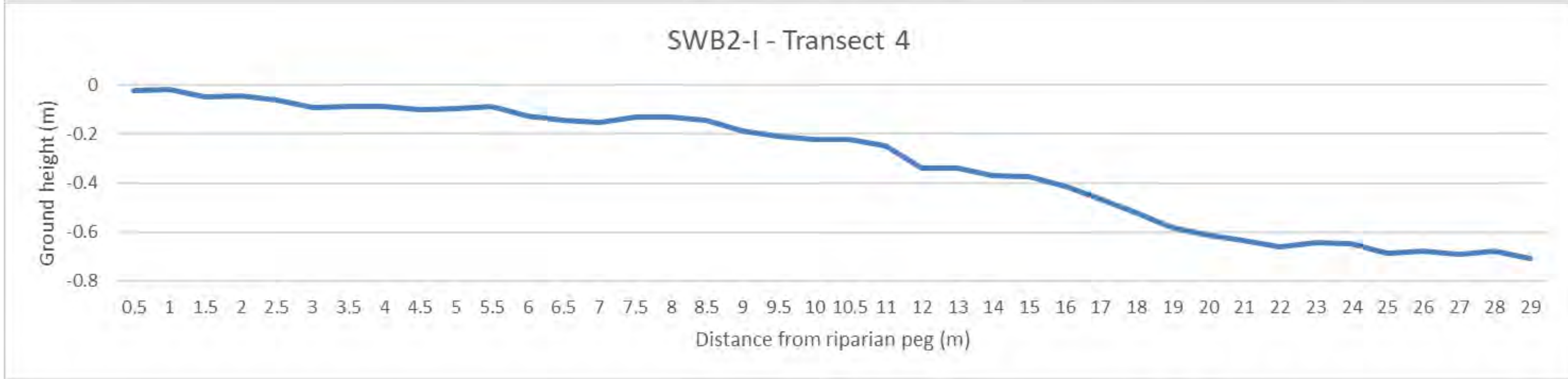

SWB1-I - Transect 1
Ground height (m)
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
0.5
3
5.5
8
10.5
14
19
24
29
34
39
Distance from riparian peg (m)

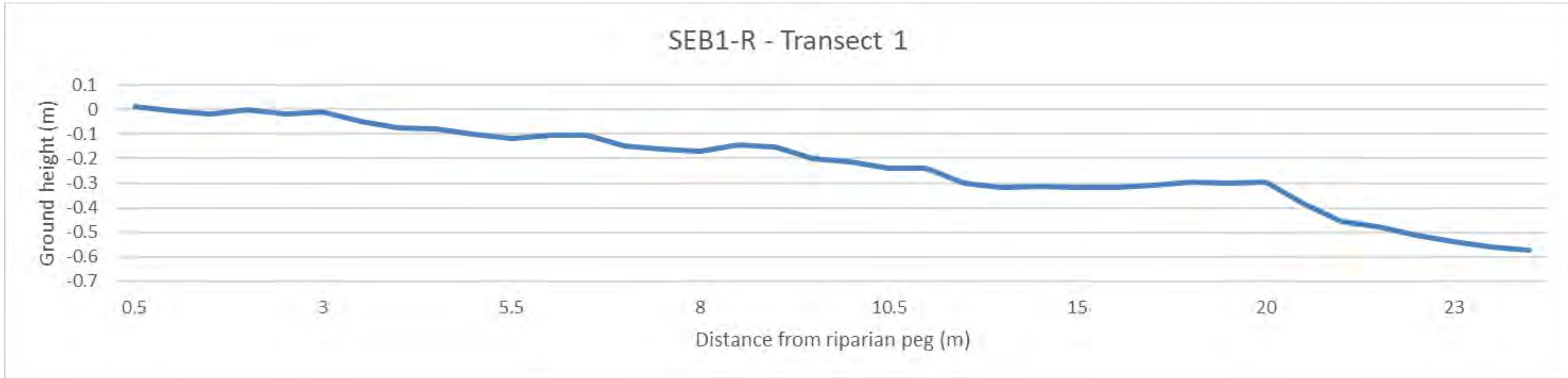

SWB1-I - Transect 4
Ground height (m)
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
14
19
22
27
32
37
40
Distance from riparian peg (m)

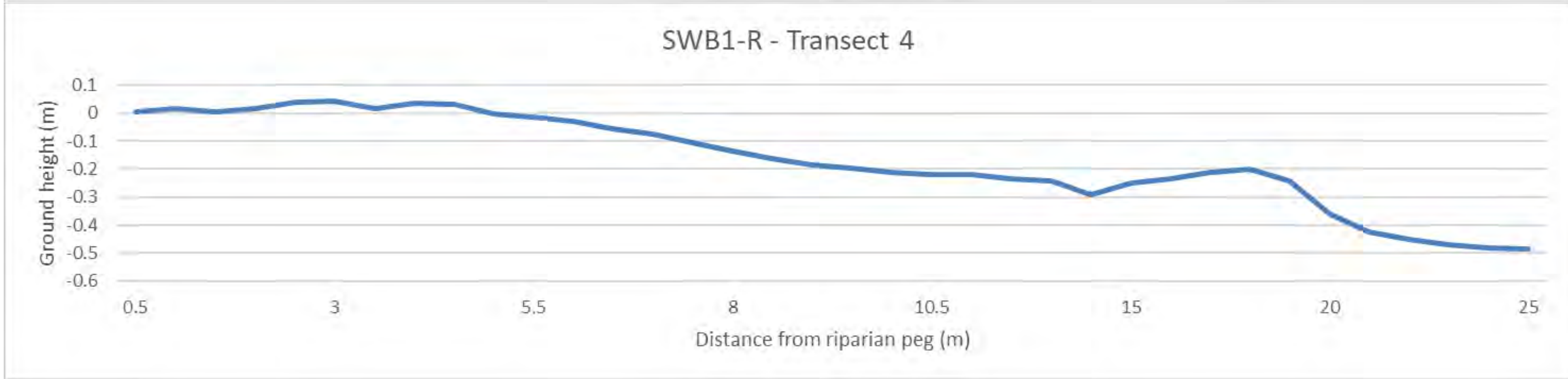

SWB2-R - Transect 1
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0.5
3
5.5
8
10.5
15
20
25
30
Distance from riparian peg (m)

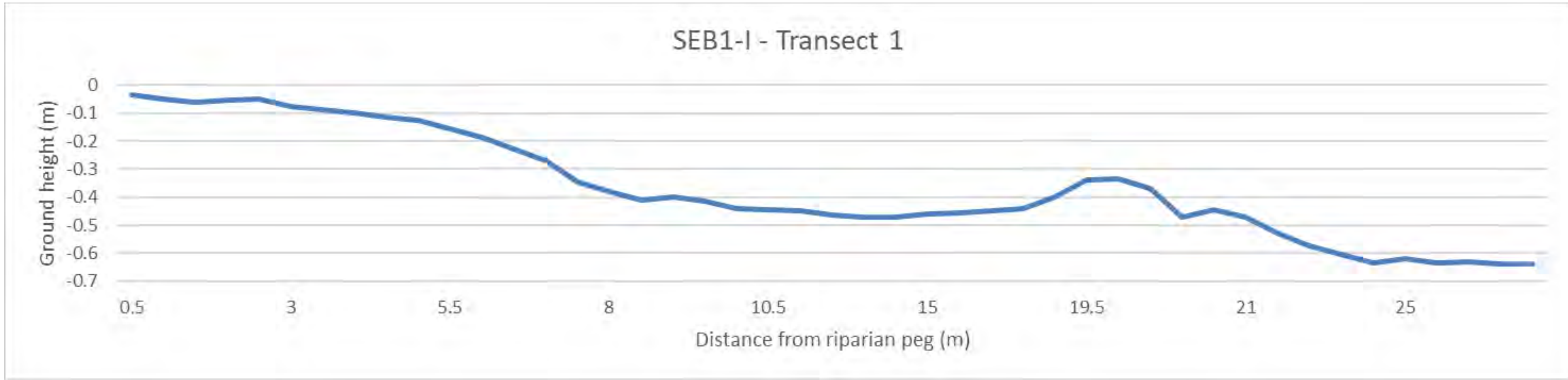

SWB2-R - Transect 4
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
13
16
21
26
31
Distance from riparian peg (m)

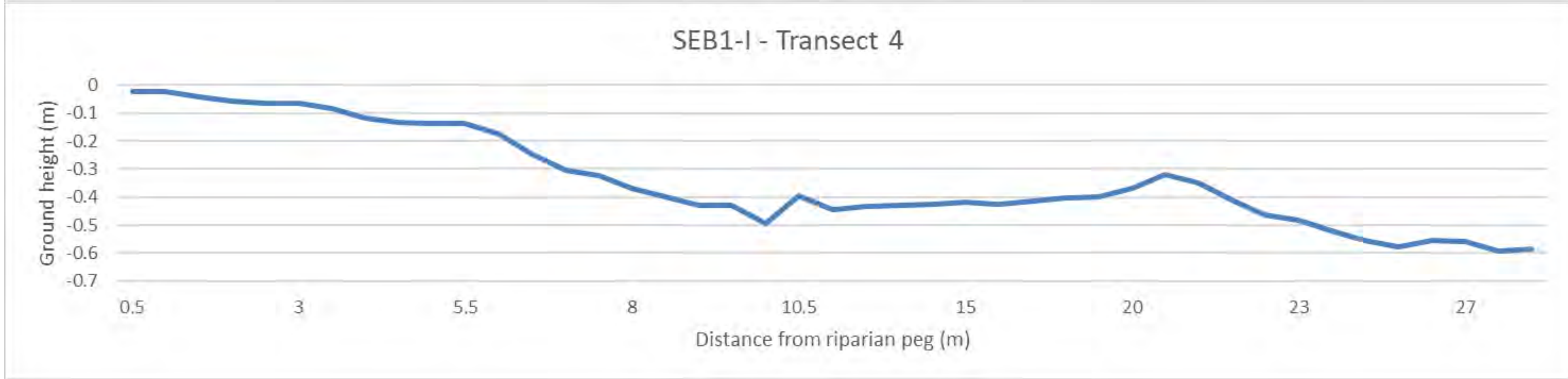

SWB2-R - Transect 4
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
13
16
21
26
31
Distance from riparian peg (m)

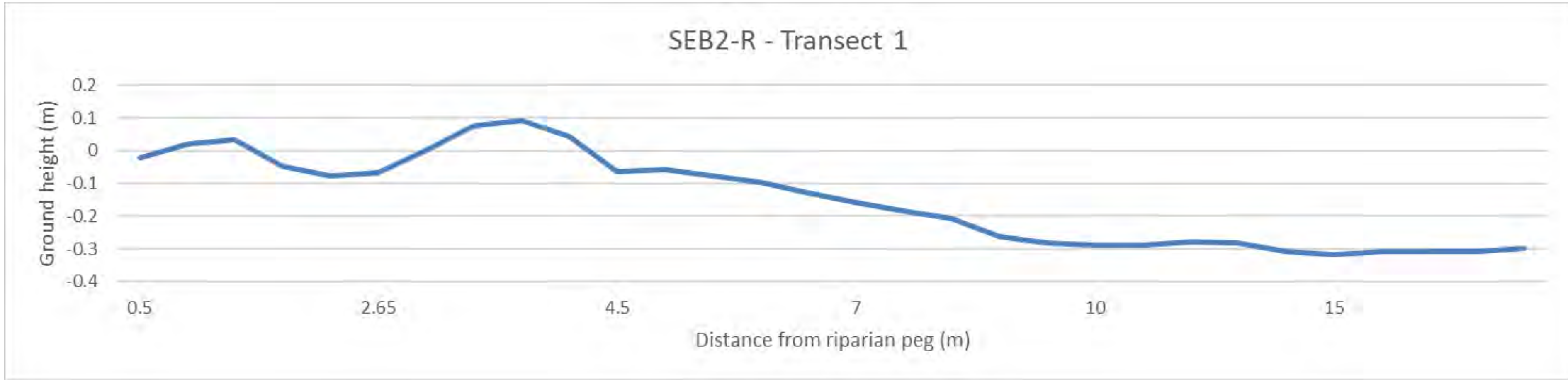

SWB2-I - Transect 4
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
Distance from riparian peg (m)

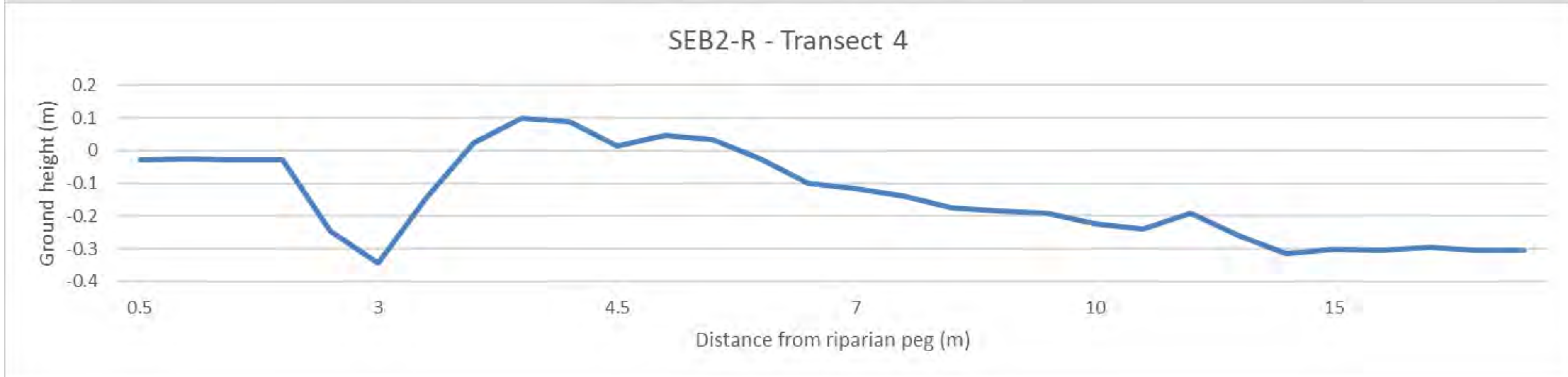

SEB1-R - Transect 1
Ground height (m)
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
0.5
3
5.5
8
10.5
15
20
23
Distance from riparian peg (m)

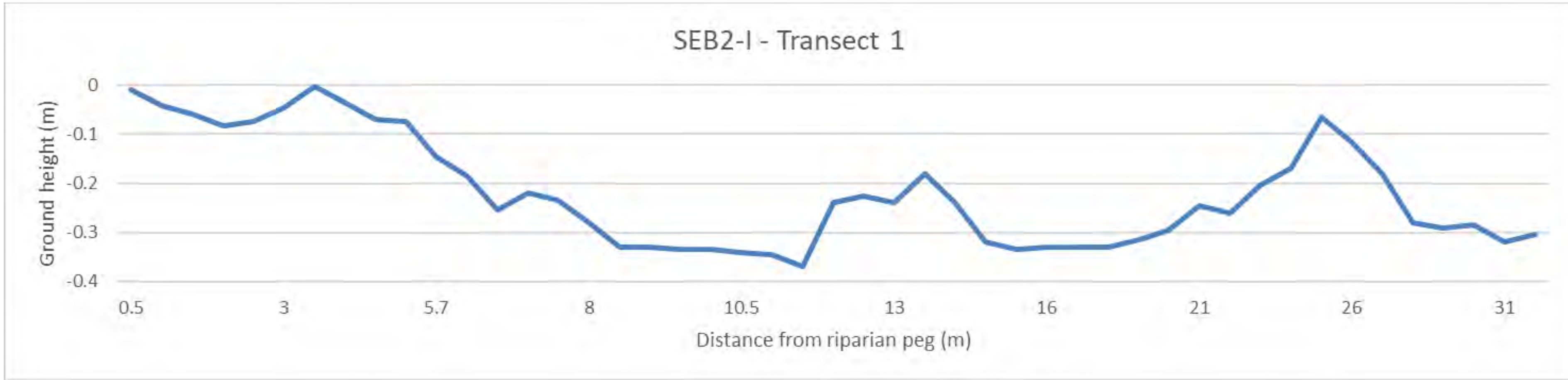

SWB1-R - Transect 4
Ground height (m)
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
15
20
25
Distance from riparian peg (m)

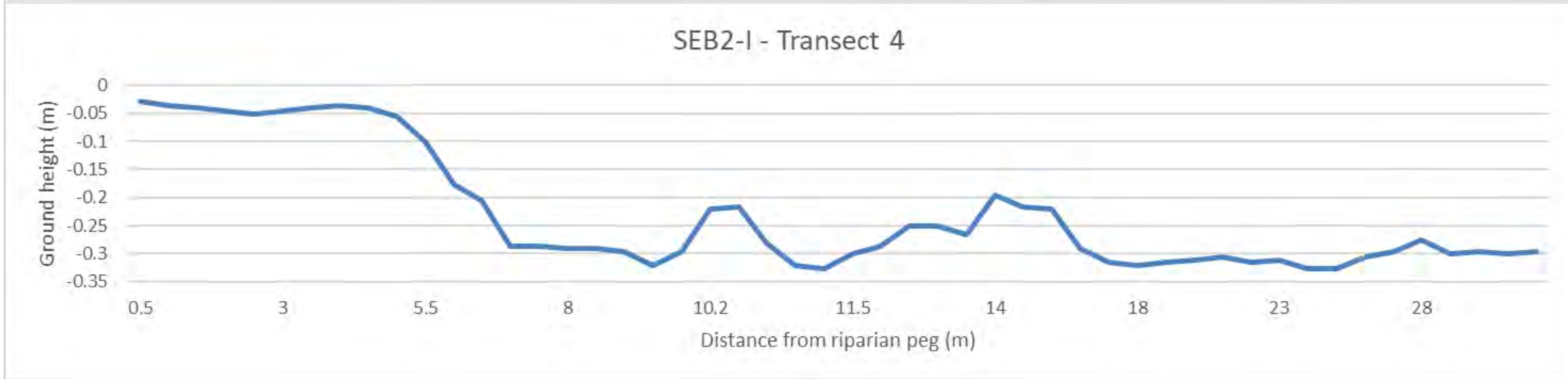

SEB1-I - Transect 1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
Ground height (m)
0.5
3
5.5
8
10.5
15
19.5
21
25
Distance from riparian peg (m)

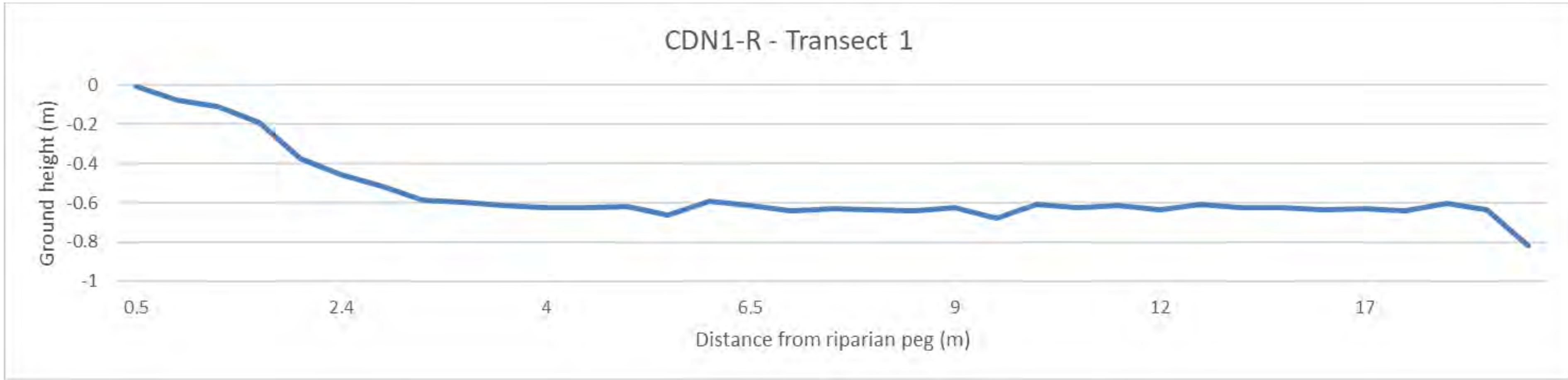

SEB1-I - Transect 4
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
Ground height (m)
0.5
3
5.5
8
10.5
15
20
23
27
Distance from riparian peg (m)

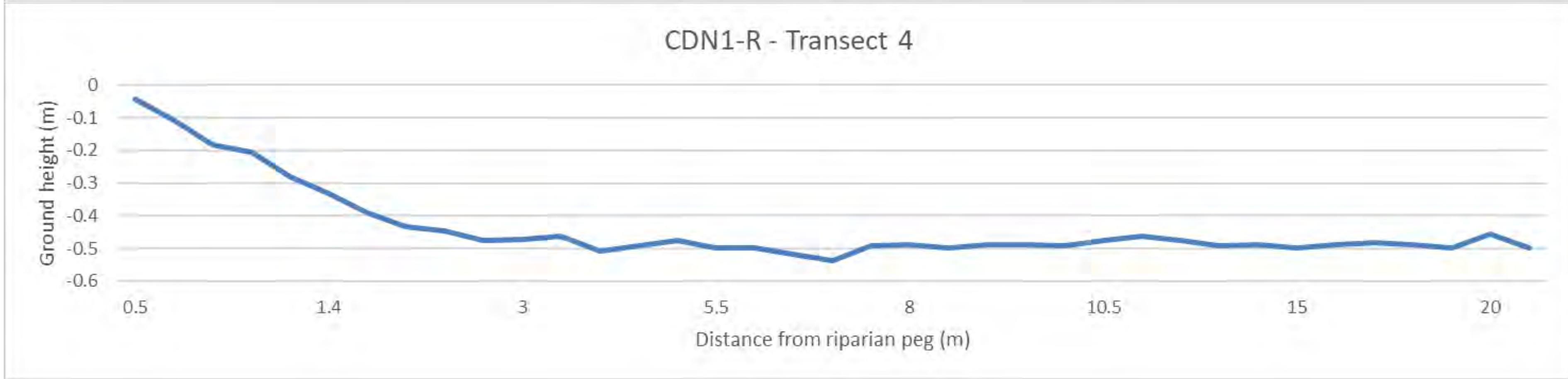

SEB2-R - Transect 1
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
Ground height (m)
0.5
2.65
4.5
7
10
15
Distance from riparian peg (m)

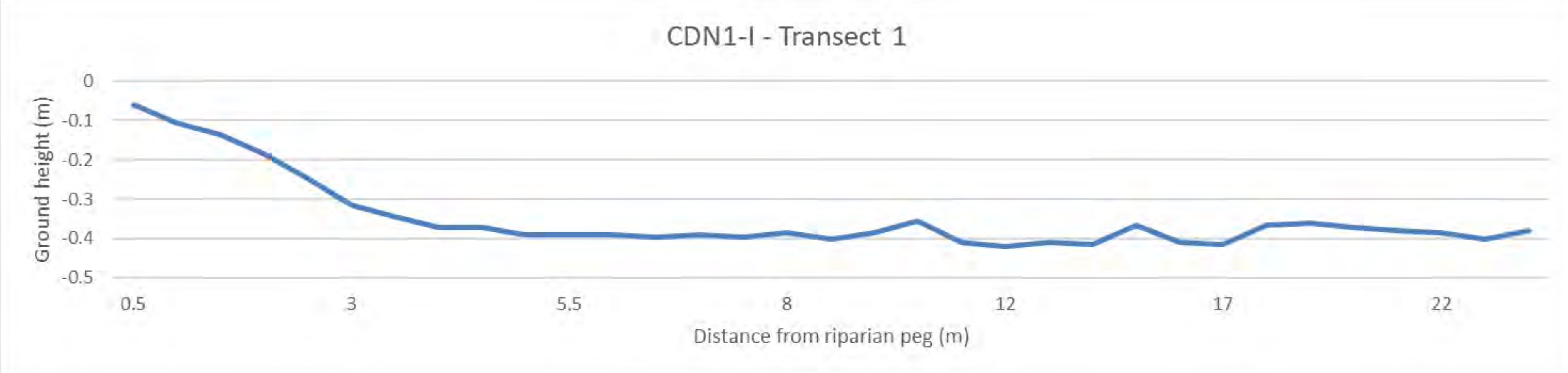

SEB2-R - Transect 4
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
Ground height (m)
0.5
3
4.5
7
10
15
Distance from riparian peg (m)

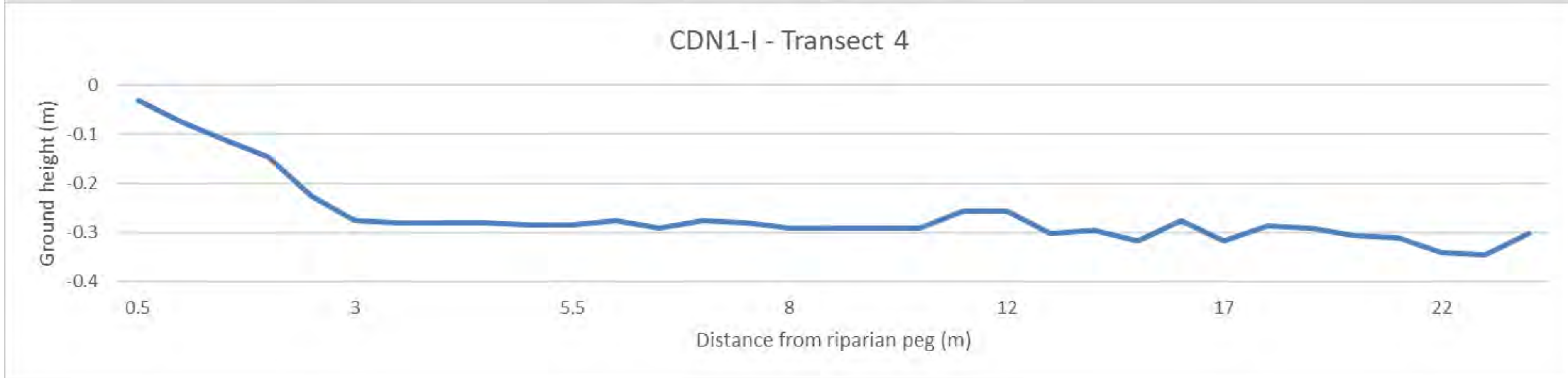

SEB2-I - Transect 1
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
0.5
3
5.7
8
10.5
13
16
21
26
31
Distance from riparian peg (m)

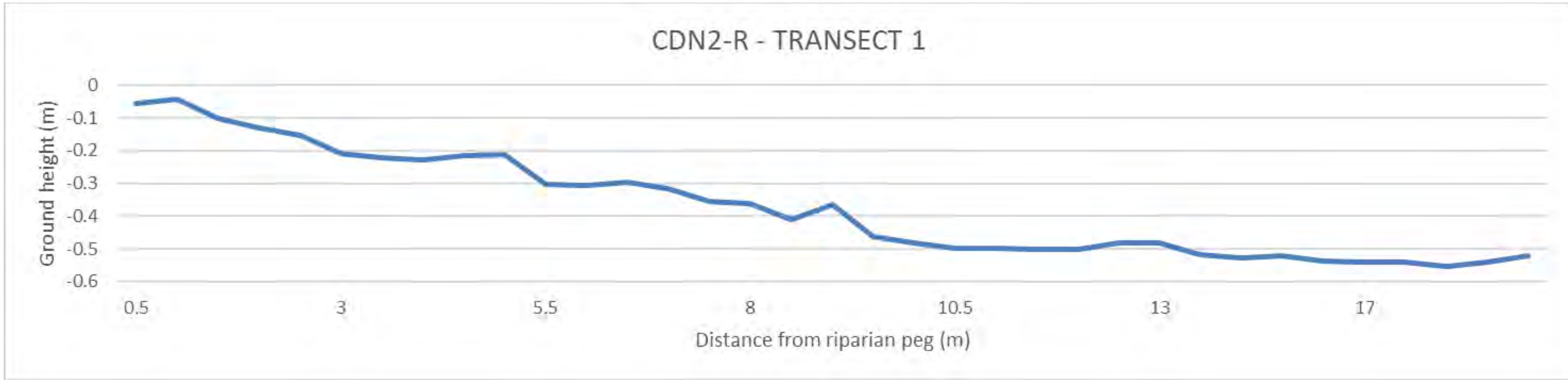

SEB2-I - Transect 4
Ground height (m)
0
-0.05
-0.1
-0.15
-0.2
-0.25
-0.3
-0.35
0.5
3
5.5
8
10.2
11.5
14
18
23
28
Distance from riparian peg (m)

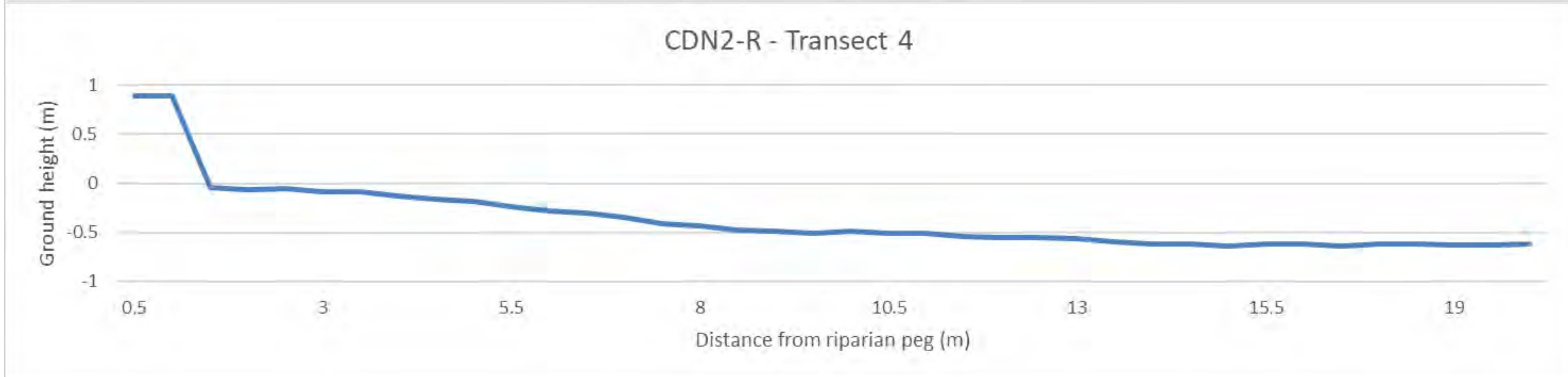

CDN1-R - Transect 1
Ground height (m)
0
-0.2
-0.4
-0.6
-0.8
-1
0.5
2.4
4
6.5
9
12
17
Distance from riparian peg (m)

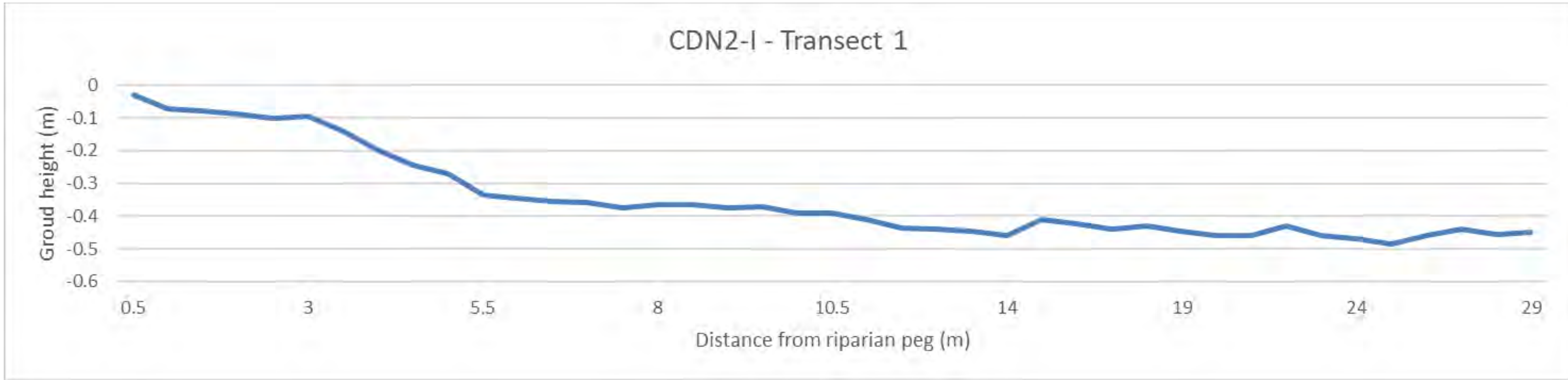

CDN1-R - Transect 4
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
1.4
3
5.5
8
10.5
15
20
Distance from riparian peg (m)

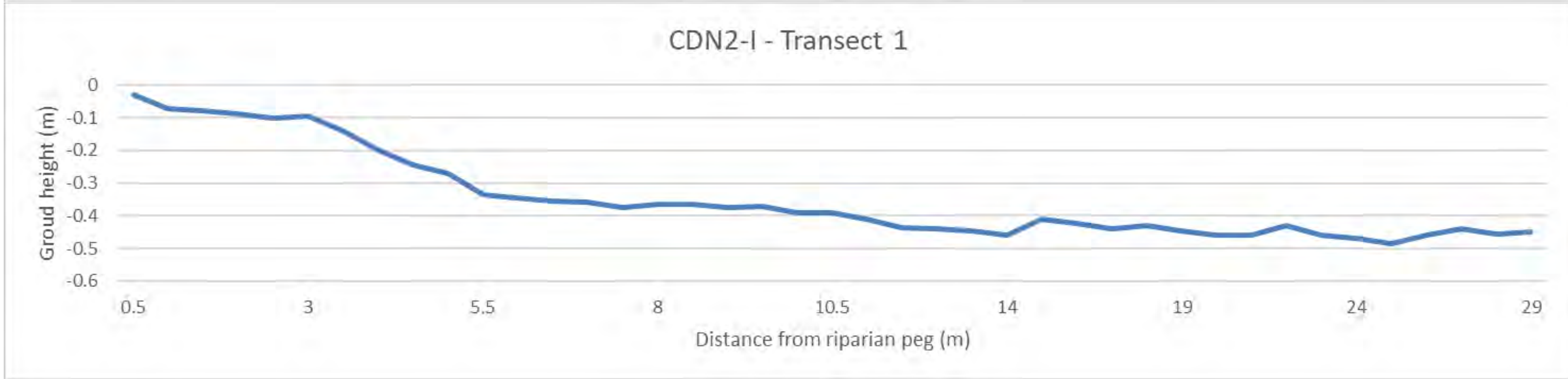

CDN1-I - Transect 1
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
0.5
3
5.5
8
12
17
22
Distance from riparian peg (m)


CDN1-I - Transect 4
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
0.5
3
5.5
8
12
17
22
Distance from riparian peg (m)

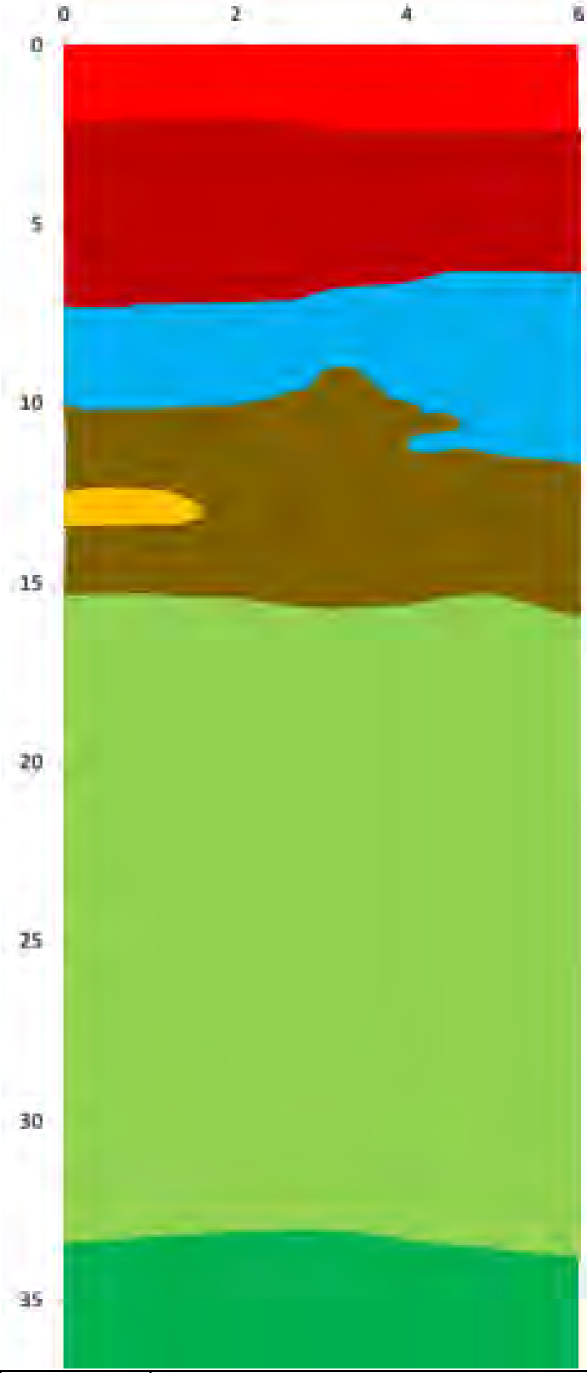

CDN2-R - TRANSECT 1
Ground height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
13
17
Distance from riparian peg (m)


CDN2-R - Transect 4
Ground height (m)
1
0.5
0
-0.5
-1
0.5
3
5.5
8
10.5
13
15.5
19
Distance from riparian peg (m)

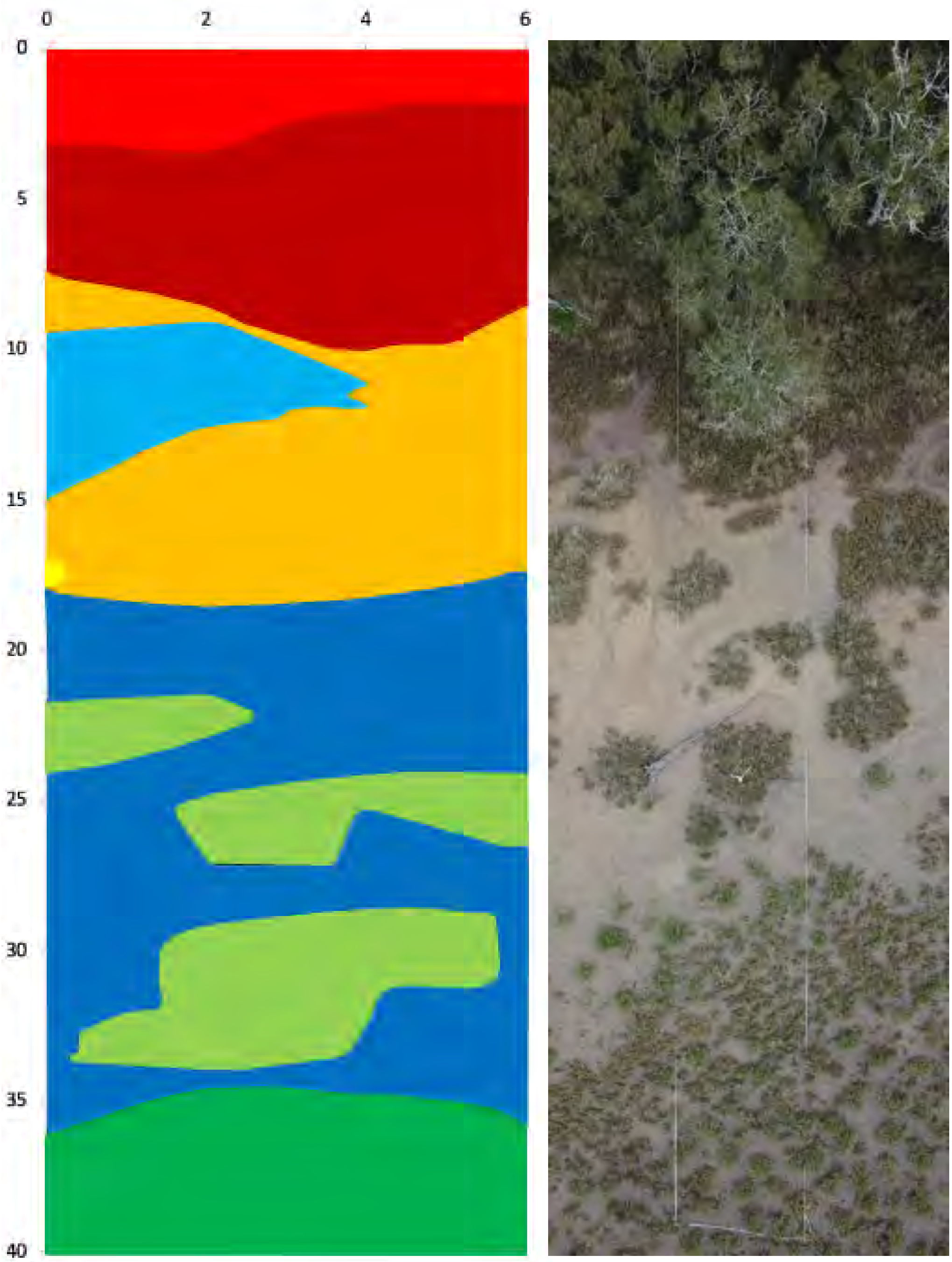

CDN2-I - Transect 1
Groud height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
14
19
24
29
Distance from riparian peg (m)


CDN2-I - Transect 1
Groud height (m)
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
0.5
3
5.5
8
10.5
14
19
24
29
Distance from riparian peg (m)

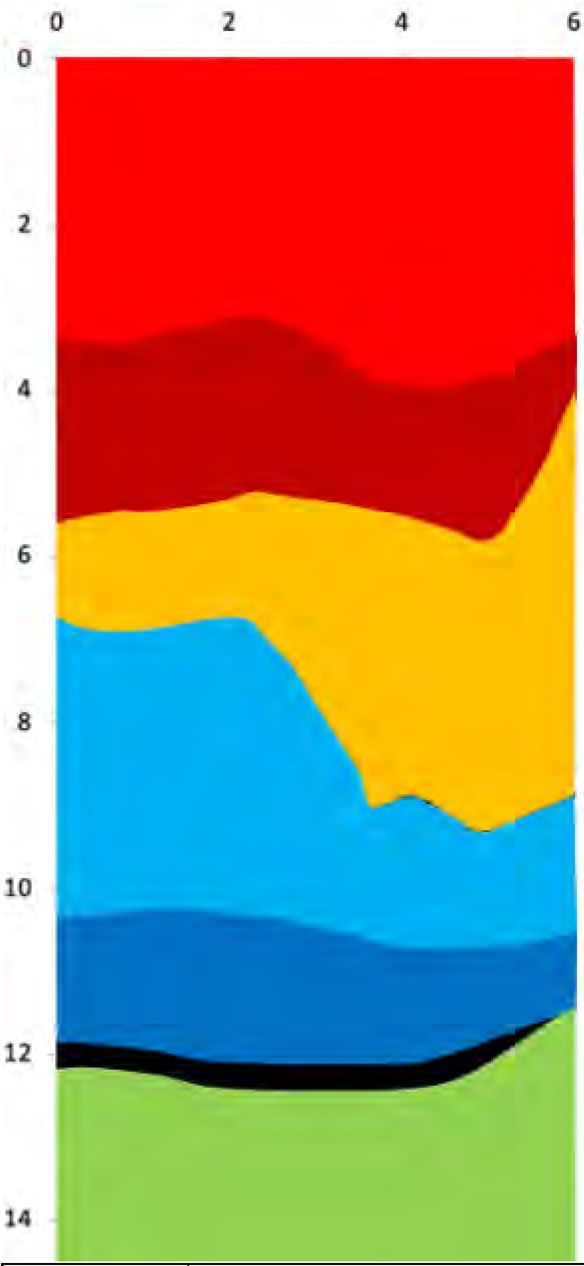
APPENDIX C3
INTERTIDAL MOSAIC PLOTS



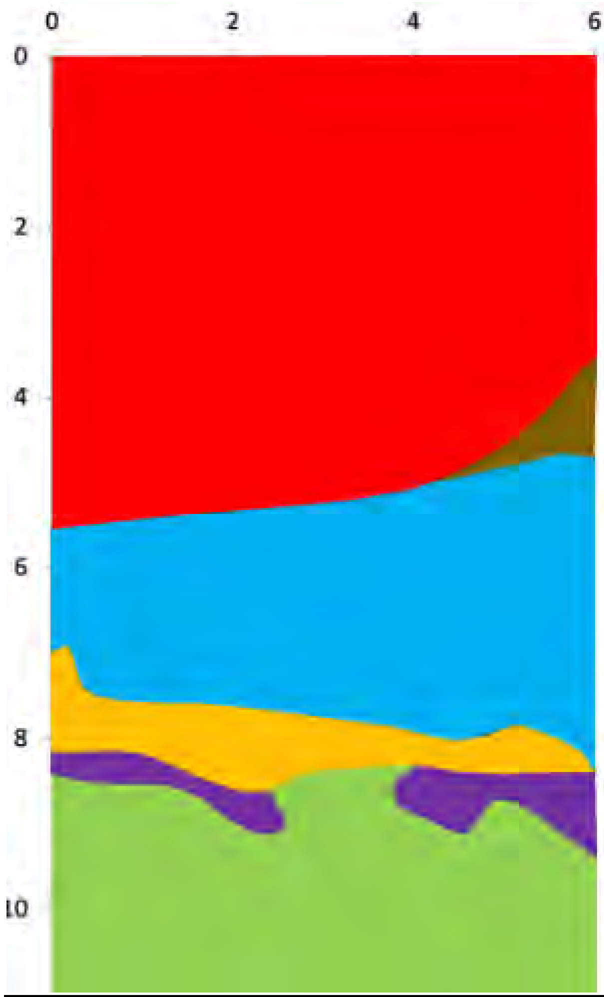
CUP1-I	
	BJ + casuarina seedlings + RG
	BJ + JK
	Dense JK + BJ + SQ
	SQ
	BM + some SQ + PN + SD + SP + AD
	Medium density SQ + some mangrove SD, SP
	Sparse SQ + SD + SP



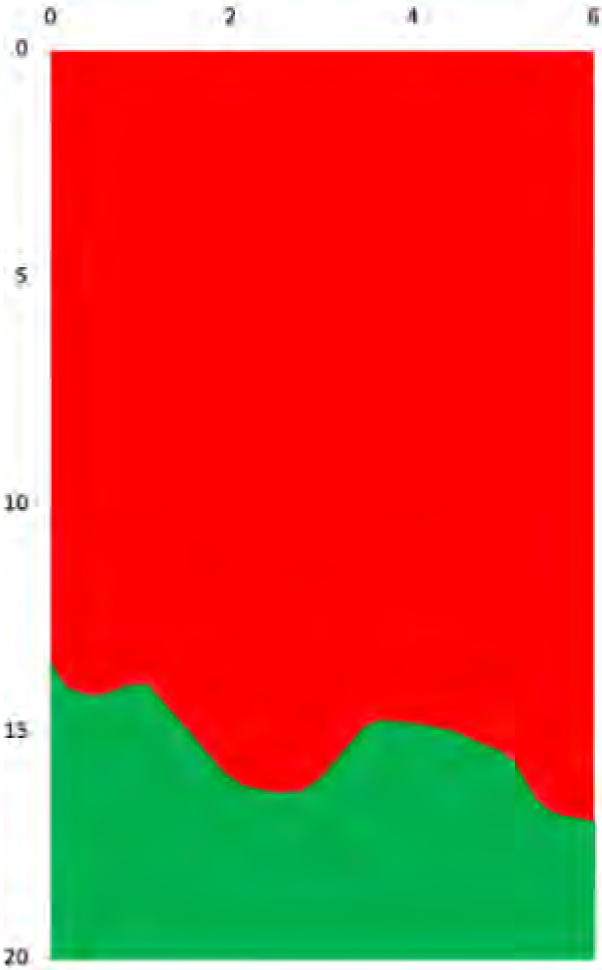
CUP1-R	
	Casuarina and seedlings + CW + BS + AL
	JK + CD + SQ on outer edge
	SQ + JK + Islands with casuarina
	SQ
	BM
	SP + SD + PN + SQ + Islands of JK
	JK + SQ
	Adult mangroves (dwarf?) + SD + PN + SP + sparse SQ



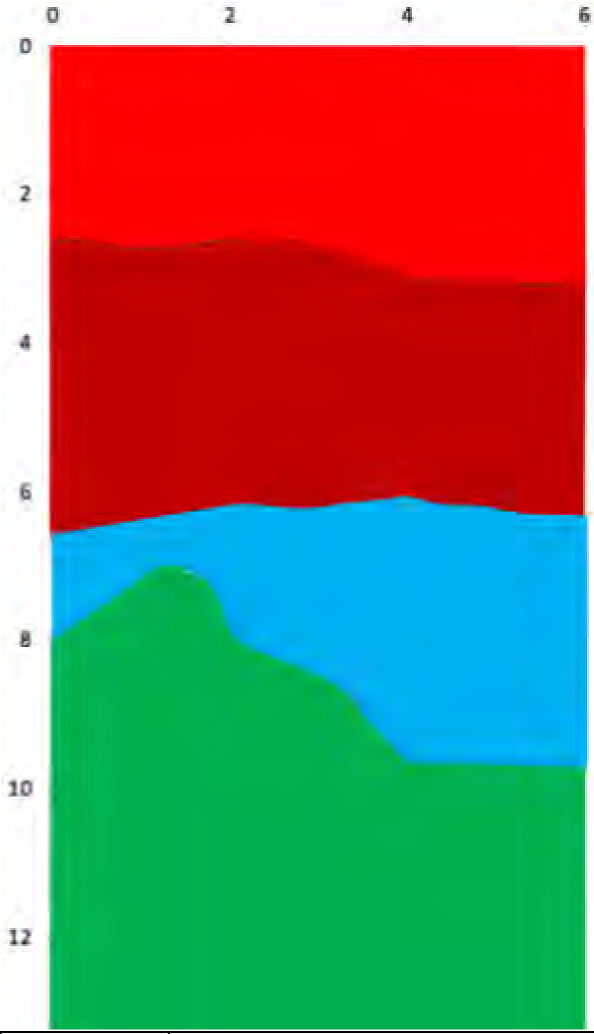
CUP2-I	
	NZ spinach (TT) + African boxthorn (AB) + BG + Nightshade (NS) + CD
	BM + some adult grey mangroves + some CD coming in from riparian 1
	JK + SA + some small AD mangroves
	Zos wrack smothering salt marsh, likely SQ + some SA + mangroves poking through
	SQ + some SA + few mangroves
	Zos wrack
	Course sands with shells + little amounts of PN inshore although some sapling and seedlings shooting up



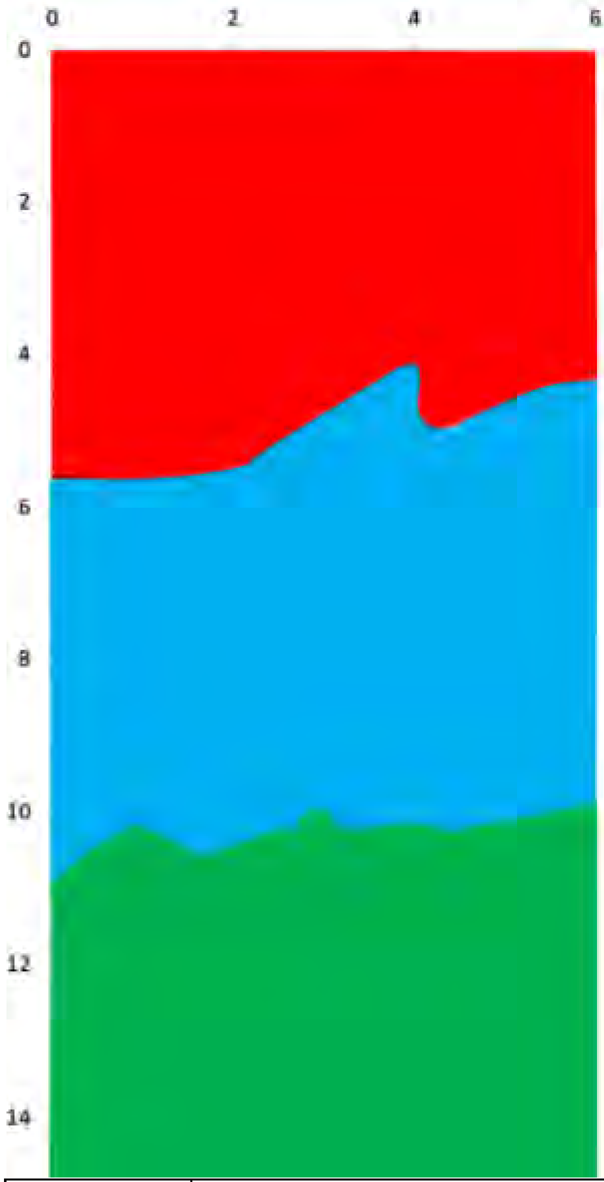
Cup2-R	
	BG + NZ Spinach (TT) + Commelina sp (WM) + some casuarina wrack (CW)
	Bare mud (BM) + CW
	Suaeda (SA)
	Zos and cas wrack + Pneumatophores (PN) + sapling (SP)
	Sarcocornia (SQ) + PN + SP
	Exposed sands + PN (PNs have medium algae) + SP + wrack



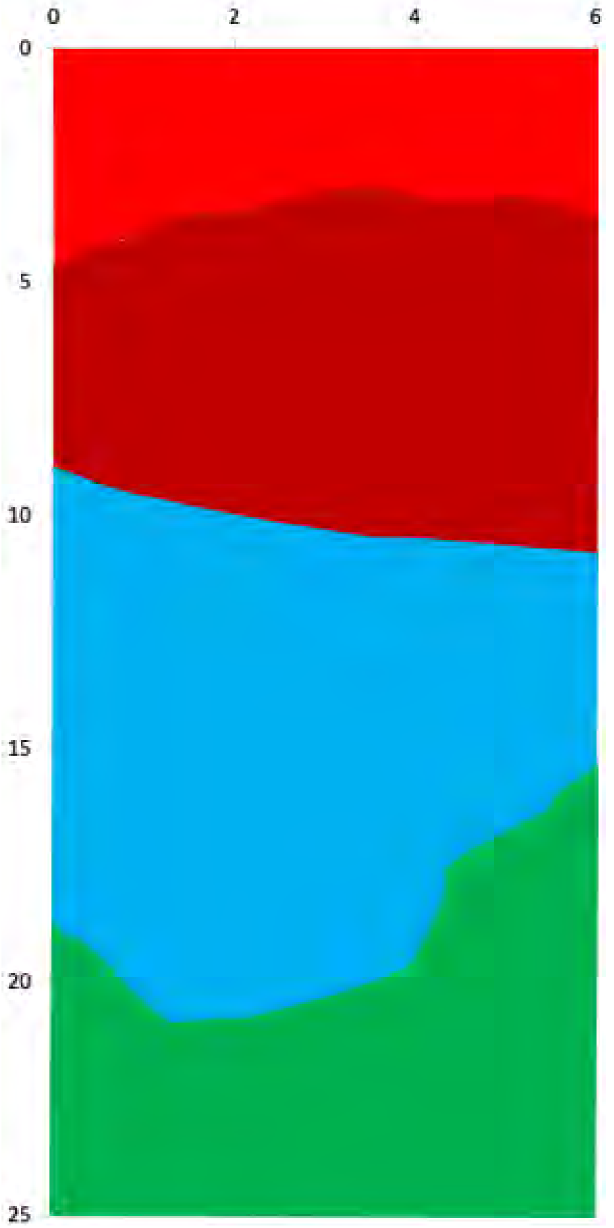
BB1-I	
	JK + BJ + Riparian grass
	PN + AD



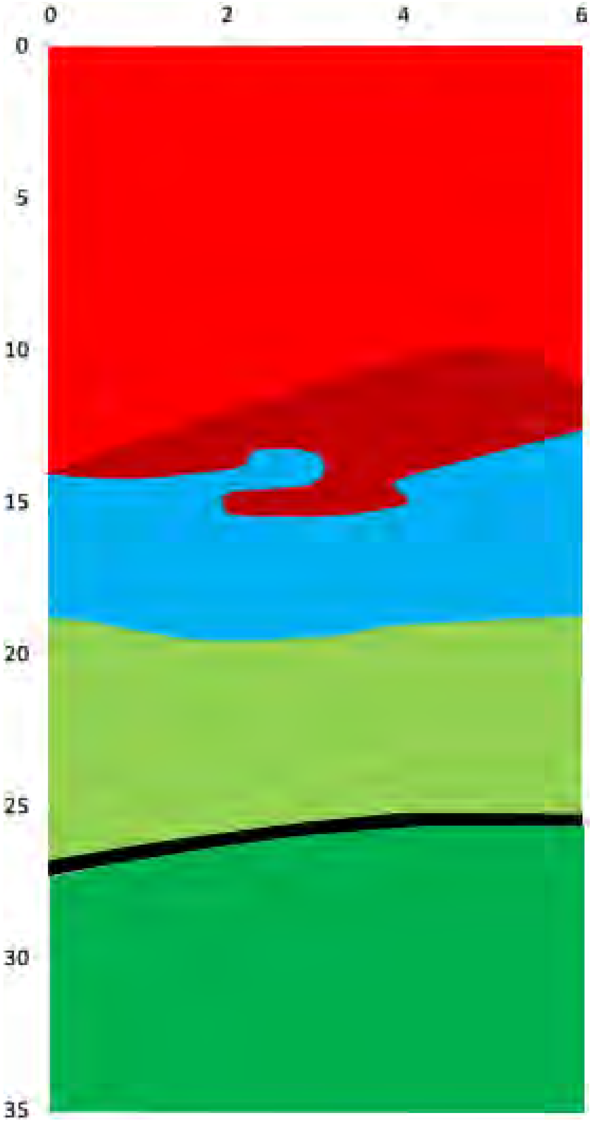
BB1-R	
	Casuarina + BS + LC + some BJ
	JK + BJ + some SQ
	JK + SQ
	PN + SD + AD



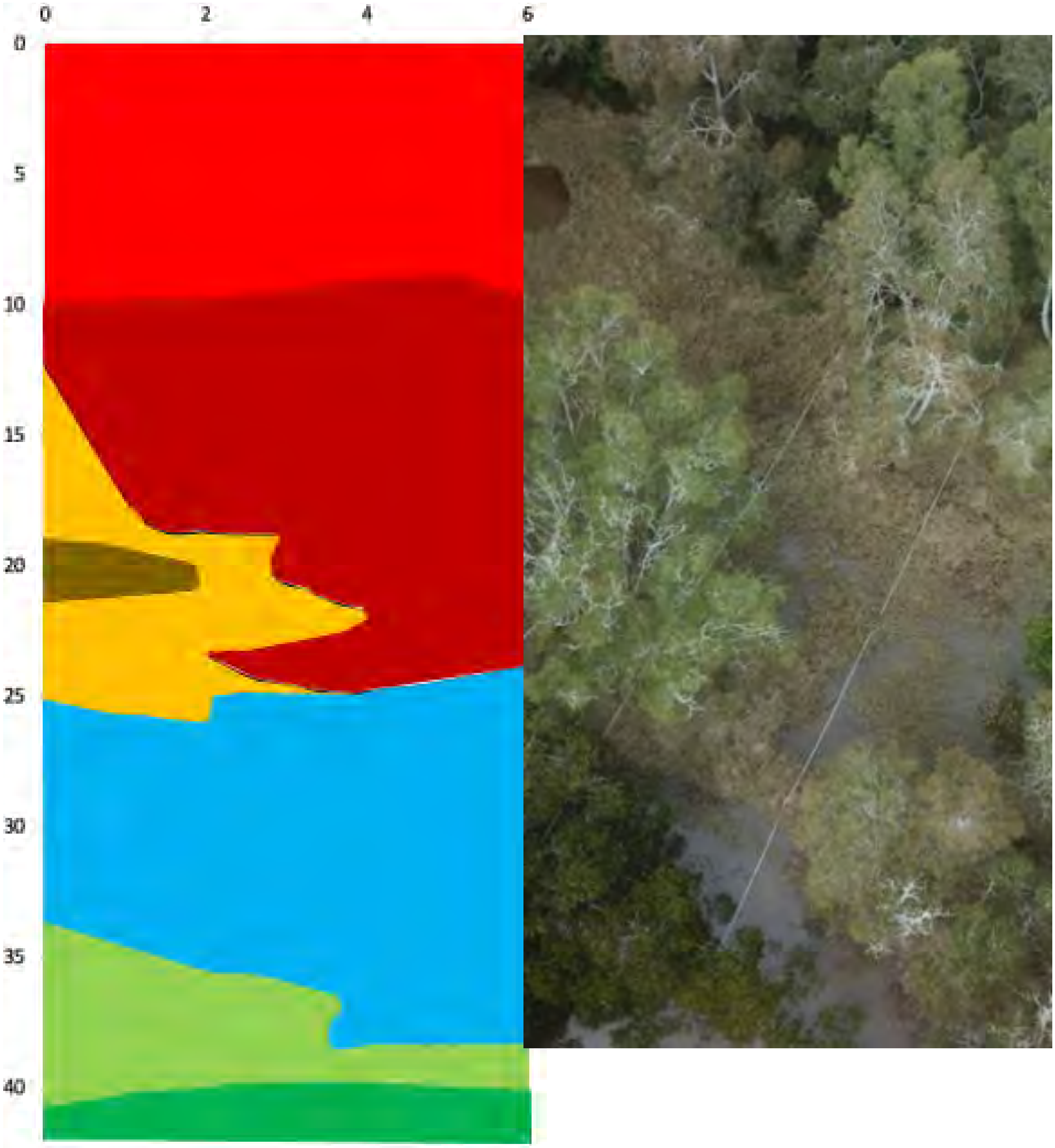
BB2-I	
	Casuarina + Melaleuca + BJ + a little JK + some CD + some PA
	JK + SQ + PA
	PN + SD + AD



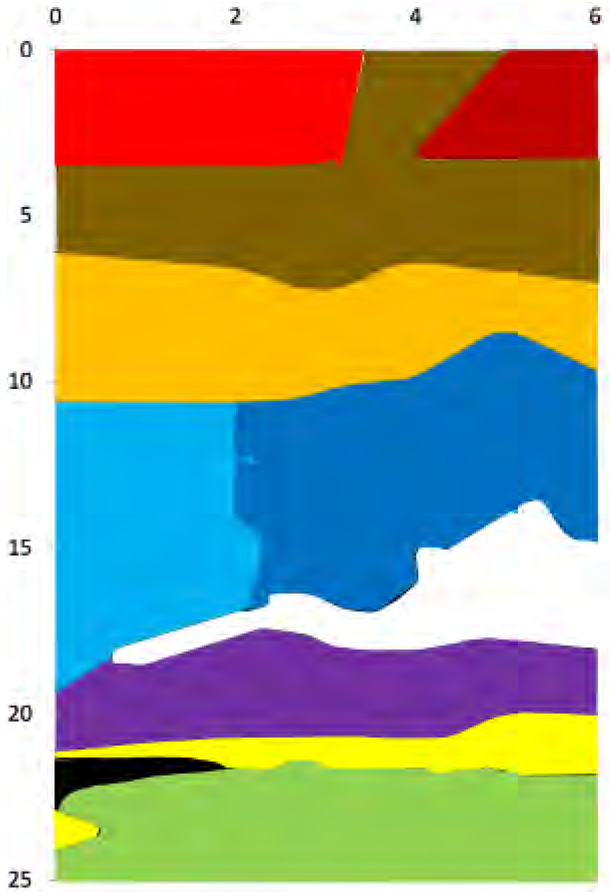
BB2-R	
	BS + Ranunculus (RN) + JK + BG + LC + CW + PT + some morning glory ?
	Casuarina + CW + JK + small amounts of SQ
	JK + SQ + CW + Debris
	PN + SD + AD + Sparse SQ



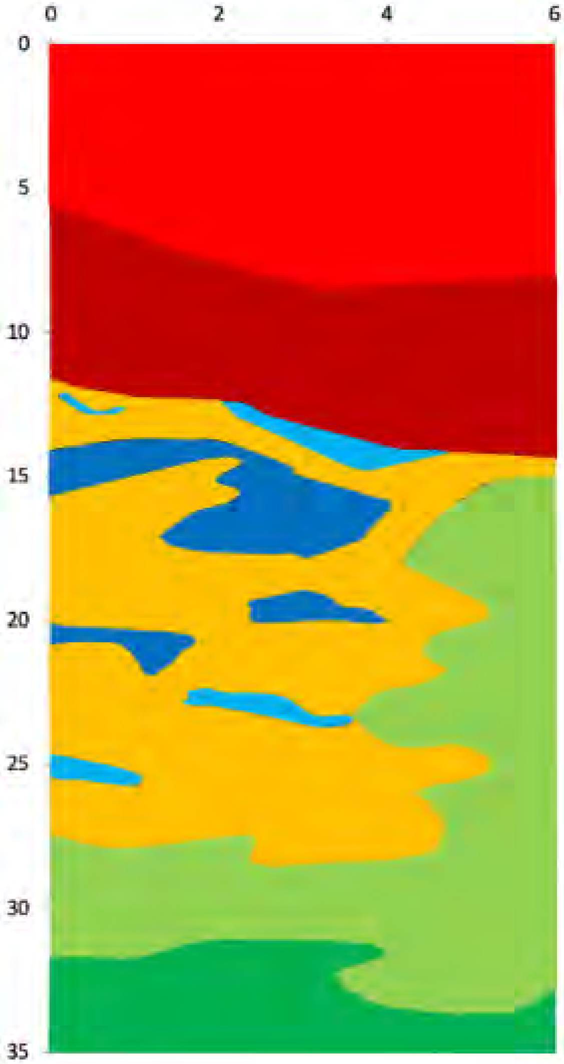
SWB1-R	
	CW + BS + CD + Casuarina + JK + AL
	JK + CW + some SQ
	JK + SQ + CW
	JK + SQ
	Erosion line and Zoss wrack line
	BM + SD + PN



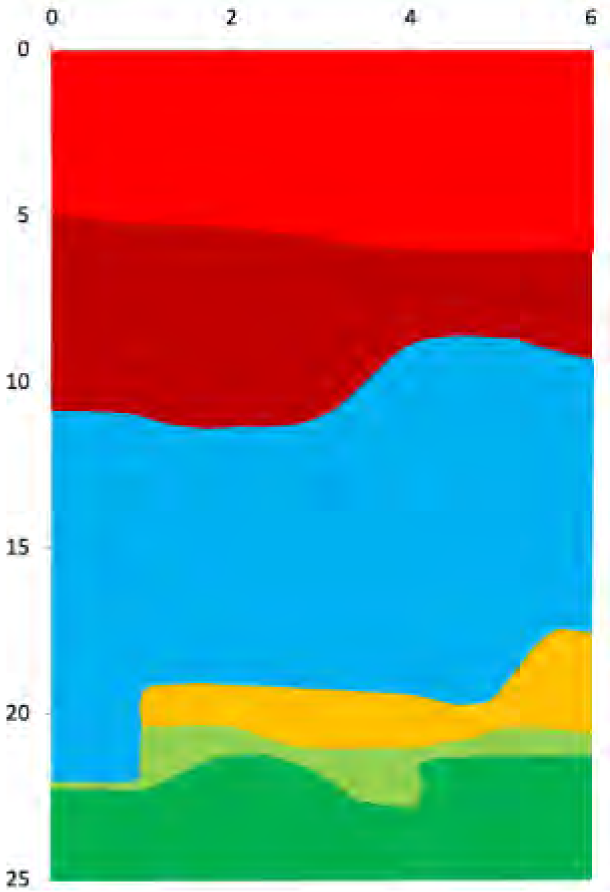
SWB1-I	
	CW + CD + RG + Lobelia (AL) + Basket grass + Lantana (LC) + Pittostrum (PT) + Casuarina
	BJ + JK + Casuarina + PT + CD
	JK + BJ + SQ + Casuarina + BM + CW
	BM
	SQ + BM + clumped JK
	JK + SQ + Casuarina
	SQ + PN + SD + AD



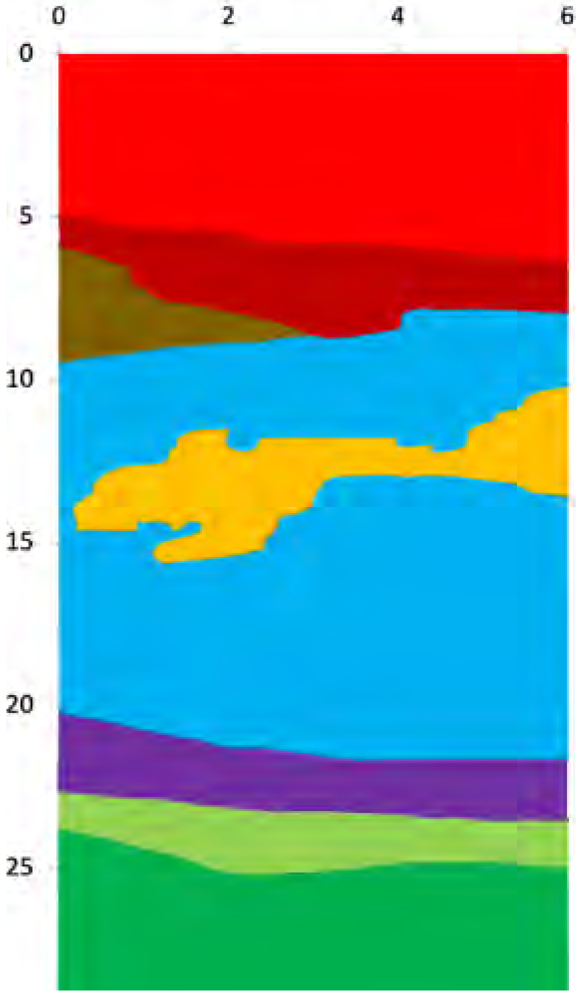
SWB2-I	(need to check coding's)
	NS + BS + BJ + BG + CS + AV
	BS + BJ + LC + AV + RG
	BS + BJ + AV + CS + RG
	JK + BJ + BS
	JK + BJ
	BJ
	BJ + CW + JK
	JK + SQ
	JK + SQ + PN + SP
	Wrack line - CW
	PN + SP (Zos hanging on mangroves from 25 m onwards)



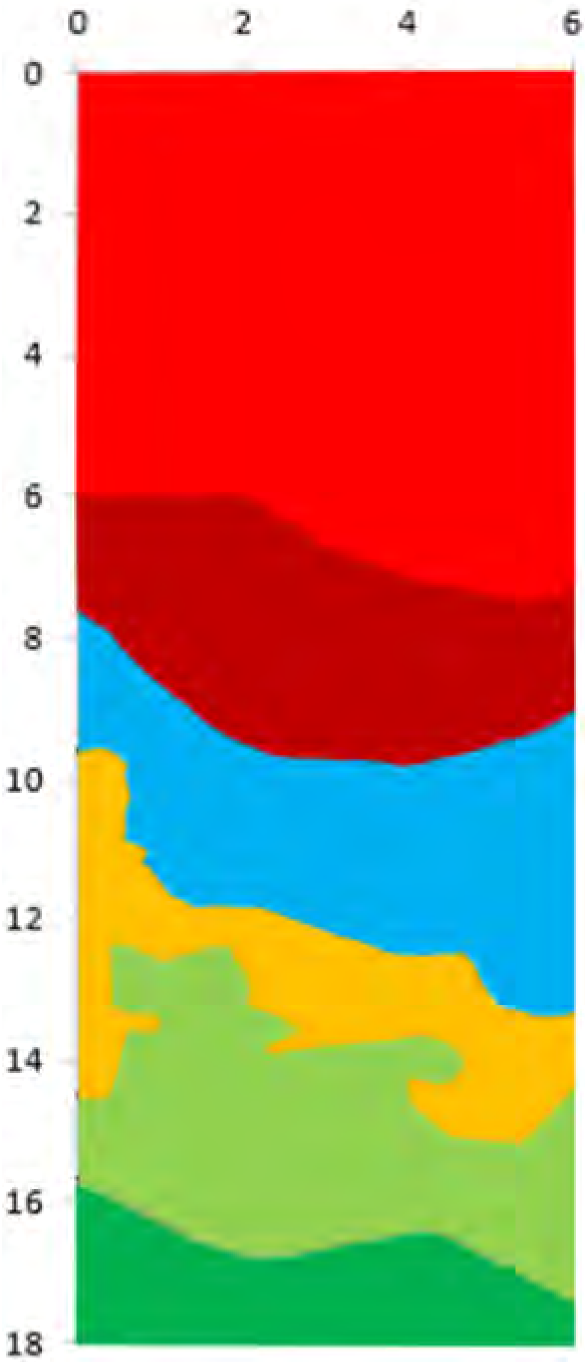
SWB2-R	
	BS + JK + Casuarina + CW + Juvenile casuarina
	JK + some SQ + Casuarina
	PN + SD + BM
	SQ
	SQ + PN
	JK + SQ
	PN+ SP + SD + AD



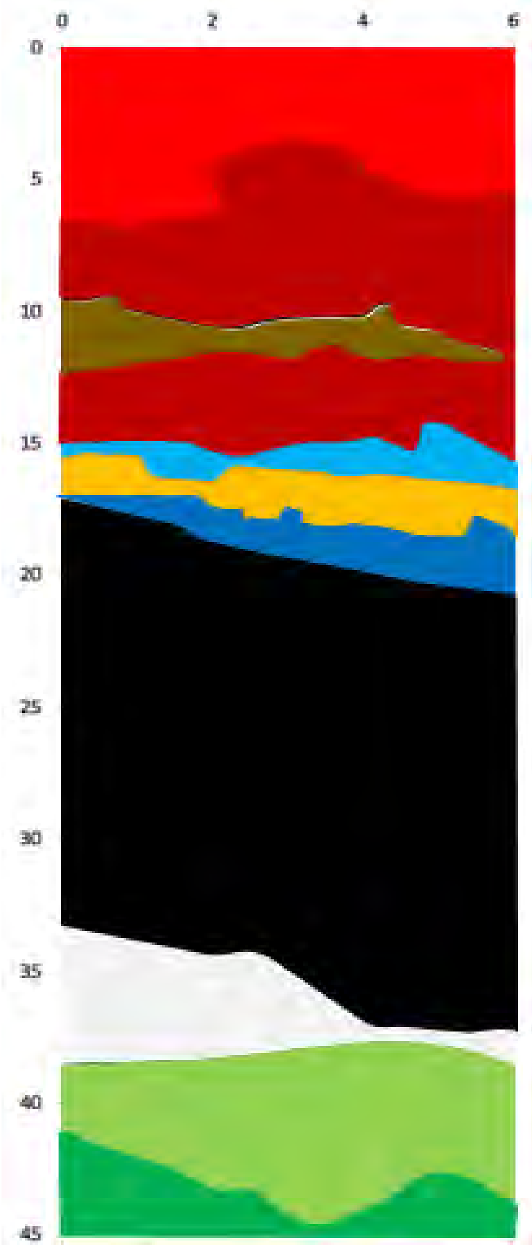
SEB1-R	
	Casuarina + RG + BG + some JK throughout (small amounts) + weeds (cape ivy, Nightshade, Asparagus)
	CD + SQ + JK + TT
	JK + SQ + some SA
	JK + SQ + SA
	SP + SQ + SA + PN
	PN + SP + SD + AD



SEB1-I	
	Casuarina wrack (CW) + few CD
	JK + CD + SQ
	CD + SQ
	SQ
	Bare mud (BM)
	JK + SQ
	SP + PN + sparse SQ
	All Mangroves PN, SP, SD, AD.

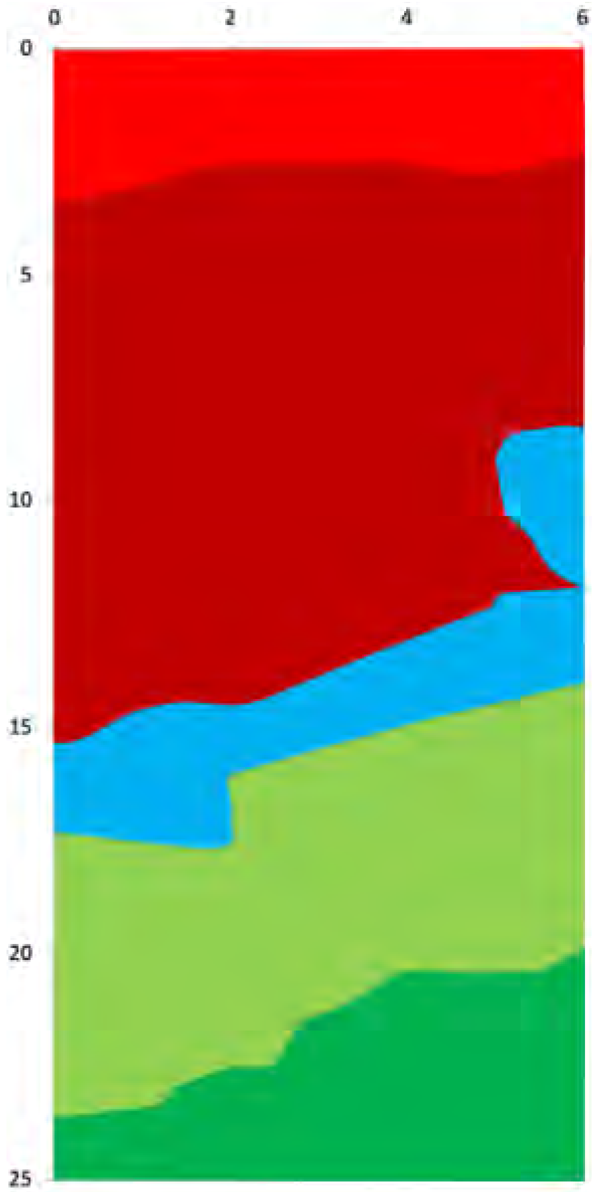


SEB2-R	
	CW + CD + AF + Some JK
	SQ + JK + CD
	JK + SQ
	Less dense SQ + PN + Edging saplings
	PN + SP
	PN + SP + SD + AD

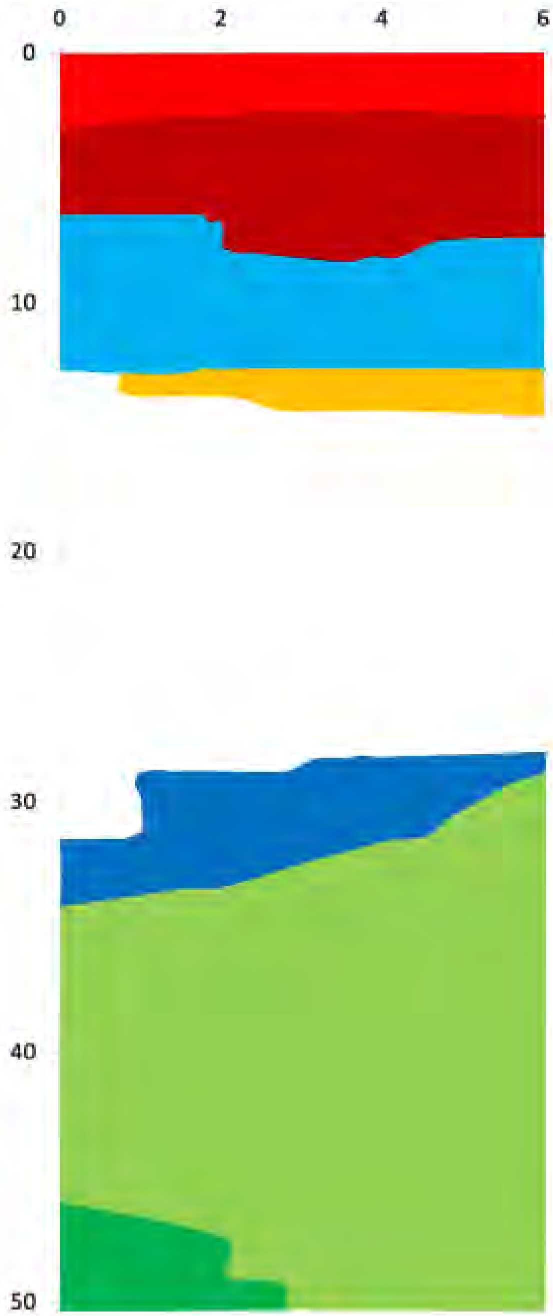


SEB2-I	
	Casuarina, wrack + a couple of juvenile casuarina (0.5m), AF + RG + CD + 1 or 2 stems of JK
	SQ + JK
	Bare mud (BM) + some PN (rainbow surface sheen on first bare patch)
	SQ (sparse to medium) + PN
	Bare mud (BM) + PN + very very very sparse SQ + saplings
	SQ (sparse to medium) + adult mangrove + PN
	Dense JK
	JK + river mangroves(>1.5m and budding) + a couple of grey mangroves (>1.5m – adults) + PN
	PN + SQ + saplings (SP) + adult (AD)
	PN + some SP + Adult mangroves (AD)

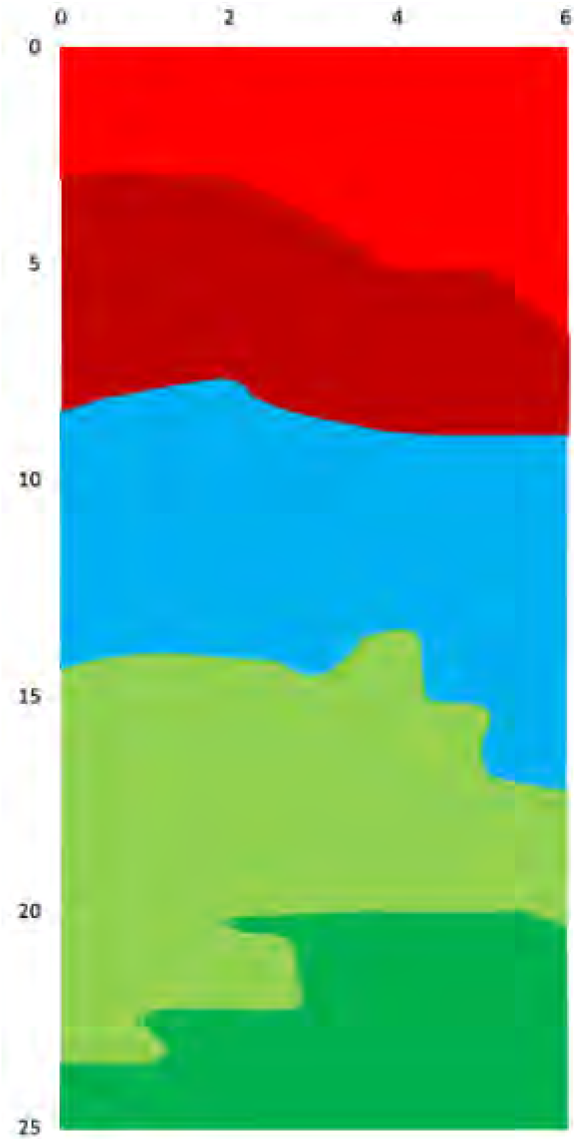
CDN1-I	
	CW + CD little JK + Eucalyptus wrack
	JK + SQ + CW + Eucalyptus wrack + lots of rubbish
	PN + SQ + BM + Iso AD + 1-2 SP
	PN + SP + SD + AD + sparse SQ (Dominated by very large AD)
	PN + SP + SD + AD + BM + sparse SQ clumped throughout



CDN1-R	
	CD + some JK + C + CW + small CD
	SQ + BM + CH
	SQ + PN + some SP
	SQ + PN + SP + SD + some AD
	PN + BM + AD + SD + SP



CDN2-I	
	JK + AL + CW + C + GH + ALT
	JK
	JK + SQ some SD + some SP some PN
	SQ + PN + SP + SD + AD
	SQ + some PN
	SQ + PN SP SD
	Little SQ + BM + PN + SP + SD + AD
	Very large AD dominating



CDN2-R	
	CD + SQ TT IC + CA + SON
	SQ + some SP + D + SA
	SQ + BM + some SP, SD + 2 Isolated AD
	BM
	PN + SP + SD +M

CUP1-I Transect 1 Site photos

Looking up Transect 1

16/5/23

Photos not taken

Looking down transect 1

16/5/23

Photos not taken

CUP1-R Transect 1 Site photos

Looking up Transect 1

4/5/23

Photos not taken

Looking down transect 1

4/5/23

Photos not taken

CUP2-I Transect 1 Site photos

Looking up Transect 1

4/5/23

Photos not taken

Looking down transect 1

4/5/23

Photos not taken

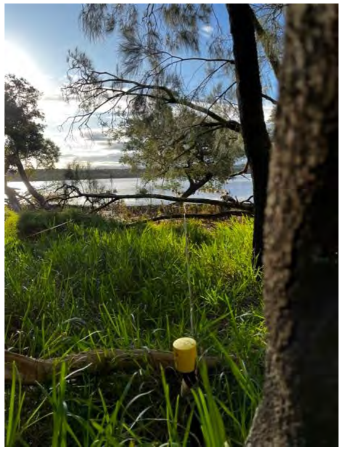
CUP2-R Transect 1 Site photos

Looking up Transect 1

3/3/23 | 4/5/23

Looking down transect 1

3/3/23 | 4/5/23



BB1-I Transect 1 Site photos

Looking up Transect 1

12/4/23	5/5/23
	

Looking down transect 1

12/4/23	5/5/23
	

BB1-R Transect 1 Site photos

Looking up Transect 1

12/4/23

5/5/23

Looking down transect 1

12/4/23

5/5/23

BB2-I Transect 1 Site photos

Looking up Transect 1

12/4/23

3/5/23

Looking down transect 1

12/4/23

3/5/23

BB2-R Transect 1 Site photos

Looking up Transect 1

29/3/23

3/5/23

Looking down transect 1

29/3/23

3/5/23

SWB1-I Transect 1 Site photos

Looking up Transect 1

21/3/23

2/5/23

Looking down transect 1

21/3/23

2/5/23

SWB1-R Transect 1 Site photos

Looking up Transect 1

21/3/23	2/5/23
	

Looking down transect 1

21/3/23	2/5/23
	

SWB2-I Transect 1 Site photos

Looking up Transect 1

6/3/23

2/5/23

Looking down transect 1

6/3/23

2/5/23

SWB2-R Transect 1 Site photos

Looking up Transect 1

20/3/23	2/5/23
	

Looking down transect 1

20/3/23	2/5/23
	

SEB1-I Transect 1 Site photos

Looking up Transect 1

1/3/23

Photos not taken

Looking down transect 1

1/3/23

Photos not taken

SEB1-R Transect 1 Site photos

Looking up Transect 1

2/3/23

Photos not taken

Looking down transect 1

2/3/23

Photos not taken

CDN1-I Transect 1 Site photos

Looking up Transect 1

28/2/23

24/5/23

Looking down transect 1

28/2/23

24/5/23

CDN1-R Transect 1 Site photos

Looking up Transect 1

28/2/23

24/5/23

Looking down transect 1

28/2/23

24/5/23

CDN2-I Transect 1 Site photos

Looking up Transect 1

27/2/23

17/5/23

Looking down transect 1

27/2/23

17/5/23

CDN2-R Transect 4 Site photos

Looking up Transect 4

27/2/23

17/5/23

Looking down transect 4

27/2/23

17/5/23

APPENDIX C-4

Intertidal Transect Riparian Drip Line Results - Term 1				
Site	Transect			
	1	2	3	4
CUP1-I	12.1	12.2	12.1	13.4
CUP1-R	11.4	10.8	10.9	10
CUP2-I	8	8.3	8.7	7.7
CUP2-R	11.3	6.8	6.7	7.8
BB1-I	18.5	18.2	17.5	17.7
BB1-R	10.5	7.3	8.6	11.9
BB2-I	6.9	5.6	3.7	6.3
BB2-R	11	11	11.4	11
SWB1-I	25	27.3	29	27
SWB1-R	14.2	13.2	12.6	19.1
SWB2-I	20.2	18.6	17.9	18
SWB2-R	12.2	15.1	14.5	14.3
SEB1-I	11.6	10	10.5	9.8
SEB1-R	9.6	9.3	11.1	2.6
SEB2-I	4.5	7.5	7.6	9.2
SEB2-R	8.4	9.1	8.9	8.7
CDN1-I	5.3	5.6	5.5	3.5
CDN1-R	4.4	3.5	3.6	2.7
CDN2-I	1.8	1.5	0	1.6
CDN2-R	0	0	0	0

APPENDIX C5
PRE & POST WET WEATHER SITE PHOTOS

SEB2-R – Looking up transect 1

SEB2-R – Looking down transect 1

SEB2-R – Looking up transect 4

SEB2-R – Looking down transect 4

SEB2-I – Looking up transect 1

SEB2-I – Looking down transect 1

SEB2-I – Looking up transect 4

SEB2-I – Looking down transect 4

APPENDIX D

SUBTIDAL SEAGRASS MONITORING DATA

Subtidal Seagrass Monitoring Data

Site	Term	Rep	# leaves	Foil weight	Dry Weight	Ash Weight	Actual Dry	Actual Ash	Total Organic	Leaf Length	Leaf Area	Sediment Weight (cm^2)	Algae Weight (cm^2)
Cdn1	Pilot	1	20	2.53	1.85	3.51	1.07	0.98	0.09	25	30	0.0016	0.0002
Cdn1	Pilot	2	20	2.66	1.89	3.68	1.11	1.02	0.09	25	30	0.0017	0.0002
Cdn2	Pilot	1	20	2.97	3.1	5.13	2.33	2.16	0.17	25	30	0.0036	0.0003
Cdn2	Pilot	2	19	2.66	1.81	3.58	1.03	0.92	0.11	25	30	0.0016	0.0002
Cup1	Pilot	1	17	2.71	1.96	3.69	1.23	0.98	0.25	25	30	0.0019	0.0005
Cup1	Pilot	2	18	2.44	1.75	3.16	0.98	0.72	0.26	25	30	0.0013	0.0005
Cup2	Pilot	1	20	2.91	2.37	4.27	1.61	1.36	0.25	25	30	0.0023	0.0004
Cup2	Pilot	2	20	3.05	2.24	4.26	1.47	1.21	0.26	25	30	0.0020	0.0004
BB1	Pilot	1	20	2.57	5.72	7.15	4.96	4.58	0.38	25	30	0.0076	0.0006
BB1	Pilot	2	20	2.7	3.7	5.43	2.98	2.73	0.25	25	30	0.0046	0.0004
BB2	Pilot	1	20	2.72	2.45	4.28	1.67	1.56	0.11	25	30	0.0026	0.0002
BB2	Pilot	2	20	2.44	3.18	4.53	2.46	2.09	0.37	25	30	0.0035	0.0006
SWB1	Pilot	1	18	2.6	6.26	6.22	5.5	3.62	1.88	25	30	0.0067	0.0035
SWB1	Pilot	2	20	2.46	8.27	9.55	7.54	7.09	0.45	25	30	0.0118	0.0007
SWB2	Pilot	1	13	2.7	5.65	7.19	4.9	4.49	0.41	25	30	0.0115	0.0011
SWB2	Pilot	2	20	2.41	4.68	6.22	3.97	3.81	0.16	25	30	0.0064	0.0003
SEB1	Pilot	1	20	2.06	2.03	3.21	1.3	1.15	0.15	25	30	0.0019	0.0003
SEB1	Pilot	2	20	2.5	3.88	5.2	3.11	2.7	0.41	25	30	0.0045	0.0007
SEB2	Pilot	1	19	2.11	1.79	3.06	1.06	0.95	0.11	25	30	0.0017	0.0002
SEB2	Pilot	2	20	2.47	2.09	3.61	1.33	1.14	0.19	25	30	0.0019	0.0003
Cdn1	Term 1	1	16	2.42	7.86	7.26	5.44	4.84	0.6	30	36	0.0084	0.0010
Cdn1	Term 1	2	16	2.71	6.47	5.96	3.76	3.25	0.51	30	36	0.0056	0.0009
Cdn1	Term 1	3	16	2.76	7.73	7.12	4.97	4.36	0.61	30	36	0.0076	0.0011
Cdn2	Term_1	1	16	2.46	5.82	5.3	3.36	2.84	0.52	30	36	0.0049	0.0009
Cdn2	Term_1	2	16	2.54	6.32	5.8	3.78	3.26	0.52	30	36	0.0057	0.0009
Cdn2	Term 1	3	16	2.98	6.37	5.82	3.39	2.84	0.55	30	36	0.0049	0.0010
Cup1	Term 1	1	16	3.11	4.29	4.18	1.18	1.07	0.11	30	36	0.0019	0.0002
Cup1	Term 1	2	16	3.06	4.78	4.51	1.72	1.45	0.27	30	36	0.0025	0.0005
Cup1	Term_1	3	15	3.18	5.76	5.34	2.58	2.16	0.42	30	36	0.0040	0.0008
Cup2	Term_1	1	16	2.75	3.85	3.63	1.1	0.88	0.22	30	36	0.0015	0.0004
Cup2	Term 1	2	16	2.57	3.63	3.4	1.06	0.83	0.23	30	36	0.0014	0.0004
Cup2	Term 1	3	16	2.62	3.72	3.5	1.1	0.88	0.22	30	36	0.0015	0.0004
BB1	Term 1	1	16	2.08	5.09	4.76	3.01	2.68	0.33	30	36	0.0047	0.0006
BB1	Term 1	2	16	3	9.44	8.93	6.44	5.93	0.51	30	36	0.0103	0.0009

BB1	Term 1	3	16	2.34	5.48	5.14	3.14	2.8	0.34	30	36	0.0049	0.0006
BB2	Term_1	1	16	2.13	3.6	3.27	1.47	1.14	0.33	30	36	0.0020	0.0006
BB2	Term 1	2	16	2.67	4.59	4.29	1.92	1.62	0.3	30	36	0.0028	0.0005
BB2	Term 1	3	16	2.78	4.2	3.95	1.42	1.17	0.25	30	36	0.0020	0.0004
SWB1	Term 1	1	16		sample					30	36		
SWB1	Term 1	2	16		sample					30	36		
SWB1	Term_1	3	16		sample					30	36		
SWB2	Term 1	1	16	2.7	5.62	5.22	2.92	2.52	0.4	30	36	0.0044	0.0007
SWB2	Term 1	2	16	2.51	6.86	6.3	4.35	3.79	0.56	30	36	0.0066	0.0010
SWB2	Term 1	3	16	2.65	7.61	6.98	4.96	4.33	0.63	30	36	0.0075	0.0011
SEB1	Term 1	1	12	2.7	5.93	5.42	3.23	2.72	0.51	30	36	0.0063	0.0012
SEB1	Term_1	2	16	2.48	7.75	6.91	5.27	4.43	0.84	30	36	0.0077	0.0015
SEB1	Term 1	3	16	2.9	7.35	5.64	4.45	2.74	1.71	30	36	0.0048	0.0030
SEB2	Term 1	1	16	2.67	5.54	5.06	2.87	2.39	0.48	30	36	0.0041	0.0008
SEB2	Term 1	2	16	2.47	5.78	5.22	3.31	2.75	0.56	30	36	0.0048	0.0010
SEB2	Term 1	3	16	3.03	6.83	6.31	3.8	3.28	0.52	30	36	0.0057	0.0009
Cdn1	Term_2	1	16	1.69	5.98	5.66	4.29	3.97	0.32	30	36	0.0069	0.0006
Cdn1	Term 2	2	15	1.69	4.41	4.23	2.72	2.54	0.18	30	36	0.0047	0.0003
Cdn1	Term 2	3	16	1.69	4.66	4.42	2.97	2.73	0.24	30	36	0.0047	0.0004
Cdn2	Term 2	1	17	1.7	10.34	9.94	8.64	8.24	0.4	30	36	0.0135	0.0007
Cdn2	Term 2	2	15	1.7	8.65	8.32	6.95	6.62	0.33	30	36	0.0123	0.0006
Cdn2	Term_2	3	16	1.7	5.34	5.08	3.64	3.38	0.26	30	36	0.0059	0.0005
Cup1	Term 2	1	16	1.7	3.51	3.28	1.81	1.58	0.23	30	36	0.0027	0.0004
Cup1	Term 2	2	16	1.7	3.86	3.57	2.16	1.87	0.29	30	36	0.0032	0.0005
Cup1	Term 2	3	12	1.7	2.6	2.46	0.9	0.76	0.14	30	36	0.0018	0.0003
Cup2	Term 2	1	15	1.7	2.8	2.6	1.1	0.9	0.2	30	36	0.0017	0.0004
Cup2	Term_2	2	16	1.7	3.16	2.92	1.46	1.22	0.24	30	36	0.0021	0.0004
Cup2	Term 2	3	16	1.68	2.84	2.63	1.16	0.95	0.21	30	36	0.0016	0.0004
BB1	Term 2	1	16	1.72	3.47	3.24	1.75	1.52	0.23	30	36	0.0026	0.0004
BB1	Term 2	2	16	1.71	3.25	3.06	1.54	1.35	0.19	30	36	0.0023	0.0003
BB1	Term 2	3	16	1.7	3.09	2.92	1.39	1.22	0.17	30	36	0.0021	0.0003
BB2	Term_2	1	15	1.7	4.87	4.45	3.17	2.75	0.42	30	36	0.0051	0.0008
BB2	Term 2	2	16	1.67	3.07	2.87	1.4	1.2	0.2	30	36	0.0021	0.0003
BB2	Term 2	3	16	1.67	4.82	4.43	3.15	2.76	0.39	30	36	0.0048	0.0007
SWB1	Term 2	1			sample					30	36		
SWB1	Term 2	2			Sample					30	36		
SWB1	Term_2	3			Sample					30	36		
SWB2	Term 2	1	16	1.68	4.76	4.54	3.08	2.86	0.22	30	36	0.0050	0.0004
SWB2	Term 2	2	16	1.67	6.95	6.66	5.28	4.99	0.29	30	36	0.0087	0.0005
SWB2	Term 2	3	16	1.67	4.17	3.99	2.5	2.32	0.18	30	36	0.0040	0.0003
SEB1	Term 2	1	14	1.67	6.37	5.98	4.7	4.31	0.39	30	36	0.0086	0.0008
SEB1	Term_2	2	16	1.7	5.87	5.51	4.17	3.81	0.36	30	36	0.0066	0.0006
SEB1	Term 2	3	13	1.68	4.46	4.18	2.78	2.5	0.28	30	36	0.0053	0.0006
SEB2	Term 2	1	15	1.67	4.34	4.08	2.67	2.41	0.26	30	36	0.0045	0.0005
SEB2	Term 2	2	16	1.68	6.37	5.99	4.69	4.31	0.38	30	36	0.0075	0.0007

SEB2	Term 2	3	19	1.69	6.87	6.4	5.18	4.71	0.47	30	36	0.0069	0.0007
Cdn1	Term_3	1	16	1.72	4.66	4.4	2.94	2.68	0.26	30	36	0.0047	0.0005
Cdn1	Term 3	2	16	1.73	3.76	3.59	2.03	1.86	0.17	30	36	0.0032	0.0003
Cdn1	Term 3	3	16	1.78	3.79	3.6	2.01	1.82	0.19	30	36	0.0032	0.0003
Cdn2	Term 3	1	16	1.76	6.8	6.46	5.04	4.7	0.34	30	36	0.0082	0.0006
Cdn2	Term 3	2	15	1.85	5.56	5.24	3.71	3.39	0.32	30	36	0.0063	0.0006
Cdn2	Term_3	3	16	1.76	6.49	6.14	4.73	4.38	0.35	30	36	0.0076	0.0006
Cup1	Term 3	1	16	1.73	3.38	dropped	1.65			30	36		
Cup1	Term 3	2	16	1.73	3.2	2.98	1.47	1.25	0.22	30	36	0.0022	0.0004
Cup1	Term 3	3	16	1.75	3.26	3.07	1.51	1.32	0.19	30	36	0.0023	0.0003
Cup2	Term 3	1	15	1.74	3.56	3.33	1.82	1.59	0.23	30	36	0.0029	0.0004
Cup2	Term_3	2	15	1.72	3.17	3	1.45	1.28	0.17	30	36	0.0024	0.0003
Cup2	Term 3	3	16	1.73	3.15	2.97	1.42	1.24	0.18	30	36	0.0022	0.0003
BB1	Term 3	1	15	1.78	10.12	9.75	8.34	7.97	0.37	30	36	0.0148	0.0007
BB1	Term 3	2	16	1.76	9.54	9.14	7.78	7.38	0.4	30	36	0.0128	0.0007
BB1	Term 3	3	16	1.74	12.06	11.59	10.32	9.85	0.47	30	36	0.0171	0.0008
BB2	Term_3	1	15	1.76	4.39	4.14	2.63	2.38	0.25	30	36	0.0044	0.0005
BB2	Term 3	2	16	1.74	3.13	2.9	1.39	1.16	0.23	30	36	0.0020	0.0004
BB2	Term 3	3	16	1.78	4.17	3.88	2.39	2.1	0.29	30	36	0.0036	0.0005
SWB1	Term 3	1	15	1.72	6.75	6.4	5.03	4.68	0.35	30	36	0.0087	0.0006
SWB1	Term 3	2	15	1.74	7.86	7.46	6.12	5.72	0.4	30	36	0.0106	0.0007
SWB1	Term_3	3	16	1.77	5.5	5.21	3.73	3.44	0.29	30	36	0.0060	0.0005
SWB2	Term 3	1	14	1.78	8.14	7.71	6.36	5.93	0.43	30	36	0.0118	0.0009
SWB2	Term 3	2	16	1.74	11.29	10.69	9.55	8.95	0.6	30	36	0.0155	0.0010
SWB2	Term 3	3	16	1.78	6.89	6.48	5.11	4.7	0.41	30	36	0.0082	0.0007
SEB1	Term 3	1	16	1.77	7.96	7.58	6.19	5.81	0.38	30	36	0.0101	0.0007
SEB1	Term_3	2	16	1.71	10.48	10.04	8.77	8.33	0.44	30	36	0.0145	0.0008
SEB1	Term 3	3	14	1.78	5.97	5.72	4.19	3.94	0.25	30	36	0.0078	0.0005
SEB2	Term 3	1	14	1.69	7	6.77	5.31	5.08	0.23	30	36	0.0101	0.0005
SEB2	Term 3	2	15	1.69	5.89	5.7	4.2	4.01	0.19	30	36	0.0074	0.0004
SEB2	Term 3	3	16	1.69	7.28	7.02	5.59	5.33	0.26	30	36	0.0093	0.0005

APPENDIX E
OYSTER MONITORING DATA

E1 WILD SRO CONDITION INDEX

E2 BACKGROUND OYSTER CONDITION INDEX

E3 OYSTER CONDITION INDEX

E4 WILD SRO FLESH MEAN METAL CONCENTRATIONS

E5 LABOROTRY ANALYSIS REPORTS

APPENDIX E1

Condition index results for wild SROs for the original wild oyster pilot study (S = shore, L = Lease).

Table E1 Pilot Study - Wild SRO Condition Index						
Site	**Sub-site**	**Oyster**	**Shell height**	**Total weight**	**Shell weight**	**Flesh weight**
Cup1	S	1	65	40.32	27.54	9.01
Cup1	S	2	70	51.06	38.55	9.96
Cup1	S	3	68	44.56	35.01	7.02
Cup1	S2	1	65	47.55	36.71	7.39
Cup1	S2	2	61	40.26	28.09	6.46
Cup1	S2	3	70	30.78	23.30	5.71
Cup2	S	1	44	13.33	10.12	2.10
Cup2	S	2	62	15.41	11.25	3.26
Cup2	S	3	44	9.56	7.34	1.50
Cup2	L	1	52	32.21	25.11	5.74
Cup2	L	2	56	29.11	21.20	6.25
Cup2	L	3	59	28.45	20.77	5.45
BB1	S	1	75	31.54	23.50	5.30
BB1	S	2	67	26.09	18.61	4.02
BB1	S	3	94	57.57	40.23	8.63
BB1	L	1	82	62.86	48.41	10.33
BB1	L	2	51	28.01	21.16	5.02
BB1	L	3	72	35.40	31.32	4.08
BB2	S	1	68	29.11	21.39	3.97
BB2	S	2	69	24.08	18.26	3.59
BB2	S	3	62	32.12	25.22	2.92
BB2	L	1	68	25.49	18.34	4.72
BB2	L	2	74	44.36	32.69	7.83
BB2	L	3	75	52.04	40.10	7.11
SWB1	S	1	60	31.22	24.74	3.35
SWB1	S	2	40	9.99	8.74	0.70
SWB1	S	3	46	11.04	8.81	1.40
SWB1	L	1	103	53.43	40.22	7.75
SWB1	L	2	75	42.62	30.92	7.30
SWB1	L	3	70	18.00	13.69	3.25
SWB2	S	1	56	24.34	18.65	3.30
SWB2	S	2	74	27.98	21.59	4.04
SWB2	S	3	46	14.37	12.17	2.01
SEB1	S	1	76	26.16	19.10	4.81
SEB1	S	2	60	32.83	25.21	5.73
SEB1	S	3	53	19.54	14.03	3.56
SEB1	L	1	55	24.88	19.54	3.92

SEB1	L	2	85	39.19	30.90	6.64
SEB1	L	3	74	57.42	45.18	9.20
SEB2	S	1	82	49.23	35.84	9.29
SEB2	S	2	100	64.70	47.05	12.57
SEB2	S	3	95	37.50	24.15	12.71
SEB2	S2	1	63	29.95	21.65	5.88
SEB2	S2	2	74	38.48	25.46	9.26
SEB2	S2	3	67	32.03	23.47	5.24
SWB2	L	1	60	35.66	28.60	5.03
SWB2	L	2	79	74.94	54.77	9.42
SWB2	L	3	53	20.51	16.33	2.32
NB1	S	1	50	11.28	8.62	1.57
NB1	S	2	60	25.55	20.76	2.07
NB1	S	3	68	23.51	18.86	3.60
NB1	L	1	79	35.17	27.45	4.69
NB1	L	2	57	17.09	14.01	2.90
NB1	L	3	69	26.80	20.40	4.05
NB2	S	1	70	21.33	16.14	3.35
NB2	S	2	54	10.51	8.39	1.80
NB2	S	3	70	26.63	18.52	2.75
NB2	L	1	61	32.55	25.40	4.23
NB2	L	2	80	38.72	25.75	8.47
NB2	L	3	64	19.89	16.64	1.98
CDN1	S	1	65	26.11	19.90	2.81
CDN1	S	2	60	18.51	12.89	1.82
CDN1	S	3	55	13.60	10.62	1.74
CDN1	L	1	60	18.24	13.92	3.09
CDN1	L	2	60	22.10	17.49	3.26
CDN1	L	3	50	19.36	14.57	2.79
CDN2	S	1	66	24.81	20.61	2.19
CDN2	S	2	67	20.68	16.36	1.76
CDN2	S	3	58	26.08	21.51	2.37
CDN2	L	1	54	18.70	15.61	1.95
CDN2	L	2	51	29.69	23.84	3.11
CDN2	L	3	69	16.01	14.66	1.35

APPENDIX E2

For Term 1 there were 12 oysters in each of the three batches Background replicated with six oysters for the Term 2 and Term 3 deployments.

Table X Background Oyster Condition Index

Batch	Species	Oyster	Term	Shell height	Total weight	Shell weight	Flesh weight
B1	SR	1	1	60	38.82	23.57	6.76
B1	SR	2	1	60	37.4	27.77	4.7
B1	SR	3	1	56	47.25	39.1	6.2
B1	SR	4	1	53	22.16	16.06	4.72
B1	SR	5	1	65	36.15	25.95	8.92
B1	SR	6	1	57	39.51	30.36	5.85
B1	SR	7	1	53	39.89	31.74	5.66
B1	SR	8	1	62	29.19	23.93	5.2
B1	SR	9	1	58	28.3	23.68	4.44
B1	SR	10	1	57	34.52	28.63	5.06
B1	SR	11	1	60	31.43	24.22	4.96
B1	SR	12	1	59	34.28	26.3	3.21
B2	SR	1	1	60	39.02	29.08	6.83
B2	SR	2	1	58	34.75	27.92	6.1
B2	SR	3	1	59	38.88	28.16	6.89
B2	SR	4	1	58	31.8	23.88	6.42
B2	SR	5	1	63	39.94	32.15	4.91
B2	SR	6	1	56	40.14	29.1	5.95
B2	SR	7	1	60	45.36	34.78	7.25
B2	SR	8	1	61	35.83	28.51	6.11
B2	SR	9	1	59	41.88	32.23	5.15
B2	SR	10	1	59	39.63	32.61	6.73
B2	SR	11	1	65	34.94	26.91	4.11
B2	SR	12	1	57	27	20.08	4.87
B3	SR	1	1	55	38.42	30.61	7.58
B3	SR	2	1	55	28.5	19.47	6.58
B3	SR	3	1	57	31.21	24.92	4.75
B3	SR	4	1	60	33.17	23.27	5.71
B3	SR	5	1	55	32.78	25.03	5.76
B3	SR	6	1	68	42.69	32.29	5.53
B3	SR	7	1	59	36.61	27.51	6.05
B3	SR	8	1	64	47.17	35.29	7.36
B3	SR	9	1	60	41.71	32.95	5.06
B3	SR	10	1	74	53.7	41.55	6.73
B3	SR	11	1	53	26.14	21.81	3.58
B3	SR	12	1	60	29.16	23.24	4.62
B1	P	1	1	75	45.62	27.37	9.77

B1	P	2	1	70	53.3	31.1	11.21
B1	P	3	1	83	72.65	42.56	20.57
B1	P	4	1	73	54.07	34.91	10.93
B1	P	5	1	83	82.4	52.36	18.97
B1	P	6	1	87	68.68	51.01	17.16
B1	P	7	1	100	89.94	54.52	19.17
B1	P	8	1	83	55.63	34.13	11.95
B1	P	9	1	67	42.2	31.04	10.33
B1	P	10	1	78	45.63	27.8	11.61
B1	P	11	1	76	59.44	36.45	12.66
B1	P	12	1	66	37.67	26.66	9.5
B2	P	1	1	74	54.51	35.14	12.21
B2	P	2	1	84	68.35	42.95	14.09
B2	P	3	1	80	66.42	40.77	16.16
B2	P	4	1	70	41.98	30.06	9.6
B2	P	5	1	75	51.98	35.33	11.12
B2	P	6	1	80	55.76	40.9	13.03
B2	P	7	1	77	47.04	30.45	8.91
B2	P	8	1	84	65.47	41.19	13.36
B2	P	9	1	90	78.53	49.94	13
B2	P	10	1	76	54.68	37.05	13.53
B2	P	11	1	69	49.88	30.36	11.73
B2	P	12	1	77	45.4	32.52	11.07
B3	P	1	1	80	59.39	33.17	13.93
B3	P	2	1	74	51.67	31.66	9.4
B3	P	3	1	74	66.36	39.21	15.74
B3	P	4	1	90	70.03	43.29	13.35
B3	P	5	1	75	48.97	32.4	10.14
B3	P	6	1	71	43.86	26.78	9.84
B3	P	7	1	79	49.55	39.14	10.29
B3	P	8	1	80	45.93	33.64	10.39
B3	P	9	1	79	77.79	48.32	20.8
B3	P	10	1	71	49.75	36.55	12.06
B3	P	11	1	77	57.2	35.52	15.04
B3	P	12	1	80	65.8	38.91	15.84
B1	SR	1	2	59	25.31	18.65	4.81
B1	SR	2	2	60	30.71	23.55	4.71
B1	SR	3	2	57	26.1	19.35	4.73
B1	SR	4	2	65	40.56	33.85	4.75
B1	SR	5	2	66	29.64	23.88	5.06
B1	SR	6	2	61	32.89	24.94	6.71
B2	SR	1	2	56	30.2	22.96	4.24
B2	SR	2	2	60	28.22	22.51	2.99

B2	SR	3	2	57	22.55	16.47	4.29
B2	SR	4	2	56	22.97	17.2	3.92
B2	SR	5	2	65	32.03	26.4	4.5
B2	SR	6	2	71	33.9	26.09	4.49
B3	SR	1	2	60	32.63	23.28	6.73
B3	SR	2	2	55	23.54	17.3	4.26
B3	SR	3	2	56	28.16	20.94	5.1
B3	SR	4	2	53	31.26	24	4.77
B3	SR	5	2	60	27.08	22.27	3.54
B3	SR	6	2	64	29.73	23.04	4.84
B1	P	1	2	100	124.33	72.1	23.12
B1	P	2	2	110	128.28	71.82	21.83
B1	P	3	2	77	67.97	38.52	12.71
B1	P	4	2	62	41.82	23	6.4
B1	P	5	2	103	139.07	86.52	24.95
B1	P	6	2	80	90.04	55.07	11.72
B2	P	1	2	105	135.75	89.9	17.65
B2	P	2	2	97	65.97	39.49	11.58
B2	P	3	2	102	87.75	52.59	11.24
B2	P	4	2	98	100.27	63.65	15.21
B2	P	5	2	88	85.61	48.8	13.49
B2	P	6	2	96	87.56	52.49	10.68
B3	P	1	2	104	104.83	60.04	15.32
B3	P	2	2	106	124.37	72.17	19.72
B3	P	3	2	111	113.58	70.52	17.93
B3	P	4	2	77	44.35	26.42	7.02
B3	P	5	2	100	127.53	77.55	16.09
B3	P	6	2	96	99.26	60.16	12.63

APPENDIX E3

Oyster monitoring condition index for Oysters deployed for Terms 1 and 2.

Table D-2 Term 1 and term 2 Oyster Condition Index Results							
Site	**Species**	**Replicate**	**Term**	**Shell Height**	**Total Weight**	**Shell Weight**	**Flesh Weight**
CUP1	SR	1	1	57.75	34.61	25.55	6.87
CUP1	SR	2	1	58.42	33.23	24.63	6.37
CUP2	SR	1	1	62.50	35.35	26.87	5.78
CUP2	SR	2	1	59.92	32.92	26.27	5.34
BB1	SR	1	1	57.00	31.54	22.78	6.07
BB1	SR	2	1	58.42	32.82	23.99	5.98
BB2	SR	1	1	60.33	33.53	28.63	6.03
BB2	SR	2	1	60.67	34.65	26.17	6.15
SWB1	SR	1	1	59.67	33.90	26.71	5.54
SWB1	SR	2	1	64.08	39.37	30.91	5.75
SWB2	SR	1	1	59.75	33.52	26.10	5.63
SWB2	SR	2	1	56.08	29.92	22.72	4.97
SEB1	SR	1	1	60.00	34.88	26.55	6.89
SEB1	SR	2	1	59.00	30.70	22.91	6.64
SEB2	SR	1	1	57.83	29.95	22.26	6.51
SEB2	SR	2	1	58.75	34.74	26.07	7.39
NB1	SR	1	1	59.25	31.22	23.63	5.24
NB1	SR	2	1	59.17	30.67	23.17	5.30
NB2	SR	1	1	59.58	31.93	23.47	6.03
NB2	SR	2	1	57.33	31.30	24.32	5.18
CDN1	SR	1	1	61.83	38.03	28.08	5.03
CDN1	SR	2	1	59.08	34.61	27.53	4.61
CDN2	SR	1	1	58.75	32.42	25.60	4.57
CDN2	SR	2	1	58.17	30.60	24.19	4.83
CUP1	P	1	1	84.17	73.12	44.35	17.20
CUP1	P	2	1	84.67	71.56	42.74	16.11
CUP2	P	1	1	86.17	82.04	50.97	15.68
CUP2	P	2	1	84.25	71.81	45.46	15.48
BB1	P	1	1	80.67	65.64	42.09	8.70
BB1	P	2	1	78.83	63.74	42.27	8.43
BB2	P	1	1	81.83	70.16	45.87	9.09
BB2	P	2	1	83.00	69.69	44.82	14.83
SWB1	P	1	1	84.00	73.42	44.72	13.80
SWB1	P	2	1	83.58	71.04	46.07	14.01
SWB2	P	1	1	78.75	71.09	44.66	12.89
SWB2	P	2	1	79.75	74.18	49.88	13.44
SEB1	P	1	1	78.17	68.85	43.54	13.03
SEB1	P	2	1	82.42	84.15	54.33	16.27
SEB2	P	1	1	78.00	74.17	47.04	14.59
SEB2	P	2	1	79.33	75.02	47.80	15.38
NB1	P	1	1	93.00	79.58	52.04	17.12
NB1	P	2	1	91.50	83.11	50.77	18.33
NB2	P	1	1	80.25	65.52	42.01	10.83
NB2	P	2	1	82.58	71.56	46.63	12.13
CDN1	P	1	1	79.73	63.15	41.78	11.81
CDN1	P	2	1	79.67	69.61	45.43	12.84

CDN2	P	1	1	76.08	62.24	42.49	10.85
CDN2	P	2	1	79.08	67.58	43.78	11.06
CUP1	SR	1	2	60.17	27.71	21.10	6.26
CUP1	SR	2	2	58.42	27.55	21.16	6.02
CUP2	SR	1	2	54.00	28.41	21.41	6.42
CUP2	SR	2	2	56.75	24.13	18.14	5.36
BB1	SR	1	2	56.67	26.41	19.50	4.85
BB1	SR	2	2	58.17	28.95	22.61	5.98
BB2	SR	1	2	59.58	27.30	20.67	5.94
BB2	SR	2	2	57.08	24.30	18.92	5.14
SWB1	SR	1	2	59.33	31.38	23.88	5.45
SWB1	SR	2	2	61.42	32.46	25.14	5.50
SWB2	SR	1	2	59.08	32.81	24.84	7.65
SWB2	SR	2	2	56.25	28.01	20.53	6.64
SEB1	SR	1	2	57.58	25.63	19.70	5.94
SEB1	SR	2	2	57.67	36.17	27.32	7.77
SEB2	SR	1	2	57.25	31.87	24.06	6.84
SEB2	SR	2	2	60.83	30.06	23.62	6.23
NB1	SR	1	2	61.83	29.11	22.98	5.26
NB1	SR	2	2	59.33	30.05	23.74	5.09
NB2	SR	1	2	58.92	26.11	19.67	5.16
NB2	SR	2	2	58.82	28.11	21.22	5.09
CDN1	SR	1	2	57.75	29.11	22.53	5.16
CDN1	SR	2	2	59.25	29.99	23.21	5.72
CDN2	SR	1	2	58.33	29.85	22.00	5.00
CDN2	SR	2	2	58.67	29.71	22.55	5.41
CUP1	P	1	2	97.83	121.82	77.10	21.78
CUP1	P	2	2	99.25	110.45	68.98	21.42
CUP2	P	1	2	94.00	105.10	66.36	18.70
CUP2	P	2	2	95.33	118.20	75.28	20.52
BB1	P	1	2	101.42	125.82	80.54	23.44
BB1	P	2	2	102.50	119.98	76.05	21.57
BB2	P	1	2	101.17	119.43	76.05	20.40
BB2	P	2	2	96.33	116.30	74.69	18.61
SWB1	P	1	2	78.00	65.03	38.73	12.84
SWB1	P	2	2	72.25	54.96	32.14	11.83
SWB2	P	1	2	71.17	52.55	34.62	9.49
SWB2	P	2	2	80.00	69.50	45.44	12.47
SEB1	P	1	2	70.50	59.35	38.68	11.47
SEB1	P	2	2	73.17	63.59	41.99	12.23
SEB2	P	1	2	73.92	70.27	45.48	13.51
SEB2	P	2	2	76.83	73.31	47.84	13.88
NB1	P	1	2	84.58	80.78	53.60	15.31
NB1	P	2	2	80.25	76.31	49.29	15.23
NB2	P	1	2	77.83	67.16	46.37	12.37
NB2	P	2	2	73.17	62.27	39.10	11.21
CDN1	P	1	2	72.42	61.78	39.83	11.45
CDN1	P	2	2	71.75	63.00	39.30	11.35
CDN2	P	1	2	76.08	74.74	50.22	12.57
CDN2	P	2	2	72.75	65.45	42.32	11.41

APPENDIX E4

Wild SRO Pilot Study Flesh Mean Metal Concentrations (2 replicate samples)

Oyster Pilot Study - Metal Concentrations								
		Arsenic	Chromium	Copper	Lead	Mercury	Selenium	Zinc
Site	Area	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Cup1-S	Shoreline	5	0.5	104.5	0.5	0.15	2	1800
Cup1-S2	Shoreline 2	5	0.5	56.5	0.5	0.2	2	1550
Cup2-S	Shoreline	5.5	5	109.5	1.25	0.3	2.25	2550
Cup2-L	Lease	3	0.75	89.5	0.5	0.125	1	1550
BB1-S	Shoreline	5	0.5	185	0.5	0.25	2	2800
BB1-L	Lease	4	0.5	109.5	0.5	0.1	1.5	1900
BB2-S	Shoreline	5.5	0.75	130.5	0.75	0.25	2.5	2950
BB2-L	Lease	3.5	0.5	140	0.5	0.125	1	2250
NB1-S	Shoreline	4	3	275	1.25	0.4	1.5	4600
NB1-L	Lease	6	0.5	131.5	0.5	0.15	2	2400
NB2-L	Shoreline	4.5	2.75	90.5	1	0.225	1.25	1475
Cdn1-S	Lease	8.5	3	126	1	0.25	3	2650
Cdn1-L	Shoreline	8	5.25	109.5	0.75	0.15	3	2150
Cdn2-S	Lease	5	3	150	0.75	0.25	2	2100
Cdn2-L	Shoreline	4	3	81	0.75	0.2	1	1225
NB2-S	Lease	9.5	5	505	1.5	0.6	6	6900

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CERTIFICATE OF ANALYSIS 309245

Client Details

Client	Marine Pollution Research
Attention	Paul Anink
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Sample Details

Your Reference	**Marine Pollution Reserach - West Culburra**
Number of Samples	48 Oyster
Date samples received	21/10/2022
Date completed instructions received	30/11/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	09/12/2022
Date of Issue	14/12/2022

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Results Approved By
Josh Williams, Organics and LC Supervisor
Loren Bardwell, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		309245-1	309245-2	309245-4	309245-5	309245-7
Your Reference	UNITS	Cup1-S-1	Cup1-S-2	Cup1-S2-1	Cup1-S2-2	Cup2-S-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<1	<0.4
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.2	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.25	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<2.5	<1
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<2.5	<1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<2.5	<1
Surrogate p-Terphenyl-d14	%	87	82	82	86	86

PAHs in Biomass						
Our Reference		309245-8	309245-10	309245-11	309245-13	309245-15
Your Reference	UNITS	Cup2-S-2	Cup2-L-1	Cup2-L-2	BB1-S-2	BB1-L-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	89	77	87	84	86

PAHs in Biomass						
Our Reference		309245-16	309245-18	309245-19	309245-21	309245-22
Your Reference	UNITS	BB1-L-2	BB2-S-1	BB2-S-2	BB2-L-1	BB2-L-2
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
Naphthalene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.4	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.1	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.1	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<1	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<1	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<1	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	85	86	87	91	88

PAHs in Biomass						
Our Reference		309245-24	309245-25	309245-27	309245-28	309245-30
Your Reference	UNITS	NB1-S-1	NB1-S-2	NB1-L-1	NB1-L-2	NB2-L-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
Naphthalene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Acenaphthylene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Acenaphthene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Fluorene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Phenanthrene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Anthracene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Fluoranthene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Pyrene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Benzo(a)anthracene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Chrysene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.4	<0.4	<0.2	<0.4	<0.4
Benzo(a)pyrene	mg/kg	<0.1	<0.1	<0.05	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Dibenzo(a,h)anthracene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Benzo(g,h,i)perylene	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Total +ve PAH's	mg/kg	<0.1	<0.1	<0.05	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<1	<1	<0.5	<1	<1
Benzo(a)pyrene TEQ calc(half)	mg/kg	<1	<1	<0.5	<1	<1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<1	<1	<0.5	<1	<1
Surrogate p-Terphenyl-d14	%	82	86	84	89	86

PAHs in Biomass						
Our Reference		309245-31	309245-33	309245-34	309245-36	309245-37
Your Reference	UNITS	NB2-L-2	Cdn1-S-1	Cdn1-S-2	Cdn1-L-1	Cdn1-L-2
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Naphthalene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<1	<1	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.2	<0.2	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.2	<0.2	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<2.5	<2.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<2.5	<2.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<2.5	<2.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	86	87	78	87	88

PAHs in Biomass						
Our Reference		309245-39	309245-40	309245-42	309245-43	309245-45
Your Reference	UNITS	Cdn2-S-1	Cdn2-S-2	Cdn2-L-1	Cdn2-L-2	NB2-S-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Naphthalene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Acenaphthylene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Acenaphthene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Fluorene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Phenanthrene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Anthracene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Fluoranthene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Pyrene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Benzo(a)anthracene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Chrysene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Benzo(b,j+k)fluoranthene	mg/kg	<1	<0.2	<0.4	<0.4	<0.4
Benzo(a)pyrene	mg/kg	<0.2	<0.05	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Dibenzo(a,h)anthracene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Benzo(g,h,i)perylene	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Total +ve PAH's	mg/kg	<0.2	<0.05	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<2.5	<0.5	<1	<1	<1
Benzo(a)pyrene TEQ calc(half)	mg/kg	<2.5	<0.5	<1	<1	<1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<2.5	<0.5	<1	<1	<1
Surrogate p-Terphenyl-d14	%	88	87	85	88	88

PAHs in Biomass			
Our Reference		309245-46	309245-48
Your Reference	UNITS	NB2-S-2	BB1-S-1
Date Sampled		19/10/2022	20/10/2022
Type of sample		Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022
Naphthalene	mg/kg	<0.5	<0.1
Acenaphthylene	mg/kg	<0.5	<0.1
Acenaphthene	mg/kg	<0.5	<0.1
Fluorene	mg/kg	<0.5	<0.1
Phenanthrene	mg/kg	<0.5	<0.1
Anthracene	mg/kg	<0.5	<0.1
Fluoranthene	mg/kg	<0.5	<0.1
Pyrene	mg/kg	<0.5	<0.1
Benzo(a)anthracene	mg/kg	<0.5	<0.1
Chrysene	mg/kg	<0.5	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<1	<0.2
Benzo(a)pyrene	mg/kg	<0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.5	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.5	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.5	<0.1
Total +ve PAH's	mg/kg	<0.2	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<2.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<2.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<2.5	<0.5
Surrogate p-Terphenyl-d14	%	86	84

Organochlorine Pesticides in Biomass						
Our Reference		309245-1	309245-2	309245-4	309245-5	309245-7
Your Reference	UNITS	Cup1-S-1	Cup1-S-2	Cup1-S2-1	Cup1-S2-2	Cup2-S-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
HCB	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.5	<0.2
Surrogate TCMX	%	96	88	91	94	94

Organochlorine Pesticides in Biomass						
Our Reference		309245-8	309245-10	309245-11	309245-13	309245-15
Your Reference	UNITS	Cup2-S-2	Cup2-L-1	Cup2-L-2	BB1-S-2	BB1-L-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	84	92	93	93

Organochlorine Pesticides in Biomass						
Our Reference		309245-16	309245-18	309245-19	309245-21	309245-22
Your Reference	UNITS	BB1-L-2	BB2-S-1	BB2-S-2	BB2-L-1	BB2-L-2
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
HCB	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.2	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	88	92	94	93

Organochlorine Pesticides in Biomass						
Our Reference		309245-24	309245-25	309245-27	309245-28	309245-30
Your Reference	UNITS	NB1-S-1	NB1-S-2	NB1-L-1	NB1-L-2	NB2-L-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	06/12/2022	06/12/2022	06/12/2022	06/12/2022	06/12/2022
HCB	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
alpha-BHC	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
gamma-BHC	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
beta-BHC	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Heptachlor	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
delta-BHC	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Aldrin	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Heptachlor Epoxide	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
gamma-Chlordane	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
alpha-chlordane	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Endosulfan I	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
pp-DDE	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Dieldrin	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Endrin	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
pp-DDD	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Endosulfan II	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
pp-DDT	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Endrin Aldehyde	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Endosulfan Sulphate	mg/kg	<0.2	<0.2	<0.1	<0.2	<0.2
Surrogate TCMX	%	88	92	88	92	93

Organochlorine Pesticides in Biomass						
Our Reference		309245-31	309245-33	309245-34	309245-36	309245-37
Your Reference	UNITS	NB2-L-2	Cdn1-S-1	Cdn1-S-2	Cdn1-L-1	Cdn1-L-2
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
HCB	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.5	<0.5	<0.1	<0.1
Surrogate TCMX	%	90	88	82	88	90

Organochlorine Pesticides in Biomass						
Our Reference		309245-39	309245-40	309245-42	309245-43	309245-45
Your Reference	UNITS	Cdn2-S-1	Cdn2-S-2	Cdn2-L-1	Cdn2-L-2	NB2-S-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
HCB	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
alpha-BHC	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
gamma-BHC	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
beta-BHC	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Heptachlor	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
delta-BHC	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Aldrin	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Heptachlor Epoxide	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
gamma-Chlordane	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
alpha-chlordane	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Endosulfan I	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
pp-DDE	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Dieldrin	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Endrin	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
pp-DDD	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Endosulfan II	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
pp-DDT	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Endrin Aldehyde	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Endosulfan Sulphate	mg/kg	<0.5	<0.1	<0.2	<0.2	<0.2
Surrogate TCMX	%	92	90	88	90	92

Organochlorine Pesticides in Biomass			
Our Reference		309245-46	309245-48
Your Reference	UNITS	NB2-S-2	BB1-S-1
Date Sampled		19/10/2022	20/10/2022
Type of sample		Oyster	Oyster
Date extracted	-	05/12/2022	05/12/2022
Date analysed	-	07/12/2022	07/12/2022
HCB	mg/kg	<0.5	<0.1
alpha-BHC	mg/kg	<0.5	<0.1
gamma-BHC	mg/kg	<0.5	<0.1
beta-BHC	mg/kg	<0.5	<0.1
Heptachlor	mg/kg	<0.5	<0.1
delta-BHC	mg/kg	<0.5	<0.1
Aldrin	mg/kg	<0.5	<0.1
Heptachlor Epoxide	mg/kg	<0.5	<0.1
gamma-Chlordane	mg/kg	<0.5	<0.1
alpha-chlordane	mg/kg	<0.5	<0.1
Endosulfan I	mg/kg	<0.5	<0.1
pp-DDE	mg/kg	<0.5	<0.1
Dieldrin	mg/kg	<0.5	<0.1
Endrin	mg/kg	<0.5	<0.1
pp-DDD	mg/kg	<0.5	<0.1
Endosulfan II	mg/kg	<0.5	<0.1
pp-DDT	mg/kg	<0.5	<0.1
Endrin Aldehyde	mg/kg	<0.5	<0.1
Endosulfan Sulphate	mg/kg	<0.5	<0.1
Surrogate TCMX	%	90	88

Acid Extractable metals in biomass						
Our Reference		309245-1	309245-2	309245-4	309245-5	309245-7
Your Reference	UNITS	Cup1-S-1	Cup1-S-2	Cup1-S2-1	Cup1-S2-2	Cup2-S-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	5	5	4	6	7
Chromium	mg/kg	<1	<1	<1	<1	<10
Copper	mg/kg	89	120	66	47	89
Lead	mg/kg	<1	<1	<1	<1	<2
Mercury	mg/kg	0.1	0.2	0.1	0.3	<0.4
Selenium	mg/kg	2	2	<2	3	3
Zinc	mg/kg	1,700	1,900	1,900	1,200	2,400

Acid Extractable metals in biomass						
Our Reference		309245-8	309245-10	309245-11	309245-13	309245-15
Your Reference	UNITS	Cup2-S-2	Cup2-L-1	Cup2-L-2	BB1-S-2	BB1-L-1
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	4	4	<4	5	6
Chromium	mg/kg	<10	<2	<1	<1	<1
Copper	mg/kg	130	110	69	170	89
Lead	mg/kg	<3	<1	<1	<1	<1
Mercury	mg/kg	<0.8	0.2	<0.1	0.3	0.1
Selenium	mg/kg	<3	<2	<2	3	2
Zinc	mg/kg	2,700	1,600	1,500	2,500	1,200

Acid Extractable metals in biomass						
Our Reference		309245-16	309245-18	309245-19	309245-21	309245-22
Your Reference	UNITS	BB1-L-2	BB2-S-1	BB2-S-2	BB2-L-1	BB2-L-2
Date Sampled		20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	<4	6	5	<4	5
Chromium	mg/kg	<1	<1	<2	<1	<1
Copper	mg/kg	130	91	170	120	160
Lead	mg/kg	<1	<1	<2	<1	<1
Mercury	mg/kg	0.1	0.2	<0.6	0.2	<0.1
Selenium	mg/kg	<2	2	3	<2	<2
Zinc	mg/kg	2,600	1,400	4,500	2,000	2,500

Acid Extractable metals in biomass						
Our Reference		309245-24	309245-25	309245-27	309245-28	309245-30
Your Reference	UNITS	NB1-S-1	NB1-S-2	NB1-L-1	NB1-L-2	NB2-L-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	6	<4	5	7	<4
Chromium	mg/kg	<2	<10	<1	<1	<10
Copper	mg/kg	360	190	170	93	120
Lead	mg/kg	<1	<4	<1	<1	<3
Mercury	mg/kg	0.3	<1	0.2	<0.2	<0.8
Selenium	mg/kg	<2	<4	2	2	<3
Zinc	mg/kg	4,800	4,400	3,300	1,500	2,200

Acid Extractable metals in biomass						
Our Reference		309245-31	309245-33	309245-34	309245-36	309245-37
Your Reference	UNITS	NB2-L-2	Cdn1-S-1	Cdn1-S-2	Cdn1-L-1	Cdn1-L-2
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	7	9	8	7	9
Chromium	mg/kg	<1	<2	<10	10	<1
Copper	mg/kg	61	170	82	130	89
Lead	mg/kg	<1	<1	<3	<2	<1
Mercury	mg/kg	<0.1	<0.2	<0.8	<0.4	0.1
Selenium	mg/kg	<2	3	3	3	3
Zinc	mg/kg	750	2,500	2,800	2,700	1,600

Acid Extractable metals in biomass						
Our Reference		309245-39	309245-40	309245-42	309245-43	309245-45
Your Reference	UNITS	Cdn2-S-1	Cdn2-S-2	Cdn2-L-1	Cdn2-L-2	NB2-S-1
Date Sampled		19/10/2022	19/10/2022	19/10/2022	19/10/2022	19/10/2022
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022	07/12/2022	07/12/2022	07/12/2022
Arsenic	mg/kg	8	<4	6	<4	7
Chromium	mg/kg	<2	<10	<2	<10	<10
Copper	mg/kg	240	60	140	22	260
Lead	mg/kg	<1	<2	<1	<2	<4
Mercury	mg/kg	0.2	<0.6	<0.2	<0.6	<1
Selenium	mg/kg	3	<2	<2	<2	<4
Zinc	mg/kg	3,100	1,100	1,900	550	5,600

Acid Extractable metals in biomass			
Our Reference		309245-46	309245-48
Your Reference	UNITS	NB2-S-2	BB1-S-1
Date Sampled		19/10/2022	20/10/2022
Type of sample		Oyster	Oyster
Date prepared	-	07/12/2022	07/12/2022
Date analysed	-	07/12/2022	07/12/2022
Arsenic	mg/kg	12	5
Chromium	mg/kg	<10	<1
Copper	mg/kg	750	200
Lead	mg/kg	<2	<1
Mercury	mg/kg	0.7	0.2
Selenium	mg/kg	10	<2
Zinc	mg/kg	8,200	3,100

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			05/12/2022	[NT]	[NT]	[NT]	[NT]	05/12/2022	[NT]
Date analysed	-			07/12/2022	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	63	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	114	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	82	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			05/12/2022	[NT]	[NT]	[NT]	[NT]	05/12/2022	[NT]
Date analysed	-			07/12/2022	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
HCB	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	94	[NT]
Heptachlor	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]
delta-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Heptachlor Epoxide	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	96	[NT]
gamma-Chlordane	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
Dieldrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Endrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
pp-DDD	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	100	[NT]
Endosulfan II	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	66	[NT]
Surrogate TCMX	%		Org-021	88	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/12/2022	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
Date analysed	-			07/12/2022	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Selenium	mg/kg	2	Metals-020	<2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			[NT]	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	07/12/2022	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	94	[NT]
Copper	mg/kg	1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	91	[NT]
Lead	mg/kg	1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	106	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	94	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

All analysis performed on freeze dried samples.

Metals in biomass:
- The results are reported on the sample as received i.e. no moisture correction has been applied.
- The PQL has been raised due to the limited amount of sample/s available for testing.

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CERTIFICATE OF ANALYSIS 317918

Client Details

Client	Marine Pollution Research
Attention	Paul Anink
Address	

Sample Details

Your Reference	**Marine Pollution Reserach - West Culburra**
Number of Samples	6 Oyster
Date samples received	03/02/2023
Date completed instructions received	03/02/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	10/03/2023
Date of Issue	09/03/2023

Results Approved By
Hannah Nguyen, Metals Supervisor
Kyle Gavrily, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		317918-1	317918-2	317918-3	317918-4	317918-5
Your Reference	UNITS	B1-SRO	B2-SRO	B3-SRO	B1-PO	B2-PO
Date Sampled		31/01/2023	31/01/2023	31/01/2023	31/01/2023	31/01/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	08/03/2023	08/03/2023	08/03/2023	08/03/2023	08/03/2023
Date analysed	-	08/03/2023	08/03/2023	08/03/2023	08/03/2023	08/03/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	130	73	62	#	#

PAHs in Biomass		
Our Reference		317918-6
Your Reference	UNITS	B3-PO
Date Sampled		31/01/2023
Type of sample		Oyster
Date extracted	-	08/03/2023
Date analysed	-	08/03/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	#

Organochlorine Pesticides in Biomass						
Our Reference		317918-1	317918-2	317918-3	317918-4	317918-5
Your Reference	UNITS	B1-SRO	B2-SRO	B3-SRO	B1-PO	B2-PO
Date Sampled		31/01/2023	31/01/2023	31/01/2023	31/01/2023	31/01/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	08/03/2023	08/03/2023	08/03/2023	08/03/2023	08/03/2023
Date analysed	-	08/03/2023	08/03/2023	08/03/2023	08/03/2023	08/03/2023
HCB	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
alpha-BHC	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
gamma-BHC	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
beta-BHC	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Heptachlor	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
delta-BHC	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Aldrin	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Heptachlor Epoxide	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
gamma-Chlordane	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
alpha-chlordane	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Endosulfan I	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDE	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Dieldrin	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Endrin	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDD	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Endosulfan II	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
pp-DDT	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Endrin Aldehyde	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Endosulfan Sulphate	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate TCMX	%	117	112	108	102	104

Organochlorine Pesticides in Biomass		
Our Reference		317918-6
Your Reference	UNITS	B3-PO
Date Sampled		31/01/2023
Type of sample		Oyster
Date extracted	-	08/03/2023
Date analysed	-	08/03/2023
HCB	mg/kg	<0.02
alpha-BHC	mg/kg	<0.02
gamma-BHC	mg/kg	<0.02
beta-BHC	mg/kg	<0.02
Heptachlor	mg/kg	<0.02
delta-BHC	mg/kg	<0.02
Aldrin	mg/kg	<0.02
Heptachlor Epoxide	mg/kg	<0.02
gamma-Chlordane	mg/kg	<0.02
alpha-chlordane	mg/kg	<0.02
Endosulfan I	mg/kg	<0.02
pp-DDE	mg/kg	<0.02
Dieldrin	mg/kg	<0.02
Endrin	mg/kg	<0.02
pp-DDD	mg/kg	<0.02
Endosulfan II	mg/kg	<0.02
pp-DDT	mg/kg	<0.02
Endrin Aldehyde	mg/kg	<0.02
Endosulfan Sulphate	mg/kg	<0.02
Surrogate TCMX	%	100

Acid Extractable metals in biomass						
Our Reference		317918-1	317918-2	317918-3	317918-4	317918-5
Your Reference	UNITS	B1-SRO	B2-SRO	B3-SRO	B1-PO	B2-PO
Date Sampled		31/01/2023	31/01/2023	31/01/2023	31/01/2023	31/01/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	09/03/2023	09/03/2023	09/03/2023	09/03/2023	09/03/2023
Date analysed	-	09/03/2023	09/03/2023	09/03/2023	09/03/2023	09/03/2023
Arsenic	mg/kg	8	8	10	5	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	93	96	110	70	78
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<4	<4	<4	<4	<2
Zinc	mg/kg	1,300	1,200	1,300	460	500

Acid Extractable metals in biomass		
Our Reference		317918-6
Your Reference	UNITS	B3-PO
Date Sampled		31/01/2023
Type of sample		Oyster
Date prepared	-	09/03/2023
Date analysed	-	09/03/2023
Arsenic	mg/kg	6
Chromium	mg/kg	<1
Copper	mg/kg	65
Lead	mg/kg	<1
Mercury	mg/kg	<0.1
Selenium	mg/kg	<4
Zinc	mg/kg	460

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			08/03/2023	[NT]	[NT]	[NT]	[NT]	08/03/2023	[NT]
Date analysed	-			08/03/2023	[NT]	[NT]	[NT]	[NT]	08/03/2023	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	119	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	114	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			08/03/2023	[NT]	[NT]	[NT]	[NT]	08/03/2023	[NT]
Date analysed	-			08/03/2023	[NT]	[NT]	[NT]	[NT]	08/03/2023	[NT]
HCB	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
alpha-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
gamma-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Heptachlor	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
delta-BHC	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Heptachlor Epoxide	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
gamma-Chlordane	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	118	[NT]
Dieldrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	114	[NT]
Endrin	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
pp-DDD	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endosulfan II	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.02	Org-021	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate TCMX	%		Org-021	114	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			09/03/2023	[NT]	[NT]	[NT]	[NT]	09/03/2023	[NT]
Date analysed	-			09/03/2023	[NT]	[NT]	[NT]	[NT]	09/03/2023	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Selenium	mg/kg	2	Metals-020	<2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PAHs in Soil - # Percent recovery for the surrogate is not possible to report due to interference from analytes (other than those being tested) in samples 317918-4,5,6.
Metals in biomass - The PQL has been raised for Se due to interferences from analytes (other than those being tested).

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CERTIFICATE OF ANALYSIS 318341

Client Details

Client	MARINE POLLUTION RESEARCH PTY LTD
Attention	Jacob Broom
Address	25 RICHARD ROAD, SCOTLAND ISLAND, NSW, 2105

Sample Details

Your Reference	**Marine Pollution Research - West Culburra**
Number of Samples	48 Oyster
Date samples received	10/03/2023
Date completed instructions received	10/03/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	17/03/2023
Date of Issue	20/03/2023

Results Approved By
Greta Petzold, Assistant Operation Manager
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		318341-1	318341-2	318341-3	318341-4	318341-5
Your Reference	UNITS	CVP1-SR-1	CVP1-SR-1	CVP2-SR-1	CVP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-6	318341-7	318341-8	318341-9	318341-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference	UNITS	318341-11	318341-12	318341-13	318341-14	318341-15
Your Reference		SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-16	318341-17	318341-18	318341-19	318341-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-21	318341-22	318341-23	318341-24	318341-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CVP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-26	318341-27	318341-28	318341-29	318341-30
Your Reference	UNITS	CVP1-P-2	CVP2-P-1	CVP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-31	318341-32	318341-33	318341-34	318341-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	65

PAHs in Biomass						
Our Reference		318341-36	318341-37	318341-38	318341-39	318341-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	#	#	#

PAHs in Biomass						
Our Reference		318341-41	318341-42	318341-43	318341-44	318341-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	61	69	67

PAHs in Biomass				
Our Reference		318341-46	318341-47	318341-48
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023
Naphthalene	ug/kg	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5
Surrogate p-Terphenyl-d14	%	#	#	60

Organochlorine Pesticides in Biomass						
Our Reference		318341-1	318341-2	318341-3	318341-4	318341-5
Your Reference	UNITS	CVP1-SR-1	CVP1-SR-1	CVP2-SR-1	CVP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	98	96	97	98	98

Organochlorine Pesticides in Biomass						
Our Reference		318341-6	318341-7	318341-8	318341-9	318341-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	97	97	93	96	97

Organochlorine Pesticides in Biomass						
Our Reference		318341-11	318341-12	318341-13	318341-14	318341-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	94	94	91	94	93

Organochlorine Pesticides in Biomass						
Our Reference		318341-16	318341-17	318341-18	318341-19	318341-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	95	96	97	98	97

Organochlorine Pesticides in Biomass						
Our Reference		318341-21	318341-22	318341-23	318341-24	318341-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CVP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	100	94	98	99	93

Organochlorine Pesticides in Biomass						
Our Reference		318341-26	318341-27	318341-28	318341-29	318341-30
Your Reference	UNITS	CVP1-P-2	CVP2-P-1	CVP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	94	96	#	91	93

Organochlorine Pesticides in Biomass						
Our Reference		318341-31	318341-32	318341-33	318341-34	318341-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	#	87	88	86	#

Organochlorine Pesticides in Biomass						
Our Reference		318341-36	318341-37	318341-38	318341-39	318341-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	99	84	85	84	82

Organochlorine Pesticides in Biomass						
Our Reference	UNITS	318341-41	318341-42	318341-43	318341-44	318341-45
Your Reference		NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	84	84	77	78	83

Organochlorine Pesticides in Biomass				
Our Reference		318341-46	318341-47	318341-48
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster	Oyster
Date extracted	-	16/03/2023	16/03/2023	16/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023
HCB	ug/kg	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1
Endrin	ug/kg	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1
Surrogate TCMX	%	79	78	76

Acid Extractable metals in biomass						
Our Reference		318341-1	318341-2	318341-3	318341-4	318341-5
Your Reference	UNITS	CVP1-SR-1	CVP1-SR-1	CVP2-SR-1	CVP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	5	5	7	4	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	40	47	79	50	72
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	<2	3	<2	<2
Zinc	mg/kg	680	750	1,400	860	1,100

Acid Extractable metals in biomass						
Our Reference		318341-6	318341-7	318341-8	318341-9	318341-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	6	4	6	5	8
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	72	67	56	67	110
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	<2	<2	<2	2
Zinc	mg/kg	990	890	970	880	1,400

Acid Extractable metals in biomass						
Our Reference		318341-11	318341-12	318341-13	318341-14	318341-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	4	4	5	<4	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	58	51	34	29	82
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	<2	<2	<2	2
Zinc	mg/kg	770	670	480	480	1,000

Acid Extractable metals in biomass						
Our Reference		318341-16	318341-17	318341-18	318341-19	318341-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	8	<4	5	6	5
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	61	46	55	93	56
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	<2	<2	<2	<2
Zinc	mg/kg	840	720	720	1,200	790

Acid Extractable metals in biomass						
Our Reference		318341-21	318341-22	318341-23	318341-24	318341-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CVP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	6	9	7	7	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	64	76	72	74	47
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	2	3	2	2
Zinc	mg/kg	880	1,200	1,200	990	440

Acid Extractable metals in biomass						
Our Reference		318341-26	318341-27	318341-28	318341-29	318341-30
Your Reference	UNITS	CVP1-P-2	CVP2-P-1	CVP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	8	10	7	7	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	45	76	45	76	58
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	3	2	<2	<2
Zinc	mg/kg	390	700	400	660	560

Acid Extractable metals in biomass						
Our Reference		318341-31	318341-32	318341-33	318341-34	318341-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	6	6	5	6	8
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	64	110	45	75	140
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	2	<2	3	3
Zinc	mg/kg	550	800	460	710	870

Acid Extractable metals in biomass						
Our Reference		318341-36	318341-37	318341-38	318341-39	318341-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	5	6	6	7	9
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	60	54	55	76	95
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	2	2	3	3	4
Zinc	mg/kg	560	420	460	590	590

Acid Extractable metals in biomass						
Our Reference		318341-41	318341-42	318341-43	318341-44	318341-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	4	6	5	7	6
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	43	76	59	64	61
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	2	2	2	<2
Zinc	mg/kg	400	660	500	580	510

Acid Extractable metals in biomass					
Our Reference		318341-46	318341-47	318341-48	318341-49
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2	CVP1-SR-1 - [TRIPLICATE]
Type of sample		Oyster	Oyster	Oyster	Oyster
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Arsenic	mg/kg	6	7	7	7
Chromium	mg/kg	<1	<1	<1	<1
Copper	mg/kg	71	60	61	60
Lead	mg/kg	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	<2	2	3
Zinc	mg/kg	620	530	570	1,100

Microbiologocal Testing						
Our Reference		318341-1	318341-2	318341-3	318341-4	318341-5
Your Reference	UNITS	CVP1-SR-1	CVP1-SR-1	CVP2-SR-1	CVP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	3	<1	<1	1	<1

Microbiologocal Testing						
Our Reference		318341-6	318341-7	318341-8	318341-9	318341-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	<1	<1

Microbiologocal Testing						
Our Reference		318341-11	318341-12	318341-13	318341-14	318341-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	1	<1	<1

Microbiologocal Testing						
Our Reference		318341-16	318341-17	318341-18	318341-19	318341-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	<1	<1

Microbiologocal Testing						
Our Reference		318341-21	318341-22	318341-23	318341-24	318341-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CVP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	1	<1

Microbiologocal Testing						
Our Reference		318341-26	318341-27	318341-28	318341-29	318341-30
Your Reference	UNITS	CVP1-P-2	CVP2-P-1	CVP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	1	<1	<1	<1

Microbiologocal Testing						
Our Reference		318341-31	318341-32	318341-33	318341-34	318341-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	1	<1

Microbiologocal Testing						
Our Reference		318341-36	318341-37	318341-38	318341-39	318341-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	<1	<1

Microbiologocal Testing						
Our Reference		318341-41	318341-42	318341-43	318341-44	318341-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	<1	<1	<1	<1

Microbiologocal Testing				
Our Reference		318341-46	318341-47	318341-48
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster	Oyster
Date of testing	-	11/03/2023	11/03/2023	11/03/2023
E. coli	cfu/g	<1	2	1

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	318341-2
Date extracted	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Naphthalene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	93	126
Acenaphthylene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	103	130
Fluorene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	92	126
Phenanthrene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	94	#
Anthracene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	92	83
Pyrene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	97	#
Benzo(a)anthracene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	87	#
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	<0.5	1	<0.5	<0.5	0	92	72
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	66	1	#	#		103	60

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	318341-22
Date extracted	-			[NT]	11	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			[NT]	11	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Naphthalene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	93	120
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	103	124
Fluorene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	93	118
Phenanthrene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	98	#
Anthracene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	82	80
Pyrene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	86	#
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	85	#
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	11	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	11	<0.5	<0.5	0	85	62
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	#	#		83	65

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	318341-32
Date extracted	-			[NT]	21	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			[NT]	21	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Naphthalene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	92	118
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	105	#
Fluorene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	97	#
Phenanthrene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	98	140
Anthracene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	65	86
Pyrene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	63	#
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	77	#
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	21	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	21	<0.5	<0.5	0	72	#
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	21	#	#		69	61

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	318341-42
Date extracted	-			[NT]	31	16/03/2023	16/03/2023		[NT]	16/03/2023
Date analysed	-			[NT]	31	17/03/2023	17/03/2023		[NT]	17/03/2023
Naphthalene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	114
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	119
Fluorene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	111
Phenanthrene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	126
Anthracene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	84
Pyrene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	70
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	#
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	31	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	31	<0.5	<0.5	0	[NT]	#
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	31	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	31	#	#		[NT]	74

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	16/03/2023	16/03/2023		[NT]	[NT]
Date analysed	-			[NT]	41	17/03/2023	17/03/2023		[NT]	[NT]
Naphthalene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Fluorene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Phenanthrene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Anthracene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Pyrene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	41	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	41	<0.5	<0.5	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	41	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	41	#	#		[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	318341-2
Date extracted	-			16/03/2023	1	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
HCB	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	<0.2	1	<1	<1	0	104	85
gamma-BHC	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	<0.2	1	<1	<1	0	106	113
Heptachlor	ug/kg	1	Org-021	<0.2	1	<1	<1	0	101	[NT]
delta-BHC	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	<0.2	1	<1	<1	0	99	#
Heptachlor Epoxide	ug/kg	1	Org-021	<0.2	1	<1	<1	0	94	79
gamma-Chlordane	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	<0.2	1	<1	<1	0	105	#
Dieldrin	ug/kg	1	Org-021	<0.2	1	<1	<1	0	104	140
Endrin	ug/kg	1	Org-021	<0.2	1	<1	<1	0	96	90
pp-DDD	ug/kg	1	Org-021	<0.2	1	<1	<1	0	100	#
Endosulfan II	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	<0.2	1	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	81	1	<1	<1	0	95	#
Surrogate TCMX	%		Org-021	92	1	98	98	0	96	78

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	318341-22
Date extracted	-			[NT]	11	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			[NT]	11	17/03/2023	17/03/2023		17/03/2023	17/03/2023
HCB	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	11	<1	<1	0	88	79
gamma-BHC	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	11	<1	<1	0	96	102
Heptachlor	ug/kg	1	Org-021	[NT]	11	<1	<1	0	85	62
delta-BHC	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	11	<1	<1	0	95	#
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	11	<1	<1	0	96	105
gamma-Chlordane	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	11	<1	<1	0	96	80
Dieldrin	ug/kg	1	Org-021	[NT]	11	<1	<1	0	98	#
Endrin	ug/kg	1	Org-021	[NT]	11	<1	<1	0	86	85
pp-DDD	ug/kg	1	Org-021	[NT]	11	<1	<1	0	86	#
Endosulfan II	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	11	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	11	<1	<1	0	80	#
Surrogate TCMX	%		Org-021	[NT]	11	94	100	6	91	65

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	318341-32
Date extracted	-			[NT]	21	16/03/2023	16/03/2023		16/03/2023	16/03/2023
Date analysed	-			[NT]	21	17/03/2023	17/03/2023		17/03/2023	17/03/2023
HCB	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	21	<1	<1	0	80	95
gamma-BHC	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	21	<1	<1	0	84	110
Heptachlor	ug/kg	1	Org-021	[NT]	21	<1	<1	0	69	70
delta-BHC	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	21	<1	<1	0	99	#
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	21	<1	<1	0	84	114
gamma-Chlordane	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	21	<1	<1	0	80	82
Dieldrin	ug/kg	1	Org-021	[NT]	21	<1	<1	0	84	#
Endrin	ug/kg	1	Org-021	[NT]	21	<1	<1	0	64	99
pp-DDD	ug/kg	1	Org-021	[NT]	21	<1	<1	0	89	62
Endosulfan II	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	21	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	21	<1	<1	0	81	#
Surrogate TCMX	%		Org-021	[NT]	21	100	106	6	96	79

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	318341-42
Date extracted	-			[NT]	31	16/03/2023	16/03/2023		[NT]	16/03/2023
Date analysed	-			[NT]	31	17/03/2023	17/03/2023		[NT]	17/03/2023
HCB	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	74
gamma-BHC	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	88
Heptachlor	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	66
delta-BHC	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	#
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	118
gamma-Chlordane	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	108
Dieldrin	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	118
Endrin	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	92
pp-DDD	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	#
Endosulfan II	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	31	<1	<1	0	[NT]	#
Surrogate TCMX	%		Org-021	[NT]	31	#	#		[NT]	80

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	16/03/2023	16/03/2023		[NT]	[NT]
Date analysed	-			[NT]	41	17/03/2023	17/03/2023		[NT]	[NT]
HCB	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
gamma-BHC	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Heptachlor	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
delta-BHC	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
gamma-Chlordane	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Dieldrin	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Endrin	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
pp-DDD	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Endosulfan II	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	41	<1	<1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	41	84	84	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	318341-2
Date prepared	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Date analysed	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Arsenic	mg/kg	4	Metals-020	<4	1	5	<4	22	106	90
Chromium	mg/kg	1	Metals-020	<1	1	<1	<1	0	105	95
Copper	mg/kg	1	Metals-020	<1	1	40	24	50	104	89
Lead	mg/kg	1	Metals-020	<1	1	<1	<1	0	110	85
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	109	83
Selenium	mg/kg	2	Metals-020	<2	1	<2	<2	0	103	82
Zinc	mg/kg	1	Metals-020	<1	1	680	430	45	112	96

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	318341-22
Date prepared	-			[NT]	11	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Date analysed	-			[NT]	11	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Arsenic	mg/kg	4	Metals-020	[NT]	11	4	<4	0	109	84
Chromium	mg/kg	1	Metals-020	[NT]	11	<1	<1	0	111	90
Copper	mg/kg	1	Metals-020	[NT]	11	58	42	32	110	86
Lead	mg/kg	1	Metals-020	[NT]	11	<1	<1	0	113	78
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	103	##
Selenium	mg/kg	2	Metals-020	[NT]	11	<2	<2	0	111	78
Zinc	mg/kg	1	Metals-020	[NT]	11	770	590	26	111	#

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	318341-42
Date prepared	-			[NT]	21	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Date analysed	-			[NT]	21	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Arsenic	mg/kg	4	Metals-020	[NT]	21	6	8	29	102	113
Chromium	mg/kg	1	Metals-020	[NT]	21	<1	<1	0	106	115
Copper	mg/kg	1	Metals-020	[NT]	21	64	92	36	105	116
Lead	mg/kg	1	Metals-020	[NT]	21	<1	<1	0	103	105
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	103	88
Selenium	mg/kg	2	Metals-020	[NT]	21	<2	2	0	103	116
Zinc	mg/kg	1	Metals-020	[NT]	21	880	1300	39	105	85

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	31	17/03/2023	17/03/2023		[NT]	[NT]
Date analysed	-			[NT]	31	17/03/2023	17/03/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	31	6	7	15	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	31	<1	<1	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	31	64	77	18	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	31	<1	<1	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	31	<0.1	<0.1	0	[NT]	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	31	<2	<2	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	31	550	700	24	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	41	17/03/2023	17/03/2023		[NT]	[NT]
Date analysed	-			[NT]	41	17/03/2023	17/03/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	41	4	5	22	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	41	<1	<1	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	41	43	49	13	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	41	<1	<1	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	41	<2	<2	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	41	400	400	0	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Microbiology analysed by Sonic Food & Water Testing. Report No. W2306214-W2306220

PAH/OCs: - # Percent recovery for the surrogate/matrix spike is not possible to report due to interference from analytes (other than those being tested) in samples 318341-1-34, 36-42, 46-47.

Metals in biomass:
- The laboratory RPD acceptance criteria has been exceeded for 318341-1 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 318341-49.
- # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- ## Spike recovery for Hg in sample 318341-22 at 68% which is outside lab acceptance criteria (70-130%), however, the LCS recovery is acceptable at 103%. Sample matrix interference suspected. There is insufficient sample for re-digestion and confirmation.

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CERTIFICATE OF ANALYSIS 319396

Client Details

Client	MARINE POLLUTION RESEARCH PTY LTD
Attention	Jacob Broom
Address	25 RICHARD ROAD, SCOTLAND ISLAND, NSW, 2105

Sample Details

Your Reference	**Marine Pollution Research - West Culburra**
Number of Samples	6 Oyster
Date samples received	24/03/2023
Date completed instructions received	24/03/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	31/03/2023
Date of Issue	31/03/2023

Results Approved By
Kyle Gavrily, Senior Chemist
Loren Bardwell, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		319396-1	319396-2	319396-3	319396-4	319396-5
Your Reference	UNITS	B1-SR-1	B2-SR-2	B3-SR-3	B1-P-1	B2-P-2
Date Sampled		22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	29/03/2023	29/03/2023	29/03/2023	29/03/2023	29/03/2023
Date analysed	-	29/03/2023	29/03/2023	29/03/2023	29/03/2023	29/03/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	104	101	104	99	84

PAHs in Biomass		
Our Reference		319396-6
Your Reference	UNITS	B3-P-3
Date Sampled		22/03/2023
Type of sample		Oyster
Date extracted	-	29/03/2023
Date analysed	-	29/03/2023
Naphthalene	ug/kg	<1
Acenaphthylene	ug/kg	<1
Acenaphthene	ug/kg	<1
Fluorene	ug/kg	<1
Phenanthrene	ug/kg	<1
Anthracene	ug/kg	<1
Fluoranthene	ug/kg	<1
Pyrene	ug/kg	<1
Benzo(a)anthracene	ug/kg	<1
Chrysene	ug/kg	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2
Benzo(a)pyrene	ug/kg	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1
Dibenzo(a,h)anthracene	ug/kg	<1
Benzo(g,h,i)perylene	ug/kg	<1
Total +ve PAH's	ug/kg	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5
Surrogate p-Terphenyl-d14	%	77

Organochlorine Pesticides in Biomass						
Our Reference		319396-1	319396-2	319396-3	319396-4	319396-5
Your Reference	UNITS	B1-SR-1	B2-SR-2	B3-SR-3	B1-P-1	B2-P-2
Date Sampled		22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	29/03/2023	29/03/2023	29/03/2023	29/03/2023	29/03/2023
Date analysed	-	29/03/2023	29/03/2023	29/03/2023	29/03/2023	29/03/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	98	99	102	100	94

Organochlorine Pesticides in Biomass		
Our Reference		319396-6
Your Reference	UNITS	B3-P-3
Date Sampled		22/03/2023
Type of sample		Oyster
Date extracted	-	29/03/2023
Date analysed	-	29/03/2023
HCB	ug/kg	<1
alpha-BHC	ug/kg	<1
gamma-BHC	ug/kg	<1
beta-BHC	ug/kg	<1
Heptachlor	ug/kg	<1
delta-BHC	ug/kg	<1
Aldrin	ug/kg	<1
Heptachlor Epoxide	ug/kg	<1
gamma-Chlordane	ug/kg	<1
alpha-chlordane	ug/kg	<1
Endosulfan I	ug/kg	<1
pp-DDE	ug/kg	<1
Dieldrin	ug/kg	<1
Endrin	ug/kg	<1
pp-DDD	ug/kg	<1
Endosulfan II	ug/kg	<1
pp-DDT	ug/kg	<1
Endrin Aldehyde	ug/kg	<1
Endosulfan Sulphate	ug/kg	<1
Surrogate TCMX	%	93

Acid Extractable metals in biomass						
Our Reference		319396-1	319396-2	319396-3	319396-4	319396-5
Your Reference	UNITS	B1-SR-1	B2-SR-2	B3-SR-3	B1-P-1	B2-P-2
Date Sampled		22/03/2023	22/03/2023	22/03/2023	22/03/2023	22/03/2023
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	28/03/2023	28/03/2023	28/03/2023	28/03/2023	28/03/2023
Date analysed	-	28/03/2023	28/03/2023	28/03/2023	28/03/2023	28/03/2023
Arsenic	mg/kg	6	4	<4	<4	7
Chromium	mg/kg	2	<1	<1	60	<1
Copper	mg/kg	86	47	44	39	56
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	mg/kg	<1	<1	<1	<1	<1
Selenium	mg/kg	2	<2	<2	<2	<2
Zinc	mg/kg	930	590	580	370	630

Acid Extractable metals in biomass			
Our Reference		319396-6	319396-7
Your Reference	UNITS	B3-P-3	B1-P-1 - [TRIPLICATE]
Date Sampled		22/03/2023	22/03/2023
Type of sample		Oyster	Oyster
Date prepared	-	28/03/2023	28/03/2023
Date analysed	-	28/03/2023	28/03/2023
Arsenic	mg/kg	5	<4
Chromium	mg/kg	<1	56
Copper	mg/kg	30	39
Mercury	mg/kg	<0.1	<0.1
Lead	mg/kg	<1	<1
Selenium	mg/kg	<2	<2
Zinc	mg/kg	400	380

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	319396-6
Date extracted	-			29/03/2023	4	29/03/2023	29/03/2023		29/03/2023	29/03/2023
Date analysed	-			29/03/2023	4	29/03/2023	29/03/2023		29/03/2023	29/03/2023
Naphthalene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	82	101
Acenaphthylene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	85	103
Fluorene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	80	103
Phenanthrene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	84	104
Anthracene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	88	88
Pyrene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	91	#
Benzo(a)anthracene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	89	115
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	<2	4	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	<0.5	4	<0.5	<0.5	0	74	100
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	<1	4	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	4	99	94	5	96	99

QUALITY CONTROL: Organochlorine Pesticides in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	319396-6
Date extracted	-			29/03/2023	4	29/03/2023	29/03/2023		29/03/2023	29/03/2023
Date analysed	-			29/03/2023	4	29/03/2023	29/03/2023		29/03/2023	29/03/2023
HCB	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	<1	4	<1	<1	0	88	108
gamma-BHC	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	<1	4	<1	<1	0	84	96
Heptachlor	ug/kg	1	Org-021	<1	4	<1	<1	0	67	93
delta-BHC	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	<1	4	<1	<1	0	91	63
Heptachlor Epoxide	ug/kg	1	Org-021	<1	4	<1	<1	0	80	92
gamma-Chlordane	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	<1	4	<1	<1	0	94	84
Dieldrin	ug/kg	1	Org-021	<1	4	<1	<1	0	100	118
Endrin	ug/kg	1	Org-021	<1	4	<1	<1	0	70	107
pp-DDD	ug/kg	1	Org-021	<1	4	<1	<1	0	76	68
Endosulfan II	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	<1	4	<1	<1	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	<1	4	<1	<1	0	89	#
Surrogate TCMX	%		Org-021	87	4	100	99	1	90	128

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	319396-6
Date prepared	-			28/03/2023	4	28/03/2023	28/03/2023		28/03/2023	28/03/2023
Date analysed	-			28/03/2023	4	28/03/2023	28/03/2023		28/03/2023	28/03/2023
Arsenic	mg/kg	4	Metals-020	<4	4	<4	4	0	95	101
Chromium	mg/kg	1	Metals-020	<1	4	60	<1	193	97	95
Copper	mg/kg	1	Metals-020	<1	4	39	50	25	96	121
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	105	75
Lead	mg/kg	1	Metals-020	<1	4	<1	<1	0	105	99
Selenium	mg/kg	2	Metals-020	<2	4	<2	<2	0	104	100
Zinc	mg/kg	1	Metals-020	<1	4	370	480	26	92	#

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Metals in biomass:
- The results are reported on the sample as received i.e. no moisture correction has been applied.
- The high laboratory RPD has been obtained for 319396-4 for Cr. Therefore a triplicate result has been issued as laboratory sample number 319396-7.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

PAHs in Biomass - # Percent recovery for the matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample/s 319396-6ms.

OC Pesticides in Biomass - # Percent recovery for the matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample/s319396-6ms.

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CERTIFICATE OF ANALYSIS 322995

Client Details

Client	MARINE POLLUTION RESEARCH PTY LTD
Attention	Jacob Broom
Address	25 RICHARD ROAD, SCOTLAND ISLAND, NSW, 2105

Sample Details

Your Reference	**Marine Pollution Research - West Culburra**
Number of Samples	48 Oyster
Date samples received	12/05/2023
Date completed instructions received	12/05/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/05/2023
Date of Issue	26/05/2023

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Results Approved By
Dragana Tomas, Senior Chemist
Greta Petzold, Operation Manager
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist

Authorised By
Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		322995-1	322995-2	322995-3	322995-4	322995-5
Your Reference	UNITS	CUP1-SR-1	CUP1-SR-2	CUP2-SR-1	CUP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	86	83	83	82	84

PAHs in Biomass						
Our Reference	UNITS	322995-6	322995-7	322995-8	322995-9	322995-10
Your Reference		BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	82	81	82	81	82

PAHs in Biomass						
Our Reference		322995-11	322995-12	322995-13	322995-14	322995-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	78	79	77	76	76

PAHs in Biomass						
Our Reference		322995-16	322995-17	322995-18	322995-19	322995-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	76	76	76	74	74

PAHs in Biomass						
Our Reference		322995-21	322995-22	322995-23	322995-24	322995-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CUP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	72	72	70	89	86

PAHs in Biomass						
Our Reference		322995-26	322995-27	322995-28	322995-29	322995-30
Your Reference	UNITS	CUP1-P-2	CUP2-P-1	CUP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	89	86	86	84	85

PAHs in Biomass						
Our Reference		322995-31	322995-32	322995-33	322995-34	322995-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	87	85	84	83	83

PAHs in Biomass						
Our Reference	UNITS	322995-36	322995-37	322995-38	322995-39	322995-40
Your Reference		SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	83	80	82	82	83

PAHs in Biomass						
Our Reference		322995-41	322995-42	322995-43	322995-44	322995-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50	<50	<50
Surrogate p-Terphenyl-d14	%	81	81	79	79	77

PAHs in Biomass				
Our Reference		322995-46	322995-47	322995-48
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023
Naphthalene	ug/kg	<10	<10	<10
Acenaphthylene	ug/kg	<10	<10	<10
Acenaphthene	ug/kg	<10	<10	<10
Fluorene	ug/kg	<10	<10	<10
Phenanthrene	ug/kg	<10	<10	<10
Anthracene	ug/kg	<10	<10	<10
Fluoranthene	ug/kg	<10	<10	<10
Pyrene	ug/kg	<10	<10	<10
Benzo(a)anthracene	ug/kg	<10	<10	<10
Chrysene	ug/kg	<10	<10	<10
Benzo(b,j+k)fluoranthene	ug/kg	<20	<20	<20
Benzo(a)pyrene	ug/kg	<5.0	<5.0	<5.0
Indeno(1,2,3-c,d)pyrene	ug/kg	<10	<10	<10
Dibenzo(a,h)anthracene	ug/kg	<10	<10	<10
Benzo(g,h,i)perylene	ug/kg	<10	<10	<10
Total +ve PAH's	ug/kg	<5.0	<5.0	<5.0
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<50	<50	<50
Benzo(a)pyrene TEQ calc(half)	ug/kg	<50	<50	<50
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<50	<50	<50
Surrogate p-Terphenyl-d14	%	77	79	77

Organochlorine Pesticides in Biomass						
Our Reference		322995-1	322995-2	322995-3	322995-4	322995-5
Your Reference	UNITS	CUP1-SR-1	CUP1-SR-2	CUP2-SR-1	CUP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	103	99	99	97	97

Organochlorine Pesticides in Biomass						
Our Reference		322995-6	322995-7	322995-8	322995-9	322995-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	96	97	97	96	96

Organochlorine Pesticides in Biomass						
Our Reference		322995-11	322995-12	322995-13	322995-14	322995-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	93	93	92	91	91

Organochlorine Pesticides in Biomass						
Our Reference		322995-16	322995-17	322995-18	322995-19	322995-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	92	89	91	89	88

Organochlorine Pesticides in Biomass						
Our Reference		322995-21	322995-22	322995-23	322995-24	322995-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CUP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	87	85	84	107	104

Organochlorine Pesticides in Biomass						
Our Reference		322995-26	322995-27	322995-28	322995-29	322995-30
Your Reference	UNITS	CUP1-P-2	CUP2-P-1	CUP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	105	104	103	103	101

Organochlorine Pesticides in Biomass						
Our Reference		322995-31	322995-32	322995-33	322995-34	322995-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	101	101	100	100	100

Organochlorine Pesticides in Biomass						
Our Reference		322995-36	322995-37	322995-38	322995-39	322995-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	99	100	99	99	97

Organochlorine Pesticides in Biomass						
Our Reference		322995-41	322995-42	322995-43	322995-44	322995-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10	<10	<10
Endrin	ug/kg	<10	<10	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10	<10	<10
Surrogate TCMX	%	96	97	96	95	95

Organochlorine Pesticides in Biomass				
Our Reference		322995-46	322995-47	322995-48
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster	Oyster
Date extracted	-	19/05/2023	19/05/2023	19/05/2023
Date analysed	-	19/05/2023	19/05/2023	19/05/2023
HCB	ug/kg	<10	<10	<10
alpha-BHC	ug/kg	<10	<10	<10
gamma-BHC	ug/kg	<10	<10	<10
beta-BHC	ug/kg	<10	<10	<10
Heptachlor	ug/kg	<10	<10	<10
delta-BHC	ug/kg	<10	<10	<10
Aldrin	ug/kg	<10	<10	<10
Heptachlor Epoxide	ug/kg	<10	<10	<10
gamma-Chlordane	ug/kg	<10	<10	<10
alpha-chlordane	ug/kg	<10	<10	<10
Endosulfan I	ug/kg	<10	<10	<10
pp-DDE	ug/kg	<10	<10	<10
Dieldrin	ug/kg	<10	<10	<10
Endrin	ug/kg	<10	<10	<10
pp-DDD	ug/kg	<10	<10	<10
Endosulfan II	ug/kg	<10	<10	<10
pp-DDT	ug/kg	<10	<10	<10
Endrin Aldehyde	ug/kg	<10	<10	<10
Endosulfan Sulphate	ug/kg	<10	<10	<10
Surrogate TCMX	%	95	95	95

Acid Extractable metals in biomass						
Our Reference		322995-1	322995-2	322995-3	322995-4	322995-5
Your Reference	UNITS	CUP1-SR-1	CUP1-SR-2	CUP2-SR-1	CUP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	12	8	12	9	10
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	120	140	98	64	110
Lead	mg/kg	<1	<1	<2	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	4	3	3	4	3
Zinc	mg/kg	1,800	1,600	1,600	950	1,500

Acid Extractable metals in biomass						
Our Reference		322995-6	322995-7	322995-8	322995-9	322995-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	10	6	8	9	9
Chromium	mg/kg	<1	<1	<1	1	<1
Copper	mg/kg	91	38	24	230	160
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Selenium	mg/kg	3	2	2	4	4
Zinc	mg/kg	1,500	240	320	2,300	1,700

Acid Extractable metals in biomass						
Our Reference		322995-11	322995-12	322995-13	322995-14	322995-15
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB1-SR-2	SEB2-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	9	9	9	10	9
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	110	89	71	92	51
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	4	3	4	4	3
Zinc	mg/kg	1,600	890	1,000	1,300	600

Acid Extractable metals in biomass						
Our Reference		322995-16	322995-17	322995-18	322995-19	322995-20
Your Reference	UNITS	SEB2-SR-2	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	7	8	8	8	8
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	120	130	170	94	180
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	3	4	3	3
Zinc	mg/kg	1,500	840	850	900	2,600

Acid Extractable metals in biomass						
Our Reference		322995-21	322995-22	322995-23	322995-24	322995-25
Your Reference	UNITS	CDN1-SR-1	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CUP1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	9	10	9	11	7
Chromium	mg/kg	<1	2	<1	<1	<1
Copper	mg/kg	130	220	64	180	88
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	0.1	0.1	<0.1	0.1	<0.1
Selenium	mg/kg	3	4	3	4	2
Zinc	mg/kg	1,400	3,000	910	2,100	720

Acid Extractable metals in biomass						
Our Reference		322995-26	322995-27	322995-28	322995-29	322995-30
Your Reference	UNITS	CUP1-P-2	CUP2-P-1	CUP2-P-2	BB1-P-1	BB1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	6	8	7	8	7
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	35	96	93	49	140
Lead	mg/kg	<2	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	<2	3	2	3	3
Zinc	mg/kg	570	930	930	590	1,000

Acid Extractable metals in biomass						
Our Reference		322995-31	322995-32	322995-33	322995-34	322995-35
Your Reference	UNITS	BB2-P-1	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	7	6	7	7	5
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	70	61	60	31	50
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	<2	2	2	2
Zinc	mg/kg	700	600	500	310	440

Acid Extractable metals in biomass						
Our Reference		322995-36	322995-37	322995-38	322995-39	322995-40
Your Reference	UNITS	SWB2-P-2	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	7	6	6	7	7
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	57	44	66	43	82
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	2	3	2	3
Zinc	mg/kg	550	380	490	380	680

Acid Extractable metals in biomass						
Our Reference		322995-41	322995-42	322995-43	322995-44	322995-45
Your Reference	UNITS	NB1-P-1	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	8	7	9	9	7
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	48	59	79	110	26
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	3	3	3	4	2
Zinc	mg/kg	420	420	600	890	390

Acid Extractable metals in biomass						
Our Reference		322995-46	322995-47	322995-48	322995-49	322995-50
Your Reference	UNITS	CDN1-P-2	CDN2-P-1	CDN2-P-2	CUP1-SR-1 - [TRIPLICATE]	SEB1-SR-1 - [TRIPLICATE]
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Arsenic	mg/kg	7	9	8	11	10
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	56	63	40	120	74
Lead	mg/kg	<1	<1	<1	<1	<1
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	mg/kg	2	2	2	5	4
Zinc	mg/kg	440	450	540	1,500	950

Acid Extractable metals in biomass			
Our Reference		322995-51	322995-52
Your Reference	UNITS	CUP2-P-1 - [TRIPLICATE]	BB2-P-1 - [TRIPLICATE]
Type of sample		Oyster	Oyster
Date prepared	-	24/05/2023	24/05/2023
Date analysed	-	24/05/2023	24/05/2023
Arsenic	mg/kg	6	7
Chromium	mg/kg	<1	<1
Copper	mg/kg	75	70
Lead	mg/kg	<1	<1
Mercury	mg/kg	<0.1	<0.1
Selenium	mg/kg	3	2
Zinc	mg/kg	720	590

Microbiologocal Testing						
Our Reference		322995-1	322995-2	322995-3	322995-4	322995-5
Your Reference	UNITS	CUP1-SR-1	CUP1-SR-2	CUP2-SR-1	CUP2-SR-2	BB1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	3	4	1	<1	<1

Microbiologocal Testing						
Our Reference		322995-6	322995-7	322995-8	322995-9	322995-10
Your Reference	UNITS	BB1-SR-2	BB2-SR-1	BB2-SR-2	SWB1-SR-1	SWB1-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	1	<1	<1	1

Microbiologocal Testing						
Our Reference		322995-11	322995-12	322995-13	322995-15	322995-16
Your Reference	UNITS	SWB2-SR-1	SWB2-SR-2	SEB1-SR-1	SEB2-SR-1	SEB2-SR-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	<1	<1	1	1

Microbiologocal Testing						
Our Reference		322995-17	322995-18	322995-19	322995-20	322995-21
Your Reference	UNITS	NB1-SR-1	NB1-SR-2	NB2-SR-1	NB2-SR-2	CDN1-SR-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	1	1	1	<1

Microbiologocal Testing						
Our Reference		322995-22	322995-23	322995-24	322995-25	322995-26
Your Reference	UNITS	CDN1-SR-2	CDN2-SR-1	CDN2-SR-2	CUP1-P-1	CUP1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	<1	<1	1	2

Microbiologocal Testing						
Our Reference		322995-27	322995-28	322995-29	322995-30	322995-31
Your Reference	UNITS	CUP2-P-1	CUP2-P-2	BB1-P-1	BB1-P-2	BB2-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	<1	<1	<1	<1

Microbiologocal Testing						
Our Reference		322995-32	322995-33	322995-34	322995-35	322995-36
Your Reference	UNITS	BB2-P-2	SWB1-P-1	SWB1-P-2	SWB2-P-1	SWB2-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	1	<1	<1	1

Microbiologocal Testing						
Our Reference		322995-37	322995-38	322995-39	322995-40	322995-41
Your Reference	UNITS	SEB1-P-1	SEB1-P-2	SEB2-P-1	SEB2-P-2	NB1-P-1
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	<1	<1	<1	1	<1

Microbiologocal Testing						
Our Reference		322995-42	322995-43	322995-44	322995-45	322995-46
Your Reference	UNITS	NB1-P-2	NB2-P-1	NB2-P-2	CDN1-P-1	CDN1-P-2
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
E. coli	cfu/g	1	2	2	<1	<1

Microbiologocal Testing			
Our Reference		322995-47	322995-48
Your Reference	UNITS	CDN2-P-1	CDN2-P-2
Type of sample		Oyster	Oyster
Date of testing	-	15/05/2023	15/05/2023
E. coli	cfu/g	<1	<1

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	322995-2
Date extracted	-			19/05/2023	1	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			19/05/2023	1	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Naphthalene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	80	86
Acenaphthylene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	81	83
Fluorene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	76	80
Phenanthrene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	77	77
Anthracene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	78	80
Pyrene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	79	83
Benzo(a)anthracene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	77	81
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	<2	1	<20	<20	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	<0.5	1	<5.0	<5.0	0	78	88
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	<1	1	<10	<10	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	81	1	86	85	1	81	83

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	322995-26
Date extracted	-			[NT]	11	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			[NT]	11	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Naphthalene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	74	88
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	73	87
Fluorene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	69	84
Phenanthrene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	67	82
Anthracene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	69	84
Pyrene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	73	85
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	69	85
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	11	<20	<20	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	11	<5.0	<5.0	0	78	92
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	11	<10	<10	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	78	78	0	73	87

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	322995-42
Date extracted	-			[NT]	27	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			[NT]	27	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Naphthalene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	84	88
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	83	84
Fluorene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	76	84
Phenanthrene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	77	78
Anthracene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	80	82
Pyrene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	83	84
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	79	82
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	27	<20	<20	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	27	<5.0	<5.0	0	70	66
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	27	<10	<10	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	27	86	86	0	82	81

QUALITY CONTROL: PAHs in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	31	19/05/2023	19/05/2023		[NT]	[NT]
Date analysed	-			[NT]	31	19/05/2023	19/05/2023		[NT]	[NT]
Naphthalene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Fluorene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Phenanthrene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Anthracene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Pyrene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	31	<20	<20	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	31	<5.0	<5.0	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	31	<10	<10	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	31	87	86	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	19/05/2023	19/05/2023		[NT]	[NT]
Date analysed	-			[NT]	41	19/05/2023	19/05/2023		[NT]	[NT]
Naphthalene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Acenaphthylene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Fluorene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Phenanthrene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Anthracene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Pyrene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Benzo(a)anthracene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	[NT]	41	<20	<20	0	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	[NT]	41	<5.0	<5.0	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	[NT]	41	<10	<10	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	41	81	80	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	322995-2
Date extracted	-			19/05/2023	1	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			19/05/2023	1	19/05/2023	19/05/2023		19/05/2023	19/05/2023
HCB	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	<1	1	<10	<10	0	80	80
gamma-BHC	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	<1	1	<10	<10	0	80	84
Heptachlor	ug/kg	1	Org-021	<1	1	<10	<10	0	75	79
delta-BHC	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	<1	1	<10	<10	0	77	83
Heptachlor Epoxide	ug/kg	1	Org-021	<1	1	<10	<10	0	76	78
gamma-Chlordane	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	<1	1	<10	<10	0	82	90
Dieldrin	ug/kg	1	Org-021	<1	1	<10	<10	0	80	92
Endrin	ug/kg	1	Org-021	<1	1	<10	<10	0	68	88
pp-DDD	ug/kg	1	Org-021	<1	1	<10	<10	0	74	84
Endosulfan II	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	<1	1	<10	<10	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	<1	1	<10	<10	0	68	87
Surrogate TCMX	%		Org-021	95	1	103	101	2	100	100

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	322995-26
Date extracted	-			[NT]	11	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			[NT]	11	19/05/2023	19/05/2023		19/05/2023	19/05/2023
HCB	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	11	<10	<10	0	70	82
gamma-BHC	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	11	<10	<10	0	74	90
Heptachlor	ug/kg	1	Org-021	[NT]	11	<10	<10	0	67	85
delta-BHC	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	11	<10	<10	0	73	85
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	11	<10	<10	0	70	84
gamma-Chlordane	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	11	<10	<10	0	78	92
Dieldrin	ug/kg	1	Org-021	[NT]	11	<10	<10	0	80	96
Endrin	ug/kg	1	Org-021	[NT]	11	<10	<10	0	74	92
pp-DDD	ug/kg	1	Org-021	[NT]	11	<10	<10	0	76	90
Endosulfan II	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	11	<10	<10	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	11	<10	<10	0	70	66
Surrogate TCMX	%		Org-021	[NT]	11	93	92	1	87	104

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	322995-42
Date extracted	-			[NT]	27	19/05/2023	19/05/2023		19/05/2023	19/05/2023
Date analysed	-			[NT]	27	19/05/2023	19/05/2023		19/05/2023	19/05/2023
HCB	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	27	<10	<10	0	74	78
gamma-BHC	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	27	<10	<10	0	86	86
Heptachlor	ug/kg	1	Org-021	[NT]	27	<10	<10	0	69	74
delta-BHC	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	27	<10	<10	0	79	80
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	27	<10	<10	0	78	78
gamma-Chlordane	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	27	<10	<10	0	92	90
Dieldrin	ug/kg	1	Org-021	[NT]	27	<10	<10	0	92	96
Endrin	ug/kg	1	Org-021	[NT]	27	<10	<10	0	90	92
pp-DDD	ug/kg	1	Org-021	[NT]	27	<10	<10	0	86	84
Endosulfan II	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	27	<10	<10	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	27	<10	<10	0	72	#
Surrogate TCMX	%		Org-021	[NT]	27	104	104	0	97	73

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	31	19/05/2023	19/05/2023		[NT]	[NT]
Date analysed	-			[NT]	31	19/05/2023	19/05/2023		[NT]	[NT]
HCB	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
gamma-BHC	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Heptachlor	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
delta-BHC	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
gamma-Chlordane	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Dieldrin	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Endrin	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
pp-DDD	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Endosulfan II	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	31	<10	<10	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	31	101	101	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	19/05/2023	19/05/2023		[NT]	[NT]
Date analysed	-			[NT]	41	19/05/2023	19/05/2023		[NT]	[NT]
HCB	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
gamma-BHC	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Heptachlor	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
delta-BHC	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Heptachlor Epoxide	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
gamma-Chlordane	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Dieldrin	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Endrin	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
pp-DDD	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Endosulfan II	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	[NT]	41	<10	<10	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	41	96	96	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	322995-3
Date prepared	-			24/05/2023	1	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Date analysed	-			24/05/2023	1	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Arsenic	mg/kg	4	Metals-020	<4	1	12	9	29	103	104
Chromium	mg/kg	1	Metals-020	<1	1	<1	<1	0	104	94
Copper	mg/kg	1	Metals-020	<1	1	120	11	166	104	#
Lead	mg/kg	1	Metals-020	<1	1	<1	<1	0	103	###
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	128	99
Selenium	mg/kg	2	Metals-020	<2	1	4	3	29	105	102
Zinc	mg/kg	1	Metals-020	<1	1	1800	180	164	102	##

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	322995-26
Date prepared	-			[NT]	13	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Date analysed	-			[NT]	13	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Arsenic	mg/kg	4	Metals-020	[NT]	13	9	9	0	102	101
Chromium	mg/kg	1	Metals-020	[NT]	13	<1	<1	0	103	90
Copper	mg/kg	1	Metals-020	[NT]	13	71	19	116	104	108
Lead	mg/kg	1	Metals-020	[NT]	13	<1	<1	0	101	###
Mercury	mg/kg	0.1	Metals-021	[NT]	13	<0.1	<0.1	0	128	109
Selenium	mg/kg	2	Metals-020	[NT]	13	4	3	29	110	99
Zinc	mg/kg	1	Metals-020	[NT]	13	1000	240	123	101	109

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	322995-42
Date prepared	-			[NT]	27	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Date analysed	-			[NT]	27	24/05/2023	24/05/2023		24/05/2023	24/05/2023
Arsenic	mg/kg	4	Metals-020	[NT]	27	8	7	13	103	94
Chromium	mg/kg	1	Metals-020	[NT]	27	<1	<1	0	104	88
Copper	mg/kg	1	Metals-020	[NT]	27	96	38	87	104	98
Lead	mg/kg	1	Metals-020	[NT]	27	<1	<1	0	102	80
Mercury	mg/kg	0.1	Metals-021	[NT]	27	<0.1	<0.1	0	123	95
Selenium	mg/kg	2	Metals-020	[NT]	27	3	2	40	110	98
Zinc	mg/kg	1	Metals-020	[NT]	27	930	770	19	101	95

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	31	24/05/2023	24/05/2023		[NT]	[NT]
Date analysed	-			[NT]	31	24/05/2023	24/05/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	31	7	5	33	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	31	<1	<1	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	31	70	47	39	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	31	<1	<1	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	31	0.1	<0.1	0	[NT]	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	31	3	<2	40	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	31	700	410	52	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	41	24/05/2023	24/05/2023		[NT]	[NT]
Date analysed	-			[NT]	41	24/05/2023	24/05/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	41	8	8	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	41	<1	<1	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	41	48	50	4	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	41	<1	<1	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	41	3	2	40	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	41	420	360	15	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Microbiology analysed by Sonic Food & Water Testing. Report No. W2311583-589
The time between collection and the commencement of testing should not exceed 24 hours. Samples tested outside this time may have their results compromised

PAH_S:
The PQL has been raised due to the light weight nature of sample/s 322995-1 to 48, which results in a higher than routine dilution factor.
Sample/s 322995-1 to 48 has been reported on an "as received" basis, i.e. moisture content not included in the calculation.

OCPBIOMASS:The PQL has been raised due to the light weight nature of sample/s 322995-1 to 48, which results in a higher than routine dilution factor.
Sample/s 322995-1 to 48 has been reported on an "as received" basis, i.e. moisture content not included in the calculation.

OC Pesticides in Biomass - # Percent recovery for the surrogate/matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample/s 322995-42ms.

Metals in biomass:
- The results are reported on the sample as received i.e. no moisture correction has been applied.
- The laboratory RPD acceptance criteria has been exceeded for 322995-1 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 322995-49.
- The laboratory RPD acceptance criteria has been exceeded for 322995-13 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 322995-50.
- The laboratory RPD acceptance criteria has been exceeded for 322995-27 for Cu. Therefore a triplicate result has been issued as laboratory sample number 322995-51.
- The laboratory RPD acceptance criteria has been exceeded for 322995-31 for Zn. Therefore a triplicate result has been issued as laboratory sample number 322995-52.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- ## Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- ### Low spike recovery was obtained for this sample. Sample matrix interference is suspected. However, an acceptable recovery was obtained for the LCS
- The PQL for Pb in samples 322995-3 and 26 has been raised due to the low spike recovery. This may reflect other samples where similar in matrix and similar analytical interferences occur.

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CERTIFICATE OF ANALYSIS 323566

Client Details

Client	MARINE POLLUTION RESEARCH PTY LTD
Attention	Jacob Broom
Address	25 RICHARD ROAD, SCOTLAND ISLAND, NSW, 2105

Sample Details

Your Reference	**Marine Pollution Research - West Culburra**
Number of Samples	6 Oyster
Date samples received	19/05/2023
Date completed instructions received	19/05/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/05/2023
Date of Issue	26/05/2023

Results Approved By
Giovanni Agosti, Group Technical Manager
Kyle Gavrily, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

PAHs in Biomass						
Our Reference		323566-1	323566-2	323566-3	323566-4	323566-5
Your Reference	UNITS	B1-SR	B2-SR	B3-SR	B1-P	B2-P
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023
Date analysed	-	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
Naphthalene	ug/kg	<1	<1	<1	<1	<1
Acenaphthylene	ug/kg	<1	<1	<1	<1	<1
Acenaphthene	ug/kg	<1	<1	<1	<1	<1
Fluorene	ug/kg	<1	<1	<1	<1	<1
Phenanthrene	ug/kg	<1	<1	<1	<1	<1
Anthracene	ug/kg	<1	<1	<1	<1	<1
Fluoranthene	ug/kg	<1	<1	<1	<1	<1
Pyrene	ug/kg	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/kg	<1	<1	<1	<1	<1
Chrysene	ug/kg	<1	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2	<2	<2	<2	<2
Benzo(a)pyrene	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	ug/kg	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	ug/kg	<1	<1	<1	<1	<1
Total +ve PAH's	ug/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5	<5	<5	<5	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5	<5	<5	<5	<5
Surrogate p-Terphenyl-d14	%	111	107	106	105	106

PAHs in Biomass		
Our Reference		323566-6
Your Reference	UNITS	B3-P
Type of sample		Oyster
Date extracted	-	25/05/2023
Date analysed	-	26/05/2023
Naphthalene	ug/kg	<1
Acenaphthylene	ug/kg	<1
Acenaphthene	ug/kg	<1
Fluorene	ug/kg	<1
Phenanthrene	ug/kg	<1
Anthracene	ug/kg	<1
Fluoranthene	ug/kg	<1
Pyrene	ug/kg	<1
Benzo(a)anthracene	ug/kg	<1
Chrysene	ug/kg	<1
Benzo(b,j+k)fluoranthene	ug/kg	<2
Benzo(a)pyrene	ug/kg	<0.5
Indeno(1,2,3-c,d)pyrene	ug/kg	<1
Dibenzo(a,h)anthracene	ug/kg	<1
Benzo(g,h,i)perylene	ug/kg	<1
Total +ve PAH's	ug/kg	<0.5
Benzo(a)pyrene TEQ calc (zero)	ug/kg	<5
Benzo(a)pyrene TEQ calc(half)	ug/kg	<5
Benzo(a)pyrene TEQ calc(PQL)	ug/kg	<5
Surrogate p-Terphenyl-d14	%	108

Organochlorine Pesticides in Biomass						
Our Reference		323566-1	323566-2	323566-3	323566-4	323566-5
Your Reference	UNITS	B1-SR	B2-SR	B3-SR	B1-P	B2-P
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date extracted	-	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023
Date analysed	-	26/05/2023	26/05/2023	26/05/2023	26/05/2023	26/05/2023
HCB	ug/kg	<1	<1	<1	<1	<1
alpha-BHC	ug/kg	<1	<1	<1	<1	<1
gamma-BHC	ug/kg	<1	<1	<1	<1	<1
beta-BHC	ug/kg	<1	<1	<1	<1	<1
Heptachlor	ug/kg	<1	<1	<1	<1	<1
delta-BHC	ug/kg	<1	<1	<1	<1	<1
Aldrin	ug/kg	<1	<1	<1	<1	<1
Heptachlor Epoxide	ug/kg	<1	<1	<1	<1	<1
gamma-Chlordane	ug/kg	<1	<1	<1	<1	<1
alpha-chlordane	ug/kg	<1	<1	<1	<1	<1
Endosulfan I	ug/kg	<1	<1	<1	<1	<1
pp-DDE	ug/kg	<1	<1	<1	<1	<1
Dieldrin	ug/kg	<1	<1	<1	<1	<1
Endrin	ug/kg	<1	<1	<1	<1	<1
pp-DDD	ug/kg	<1	<1	<1	<1	<1
Endosulfan II	ug/kg	<1	<1	<1	<1	<1
pp-DDT	ug/kg	<1	<1	<1	<1	<1
Endrin Aldehyde	ug/kg	<1	<1	<1	<1	<1
Endosulfan Sulphate	ug/kg	<1	<1	<1	<1	<1
Surrogate TCMX	%	113	111	111	110	111

Organochlorine Pesticides in Biomass		
Our Reference		323566-6
Your Reference	UNITS	B3-P
Type of sample		Oyster
Date extracted	-	25/05/2023
Date analysed	-	26/05/2023
HCB	ug/kg	<1
alpha-BHC	ug/kg	<1
gamma-BHC	ug/kg	<1
beta-BHC	ug/kg	<1
Heptachlor	ug/kg	<1
delta-BHC	ug/kg	<1
Aldrin	ug/kg	<1
Heptachlor Epoxide	ug/kg	<1
gamma-Chlordane	ug/kg	<1
alpha-chlordane	ug/kg	<1
Endosulfan I	ug/kg	<1
pp-DDE	ug/kg	<1
Dieldrin	ug/kg	<1
Endrin	ug/kg	<1
pp-DDD	ug/kg	<1
Endosulfan II	ug/kg	<1
pp-DDT	ug/kg	<1
Endrin Aldehyde	ug/kg	<1
Endosulfan Sulphate	ug/kg	<1
Surrogate TCMX	%	112

Acid Extractable metals in biomass						
Our Reference		323566-1	323566-2	323566-3	323566-4	323566-5
Your Reference	UNITS	B1-SR	B2-SR	B3-SR	B1-P	B2-P
Type of sample		Oyster	Oyster	Oyster	Oyster	Oyster
Date prepared	-	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023
Date analysed	-	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023
Arsenic	mg/kg	5	8	6	4	5
Chromium	mg/kg	<1	<1	<1	<1	<1
Copper	mg/kg	100	140	140	49	36
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Lead	mg/kg	<1	<1	<1	<1	<1
Selenium	mg/kg	<2	2	2	<2	<2
Zinc	mg/kg	1,400	1,900	1,800	570	420

Acid Extractable metals in biomass			
Our Reference		323566-6	323566-7
Your Reference	UNITS	B3-P	B1-P - [TRIPLICATE]
Type of sample		Oyster	Oyster
Date prepared	-	25/05/2023	25/05/2023
Date analysed	-	25/05/2023	25/05/2023
Arsenic	mg/kg	<4	5
Chromium	mg/kg	<1	<1
Copper	mg/kg	18	35
Mercury	mg/kg	<0.1	<0.1
Lead	mg/kg	<1	<1
Selenium	mg/kg	<2	<2
Zinc	mg/kg	260	450

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

QUALITY CONTROL: PAHs in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			25/05/2023	[NT]	[NT]	[NT]	[NT]	25/05/2023	[NT]
Date analysed	-			25/05/2023	[NT]	[NT]	[NT]	[NT]	25/05/2023	[NT]
Naphthalene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Acenaphthylene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Fluorene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Phenanthrene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzo(a)anthracene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Benzo(b,j+k)fluoranthene	ug/kg	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	ug/kg	0.5	Org-022/025	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Indeno(1,2,3-c,d)pyrene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	ug/kg	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Biomass					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			25/05/2023	[NT]	[NT]	[NT]	[NT]	25/05/2023	[NT]
Date analysed	-			25/05/2023	[NT]	[NT]	[NT]	[NT]	25/05/2023	[NT]
HCB	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
gamma-BHC	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Heptachlor	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
delta-BHC	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Heptachlor Epoxide	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
gamma-Chlordane	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Dieldrin	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Endrin	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
pp-DDD	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endosulfan II	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	ug/kg	1	Org-021	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate TCMX	%		Org-021	113	[NT]	[NT]	[NT]	[NT]	113	[NT]

QUALITY CONTROL: Acid Extractable metals in biomass						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	323566-6
Date prepared	-			25/05/2023	4	25/05/2023	25/05/2023		25/05/2023	25/05/2023
Date analysed	-			25/05/2023	4	25/05/2023	25/05/2023		25/05/2023	25/05/2023
Arsenic	mg/kg	4	Metals-020	<4	4	4	<4	0	105	112
Chromium	mg/kg	1	Metals-020	<1	4	<1	<1	0	103	114
Copper	mg/kg	1	Metals-020	<1	4	49	24	68	101	119
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	112	79
Lead	mg/kg	1	Metals-020	<1	4	<1	<1	0	105	80
Selenium	mg/kg	2	Metals-020	<2	4	<2	<2	0	97	107
Zinc	mg/kg	1	Metals-020	<1	4	570	290	65	105	#

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Metals in biomass:
- The results are reported on the sample as received i.e. no moisture correction has been applied.
- The laboratory RPD acceptance criteria has been exceeded for 323566-4 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 323566-7.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

APPENDIX F

FRESHWATER MONITORING DATA

F-1.1 WATTLE CREEK WATER QUALITY DATA

F-1.2 DOWNS CREEK WATER QUALITY DATA

F-1.3 SOUTH CREEK WATER QUALITY DATA

F-2.1 ASU MACROINVERTEBRATE RESULTS TERM 1

F-2.2 ASU MACROINVERTEBRATE RESULTS TERM 2

F3 ELECTROFISHING FISH CATCH RESULTS

Appendix Table F1.1 Wattle Creek Water Quality Profiling Results December 2022 to July 2023													
Creek	Site	Date	Time	Depth	Temp	Cond	Sal	DO	DO	pH	Turb	MGA 56	
				M	°C	µS/cm	ppt	%sat	mg/l	Units	ntu	Easting	Northing
Wattle Creek	WCUp	6/12/22	13:26	0.1	28.35	400	0.19	119.4	9.27	6.59	4.9	294632	6131715
Wattle Creek	WCUp	23/3/23	09:00	0.1	18.69	482	0.23	42.6	3.97	5.74	0.1	294632	6131715
Wattle Creek	WCUp	23/3/23	09:00	0.2	18.69	482	0.23	40.0	3.73	5.78	0.2	294632	6131715
Wattle Creek	WCUp	28/3/23	08:02	0.1	20.31	503	0.24	41.9	3.78	5.87	0.2	294632	6131715
Wattle Creek	WCUp	28/3/23	08:02	0.2	20.32	504	0.24	41.5	3.74	5.88	1.0	294632	6131715
Wattle Creek	WCUp	9/6/23	11:33	0.1	12.51	435	0.32	88.0	9.37	5.66	2.1	294632	6131715
Wattle Creek	WCDn	6/12/22	14:10	0.1	23.79	1589	0.77	21.9	1.84	6.25	60.4	294760	6131659
Wattle Creek	WCDn	6/12/22	14:10	0.3	21.47	1633	0.80	37.4	3.29	6.22	64.9	294760	6131659
Wattle Creek	WCDn	6/12/22	14:11	0.7	19.23	1758	0.87	26.1	2.40	6.19	38.9	294760	6131659
Wattle Creek	WCDn	24/1/23	09:38	0.1	27.43	1988	1.01	43.6	3.42	6.44	27.3	294760	6131659
Wattle Creek	WCDn	24/1/23	09:38	0.2	23.92	1965	1.00	31.3	2.63	6.52	29.0	294760	6131659
Wattle Creek	WCDn	24/1/23	09:38	0.3	23.12	1960	1.00	23.4	1.99	6.54	61.1	294760	6131659
Wattle Creek	WCDn	23/3/23	08:52	0.1	19.22	1426	0.72	14.4	1.32	5.80	12.7	294760	6131659
Wattle Creek	WCDn	23/3/23	08:52	0.2	19.23	1438	0.72	13.3	1.22	5.82	16.3	294760	6131659
Wattle Creek	WCDn	23/3/23	08:53	0.3	19.33	1528	0.77	12.2	1.12	5.91	19.5	294760	6131659
Wattle Creek	WCDn	23/3/23	08:53	0.4	19.80	1924	0.98	9.3	0.85	6.06	19.4	294760	6131659
Wattle Creek	WCDn	28/3/23	08:42	0.1	20.13	1261	0.63	41.1	3.71	5.97	0.5	294760	6131659
Wattle Creek	WCDn	28/3/23	08:42	0.1	20.13	1267	0.63	37.3	3.37	6.00	0.6	294760	6131659
Wattle Creek	WCDn	28/3/23	08:44	0.2	19.92	1708	0.88	13.5	1.22	6.10	16.6	294760	6131659
Wattle Creek	WCDn	28/3/23	08:44	0.4	19.76	2181	1.13	11.1	1.01	6.19	23.5	294760	6131659
Wattle Creek	WCDn	28/3/23	08:45	0.5	19.67	2609	1.30	10.0	0.91	6.28	25.6	294760	6131659
Wattle Creek	WCDn	9/6/23	11:22	0.1	12.48	844	0.54	65.8	7.00	5.95	44.4	294760	6131659
Wattle Creek	WCDn	9/6/23	11:23	0.2	12.44	842	0.54	53.5	5.70	5.90	44.0	294760	6131659
Wattle Creek	WCDn	9/6/23	11:23	0.3	12.35	842	0.54	49.4	5.27	5.89	43.2	294760	6131659
Wattle Creek	WCDn	9/6/23	11:23	0.4	12.29	849	0.54	46.0	4.92	5.88	41.9	294760	6131659
Wattle Creek	WCDn	9/6/23	11:23	0.5	12.25	862	0.55	42.8	4.58	5.86	42.8	294760	6131659
Wattle Creek	WCDn	9/6/23	11:23	0.6	12.24	872	0.55	40.0	4.28	5.84	43.5	294760	6131659
Wattle Creek	WCDn	9/6/23	11:24	0.7	12.25	871	0.55	35.2	3.76	5.80	42.1	294760	6131659

Wattle Creek	WCDn	5/7/23	11:59	0.1	11.45	943	0.59	30.7	3.34	5.72	10.8	294760	6131659
Wattle Creek	WCDn	5/7/23	11:59	0.2	11.42	945	0.59	28.9	3.15	5.72	10.7	294760	6131659
Wattle Creek	WCDn	5/7/23	11:59	0.3	11.25	957	0.59	28.4	3.10	5.73	10.9	294760	6131659
Wattle Creek	WCDn	5/7/23	11:59	0.4	11.03	988	0.61	27.8	3.06	5.78	10.9	294760	6131659
Wattle Creek	WCDn	5/7/23	11:59	0.5	11.07	1094	0.67	26.2	2.87	5.85	20.0	294760	6131659

Appendix Table F1.2 Downs Creek Water Quality Profiling Results December 2022 to July 2023													
Creek	Site	Date	Time	Depth	Temp	Cond	Sal	DO	DO	pH	Turb	MGA 56	
				M	°C	µS/cm	ppt	%sat	mg/l	Units	ntu	Easting	Northing
Downs Creek	DCUp	6/12/22	16:58	0.1	22.07	935	0.47	52.3	4.55	7.05	7.4	293653	6131705
Downs Creek	DCUp	6/12/22	16:58	0.2	21.99	936	0.47	52.5	4.58	7.05	7.4	293653	6131705
Downs Creek	DCUp	6/12/22	16:58	0.3	20.61	935	0.47	50.5	4.52	6.99	9.0	293653	6131705
Downs Creek	DCUp	6/12/22	16:59	0.6	19.97	958	0.48	40.1	3.64	6.94	17.3	293653	6131705
Downs Creek	DCUp	6/12/22	16:59	0.8	19.13	1176	0.59	26.6	2.45	6.72	22.9	293653	6131705
Downs Creek	DCUp	24/1/23	10:14	0.1	23.40	548	0.27	40.6	3.45	6.80	14.6	293653	6131705
Downs Creek	DCUp	24/1/23	10:15	0.2	20.96	534	0.26	35.1	3.13	6.85	16.5	293653	6131705
Downs Creek	DCUp	24/1/23	10:15	0.3	20.60	528	0.26	30.6	2.75	6.85	15.4	293653	6131705
Downs Creek	DCUp	24/1/23	10:15	0.4	20.60	778	0.38	23.7	2.12	6.88	23.7	293653	6131705
Downs Creek	DCUp	24/1/23	10:16	0.5	20.63	1128	0.57	16.0	1.43	6.95	37.5	293653	6131705
Downs Creek	DCUp	24/1/23	10:16	0.6	19.88	1784	0.91	12.2	1.11	6.97	9.2	293653	6131705
Downs Creek	DCUp	23/3/23	09:22	0.1	19.55	743	0.36	34.7	3.18	7.05	1.3	293653	6131705
Downs Creek	DCUp	23/3/23	09:23	0.2	19.55	741	0.36	32.7	3.00	7.07	0.7	293653	6131705
Downs Creek	DCUp	23/3/23	09:23	0.3	19.54	739	0.35	32.2	2.95	7.08	0.6	293653	6131705
Downs Creek	DCUp	23/3/23	09:23	0.4	19.54	762	0.37	30.1	2.76	7.08	1.4	293653	6131705
Downs Creek	DCUp	27/3/23	13:26	0.1	22.27	411	0.21	73.8	6.41	6.92	1.8	293653	6131705
Downs Creek	DCUp	27/3/23	13:27	0.2	21.33	616	0.30	68.2	6.03	6.99	2.5	293653	6131705
Downs Creek	DCUp	27/3/23	13:27	0.3	20.73	651	0.32	62.8	5.62	7.04	1.2	293653	6131705
Downs Creek	DCUp	27/3/23	13:27	0.4	20.71	651	0.32	57.1	5.11	7.07	0.7	293653	6131705
Downs Creek	DCUp	27/3/23	13:28	0.5	20.58	657	0.32	55.1	4.94	7.08	0.7	293653	6131705
Downs Creek	DCUp	27/3/23	13:28	0.6	20.41	684	0.34	45.5	4.10	7.06	1.9	293653	6131705
Downs Creek	DCUp	27/3/23	13:28	0.7	20.36	698	0.34	34.9	3.15	7.04	3.0	293653	6131705
Downs Creek	DCUp	9/6/23	10:59	0.1	12.71	837	0.54	50.4	5.34	6.90	4.0	293653	6131705
Downs Creek	DCUp	9/6/23	11:00	0.2	12.69	837	0.53	48.4	5.12	6.93	4.0	293653	6131705
Downs Creek	DCUp	9/6/23	11:00	0.3	12.68	838	0.53	48.1	5.10	6.93	4.2	293653	6131705
Downs Creek	DCUp	9/6/23	11:00	0.4	12.67	848	0.54	48.0	5.09	6.93	4.2	293653	6131705
Downs Creek	DCUp	9/6/23	11:01	0.5	12.66	858	0.54	47.8	5.07	6.93	4.2	293653	6131705
Downs Creek	DCUp	9/6/23	11:01	0.6	12.65	868	0.55	47.8	5.07	6.93	4.2	293653	6131705
Downs Creek	DCUp	9/6/23	11:01	0.7	12.65	875	0.55	47.5	5.04	6.93	4.0	293653	6131705

Downs Creek	DCUp	4/7/23	11:50	0.1	11.36	1133	0.67	99.1	10.81	7.73	8.7	293653	6131705
Downs Creek	DCUp	4/7/23	11:50	0.2	11.34	1135	0.67	93.3	10.18	7.70	8.4	293653	6131705
Downs Creek	DCUp	4/7/23	11:50	0.3	11.13	1138	0.68	92.3	10.12	7.69	8.8	293653	6131705
Downs Creek	DCUp	4/7/23	11:50	0.4	10.98	1142	0.68	90.9	10.00	7.67	9.1	293653	6131705
Downs Creek	DCDn	6/12/22	16:27	0.2	20.19	438	0.22	35.7	3.23	6.43	14.8	293770	6131386
Downs Creek	DCDn	6/12/22	16:27	0.3	18.64	480	0.24	19.3	1.80	6.43	13.0	293770	6131386
Downs Creek	DCDn	6/12/22	16:27	0.6	16.86	648	0.33	10.5	1.02	6.58	11.9	293770	6131386
Downs Creek	DCDn	24/1/23	10:04	0.1	19.90	791	0.39	52.0	4.73	5.21	8.6	293770	6131386
Downs Creek	DCDn	24/1/23	10:04	0.2	19.12	800	0.40	53.3	4.92	5.25	5.7	293770	6131386
Downs Creek	DCDn	24/1/23	10:05	0.3	18.78	800	0.40	51.6	4.80	5.29	5.1	293770	6131386
Downs Creek	DCDn	24/1/23	10:05	0.4	18.60	802	0.40	49.1	4.58	5.32	4.7	293770	6131386
Downs Creek	DCDn	24/1/23	10:05	0.5	18.51	807	0.40	46.4	4.34	5.52	18.5	293770	6131386
Downs Creek	DCDn	23/3/23	09:14	0.1	18.41	271	0.12	19.8	1.86	5.98	20.6	293770	6131386
Downs Creek	DCDn	23/3/23	09:15	0.2	18.40	270	0.12	15.5	1.46	6.01	19.0	293770	6131386
Downs Creek	DCDn	23/3/23	09:15	0.3	18.40	271	0.12	12.9	1.21	6.03	18.8	293770	6131386
Downs Creek	DCDn	23/3/23	09:16	0.4	18.52	376	0.17	10.2	0.96	6.65	18.3	293770	6131386
Downs Creek	DCDn	27/3/23	15:22	0.1	20.30	338	0.17	12.7	1.15	6.12	22.0	293770	6131386
Downs Creek	DCDn	27/3/23	15:22	0.2	19.45	342	0.17	10.0	0.92	6.31	12.9	293770	6131386
Downs Creek	DCDn	27/3/23	15:23	0.3	19.09	346	0.17	8.2	0.76	6.52	12.8	293770	6131386
Downs Creek	DCDn	27/3/23	15:23	0.4	18.83	377	0.18	7.4	0.69	6.67	17.3	293770	6131386
Downs Creek	DCDn	27/3/23	15:24	0.5	18.70	420	0.21	6.8	0.63	6.76	19.2	293770	6131386
Downs Creek	DCDn	27/3/23	15:24	0.6	18.61	483	0.24	6.2	0.58	6.82	24.3	293770	6131386
Downs Creek	DCDn	9/6/23	11:47	0.1	12.27	375	0.28	80.3	8.60	5.95	13.1	293770	6131386
Downs Creek	DCDn	9/6/23	11:47	0.2	12.16	374	0.28	67.9	7.29	5.93	13.5	293770	6131386
Downs Creek	DCDn	9/6/23	11:48	0.3	12.11	376	0.28	61.1	6.56	5.89	13.0	293770	6131386
Downs Creek	DCDn	9/6/23	11:48	0.4	12.05	382	0.28	56.9	6.13	5.84	12.5	293770	6131386
Downs Creek	DCDn	9/6/23	11:48	0.5	12.23	417	0.30	49.8	5.33	5.94	19.0	293770	6131386
Downs Creek	DCDn	9/6/23	11:48	0.6	12.44	457	0.32	45.6	4.86	6.08	18.5	293770	6131386
Downs Creek	DCDn	9/6/23	11:49	0.7	12.51	477	0.33	43.0	4.58	6.15	17.9	293770	6131386

Downs Creek	DCDn	4/7/23	14:29	0.1	11.85	449	0.30	69.0	7.46	6.01	8.8	293770	6131386
Downs Creek	DCDn	4/7/23	14:29	0.2	11.55	441	0.30	69.2	7.54	5.96	8.7	293770	6131386
Downs Creek	DCDn	4/7/23	14:29	0.3	10.97	438	0.30	70.0	7.72	5.93	8.9	293770	6131386
Downs Creek	DCDn	4/7/23	14:29	0.4	10.78	449	0.31	69.5	7.70	5.91	8.8	293770	6131386
Downs Creek	DCDn	4/7/23	14:30	0.5	10.71	472	0.32	68.6	7.61	5.88	8.8	293770	6131386
Downs Creek	DCDn-D3	6/12/22	15:16	0.1	25.45	47620	30.99	74.0	5.08	5.69	9.4	293842	6131258
Downs Creek	DCDn-D3	6/12/22	15:16	0.2	24.08	50800	33.31	72.4	5.03	5.87	5.2	293842	6131258
Downs Creek	DCDn-D3	6/12/22	15:17	0.3	23.45	52230	34.36	58.0	4.05	5.88	7.6	293842	6131258

Appendix Table F1.3 South Creek Water Quality Profiling Results December 2022 to July 2023													
Creek	Site	Date	Time	Depth	Temp	Cond	Sal	DO	DO	pH	Turb	MGA 56	
				M	°C	µS/cm	ppt	%sat	mg/l	Units	ntu	Easting	Northing
South Creek	SCUp	7/12/22	16:34	0.1	20.63	211	0.12	25.9	2.32	5.72	31.2	293479	6130734
South Creek	SCUp	7/12/22	16:35	0.2	20.11	258	0.14	18.3	1.66	5.69	30.2	293479	6130734
South Creek	SCUp	24/1/23	08:50	0.1	24.09	216	0.10	32.8	2.76	5.84	75.8	293479	6130734
South Creek	SCUp	23/3/23	09:55	0.1	18.00	289	0.13	16.9	1.60	5.80	10.4	293479	6130734
South Creek	SCUp	23/3/23	09:55	0.2	17.96	289	0.14	15.1	1.43	5.81	10.0	293479	6130734
South Creek	SCUp	28/3/23	10:45	0.1	19.45	291	0.14	31.1	2.86	5.76	49.0	293479	6130734
South Creek	SCUp	28/3/23	10:45	0.3	19.42	297	0.11	27.0	2.49	5.77	24.2	293479	6130734
South Creek	SCUp	9/6/23	10:07	0.1	10.96	238	0.22	21.9	2.42	5.36	14.8	293479	6130734
South Creek	SCUp	5/7/23	08:26	0.1	10.40	327	0.27	47.3	5.29	5.52	17.7	293479	6130734
South Creek	SCUp	5/7/23	08:27	0.2	10.40	342	0.28	50.1	5.61	5.48	12.9	293479	6130734
South Creek	SCUp	5/7/23	08:27	0.3	10.40	342	0.28	50.6	5.66	5.47	12.4	293479	6130734
South Creek	SCUp	5/7/23	08:27	0.4	10.40	342	0.28	51.0	5.70	5.47	12.3	293479	6130734
South Creek	SCDn	7/12/22	15:00	0.1	22.69	2014	1.02	58.7	5.04	4.74	11.3	293784	6130827
South Creek	SCDn	7/12/22	15:00	0.2	21.70	2116	1.06	64.6	5.65	4.66	32.6	293784	6130827
South Creek	SCDn	7/12/22	15:01	0.4	20.50	2754	1.41	57.5	5.14	4.42	10.8	293784	6130827
South Creek	SCDn	7/12/22	15:01	0.5	20.57	2871	1.47	52.4	4.67	4.38	19.4	293784	6130827
South Creek	SCDn	24/1/23	09:04	0.1	21.65	3408	1.80	63.1	5.50	5.75	14.9	293784	6130827
South Creek	SCDn	24/1/23	09:04	0.2	21.00	3378	1.78	59.8	5.27	5.76	11.0	293784	6130827
South Creek	SCDn	24/1/23	09:04	0.3	20.78	3380	1.78	55.4	4.91	5.75	4.5	293784	6130827
South Creek	SCDn	24/1/23	09:05	0.4	20.63	3487	1.85	52.1	4.63	5.73	9.0	293784	6130827
South Creek	SCDn	23/3/23	09:44	0.1	18.78	1213	0.60	47.0	4.37	5.51	1.3	293784	6130827
South Creek	SCDn	23/3/23	09:44	0.2	18.76	1208	0.60	44.4	4.12	5.54	0.8	293784	6130827
South Creek	SCDn	23/3/23	09:45	0.3	19.12	1413	0.71	27.9	2.58	5.80	11.1	293784	6130827
South Creek	SCDn	28/3/23	11:56	0.1	20.72	911	0.31	46.4	4.15	5.39	61.3	293784	6130827
South Creek	SCDn	28/3/23	11:55	0.2	21.55	1461	0.74	59.5	5.22	5.39	1.6	293784	6130827
South Creek	SCDn	28/3/23	11:55	0.3	20.87	1487	0.75	57.6	5.13	5.36	1.8	293784	6130827
South Creek	SCDn	9/6/23	09:53	0.1	11.63	989	0.62	63.1	6.84	5.10	3.3	293784	6130827
South Creek	SCDn	9/6/23	09:53	0.2	11.56	986	0.61	61.8	6.71	5.07	3.0	293784	6130827

South Creek	SCDn	5/7/23	09:40	0.1	11.09	1283	0.79	76.4	8.38	4.95	1.3	293784	6130827
South Creek	SCDn	5/7/23	09:40	0.2	11.09	1304	0.80	75.9	8.32	4.92	1.3	293784	6130827
South Creek	SCDn	5/7/23	09:40	0.3	11.09	1325	0.81	75.6	8.29	4.89	1.5	293784	6130827
South Creek	SCDn	5/7/23	09:41	0.4	11.18	1397	0.85	70.4	7.71	4.79	24.2	293784	6130827

Appendix Table F2-1

West Culburra Articifial Sampling Unit Macroinvertebrate Results Term 1

Phylum	Class	Order	Sub-Order	Family	Sub-Family	Genus/spp	Common Name	Term 1 WCDn-S 1	2	3	WCDn-B 1	2	3	DCUp-S 1	2	3	DCUp-B 1	2	3	DCDn-S 1	2	3	DCDn-B 1	2	3	SCUp-S 1	2	3	SCDn-S 1	2	3	SCDn-B 1	2	3	Abundance	Occurrence
Arthropoda	Insecta	Coleoptera		Dytiscidae			Diving Beetles																			1									1	1
Arthropoda	Insecta	Coleoptera		Hydrochidae			Scavenger Water Beetles						1													1									2	2
Arthropoda	Insecta	Coleoptera		Scirtidae			Marsh Beetles													1		1	2												4	3
Arthropoda	Insecta	Diptera		Ceratopogonidae			Biting Midges																						2	4	1				7	3
Arthropoda	Insecta	Diptera		Chironomidae	Chironominae		Bloodworms	376	170	215	138	105	35	116	98	104	1			28	23	79	2		1	31	24	25	15	53	41	13	7	15	1715	24
Arthropoda	Insecta	Diptera		Chironomidae	Tanypodinae		Bloodworms				1			2	9	3				1		2					1	2	4	6	4	3	6	1	45	14
Arthropoda	Insecta	Ephemeroptera		Leptophlebiidae			Mayflies																						1						1	1
Arthropoda	Insecta	Odonata	Epiproctophor	Corduliidae			Dragonflies															1				1					1			2	5	4
Arthropoda	Insecta	Trichoptera		Leptoceridae			Caddisflies																						2	3	2	2			9	4
Arthropoda	Arachnida	Acarina	Hydracarina				Freshwater Mites																			1									1	1
Arthropoda	Branchiopoda		Cladocera				Water Fleas									1																			1	1
Arthropoda	Collembola						Springtails																			1		1			2				4	3
Arthropoda	Copepoda	Cyclopoida		Cyclopidae			Copepods		1	1	1					1													1						5	5
Arthropoda	Ostracoda						Seed Shrimps			1					1	1																			3	3
Annelida	Oligochaeta						Worms			2	1			1		2				2	2	5				4	5								24	9
Chordata	Osteichthyes			Eleotridae		*Gobiomorphus australis*	Striped Gudgeon																								1				1	1
							Total invertebrate abundance per site:	376	171	219	141	105	36	119	108	112	1	0	0	32	25	88	4	0	1	40	30	28	25	66	51	18	13	18	1827	
							Total number of invertebrate taxa per site:	1	2	4	4	1	2	3	3	6	1	0	0	4	2	5	2	0	1	7	3	3	6	4	6	3	2	3	16	

Appendix Table F2-2

West Culburra Articifial Sampling Unit Macroinvertebrate Results Term 2

Phylum	Class	Order	Sub-Order	Family	Sub-Family	Genus/spp	Common Name	Term 2 WCUp-S 1	2	3	WCDn-S 1	2	3	WCDn-B 1	2	3	DCUp-S 1	2	3	DCUp-B 1	2	3	DCDn-S 1	2	3	DCDn-B 1	2	3	SCUp-S 1	2	3	SCDn-S 1	2	3	SCDn-B 1	2	3	Abundance	Occurrence
Arthropoda	Insecta	Coleoptera		Dytiscidae			Diving Beetles																															0	0
Arthropoda	Insecta	Coleoptera		Hydrochidae			Scavenger Water Beetles																															0	0
Arthropoda	Insecta	Coleoptera		Scirtidae			Marsh Beetles																															0	0
Arthropoda	Insecta	Diptera		Ceratopogonidae			Biting Midges																															0	0
Arthropoda	Insecta	Diptera		Chironomidae	Chironominae		Bloodworms	14	14	4	9	6	7	6	4	6	8	5	10	28	27	40	1	2	3	2	6	3	3	7	10	3	11	7	5	1		252	29
Arthropoda	Insecta	Diptera		Chironomidae	Tanypodinae		Bloodworms	2	5	4	18	8	19	2		1	6	1	3	20	10	35		2			4				8	6	1	6	1			162	21
Arthropoda	Insecta	Ephemeroptera		Leptophlebiidae			Mayflies																															0	0
Arthropoda	Insecta	Odonata	Epiproctophor	Corduliidae			Dragonflies					1																										1	1
Arthropoda	Insecta	Trichoptera		Leptoceridae			Caddisflies	1															1															2	2
Arthropoda	Arachnida	Acarina	Hydracarina				Freshwater Mites																															0	0
Arthropoda	Branchiopoda		Cladocera				Water Fleas																															0	0
Arthropoda	Collembola						Springtails								2								1															3	2
Arthropoda	Copepoda	Cyclopoida		Cyclopidae			Copepods																															0	0
Arthropoda	Ostracoda						Seed Shrimps																															0	0
Annelida	Oligochaeta						Worms																															0	0
Chordata	Osteichthyes			Eleotridae		*Gobiomorphus australis*	Striped Gudgeon																															0	0
							Total invertebrate abundance per site:	17	19	8	27	15	26	8	6	7	14	6	13	48	37	75	3	4	3	2	10	3	3	7	18	9	12	13	6	1	0	420	
							Total number of invertebrate taxa per site:	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	1	1	2	1	1	1	2	2	2	2	2	1	0	5	

Appendix Table F3 Electrofishing Survey Results Terms 1 & 2									
Term	Site	Rep	Empire Gudgeon *Hypseleotris compressa*	Striped Gudgeon *Gobiomorphus australis*	Common Jollytail *Galaxias maculatus*	Plague Minnow *Gambusia holbrooki*	Short-Finned Eel *Anguilla australis*	Tadpole
1	DCDn	1		47				
1	DCDn	1		55				
1	DCDn	1		54				
1	DCDn	1	33					
1	DCDn	1	35					
1	DCDn	1	34					
1	DCDn	1		47				
1	DCDn	1		12				
1	DCDn	1	35					
1	DCDn	1	48					
1	DCDn	1	44					
1	DCDn	1	31					
1	DCDn	1					110	
1	DCDn	2		120				
1	DCDn	2			90			
1	DCDn	2		25				
1	DCDn	2	52					
1	DCDn	2	34					
1	DCDn	2	39					
1	DCDn	2	38					
1	DCDn	2		40				
1	DCDn	2	42					
1	DCDn	2	40					
1	DCDn	2	40					
1	DCDn	2	38					
1	DCDn	2	38					
1	DCDn	2	30					
1	DCDn	2	28					
1	DCDn	2		60				
1	DCDn	2		50				
1	DCDn	2	50					
1	DCDn	2	45					
1	DCDn	2	38					
1	DCDn	2		45				

1	DCDn	3		128				
1	DCDn	3	42					
1	DCDn	3		50				
1	DCDn	3	32					
1	DCDn	3		144				
1	DCDn	3	34					
1	DCDn	3	50					
1	DCDn	3		41				
1	DCDn	3	44					
1	DCDn	3	36					
1	DCDn	3	38					
1	DCDn	3		42				
1	DCDn	3		55				
1	DCDn	3	39					
1	DCDn	3	40					
1	DCDn	3	47					
1	DCDn	3	40					
1	DCDn	3	38					
1	DCDn	3	35					
1	DCDn	3		40				
1	DCUp		50					
1	DCUp					42		
1	DCUp			58				
1	DCUp			51				
1	DCUp			41				
1	DCUp			55				
1	DCUp			36				
1	DCUp			47				
1	DCUp		41					
1	DCUp		37					
1	DCUp		52					
1	DCUp		37					
1	DCUp		40					
1	DCUp		42					
1	DCUp		28					
1	DCUp		28					
1	DCUp		47					
1	DCUp					48		
1	DCUp			40				
1	DCUp			48				
1	DCUp		47					
1	DCUp			45				
1	DCUp		48					
1	DCUp			43				
1	DCUp		25					

1	DCUp		25					
1	DCUp		38					
1	DCUp		30					
1	DCUp		28					
1	DCUp				71			
1	DCUp				76			
1	DCUp			41				
1	DCUp			42				
1	DCUp		46					
1	DCUp			35				
1	DCUp		35					
1	DCUp		32					
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1	DCUp			50				
1	DCUp			53				
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1	DCUp				78			
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1	DCUp		24					
1	DCUp		24					
1	DCUp		31					
1	DCUp		42					
1	DCUp		37					
1	DCUp		47					
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1	DCUp			37				
1	DCUp			134				
1	DCUp			114				
1	DCUp					25		
1	DCUp						250	
1	DCUp		48					
1	DCUp		50					
1	DCUp		50					

1	DCUp		51					
1	DCUp			51				
1	DCUp		52					
1	DCUp			45				
1	DCUp		40					
1	DCUp			42				
1	DCUp			36				
1	DCUp		39					
1	DCUp			50				
1	DCUp			50				
1	DCUp		38					
1	DCUp		26					
1	DCUp		36					
1	DCUp		36					
1	DCUp		31					
1	DCUp		31					
1	DCUp			43				
1	WCUp	1	0	0	0	0	0	
1	WCUp	2			90			
1	WCUp	2			86			
1	WCUp	3				40		
1	WCUp	3			91			
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1	WCDn	1		75				
1	WCDn	1	60					
1	WCDn	2		70				
1	WCDn	2			90			
1	WCDn	2		75				
1	WCDn	2	65					
1	WCDn	2			70			
1	WCDn	2				50		
1	WCDn	2					120	
1	WCDn	2	55					
1	WCDn	2		65				
1	WCDn	2			64			
1	WCDn	3		63				
1	WCDn	3		58				
1	WCDn	3		64				
1	WCDn	3	59					
1	WCDn	3	54					
1	WCDn	3		68				
1	WCDn	3		50				
1	WCDn	3				32		
1	WCDn	3			75			
1	WCDn	3				30		

1	WCDn	3		69				
1	WCDn	3	53					
1	WCDn	3		50				
1	WCDn	3		43				
1	WCDn	3			79			
1	SCUp	1						50
1	SCUp	1				47		
1	SCUp	1				30		
1	SCUp	1				21		
1	SCUp	1				21		
1	SCUp	1				19		
1	SCUp	1				22		
1	SCUp	1				23		
1	SCUp	1				21		
1	SCUp	1				23		
1	SCUp	1	56					
1	SCUp	2				41		
1	SCUp	2				21		
1	SCUp	2				33		
1	SCUp	2				11		
1	SCUp	2				30		
1	SCUp	2				21		
1	SCUp	2				21		
1	SCUp	3				20		
1	SCUp	3		41				
1	SCUp	3		59				
1	SCUp	3			64			
1	SCUp	3			40			
1	SCUp	3			64			
1	SCUp	3			70			
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1	SCDn	1		43				
1	SCDn	1		31				
1	SCDn	1	50					
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1	SCDn	1		35				
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1	SCDn	1		34				
1	SCDn	1	42					
1	SCDn	2	40					
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1	SCDn	2	33					
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1	SCDn	2	48					
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1	SCDn	2	41					
1	SCDn	2				40		
1	SCDn	2	45					
1	SCDn	2		31				
1	SCDn	2		32				
1	SCDn	2		35				
1	SCDn	2		45				
1	SCDn	3		68				
1	SCDn	3					450	
1	SCDn	3	45					
1	SCDn	3	40					
1	SCDn	3	44					
1	SCDn	3		32				
1	SCDn	3		32				
1	SCDn	3	32					
1	SCDn	3		51				
1	SCDn	3	31					
1	SCDn	3	49					
1	DCUp	1				48		
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1	DCUp	1	42					
1	DCUp	1	37					
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1	DCUp	1		31				
1	DCUp	1	48					
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1	DCUp	1	28					
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1	DCUp	1		38				
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1	DCUp	1	38					
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1	DCUp	3	46					
1	DCUp	3	41					
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1	DCUp	3	23					
1	DCUp	3	24					
1	DCUp	3	30					
1	DCUp	3	305					
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2	DCDN	1		63				
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2	DCDN	1		44				
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2	DCDN	1	51					
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2	DCDN	1		60				
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2	DCDN	2		52				
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2	DCDN	3		45				
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2	DCDN	3			93			
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2	DCDN	3		42				
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2	DCDN	3		33				
2	DCDN	3	41					
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2	DCUP	1	41					
2	DCUP	1		42				
2	DCUP	1	22					
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2	DCUP	2	25					
2	DCUP	2	30					
2	DCUP	2		55				
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2	DCUP	3	42					
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2	DCUP	3		110				
2	DCUP	3	45					

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2	DCUP	3		58				
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2	DCUP	3	51					
2	DCUP	3		52				
2	DCUP	3	40					
2	DCUP	3	37					
2	DCUP	3	44					
2	DCUP	3	52					
2	DCUP	3	47					
2	DCUP	3					146	
2	DCUP	3	48					
2	DCUP	3					700	
2	DCUP	3		68				
2	DCUP	3	34					
2	DCUP	3		53				
2	DCUP	3		51				
2	DCUP	3	42					
2	DCUP	3	43					
2	DCUP	3	44					
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2	DCUP	3	24					
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2	WCDN	1				19		
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