

DALRADIAN

GOLD

Discharge Consent (068/12/2) Reporting

March 2015 to May 2015

Author

[REDACTED]

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1.0 INTRODUCTION

This report has been prepared by Dalradian Gold Ltd. (DGL) in response to Condition 1.I. of Discharge Consent 068/12/2, which requires quarterly water quality reporting. The consent relates to discharge of site drainage water (at Irish Grid Reference H 5707 8690) arising from the DGL advanced exploration project at Curraghinalt. The site is situated approximately 8 km to the east of the village of Gortin, County Tyrone, Northern Ireland, BT79 7SF.

2.0 SUMMARY OF OPERATIONS DURING THE REPORTING PERIOD

DGL are currently in the early stages of progressing advanced exploration at the Curraghinalt site, which includes re-activating historical underground workings and completion of a parallel drilling program. The work is progressing under Planning Permission K/2013/0072/F, and is aimed at collecting information that will support a Pre-Feasibility Study and an Environmental Impact Assessment to allow for development of a full mine.

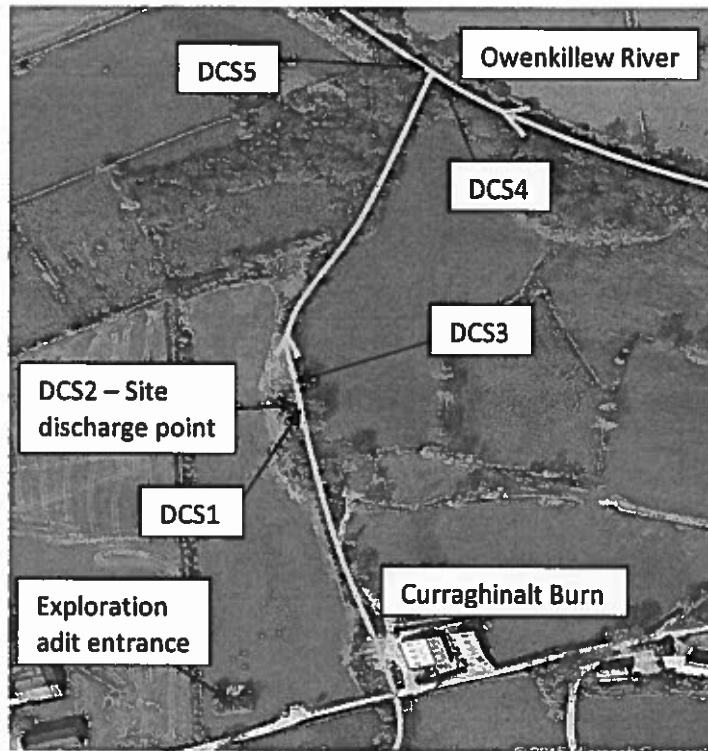
Water discharged via the consent during the reporting period has derived from natural groundwater drainage from the adit entrance, together with runoff water on the site that has resulted from incident rainfall. Following capture and management of these sources, temporary treatment prior to discharge at the consent location has included passage through an oil interceptor and thereafter one of two dedicated filter presses. However, the latest water quality data presented for May will reflect discharge associated with a formal water treatment facility that has recently been commissioned at the site. To date treatment has primarily focused on silt removal. DGL informed the Northern Ireland Environment Agency (NIEA) of the intention to commence the site discharge on 3 December 2014. This document represents the second quarterly discharge consent report.

Current construction works being finalised at the site include the development of offices, services and parking, a designated storage area for waste rock, and the formal water treatment facility to allow for additional treatment capacity as exploration progresses.

3.0 SAMPLING LOCATIONS, PROTOCOL AND LABORATORIES

Five surface water sample locations are required to be sampled monthly as part of the Discharge Consent. These have been listed below as Discharge Consent Sample 1 (DCS1) to Discharge Consent Sample 5 (DCS5) and are also presented on Figure 1.

- DCS1 - Immediately upstream of the confluence of the site discharge point and Curraghinalt Burn;
- DCS2 - Site discharge point;
- DCS3 - 5 m downstream of the confluence of the site discharge point and Curraghinalt Burn;
- DCS4 - Immediately upstream of the confluence of Curraghinalt Burn and the Owenkillew River; and
- DCS5 - 5 m downstream of the confluence of the Curraghinalt Burn and the Owenkillew River.



100m – approx. scale

Figure 1: Site map (Bing Maps) showing discharge consent sample locations

All surface water samples are collected according to protocols described in the DGL Surface Water Sampling Procedure¹. To help ensure quality results, care is taken not to disturb stream bed sediments upstream of the sampling point and prior to sampling. Samples are collected at all locations by a DGL Field Technician wearing a fresh pair of nitrile gloves and from the flowing stream of water to minimise any risks of contamination. All sample bottles are laboratory supplied and are filled to capacity at source.

Samples are placed in a cooler with ice, secured with sample packaging and accompanied by a completed Chain of Custody (CoC) Form, and shipped directly to ██████████ in Antrim for analysis. Thereafter, ██████████ routinely sub-contract metals analysis to ██████████ in ██████████. ██████████ is accredited by the United Kingdom Accreditation Service (UKAS) to 17025 standard, and UKAS monitor and externally audit the laboratory. All analyses that have been undertaken for comparison against discharge consent thresholds are reported as accredited on ██████████ laboratory certificates. Additionally, ██████████ based in ██████████ have been utilised to support supplementary Quality Assurance/Quality Control (QA/QC) testing.

DGL have also introduced the measurement of pH in the field at each sample location. Regular calibration of the instrument used is undertaken on site using both pH 4.01 and pH 7.01 buffer solution and in accordance with DGL MultiParameter Meter Calibration Procedure². During readings, the pH probe is fully immersed at all times in the flowing stream of water and up until stabilisation occurs³.

¹ Dalradian Gold Ltd. 2013. Surface Water Sampling Procedure. Issued July 2013.

² Dalradian Gold Ltd. 2013. MultiParameter Meter Calibration Procedure. Issued July 2013.

³ Dalradian Gold Ltd. 2013. MultiParameter Meter Sampling Procedure. Issued July 2013.

The instrument has not been available throughout the reporting period and has been scheduled for maintenance.

4.0 RESULTS

During the reporting period DGL have collected a total of 20 water samples from the discharge consent locations. This number of samples exceeds that required by the consent during the period, and amounts to a maximum of five samples from any of the locations described. Sampling was undertaken on 23 March 2015, 26 March 2015, 23 April 2015, 21 May 2015 and 28 May 2015. In total, five batches of water samples were sent to two different laboratories.

QA/QC checks and factual reporting against the consent water quality thresholds for the discharge point are presented in the following sub-sections. Water quality results and thresholds are summarised in Appendix A, and all laboratory certificates are presented in Appendix B.

4.1 Quality Assurance/Quality Control

A number of QA/QC measures have been applied to water samples taken at all sites. A factory calibrated certificate for the HANNA HI9828 MultiParameter meter used to measure pH in the field is provided in Appendix C.

4.1.1 Chain of Custody and confirmation of parameter analysis

A CoC form was completed on each day of sampling and on eight separate occasions between 23 March 2015 and 28 May 2015. The CoC forms document possession of the samples from the time of sample collection to reception at the lab; provide primary instruction to the lab on the parameters to be analysed; and provide sample information relevant to the lab, such as sample name and sample date and time. Following each sampling event and prior to submission to the lab, the CoC was reviewed and checked for errors. In the events covered within the period there are no issues to report in this respect.

4.1.2 Holding times

In Standard Operating Procedure (SOP) No. QA 022 REV 0 'Preservation and Handling of Samples', [REDACTED] provide maximum holding or storage times for individual analytical parameters alongside sample container types to be used, analytical methods and validation references.

In order to ensure holding times were not exceeded, DGL shipped samples directly to the laboratory. Certificates presented in Appendix B demonstrate that all samples were received by [REDACTED] on the day of sampling (four occasions), and three out of four batches were received by [REDACTED] on the day of sampling. A single batch of samples (24 March 2015) were received by [REDACTED] on the day following sampling. Testing is recorded by [REDACTED] to have been scheduled for a standard 10 day turnaround time, or on one occasion (28 May 2015) an express 7 day turnaround time.

Results certificates show that testing commenced on the day of sample receipt on seven occasions and on the day following sample receipt on one occasion.

4.1.3 Field Blanks

A total of three field blanks have been collected during the reporting period to assess potential contamination due to the sampling environment (e.g., dust getting into the sample bottle). Analysis of field blanks was undertaken by [REDACTED] alongside the specified water chemical analysis. Field blank results include total ambient conditions during samplings, but can also potentially incorporate bias due to laboratory methods (e.g., low-level constituents remaining in analytical equipment from a prior highly contaminated sample from another site) that are assessed by laboratory method blanks. The field blanks incorporated deionised water supplied by the laboratory which theoretically should

return no measurable values throughout the parameters analysed (with the omission of pH) unless there has been a source of contamination during sampling.

All blank determinants were below laboratory detection limits (Appendix A), which is consistent with satisfactory conditions during each sampling event.

4.1.4 Duplicate Samples

Five duplicate samples were collected during the reporting period. Two at the discharge point (DCS2), two immediately upstream of the confluence of Curraghinalt Burn and the Owenkillew River (DCS4), and one 5 m downstream of the confluence of the Curraghinalt Burn and the Owenkillew River (DCS5). Analysis of all duplicate samples was undertaken by [REDACTED] for independent testing; and therefore not alongside the remaining batch.

The measure of the reproducibility or precision of the chemical analysis has been quantified by calculating the Relative Percentage Difference (RPD) between parameter concentrations on the split sample submitted as a blind duplicate. The RPD has been calculated as follows:

$$RPD\% = \frac{|S - D|}{\frac{1}{2}(S + D)} \times 100$$

Where:

RPD = Relative Percentage Difference

S = Sample value of parameter; and

D = Duplicate value of parameter

Theoretically, the samples should have identical chemical concentrations (i.e., RPD = 0). However, due to factors such as sample matrix heterogeneity, natural variations or variations due to sample collection, handling or analysis, a variation in chemical concentration may occur (i.e., RPD greater than 0). The duplicates reported here were also tested at a different laboratory, and therefore exposed to slightly different holding times and possibly analytical methodology. Moreover, the reproducibility of replicate analyses at concentrations near the method detection limit (MDL) can be poor, resulting in RPD values of greater than the desirable limits. Therefore, for duplicate concentrations greater than five times the detection limit, a relative percent difference value of $\pm 20\%$ is considered acceptable⁴. Given these considerations, for duplicate concentrations less than five times the detection limit, RPD has not been calculated.

An RPD value greater than the above project objectives suggests variability has been introduced through sample collection, sample handling, or sample analysis. Of the analysis undertaken, dissolved arsenic determined in the discharge point sample (DCS2) on 26/03/2015, in comparison to the associated duplicate, falls outside the 20% acceptable threshold. Both values are below the consent limit, but these values should be interpreted in a qualitative capacity only.

4.1.5 Laboratory internal QA/QC

[REDACTED] operate in accordance with SOP No. QA 017 REV 5 covering their 'Procedure for the Accepting and Rejecting of Quality Controls and Results'. This document covers the approach adopted to quality control and the criteria used for accepting and rejecting results. On laboratory certificates [REDACTED] report all samples to be in 'Acceptable' Condition upon receipt.

⁴ Zeiner, S.T. 1994. Realistic Criteria for the Evaluation of Field Duplicate Field Results. Proceedings of Superfund XV, November 29-December 1, 1994. Sheraton Washington Hotel, Washington, D.C.

BOD analysis on fourteen samples has been reported by [REDACTED] as a 'sample deviation'. This has been due to the sample being over diluted in the laboratory. These results are considered to be indicative only (see Appendix A).

4.1.6 Summary

As detailed above, there are no major QA/QC concerns and all samples are considered applicable. Duplicate and blank samples collected also indicate a high level of data quality. There were no detections in any field blanks. However, a number of the BOD samples have been over diluted in the lab and are considered to be indicative only.

4.2 Factual Presentation of Data

All water quality results are presented in summary form for each location in Appendix A. This includes a comparison of concentrations from the discharge point location (DCS2) against specific threshold values detailed within the consent.

During the reporting period, all five sample results from DCS2 are below the threshold values presented within the consent for all parameters.

Excluding duplicate samples obtained for QA/QC purposes, water quality obtained from the Curraghinalt Burn during the period can be summarised as follows:

- Total suspended solids data varied significantly and from <3 mg/L (both upstream and downstream) to a maximum of 72 mg/L (downstream of the site). At the time of the maximum suspended solids concentration recorded in the burn the discharge from the exploration site had a solids loading of 7 mg/L;
- All BOD concentrations are less than 2 mg/L;
- Laboratory measured pH varies between a minimum of 6.81 pH units (recorded at the upstream location) and a maximum of 7.88 pH units (recorded at the downstream location);
- Dissolved mercury and cadmium were always recorded to be below detection;
- Oil or grease has not been visible at the sample locations;
- The maximum dissolved iron concentration has been determined at 1.47 mg/L at the upstream location; and
- The maximum total hardness has been recorded as 71.4 mg/L at the downstream location.

Excluding duplicate samples obtained for QA/QC purposes, water quality obtained from the Owenkillew River during the period can be summarised as follows:

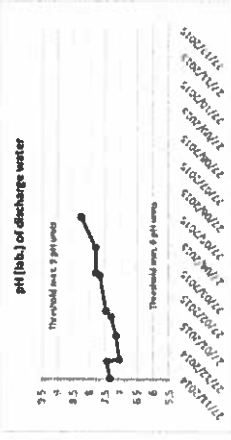
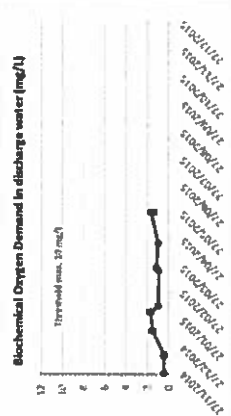
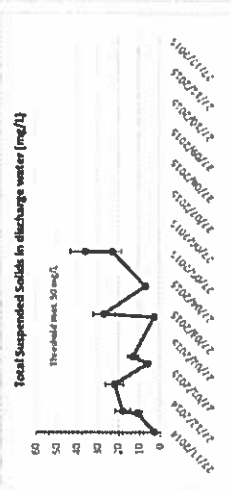
- Total suspended solids data varied significantly and from <3 mg/L (both upstream and downstream) to a maximum of 42 mg/L (upstream of the site);
- All BOD concentrations are less than 3 mg/L;
- Laboratory measured pH varies between a minimum of 6.9 pH units (recorded at both the upstream and downstream locations) and a maximum of 7.93 pH units (recorded at the downstream location);
- Dissolved mercury, cadmium, chromium and lead were always recorded to be below detection;
- Oil or grease has not been visible at the sample locations;
- The maximum dissolved iron concentration has been determined at 0.6379 mg/L at the downstream location; and
- The maximum total hardness has been recorded as 41.6 mg/L at the downstream location.

Appendix A
Presentation of Water Quality Results

DCS2 - Discharge Point

Parameter	Discharge Consent Threshold	Detection limit (Typical)	27/11/2015	16/12/2015	16/12/2015	14/01/2015	04/02/2015	11/02/2015	04/03/2015	11/03/2015	18/03/2015	25/03/2015	16/03/2015	21/04/2015	26/05/2015	26/05/2015
Total Suspended Solids	50	3	3	11	18	22	6	<3	13	11	8	3	27	31	10	23
Biochemical Oxygen Demand	10	1	<1	<1	1.54 ¹	1.76 ¹	1.61 ¹	1.03 ¹	<1	<1	<1	<1	1.73 ¹	<1	<1	1.49 ¹
pH	>8 & <9	-	7.38	7.47	7.08	7.16	7.34 (7.00)	6.92	7.5 (7.48)	7.68	7.8	7.7	7.83 (8.54)	7.8	7.9	8.29
Total Inc ²	33.8	18 ³	<18	<18	30	30	<18	<18	<18	<18	31.47	10.21	<18	30.07	<18	<18
Dissolved mercury ⁴	1.7	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1
Dissolved cadmium ⁴	0.7	0.6 ⁵	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Dissolved iron ⁴	3.9	0.23	<0.23	<0.23	<0.23	<0.23	<0.23	0.34	<0.23	<0.23	0.04908	0.03045	<0.23	0.0087	0.18	<0.19
Dissolved copper ⁴	16.2	9 ⁶	12	10	<9	<9	<9	<9	<9	<9	9.065	7.101	10	7.202	4.765	9.39
Dissolved chromium ³	8.1	2	<2	<2	7	7	2	<2	<2	<2	<0.68	<0.68	<2	<0.68	<2	2.01
Chromium VI	N/A	5	<5	<5	9	9	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium III	N/A	30	<30	<30	14	10	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Dissolved nickel ⁴	20	3	<3	<3	6	6	14	10	<3	11	12.01	6.544	5	0.833	5.27	5.09
Dissolved arsenic ¹	50	1	<1	<1	4.1	4.1	3	4.8	1.1	4.3	6.23	2.971	7.9	1.979	2.5	2.214
Dissolved lead ¹	7.1	6 ⁷	<6	<6	<6	<6	<6	<6	<6	<6	<0.173	<0.173	<6	<0.173	<6	<0.02
Total Hardness as CaCO3	N/A	3.2	123	137	132	135	137	24.1	150	146	139	2.16	106	114	147	140
Visible oil or grease	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
 pH values presented in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total Hardness & Dissolved Iron concentrations are presented in mg/L. All other parameters are in µg/L.
 L¹ Discharge Consent Threshold from The Water Framework Directive (Priority Substances and Classification) Regulations (Northern Ireland) 2011.
¹ Annual mean value presented for 'Good Standard for rivers and freshwater lakes'
² Annual mean environmental standard for chromium III (4.7µg/l) plus annual mean environmental standard for chromium VI (3.4µg/l) presented for 'Good Standard for rivers and freshwater lakes'
³ Annual mean environmental standard (AA-EOS) value presented for priority substances and its compounds for all rivers and lakes
⁴ Department Specific
⁵ Detection limit greater than 50% of Discharge Consent Threshold concentration
⁶ BOD over diluted, therefore result indicative only
⁷ Exceedance of threshold
 Duplicate sample



DCS1 - Curraghinalt Burn upstream

Parameter Detection limit 27/11/2014 16/12/2014 18/12/2014 14/03/2015 04/02/2015 11/02/2015 Duplicate 26/03/2015 23/04/2015 21/05/2015 28/05/2015

Parameter	Detection limit	27/11/2014	16/12/2014	18/12/2014	14/03/2015	04/02/2015	11/02/2015	Duplicate	26/03/2015	23/04/2015	21/05/2015	28/05/2015
Total Suspended Solids	3	<3	<3	<3	9	<3	<3	<2	18	<3	3	5
Biochemical Oxygen Demand	1	<1	<1	<1	1.87 ^a	1.39 ^a	<1	<2	1.23 ^a	<1	1.29 ^a	<1
Total zinc	18	6.75	7	6.9	7.23 (6.73)	6.8 (7.33)	8.2	6.81 (7.05)	6.99	7.19	7.7	7.7
Dissolved mercury	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	5.394	<18	<0.1	<0.1	7.49
Dissolved cadmium	0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.09	<0.6	<0.6	<0.6	<0.1
Dissolved iron	0.23	2.07	0.52	0.67	0.39	0.36	0.6533	<0.23	1.34	1.34	1.47	1.47
Dissolved copper	9	<9	<9	<9	<9	<9	7.207	<9	<9	<9	<9	2.56
Dissolved chromium	2	<2	<2	<2	<2	<2	<0.68	<2	<2	<2	<2	0.956
Chromium VI	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30
Chromium III	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Dissolved nickel	3	<3	<3	<3	<3	<3	0.702	<3	<3	<3	<3	0.913
Dissolved arsenic	1	2.4	<1	<1	1.3	<1	1.197	2	3.2	2.2	2.2	3.69
Dissolved lead	6	<6	<6	<6	<6	<6	0.284	<6	<6	<6	<6	0.315
Total hardness as CaCO3	3.2	21.7	16.2	21.1	30.1	24.2	19.7	19	13.4	33.1	17.6	29.4
Visible oil or grease	N/A	-	-	-	-	-	-	-	-	-	-	-

Notes: pH values presented in pH units. Values in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total hardness & Dissolved iron concentrations are presented in mg/L, all other parameters are in µg/L.
^a BOD over diluted, therefore result indicative only

DCS3 - Curraghinalt Burn downstream

Parameter Detection limit 27/11/2014 16/12/2014 18/12/2014 14/03/2015 04/02/2015 11/02/2015 Duplicate 26/03/2015 23/04/2015 21/05/2015 28/05/2015

Parameter	Detection limit	27/11/2014	16/12/2014	18/12/2014	14/03/2015	04/02/2015	11/02/2015	Duplicate	26/03/2015	23/04/2015	21/05/2015	28/05/2015
Total Suspended Solids	3	3	8	4	5	3	5	28	72	<3	18	18
Biochemical Oxygen Demand	1	1.08 ^a	<1	<1	1.65 ^a	1.91 ^a	<1	1.31 ^a	<1	1.25 ^a	1.22 ^a	1.22 ^a
pH	-	7.19	7.46	6.95	7.44	7.16 (6.93)	7.45 (7.2)	6.91 (7.31)	7.82	7.88	7.76	7.76
Total zinc	18	<18	<18	<18	20	<18	<18	<18	<18	<18	11.2	11.2
Dissolved mercury	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved cadmium	0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.1
Dissolved iron	0.23	1.78	0.54	0.65	0.38	0.25	0.24	0.8	0.8	1.13	1.03	1.03
Dissolved copper	9	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	5.58
Dissolved chromium	2	<2	<2	<2	6	<2	<2	<2	<2	<2	<2	1.8
Chromium VI	5	<5	<5	<5	8	<5	<5	<5	<5	<5	<5	<30
Chromium III	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Dissolved nickel	3	<3	<3	<3	<3	<3	4	<3	<3	<3	<3	2.12
Dissolved arsenic	1	2.1	<1	<1	<1	<1	2	2.7	5.3	8.3	7.7	7.7
Dissolved lead	6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0.187
Total hardness as CaCO3	3.2	35.5	27.5	21	34.5	41.4	49.4	13.7	71.4	36.6	65.1	65.1
Visible oil or grease	N/A	-	-	-	-	-	-	-	-	-	-	-

Notes: pH values presented in pH units. Values in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total hardness & Dissolved iron concentrations are presented in mg/L, all other parameters are in µg/L.
^a BOD over diluted, therefore result indicative only

DCS4 - Owenkillew River upstream

Parameter	Detection limit	27/11/2014		16/12/2014		18/12/2014		14/01/2015		04/02/2015		11/02/2015		26/03/2015		23/04/2015		21/05/2015	
		Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015
Total Suspended Solids	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<2	6
Biochemical Oxygen Demand	1	<1	<1	6.84	7.07	6.68	6.77	1.47 ^a	1.29 ^a	6.7 (5.92)	7.06 (6.15)	6.9 (8.54)	2.57 ^a	8	7.7	7.93	7.2	<2	1.95 ^a
pH	-	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	9.716	<18	<18	<18	<18	<18
Total zinc	18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.03	<0.1
Dissolved mercury	0.1	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.09	<0.6	<0.6	<0.6	<0.01	<0.6
Dissolved cadmium	0.6	1.05	0.5	0.45	0.43	0.4	0.36	0.25	0.2771	0.56	0.2771	0.56	0.2771	0.56	0.2771	0.56	0.806	0.53	0.53
Dissolved iron	0.23	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	20.09	<9	<9	0.445	<9	<9
Dissolved copper	9	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.68	<2	<2	<0.58	<2	<2
Dissolved chromium	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chromium VI	5	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Chromium III	30	<3	<3	57	<3	<3	<3	<3	<3	<3	<3	<3	<3	4	6.45	<3	0.569	<3	<3
Dissolved nickel	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	4.8	5.032	1.5	1.399	1.4	1.4
Dissolved arsenic	1	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	0.543	<6	<6	<0.02	<6	<6
Dissolved lead	6	28.8	24.3	19.1	25.1	31	27.9	17.6	17.6	31	27.9	17.6	31	21	37.5	38	37.5	23.7	23.7
Total hardness as CaCO3	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Visible oil or grease	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
 pH values presented in pH units. Values in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total hardness & Dissolved iron concentrations are presented in mg/L, all other parameters are in µg/L.
^a BOD over diluted, therefore result indicative only

DCS5 - Owenkillew River downstream

Parameter	Detection limit	27/11/2014		16/12/2014		18/12/2014		14/01/2015		04/02/2015		11/02/2015		23/03/2015		26/03/2015		23/04/2015		21/05/2015	
		Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015	Duplicate	21/05/2015
Total Suspended Solids	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	5	35	<3	<3	<3	<3	2	
Biochemical Oxygen Demand	1	<1	<1	7.04	7.15	6.61	6.76	1.61 ^a	1.37 ^a	6.66 (5.54)	7.03 (7.45)	7.5	2.59 ^a	6.9 (6.77)	7.71	6.94	7.5	1.17 ^a	<2	<2	
pH	-	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	<18	20	<18	<18	<18	<18	<18	4.396	
Total zinc	18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	
Dissolved mercury	0.1	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.09	<0.6	<0.6	<0.6	<0.6	<0.6	<0.09	
Dissolved cadmium	0.6	0.98	0.5	0.42	0.43	0.37	0.39	0.6379	0.25	0.58	0.6379	0.25	0.58	0.56	0.5218	0.56	0.56	0.5218	0.5218	0.5218	
Dissolved iron	0.23	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	<9	0.322	<9	<9	<9	<9	<9	7.819	
Dissolved copper	9	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.68	<2	<2	<2	<2	<2	<0.68	
Dissolved chromium	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Chromium VI	5	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	
Chromium III	30	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	0.649	<3	<3	<3	<3	<3	0.997	
Dissolved nickel	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.5	1.5	1.3	1.3	1.3	1.3	1.183	
Dissolved arsenic	1	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	
Dissolved lead	6	29.3	23.8	18.2	25.3	31	27.1	17.2	17.2	31	27.1	17.2	31	41.6	41.6	23	23	23	23	25	
Total hardness as CaCO3	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Visible oil or grease	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Notes:
 pH values presented in pH units. Values in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total hardness & Dissolved iron concentrations are presented in mg/L, all other parameters are in µg/L.
^a BOD over diluted, therefore result indicative only

DC56 - Field Blanks

Parameter

Detection limit 27/11/2014 16/12/2014 18/12/2014 14/01/2015 04/02/2015 11/02/2015 26/03/2015 11/02/2015 23/04/2015 21/05/2015

Parameter	27/11/2014	16/12/2014	18/12/2014	14/01/2015	04/02/2015	11/02/2015	26/03/2015	11/02/2015	23/04/2015	21/05/2015
Total Suspended Solids	3	<3	<3	<3	<3	<2	<3	<2	<3	<3
Biochemical Oxygen Demand	1	<1	<1	<1	<1	<2	<1	<2	<1	<1
pH	-	6.15	6.4	5.59	6	5.22	6.89	8.1	5.75	6.15
Total zinc	18	<18	<18	<18	<18	<18	<18	<3.73	<18	<18
Dissolved mercury	0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Dissolved cadmium	0.6	<0.6	<0.6	<0.6	<0.6	<0.09	<0.6	<0.09	<0.6	<0.6
Dissolved iron	0.23	<0.23	<0.23	<0.23	<0.23	0.003	<0.23	<0.003	<0.23	<0.23
Dissolved copper	9	<9	<9	<9	<9	1.454	<9	<9	<9	<9
Dissolved chromium	2	<2	<2	<2	<2	<0.68	<2	<2	<2	<2
Chromium VI	5	<5	<5	11	<5	<5	<5	<5	<5	<5
Chromium III	30	<30	<30	<30	<30	<30	<30	<30	<30	<30
Dissolved nickel	3	<3	<3	<3	<3	<0.374	<3	<3	<3	<3
Dissolved arsenic	1	<1	<1	<1	<1	<0.352	<1	<1	<1	<1
Dissolved lead	6	<6	<6	<6	<6	<0.173	<6	<6	<6	<6
Total hardness as CaCO3	3.2	<3.2	<3.2	<3.2	<3.2	<5.2	<3.2	<5.2	<3.2	<3.2
Visible oil or grease	N/A	-	-	-	-	-	-	-	-	-

Notes:

pH values presented in pH units. Values in brackets are field pH measurements. Total Suspended Solids, Biochemical Oxygen Demand, Total hardness & Dissolved iron concentrations are presented in mg/L, all other parameters are in µg/L

Appendix B
Laboratory Certificates

Monitoring and Testing Services

A copy of this certificate is available on [REDACTED]

Customer	[REDACTED] Dalradian Gold Ltd	Lab Report Ref. No.	[REDACTED]
	[REDACTED]	Date of Receipt	24/03/2015
		Sampled On	23/03/2015
		Date Testing Commenced	24/03/2015
		Received or Collected	Delivered by Customer
Customer PO		Condition on Receipt	Acceptable
Customer Ref	[REDACTED]	Date of Report	03/04/2015
Ref 2		Sample Type	Surface Water
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Dissolved)	177	ICPMS	2.971	ug/L	
BOD (Surface Water)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Dissolved)	177	ICPMS	<0.09	ug/L	
Chromium (Dissolved)	177	ICPMS	<0.68	ug/L	
Copper (Dissolved)	177	ICPMS	7.101	ug/L	
Hardness Total (Surface Water)	111	Colorimetry	136	mg/L CaCO3	UKAS
Iron (Dissolved)	177	ICPMS	30.45	ug/L	
Lead (Dissolved)	177	ICPMS	<0.173	ug/L	
Mercury (Dissolved)	178	ICPMS	<0.2	ug/L	
Nickel (Dissolved)	177	ICPMS	6.544	ug/L	
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Surface Water)	110	Electrometry	7.7	pH Units	UKAS
Solids (Total Suspended)	106	Filtration/ Drying @ 104C	3	mg/L	
Zinc (Surface Water)	177	ICPMS	10.21	ug/L	UKAS

Signed : [REDACTED]

Date : 03/04/2015

Acc. : Accredited Parameters by ISO 17025:2005
 PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)
 For bacterial analysis a result of 0 means none detected in volume examined
 All organic results are analysed as received and all results are corrected for dry weight at 104 C
 Results shall not be reproduced, except in full, without the approval of [REDACTED]
 Results contained in this report relate only to the samples tested (P) : Presumptive Results



** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)

Monitoring and Testing Services

A copy of this certificate is available on www.fitzsci.ie

Customer	[REDACTED]	Lab Report Ref. No.	[REDACTED]
	[REDACTED]	Date of Receipt	24/03/2015
	[REDACTED]	Sampled On	23/03/2015
	[REDACTED]	Date Testing Commenced	24/03/2015
	[REDACTED]	Received or Collected	Delivered by Customer
Customer PO		Condition on Receipt	Acceptable
Customer Ref	DCS5 - 23/03/15	Date of Report	03/04/2015
Ref 2		Sample Type	Surface Water
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Dissolved)	177	ICPMS	1.158	ug/L	
BOD (Surface Water)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Dissolved)	177	ICPMS	<0.09	ug/L	
Chromium (Dissolved)	177	ICPMS	<0.68	ug/L	
Copper (Dissolved)	177	ICPMS	0.322	ug/L	
Hardness Total (Surface Water)	111	Colorimetry	35	mg/L CaCO3	UKAS
Iron (Dissolved)	177	ICPMS	637.9	ug/L	
Lead (Dissolved)	177	ICPMS	<0.173	ug/L	
Mercury (Dissolved)	178	ICPMS	<0.2	ug/L	
Nickel (Dissolved)	177	ICPMS	0.649	ug/L	
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Surface Water)	110	Electrometry	7.5	pH Units	UKAS
Solids (Total Suspended)	106	Filtration/ Drying @ 104C	5	mg/L	
Zinc (Surface Water)	177	ICPMS	11.69	ug/L	UKAS

Signed : [REDACTED]

- Technical Supervisor

Date : 03/04/2015



Acc. : Accredited Parameters by ISO 17025:2005

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of [REDACTED]

Results contained in this report relate only to the samples tested

(P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)

[Redacted]

[Redacted]

Test Certificate

Analytical Services

Certificate: [Redacted]

Issue No: 1

Dalradian Gold Ltd

[Redacted]

[Redacted]

[Redacted]

Job No	ORD-05645
Sample Receipt Date	26/03/2015
Date Analysis Started	27/03/2015
Completion Date	10/04/2015
Turnaround Time	10
No of Samples	5
Purchase Order Number	[Redacted]
Quote Number	ECA-01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.

[Redacted]

[Redacted]

Lab Technician

Analytical Services

Test Certificate

Certificate: [REDACTED]

Issue No: [REDACTED]

1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
[REDACTED]	DCS1	26/03/2015	N/A	Arsenic, Ultra-low Total as As	2	ug/l	Y	S	
			SAM018	BOD	1.23	mg/l	Y	[REDACTED]	\$
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.81	Units	Y	[REDACTED]	
			SAM001	Suspended Solids	18	mg/l	Y	[REDACTED]	
			N/A	Total Hardness as CaCO3	13.4	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

[REDACTED]	D18853	DCS2	26/03/2015	N/A	Arsenic, Ultra-low Total as As	7.9	ug/l	Y	S	
				SAM016	BOD	1.23	mg/l	Y	[REDACTED]	\$
				N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
				N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
				N/A	Chromium III	<30	ug/l	N	S	
				N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
				N/A	Copper, Filtered as Cu	10	ug/l	Y	S	
				N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
				N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
				N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
				N/A	Nickel, Filtered as Ni	5	ug/l	Y	S	
				SAM004	pH	7.63	Units	Y	[REDACTED]	
				SAM001	Suspended Solids	27	mg/l	Y	[REDACTED]	
				N/A	Total Hardness as CaCO3	106	mg/l	Y	S	
				N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
				N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

[REDACTED]	D18854	DCS3	26/03/2015	N/A	Arsenic, Ultra-low Total as As	2.7	ug/l	Y	S	
				SAM016	BOD	1.31	mg/l	Y	[REDACTED]	\$
				N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
				N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
				N/A	Chromium III	<30	ug/l	N	S	
				N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
				N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
				N/A	Iron, Filtered as Fe	0.24	mg/l	Y	S	
				N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
				N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
				N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
				SAM004	pH	6.91	Units	Y	[REDACTED]	
				SAM001	Suspended Solids	28	mg/l	Y	[REDACTED]	
				N/A	Total Hardness as CaCO3	13.7	mg/l	Y	S	
				N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
				N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

[REDACTED]	D18855	DCS4	26/03/2015	N/A	Arsenic, Ultra-low Total as As	4.6	ug/l	Y	S	
				SAM016	BOD	2.57	mg/l	Y	[REDACTED]	\$
				N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
				N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
				N/A	Chromium III	<30	ug/l	N	S	
				N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	

N/A	Copper, Filtered as Cu	<9	ug/l	Y	S
N/A	Iron, Filtered as Fe	0.25	mg/l	Y	S
N/A	Lead, Filtered as Pb	<6	ug/l	Y	S
N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S
N/A	Nickel, Filtered as Ni	4	ug/l	Y	S
SAM004	pH	6.90	Units	Y	█
SAM001	Suspended Solids	42	mg/l	Y	█
N/A	Total Hardness as CaCO3	17.6	mg/l	Y	S
N/A	TPH / Oil & Greases	<1	mg/l	Y	S
N/A	Zinc, Total as Zn	<16	ug/l	Y	S

Sample Matrix: Surface Water Analyst Comment:

018856	DCS5	28/03/2015	N/A	Arsenic, Ultra-low Total as As	5	ug/l	Y	S	
			SAM016	BOD	2.59	mg/l	Y	█	\$
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	0.25	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.90	Units	Y	█	
			SAM001	Suspended Solids	35	mg/l	Y	█	
			N/A	Total Hardness as CaCO3	17.2	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<20	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

018857	DCS6	26/03/2015	N/A	Arsenic, Ultra-low Total as As	<1.0	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	█	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	5.75	Units	Y	█	
			SAM001	Suspended Solids	<3	mg/l	Y	█	
			N/A	Total Hardness as CaCO3	<3.20	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	‡
Container with Headspace provided	g	insufficient sample volume	Ⓒ
BOD Overdiluted, therefore result indicative only	\$	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, COD could not be	§	Holding time exceeded due to sampled on date	@
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	&

Monitoring and Testing Services

Tel:
Fax:
Web:
email

A copy of this certificate is available on [REDACTED]

Customer	[REDACTED] Dalradian Gold Ltd	Lab Report Ref. No.	[REDACTED]
	[REDACTED]	Date of Receipt	26/03/2015
		Sampled On	26/03/2015
		Date Testing Commenced	26/03/2015
		Received or Collected	Delivered by Customer
Customer PO		Condition on Receipt	Acceptable
Customer Ref	[REDACTED]	Date of Report	07/04/2015
Ref 2		Sample Type	Trade Effluent
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Dissolved)	177	ICPMS	1.929	ug/L	
BOD (Industrial Eff.)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Dissolved)	177	ICPMS	<0.09	ug/L	
Chromium (Dissolved)	177	ICPMS	<0.68	ug/L	
Copper (Dissolved)	177	ICPMS	2.202	ug/L	
Hardness Total (Industrial Eff.)	111	Colorimetry	114	mg/L CaCO3	UKAS
Iron (Dissolved)	177	ICPMS	808.7	ug/L	
Lead (Dissolved)	177	ICPMS	<0.173	ug/L	
Mercury (Dissolved)	178	ICPMS	<0.2	ug/L	
Nickel (Dissolved)	177	ICPMS	0.833	ug/L	
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Industrial Eff)	110	Electrometry	7.8	pH Units	UKAS
Solids (Total Suspended) Industrial E	106	Gravimetry	31	mg/L	UKAS
Zinc (Industrial Eff.)	177	ICPMS	30.07	ug/L	UKAS

Signed : [REDACTED]

Date : 07/04/2015



Acc. : Accredited Parameters by ISO 17025:2005

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of [REDACTED]

Results contained in this report relate only to the samples tested

(P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5687-3:2012)

Tel:
Fax:
Web:
email

A copy of this certificate is available on

Customer		Lab Report Ref. No.	
		Date of Receipt	26/03/2016
		Sampled On	26/03/2016
		Date Testing Commenced	26/03/2016
		Received or Collected	Delivered by Customer
Customer PO		Condition on Receipt	Acceptable
Customer Ref		Date of Report	07/04/2016
Ref 2		Sample Type	Surface Water
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Dissolved)	177	ICPMS	5.032	ug/L	
BOD (Industrial Eff.)	113	Electrometry	8	mg/L	UKAS
Cadmium (Dissolved)	177	ICPMS	<0.09	ug/L	
Chromium (Dissolved)	177	ICPMS	<0.68	ug/L	
Copper (Dissolved)	177	ICPMS	20.09	ug/L	
Hardness Total (Industrial Eff.)	111	Colorimetry	21	mg/L CaCO3	UKAS
Iron (Dissolved)	177	ICPMS	277.1	ug/L	
Lead (Dissolved)	177	ICPMS	0.543	ug/L	
Mercury (Dissolved)	178	ICPMS	<0.2	ug/L	
Nickel (Dissolved)	177	ICPMS	6.45	ug/L	
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Industrial Eff)	110	Electrometry	7.7	pH Units	UKAS
Solids (Total Suspended) Industrial E	106	Gravimetry	43	mg/L	UKAS
Zinc (Industrial Eff.)	177	ICPMS	9.716	ug/L	UKAS

Signed :

Date : 07/04/2015

Acc. : Accredited Parameters by ISO 17025:2005

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

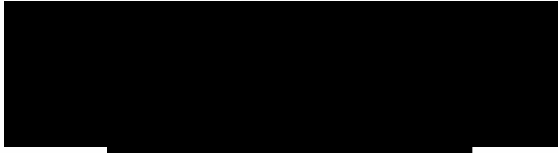
Results shall not be reproduced, except in full, without the approval of

Results contained in this report relate only to the samples tested

(P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)

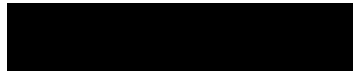




Test Certificate

Analytical Services

Certificate: [Redacted]
Issue No: 1

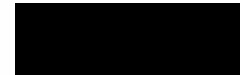


[Redacted]	Job No	ORD-05850
	Sample Receipt Date	23/04/2015
	Date Analysis Started	23/04/2015
	Completion Date	08/05/2015
	Turnaround Time	10
	No of Samples	3
	Purchase Order Number	1737
[Redacted]	Quote Number	EGA TM 01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] Analytical Laboratory [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Test Certificate

Analytical Services

Certificate: [REDACTED]

Issue No: [REDACTED]

1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
[REDACTED]	DCS1	23/04/2015	N/A	Arsenic, Ultra-low Total as As	3.2	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	[REDACTED]	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	1.34	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.99	Units	Y	[REDACTED]	
			SAM001	Suspended Solids	<3	mg/l	Y	[REDACTED]	
			N/A	Total Hardness as CaCO3	33.1	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

[REDACTED]	019526	DCS2	23/04/2015	N/A	Arsenic, Ultra-low Total as As	2.5	ug/l	Y	S	
				SAM016	BOD	1.04	mg/l	Y	[REDACTED]	S
				N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
				N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
				N/A	Chromium III	<30	ug/l	N	S	
				N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
				N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
				N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
				N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
				N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
				N/A	Nickel, Filtered as Ni	7	ug/l	Y	S	
				SAM004	pH	7.83	Units	Y	[REDACTED]	
				SAM001	Suspended Solids	7	mg/l	Y	[REDACTED]	
				N/A	Total Hardness as CaCO3	147	mg/l	Y	S	
				N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
				N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

[REDACTED]	019527	DCS4	23/04/2015	N/A	Arsenic, Ultra-low Total as As	1.5	ug/l	Y	S	
				SAM016	BOD	<1	mg/l	Y	[REDACTED]	
				N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
				N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
				N/A	Chromium III	<30	ug/l	N	S	
				N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
				N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
				N/A	Iron, Filtered as Fe	0.56	mg/l	Y	S	
				N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
				N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
				N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
				SAM004	pH	7.93	Units	Y	[REDACTED]	
				SAM001	Suspended Solids	<3	mg/l	Y	[REDACTED]	
				N/A	Total Hardness as CaCO3	37.5	mg/l	Y	S	
				N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
				N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment			
Container with Headspace provided	G	Insufficient sample volume	C
	C	Incorrect Container	#

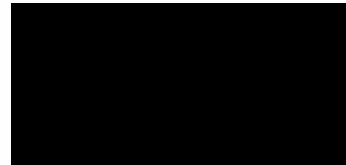
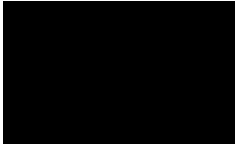
BOD Overdiluted, therefore result indicative only	§	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, CDD could not be <small>detected</small>	§	Holding time exceeded due to sampled on date	Ⓜ
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	&



Test Certificate

Analytical Services

Certificate: [Redacted]
Issue No: 1



Job No	ORD-05852
Sample Receipt Date	23/04/2015
Date Analysis Started	23/04/2015
Completion Date	08/05/2015
Turnaround Time	10
No of Samples	3
Purchase Order Number	1737
Quote Number	ECA-01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] Analytical Laboratory [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
019528	DCS3	23/04/2015	N/A	Arsenic, Ultra-low Total as As	5.3	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	[Redacted]	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	0.8	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	7.82	Units	Y	[Redacted]	
			SAM001	Suspended Solids	72	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	71.4	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

019529	DCS5	23/04/2015	N/A	Arsenic, Ultra-low Total as As	1.5	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	[Redacted]	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	0.58	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	7.71	Units	Y	[Redacted]	
			SAM001	Suspended Solids	< 3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	41.6	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

019530	DCS6	23/04/2015	N/A	Arsenic, Ultra-low Total as As	<1.0	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	[Redacted]	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.15	Units	Y	[Redacted]	
			SAM001	Suspended Solids	< 3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	<3.20	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<16	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	‡
Container with Headspaces provided	g	Insufficient sample volume	C

BOD Overdiluted, therefore result indicative only	§	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, CDO could not be performed	§	Holding time exceeded due to sampled on date	Ⓜ
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	Ⓜ

Monitoring and Testing Services

A copy of this certificate is available on [redacted]

Customer	[redacted]	Lab Report Ref. No.	[redacted]
Customer PO		Date of Receipt	23/04/2015
Customer Ref	DCS 2	Sampled On	23/04/2015
Ref 2		Date Testing Commenced	23/04/2015
Ref 3		Received or Collected	Delivered by Customer
		Condition on Receipt	Acceptable
		Date of Report	15/05/2015
		Sample Type	Trade Effluent

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Industrial Eff.)	177	ICPMS	2.214	ug/L	UKAS
BOD (Industrial Eff.)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Industrial Eff.)	177	ICPMS	<0.05	ug/L	UKAS
Chromium (Industrial Eff.)	177	ICPMS	<0.28	ug/L	UKAS
Copper (Industrial Eff.)	177	ICPMS	4.765	ug/L	UKAS
Hardness Total (Industrial Eff.)	111	Colorimetry	159	mg/L CaCO3	UKAS
Iron mg/L	177	ICPMS	0.18	mg/L	
Lead (Industrial Eff.)	177	ICPMS	<0.12	ug/L	UKAS
Mercury (Industrial Eff.)	178	ICPMS	<0.04	ug/L	UKAS
Nickel (Industrial Eff.)	177	ICPMS	5.578	ug/L	UKAS
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Industrial Eff)	110	Electrometry	7.9	pH Units	UKAS
Solids (Total Suspended) Industrial E	106	Gravimetry	10	mg/L	UKAS
TPH (>C10-40)	188	GC-FID	<1	ug/L	
Zinc (Industrial Eff.)	177	ICPMS	<3.73	ug/L	UKAS

Date : 15/05/2015



Acc. : Accredited Parameters by ISO 17025:2005

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of [redacted]

Results contained in this report relate only to the samples tested

(P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)

Monitoring and Testing Services

Tel:
Fax:
Web:
email

A copy of this certificate is available on

Customer		Lab Report Ref. No.	
Customer PO		Date of Receipt	23/04/2015
Customer Ref	DCS4	Sampled On	23/04/2015
Ref 2		Date Testing Commenced	23/04/2015
Ref 3		Received or Collected	Delivered by Customer
		Condition on Receipt	Acceptable
		Date of Report	15/05/2015
		Sample Type	Surface Water

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Surface Water)	177	ICPMS	1.399	ug/L	UKAS
BOD (Surface Water)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Surface Water)	177	ICPMS	<0.01	ug/L	UKAS
Chromium (Surface Water)	177	ICPMS	<0.58	ug/L	UKAS
Copper (Surface Water)	177	ICPMS	0.445	ug/L	UKAS
Hardness Total (Surface Water)	111	Colorimetry	38	mg/L CaCO3	UKAS
Iron mg/L	177	ICPMS	0.806	mg/L	
Lead (Surface Water)	177	ICPMS	<0.02	ug/L	UKAS
Mercury (Surface water)	178	ICPMS	<0.03	ug/L	UKAS
Nickel (Surface Water)	177	ICPMS	0.569	ug/L	UKAS
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Surface Water)	110	Electrometry	7.2	pH Units	UKAS
Solids (Total Suspended)	106	Filtration/ Drying @ 104C	<2	mg/L	
TPH (>C10-40)	188	GC-FID	<1	ug/L	
Zinc (Surface Water)	177	ICPMS	<0.63	ug/L	UKAS

Signed :

Date : 15/05/2015

Acc. : Accredited Parameters by ISO 17025:2005

PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)

For bacterial analysis a result of 0 means none detected in volume examined

All organic results are analysed as received and all results are corrected for dry weight at 104 C

Results shall not be reproduced, except in full, without the approval of

Results contained in this report relate only to the samples tested

(P) : Presumptive Results

** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)

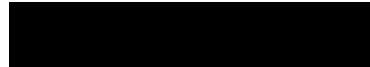
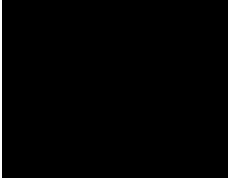




Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1

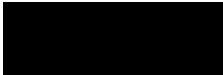


Job No	ORD-06082
Sample Receipt Date	21/05/2015
Date Analysis Started	21/05/2015
Completion Date	04/06/2015
Turnaround Time	10
No of Samples	2
Purchase Order Number	PO1830
Quote Number	ECA-01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] Analytical Laboratory, [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Companies Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
020292	DCS1	21/05/2015	N/A	Arsenic, Ultra-low Total as As	2.2	ug/l	Y	S	
			SAM016	BOD	1.29	mg/l	Y	[Redacted]	\$
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	1.34	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	7.19	Units	Y	[Redacted]	
			SAM001	Suspended Solids	3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	17.6	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

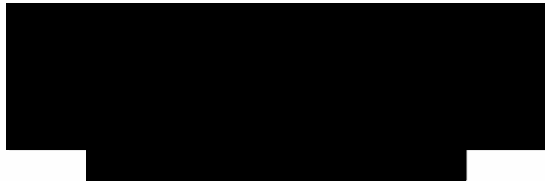
Sample Matrix: Surface Water Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

Sample Matrix: Surface Water Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

020294	DCS6	21/05/2015	N/A	Arsenic, Ultra-low Total as As	<1.0	ug/l	Y	S	
			SAM016	BOD	<1	mg/l	Y	[Redacted]	
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	<0.23	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.41	Units	Y	[Redacted]	
			SAM001	Suspended Solids	<3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	<3.20	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

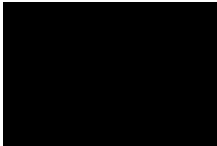
Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	‡
Container with Headspace provided	g	Insufficient sample volume	C
BOD Overdiluted, therefore result indicative only	\$	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, COD could not be determined	§	Holding time exceeded due to sampled on date	Ⓢ
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	Ⓡ



Test Certificate

Analytical Services

Certificate:
Issue No: 1



	Job No	ORD-06084
	Sample Receipt Date	21/05/2015
	Date Analysis Started	21/05/2015
	Completion Date	04/06/2015
	Turnaround Time	10
	No of Samples	2
	Purchase Order Number	PO1830
	Quote Number	ECA-01585

Dear

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within Analytical Laboratory unless otherwise specified. Any analysis that was subcontracted to a Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
20297	DCS3	21/05/2015	N/A	Arsenic, Ultra-low Total as As	8.3	ug/l	Y	S	
			SAM016	BOD	1.25	mg/l	Y	[Redacted]	\$
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	1.13	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	7.88	Units	Y	[Redacted]	
			SAM001	Suspended Solids	< 3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	38.6	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water

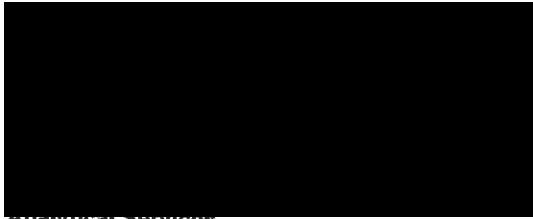
Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

20298	DCS4	21/05/2015	N/A	Arsenic, Ultra-low Total as As	1.4	ug/l	Y	S	
			SAM016	BOD	1.95	mg/l	Y	[Redacted]	\$
			N/A	Cadmium, Filtered as Cd	<0.6	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	0.53	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<6	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	7.23	Units	Y	[Redacted]	
			SAM001	Suspended Solids	6	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	23.7	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	±
Container with Headspace provided	g	Insufficient sample volume	C
BOD Overdiluted, therefore result indicative only	\$	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, COD could not be determined	\$	Holding time exceeded due to sampled on date	⊕
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	&

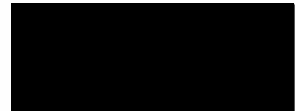


Analytical Services

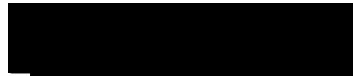
Test Certificate

Certificate: [Redacted]

Issue No: 1



Tel: [Redacted]
Fax: [Redacted]



Job No	ORD-06083
Sample Receipt Date	21/05/2015
Date Analysis Started	21/05/2015
Completion Date	04/06/2015
Turnaround Time	10
No of Samples	1
Purchase Order Number	PO1830
Quote Number	ECA-01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] Analytical Laboratory [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Analytical Services

Test Certificate

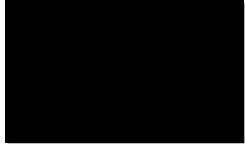
Certificate: [Redacted]
Issue No: 1

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
020298	DCS5	21/05/2015	N/A	Arsenic, Ultra-low Total as As	1.3	ug/l	Y	S	
			SAM016	BOD	1.17	mg/l	Y	[Redacted]	\$
			N/A	Cadmium, Filtered as Cd	<0.8	ug/l	Y	S	
			N/A	Chromium - Hexavalent	<5	ug/l	Y	S	
			N/A	Chromium III	<30	ug/l	N	S	
			N/A	Chromium, Filtered as Cr	<2	ug/l	Y	S	
			N/A	Copper, Filtered as Cu	<9	ug/l	Y	S	
			N/A	Iron, Filtered as Fe	0.56	mg/l	Y	S	
			N/A	Lead, Filtered as Pb	<8	ug/l	Y	S	
			N/A	Mercury, Filtered as Hg	<0.1	ug/l	Y	S	
			N/A	Nickel, Filtered as Ni	<3	ug/l	Y	S	
			SAM004	pH	6.84	Units	Y	[Redacted]	
			SAM001	Suspended Solids	<3	mg/l	Y	[Redacted]	
			N/A	Total Hardness as CaCO3	23	mg/l	Y	S	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc, Total as Zn	<18	ug/l	Y	S	

Sample Matrix: Surface Water

Analyst Comment: This sample has been analysed for Chromium - Hexavalent, Arsenic, Ultra-low Total as As outside recommended stability times. It is therefore possible that the results provided may be compromised.

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	±
Container with Headspace provided	g	Insufficient sample volume	C
BOD Overdiluted, therefore result indicative only	\$	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, CDD could not be determined	\$	Holding time exceeded due to sampled on date	Ⓢ
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	&



Tel: [Redacted]
 Fax: [Redacted]
 Web: [Redacted]
 email: [Redacted]

A copy of this certificate is available on [Redacted]

Customer	[Redacted]	Lab Report Ref. No.	[Redacted]
		Date of Receipt	21/05/2016
		Sampled On	21/05/2015
		Date Testing Commenced	21/05/2015
		Received or Collected	Delivered by Customer
Customer PO	PO1837	Condition on Receipt	Acceptable
Customer Ref	DCS5	Date of Report	02/06/2015
Ref 2		Sample Type	Surface Water
Ref 3			

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Arsenic (Dissolved)	177	ICPMS	1.183	ug/L	
BOD (Surface Water)	113	Electrometry	<2	mg/L	UKAS
Cadmium (Dissolved)	177	ICPMS	<0.09	ug/L	
Chromium (Dissolved)	177	ICPMS	<0.68	ug/L	
Copper (Dissolved)	177	ICPMS	2.819	ug/L	
Hardness Total (Surface Water)	111	Colorimetry	25	mg/L CaCO3	UKAS
Iron (Dissolved)	177	ICPMS	521.8	ug/L	
Lead (Dissolved)	177	ICPMS	<0.173	ug/L	
Mercury (Dissolved)	178	ICPMS	<0.2	ug/L	
Nickel (Dissolved)	177	ICPMS	0.997	ug/L	
Oils, Fats & Grease	101	Solvent Extraction/ Gravimetry	<1	mg/L	
pH (Surface Water)	110	Electrometry	7.5	pH Units	UKAS
Solids (Total Suspended)	106	Filtration/ Drying @ 104C	2	mg/L	
Zinc (Surface Water)	177	ICPMS	4.396	ug/L	UKAS

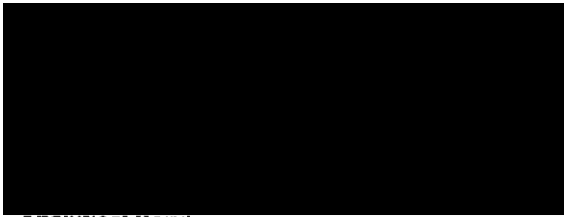
Signed : [Redacted Signature]

Date : 02/06/2015



Acc. : Accredited Parameters by ISO 17025:2005
 PVL - Parametric Value Limit as per EU (Drinking water) Regulations (SI 122 2014)
 For bacterial analysis a result of 0 means none detected in volume examined
 All organic results are analysed as received and all results are corrected for dry weight at 104 C
 Results shall not be reproduced, except in full, without the approval of [Redacted]
 Results contained in this report relate only to the samples tested (P) : Presumptive Results

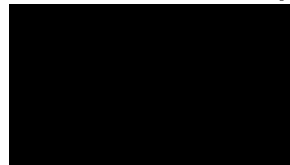
** : The test result for this parameter may be invalid as it has exceeded the recommended holding time (BS EN ISO 5667-3:2012)



Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1



Job No	ORD:06136
Sample Receipt Date	28/05/2015
Date Analysis Started	28/05/2015
Completion Date	12/06/2015
Turnaround Time	10
No of Samples	2
Purchase Order Number	PO1856
Quote Number	EGA-01585

Dear [Redacted]

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within [Redacted] Analytical Laboratory [Redacted] unless otherwise specified. Any analysis that was subcontracted to a [Redacted] Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician



Analytical Services

Test Certificate

Certificate: [Redacted]
Issue No: 1

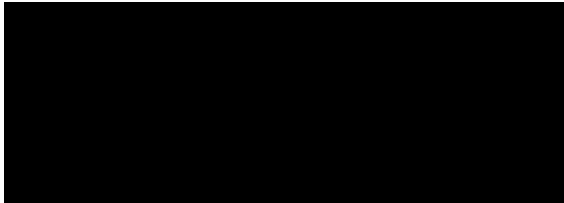
Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
[Redacted] 20488	DCS1	28/05/2015	N/A	Arsenic (tot.unfilt)	3.88	ug/l	Y	S	
			SAM018	BOD	<1	mg/l	Y	[Redacted]	
			N/A	Cadmium (diss.filt)	<0.1	ug/l	Y	S	
			N/A	Chromium (diss.filt)	0.956	ug/l	Y	S	
			N/A	Chromium, Hexavalent	<30	ug/l	Y	S	
			N/A	Chromium, Trivalent	<30	ug/l	N	S	
			N/A	Copper (diss.filt)	2.56	ug/l	Y	S	
			N/A	Hardness, Total as CaCO3 unfiltered	29.4	mg/l	Y	S	
			N/A	Iron (diss.filt)	1.47	mg/l	Y	S	
			N/A	Lead (diss.filt)	0.315	ug/l	Y	S	
			N/A	Mercury (diss.filt)	<0.01	ug/l	Y	S	
			N/A	Nickel (diss.filt)	0.913	ug/l	Y	S	
			SAM004	pH	7.70	Units	Y	[Redacted]	
			SAM001	Suspended Solids	5	mg/l	Y	[Redacted]	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc (tot.unfilt)	7.48	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

[Redacted] 020489	DCS3	28/05/2015	N/A	Arsenic (tot.unfilt)	7.77	ug/l	Y	S	
			SAM018	BOD	1.22	mg/l	Y	[Redacted]	\$
			N/A	Cadmium (diss.filt)	<0.1	ug/l	Y	S	
			N/A	Chromium (diss.filt)	1.8	ug/l	Y	S	
			N/A	Chromium, Hexavalent	<30	ug/l	Y	S	
			N/A	Chromium, Trivalent	<30	ug/l	N	S	
			N/A	Copper (diss.filt)	5.58	ug/l	Y	S	
			N/A	Hardness, Total as CaCO3 unfiltered	65.1	mg/l	Y	S	
			N/A	Iron (diss.filt)	1.03	mg/l	Y	S	
			N/A	Lead (diss.filt)	0.187	ug/l	Y	S	
			N/A	Mercury (diss.filt)	<0.01	ug/l	Y	S	
			N/A	Nickel (diss.filt)	2.12	ug/l	Y	S	
			SAM004	pH	7.76	Units	Y	[Redacted]	
			SAM001	Suspended Solids	18	mg/l	Y	[Redacted]	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc (tot.unfilt)	11.2	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

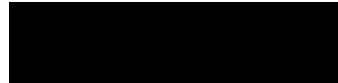
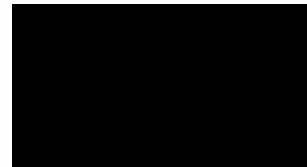
Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	±
Container with Headspace provided	⊗	Insufficient sample volume	⊘
BOD Overdiluted, therefore result indicative only	⊙	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, CDD could not be	⊙	Holding time exceeded due to sampled on date	Ⓢ
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	&



Analytical Services

Test Certificate

Certificate:
Issue No: 2

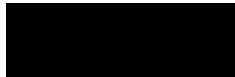


	Job No	ORD-06135
	Sample Receipt Date	28/05/2015
	Date Analysis Started	28/05/2015
	Completion Date	08/06/2015
	Turnaround Time	7
	No of Samples	2
	Purchase Order Number	PO1856
	Quote Number	ECA-01585

Dear

Analysis of your sample(s) is now complete and we have pleasure in enclosing the appropriate test report.

All analysis was completed within Analytical Laboratory unless otherwise specified. Any analysis that was subcontracted to a Approved Laboratory is indicated by 'S'. Please refer to the table at the end of your test certificate for explanations of sample deviations.



Lab Technician

Analytical Services

Test Certificate

Certificate: [REDACTED]

Issue No: [REDACTED]

2

Lab Ref	Sample Details	Sample Date	Method No.	Test	Result	Units	ACC	Lab	Sample Deviations
[REDACTED] 020466	DCS2a	28/05/2015	N/A	Arsenic (tot.unfit)	16	ug/l	Y	S	
			SAM018	BOD	1.71	mg/l	Y	[REDACTED]	\$
			N/A	Cadmium (diss.fit)	<0.1	ug/l	Y	S	
			N/A	Chromium Dissolved (W)	2.13	ug/l	Y	S	
			N/A	Chromium, Hexavalent	<30	ug/l	Y	S	
			N/A	Chromium, Trivalent	<30	ug/l	N	S	
			N/A	Copper (diss.fit)	9.39	ug/l	Y	S	
			N/A	Hardness, Total as CaCO3	140	mg/l	Y	S	
			N/A	Iron (diss.fit)	<0.018	mg/l	Y	S	
			N/A	Lead (diss.fit)	<0.02	ug/l	Y	S	
			N/A	Mercury (diss.fit)	<0.01	ug/l	Y	S	
			N/A	Nickel (diss.fit)	5.22	ug/l	Y	S	
			SAM004	pH	8.29	Units	Y	[REDACTED]	
			SAM001	Suspended Solids	23	mg/l	Y	[REDACTED]	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc (tot.unfit)	17.8	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

[REDACTED] 020467	DCS2b	28/05/2015	N/A	Arsenic (tot.unfit)	13.7	ug/l	Y	S	
			SAM018	BOD	1.48	mg/l	Y	[REDACTED]	\$
			N/A	Cadmium (diss.fit)	<0.1	ug/l	Y	S	
			N/A	Chromium Dissolved (W)	2.01	ug/l	Y	S	
			N/A	Chromium, Hexavalent	<30	ug/l	Y	S	
			N/A	Chromium, Trivalent	<30	ug/l	N	S	
			N/A	Copper (diss.fit)	8.77	ug/l	Y	S	
			N/A	Hardness, Total as CaCO3	148	mg/l	Y	S	
			N/A	Iron (diss.fit)	<0.018	mg/l	Y	S	
			N/A	Lead (diss.fit)	<0.02	ug/l	Y	S	
			N/A	Mercury (diss.fit)	<0.01	ug/l	Y	S	
			N/A	Nickel (diss.fit)	5.09	ug/l	Y	S	
			SAM004	pH	8.27	Units	Y	[REDACTED]	
			SAM001	Suspended Solids	38	mg/l	Y	[REDACTED]	
			N/A	TPH / Oil & Greases	<1	mg/l	Y	S	
			N/A	Zinc (tot.unfit)	14.6	ug/l	Y	S	

Sample Matrix: Surface Water Analyst Comment:

Sample Deviations Legend			
Results may be compromised if the following deviations apply			
Comment	C	Incorrect Container	‡
Container with Headspace provided	⊘	Insufficient sample volume	⊘
BOD Overdiluted, therefore result indicative only	§	BOD Underdiluted, therefore result indicative only	#
High Chloride concentration, CDD could not be determined	§	Holding time exceeded due to sampled on date	@
Holding time exceeded in Lab	±	Holding time exceeded due to delayed instructions	⊘

Appendix C
Hanna MultiParameter Meter Calibration Certificate

Certificate of Calibration

Certificate Number: 213529

Date of Calibration: 14th January 2015

Instrument tested

Serial Number: 08592409

Part Number: HI-9828

Description: Multiparameter Water Quality meter

Test Equipment Used

The above product has been tested against the following test equipment:

1. Digital Indicator with Probe, certificate serial number: BC114138 & BC121446 which has a current UKAS calibration certificate serial number: 0371236
2. Fluke JF23, Serial Number 63390735R which has a current UKAS calibration certificate serial number 1352570
3. Hanna Instruments HI-931001 pH/mV Simulator serial number S24387
4. A range of high precision resistor
5. PH4.01 Lot 6942, pH7.01 lot 7063, pH10.01 lot 7086, 1413us lot 6647

Test Results

The aforementioned instrument has been calibrated and subsequently tested at + 4.00, +7.00, +10.00pH and is certified accurate to within +/-0.05pH

The aforementioned instrument has been tested at +10°C and +40°C and is certified accurate to within ±0.5°C

The aforementioned instrument has been calibrated at 1413us and is certified accurate to ±1%

The aforementioned instrument has been calibrated to 100% dissolved oxygen and is certified accurate to ±3%

This certificate is valid only if signed by an authorised signatory as below

.....
- Service Engineer

- QC Engineer

 **HANNA**
instruments