

Permit Number: EPR/VP3095FS

Operator: Neal Soils

Facility: Neal Soils

Form Number: Groundwater1

Reporting of groundwater results for bi-annual monitoring in November 2017

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS6	n/a	n/a	Bi-annually	No data as borehole was damaged so no sampling could be undertaken	n/a	n/a	n/a
WS7	n/a	n/a	Bi-annually	No data as borehole was damaged so no sampling could be undertaken	n/a	n/a	n/a
WS10	pH	7.3 ÷ 8.7	Bi-annually	7.5 pH Units	TM256	17/11/2017 at 10.50	Lab:precision 0%, Bias 0.1%, Expanded Uncertainty 0.1%. Sampling Immeasurable
WS10	Total Oxidised Nitrogen as N	>3.2 mg/l	Bi-annually	0.196 mg/l	TM184	17/11/2017 at 10.50	Lab:precision 1.9%, Bias 5.4%, Expanded Uncertainty 9.2%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS10	Nitrite as N	>300 mg/l	Bi-annually	<0.0152 mg/l	TM184	17/11/2017 at 10.50	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS10	Nitrate as N	>25.35 mg/l	Bi-annually	0.191 mg/l	TM184	17/11/2017 at 10.50	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS10	Ammoniacal Nitrogen as N*	>0.0148 mg/l	Bi-annually	0.0074 mg/l	TM099	17/11/2017 at 10.50	Lab:precision 2%, Bias - 1.1%, Expanded Uncertainty 5%. Sampling Immeasurable
WS10	Chloride	>595 mg/l	Bi-annually	58.6 mg/l	TM184	17/11/2017 at 10.50	Lab:precision 1.8%, Bias 6.9%, Expanded Uncertainty 10.5%. Sampling Immeasurable
WS10	Conductivity	>7500 µS/cm	Bi-annually	0.971 mS/cm	TM120	17/11/2017 at 10.50	Lab:precision 1%, Bias 2.9%, Expanded Uncertainty 4.9%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS10	EPH >C10-C40	>100 µg/l	Bi-annually	122 µg/l	TM174	17/11/2017 at 10.50	Lab: Unknown. Sampling: Immeasurable
WS10	Total PAH (16)	>20 µg/l	Bi-annually	<0.082 µg/l	TM178	17/11/2017 at 10.50	Lab: Unknown. Sampling: Immeasurable
WS10	Sulphate	>269 mg/l	Bi-annually	69.7 mg/l	TM184	17/11/2017 at 10.50	Lab:precision 1.9%, Bias 6%, Expanded Uncertainty 9.8%. Sampling Immeasurable
WS10	Total Cadmium	>3.45 µg/l	Bi-annually	<0.5 µg/l	TM191	17/11/2017 at 10.50	Lab:precision 5.7%, Bias -12.1%, Expanded Uncertainty 23.5%. Sampling Immeasurable
WS10	Total Calcium	>354 mg/l	Bi-annually	174 mg/l	TM228	17/11/2017 at 10.50	Lab:precision 4.5%, Bias -9.3%, Expanded Uncertainty 18.3%. Sampling Immeasurable
WS10	Dissolved Nickel	>30 mg/l	Bi-annually	2.22 µg/l	TM152	17/11/2017 at 10.50	Lab:precision 3.4%, Bias 2.3%, Expanded Uncertainty 9.0%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS10	Dissolved Lead	>17.5 µg/l	Bi-annually	<0.2 µg/l	TM152	17/11/2017 at 10.50	Lab:precision 3.6%, Bias 3.6%, Expanded Uncertainty 10.8%. Sampling Immeasurable
WS10	Total Zinc	>2645 mg/l	Bi-annually	176 µg/l	TM191	17/11/2017 at 10.50	Lab:precision 5.9%, Bias -10%, Expanded Uncertainty 21.7%. Sampling Immeasurable
WS11	pH	7.3 ÷ 8.7	Bi-annually	7.48 pH Units	TM256	17/11/2017 at 11.05	Lab:precision 0%, Bias 0.1%, Expanded Uncertainty 0.1%. Sampling Immeasurable
WS11	Total Oxidised Nitrogen as N	>3.2 mg/l	Bi-annually	<0.1 mg/l	TM184	17/11/2017 at 11.05	Lab:precision 1.9%, Bias 5.4%, Expanded Uncertainty 9.2%. Sampling Immeasurable
WS11	Nitrite as N	>300 mg/l	Bi-annually	<0.0152 mg/l	TM184	17/11/2017 at 11.05	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS11	Nitrate as N	>25.35 mg/l	Bi-annually	<0.0677 mg/l	TM184	17/11/2017 at 11.05	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%.

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
							Sampling Immeasurable
WS11	Ammoniacal Nitrogen as N*	>0.0148 mg/l	Bi-annually	0.058 mg/l	TM099	17/11/2017 at 11.05	Lab:precision 2%, Bias - 1.1%, Expanded Uncertainty 5%. Sampling Immeasurable
WS11	Chloride	>595 mg/l	Bi-annually	28.6 mg/l	TM184	17/11/2017 at 11.05	Lab:precision 1.8%, Bias 6.9%, Expanded Uncertainty 10.5%. Sampling Immeasurable
WS11	Conductivity	>7500 µS/cm	Bi-annually	0.861 mS/cm	TM120	17/11/2017 at 11.05	Lab:precision 1%, Bias 2.9%, Expanded Uncertainty 4.9%. Sampling Immeasurable
WS11	EPH >C10-C40	>100 µg/l	Bi-annually	404 µg/l	TM174	17/11/2017 at 11.05	Lab: Unknown. Sampling: Immeasurable
WS11	Total PAH (16)	>20 µg/l	Bi-annually	0.213 µg/l	TM178	17/11/2017 at 11.05	Lab: Unknown. Sampling: Immeasurable
WS11	Sulphate	>269 mg/l	Bi-annually	20.4 mg/l	TM184	17/11/2017 at 11.05	Lab:precision 1.9%, Bias 6%, Expanded Uncertainty 9.8%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS11	Total Cadmium	>3.45 µg/l	Bi-annually	<0.5 µg/l	TM191	17/11/2017 at 11.05	Lab:precision 5.7%, Bias -12.1%, Expanded Uncertainty 23.5%. Sampling Immeasurable
WS11	Total Calcium	>354 mg/l	Bi-annually	201 mg/l	TM228	17/11/2017 at 11.05	Lab:precision 4.5%, Bias -9.3%, Expanded Uncertainty 18.3%. Sampling Immeasurable
WS11	Dissolved Nickel	>30 mg/l	Bi-annually	1.3 µg/l	TM152	17/11/2017 at 11.05	Lab:precision 3.4%, Bias 2.3%, Expanded Uncertainty 9.0%. Sampling Immeasurable
WS11	Dissolved Lead	>17.5 µg/l	Bi-annually	<0.2 µg/l	TM152	17/11/2017 at 11.05	Lab:precision 3.6%, Bias 3.6%, Expanded Uncertainty 10.8%. Sampling Immeasurable
WS11	Total Zinc	>2645 mg/l	Bi-annually	200 µg/l	TM191	17/11/2017 at 11.05	Lab:precision 5.9%, Bias -10%, Expanded Uncertainty 21.7%. Sampling Immeasurable
WS12	pH	8.6 ÷ 9.2	Bi-annually	7.55 pH Units	TM256	17/11/2017 at	Lab:precision 0%, Bias

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
						11.20	0.1%, Expanded Uncertainty 0.1%. Sampling Immeasurable
WS12	Total Oxidised Nitrogen as N	>3.2 mg/l	Bi-annually	1.21 mg/l	TM184	17/11/2017 at 11.20	Lab:precision 1.9%, Bias 5.4%, Expanded Uncertainty 9.2%. Sampling Immeasurable
WS12	Nitrite as N	>300 mg/l	Bi-annually	<0.0152 mg/l	TM184	17/11/2017 at 11.20	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS12	Nitrate as N	>25.35 mg/l	Bi-annually	1.21 mg/l	TM184	17/11/2017 at 11.20	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS12	Ammoniacal Nitrogen as N*	>0.0614 mg/l	Bi-annually	0.0011 mg/l	TM099	17/11/2017 at 11.20	Lab:precision 2%, Bias - 1.1%, Expanded Uncertainty 5%. Sampling Immeasurable
WS12	Chloride	>595 mg/l	Bi-annually	34.7 mg/l	TM184	17/11/2017 at 11.20	Lab:precision 1.8%, Bias 6.9%, Expanded Uncertainty 10.5%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS12	Conductivity	>7500 µS/cm	Bi-annually	1.38 mS/cm	TM120	17/11/2017 at 11.20	Lab:precision 1%, Bias 2.9%, Expanded Uncertainty 4.9%. Sampling Immeasurable
WS12	EPH >C10-C40	>100 µg/l	Bi-annually	<100 µg/l	TM174	17/11/2017 at 11.20	Lab: Unknown. Sampling: Immeasurable
WS12	Total PAH (16)	>20 µg/l	Bi-annually	1.08 µg/l	TM178	17/11/2017 at 11.20	Lab: Unknown. Sampling: Immeasurable
WS12	Sulphate	>269 mg/l	Bi-annually	141 mg/l	TM184	17/11/2017 at 11.20	Lab:precision 1.9%, Bias 6%, Expanded Uncertainty 9.8%. Sampling Immeasurable
WS12	Total Cadmium	>3.45 µg/l	Bi-annually	<0.5 µg/l	TM191	17/11/2017 at 11.20	Lab:precision 5.7%, Bias -12.1%, Expanded Uncertainty 23.5%. Sampling Immeasurable
WS12	Total Calcium	>354 mg/l	Bi-annually	220 mg/l	TM228	17/11/2017 at 11.20	Lab:precision 4.5%, Bias -9.3%, Expanded Uncertainty 18.3%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS12	Dissolved Nickel	>30 mg/l	Bi-annually	3.82 µg/l	TM152	17/11/2017 at 11.20	Lab:precision 3.4%, Bias 2.3%, Expanded Uncertainty 9.0%. Sampling Immeasurable
WS12	Dissolved Lead	>17.5 µg/l	Bi-annually	<0.2 µg/l	TM152	17/11/2017 at 11.20	Lab:precision 3.6%, Bias 3.6%, Expanded Uncertainty 10.8%. Sampling Immeasurable
WS12	Total Zinc	>2645 mg/l	Bi-annually	55.4 µg/l	TM191	17/11/2017 at 11.20	Lab:precision 5.9%, Bias -10%, Expanded Uncertainty 21.7%. Sampling Immeasurable
WS13	n/a	n/a	Bi-annually	No data as Borehole is dry	n/a	n/a	n/a
WS14	n/a	n/a	Bi-annually	No data as Borehole is dry	n/a	n/a	n/a
WS15	pH	7.3 ÷ 8.7	Bi-annually	7.54 pH Units	TM256	17/11/2017 at 11.35	Lab:precision 0%, Bias 0.1%, Expanded Uncertainty 0.1%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS15	Total Oxidised Nitrogen as N	>3.2 mg/l	Bi-annually	<0.1 mg/l	TM184	17/11/2017 at 11.35	Lab:precision 1.9%, Bias 5.4%, Expanded Uncertainty 9.2%. Sampling Immeasurable
WS15	Nitrite as N	>300 mg/l	Bi-annually	<0.0152 mg/l	TM184	17/11/2017 at 11.35	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS15	Nitrate as N	>25.35 mg/l	Bi-annually	0.0812 mg/l	TM184	17/11/2017 at 11.35	Lab:precision 1.6%, Bias 1.6%, Expanded Uncertainty 4.7%. Sampling Immeasurable
WS15	Ammoniacal Nitrogen as N*	>0.0148 mg/l	Bi-annually	0.0071 mg/l	TM099	17/11/2017 at 11.35	Lab:precision 2%, Bias - 1.1%, Expanded Uncertainty 5%. Sampling Immeasurable
WS15	Chloride	>595 mg/l	Bi-annually	142 mg/l	TM184	17/11/2017 at 11.35	Lab:precision 1.8%, Bias 6.9%, Expanded Uncertainty 10.5%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS15	Conductivity	>7500 µS/cm	Bi-annually	1.69 mS/cm	TM120	17/11/2017 at 11.35	Lab:precision 1%, Bias 2.9%, Expanded Uncertainty 4.9%. Sampling Immeasurable
WS15	EPH >C10-C40	>100 µg/l	Bi-annually	<100 µg/l	TM174	17/11/2017 at 11.35	Lab: Unknown. Sampling: Immeasurable
WS15	Total PAH (16)	>20 µg/l	Bi-annually	0.198 µg/l	TM178	17/11/2017 at 11.35	Lab: Unknown. Sampling: Immeasurable
WS15	Sulphate	>269 mg/l	Bi-annually	193 mg/l	TM184	17/11/2017 at 11.35	Lab:precision 1.9%, Bias 6%, Expanded Uncertainty 9.8%. Sampling Immeasurable
WS15	Total Cadmium	>3.45 µg/l	Bi-annually	<0.5 µg/l	TM191	17/11/2017 at 11.35	Lab:precision 5.7%, Bias -12.1%, Expanded Uncertainty 23.5%. Sampling Immeasurable
WS15	Total Calcium	>354 mg/l	Bi-annually	163 mg/l	TM228	17/11/2017 at 11.35	Lab:precision 4.5%, Bias -9.3%, Expanded Uncertainty 18.3%. Sampling Immeasurable

Monitoring Point	Substance / Parameter	Trigger level	Reference Period	Result ⁽¹⁾	Test Method ⁽²⁾	Sample Date and Times ⁽³⁾	Uncertainty ⁽⁴⁾
WS15	Dissolved Nickel	>30 mg/l	Bi-annually	4.81 µg/l	TM152	17/11/2017 at 11.35	Lab:precision 3.4%, Bias 2.3%, Expanded Uncertainty 9%. Sampling Immeasurable
WS15	Dissolved Lead	>17.5 µg/l	Bi-annually	<0.2 µg/l	TM152	17/11/2017 at 11.35	Lab:precision 3.6%, Bias 3.6%, Expanded Uncertainty 10.8%. Sampling Immeasurable
WS15	Total Zinc	>2645 mg/l	Bi-annually	10.2 µg/l	TM191	17/11/2017 at 11.35	Lab:precision 5.9%, Bias -10%, Expanded Uncertainty 21.7%. Sampling Immeasurable

*Total ammoniacal nitrogen converted to unionised ammonia using water temperature and pH.

- [1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum - maximum' measured values.
- [2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
- [3] For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
- [4] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.



Signed é é é é é é é é é é é é é é é é é

(Authorised to sign as representative of Operator)

Date: December 2017

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