

Annual Environmental Report 2015

| | |
|-----------------------------|-----------------|
| Agglomeration Name: | Clones |
| Licence Register No. | D0206-01 |



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Section 1. Executive Summary and Introduction to the 2015 AER

1.1 Summary Report on 2015

This Annual Environmental Report has been prepared for **D0206-01, Clones**, in County **Monaghan**, in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified assessments are included as an appendix to the AER as follows:

- Priority Substance Assessment

The agglomeration is served by a wastewater treatment plant with a Design PE of 4500. The treatment process includes the following:-

- Preliminary Treatment (Screening)
- Primary Treatment (Settlement)
- Secondary Treatment (Percolating Filters)

The final effluent from the Primary Discharge Point was compliant with the Emission Limit Values in 2015.

7,738,000kgs (total weight) sludge was removed from the wastewater treatment plant in 2015 as liquid sludge. Sludge was transferred to Monaghan WWTP.

There were no major capital or operational changes undertaken in 2015

An Annual Statement of Measures is included in Appendix 7.1.

Section 2. Monitoring Reports Summary

2.1 Summary report on monthly influent monitoring

Table 2.1 Influent Monitoring Summary

| 2.1.1 Monthly Influent Monitoring | BOD (mg / l) | COD (mg / l) | SS (mg / l) | TP (mg / l) | TN (mg / l) | Hydraulic Loading (m3/d) | Organic Loading (PE/Day) |
|--|---------------------|---------------------|--------------------|--------------------|--------------------|---------------------------------|---------------------------------|
| Number of Samples | 12 | 12 | 12 | 12 | 12 | | |
| Annual Max. | 177 | 560 | 290 | 7 | 23.2 | 4848 | 3,817 |
| Annual Mean | 71.80 | 171.92 | 81.97 | 3.91 | 12.26 | 1,499 | 2,056 |

Significance of results

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity as detailed further in Section 3.2

The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity as detailed further in Section 3.2.

The annual mean organic loading is less than the Treatment Plant Capacity as detailed further in Section 3.2.

The annual maximum organic loading is less than the Treatment Plant Capacity as detailed further in Section 3.2.

The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.2 Discharges from the agglomeration

Table 2.2 - Effluent Monitoring

| 2.2.1 Effluent Monitoring Summary | BOD (mg/l) | COD (mg/l) | TSS (mg/l) | Ortho P (mg/l) | Ammonia NH3 (mg/l) | pH | Comments |
|--|------------|------------|------------|----------------|--------------------|--------------------------|--|
| WWDL ELV (Schedule A) where applicable | 25 | 125 | 35 | N/A | N/A | 6 to 9 | New ELVS from the 31/12/2019 <ul style="list-style-type: none"> • BOD 2 mg/L • Total ammonia (as N) 0.1 mg/L • Orthophosphate (as P) 0.075 mg/L |
| ELV with Condition 2 Interpretation included | 50 | 250 | 87.5 | N/A | N/A | No allowable exceedances | |
| Number of sample results | 12 | 12 | 11 | 12 | 12 | 12 | |
| Number of sample results above WWDL ELV | 2 | 0 | 1 | N/A | N/A | 0 | |
| Number of sample results above ELV with Condition 2 Interpretation | 0 | 0 | 0 | N/A | N/A | 0 | |
| Annual Mean (for parameters where a mean ELV applies) | N/A | N/A | N/A | 1.78 | 3.47 | N/A | |
| Overall Compliance (Pass/Fail) | Pass | Pass | Pass | N/A | N/A | Pass | |

Significance of results

The WWTP was compliant with the ELV's set in the wastewater discharge licence. The impact on the receiving waters is assessed further in Section 2.3.

2.3. Ambient Monitoring Summary

Table 2.3. Ambient Monitoring Report Summary Table

| Ambient Monitoring Point from WWDL (or as agreed with EPA) | Irish Grid Reference | EPA Feature Coding Tool code | Receiving Waters Designation (Y/N) | | | | WFD Status | Does assessment of the ambient monitoring results indicate that the discharge is impacting on water quality? |
|--|----------------------|------------------------------|------------------------------------|----------------|------|-----------|------------|--|
| | | | Bathing Water | Drinking Water | FWPM | Shellfish | | |
| Upstream monitoring point | 250444E 325380N | Awaiting | N | N | N | N | Moderate | |
| Downstream monitoring point | 250672E 325280N | Awaiting | N | N | N | N | Moderate | Yes, due to orthophosphate, ammonia and BOD |

The results for the upstream and downstream monitoring are included in Appendix 2: Ambient Monitoring Results

Significance of results

- The WWTP was compliant with the ELVs set in the wastewater discharge licence as detailed in Section 2.2
- The discharge from the wastewater plant may have an observable negative impact on the water quality status. A deterioration in water quality has been identified in terms of Orthophosphate and ammonia however it is not known if it is caused solely by the WWTP.
- There is also a deterioration in the downstream concentrations of BOD. The WWTP was compliant with the ELVs for BOD and therefore it is not considered that the WWTP is impacting on this concentration downstream. The other potential causes of deterioration in water quality in the area are unknown.
- The discharge from the wastewater treatment plant doesn't have an observable negative impact on the Water Framework Directive status.

2.4 Data collection and reporting requirements under the UWWTD

The electronic submission of data was completed on 15/01/2016

2.5 Pollutant Release and Transfer Register (PRTR) - report for previous year

A PRTR is not required.

Section 3. Operational Reports Summary

3.1 Treatment Efficiency Report

| | cBOD (kg/yr) | COD (kg/yr) | SS (kg/yr) | Total P (kg/yr) | Total N (kg/yr) |
|---|---------------------|--------------------|-------------------|------------------------|------------------------|
| Influent mass loading (kg/year) | 45,032 | 107,821 | 51,408 | 2,450 | 7,687 |
| Effluent mass emission (kg/year) | 5,964 | 24,640 | 5,697 | 1,084 | 7,271 |
| % Efficiency (% reduction of influent load) | 87% | 77% | 89% | 56% | 5% |

3.2 Treatment Capacity Report

Table 3.2 - Treatment Capacity Report Summary

| | |
|--|-----------|
| Hydraulic Capacity – Design / As Constructed (dry weather flow) (m3/year) | 373,030 |
| Hydraulic Capacity – Design / As Constructed (peak flow) (m3/year) | 1,119,090 |
| Hydraulic Capacity – Current loading (m3/year) | 547,110 |
| Hydraulic Capacity – Remaining (m3/year) | 571,980 |
| Organic Capacity - Design / As Constructed (PE) | 4,500 |
| Organic Capacity - Current loading (PE) | 2,056 |
| Organic Capacity – Remaining (PE) | 2,444 |
| Will the capacity be exceeded in the next three years? (Yes / No) | No |

3.3 Extent of Agglomeration Summary Report

In this section Irish Water is required to report on the amount of urban waste water generated within the agglomeration. It does not include any waste water collected and created in a private system and discharged to water under a Section 4 Licence issued under the Water Pollution Acts 1977 (as amended).

Table 3.3 - Extent of Agglomeration Summary Report

| | % of total load generated in the agglomeration |
|---|---|
| Load generated in the agglomeration that is collected in the sewer network | 100% |
| Load collected in the agglomerations that enters treatment plant | 100% |
| Load collected in the sewer network but discharges without treatment | 0% |

Load generated in the agglomeration that is collected in the sewer network is the total load generated and collected in the municipal network within the boundary of the agglomeration.

Load collected in the agglomerations that enters treatment plant is that portion of the previous figure which enters the waste water treatment plant.

Load collected but discharged without treatment is that portion of the first figure which is discharged without treatment.

The data in Table 3.3 is estimated based on influent monitoring as detailed in Section 2.1 above.

3.4 Complaints Summary

A summary of complaints of an environmental nature is included below.

Table 3.4 - Complaints Summary Table

| Number | Date & Time | Nature of Complaint | Cause of Complaint | Actions taken to resolve issue | Closed (Y/N) |
|----------------|------------------------|---|--------------------|--------------------------------|--------------|
| 80078620 4 | 10/06/2015 08:44:00 | Below Ground Waste Investigation Sewage Flooding | Blocked Sewer | | Yes |
| 80078620 4 | 10/06/2015 08:44:00 | Below Ground Waste Investigation Sewage Flooding | Blocked Sewer | Jetted blocked sewer | Yes |
| 97440792 75 | 25/06/2015 15:08:00 | Below Ground Waste Investigation Sewage Flooding | Blocked Sewer | | Yes |
| 97440792 75 | 25/06/2015 15:08:00 | Below Ground Waste Investigation Sewage Flooding | Blocked Sewer | Jetted blocked sewer | Yes |
| NO SR | NO SR | Below Ground Waste Investigation Sewage Flooding | Blocked Sewer | | Yes |

3.5 Reported Incidents Summary

A summary of reported incidents is included below.

Table 3.5.1 - Summary of Incidents

| 3.5.1 Incident Type (e.g. Non-compliance, Emission, spillage, pollution incident) | Incident Description | Cause | No. of Incidents | Corrective Action | Authorities Contacted. Note 1 | Reported to EPA (Yes/No) | Closed (Yes/No) |
|--|---|---------------|-------------------------|--|--------------------------------------|---------------------------------|------------------------|
| Uncontrolled Release | Problem with valve in storm tank caused some untreated storm flow to enter clarifier tank | Valve failure | 1 | Pumps operated manually & Valve repaired | IFI | Yes | Yes |

Note 1: For shellfish waters notify the Marine Institute (MI) Sea Fisheries Protection Authority (SFPA) Food Safety Authority (FSAI) and An Bord Iascaigh Mhara (BIM). This should also include any other authorities that should be contacted arising from the findings of any Licence Specific Reports also e.g. Drinking Water Abstraction Impact Risk Assessment, Fresh Water Pearl Mussel Impact Assessments etc.

Table 3.5.2 - Summary of Overall Incidents

| | |
|---|-----|
| Number of Incidents in 2015 | 1 |
| Number of Incidents reported to the EPA via EDEN in 2015 | 1 |
| Explanation of any discrepancies between the two numbers above | N/A |

3.6 Sludge / Other inputs to the WWTP

Other inputs to the waste water treatment plant are summarised in Table 3.6 below.

Table 3.6 - Other Inputs

| Input Type | m3/year | PE/year | % of load to WWT P | Included in Influent Monitoring (Y/N)? ³ | Is there a leachate/sludge acceptance procedure for the WWTP? (Y/N) | Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N) |
|---|---------|---------|--------------------|---|---|--|
| Domestic /Septic Tank Sludge | 0 | 0 | | N/A | | |
| Industrial / Commercial Sludge | 0 | 0 | | N/A | | |
| Landfill Leachate (delivered by tanker) | 0 | 0 | | N/A | | |
| Landfill Leachate (delivered by sewer network) | 0 | 0 | | N/A | | |
| Other (specify) | 0 | 0 | | N/A | | |

Notes:

1. Other Inputs include; septic tank sludge, industrial /commercial sludge, landfill leachate and any other sludge that is collected and added to the treatment plant.
2. Sludge that is added to a dedicated sludge reception facility at a waste water treatment plant not included in Table 3.6. Only include sludge which is added to the waste water treatment process stream. Enter zero where there are no inputs.

Section 4. Infrastructure Assessments and Programme of Improvements

4.1 Storm water overflow identification and inspection report

This is the first AER for this agglomeration – a Storm Water Identification and Inspection Report will be included in the 2nd AER as required. A summary of the significance and operation of SWO is included below.

Table 4.1.1 - SWO Identification and Inspection Summary Report

| WWDL Name / Code for Storm Water Overflow | Irish Grid Ref. | Included in Schedule A4 of the WWDL | Significance of the overflow (High/Med/Low) | Compliance with DoEHLG criteria | No. of times activated in 2015 (No. of events) | Total volume discharged in 2015 (m3) | Total volume discharged in 2015 (P.E.) | Estimated / Measured data |
|---|-------------------|-------------------------------------|---|---------------------------------|--|--------------------------------------|--|---------------------------|
| TPEFF2400D 0206SW003 | 250510,3253 36 | Yes | High | Non Compliant | 6 | 600 | 400 | Estimated |

Table 4.1.2 - SWO Identification and Inspection Summary Report

| | |
|---|--------|
| How much sewage was discharged via SWOs in the agglomeration in the year (m3/yr)? | 600 |
| How much sewage was discharged via SWOs in the agglomeration in the year (p.e.)? | 400 |
| What % of the total volume of sewage generated in the agglomeration was discharged via SWOs in the agglomeration in 2013? | 0.001% |
| Is each SWO identified as non-compliant with DoEHLG Guidance included in the Programme of Improvements? | No |
| The SWO assessment includes the requirements of relevant WWDL Schedules (Yes/No) | No |
| Have the EPA been advised of any additional SWOs / changes to Schedules A/C under Condition 1 ? | No |

4.2 Report on progress made and proposals being developed to meet the improvement programme requirements.

This is the first AER for this agglomeration – an Improvement Programme will be included in the 2nd AER as required.

Table 4.2.1 - Specified Improvement Programme Summary

| Specified Improvement Programmes | Licence Schedule | Licence Completion Date | Date Expired | Status of Works | % Construction Work Completed | Licensee Timeframe for Completing the Work | Comments |
|--|------------------|-------------------------|--------------|------------------------|-------------------------------|--|----------|
| Improvement works to ensure compliance with Condition 1.7. | C | 31/12/2019 | No | (ii) At Planning Stage | 0% | 01/10/2016 | |

A summary of the status of any improvements identified by under Condition 5.2 is included below.

Table 4.2.2 - Improvement Programme Summary

| Improvement Identifier / Name | Improvement Description | Improvement Source | Progress (% complete) | Expected Completion Date | Comments |
|-------------------------------|-------------------------|--|-----------------------|--------------------------|----------|
| | | WWTP assessment (Condition 5.2). | | | |
| | | Sewer Integrity Tool (Condition 5.2). | | | |
| | | Secondary discharges assessment (Condition 5.2). | | | |
| | | SWO assessment (Condition 4 & 5.2). | | | |
| | | Pearl Mussel | | | |

| | | | | | |
|----------|---------------------------------|---------------------------------|--|------------|--------------------------|
| | | Impact Assessment (Condition 4) | | | |
| 10010055 | D0206 Clones WWTP Sludge Tank | Improved Operational Control | | 01/06/2016 | Critical Asset Programme |
| 10007268 | Flow Monitoring and Sampling MN | Improved Operational Control | | 01/06/2016 | Critical Asset Programme |

Table 4.2.3 - Sewer Integrity Risk Assessment Tool Summary

| The Improvement Programme should include an assessment of the integrity of the existing wastewater works for the following: | Risk Assessment Rating (High, Medium, Low) | Risk Assessment Score | Comment |
|--|---|------------------------------|----------------|
| Hydraulic Risk Assessment Score | Unknown | Unknown | |
| Environmental Risk Assessment Score | Unknown | Unknown | |
| Structural Risk Assessment Score | Unknown | Unknown | |
| Operation & Maintenance Risk Assessment Score | Unknown | Unknown | |
| Overall Risk Score for the agglomeration | Unknown | Unknown | |

The sewer network integrity risk assessment has not been completed and will be submitted this year at a later date following the submission of this AER.

Section 5. Licence Specific Reports

Licence Specific Reports Summary Table

| Licence Specific Report | Required in this AER or outstanding from previous AER | Report included in this AER | Reference to previous AER containing report or relevant section of this AER |
|---|--|------------------------------------|--|
| Priority Substances Assessment | Yes | Yes | Appendix 3: Priority Substance Assessment |
| Drinking Water Abstraction Point Risk Assessment | No | No | N/A |
| Habitats Impact Assessment | No | N/A | N/A |
| Shellfish Impact Assessment | No | N/A | N/A |
| Pearl Mussel Report | No | N/A | N/A |
| Toxicity/Leachate Management | No | N/A | N/A |
| Toxicity of Final Effluent Report | No | N/A | N/A |

Licence Specific Reports Summary of Findings

| Licence Specific Report | Recommendations in Report | Summary of Recommendations in Report | Status of Recommendations |
|---------------------------------------|----------------------------------|--|----------------------------------|
| Priority Substances Assessment | Yes | Screening data is from 2008, recommend re sampling of influent and receiving water for priority substances in 2016 | Planned for 2016 |

5.1 Priority Substances Assessment

The Priority Substances Assessment report is included in Appendix 3. A summary of the findings of this report is included below.

| | |
|---|--|
| | Licensee self- assessment checks to determine whether all relevant information is included in the Assessment. |
| Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance | Desktop Study |
| Does the assessment include a review of Trade inputs to the works? | Yes |
| Does the assessment include a review of other inputs to the works? | No |
| Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water) | Yes |
| Does the assessment identify that priority substances may be impacting the receiving water? | Yes |
| Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality? | No |
| Recommendations | Screening data is from 2008, recommend re sampling an analysis of influent and receiving water for priority substances in 2016 |
| Status of any improvement measures required | N/A |

Section 6. Certification and Sign Off

Table 6.1 - Summary of AER Contents

| | |
|--|------------------------------|
| Does the AER include an executive summary? | Yes |
| Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)? | Yes |
| Is there a need to advise the EPA for consideration of a technical amendment / review of the licence? | No |
| List reason e.g. additional SWO identified | N/A |
| Is there a need to request/advise the EPA of any modifications to the existing WWDL? Refer to Condition 1.7 (changes to works/discharges) & Condition 4 (changes to monitoring location, frequency etc.) | No |
| List reason e.g. failure to complete specified works within dates specified in the licence, changes to monitoring requirements | |
| Have these processes commenced? (i.e. Request for Technical Amendment / Licence Review / Change Request) | N/A |
| Are all outstanding reports and assessments from previous AERs included as an appendix to this AER? | No |
| List outstanding reports | Sewer Network Integrity Tool |

Declaration by Irish Water

The AER contains the following:

- Introduction and background to 2015 AER.
- Monitoring Reports Summary.
- Operational Reports Summary.
- Infrastructural Assessment and Programme of Improvements.
- Licence specific reports
- Certification and Sign Off
- Appendices

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed:  Date: 04/03/2016

Gerry Galvin
Chief Technical Advisor

Section 7. Appendix

In the appendix include all the detailed or site specific reports that are relevant to the AER. Reports omitted from previous AERs should also be appended here.

Appendix 7.1 - Annual Statement of Measures

Appendix 7.2 - Ambient monitoring summary

Appendix 7.3 - Priority substances assessment

Appendix 7.1 Annual Statement of Measures

| Risk / Description of issue | Risk Score | Mitigation Measure to be taken | Outcome | Action | Date for Completion |
|---|------------|--|---|--|--|
| Clones WWTP Sludge Handling | Medium | Supply and fit a Sludge dewatering tank | Improvement works required to comply with ELV's in Schedule A | | Design change Dec 15 |
| Clones WWTP Final Clarifier | Medium | Clones WWTP final clarifier | Improvement works required to comply with ELV's in Schedule A | | Approval received Dec 15 |
| Improvement works required to comply with ELV's in Schedule A | Medium | Installation of ferric dosing system and tank. | Compliance with ELV for ortho P | New ferric dosing tank installed -. Existing site ducting requires replacement including the renewal of 2 No. chambers along the line of same. | Ferric dosing tank installed Ducting required |

Appendix 7.2 Ambient Monitoring Results

| Sample Location | Sample Date | Sample type | Dissolved Oxygen Mg/l | Temp oC | Ammonia (as N) mg/l | pH | BOD mg/l | Phosphate-Ortho(as P) | cBOD |
|-----------------|-------------|-------------|-----------------------|--------------|---------------------|-------------|-------------|-----------------------|-------------|
| Clones Upstream | 12/01/2015 | Grab | 8.26 | 13.0 | 0.062 | 7.7 | | <0.009 | <1 |
| Clones Upstream | 02/02/2015 | Grab | 10.14 | 8.3 | 0.038 | 7.9 | | 0.024 | <1 |
| Clones Upstream | 09/03/2015 | Grab | 8.54 | 12.2 | 0.066 | 8.5 | | 0.053 | 2 |
| Clones Upstream | 14/04/2015 | Grab | 9.99 | 11.7 | 0.26 | 7.8 | | 0.062 | <1 |
| Clones Upstream | 20/04/2015 | Grab | | | 2.5 | 7.8 | | 0.265 | 7.4 |
| Clones Upstream | 13/05/2015 | Grab | 9.58 | 12.6 | 0.084 | 8 | | 0.043 | 2.3 |
| Clones Upstream | 03/06/2015 | Grab | 7.92 | 12.0 | 0.08 | 8.2 | 1 | 0.016 | |
| Clones Upstream | 14/07/2015 | Grab | 6.55 | 17.5 | 0.1 | 8.1 | 1 | 0.056 | |
| Clones Upstream | 05/08/2015 | Grab | 6.61 | 15.2 | 0.072 | 8.1 | 1 | 0.062 | |
| Clones Upstream | 01/09/2015 | Grab | 6.03 | 14.2 | 0.061 | 8 | 1 | 0.047 | |
| Clones Upstream | 07/10/2015 | Grab | 6.67 | 14.7 | 0.071 | 7.9 | 2 | 0.041 | |
| Clones Upstream | 03/11/2015 | Grab | 8.24 | 11.9 | 0.061 | 7.8 | 1 | 0.045 | |
| Average | | | 8.048 | 13.11 | 0.288 | 7.98 | 1.17 | 0.06 | 2.45 |

| Sample Location | Sample Date | Sample Type | Dissolved Oxygen mg/l | Temp oC | Ammonia (as N) mg/l | pH | BOD mg/l | Phosphate-Ortho(as P) | cBOD |
|-------------------|-------------|-------------|-----------------------|-------------|---------------------|-------------|-------------|-----------------------|-------------|
| Clones Downstream | 12/01/2015 | Grab | | | 0.53 | 7.7 | | 0.18 | 3 |
| Clones Downstream | 02/02/2015 | Grab | 10.42 | 8.1 | 0.039 | 7.9 | | 0.057 | <1 |
| Clones Downstream | 09/03/2015 | Grab | 8.03 | 7.93 | 0.14 | 8.5 | | 0.231 | 3 |
| Clones Downstream | 14/04/2015 | Grab | 10.21 | 7.64 | 0.25 | 7.8 | | 0.078 | <1 |
| Clones Downstream | 20/04/2015 | Grab | 7.7 | 8.2 | 1.8 | 8.2 | | 0.078 | 2.4 |
| Clones Downstream | 13/05/2015 | Grab | | | 2.2 | 8 | | 0.04 | 11 |
| Clones Downstream | 03/06/2015 | Grab | 7.9 | 7.79 | 0.091 | 8.1 | 1 | 0.066 | |
| Clones Downstream | 14/07/2015 | Grab | 4.11 | 7.71 | 1.4 | 7.8 | 6 | 0.514 | |
| Clones Downstream | 05/08/2015 | Grab | 4.15 | 8.07 | 0.6 | 8 | 4 | 0.284 | |
| Clones Downstream | 01/09/2015 | Grab | 4.32 | 7.95 | 1.4 | 8 | 5 | 0.352 | |
| Clones Downstream | 07/10/2015 | Grab | 6.09 | 7.93 | 0.24 | 7.8 | 5 | 0.668 | |
| Clones Downstream | 03/11/2015 | Grab | 7.96 | 7.06 | 0.15 | 7.8 | 4 | 0.251 | |
| Average | | | 7.08 | 7.84 | 0.737 | 7.97 | 4.17 | 0.233 | 3.56 |

Appendix 7.3 Priority Substances Report

Priority Substances Assessment

| | |
|-----------------------------|---------------|
| Agglomeration Name: | Clones |
| Licence Register No. | D0206 |



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1 Introduction

This report has been prepared for D0206, Clones in County Monaghan in accordance with the requirements of Condition 4.11.1 of the wastewater discharge licence for the agglomeration.

This desk top study has been undertaken to determine the necessity, if any, for analysis of the discharge to comply with the condition in the wastewater discharge licence based on the *Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*, issued by the EPA. Relevant inputs to the waste water works and estimates of emissions from the discharge point have been taken into account in the preparation of this report. Relevant inputs to the waste water works, any relevant measurements / calculations / estimates of emissions from the discharge point and any relevant measurements undertaken at representative downstream monitoring locations have been taken into account in the preparation of this report.

Details of the emissions concentration for the primary discharge and impact on the receiving water are included in Appendix 1.

2 Desktop Study

2.1 Assessment of Analysis Required

A. Review of all industrial inputs into WWTP

A list all licensed and unlicensed industrial or trade effluent discharges, leachate discharges and other imports is included in Table 2.1 below. State if all trade / industrial discharges are licensed and include any known unlicensed discharges. “Other Imports” includes any non-domestic imports to the WWTP.

Table 2.1 – List of Non-Domestic Discharges to WWTP

| Licensee Name / Landfill Name /Other Imports | Type of Industry | Type of Licence (IED / IPPC / Section 16 / Unlicensed) | Potential Source of Dangerous / Priority Substances (Yes / No) | Dangerous / Priority Substances Monitoring Undertaken (Yes / No) |
|--|--|--|--|--|
| Feldues | Food Industry with DAF (Dissolved Air Flotation) Treatment | Section 16 | No | No |

Where the answer to “**Potential Source of Dangerous Substances (Yes / No)**” is Yes, **Table 2.2** below has been completed for each industry/landfill/other import source.

Table 2.2 – List of Dangerous or Priority Substances in Non-Domestic Discharges to WWTP

| Licensee Name | List Anticipated Dangerous Substances or state if unknown | Monitoring Undertaken (Yes / No) |
|---------------|---|----------------------------------|
| Feldues | VOCs | Unknown |

B. Discharge monitoring

The primary discharge has been analysed for priority substances.

Analysis data is included in Appendix 1 with details of the sample data and/or source of the data. Analysis data does not include the full list of priority substances listed in the EPA's *Guidance on the Screening for Priority Substances for Waste Water Discharge Licences*.

C. Downstream monitoring location's participation in relevant monitoring programme

Any analysis data available for a representative downstream monitoring location from the discharge point for the relevant parameters is included in Appendix 3 with details of the sample data and/or source of the data.

D. Participation in PRTR reporting

Not required for 2015. The emissions of specific organic compounds and metals (priority substances) have been estimated for the discharge utilising the EPA's urban WWTP calculation tool for PRTR reporting. It is noted from the EPA's report, *An Inventory of Emissions to Waters in Ireland*, that extensive assessment of emission factors was undertaken during 2011 / 2012 that focussed on the evaluation of inputs / output concentrations and removal efficiency using a variety of different sized plants and wastewater treatment options. This has led to the significant refinement of the electronic templates toolkit used for WWTP assessment using the PRTR tool. The estimated emission data relevant to the Clones Agglomeration pertains to a WWTP <10,000 PE with no saline intrusion providing secondary treatment consisting of: inlet works, storm tank, primary settlement tanks percolating filters and humus tank.

The emission concentration from the PRTR has been included in the table in Appendix 1 where analysis data of the primary discharge is not available.

2.2 Review outcome of Desktop study

Following the desktop study, all parameters in Appendix 1 have been assessed to establish any potential impact on the receiving waters. A review of all non-domestic loads to the wastewater treatment plant is underway by Irish Water. A review of the national monitoring programme for priority substances in wastewater is proposed to be undertaken by Irish Water in 2016 in consultation with the EPA. It is proposed that this review, in consultation with the EPA, will determine the scope of future Priority Substances monitoring at Irish Water WWTP's.

Priority substance concentrations in the primary discharge were available for all parameters based on either analysis or the EPA PRTR toolkit. This desktop study is considered to provide partial characterisation of the wastewater.

3 Assessment of Significance and Recommendations

An assessment of the potential for impacts on receiving waters from priority substances in the primary discharge has been carried out. The assessment considers the primary discharge relevant to Environmental Quality Standards (EQS) for priority substances in surface waters, as set out in the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.

1 parameter has been identified as potentially being higher than the required EQS, following dilution, as follows:-

Dichloromethane, Benzo[a]pyrene

There is a potential for some impact on the receiving waters based on the assessment carried out.

The EPA have prepared a report on priority substances, *An Inventory of Emissions to Waters in Ireland*. This document states that Ireland appears to have relatively few problems

associated with the presence of Priority / Priority Hazardous substances in its surface waters. It identifies that wastewater discharges are a potential source of metals in receiving waters with lead being the main metal identified as associated with wastewater discharges. However, metals exceedences, in particular those for cadmium, lead, and nickel are primarily associated with areas of historic mining activity. Similarly PAH's have been identified in stormwater overflows but the most significant source is considered to be rainfall.

A consultation process with the EPA is proposed to be undertaken by Irish Water in 2016 to establish appropriate levels of monitoring for priority and dangerous substances, taking into account the particular requirements of the Water Framework Directive. This will allow a targeted monitoring programme to be undertaken in areas where priority substances have been identified or industrial discharges or imports provide a potential source, and where there is a shortfall of existing monitoring data.

| | |
|---|---------------------------------------|
| Does the assessment use the Desk Top Study Method or Screening Analysis to determine if the discharge contains the parameters in Appendix 1 of the EPA guidance | Desk Top Study and Screening Analysis |
| Does the assessment include a review of licensed / authorised inputs to the works? | Yes |
| Does the assessment include a review of other (unauthorised) inputs to the works? | No |
| Does the report include an assessment of the significance of the results where a listed material is present in the discharge? (e.g. impact on the relevant EQS standard for the receiving water) | Yes |
| Does the assessment identify that priority substances may be impacting the receiving water? | Yes |
| Does the Improvement Programme for the agglomeration include the elimination / reduction of all priority substances identified as having an impact on receiving water quality? | No |

Appendix 1 – Screening of Parameters for Priority Substances

AA: Annual Average

MAC: Maximum Allowable Concentration

EQS: Environmental Quality Standards

Dilution factor in receiving water: 0.0934

| No | Compound | Group of compounds | AA-EQS Inland SW (µg/l) | AA-EQS Other SW (µg/l) | Measured /Estimated Conc. (µg/l) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|----|-----------------------|--------------------|-------------------------|------------------------|---|---|-----------------------------|--|---|
| 1 | Benzene | VOCs | 10 | 8 | 0.016818 | PRTR | | No | No |
| 2 | Carbon tetrachloride | VOCs | 12 | 12 | 0 | PRTR | | No | No |
| 3 | 1,2-Dichloroethane | VOCs | 10 | 10 | 0.045455 | PRTR | | No | No |
| 4 | Dichloromethane | VOCs | 20 | 20 | 400.374 | Sample Data | 18/06/08 | Yes | Yes |
| 5 | Tetrachloroethylene | VOCs | 10 | 10 | 0.059091 | PRTR | | No | No |
| 6 | Trichloroethylene | VOCs | 10 | 10 | 0 | PRTR | | No | No |
| 7 | Trichlorobenzenes | VOCs | 0.4 | 0.4 | 0 | PRTR | | No | No |
| 8 | Trichloromethane | VOCs | 2.5 | 2.5 | 0 | PRTR | | No | No |
| 9 | Xylenes (all isomers) | VOCs | 10 | 10 | 0.5 (LOD = 1) | Sample Data | 18/06/08 | No | No |
| 10 | Ethyl Benzene | VOCs | n/a | n/a | 0.016591 | PRTR | | n/a | n/a |
| 11 | Toluene | VOCs | 10 | 10 | 0.5 | Sample Data | 18/06/08 | No | No |

| No | Compound | Group of compounds | AA-EQS Inland SW ($\mu\text{g/l}$) | AA-EQS Other SW ($\mu\text{g/l}$) | Measured /Estimated Conc. ($\mu\text{g/l}$) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|----|--------------------------------------|--------------------|--------------------------------------|-------------------------------------|--|---|-----------------------------|--|---|
| | | | | | (LOD = 1) | | | | |
| 12 | Naphthlene ¹ | PAHs | 2 | 2 | 0.004 | PRTR | | No | No |
| 13 | Fluoranthene ¹ | PAHs | 0.0063 | 0.0063 | 0.002341 | PRTR | | No | No |
| 14 | Benzo[k]fluoranthene ² | PAHs | MAC of 0.017 | MAC of 0.017 | 0.002 | PRTR | | No | No |
| 15 | Benzo[ghi]perylene ² | PAHs | MAC of 8.2×10^{-3} | MAC of 8.2×10^{-4} | 0.002 | PRTR | | No | No |
| 16 | Indeno[1,2,3-c,d]pyrene ² | PAHs | | | 0.002205 | PRTR | | n/a | n/a |
| 17 | Benzo[b]fluoranthene ² | PAHs | MAC of 0.017 | MAC of 0.017 | 0.002 | PRTR | | No | No |
| 18 | Benzo[a]pyrene | PAHs | 1.7×10^{-4} | 1.7×10^{-4} | 0.002 | PRTR | | Yes | Yes |
| 19 | Di(2-ethylhexyl)phthalate (DEHP) | Plasticiser | 1.3 | 1.3 | 0.917273 | PRTR | | No | No |

¹ The EQS for these substances shall take effect from 22 December 2015

² No indicative parameter is provided for this group of substances

| No | Compound | Group of compounds | AA-EQS Inland SW (µg/l) | AA-EQS Other SW (µg/l) | Measured /Estimated Conc. (µg/l) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|----|-----------------------|--------------------|-------------------------|------------------------|---|---|-----------------------------|--|---|
| 20 | Isodrin ³ | Pesticides | Σ=0.01 | Σ=0.005 | 0 | PRTR | | No | No |
| 21 | Dieldrin ³ | Pesticides | | | 0 | PRTR | | No | No |
| 22 | Diuron | Pesticides | 0.2 | 0.2 | 0.026364 | PRTR | | No | No |
| 23 | Isoproturon | Pesticides | 0.3 | 0.3 | 0.0075 | PRTR | | No | No |
| 24 | Atrazine | Pesticides | 0.6 | 0.6 | 0.005 (LOD = 0.01) | Sample Data | 18/06/08 | No | No |
| 25 | Simazine | Pesticides | 1 | 1 | 0.005 (LOD = 0.01) | Sample Data | 18/06/08 | No | No |
| 26 | Glyphosate | Pesticides | 60 | - | 1.532727 | PRTR | | No | No |
| 27 | Mecoprop | Pesticides | n/a | n/a | 0.107045 | PRTR | | n/a | n/a |
| 28 | 2,4-D | Pesticides | n/a | n/a | 0.051023 | PRTR | | n/a | n/a |
| 29 | MCPA | Pesticides | n/a | n/a | 0.088636 | PRTR | | n/a | n/a |

³ Σ of Aldrin, Dieldrin, Endrin and Isodrin.

| No . | Compound | Group of compounds | AA-EQS Inland SW (µg/l) | AA-EQS Other SW (µg/l) | Measured /Estimated Conc. (µg/l) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|------|-----------------------|--------------------|-----------------------------|------------------------|--|---|-----------------------------|--|---|
| 30 | Linuron | Pesticides | 0.7 | 0.7 | 0 | PRTR | | No | No |
| 31 | Dichlobenil | Pesticides | n/a | n/a | 0.004295 | PRTR | | n/a | n/a |
| 32 | 2,6-Dichlorobenzamide | Pesticides | n/a | n/a | 0.080455 | PRTR | | n/a | n/a |
| 33 | PCBs | PCBs | n/a | n/a | 0 | PRTR | | n/a | n/a |
| 34 | Phenols (as Total C) | Phenols | 8 | 8 | 0.005 (LOD = 0.01) | Sample Data | 18/06/08 | No | No |
| 35 | Lead | Metals | 1.2 | 1.3 | 3 | Sample Data | 18/06/08 | Yes | No |
| 36 | Arsenic | Metals | 25 | 20 | 1 | Sample Data | 18/06/08 | No | No |
| 37 | Copper | Metals | 5 or 30 ² | 5 | 6 (Hardness not included in analysis suite) | Sample Data | 18/06/08 | n/a | n/a |
| 38 | Zinc | Metals | 8 or 50 or 100 ³ | 40 | 11.5 (Hardness not included in analysis suite) | Sample Data | 18/06/08 | n/a | n/a |

| No . | Compound | Group of compounds | AA-EQS Inland SW (µg/l) | AA-EQS Other SW (µg/l) | Measured /Estimated Conc. (µg/l) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|------|-------------|--------------------|---|------------------------|---|---|-----------------------------|--|---|
| 39 | Cadmium | Metals | 0.08 or 0.09 or 0.15 or 0.25 ⁴ | 0.2 | 0.09 (LOD too high) | Sample Data | 18/06/08 | n/a | n/a |
| 40 | Mercury | Metals | MAC of 0.07 | MAC of 0.07 | 0.02 | Sample Data | 18/06/08 | No | No |
| 41 | Chromium VI | Metals | 3.4 | 0.6 | 0.415 (LOD =0.93) (not specified whether Cr or CR6) | Sample Data | 18/06/08 | No | No |
| 42 | Selenium | Metals | n/a | n/a | 0 | PRTR | | No | No |
| 43 | Antimony | Metals | n/a | n/a | 0.154545 | PRTR | | n/a | n/a |
| 44 | Molybdenum | Metals | n/a | n/a | 0 | PRTR | | No | No |
| 45 | Tin | Metals | n/a | n/a | 0.144444 | PRTR | | n/a | n/a |
| 46 | Barium | Metals | n/a | n/a | 54 | Sample Data | 18/06/08 | N/A | N/A |
| 47 | Boron | Metals | n/a | n/a | 147 | Sample Data | 18/06/08 | N/A | N/A |
| 48 | Cobalt | Metals | n/a | n/a | 0.175758 | PRTR | | n/a | n/a |

| No . | Compound | Group of compounds | AA-EQS Inland SW (µg/l) | AA-EQS Other SW (µg/l) | Measured /Estimated Conc. (µg/l) ¹ | Data Source [Sample / PRTR / Other (state)] | Sample Date (if applicable) | Effluent Concentration above AA concentration (Yes/No) | Effluent Concentration above AA concentration after dilution (Yes/No) |
|------|------------------------------------|--------------------|-------------------------|------------------------|---|---|-----------------------------|--|---|
| 49 | Vanadium | Metals | n/a | n/a | 2.727273 | PRTR | | n/a | n/a |
| 50 | Nickel | Metals | 4 | 8.6 | 2 | Sample Data | 18/06/08 | No | No |
| 51 | Fluoride | General | 500 | 1,500 | 0.42 | Sample Data | 18/06/08 | No | No |
| 52 | Chloride | General | n/a | n/a | 54120 | PRTR | | n/a | n/a |
| 53 | TOC | General | n/a | n/a | 9219.773 | PRTR | | n/a | n/a |
| 54 | Cyanide | General | 10 | 10 | 5 | Sample Data | 18/06/08 | No | No |
| | Conductivity | General | n/a | n/a | 622 | Sample Data | 18/06/08 | n/a | n/a |
| | Hardness (mg/l CaCO ₃) | General | n/a | n/a | | | | n/a | n/a |
| | pH | General | n/a | n/a | 7.8 | Sample Data | 18/06/08 | n/a | n/a |

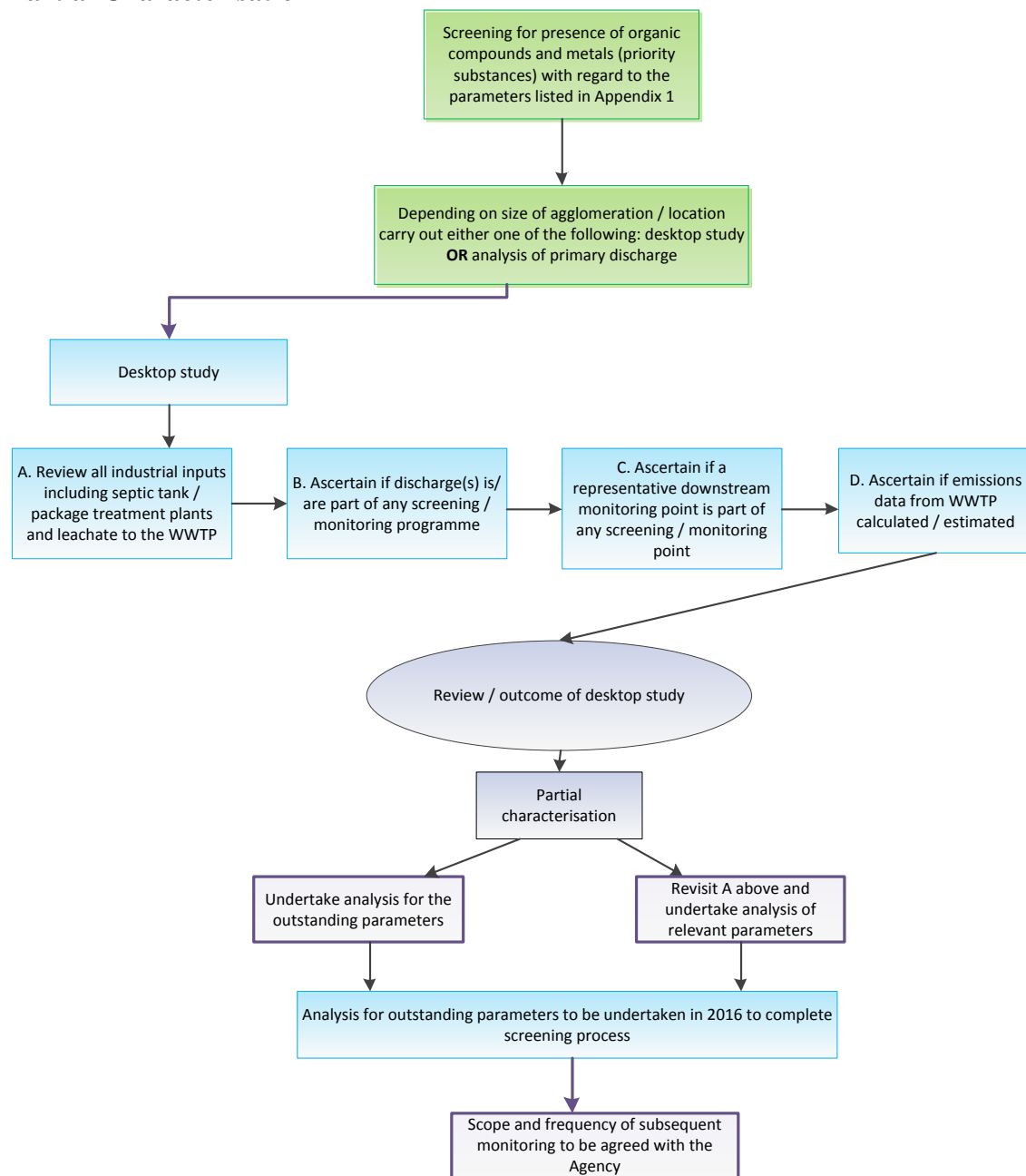
Notes:

1. Where measured values are available these should be used instead of estimated values from PRTR tool.
2. In the case of Copper the value 5 applies where the water hardness measured in mg/l CaCO₃ is less than or equal to 100; the value 30 applies where the water hardness exceeds 100 mg/l CaCO₃. Estimated CaCO₃ value > 100 where no sampling data available (based on PRTR tool)
3. In the case of Zinc, the standard shall be 8 µg/l for water hardness with annual average values less than or equal to 10 mg/l CaCO₃, 50 µg/l for water hardness greater than 10 mg/l CaCO₃ and less than or equal to 100 mg/l CaCO₃ and 100 µg/l elsewhere. Estimated CaCO₃ value > 100 where no sampling data available
For Cadmium and its compounds the EQS values vary dependent upon the hardness of the water as specified in five class categories (Class 1: <40 mg CaCO₃/l, Class 2: 40 to <50 mg CaCO₃/l, Class 3: 50 to <100 mg CaCO₃/l, Class 4: 100 to <200 mg CaCO₃/l and Class 5: ≥200 mg CaCO₃/l)

Appendix 2 – Priority Substance Screening Flowchart

A flow chart for the screening of the presence of organic compounds and metals (Priority Substances) from WWTP is included below. This flowchart shows that appropriate screening has been demonstrated in line with the assessment undertaken in this report.

Partial Characterisation



Appendix 3 – Receiving Waters Priority Substance Data

River Finn 36F01

St 500 Cumber Bridge_ Next Downstream River Station Data

Results below above LOD and past 2009 only.

| Parameter | Min | Average | Max |
|---|---------|---------|----------|
| 2,4-D (µg/L) | 0.083 | 0.083 | 0.083 |
| Alkalinity-total (as mg/L CaCO ₃) | 69.000 | 191.812 | 416.000 |
| Aluminium - unspecified (µg/L) | 8.000 | 27.833 | 71.000 |
| Ammonia-Total (as mg/L N) | 0.030 | 0.141 | 1.100 |
| Arsenic - unspecified (µg/L) | 0.500 | 0.575 | 0.600 |
| Barium - unspecified (µg/L) | 46.400 | 72.133 | 91.200 |
| Benzo(g,h,i)perylene (µg/L) | 0.001 | 0.002 | 0.004 |
| BOD - 5 days (Total - mg/L) | 1.000 | 2.187 | 5.500 |
| Boron - unspecified (µg/L) | 11.000 | 18.500 | 23.000 |
| Calcium - unspecified (mg/L) | 45.400 | 73.125 | 92.400 |
| Chloride (mg/L) | 9.000 | 29.099 | 127.000 |
| Chromium - unspecified (µg/L) | 0.600 | 1.000 | 2.000 |
| Conductivity @20°C (µS/cm) | 369.000 | 442.000 | 517.000 |
| Conductivity @25°C (µS/cm) | 189.000 | 501.789 | 1019.000 |
| Copper - unspecified (µg/L) | 0.900 | 2.150 | 4.100 |
| Dissolved Organic Carbon (mg/L) | 7.000 | 11.667 | 17.000 |
| Dissolved Oxygen (% saturation) | 68.000 | 87.514 | 108.000 |
| Dissolved Oxygen (mg/L) | 6.700 | 9.930 | 12.800 |
| Fluoride (mg/L) | 0.060 | 0.075 | 0.100 |
| Indeno(1,2,3-c,d)pyrene (µg/L) | 0.001 | 0.002 | 0.004 |
| Iron - unspecified (µg/L) | 58.000 | 220.167 | 347.000 |
| Magnesium - unspecified (µg/L) | 3.100 | 5.724 | 8.110 |
| Manganese - unspecified (µg/L) | 19.000 | 73.417 | 208.000 |
| MCPA (µg/L) | 0.086 | 0.120 | 0.181 |
| Mecoprop (µg/L) | 0.100 | 0.100 | 0.100 |
| Molybdenum - unspecified (µg/L) | 0.500 | 0.500 | 0.500 |
| Nickel - unspecified (µg/L) | 0.700 | 1.258 | 1.700 |
| Nitrite (as mg/L N) | 0.005 | 0.021 | 0.087 |
| ortho-Phosphate (as mg/L P) - unspecified | 0.018 | 4.058 | 31.000 |
| pH | 7.300 | 7.825 | 8.100 |
| Potassium - unspecified (mg/L) | 3.060 | 4.030 | 5.270 |
| Simazine (µg/L) | 0.050 | 0.050 | 0.050 |
| Sodium - unspecified (mg/L) | 7.600 | 14.608 | 24.300 |
| Strontium - unspecified (µg/L) | 169.000 | 334.417 | 525.000 |
| Total Hardness (as mg/L Ca) | 61.000 | 71.333 | 82.000 |
| Total Hardness (as mg/L CaCO ₃) | 76.000 | 216.000 | 367.000 |
| Total Oxidised Nitrogen (as mg/L N) | 0.520 | 1.092 | 2.100 |
| True Colour (Hazen) | 10.000 | 56.290 | 163.000 |
| Uranium - unspecified (µg/L) | 0.300 | 0.450 | 0.500 |
| Vanadium - unspecified (µg/L) | 0.800 | 0.800 | 0.800 |

| | | | |
|--|-------|--------|--------|
| Zinc - unspecified ($\mu\text{g/L}$) | 1.300 | 10.300 | 30.500 |
|--|-------|--------|--------|