Annual Environmental Report

2018

Mooncoin

D0145-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0145-01, Mooncoin, in Kilkenny in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports are included as an appendix to the AER as follows:

1.1 Licence specific reporting included in AER

Assessment / Report	Included in AER
There is no Licence Specific Reports included in the AER.	

1.2 Treatment Type

The agglomeration is served by a wastewater treatment plant Mooncoin WWTP with a Plant Capacity PE of 2800. The treatment process includes the following:

1.2.1 Mooncoin WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	screens
Primary Treatment	No	
Secondary Treatment	Yes	sbr
Nutrient Removal	No	
Tertiary Treatment	No	

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV's can be found in Section 2.2 Discharges from the agglomeration.

1.3 ELV Overview

1.3.1 Mooncoin WWTP

Compliance Status	
Were all parameters compliant for Mooncoin WWTP treatment plant	Yes
Where noncompliant see table 2.2.1 for details of parameters	

1.4 Sludge Removal

The amount of sludge removed from the wastewater treatment plant is shown below along with the transported destination of the sludge from the treatment plant.

Treatment Plant	Sludge type	Quantity	Unit	% Dry Solids	Destination
Mooncoin WWTP	Liquid Sludge	951.81	Volume (m3)	1	KMD

Annual Statement of Measures

None

2 MONITORING REPORTS SUMMARY

2.1 Summary report on monthly influent monitoring

A summary of influent monitoring for the treatment plant is presented in below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

2.1.1 Influent Monitoring Summary - Mooncoin WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
Suspended Solids mg/l	12	855	107.69
COD-Cr mg/l	12	886	256.03
Total Phosphorus (as P) mg/l	12	12	3.73
Total Nitrogen mg/l	12	74	31.2
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	354	107.04
Hydraulic Capacity	0	1637	563.66

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 3.5 if applicable

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 less than the peak Treatment Plant Capacity as detailed further in Section 3.2. The design of the wastewater tretament 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

2.2.1 Effluent Monitoring Summary - Mooncoin WWTP

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedences	Number of with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Total Phosphorus (as P) mg/l	0	0	0	12	0	0	0.63	Pass
Suspended Solids mg/l	35	87.5	0	12	0	0	6.19	Pass
pH pH units	0	0	0	12	0	0	7.37	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	25	50	0	12	0	0	3.06	Pass
Total Oxidised Nitrogen (as N) mg/l	15	18	0	12	0	0	4.17	Pass
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	12	0	0	0.45	Pass
COD-Cr mg/l	125	250	0	12	0	0	25.76	Pass
Ammonia-Total (as N) mg/l	10	12	0	12	0	0	0.09	Pass
Total Nitrogen mg/l	0	0	0	12	0	0	4.85	Pass

Notes:
1– This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 - For parameters where a mean ELV applies

Cause of Exceedance(s):

Not Applicable

Significance of Results:

The WWTP is compliant with the ELV's set in the Wastewater Discharge Licence.

2.3 Ambient monitoring summary

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

2.3.1 Ambient Monitoring Report Summary - Mooncoin WWTP

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Status
Upstream	248789, 115586	TPEFF1500D0145SW001	No	No	No	No	Poor
Downstream	251740, 112535	TPEFF1500D0145SW001	No	No	No	No	Poor

2.3.2 Ambient Monitoring Parameter Summary - Mooncoin WWTP

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

The WWTP discharge was compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results meet the required EQS.

The discharge from the wastewater treatment plant do not have an observable impact on the water quality.

The discharge from the wastewater treatment plant do not have an observable negative impact on the Water Framework Directive status.

Other Potential cause of deterioration in water quality relevant to this area are: No.The EQS assessed relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009, as amended.

3 OPERATIONAL REPORTS SUMMARY

3.1 Treatment Efficiency Report

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

3.1.1 Treatment Efficiency Report Summary - Mooncoin WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
SS	22154.95	693.35	96.87	
COD	52675.8	2887.12	94.52	
TN	6418.58	543.24	91.54	
cBOD	22021.55	343.16	98.44	
TP	767.02	71.16	90.72	

Note: The above data is based on sample results for the number of dates reported

3.2 Treatment Capacity Report Summary

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

Mooncoin WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	1890

Mooncoin WWTP	
DWF to the Treatment Plant (m3/day)	630
Current Hydraulic Loading - annual max (m3/day)	1637
Average Hydraulic loading to the Treatment Plant (m3/day)	563.66
Organic Capacity (PE) - As Constructed	2800
Organic Capacity (PE) - Collected Load (peak week)	1349
Organic Capacity (PE) - Remaining	1451
Will the capacity be exceeded in the next three years? (Yes/No)	No

3.3 Complaints Summary

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

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There is no Complaint data included in the AER.			

3.4 Reported Incidents Summary

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Irish Water but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.4.1 Summary of Incidents

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Uncontrolled release	Plant or equipment breakdown at WWTP	1	No	Yes

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	1
Number of Incidents reported to the EPA via EDEN in 2018	1
Explanation of any discrepancies between the two numbers above	

3.5 Sludge / Other inputs to the WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?[3]	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP?[2](Y/N)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 Storm Water Overflow Identification and Inspection Report

A summary of the operation of the storm water overflows and their significance where known is included below:

No Appendix Included

4.1.1 SWO Identification

WWDL Name / Code for Storm Water Overflow	Irish Grid Ref.	Included in Schedule A4 of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2018 (No. of events)	Total volume discharged in 2018 (m3)	Monitoring Status
KK208-SWO02	250766, 116412	Yes	Medium	Meeting			Not Monitored

4.1.2 Inspection Summary Report

SWO Summary	
How much sewage was discharged via SWOs in the agglomeration in the year (m3)?	
Is each SWO identified as non meeting DoEHLG Guidance included in the Programme of Improvements?	Yes
The SWO Assessment included the requirements of relevant of WWDL schedules?	Yes
Have the EPA been advised of any additional SWOs / charges to Schedule C3 and A4 under Condition 1.7?	No

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

4.2.1 Specified Improvement Programme Summary

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
There are no Specified Improvement Programmes for this Agglomeration.						

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

4.2.2 Improvement Programme Summary

Improvement Identifier	Improvement Description	Improvement Source	Expected Completion Date	Comments
There are no Improvements Programme for this Agglomeration.				

4.2.3 Sewer Integrity Risk Assessment

The utilisation of multiple capital maintenance programmes and the outputs of the workshops with the Local Authority Operations Staff held under the programme can be used to satisfy the requirements of Condition 5 regarding network integrity. Improvement works identified by way of these programmes and workshops will be included in the Improvements Summary Table".

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides list of the various reports required for this agglomeration and a brief summary of their recommendations.

5.a Licence Specific Reports Summary Table

Licence Specific Report	Required by licence	Year included in AER	Included in this AER	Reference to relevant section of AER (e.g. Appendix X).
There is no Licence Specific Report Required in this AER Annual Review.				

6 CERTIFICATION AND SIGN OFF

6.1 Summary of AER Contents

Parameter	Answer
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	
Is there a need to request/advise the EPA of any modifications to the existing WWDL?	No
List reason e.g. changes to monitoring requirements	
Have these processes commenced?	No
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	No

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

Signed: Date: 29/03/2019

This AER has been produced by Irish Water's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Eleanor Roche

Acting Head of Environmental Regulation.

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
Appendix 7.1 - Ambient monitoring summary

Waterbody	Waterbody	Waterbody	MonitoringStationCode	Monitoring	Monitoring	Monitoring
Middle Sui	IE_SE_100_	Transitiona	TW31002103SR5003	SR340 - Sui	Operationa	Waterford
Middle Sui	IE_SE_100_	Transitiona	TW31002103SR5003	SR340 - Sui	Operationa	Waterford
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Middle Suir	IE_SE_100_	Transitiona	TW31002103SR5005	SR350 - Sui	Operationa Waterford

SampleCod	SampleDat	SampleMe	ParameterI	ParameterI	ParameterI	Result	TextResult	ResultStrin
18-02084	########	TRaC Depth	Ammonia-N	mg/l	milligrams	0.056		OK
18-02084	########	TRaC Depth	Chlorophyl	µg/l	Microgram	3.2		OK
18-02084	########	TRaC Depth	ortho-Phos	mg/l	milligrams	0.011		OK
18-02084	########	TRaC Depth	BOD - 5 day	mg/l	milligrams per litre		<1	OK
18-02084	########	TRaC Depth	Dissolved C	% Saturatic	Percentage	91		OK
18-02084	########	TRaC Depth	Salinity	PSU	Practical sa	0.3		OK
18-02084	########	TRaC Depth	Salinity(Lab	0/oo	0/oo		<0.1	OK
18-02084	########	TRaC Depth	StationDep	m	Metres	4.4		OK
18-02084	########	TRaC Depth	Temperatu	°C	Degrees ce	5.8		OK
18-02084	########	TRaC Depth	Total Oxidi	mg/l	milligrams	3.3		OK
18-02084	########	TRaC Depth	Transparen	m	Metres	0.5		OK
18-02084	########	TRaC Depth	Depth	m	Metres	0		OK
18-02084	########	TRaC Depth	pH	pH units	pH Units	8.2		OK
18-02084	########	TRaC Depth	Silica (as Si	mg/l	milligrams	5.3		OK
18-08108	########	TRaC Depth	ortho-Phos	mg/l	milligrams	0.0067		OK
18-08108	########	TRaC Depth	pH	pH units	pH Units	8.1		OK
18-08108	########	TRaC Depth	Salinity	PSU	Practical sa	0.2		OK
18-08108	########	TRaC Depth	StationDep	m	Metres	2.3		OK
18-08108	########	TRaC Depth	Transparen	m	Metres	0.1		OK
18-08108	########	TRaC Depth	Temperatu	°C	Degrees ce	16.8		OK
18-08108	########	TRaC Depth	Ammonia-N	mg/l	milligrams	0.016		OK
18-08108	########	TRaC Depth	BOD - 5 day	mg/l	milligrams	2.7		OK
18-08108	########	TRaC Depth	Chlorophyl	µg/l	Microgram	17		OK
18-08108	########	TRaC Depth	Depth	m	Metres	0		OK
18-08108	########	TRaC Depth	Dissolved C	% Saturatic	Percentage	108		OK
18-08108	########	TRaC Depth	Salinity(Lab	0/oo	0/oo		<0.1	OK
18-08108	########	TRaC Depth	Silica (as Si	mg/l	milligrams	0.15		OK
18-08108	########	TRaC Depth	Total Oxidi	mg/l	milligrams	2.6		OK
18-12373	########	TRaC Depth	Ammonia-N	mg/l	milligrams	0.05		OK
18-12373	########	TRaC Depth	BOD - 5 day	mg/l	milligrams	1.8		OK
18-12373	########	TRaC Depth	Chlorophyl	µg/l	Microgram	29		OK
18-12373	########	TRaC Depth	pH	pH units	pH Units	8		OK
18-12373	########	TRaC Depth	Temperatu	°C	Degrees ce	19.1		OK
18-12373	########	TRaC Depth	Silica (as Si	mg/l	milligrams	0.57		OK
18-12373	########	TRaC Depth	Dissolved C	% Saturatic	Percentage	87		OK
18-12373	########	TRaC Depth	Salinity(Lab	0/oo	0/oo	0.8		OK
18-12373	########	TRaC Depth	Total Oxidi	mg/l	milligrams	2.2		OK
18-12373	########	TRaC Depth	Transparen	m	Metres	0.3		OK
18-12373	########	TRaC Depth	Depth	m	Metres	0		OK
18-12373	########	TRaC Depth	ortho-Phos	mg/l	milligrams	0.02		OK
18-12373	########	TRaC Depth	Salinity	PSU	Practical sa	1		OK
18-12373	########	TRaC Depth	StationDep	m	Metres	3.5		OK
18-13911	########	TRaC Depth	Salinity	PSU	Practical sa	2.1		OK
18-13911	########	TRaC Depth	Salinity(Lab	0/oo	0/oo	2		OK
18-13911	########	TRaC Depth	Transparen	m	Metres	0.2		OK
18-13911	########	TRaC Depth	Ammonia-N	mg/l	milligrams	0.03		OK
18-13911	########	TRaC Depth	Chlorophyl	µg/l	Microgram	37		OK
18-13911	########	TRaC Depth	BOD - 5 day	mg/l	milligrams	1.3		OK
18-13911	########	TRaC Depth	Depth	m	Metres	0		OK

18-13911	########	TRaC	Depth	Dissolved C	% Saturatic	Percentage	96	OK
18-13911	########	TRaC	Depth	Silica (as Si	mg/l	milligrams	0.3	OK
18-13911	########	TRaC	Depth	StationDep	m	Metres	3.6	OK
18-13911	########	TRaC	Depth	Total Oxidi	mg/l	milligrams	2.1	OK
18-13911	########	TRaC	Depth	ortho-Phos	mg/l	milligrams	0.028	OK
18-13911	########	TRaC	Depth	pH	pH units	pH Units	8.3	OK
18-13911	########	TRaC	Depth	Temperatu	°C	Degrees ce	17.6	OK
18-02085	########	TRaC	Depth	Ammonia-N	mg/l	milligrams	0.062	OK
18-02085	########	TRaC	Depth	Salinity(Lab	0/oo	0/oo	<0.1	OK
18-02085	########	TRaC	Depth	Temperatu	°C	Degrees ce	5.7	OK
18-02085	########	TRaC	Depth	Total Oxidi	mg/l	milligrams	3.2	OK
18-02085	########	TRaC	Depth	Chlorophyl	µg/l	Microgram	3.1	OK
18-02085	########	TRaC	Depth	Depth	m	Metres	0	OK
18-02085	########	TRaC	Depth	Silica (as Si	mg/l	milligrams	5.3	OK
18-02085	########	TRaC	Depth	StationDep	m	Metres	8.8	OK
18-02085	########	TRaC	Depth	Dissolved C	% Saturatic	Percentage	90	OK
18-02085	########	TRaC	Depth	ortho-Phos	mg/l	milligrams	0.009	OK
18-02085	########	TRaC	Depth	pH	pH units	pH Units	8.1	OK
18-02085	########	TRaC	Depth	Salinity	PSU	Practical sa	0.2	OK
18-02085	########	TRaC	Depth	Transparen	m	Metres	0.5	OK
18-08109	########	TRaC	Depth	Ammonia-N	mg/l	milligrams	0.017	OK
18-08109	########	TRaC	Depth	Chlorophyl	µg/l	Microgram	23	OK
18-08109	########	TRaC	Depth	Salinity	PSU	Practical sa	0.2	OK
18-08109	########	TRaC	Depth	Total Oxidi	mg/l	milligrams	2.8	OK
18-08109	########	TRaC	Depth	Transparen	m	Metres	0.2	OK
18-08109	########	TRaC	Depth	pH	pH units	pH Units	8.1	OK
18-08109	########	TRaC	Depth	Silica (as Si	mg/l	milligrams	0.14	OK
18-08109	########	TRaC	Depth	Depth	m	Metres	0	OK
18-08109	########	TRaC	Depth	Dissolved C	% Saturatic	Percentage	106	OK
18-08109	########	TRaC	Depth	ortho-Phos	mg/l	milligrams	0.0082	OK
18-08109	########	TRaC	Depth	Salinity(Lab	0/oo	0/oo	<0.1	OK
18-08109	########	TRaC	Depth	StationDep	m	Metres	6.4	OK
18-08109	########	TRaC	Depth	Temperatu	°C	Degrees ce	17	OK
18-12374	########	TRaC	Depth	Ammonia-N	mg/l	milligrams	0.06	OK
18-12374	########	TRaC	Depth	Salinity	PSU	Practical sa	2.4	OK
18-12374	########	TRaC	Depth	Transparen	m	Metres	0.4	OK
18-12374	########	TRaC	Depth	Salinity(Lab	0/oo	0/oo	2.4	OK
18-12374	########	TRaC	Depth	Temperatu	°C	Degrees ce	19.5	OK
18-12374	########	TRaC	Depth	Chlorophyl	µg/l	Microgram	11	OK
18-12374	########	TRaC	Depth	Depth	m	Metres	0	OK
18-12374	########	TRaC	Depth	StationDep	m	Metres	6	OK
18-12374	########	TRaC	Depth	Dissolved C	% Saturatic	Percentage	86	OK
18-12374	########	TRaC	Depth	ortho-Phos	mg/l	milligrams	0.02	OK
18-12374	########	TRaC	Depth	pH	pH units	pH Units	8	OK
18-12374	########	TRaC	Depth	Silica (as Si	mg/l	milligrams	0.77	OK
18-12374	########	TRaC	Depth	Total Oxidi	mg/l	milligrams	1.9	OK
18-13913	########	TRaC	Bottom	Chlorophyl	µg/l	Microgram	9.4	OK
18-13912	########	TRaC	Surface	Depth	m	Metres	0	OK
18-13913	########	TRaC	Bottom	Depth	m	Metres	6.4	OK
18-13913	########	TRaC	Bottom	Salinity	PSU	Practical sa	6.1	OK

18-13913	########	TRaC	Botto	Salinity(Lab	0/oo	0/oo	5.4	OK
18-13913	########	TRaC	Botto	StationDep	m	Metres	6.8	OK
18-13912	########	TRaC	Surfa	Temperatu	°C	Degrees ce	17.9	OK
18-13913	########	TRaC	Botto	Transparen	m	Metres	0.2	OK
18-13913	########	TRaC	Botto	Ammonia-N	mg/l	milligrams	0.046	OK
18-13912	########	TRaC	Surfa	Chlorophyl	µg/l	Microgram	18	OK
18-13912	########	TRaC	Surfa	ortho-Phos	mg/l	milligrams	0.034	OK
18-13912	########	TRaC	Surfa	Silica (as Si	mg/l	milligrams	0.15	OK
18-13913	########	TRaC	Botto	Temperatu	°C	Degrees ce	18	OK
18-13913	########	TRaC	Botto	pH	pH units	pH Units	8.2	OK
18-13912	########	TRaC	Surfa	Salinity	PSU	Practical sa	4.7	OK
18-13912	########	TRaC	Surfa	Salinity(Lab	0/oo	0/oo	4.3	OK
18-13913	########	TRaC	Botto	Silica (as Si	mg/l	milligrams	0.15	OK
18-13912	########	TRaC	Surfa	StationDep	m	Metres	6.8	OK
18-13912	########	TRaC	Surfa	Total Oxidi	mg/l	milligrams	2	OK
18-13913	########	TRaC	Botto	Total Oxidi	mg/l	milligrams	1.9	OK
18-13912	########	TRaC	Surfa	Ammonia-N	mg/l	milligrams	0.027	OK
18-13912	########	TRaC	Surfa	Dissolved C	% Saturatic	Percentage	94	OK
18-13913	########	TRaC	Botto	Dissolved C	% Saturatic	Percentage	91	OK
18-13913	########	TRaC	Botto	ortho-Phos	mg/l	milligrams	0.035	OK
18-13912	########	TRaC	Surfa	pH	pH units	pH Units	8.2	OK
18-13912	########	TRaC	Surfa	Transparen	m	Metres	0.2	OK

LimitOfDet	ReportResu	ReportText	ReportResu	ReportLimit
0.01	0.056		OK	0.01
1	3.2		OK	1
0.005	0.011		OK	0.005
1	0.5	<1	OK	1
1	91		OK	1
0.1	0.3		OK	0.1
0.1	0.05	<0.1	OK	0.1
0.1	4.4		OK	0.1
	5.8		OK	
0.01	3.3		OK	0.01
	0.5		OK	
	0		OK	
2	8.2		OK	2
0.1	5.3		OK	0.1
0.005	0.0067		OK	0.005
2	8.1		OK	2
0.1	0.2		OK	0.1
0.1	2.3		OK	0.1
	0.1		OK	
	16.8		OK	
0.01	0.016		OK	0.01
1	2.7		OK	1
1	17		OK	1
	0		OK	
1	108		OK	1
0.1	0.05	<0.1	OK	0.1
0.1	0.15		OK	0.1
0.01	2.6		OK	0.01
0.01	0.05		OK	0.01
1	1.8		OK	1
1	29		OK	1
2	8		OK	2
	19.1		OK	
0.1	0.57		OK	0.1
1	87		OK	1
0.1	0.8		OK	0.1
0.01	2.2		OK	0.01
	0.3		OK	
	0		OK	
0.005	0.02		OK	0.005
0.1	1		OK	0.1
0.1	3.5		OK	0.1
0.1	2.1		OK	0.1
0.1	2		OK	0.1
	0.2		OK	
0.01	0.03		OK	0.01
1	37		OK	1
1	1.3		OK	1
	0		OK	

1	96		OK	1
0.1	0.3		OK	0.1
0.1	3.6		OK	0.1
0.01	2.1		OK	0.01
0.005	0.028		OK	0.005
2	8.3		OK	2
	17.6		OK	
0.01	0.062		OK	0.01
0.1	0.05	<0.1	OK	0.1
	5.7		OK	
0.01	3.2		OK	0.01
1	3.1		OK	1
	0		OK	
0.1	5.3		OK	0.1
0.1	8.8		OK	0.1
1	90		OK	1
0.005	0.009		OK	0.005
2	8.1		OK	2
0.1	0.2		OK	0.1
	0.5		OK	
0.01	0.017		OK	0.01
1	23		OK	1
0.1	0.2		OK	0.1
0.01	2.8		OK	0.01
	0.2		OK	
2	8.1		OK	2
0.1	0.14		OK	0.1
	0		OK	
1	106		OK	1
0.005	0.0082		OK	0.005
0.1	0.05	<0.1	OK	0.1
0.1	6.4		OK	0.1
	17		OK	
0.01	0.06		OK	0.01
0.1	2.4		OK	0.1
	0.4		OK	
0.1	2.4		OK	0.1
	19.5		OK	
1	11		OK	1
	0		OK	
0.1	6		OK	0.1
1	86		OK	1
0.005	0.02		OK	0.005
2	8		OK	2
0.1	0.77		OK	0.1
0.01	1.9		OK	0.01
1	9.4		OK	1
	0		OK	
	6.4		OK	
0.1	6.1		OK	0.1

0.1	5.4	OK	0.1
0.1	6.8	OK	0.1
	17.9	OK	
	0.2	OK	
0.01	0.046	OK	0.01
1	18	OK	1
0.005	0.034	OK	0.005
0.1	0.15	OK	0.1
	18	OK	
2	8.2	OK	2
0.1	4.7	OK	0.1
0.1	4.3	OK	0.1
0.1	0.15	OK	0.1
0.1	6.8	OK	0.1
0.01	2	OK	0.01
0.01	1.9	OK	0.01
0.01	0.027	OK	0.01
1	94	OK	1
1	91	OK	1
0.005	0.035	OK	0.005
2	8.2	OK	2
	0.2	OK	