Annual Environmental Report

2018

Ballybunion

D0183-01

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1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2018 AER

This Annual Environmental Report has been prepared for D0183-01, Ballybunion, in Kerry 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 BALLYBUNNION WWTP with a Plant Capacity PE of 8180. The treatment process includes the following:

1.2.1 BALLYBUNNION WWTP

Treatment type	Yes / No	Details
Preliminary Treatment	Yes	Prelimenary Screening & Grit Removal
Primary Treatment	Yes	Diffused Aeration
Secondary Treatment	Yes	Final clarifiers
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 BALLYBUNNION WWTP

Compliance Status	
Were all parameters compliant for BALLYBUNNION WWTP treatment plant	No
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
BALLYBUNNION WWTP	Cake Sludge	144	Weight (Tonnes)	16.5	ENVA

Annual Statement of Measures

No capital works undertaken in 2018

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 - BALLYBUNNION WWTP

Parameters	Number of Samples	Annual Max	Annual Mean
Total Phosphorus (as P) mg/l	12	10.25	2.22
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	12	355	85.27
Suspended Solids mg/l	12	292	76.79
Total Nitrogen mg/l	12	88.04	22.6
COD-Cr mg/l	12	695	205.86
Hydraulic Capacity	0	10454	1970

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 greater 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 - BALLYBUNNION 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)
COD-Cr mg/l	125	250	0	13	0	0	30.69	Pass
BOD, 5 days with Inhibition (Carbonaceous BOD) mg/l	20	40	0	13	0	0	3.48	Pass
Total Phosphorus (as P) mg/l	0	0	0	12	0	0	1.45	Pass
Ammonia-Total (as N) mg/l	5	6	0	13	1	1	0.69	Fail
Visual Inspection Descriptive	0	0	0	12	0	0	0	Pass
pH pH units	0	0	0	13	0	0	7.35	Pass
Total Nitrogen mg/l	0	0	0	12	0	0	7.6	Pass
Conductivity 20 C µS/cm	0	0	0	13	0	0	614.79	Pass
ortho-Phosphate (as P) - unspecified mg/l	0	0	0	1	0	0	5	Pass
Suspended Solids mg/l	35	87.5	0	12	0	0	6.18	Pass

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 Oxidised Nitrogen (as N) mg/l	0	0	0	2	0	0	4.61	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):

Failure of the seals on a weir between the aeration tanks

Significance of Results:

The WWTP is not 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 - BALLYBUNNION 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
Downstream	85811, 138215	TPEFF1300D0183SW001	No	No	No	No	Poor
Downstream	85811, 138215	TPEFF1300D0183SW001	No	No	No	No	Moderate

2.3.2 Ambient Monitoring Parameter Summary - BALLYBUNNION 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 not 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.

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 - BALLYBUNNION WWTP

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)	Comment
TN	15247.32	5849.31	61.64	
SS	51809.1	4170.49	91.95	
cBOD	57531.97	2574.96	95.52	
COD	138897.34	22684.44	83.67	
TP	1494.95	977.96	34.58	

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.

BALLYBUNNION WWTP	
Peak Hydraulic Capacity (m3/day) - As Constructed	5790

BALLYBUNNION WWTP	
DWF to the Treatment Plant (m3/day)	1930
Current Hydraulic Loading - annual max (m3/day)	10454
Average Hydraulic loading to the Treatment Plant (m3/day)	1970
Organic Capacity (PE) - As Constructed	8180
Organic Capacity (PE) - Collected Load (peak week)	5162
Organic Capacity (PE) - Remaining	3018
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
2	Blocked Sewer	0	2

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	Other	1	No	Yes
Non-compliance	Plant or equipment breakdown at WWTP	1	No	Yes

3.4.2 Summary of Overall Incidents

Question	Answer
Number of Incidents in 2018	2
Number of Incidents reported to the EPA via EDEN in 2018	2
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
SW004 (INTERIM CODE AS NOT LISTED IN THE LICENCE)	87355, 140711	No	Low	Not Meeting			Not Monitored
SW005 (CARMODY'S MAIN PS) (INTERIM CODE AS NOT LISTED IN THE LICENCE)	86508, 139971	No	Low	Not Meeting			Not Monitored
SW006 (CASHEN PARK PS) (INTERIM CODE AS NOT LISTED IN THE LICENCE)	86187, 138588	No	Low	Not Meeting			Not Monitored
SW007 (RINNBHUÍ) (INTERIM CODE AS NOT LISTED IN THE LICENCE)	87732, 139512	No	Low	Not Meeting			Not Monitored
TPEFF1300D0183SW002	86161, 141002	Yes	Low	Not Meeting			Not Monitored
TPEFF1300D0183SW003	85811, 138215	Yes	Low	Not 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?	No
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
SW1 - Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	C	01/01/2020	No	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis
SW2 - Upgrading of Storm Water Overflows to comply with the criteria outlined in the DoECLG "Procedures and Criteria in relation to Storm Water Overflows, 1995"	C	01/01/2020	No	Not Started		The improvement programme will be reviewed by Irish Water to assess the works required to comply with the licence condition on a prioritised basis

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?	Yes
List reason e.g. additional SWO identified	Additional SWOs
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: 26/03/2019

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

EPA Coastal Monitoring data 2015 for the Cashen River.

Counter	Station No	Sample L	Survey Da	Time Clock	Depth Bed	Sample De	Salinity S	Temp S °C	pH	Secchi m	SS mg/	DO S % Sat	B.O.D. mg/	TON mg/l	NH3 mg/l	PO4 µg/l P	Chlorophyl	Si_est µg/l	Lab. Numb	DIN mg/l N	Free NH3	TON:NH3	DIN:PO4 µ	DO mg/l	Season	Cond	BOD_LOD	TON_L	NH3_L	PO4_LO	Chl_a_LOD	Si_est_LOD	Lab	din:si	P:si	colour	sal_lod	colour	WB
127605	CF140	CF140S	42177		3.2	0.41	2.23	16.4	8.4	0.78		132.4	7.8	0.25	0.022	59	136	1900	1543016	0.272	0.0019	11.36	10.19	12.8	Summer		>7.8						EPA Dublin	0.61	0.06				Cashen
127607	CF140	CF140B	42177		3.2	2.46	2.46	16.28	8.3	0.78		119.8	7.8	0.32	0.024	46	119.6	1800	1543017	0.344	0.00165	13.33	16.54	11.6	Summer		>7.8						EPA Dublin	0.82	0.05				Cashen
127596	CF160	CF160SR	42177		1	0.43	7.06	17.62	8.3	0.69		112.4		0.52	0.024	14	31.3	1300	1543024	0.544	0.00182	21.67	85.93	10.3	Summer								EPA Dublin	1.79	0.02				Cashen
127623	CF190	CF190SR	42177		3	0.5	31.4	15.15	8.1	2.5		105.7		0.024	0.012	2.5	2.7	100	1543037	0.036	0.00049	2	31.84	8.8	Summer					<5		<200	EPA Dublin	1.54	0.05				Cashen
127624	CF190	CF190BR	42177		3	2.6	31.4	15.15	8.1	2.5		105.6		0.023	0.016	2.5	3.3	100	1543038	0.039	0.00065	1.44	34.5	8.7	Summer					<5		<200	EPA Dublin	1.67	0.05				Cashen
127598	CF150	CF150SR	42177		2.1	0.49	4.01	17.1	8	0.97		105.3		1.4	0.046	14	34.5	1200	1543025	1.446	0.00174	30.43	228.4	9.9	Summer								EPA Dublin	5.17	0.02				Cashen
128673	CF190	CF190BR	42240	0.601389	2.87	2.64	32.06	16.47	8.2	2.51		103.7		0.048	0.031	12	1.5	260	1544588	0.079	0.00174	1.55	14.56	8.3	Summer								EPA Dublin	1.3	0.09				Cashen
128672	CF190	CF190SR	42240	0.597917	2.87	0.33	31.89	16.54	8.1	2.51		103.3		0.044	0.021	11	1.5	250	1544587	0.065	0.00095	2.1	13.07	8.3	Summer								EPA Dublin	1.12	0.09				Cashen
128272	CF190	CF190S	42212		2.3	0.3	32.67	15.08	8.1	EST 0.90		102.5		0.02	0.021	6.3	3.6	2000	1544055	0.041	0.00085	0.95	14.39	8.4	Summer								EPA Dublin	0.09	0.01				Cashen
128280	CF190	CF190B	42212	0.538194	2	1.73	32.67	15.08	8.1	EST 0.90		102.4		0.016	0.02	5.5		100	1544066	0.036	0.00081	0.8	14.47	8.4	Summer							<200	EPA Dublin	1.54	0.11				Cashen
127599	CF150	CF150BR	42177		2.1	1.41	4.47	17.04	8.1	0.97		101.6		1.3	0.053	17	24.1	1300	1543026	1.353	0.00249	24.53	176	9.5	Summer								EPA Dublin	4.46	0.03				Cashen
128270	CF180	CF180SR	42212		2.91	0.38	32.54	15.19	8.1	0.94		101.4		0.021	0.021	7.4	5.8	200	1544058	0.042	0.00086	1	12.55	8.3	Summer								EPA Dublin	0.9	0.07				Cashen
128250	CF180	CF180BR	42212		2.91	2.31	32.47	15.18	8.1	0.94		101.2		0.024	0.023	7.2	5.2	100	1544059	0.047	0.00094	1.04	14.44	8.3	Summer							<200	EPA Dublin	2.02	0.14				Cashen
127628	CF200	CF200B	42177		3.9	3.61	32.47	13.93	8.1	2.69		100.9	0.5	0.014	0.025	2.5	1.9	100	1543032	0.039	0.00094	0.56	34.5	8.5	Summer		<1.0			<5		<200	EPA Dublin	1.67	0.05				Cashen
127627	CF190	CF190S	42177		5.8	0.4	31.95	13.96	8.1	2.89		100.4		0.016	0.01	2.5	2	100	1543029	0.026	0.00037	1.6	23	8.5	Summer					<5		<200	EPA Dublin	1.12	0.05				Cashen
127629	CF200	CF200S	42177		3.9	0.38	32.46	13.92	8.1	2.69		100.4	0.5	0.016	0.01	2.5	1.9	100	1543031	0.026	0.00037	1.6	23	8.5	Summer		<1.0			<5		<200	EPA Dublin	1.12	0.05				Cashen
127597	CF165	CF165SR	42177		2.5	0.44	10.27	17.2	8.1	1.39		100.1		0.44	0.056	6.9	8.7	1200	1543023	0.496	0.00266	7.86	158.96	9	Summer								EPA Dublin	1.77	0.01				Cashen
128273	CF170	CF170BR	42212		4.2	3.49	28.17	15.1	8.1	0.91		100.1	1.2	0.09	0.03	11	7.4	760	1544057	0.12	0.00122	3	24.12	8.5	Summer								EPA Dublin	0.68	0.03				Cashen
128671	CF180	CF180BR	42240	0.586111	2.8	2.61	26.79	16.59	8.1	1.31		99.9		0.13	0.038	12	2.7	740	1544586	0.168	0.00173	3.42	30.96	8.3	Summer								EPA Dublin	0.97	0.03				Cashen
127625	CF170	CF170BR	42177		4.6	4.14	23.26	15.06	8.1	1.59		99.8	1.4	0.23	0.039	6	6.9	850	1543042	0.269	0.00159	5.9	99.14	8.7	Summer								EPA Dublin	1.36	0.01				Cashen
128274	CF170	CF170SR	42212		4.2	0.3	26.76	15.11	8.1	0.91	16	99.7	1.1	0.11	0.03	12	6	740	1544056	0.14	0.00122	3.67	25.8	8.5	Summer								EPA Dublin	0.81	0.03			35	Cashen
128670	CF180	CF180SR	42240	0.58125	2.8	0.3	26.65	16.57	8.1	1.31		99.6		0.12	0.037	12	2.9	720	1544585	0.157	0.00168	3.24	28.93	8.3	Summer								EPA Dublin	0.94	0.03				Cashen
127626	CF190	CF190B	42177		5.8	5	32.18	13.95	8.1	2.89		99.6		0.016	0.022	2.5	2.9	100	1543030	0.038	0.00082	0.73	33.61	8.4	Summer					<5		<200	EPA Dublin	1.63	0.05				Cashen
127620	CF180	CF180BR	42177		1.8	1.5	20.34	15.51	8.1	1.8 VOB		99.4		0.26	0.032	5.3	6.2	720	1543040	0.292	0.00134	8.12	121.83	8.7	Summer								EPA Dublin	1.74	0.01				Cashen
127613	CF180	CF180SR	42177		1.8	0.36	17.28	15.93	8.1	1.8 VOB		99.1		0.32	0.036	5.9	8.8	840	1543039	0.356	0.00156	8.89	133.43	8.8	Summer								EPA Dublin	1.82	0.01				Cashen
127606	CF170	CF170SR	42177		4.6	0.42	14.97	16.25	8.1	1.59	2	98.9	1.6	0.35	0.047	6.4	6.4	950	1543041	0.397	0.00208	7.45	137.17	8.9	Summer								EPA Dublin	1.79	0.01			19	Cashen
128269	CF165	CF165SR	42212		3.29	0.22	18.25	15.29	8.1	0.81		98.7		0.25	0.059	17	9.1	1500	1544060	0.309	0.00244	4.24	40.19	8.8	Summer								EPA Dublin	0.88	0.02				Cashen
128268	CF165	CF165BR	42212		3.29	2.94	29.28	15.28	8.1	0.81		98.6		0.24	0.065	16	10.7	1500	1544061	0.305	0.00268	3.69	42.15	8.3	Summer								EPA Dublin	0.87	0.02				Cashen
127609	CF150	CF150S	42177		3	0.43	9.75	16.22	8.1	1.26		97.4	2.8	0.53	0.085	13	15.8	1200	1543014	0.615	0.00376	6.24	104.61	9	Summer								EPA Dublin	2.2	0.02				Cashen
128668	CF170	CF170BR	42240	0.577083	3.83	3.29	18.1	16.48	8	0.48		96.7	1.5	0.36	0.094	23	6.2	1900	1544584	0.454	0.00339	3.83	43.65	8.5	Summer								EPA Dublin	1.02	0.02				Cashen
128266	CF160	CF160SR	42212		2.2	0.38	12.65	15.77	8	0.78		96.3		0.36	0.077	22	10	2100	1544062	0.437	0.00264	4.68	43.93	8.8	Summer								EPA Dublin	0.89	0.02				Cashen
128281	CF160	CF160BR	42212	0.640972	2.2	1.82	12.65	15.75	8	0.78		96.1		0.36	0.092	20	12.4	2100	1544063	0.452	0.00315	3.91	49.98	8.8	Summer								EPA Dublin	0.92	0.02				Cashen
127614	CF165	CF165BR	42177		2.5	2.04	15.26	15.92	8.1	1.39		95.9		0.38	0.077	7.4	8.7	1100	1543043	0.457	0.00333	4.94	136.57	8.6	Summer								EPA Dublin	1.78	0.01				Cashen
127611	CF160	CF160S	42177		2.8	0.42	11.5	16.06	8.1	1.41		95.7		0.36	0.11	16	9.8	1200	1543013	0.47	0.00481	3.27	64.96	8.8	Summer								EPA Dublin	1.68	0.03				Cashen
127619	CF165	CF165B	42177		3.1	2.83	14.07	15.56	8.1	1.41		95.3		0.38	0.083	10	6.9	1000	1543034	0.463	0.0035	4.58	102.39	8.7	Summer								EPA Dublin	1.99	0.02				Cashen
127616	CF170	CF170B	42177		4.29	3.79	11.72	15.75	8.1	1.29		95.2	1.7	0.42	0.096	10	7.9	1100	1543012	0.516	0.0041	4.38	114.11	8.8	Summer								EPA Dublin	2.01	0.02				Cashen
127622	CF180	CF180B	42177		1.89	1.75	14.35	15.44	8.1	1.27		95.1		0.15	0.064	6.5	7.5	990	1543028	0.214	0.00267	2.34	72.8	8.7	Summer								EPA Dublin	0.93	0.01				Cashen
127617	CF170	CF170S	42177		4.29	0.4	11.91	15.71	8.1	1.29	5	95	1.7	0.34	0.078	10	5.9	1200	1543011	0.418	0.00332	4.36	92.43	8.8	Summer								EPA Dublin	1.49	0.02			21	Cashen
128667	CF170	CF170SR	42240	0.572222	3.83	0.28	8.07	16.92	7.7	0.48	8	94.1	1.5	0.47	0.11	29	8.9	2500	1544583	0.58	0.00208	4.27	44.23	8.7	Summer								EPA Dublin	1	0.02			96	Cashen
127618	CF165	CF165S	42177		3.1	0.37	14.3	15.56	8.1	1.41		94		0.26	0.065	9.1	7	1000	1543033	0.325	0.00274	4	78.98	8.6	Summer								EPA Dublin	1.39	0.02				Cashen
127608	CF160	CF160BR	42177		1	1.03	13.05	16.16	8.2	0.69		93.9		0.48	0.042	13	23.1	1300	1543044	0.522	0.00231	11.43	88.79	8.5	Summer								EPA Dublin	1.72	0.02				Cashen
128699	CF200	CF200S	42240	0.370833	2.8	0.27	9.11	15.63	7.8	0.73		93.7	1.4	0.5	0.12	29	6.9	2500	1544568	0.62	0.00259	4.17	47.28	8.8	Summer								EPA Dublin	1.06	0.02				Cashen
127621	CF180	CF180S	42177		1.89	0.35	14.43	15.43	8.1	1.27		93.5		0.38	0.079	11	13.4	1000	1543027	0.459	0.0033	4.81	92.27	8.5	Summer								EPA Dublin	1.97	0.02				Cashen
127612	CF150	CF150B	42177		3	2.74	11	16.13	8	1.26		93.2	2.8	0.33	0.089	14	13.6	1200	1543015	0.419	0.00313	3.71	66.18	8.6	Summer								EPA Dublin	1.5	0.02				Cashen
128700	CF200	CF200B	42240	0.377778	2.8	2.42	32.13	16.04	7.9	0.73		93.1	1.7	0.39	0.13	22	6.1	2000	1544569	0.52	0.00363	3	52.27	7.5	Summer								EPA Dublin	1.12	0.02				Cashen
127615	CF160	CF160B	42177		2.8	2.76	14.67	15.78	8.1	1.41		92.9		0.38	0.12	13	6.9	1100	1543035	0.5	0.00514	3.17	85.05	8.4	Summer								EPA Dublin	1.95	0.02				Cashen
128263	CF170	CF170B	42212		4.22	4.03	18.54	15.8	8	1.49		92.8	1.5	0.31	0.086	27	6.3	1900	1544052	0.396	0.00295	3.6	32.43	8.2	Summer								EPA Dublin	0.89	0.03				Cashen
128265	CF180	CF180S	42212		2.13	0.68	13.26	15.76	8	1.78		91.8		0.34	0.088	20	7.3	2000	1544053	0.428	0.00301	3.86	47.32	8.4	Summer								EPA Dublin	0.92	0.02				Cashen
128264	CF180	CF180B	42212		2.13	1.96	13.42	15.76	8	1.78		91.8		0.34	0.091	21	4.8	2000	1544054	0.431	0.00311	3.74	45.39	8.4	Summer								EPA Dublin	0.92	0.02				Cashen
128267	CF170	CF170S	42212		4.22	0.79	10.82	15.28	7.9	1.49	7	91.1	1.5	0.41	0.092	22	5.9	2300	1544035	0.502	0.00243	4.46	50.46	8.5	Summer								EPA Dublin	0.94	0.02			103	Cashen
128685	CF150	CF150SR	42240	0.651389	2.07	0.36	1.11	16.79	7.5	0.36		90.5		0.73	0.11	45	24.6	2600	1544593	0.84	0.00131	6.64	41.28	8.7	Summer								EPA Dublin	1.39	0.03				Cashen
128688	CF150	CF150BR	42240	0.657639	2.07	1.67	1.09	16.72	7.5	0.36		90		0.72	0.13	45	20.6	2600	1544594	0.85	0.00154	5.54	41.77	8.7	Summer								EPA Dublin	1.4	0.03				Cashen
128257	CF160	CF160S	42212		1.2	0.28	3.73	15.96	7.8	0.61		89.9		0.56	0.093	28	14.9	3000	1544038	0.653	0.00206	6.02	51.57	8.7	Summer								EPA Dublin	0.93	0.02				Cashen
128649	CF140	CF140S	42240	0.449306	1.8	0.3	0.06	14.33	7.2	0.24		89.4	3.7	0.27	0.061	54	10.6	3000	1544575	0.331	0.0003	4.43	13.55	9.1	Summer								EPA Dublin	0.47	0.03				Cashen
128260	CF150	CF150S	42212		1.98	0.31	1.74	15.94	7.9	0.98		89.4	2.2	1.4	0.091	40	20.4	1700	1544040	1.491	0.00252	15.38	82.43	8.7	Summer								EPA Dublin	3.76	0.05				Cashen
128650	CF140	CF140B	42240	0.452778	1.8	1.74	0.06	14.29	7.2	0.24		89.2	4	0.32	0.082	56	9	2900	1544576	0.402	0.00041	3.9	15.87	9.1	Summer								EPA Dublin	0.59	0.04				Cashen
128259	CF165	CF165S	42212		1.7	0.38	5.75	15.91	7.8	1.21		89.1		0.55	0.099	26	9.8	2800	1544036	0.649	0.00218	5.56	55.2	8.5	Summer								EPA Dublin	0.99	0.02				Cashen
128254	CF150	CF150SR	42212		2.1	0.38	10.2	16.25	7.8	0.65		88.7	1.7	0.44	0.097	26	16.3	2300	1544050	0.537	0.00219	4.54	45.67	8.2	Summer								EPA Dublin	1	0.02				Cashen
128262	CF150	CF150SR	42212		2.1	0.38	10.2	16.25	8.1	0.65		88.7		0.005	0.019	7.1	3.3	100	1544064	0.024	0.00084	0.26	7.47	8.2	Summer			<0.010				<200	EPA Dublin	1.03	0.14				Cashen
128255	CF150	CF150BR	42212		2.1	1.97	10.33	16.17	7.9	0.65		88.7	2	0.41	0.1	25	9.6	2300	1544051	0.51	0.00282	4.1	45.11	8.2	Summer								EPA Dublin	0.95	0.02				Cashen
128261	CF150	CF150BR	42212		2.1	1.97	10.33	16.17	8.1	0.65		88.7		0.005	0.015	7.9	2.9	100	1544065	0.02	0.00066	0.33	5.6	8.2	Summer			<0.010				<200	EPA Dublin	0.86	0.15				Cashen
128703	CF160	CF160S	42240	0.413889	0.9	0.33	0.32	15.22	7.3	0.27		86.3		0.56	0.13	59	20.9	3100	1544572	0.69	0.00087	4.31	25.86	8.6	Summer								EPA Dublin	0.95	0.04				Cashen
128677	CF165	CF165SR	42240	0.619444	3.12	0.28	1.67	16.5	7.8	0.49		85.5		0.48	0.14	42	14.8	3000	1544589	0.62	0.00323	3.43	32.64	8.3	Summer								EPA Dublin	0.89	0.03				Cashen
128698	CF190	CF190B	42240	0.361111	2.36	2.2	4.8	16.15	7.6	0.49		85.3		0.59	0.18	34	8.5	2800	1544567	0.77	0.00257	3.28	50.08	8.1	Summer								EPA Dublin	1.18	0.02				Cashen
128253	CF165	CF165B	42212		1.7	1.49	10.76	16.3	7.8	1.21		85.1		0.61	0.21	37	8.5	2600	1544037	0.82	0.00477	2.9	49.01	7.8	Summer								EPA Dublin	1.35	0.03				Cashen
128697	CF190	CF190S	42240	0.359028	2.36	0.27	3.56	16.12	7.5	0.49		85		0.56	0.14	35	7.6	2900	1544566	0.7	0.00159	4	44.23	8.2	Summer								EPA Dublin	1.04	0.02				Cashen
128678	CF165	CF165BR	42240	0.619444	3.12	2.92	1.96	16.35	7.6	0.49		84.6		0.61	0.17	48	11.6	3000	1544590	0.78	0.00246	3.59	35.93	8.2	Summer								EPA Dublin	1.12	0.03				Cashen
128701	CF165	CF165S	42240	0.396528	1.51	0.29	0.71	15.51	7.6	0.26		84.4		0.68	0.15	57	18.9	3000	1544570	0.83	0.00204	4.53	32.2	8.4	Summer								EPA Dublin	1.19	0.04				Cashen
128679	CF160	CF160SR	42240	0.629861	1.93	0.4	1.01	16.24	7.5	0.36		84.4		0.67	0.15	56	21.8	3000	1544591	0.82	0.00172	4.47	32.38	8.2	Summer								EPA Dublin	1.17	0.04				Cashen
128278	CF140	CF140S	42212		1.41	0.45	0.16	14.58	7.8	0.58		84.3	2.4	0.62	0.047	47	14.5	3700	1544042	0.667	0.00094	13.19	31.38	8.6	Summer								EPA Dublin	0.77	0.02				Cashen
128279	CF140	CF140B	42212		1.41	1.07	0.16	14.58	7.8	0.58		84.2	2.4	0.62	0.057	44	13.3	3700	1544043	0.677	0.00114	10.88	34.02	8.6	Summer								EPA Dublin	0.78	0.02				Cashen
128702	CF165	CF165B	42240	0.402778	1.51	1.4	0.72	15.48	7.4	0.26		84.2		0.65	0.16	56	16.4	3000	1544571	0.81	0.00138	4.06	31.99	8.4	Summer								EPA Dublin	1.16	0.04				Cashen
128694	CF170	CF170S	42240	0.328472	4.1	0.71	1.12	15.77	7.2	0.31	21	82.5	2.8	0.68	0.18	56	4.9	3000	1544563	0.86	0.001	3.78	33.96	8.1	Summer								EPA Dublin	1.23	0.04			215	Cashen
128693	CF170	CF170B	42240	0.322222	4.1	3.71	1.17	15.83	7.2	0.31		82.5	4.2	0.69	0.24	51	12.2	3000	1544562	0.93	0.00134	2.88	40.32	8.1	Summer								EPA Dublin	1.33	0.03				Cashen
128647	CF150	CF150S	42240	0.425694	2.39	0.33	0.44	16.18	7.5	0.39		82.4	5.6	1.4	0.22	68	95.1	2000	1544573	1.62	0.0025	6.36	52.68	8.1	Summer								EPA Dublin	3.47	0.07				Cashen
128696	CF180	CF180B	42240	0.340278	1.49	1.14	1.25	15.86	7.2	0.33		82		0.66	0.21	55	9.4	3000	1544565	0.87	0.00118	3.14	34.98	8.1	Summer								EPA Dublin	1.24	0.04				Cashen
128695	CF180	CF180S	42240	0.336111	1.49	0.27	1.24	15.85	7.2	0.33		81.7		0.66	0.17	56	11.7	3000	1544564	0.83	0.00095	3.88	32.78	8	Summer								EPA Dublin	1.19	0.04				Cashen
128648	CF150	CF150B	42240	0.428472	2.39	1.99	0.44	16.17	7.6	0.39		81.2	5.7	1.3	0.25	59	94.2	2200	1544574	1.55	0.00357	5.2	58.09	8	Summer								EPA Dublin	3.02	0.05				Cashen
128252	CF160	CF160B	42212		1.2	1	10.42	16.53	7.8	0.61		80.7		0.36	0.095	27	17.9	2900	1544039	0.455	0.00219	3.79	37.27	7.4	Summer								EPA Dublin	0.67	0.02				Cashen
128682	CF160	CF160BR	42240	0.639583	1.93	1.72	2.57	16.23	7.4	0.36		71.5		0.63	0.16	57	16.1	2900	1544592	0.79	0.00146	3.94	30.65	6.9	Summer								EPA Dublin	1.17	0.04				Cashen

128251	CF150	CF150B	42212		1.98	1.59	11.65	16.56	7.9	0.98	67.4	2.3	1.4	0.1	35	21.4	1700	1544041	1.5	0.0029	14	94.77	6.1	Summer			EPA Dublin	3.78	0.04		Cashen
2523	CF165	CF165S	42086	0.43125	3.9	0.34	11.51	9.83	7.7	1.01	96.4		0.91	0.048	19	2.1	2700	1541125	0.958	0.00053	18.96	111.5	10.1	Winter			EPA Dublin	1.52	0.01		Cashen
2524	CF165	CF165B	42086	0.440972	3.9	3.66	24.63	9.37	7.8	1.01	97.6		0.91	0.048	19	2.1	2600	1541120	0.958	0.00064	18.96	111.5	9.5	Winter			EPA Dublin	1.58	0.01		Cashen

2525	CF160	CF160S	42086	0.444444	1.9	0.36	7.92	9.87	7.7	1.13		96.5		1.3	0.051	20	2.2	3100	1541126	1.351	0.00057	25.49	149.38	10.4	Winter			EPA Dublin	1.87	0.01		Cashen
2526	CF160	CF160B	42086	0.451389	1.9	1.72	15.97	9.71	7.8	1.13		96.7		1.3	0.055	20	2.3	3000	1541121	1.355	0.00076	23.64	149.82	9.9	Winter			EPA Dublin	1.94	0.01		Cashen
2527	CF150	CF150S	42086	0.461806	2.8	0.34	8.35	9.96	7.6	0.85		93.6	0.5	1.6	0.058	23	3.6	3100	1541127	1.658	0.00052	27.59	159.41	10	Winter	<1.0		EPA Dublin	2.29	0.01		Cashen
2528	CF150	CF150B	42086	0.467361	2.8	2.14	8.5	9.45	7.7	0.85		94.8	0.5	1.6	0.067	25	4.5	3100	1541128	1.667	0.00072	23.88	147.45	10.3	Winter	<1.0		EPA Dublin	2.31	0.02		Cashen
2529	CF140	CF140S	42086	0.479167	2.3	0.35	0.22	9.12	7.7	1.28		91	0.5	0.87	0.054	28	3.1	3800	1541129	0.924	0.00057	16.11	72.97	10.5	Winter	<1.0		EPA Dublin	1.04	0.01		Cashen
2530	CF140	CF140B	42086	0.484028	2.3	2.21	0.22	9.16	7.6	1.28		92.3	0.5	0.86	0.057	31	3	4100	1541130	0.917	0.00048	15.09	65.41	10.6	Winter	<1.0		EPA Dublin	0.96	0.01		Cashen
2536	CF170	CF170SR	42086	0.567361	4.1	0.24	8.95	10.45	7.7	1.78	5	97.6	0.5	0.98	0.05	19	2.5	3000	1541135	1.03	0.00058	19.6	119.88	10.3	Winter	<1.0		EPA Dublin	1.47	0.01	22	Cashen
2537	CF170	CF170BR	42086	0.573611	4.1	4.08	17.64	9.67	7.8	1.78		98.4	0.5	0.93	0.046	20	5	2700	1541122	0.976	0.00063	20.22	107.91	10	Winter	<1.0		EPA Dublin	1.55	0.01		Cashen
2538	CF180	CF180SR	42086	0.58125	1.8	0.29	12.34	10.18	7.8	1.19		97.7		0.9	0.045	20	2.6	2600	1541123	0.945	0.00064	20	104.49	10.1	Winter			EPA Dublin	1.56	0.01		Cashen
2539	CF180	CF180BR	42086	0.582639	1.8	1.55	12.64	10.14	7.8	1.19		97.8		0.9	0.047	20	2.5	2600	1541124	0.947	0.00067	19.15	104.71	10.1	Winter			EPA Dublin	1.56	0.01		Cashen
2540	CF165	CF165SR	42086	0.590972	2.1	0.36	4.44	10.7	7.7	0.97		101		1	0.044	20	3.1	3300	1541136	1.044	0.00052	22.73	115.43	10.9	Winter			EPA Dublin	1.36	0.01		Cashen
2541	CF165	CF165BR	42086	0.596528	2.1	1.53	11.43	9.95	7.7	0.97		97.8		0.65	0.037	16	3.4	3100	1541137	0.687	0.00041	17.57	94.95	10.3	Winter			EPA Dublin	0.95	0.01		Cashen
2542	CF160	CF160SR	42086	0.601389	1.3	0.34	3.06	10.86	7.8	0.78		102.9		0.95	0.044	26	5.4	3400	1541138	0.994	0.00066	21.59	84.54	11.2	Winter			EPA Dublin	1.25	0.01		Cashen
2543	CF160	CF160BR	42086	0.611111	1.3	0.98	9.46	10.53	7.8	0.78		100.8		0.95	0.044	25	5.8	3400	1541139	0.994	0.00065	21.59	87.92	10.6	Winter			EPA Dublin	1.25	0.01		Cashen
2546	CF170	CF170S	42086	0.359028	4.8	0.39	31.2	9.16	7.9	0.9	11	99.6	0.5	0.24	0.012	17	2	550	1541114	0.252	0.0002	20	32.78	9.4	Winter	<1.0		EPA Dublin	1.97	0.06	<5	2 Cashen
2547	CF170	CF170B	42086	0.371528	4.8	4.26	31.24	9.16	7.9	0.9		100.3	0.5	0.25	0.013	17	2.5	560	1541115	0.263	0.00022	19.23	34.21	9.4	Winter	<1.0		EPA Dublin	2.01	0.06		Cashen
2548	CF180	CF180S	42086	0.376389	2.9	0.2	31.27	9.17	7.9	0.98		100		0.24	0.01	17	1.9	540	1541116	0.25	0.00017	24	32.52	9.4	Winter			EPA Dublin	1.99	0.06		Cashen
2549	CF180	CF180B	42086	0.385417	2.9	2.67	31.31	9.16	7.9	0.98		100.1		0.24	0.011	16	2.2	560	1541117	0.251	0.00018	21.82	34.69	9.4	Winter			EPA Dublin	1.92	0.06		Cashen
2550	CF190	CF190S	42086	0.400694	5.1	0.52	31.75	9.2	7.9	1.07		100.2		0.21	0.005	16	2.5	480	1541118	0.215	0.00008	42	29.72	9.4	Winter		<0.010	EPA Dublin	1.92	0.06		Cashen
2551	CF190	CF190B	42086	0.410417	5.1	4.98	31.95	9.17	7.9	1.07		100.4		0.22	0.005	15	2.5	480	1541119	0.225	0.00008	44	33.17	9.4	Winter		<0.010	EPA Dublin	2.01	0.06		Cashen