

2017 MACRO MONITORING RESULTS

ENVIRONMENTAL SURVEYING AND MONITORING

OF THE

WILD ATLANTIC WAY OPERATIONAL PROGRAMME

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Section 1 Introduction

This document details the results of the Macro Monitoring Study carried out as part of the *Environmental Surveying and Monitoring for the Wild Atlantic Way Operational Programme*. It has been undertaken by CAAS Ltd. on behalf of Fáilte Ireland.

The Environmental Surveying and Monitoring was carried out as part of Fáilte Ireland's commitments in the WAW Operational Programme 2015-2019. A copy of the Operational Programme and associated documents are available on the Fáilte Ireland website.

The purpose of the monitoring strategy is to ensure that the effects of the implementation of the Operational Programme are understood and acted upon. This will contribute to avoiding delays in identifying existing or emerging activities that could threaten the environment.

The Strategy for Environmental Surveying and Monitoring for the Wild Atlantic Way (WAW) is intended to describe the existing conditions of sites with a view to:

- Contributing to Visitor Management Strategies;
- Contributing to future editions of Fáilte Ireland's WAW Guidelines;
- Identifying remedial action/works required;
- Assessing the capacity for future loadings; and
- Integrating site management with future European site Management Plans.

There are three strands of Monitoring Programme including:

- Strand 1 - Macro Monitoring (Concentrates on long-established, high quality, official baselines);
- Strand 2 - Visitor Observation (Surveying activities of visitors at designated points along the WAW); and
- Strand 3 - Ecological Monitoring (Surveying ecological effects of visitor activities at designated points along the WAW).

This Report forms Strand 1 of the Monitoring Programme; details of the methods and results obtained are contained in the following sections. The results of Strand One, Macro Monitoring, are collated and presented to a monitoring group each year along with results of all other WAW monitoring activities. These results are used to inform management decisions and guide future planning.

1.1 Background

Strand One of the monitoring strategy concentrates on long-established, high quality, official baselines. These measures *inter alia* the seasonal variances in environmental loadings caused by visitors; such as water quality, road traffic, Blue Flag Beach conditions and Green Coast Awards. There are seven monitoring sites and four control sites selected for the Macro Monitoring. Each site is located in the counties situated along the WAW; the seven sites Macro Monitoring sites are:

- Dungloe;
- Bundoran;
- Newport;
- Galway Bay;
- Kilrush;
- Bantry; and
- Cahersiveen.

The 4 control sites are:

- Ballybofey;
- Gort;
- Castleisland; and
- Lahinch.

The purpose of Macro Monitoring is to identify the state of the environment between the gateway settlements; these intra-urban settlements, such as Bundoran in Co. Donegal, often accommodate and entertain the bulk of overnight visitors.

The monitoring focuses on intra-urban settlements between gateway towns along the WAW. Gateways such as Cork and Galway capture the infiltration of visitors. These also supply high-level 'input' data for monitoring activities before visitors become dissipated among many smaller destinations and intra-urban settlements (See Figure 1.1).

1.2 Methodology for Macro Monitoring

- The initial Macro Monitoring focuses on the seven aforementioned sites. This monitoring can be expanded to prioritise other areas, to take account sensitivities that emerge or as directed by the monitoring group. Sites are reviewed and updated based on the results of the monitoring each year.
- The 4 control sites are also subject to changes, to take account of emerging sensitivities identified by the annual monitoring or as directed by the monitoring group.
- The Technical Indicators chosen are outlined in Table 1.1 below. Each indicator was chosen based on specific criterion whereby datasets already exist.
- The information collected from the existing datasets are combined annually to identify trends and changes in the technical indicators identified for each of the 11 monitoring sites.
- The results are examined to identify trends and/or changes within the technical indicator data sets which are directly attributed to tourism; attributes to be examined include:
 1. Traffic Volume;
 2. Water Quality;
 3. Blue Flag Beaches and Marinas;
 4. National Green Coast Award; and
 5. Fáilte Ireland visitor numbers.
- Other intervening factors such as a technical failure at a wastewater treatment plant which are not attributed to tourism will also be highlighted.
- If the results show that visitor activity and/or visitor intensification is predicted/identified to negatively affect the environment, recommendations will be made to alleviate environmental concerns. These recommendations will be guided and refined by the monitoring group.

Table 1.1 Macro Monitoring Indicators

Factor	Technical Indicator	Monitoring	Authority/Source	Frequency
Water Quality	Non-conformities with relevant legislative requirements in Waste Water Treatment data available from licensed facilities (Waste Water Treatment Plants and Agglomerations)	Non-conformances relating to minimum water quality standards and the licenced Population Equivalent (P.E) loading for the WWTP will be examined. Where a non-conformance is identified, the EPA collects and details information on the reason for failure. Persistent effects that is attributable to tourism i.e. overloading of treatment capacity resulting in failure to meet minimum requirements in summer months as a result of high visitor numbers. Non-conformances related to a relevant intervening factor, such as mechanical/technical issues, will be noted.	Environmental Protection Agency (EPA)	Annual
	Conformance with legislative requirements at the closest bathing water monitoring site	Non-conformances relating to minimum bathing water quality standards and legislative Coastal Water Quality status will be assessed		
Traffic Volume	Upward/downward trend in traffic volumes during tourist season and shoulder seasons	Assessment of National Roads Authority traffic counters adjacent to chosen sites and along the WAW route where year-round statistics are collected.	National Roads Authority (NRA)	Annual
		Assessment of Local Authority data from intermittent monitoring of regional and local road traffic (where available). Regional and local roads comprise of 75% of the WAW Route.	Local Authorities	
Blue Flag Beaches and Marinas	Upward/downward trend in award/status	Assessment of the number of annual Blue Flag Beach status being retracted/awarded at the closest bathing water.	An Taisce	Annual
National Green Coast Award		Assessment of the number of National Green Coast Awards being retracted/awarded at the closest bathing water.		
State of Knowledge Ireland's Biodiversity Report (2010)	Changes in the status of biodiversity	The status of this indicator be informed and updated by emerging findings and information sources from Biodiversity Reports.	National Biodiversity Centre	Occasional
EPA Ireland's Environment - An Assessment (2012)	Changes in environmental status along the WAW	The status of this indicator be informed and updated by emerging findings and information sources from this report.	Environmental Protection Agency (EPA)	Every 4 Years

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Factor	Technical Indicator	Monitoring	Authority/Source	Frequency
The status of EU Protected Habitats and Species in Ireland	Changes in the status of EU Protected Habitats and Species in Ireland	The status of this indicator be informed and updated by emerging findings and information sources from the National Parks and Wildlife Service and other stakeholders on the status of EU Protected Habitats and Species.	National Parks and Wildlife Service (NPWS)	Occasional
			Department of Environment, Community and Local Government (DECLG)	
			Department of Agriculture, Heritage and the Gaeltacht (DAHG)	
Visitor Numbers	Changes in Fáilte Ireland data on visitor numbers	Upward/downward trends in visitor numbers during the tourist season and shoulder season.	Fáilte Ireland	Annual
Tourism related planning refusals	Refusals of unsuitable tourism related projects by County	Applications to An Bord Pleanála will provide an official high-level indicator as to where pressure points are occurring in Counties along the WAW without the need to capture all planning applications to Local Authorities and or Foreshore Lease/Licence applications to the Department of Environment, Community and Local Government. A high level of tourism related refusals is a potential indicator pressure on the environmental status of said County. Record trends in tourism related applications.	An Bord Pleanála	Annual

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Figure 1.1 Macro Monitoring Locations

Table 1.2 Macro Monitoring Sites

County	Monitoring Sites	National Roads Authority Traffic Counter	WWTP Licence No.	WWTP/Agglomeration	Bathing Water Monitoring site
Donegal	Dungloe	N56 Between Dungloe and R252 Jn, Co. Donegal (20562)	D0208-01	Dungloe	Naran Beach/Carrickfinn
Donegal (Sligo Border)	Bundoran	N15 Between Bundoran and Sligo, Tullaghan, Co. Leitrim (20153)	D0130-01	Bundoran/Mullaghmore /Cliffony	Bundoran/Mullaghmore
Mayo	Newport	N59 Between Mullranny and Newport, Newfield, Co. Mayo (20591)	D0224-01	Mallaranny	Mullranny/Clare Island/Bertra
Galway	Galway Bay	N18 Between Kilcolgan and Clarinbridge, Co. Galway (1182)	D0050-01	Galway Mutton Island	Silverstrand/Salthill/Grattan Road/Ballyloughane
Clare	Kilrush	N67 Between Kilrush Ferry and Kilrush, Moyne Court, Co. Clare (1671)	D0075-01	Kilrush Agglomeration	Cappagh Pier
Kerry	Cahersiveen	N70 Between Cahersiveen and Glenbeigh, Gortaforia, Co. Kerry (20701)	D0181-01	Cahersiveen/Knightstown	Whitestrans
Cork	Bantry	N72 Between Bantry and Glengarriff, North of Bantry, Co. Cork (1715)	D0168-01	Bantry	Barley Cove

Table 1.3 Macro Monitoring Control Site

County	Control Sites	National Roads Authority Traffic Counter	WWTP Licence No.	WWTP/Agglomeration	Bathing Water Monitoring site
Donegal	Ballybofey	N13 Between Stranorlar and Letterkenny, Treantaboy, Co. Donegal (1133)	D0120-01	Ballybofer/Stranlorlar	N/A
Galway	Gort	N18 Between Kilcolgan and Clarinbridge, Co. Galway (1182)	D0195-01	Gort	N/A
Kerry	Castleisland	N21 Between Tralee and Castleisland, Co. Kerry (1211)	D0180-01	Castleisland	N/A
Clare	Lahinch	N67 Between Ennistimon and Lisdoonvarna, Co. Clare (20671)	D0080-01	Lahinch	Lahinch

Section 2 Presentation of Results and Analysis

2.1 Macro Indicator 1 - Water Quality

'Water Quality' is the first macro-indicator examined at each of the monitoring sites outlined in Table 1.2, and control sites outlined in Table 1.3. The 'Water Quality' indicator is broken into two sub-indicators: Wastewater treatment plant/Agglomeration operational status, and Bathing Water Status.

2.1.1 Wastewater Treatment Plant/ Agglomeration Operational Status

This macro-indicator can be used to identify persistent effects on Water Quality that is attributable to tourism i.e. overloading of treatment capacity resulting in failure to meet minimum requirements in summer months as a result of high visitor numbers.

This data is reviewed and compared annually in order to identify any trends in the operational status of the wastewater treatment plants/agglomerations at the monitoring and control sites which might be attributable to tourism. For example, continuous exceedances in Emission Limit Values (ELV's) over consecutive years might indicate that a wastewater treatment plant/agglomeration is serving more than the population equivalent which it was intended (Figure 2.1). This might suggest high visitor numbers at the monitoring and control point locations. The results are summarised as follows:

- Only three (Galway Bay, Cahersiveen and Bantry) wastewater treatment plants/agglomerations were compliant with ELV's in 2016 (Figure 2.2);
 - Reasons for non-compliance were regularly attributable to exceedances in permitted ELV's of ammonia and other substances;
 - Non-compliance with ELV's at wastewater treatment plants could suggest that the facilities are serving over-populated catchment areas;
- Increased visitor numbers to the monitoring sites and control sites along the WAW during the summer months could be putting pressure on these wastewater treatment facilities, resulting in breaches in annual ELV's. Future monitoring is required;
- 5 of the named facilities received complaints during the year 2016;
- 7 of the sites reported incidents to the EPA;
- Of the 11 wastewater treatment plants/agglomerations examined for this study had improvements or upgrades made to the facilities during the year 2016;
- 3 of the facilities examined had not published an Annual Review for the year ending 2016 at the time of this study. As such, it was not possible to determine the operational status of these three wastewater treatment plants/agglomerations.
- As Bundoran Agglomeration is currently not served by a wastewater treatment Plant, the Plant capacity is currently at 0.

Full details of the status of WWTP/Agglomerations for each of the sites can be found in Table 2.1 and Table 2.2. Where a site was found to be non-compliant the assessment examines the cause of any deficiencies and records the number of complaints/incident reports as well as compiling a catalogue of all improvements to the facility.

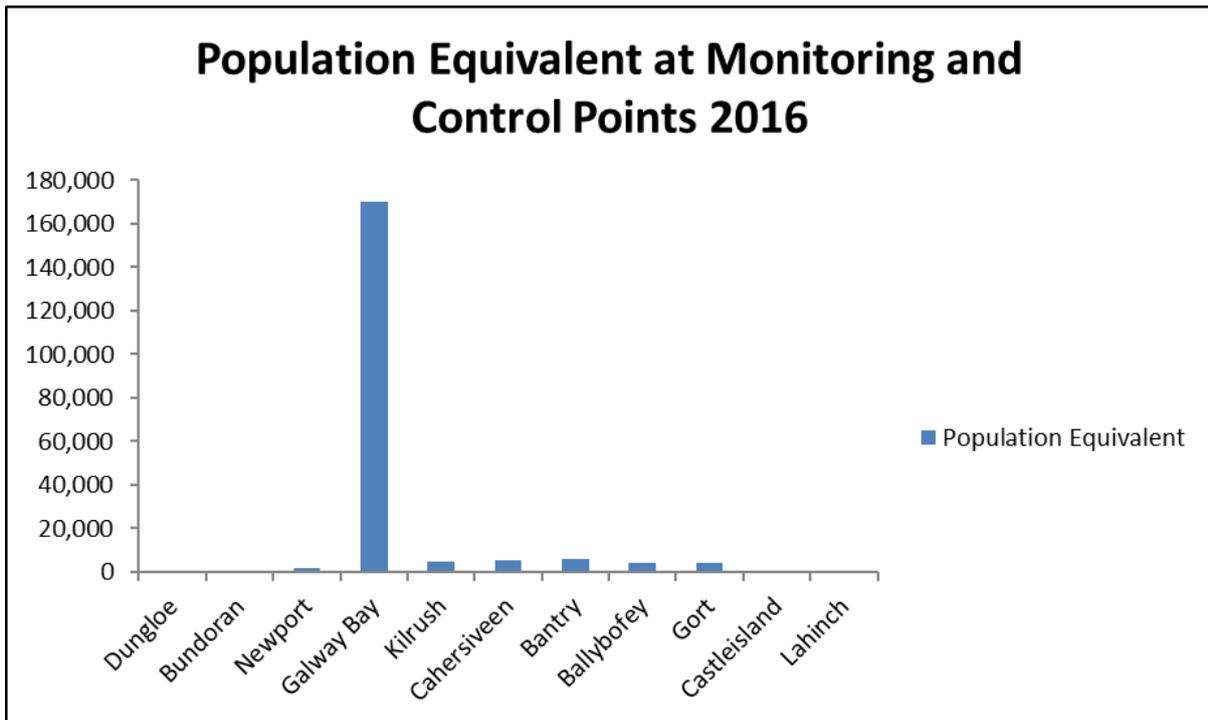


Figure 2.1 Population Equivalent at Monitoring and Control Points 2016

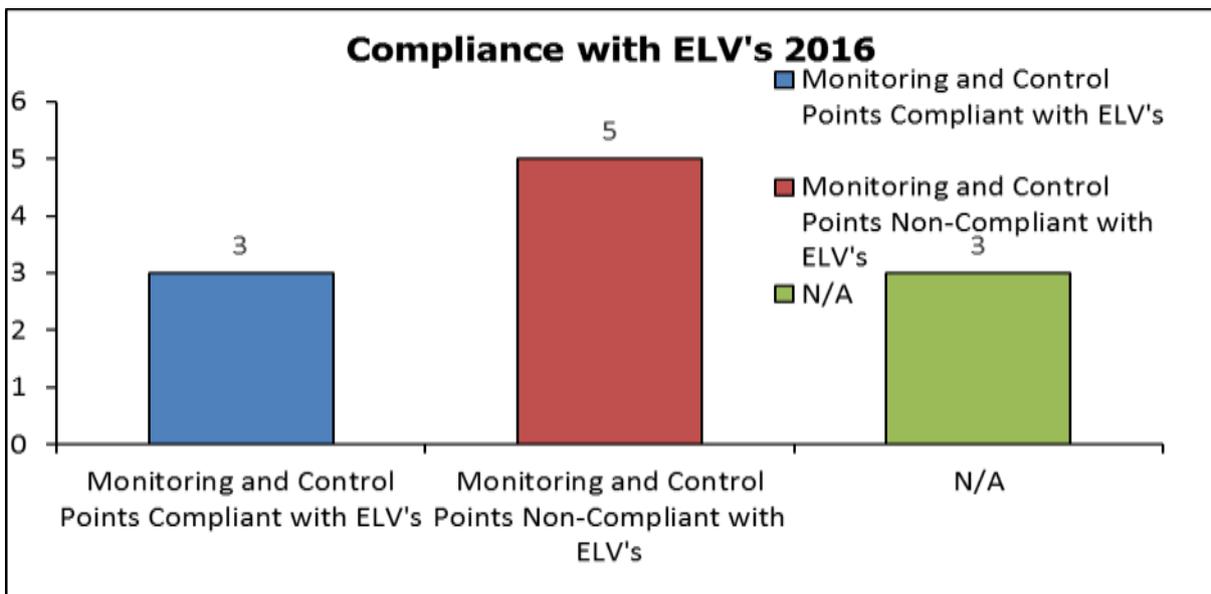


Figure 2.2 Compliance with ELV's at Monitoring and Control Points 2016

Table 2.1 WWTP/Agglomeration Status at Monitoring Sites

Monitoring Sites	WWTP Licence No.	WWTP/ Agglomeration	Status	Reasons for Non-conformity	Complaints and Reported Incidents	Population Equivalent	Improvements
Dungloe	D0208-01	Dungloe	The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016.	The following parameters exceeded the emission limit values in 2016: <ul style="list-style-type: none"> • cBOD • Suspended solids • COD • Ammonia • Ortho P 	0 complaints, 5 Reported Incidents	500	The existing septic tank (125m ³) is under control of a DBO contract for a new WWTW for Dungloe agglomeration. This is currently being commissioned and is expected to be up and running in Q2 of 2017.
Bundoran	D0130-01	Bundoran/ Mullaghmore/ Cliffony	The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016.	The following parameters exceeded the emission limit values in 2016: - <ul style="list-style-type: none"> • cBOD • COD • Suspended solids • Ammonia 	No complaints, 31 Reported Incidents	0	During 2016, a new wastewater treatment plant and associated network including a pumping station is under construction. Expected to be completed in Q2 2018
Newport	D0224-01	Mallaranny	The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016.	The following parameters exceeded the emission limit values in 2016: - <ul style="list-style-type: none"> • Ortho P (mg/l) 	1 Complaint, 8 Reported Incidents	1900	During 2016, a flume was constructed on plant storm water overflow, and was expected to be completed in Q.1 2107
Galway Bay	D0050-01	Galway Island Mutton	The final effluent from the Primary Discharge Point was compliant with the Emission Limit Value in 2016	N/A	2225 Complaints; 1 Reported Incident	170,000	The following improvement works were undertaken in 2016: - Plant upgrade works to increase the plant capacity from 91,600 PE to 170,000 PE which commenced in September 2014, were completed and commissioning took place in Q1 2016. The works were required as part of the Specified Improvement Programme set out in Schedule C1 of the Discharge Licence.
Kilrush	D0075-01	Kilrush Agglomeration.	Monitoring data relating to influent flow, or discharges to the receiving waters are not available. It is not possible to state whether the final effluent is compliant with	N/A	1 complaint, 0 Reported Incidents	4640	There was no major capital or operational changes undertaken in 2016.

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			the Emission Limit Values in 2016.				
Cahersiveen	D0181-01	Cahersiveen/ Knightstown	The final effluent from the Primary Discharge Point was compliant with the Emission Limit Values in 2016.	N/A	0 Complaints; 0 Reported incidents	5600	There were no major capital or operational changes undertaken in 2016.
Bantry	D0168-01	Bantry	The final effluent from the Primary Discharge Point was compliant with the Emission Limit Values in 2016. The final effluent from SW2 was compliant with the Emission Limit Values in 2016. The final effluent from SW3 was compliant with the Emission Limit Values in 2016.	N/A	1 Complaint; 1 Reported Incident	6000	There were no major capital or operational changes undertaken in 2016.

Table 2.2 WWTP/Agglomeration Status at control sites

Control	WWTP Licence No.	WWTP/Agglomeration	Status of Conformity	Reasons for Non-conformity	Complaints and Reported Incidents	Population Equivalent	Improvements
Ballybofey	D0120-01	Ballybofer/ Stranlorlar	The final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2016	The following parameters exceeded the emission limit values in 2016: <ul style="list-style-type: none"> • Ortho P (mg/l) • Ammonia NH3 (mg/l) 	4 complaints, 4 reported incidents	4000	There was no major capital or operational changes undertaken in 2016.
Gort	D0195-01	Gort	The final effluent from the Primary Discharge Point was non-compliant with one of the Emission Limit Values in 2015.	The following parameter exceeded the emission limit values in 2016: <ul style="list-style-type: none"> • Ammonia • TSS • COD • BOD 	0 complaints, 19 (4 individual results submitted) reported incident	4310	The following improvement works were undertaken in 2016: There were no major Capital changes undertaken in 2016. Clarifier Scraper blades were replaced in the single clarifier in 2016.
Castleisland	D0180-01	Castleisland	N/A	N/A	N/A	N/A	N/A
Lahinch	D0080-01	Lahinch	N/A	N/A	N/A	N/A	N/A

2.1.2 Bathing Water Status

The second aspect of the technical indicator 'Water Quality' involved the inspection of the bathing water status of each of the chosen settlements. This was done by comparing each of the monitoring sites and control sites against its associated Bathing Water Profile, as documented on the website 'Splash'; which is run by the EPA. The 2016 bathing Water status of each monitoring point and control site was noted, as well as any reason for non-conformity with legislative coastal water quality status, and days restricted by any short-term pollution. The bathing water status of a site is noted as being 'excellent', 'good', 'sufficient', 'poor', or having 'no data'. A total of 14 'Bathing Water monitoring sites' at 7 of the established monitoring sites and control sites along the WAW were examined and the results are summarised in Figure 2.3.

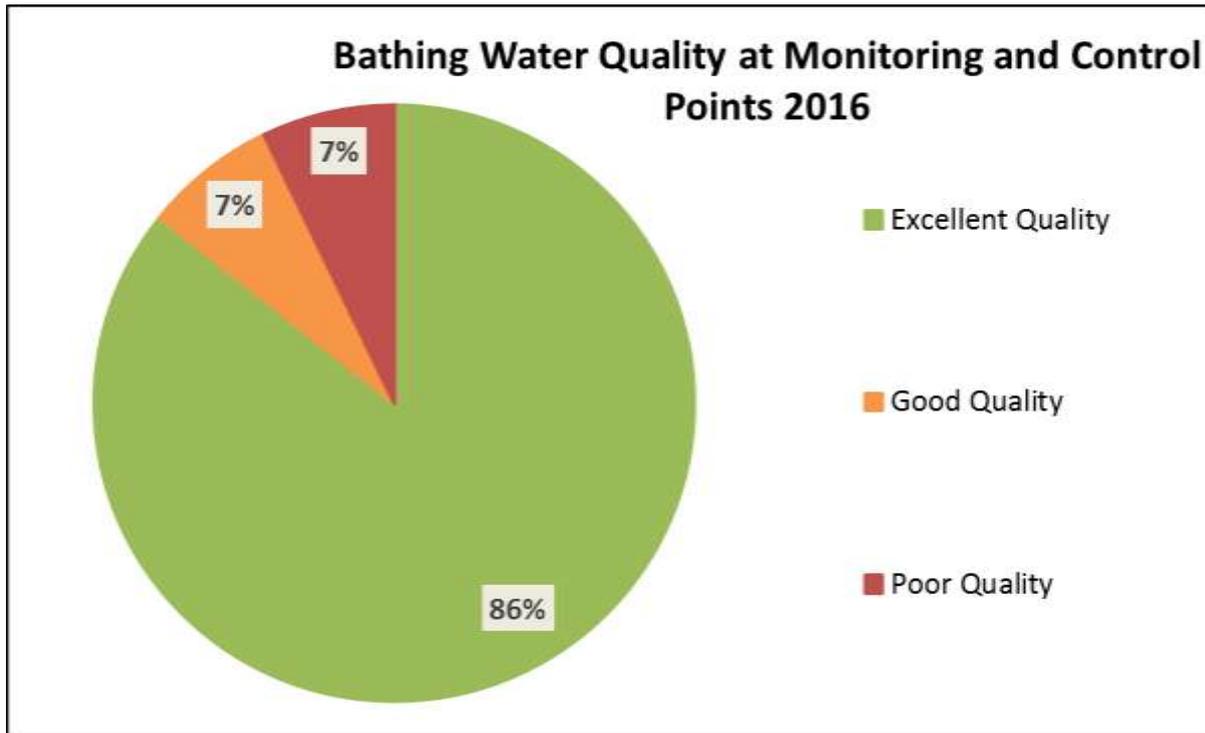


Figure 2.3 Bathing Water Quality at Monitoring and Control Points 2016

The full details from each of the sites examined can be found in the tables below. When reviewing the results it is important to note:

- That some of these sites are associated with more than one EPA 'bathing water monitoring site' and thus have more than one definitive 'bathing water status';
- Some of the monitoring sites and control sites along the WAW are not associated with any EPA 'bathing water monitoring sites', and thus the 'bathing water status' of these sites cannot be determined; and
- Of the 14 bathing water monitoring sites examined, 11 were found to have 'Excellent' bathing water status. According to the Bathing Water Regulations, 2008, and as referenced by 'Splash'.

Table 2.3 Bathing Water Status at Monitoring Sites

County	Monitoring Sites	Bathing Water Monitoring Site	Bathing Water Status 2016	Reason for Non-conformity	Days Restricted by Short Term Pollution
Donegal	Dungloe	Naran Beach/Carrickfinn	Excellent/ Excellent		0
Donegal (Sligo Border)	Bundoran	Bundoran/Mullaghmore	Excellent/ Excellent		0
Mayo	Newport	Mullranny/Clare Island/Bertra	Excellent/Excellent/Excellent		0
Galway	Galway Bay	Salthill/Grattan Road/Ballyloughane	Excellent/ Sufficient/ Poor	Grattan Road Beach, 'Sufficient' status- based on the assessment of bacteriological results for the period 2013 to 2016 Ballyloughane Beach, 'Poor' status based on the assessment of bacteriological results for the period 2013 to 2016	0
Clare	Kilrush	Cappagh Pier	Excellent		0
Kerry	Cahersiveen	Whitestrans	Excellent		0
Cork	Bantry	Barley Cove	Excellent		0

Table 2.4 Bathing Water Status at Control Points

County	Control	Bathing Water Monitoring Site	Bathing Water Status 2015	Reason for Non-conformity	Days restricted by Short Term Pollution
Donegal	Ballybofey	N/A	N/A	N/A	N/A
Galway	Gort	N/A	N/A	N/A	N/A
Kerry	Castleisland	N/A	N/A	N/A	N/A
Clare	Lahinch	Lahinch	Excellent	N/A	0

2.2 Macro-Indicator 2 - National Roads Authority Traffic Counter

The monitoring and technical Indicator 'NRA Traffic Counter' was applied to each of the monitoring sites outlined in Table 1.2, and control sites outlined in Table 1.3. This involved the assessment of traffic counts on roads adjacent to chosen sites and along the WAW for the year ending 2016 (Table 2.5 & Table 2.6).

The results of this macro indicator show that in 2016 there was an increase in 24-hour average interval traffic volumes, during both weekends and weekdays, at all monitoring and control sites during the summer months (Figure 2.4 & Figure 2.5). This increase in average interval traffic at the monitoring sites and control sites examined are likely attributable to an influx of tourists (domestic and foreign) travelling to and from the WAW sites during the summer months.

Table 2.5 NRA Traffic Count at Monitoring Sites

County	Monitoring Sites	National Roads Authority Traffic Counter	Jan	Feb	March	April	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Donegal	Dungloe	N56 Between Dungloe and R252 Jn, Co. Donegal (20562)	2566	2759	2926	3059	3179	3290	3799	3696	3236	3066	2868	2827
			2386	2586	2790	2891	3012	3145	3672	3555	3074	2921	2698	2619
Donegal (Sligo Border)	Bundoran	N15 Between Bundoran and Sligo, Tullaghan, Co. Leitrim (20153)	6240	6863	7274	7268	7876	8151	9180	9542	7972	7452	6977	6808
			5977	6729	7161	7100	7790	8113	9082	9420	7806	7280	6666	6342
Mayo	Newport	N59 Between Mullranny and Newport, Newfield, Co. Mayo (20591)	2383	2622	2988	2984	3216	3567	4114	4408	3235	2899	2666	2687
			2348	2566	2963	2969	3252	3616	4159	4357	3192	2897	2573	2536
Galway	Galway Bay	N18 Between Kilcolgan and Clarinbridge, Co. Galway (1182)	17747	18951	19099	20162	20905	21099	21603	21025	20547	19756	18645	17941
			16876	17970	18824	19974	20625	20649	21332	21065	20269	19539	18377	17427
Clare	Kilrush	N67 Between Kilrush Ferry and Kilrush, Moyne Court, Co. Clare (1671)	1198	1294	1365	1494	1756	1816	1985	2113	1662	1433	1382	1215
			1086	1171	1267	1382	1675	1726	1871	1995	1532	1337	1245	1104
Kerry	Cahersiveen	N70 Between Cahersiveen and Glenbeigh, Gortaforia, Co. Kerry (20701)	1906	2098	2466	2669	3165	3454	4113	4256	3121	2592	2240	2167
			1827	2004	2404	2603	3106	3430	4093	4182	3043	2544	2109	2004
Cork	Bantry	N71 Between Bantry and Glengarriff, North of Bantry, Co. Cork (1715)	5081	5484	5695	6150	6535	6710	7194	7447	6439	5978	5436	5472
			4830	5178	5483	5837	6289	6457	6969	7187	6204	5783	5157	5131

Table 2.6 NRA Traffic Count at Control Points

County	Control	National Authority Roads Counter	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Donegal	Ballybofey	N13 Between Stranorlar and Letterkenny, Treantaboy, Co. Donegal (1133)	9474	10213	10269	10523	10515	10522	10882	10783	10596	10412	10287	10168
			8947	9717	9800	9956	10054	10106	10295	10293	10094	9943	9667	9396
Galway	Gort	N18 Between Kilcolgan and Clarinbridge, Co. Galway (1182)	17747	18951	19604	20665	21433	21659	22187	21575	21074	20267	19134	18446
			16876	17970	18824	19974	20625	20649	21332	21065	20269	19593	18377	17427
Kerry	Castleisland	N21 Between Tralee and Castleisland, Co. Kerry (1211)	8743	9418	9686	10062	10083	10344	10761	11051	10391	10172	10092	10018
			8381	8932	9324	9734	9780	10075	10399	10751	9962	9779	9616	9348
Clare	Lahinch	N67 Between Ennistimon and Lisdoonvarna, Co. Clare (20671)	1925	2081	2258	2346	2622	2804	3076	3165	2970	2306	2073	2057
			1809	1994	2199	2296	2578	2791	3021	3107	3084	2292	1960	1911

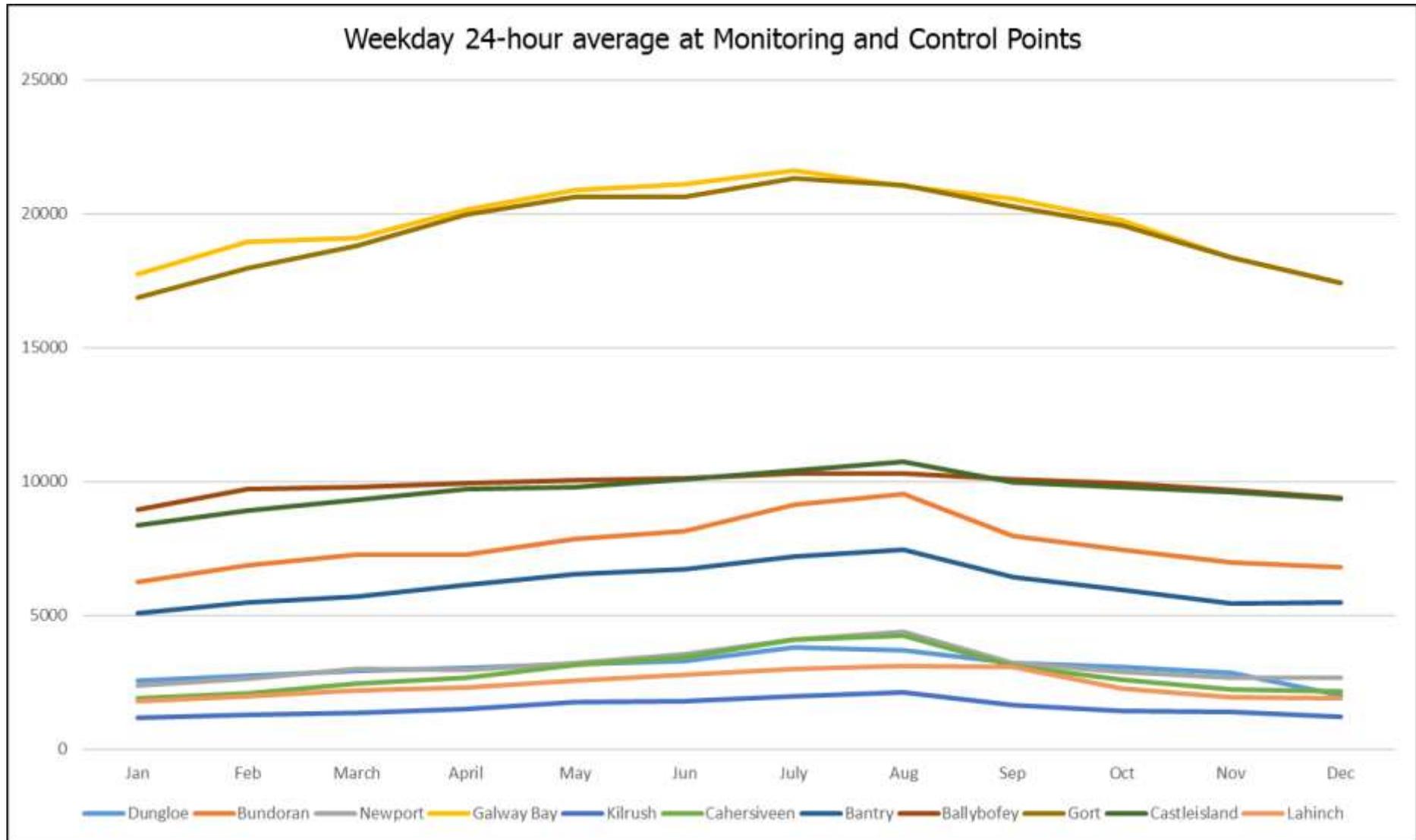


Figure 2.4 Weekday 24-hour Average Interval Traffic at Monitoring and Control Points 2016

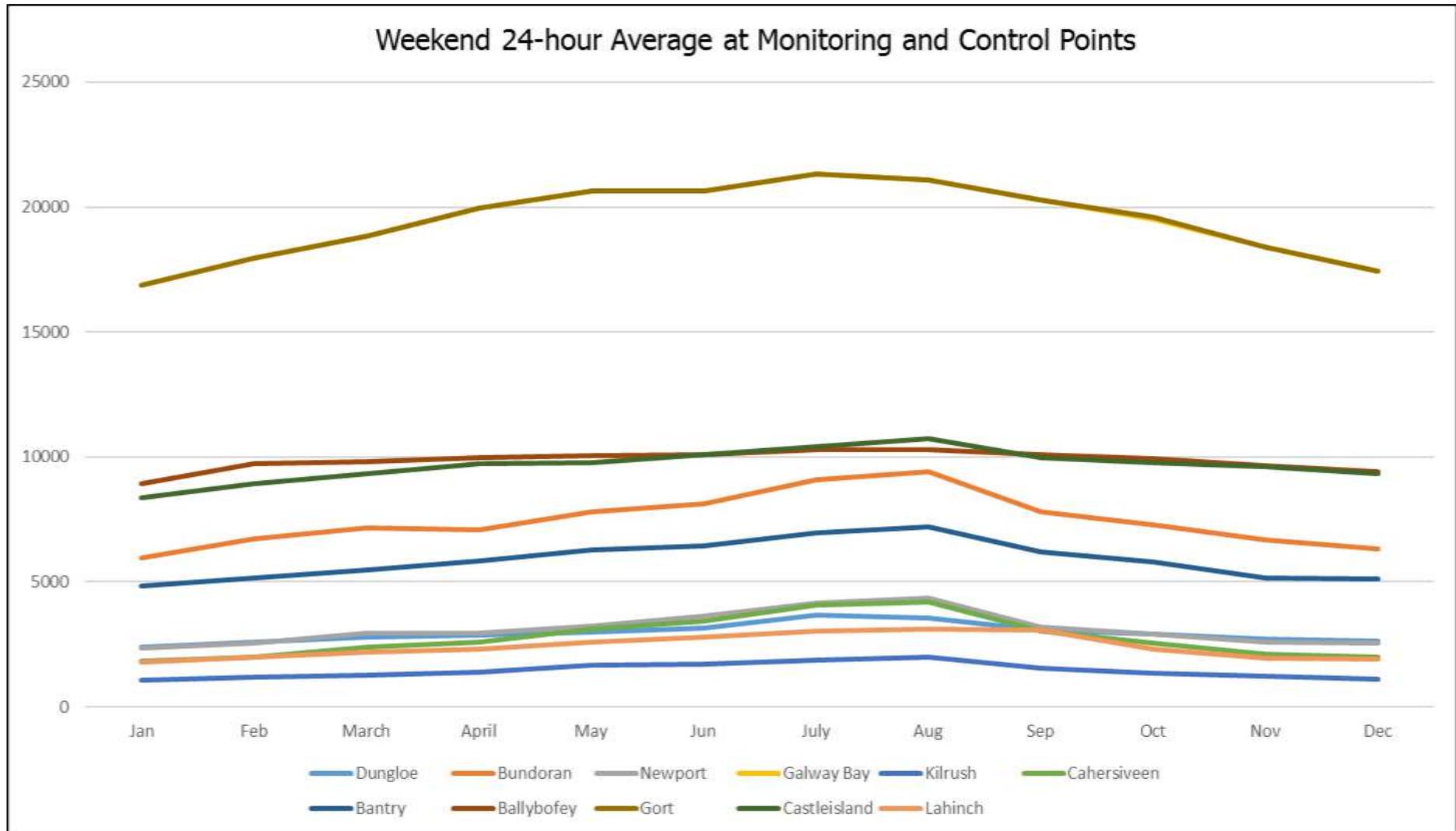


Figure 2.5 Weekend 24-hour Average Interval Traffic at Monitoring and Control points 2016

2.3 Macro-Indicator 3 - Blue Flag Beaches

The monitoring and technical Indicator 'Blue Flag Beaches' was applied to each of the monitoring sites outlined in Table 1.2, and control sites outlined in Table 1.3.

The Blue Flag is operated in Ireland by An Taisce on behalf of the Foundation for Environmental Education (FEE). Beaches and marinas that achieve this accolade must comply with a specific set of criteria relating to:

- Water quality;
- Information provision;
- Environmental education; and
- Safety and beach management.

At beaches, the bathing water must comply with the excellent standard in accordance with the EU Bathing Water Directive. The 'Blue Flag Beaches' locations map, as available on An Taisce's 'Blue Flag Beaches' website was examined against the list of the established monitoring and control sites. All those monitoring and control sites that have been awarded 'Blue Flag' status in the year 2016 were noted, as indicated in Tables 2.7 and 2.8 below.

Table 2.7 Blue flag Beaches at Monitoring Sites

County	Monitoring Sites	Blue Flag
Donegal	Dungloe	N
Donegal (Sligo Border)	Bundoran	Y
Mayo	Newport	N
Galway	Galway Bay	N
Clare	Kilrush	N
Kerry	Cahersiveen	N
Cork	Bantry	N

Table 2.8 Blue Flag Beaches at Control Points

County	Control Site	Blue Flag*
Donegal	Ballybofey	N/A
Galway	Gort	N/A
Kerry	Castleisland	N
Clare	Lahinch	Y

Of the 9 beaches examined at the established monitoring and control sites:

- Two of the beaches had been awarded 'Blue Flag' status in 2016. This has remained the same as the status recorded in 2015 and 2014. These were Bundoran beach and Lahinch beach.

*It is noted that Ballybofey and Gort are both inland site and therefore would not have any blue flag status

2.4 Macro Indicator 4 - Green Coast Award

The monitoring and technical Indicator 'Green Coast Award' was applied to each of the monitoring sites outlined in Table 1.2, and control sites outlined in Table 1.3.

The Green Coast Awards is an An Taisce award for beaches that meet the excellent standard for water quality as set out in the Bathing Water Directive but may not have the necessary built infrastructure to achieve Blue Flag status.

An important element of this award is that these beaches have a beach management plan in place and that the local community are engaged in this process.

The 'Green Coast' locations map as accessed via An Taisce's 'Clean Coasts' website was examined against the list of the above-mentioned monitoring and control sites. All those monitoring and control sites that had 'Green Coast' status in the year 2016 were noted, as indicated in Tables 2.9 and 2.10 below.

Table 2.9 Green Coast Awards at Monitoring Sites

County	Monitoring sites	Green Coast
Donegal	Dungloe	N
Donegal (Sligo Border)	Bundoran	N
Mayo	Newport	N
Galway	Galway Bay	N
Clare	Kilrush	N
Kerry	Cahersiveen	N
Cork	Bantry	N

Table 2.10 Green Coast Awards at control sites

County	Control Site	Green Coast
Donegal	Ballybofey	N
Galway	Gort	N
Kerry	Castleisland	N
Clare	Lahinch	N

Of the 11 monitoring and control sites examined, none held an An Taisce 'Green Coast Award' in 2016, results recorded from the 2015 report also show that none of the control sites held a Green Coast Award during the year 2015

2.5 Monitoring Indicator 5 - State of Knowledge of Ireland's Biodiversity

This general monitoring indicator is common to all of the above-mentioned monitoring and control sites. In 2012 the National Biodiversity Data Centre (NBDC) produced a document entitled 'State of Knowledge- Ireland's Biodiversity 2012.' It is the first inventory of the principal sources of biodiversity data in the Republic of Ireland. The document is laid out in sections following taxonomic grouping. Each section follows the same format and provides information on; Irish species, number of species, primary sources of distribution data, National conservation assessment, and monitoring or repeat surveys in place. The status of this indicator can be informed and updated by emerging findings and information sources from Biodiversity Reports.

For monitoring purposes, the NBDC Annual Review was examined in order to inform on the State of Knowledge of Ireland's Biodiversity for the year ending 2016. The following 2016 parameters were noted: Species Numbers, Datasets, Habitats and Recorded Users of Biodiversity Maps; the online data portal, as indicated in Table 2.11 below. Annual Review publications can be examined hereafter in order to assess any upward or downward trends in the state of knowledge of Ireland's Biodiversity. The key points extracted from the NBDC Annual Review are as follows:

- There is a notable rise in both numbers of species, and records and datasets of species in 2016;
- This database now exceeds 4 million records from 140 datasets; and
- Data on 15,796 species, which is almost half of all known Irish species, is available to map through the on-line data portal Biodiversity Maps.

Table 2.11 Summary of the State of Knowledge Ireland's Biodiversity Report (2016) - National Biodiversity Centre Annual Review

Species Numbers 2016	Records of Species 2016		Datasets of Species 2016	National surveys of EU protected Habitats 2016	Recorded users of Biodiversity Maps
15,796	Total	4,008,797	140	7	68,177
	Birds	29%			
	Invertebrate-terrestrial & freshwater	18%			
	Mammals	6%			
	Lower Plants	9%			
	Higher Plants	35%			
	Others	3%			

2.6 Monitoring Indicator 6 - EPA Ireland's Environment - An Assessment (2016)

This general monitoring indicator is common to all of the above-mentioned monitoring and control site; taken from Ireland's Environment 2016 - An Assessment, is the Environmental Protection Agency's four-yearly state of the environment report. The report outlines Trends and Changes in environmental quality along with socio-economic activities linked with these changes.

The overall finding of the 2016 report is that Ireland's environment is in a generally good condition overall; for key environmental challenges outlined by the assessment between 2012-2016:

- Valuing and protecting our natural environment;
- Building a resource-efficient, low-carbon economy;
- Implementing environmental legislation; and
- Putting the environment at the centre of our decision-making.

To try and combat these environmental challenges there has been key environmental actions put in place for 2016 these include:

Table 2.12 Key Environmental Actions

Environmental Health and Wellbeing	Aim to recognise the benefits of a good environment to health and wellbeing.
Climate Change	Improve mitigation actions to lower greenhouse gas emissions and to improve knowledge on how to deal with adverse climate impacts
Implementation of Legislation	Improve the enforcement and implementation of legislation to protect the environment
Restore and Protect Water Quality	Achieve ongoing improvements of water bodies from source to sea
Sustainable Economic Activities	Integrate efficient ideas across all economic sectors
Nature and Wild Places	Protect wild areas that act as hubs, contribute to health and wellbeing and provide sustainable tourist opportunities
Community Engagement	Inform communities on the importance of the protection and improvement of the environment.

2.7 Monitoring Indicator 7 - The Status of EU Protected Habitats and Species in Ireland

This general monitoring indicator is common to all monitoring and control sites. It provides for an assessment of the status of the habitats and species that Ireland is required to protect under the EU Habitats Directive. The status of this indicator can be informed and updated by emerging findings and information sources from the National Parks and Wildlife Service (NPWS) and other stakeholders on the status of EU Protected Habitats and Species.

The 2013 report 'The Status of EU Protected Habitats and Species in Ireland' as published by NPWS was reviewed in order to inform this monitoring indicator. The overall status of each of Irelands known habitats and species was noted as 'Good', 'Poor' or 'Bad' for the period 2008-2014, as indicated in Table 2.12 below and summarised in Figure 2.6. This report should be review on release every six years, and any changes in the status of Irish habitats or species along the WAW should be noted.

The data shows that in the year 2013, of the 57 EU protected habitats in Ireland:

- 5 were of 'Good' status;
- 27 were of 'Poor' status; and
- 25 were of 'Bad' status.

Of the 58 EU protected species in Ireland:

- 31 were of 'Good' status;
- 11 were of 'Poor' status; and
- 5 were of 'bad' status.

The status of 8 of the EU protected species in Ireland were 'Unknown' in 2013.

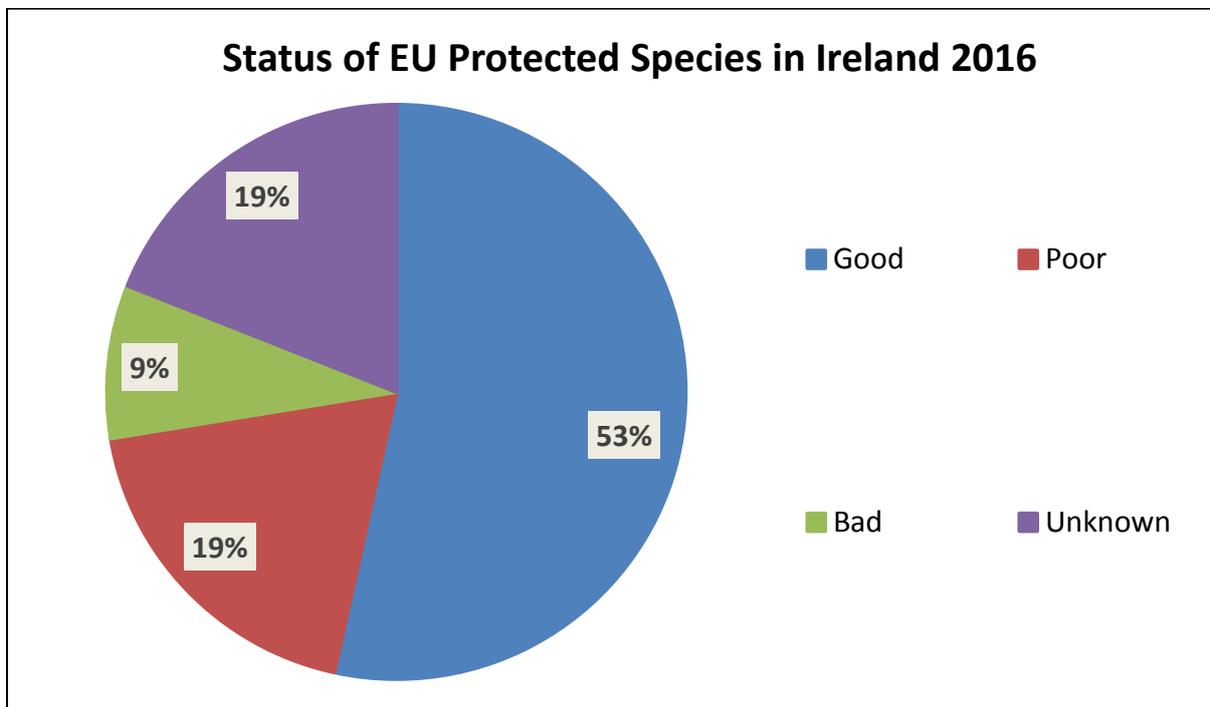


Figure 2.6 Status of EU Protected Habitats in Ireland 2013

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Table 2.13 EU Protected Habitats in Ireland

Habitat	Overall Status
SANDBANKS slightly covered by seawater at all times (1110)	Good
ESTUARIES (1130)	Poor
MUDFLATS & SANDFLATS not covered by seawater at low tide (1140)	Poor
COASTAL LAGOONS (1150)	Bad
LARGE SHALLOW INLETS AND BAYS (1160)	Poor
REEFS (1170)	Bad
ANNUAL VEGETATION OF DRIFT LINES (1210)	Poor
PERENNIAL VEGETATION OF STONY BANKS (1220)	Poor
VEGETATED SEA CLIFFS of the Atlantic and Baltic coasts (1230)	Poor
SALICORNIA and other annuals colonising mud and sand (1310)	Poor
ATLANTIC SALT MEADOWS (1330)	Poor
MEDITERRANEAN SALT MEADOWS (1410)	Poor
HALOPHILOUS SCRUB (1420)	Bad
EMBRYONIC SHIFTING DUNES (2110)	Poor
SHIFTING DUNES along the shoreline with <i>Ammophila arenaria</i> (white dunes) (2120)	Poor
FIXED COASTAL DUNES with herbaceous vegetation (grey dunes) (2130)	Bad
DECALCIFIED FIXED DUNES with <i>Empetrum nigrum</i> (2140)	Bad
ATLANTIC DECALCIFIED FIXED DUNES (<i>Calluno-Ulicetea</i>) (2150)	Bad
DUNES with <i>Salix repens</i> spp. <i>Argentea</i> (<i>Salicion arenariae</i>) (2170)	Bad
HUMID DUNE SLACKS (2190)	Poor
MACHAIR (21A0)	Bad
OLIGOTROPHIC WATERS containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) (3110)	Bad
HARD OLIGO-MESOTROPHIC WATERS with benthic vegetation of <i>Chara</i> spp. (3140)	Bad
NATURAL EUTROPHIC LAKES with <i>Magnopotamion</i> or <i>Hydrocharition</i> – type vegetation (3150)	Poor
NATURAL DYSTROPHIC LAKES and ponds (3160)	Poor
TURLOUGHES (3180)	Poor
WATER COURSES of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (3260)	Poor
RIVERS WITH MUDDY BANKS with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation (3270)	Good
NORTH ATLANTIC WET HEATHS with <i>Erica tetralix</i> (4010)	Bad
EUROPEAN DRY HEATH (4030)	Bad
ALPINE AND SUB-ALPINE HEATH (4060)	Bad
JUNIPERUS COMMUNIS formations on heaths or calcareous grasslands (5130)	Poor
CALAMINARIAN GRASSLANDS of the <i>Violetalia calaminariae</i> (6130)	Poor
SEMI-NATURAL DRY GRASSLANDS and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (6210)	Bad
SPECIES-RICH NARDUS GRASSLANDS on siliceous substrates in mountain areas (6230)	Bad
MOLINIA MEADOWS on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) (6410)	Bad
HYDROPHILOUS TALL HERB fringe communities of plains and of the montane to alpine levels (6430)	Bad
LOWLAND HAY MEADOWS (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) (6510)	Bad
ACTIVE RAISED BOG (7110)	Bad
DEGRADED RAISED BOG still capable of regeneration (7120)	Bad
BLANKET BOG (and Active Blanket Bog) (7130)	Bad
TRANSITION MIRE and quaking bogs (7140)	Bad
DEPRESSIONS on peat substrates of the <i>Rhynchosporion</i> (7150)	Good
CALCAREOUS FENS with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> (7210)	Bad
PETRIFYING SPRINGS with tufa formation (<i>Cratoneurion</i>) (7220)	Poor
ALKALINE FEN (7230)	Poor
SILICEOUS SCREE of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsetalia ladani</i>) (8110)	Poor
CALCAREOUS AND CALCHIST SCREES of the montane to alpine levels in Ireland (<i>Thlaspietea rotundifolii</i>) (8120)	Poor
CALCAREOUS ROCKY SLOPES with chasmophytic vegetation (8210)	Poor
SILICEOUS ROCKY SLOPES with chasmophytic vegetation (8220)	Poor
LIMESTONE PAVEMENTS (8240)	Poor
CAVES not open to the public (8310)	Good
Submerged or partially submerged SEA CAVES (8330)	Good
OLD SESSILE OAK WOODS with <i>Ilex</i> and <i>Blechnum</i> (91A0)	Bad
BOG WOODLAND (91D0)	Good
ALLUVIAL FORESTS with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (91E0)	Bad
<i>Taxus baccata</i> WOODS (91J0)	Bad

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Species	
KILLARNEY FERN <i>Trichomanes speciosum</i> (1421)	Good
MARSH SAXIFRAGE <i>Saxifraga hirculus</i> (1528)	Good
SLENDER NAIAD <i>Najas flexilis</i> (1833)	Poor
SLENDER GREEN FEATHER-MOSS <i>Hamatocaulis vernicosus</i> (1393)	Good
PETALWORT <i>Petalophyllum ralfsii</i> (1395)	Good
MAERL <i>Lithothamnion coralloides</i> <i>Phymatolithon calcareum</i> (1376, 1377)	Poor
WHITE CUSHION MOSS <i>Leucobryum glaucum</i> (1400)	Good
SPHAGNUM GENUS <i>Sphagnum</i> spp. (1409)	Poor
LYCOPODIUM GROUP <i>Lycopodium</i> (and related genera) (1413)	Poor
CLADONIA SPP. <i>Cladonia</i> subgenus <i>Cladina</i> (5113)	Poor
GEYER'S WHORL SNAIL <i>Vertigo geyeri</i> (1013)	Poor
NARROW-MOUTHED WHORL SNAIL <i>Vertigo angustior</i> (1014)	Poor
DEMOULIN'S WHORL SNAIL <i>Vertigo moulinsiana</i> (1016)	Poor
KERRY SLUG <i>Geomalacus maculosus</i> (1024)	Good
FRESHWATER PEARL MUSSEL <i>Margaritifera margaritifera</i> (1029)	Bad
NORE FRESHWATER PEARL MUSSEL <i>Margaritifera durrovensis</i> (1990)	Bad
WHITE-CLAWED CRAYFISH <i>Austropotamobius pallipes</i> (1092)	Poor
MARSH FRITILLARY <i>Euphydrys aurinia</i> (1065)	Poor
SEA LAMPREY <i>Petromyzon marinus</i> (1095)	Bad
RIVER LAMPREY <i>Lampetra fluviatilis</i> BROOK LAMPREY <i>Lampetra planeri</i> (1099,1096)	Good
ALLIS SHAD <i>Alosa alosa</i> (1102)	Unknown
KILLARNEY SHAD <i>Alosa fallax killarnensis</i> (5046)	Good
TWAITE SHAD <i>Alosa fallax fallax</i> (1103)	Bad
POLLAN <i>Coregonus autumnalis</i> (5076)	Bad
ATLANTIC SALMON <i>Salmo salar</i> (1106)	Bad
NATTERJACK TOAD <i>Bufo calamita</i> (1202)	Bad
COMMON FROG <i>Rana temporaria</i> (1213)	Poor
LEATHERBACK TURTLE <i>Dermodochelys coriacea</i> (1223)	Poor
HORSESHOE BAT <i>Rhinolophus hipposideros</i> (1303)	Good
COMMON PIPISTRELLE <i>Pipistrellus pipistrellus</i> (1309)	Good
SOPRANO PIPISTRELLE <i>Pipistrellus pygmaeus</i> (5009)	Good
NATHUSIUS' PIPISTRELLE <i>Pipistrellus nathusii</i> (1317)	Unknown
NATTERER'S BAT <i>Myotis nattereri</i> (1322)	Good
DAUBENTON'S BAT <i>Myotis daubentoni</i> (1314)	Good
WHISKERED BAT <i>Myotis mystacinus</i> BRANDT'S BAT <i>Myotis brandtii</i> (1330, 1320)	Good
BROWN LONG-EARED BAT <i>Plecotus auritus</i> (1326)	Good
LEISLER'S BAT <i>Nyctalus leisleri</i> (1331)	Good
IRISH HARE <i>Lepus timidus</i> (1334)	Good
OTTER <i>Lutra lutra</i> (1355)	Good
PINE MARTEN <i>Martes martes</i> (1357)	Good
GREY SEAL <i>Halichoerus gryphus</i> (1364)	Good
COMMON (HARBOUR) SEAL <i>Phoca vitulina</i> (1365)	Good
HUMPBACK WHALE <i>Megaptera novaeangliae</i> (1345)	Unknown
BOTTLE-NOSED DOLPHIN <i>Tursiops truncatus</i> (1349)	Good
COMMON DOLPHIN <i>Delphinus delphis</i> (1350)	Good
HARBOUR PORPOISE <i>Phocoena phocoena</i> (1351)	Good
KILLER WHALE <i>Orcinus orca</i> (2027)	Unknown
LONG-FINNE DOLPHIN <i>Globicephala melas</i> (2029)	Unknown
RISSO'S DOLPHIN <i>Grampus griseus</i> (2030)	Unknown
WHITE-SIDED DOLPHIN <i>Lagenorhynchus acutus</i> (2031)	Good
WHITE-BEAKED DOLPHIN <i>Lagenorhynchus albirostris</i> (2032)	Unknown
STRIPED DOLPHIN <i>Stenella coeruleoalba</i> (2034)	Unknown
CUVIER'S BEAKED WHALE <i>Ziphius cavirostris</i> (2035)	Unknown
SOWERBY'S BEAKED WHALE <i>Mesoplodon bidens</i> (2038)	Unknown
MINKE WHALE <i>Balaenoptera acutorostrata</i> (2618)	Good
FIN WHALE <i>Balaenoptera physalus</i> (2621)	Good
BLUE WHALE <i>Balaenoptera musculus</i> (5020)	Unknown
SPERM WHALE <i>Physeter macrocephalus</i> (5031)	Unknown
NORTHERN BOTTLENOSE WHALE <i>Hyperoodon ampullatus</i> (5033)	Unknown
SEI WHALE <i>Balaenoptera borealis</i> (2619)	Unknown

2.8 Monitoring Indicator 8 - Visitor Numbers

The monitoring and technical Indicator 'Visitor Numbers' was applied to each of the relevant counties outlined in Table 1.2 and Table 1.3, for the year ending 2016. It should be noted that data on visitor numbers at the specific monitoring and control sites along the WAW is not available at present time. Thus, in order to inform this monitoring indicator of environmental status, Fáilte Ireland visitor numbers at county level were reviewed instead.

This data should be reviewed and compared annually in order to identify any upwards or downwards trends in county tourism which might be attributable to awareness and promotion of the WAW.

Table 2.14 Visitor Numbers in Thousands at Monitoring Sites

Region	Monitoring Sites	Britain	Mainland Europe	North America	Other Areas	Domestic	Total Visitors
Border	Dungloe, Bundoran, Ballybofey	360	263	114	815	1,001	2,553
West	Newport, Galway Bay, Gort	350	733	479	1,675	1,591	4,828
Mid-West	Kilrush, Lahinch	377	401	357	1,125	817	3,077
South West	Cahersiveen, Bantry, Castleisland	593	772	591	2,079	2,006	6,041

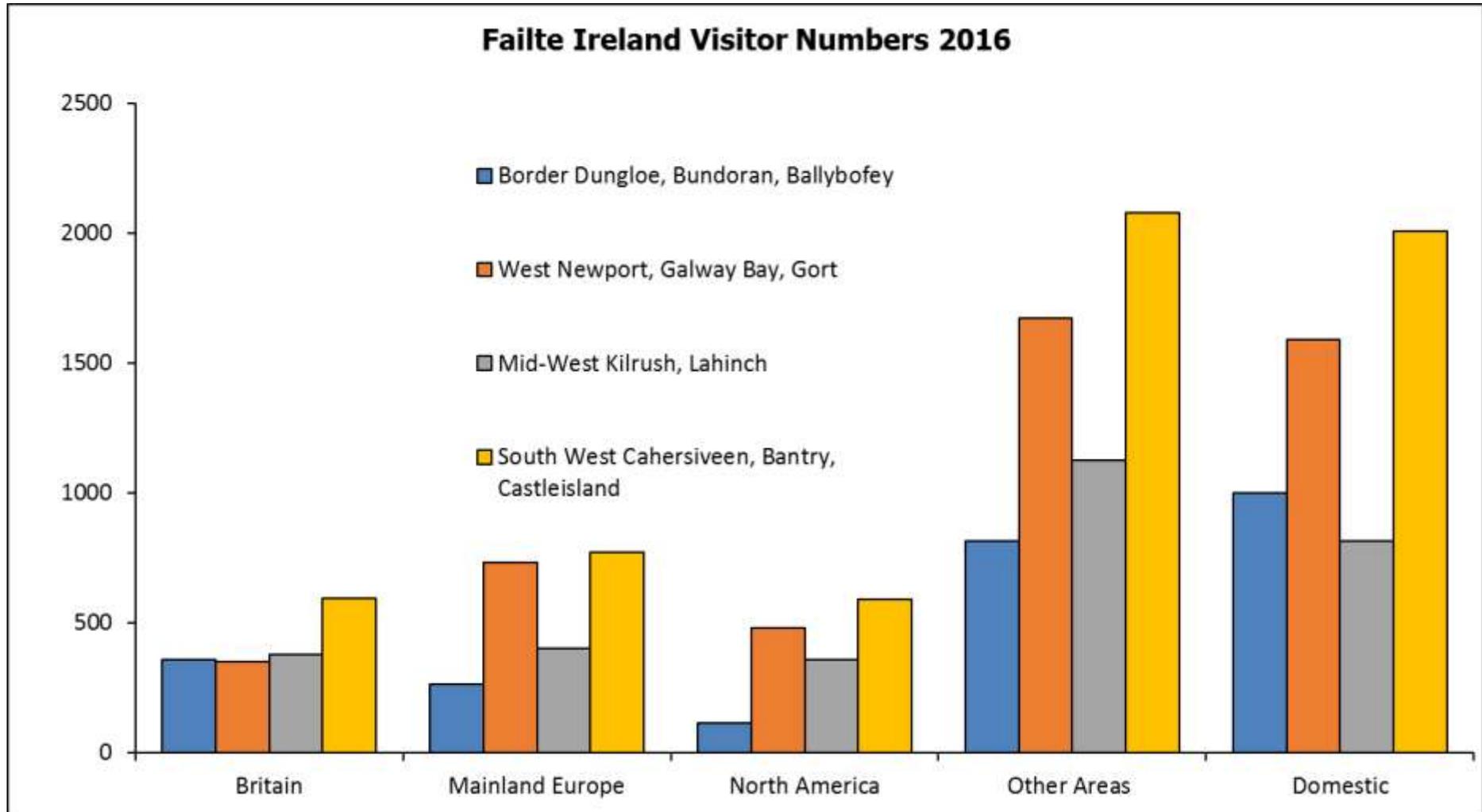


Figure 2.7 Fáilte Ireland Visitor Numbers at Counties along the WAW

2.9 Monitoring Indicator 9 - Tourism Related Planning Refusals

The final macro-indicator of environmental status examined for this study is 'tourism related planning refusals.' A high level of tourism related refusals is a potential indicator of pressure on the environmental status of a County.

The An Bord Pleanála website was used to gain access to records of all 'decided cases' of planning appeals from the year 2016 at each of the counties along the WAW. Where a decision was made by An Bord Pleanála to refuse planning for a development in any of these six counties (Galway, Mayo, Donegal, Clare, Cork and Kerry) during 2016 the reason for refusal was examined. All planning refusals during the year 2016 in each county were reviewed and all those with a decision which might be attributable to tourism were noted.

This method provides an official high-level indicator as to where pressure points are occurring in Counties along the WAW without the need to capture all planning applications to Local Authorities and or Foreshore Lease/Licence applications to the Department of Environment, Community and Local Government.

Results show that every development in the six counties that was refused planning permission in 2016 as a result of tourism related reasons were all located along the WAW route.

Table 2.15 Tourism Related Planning Refusals

Case Number	Case	Reason for Refusal
Galway		
247152	53 Grattan Park, Salthill, Galway	Landscape and visual Amenity
Donegal		
245389	Glebe Td. Killybegs, Donegal (16/51173)	Visually intrusive feature
Mayo		
246986	Newfield, Mullranny, Westport, Co. Mayo (16/159)	Visually obtrusive feature on the Landscape
Kerry		
247044	Cooliues, Muckross, Killarney, Co. Kerry (16/132)	Sensitive rural Landscape
Cork		
247120	Fergus, Dripsey, Co. Cork (16/5319)	High Value Landscape with high sensitivity of national importance
247109	Tay Road, Carrignafoy and Ballynacrusa, Cobh, Co. Cork (16/5306)	Landscape and Visual Amenity

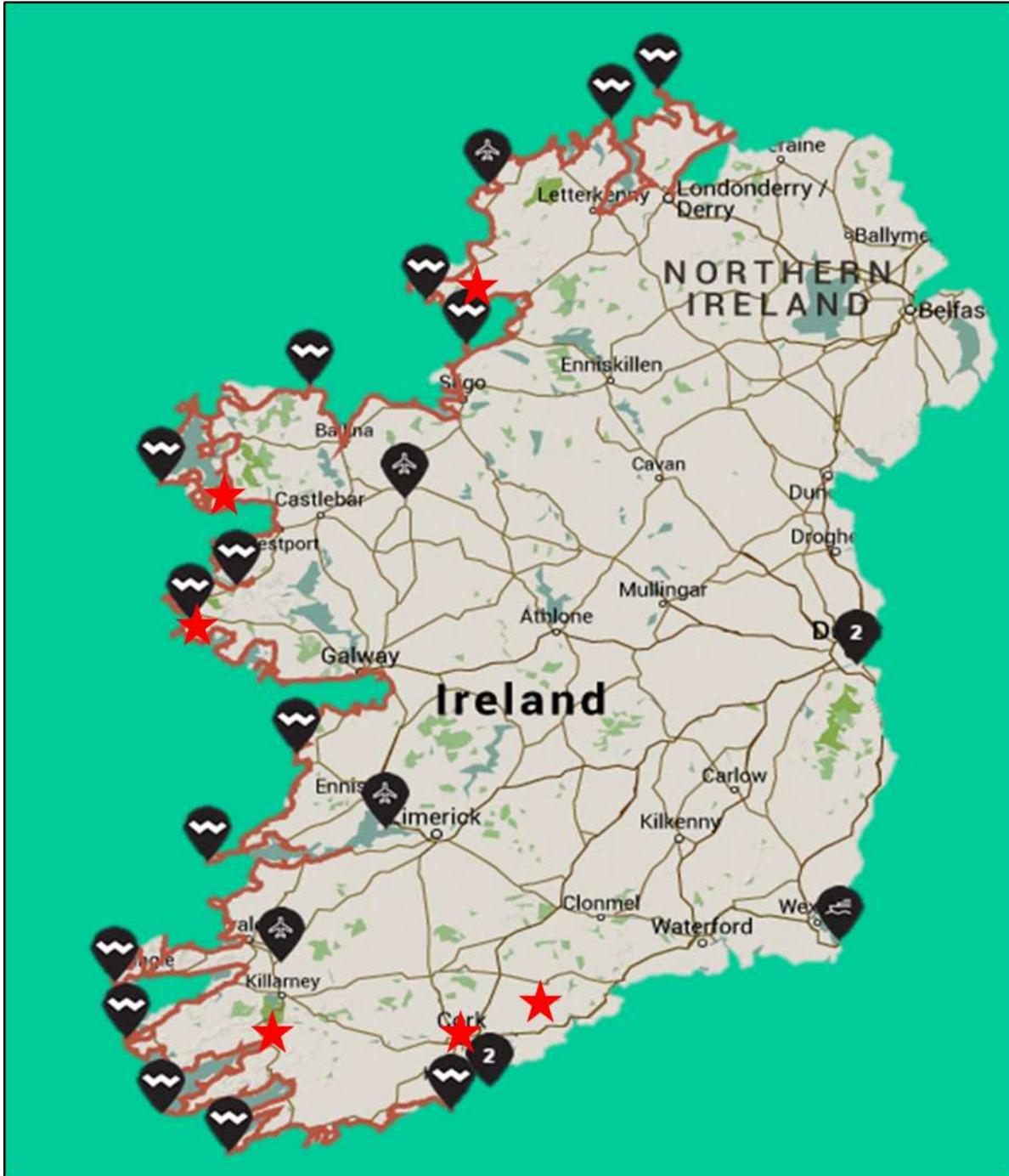


Figure 2.8 Locations of 2016 Planning Refusals along the WAW Attributable to Tourism

Section 3 Conclusions

The Macro Monitoring element of the *Environmental Surveying and Monitoring for the WAW Operational Programme*, as discussed in this document concentrates on long-established, high quality, official baselines. These official baselines were adopted for this monitoring survey in order to represent a number of key performance indicators, the intended use of which being to identify trends and changes in the state of the environment along the WAW.

The key performance indicators, as described in detailed in Table 1.1 of this document, were applied to seven monitoring sites and a further four control sites inland from the route in order to provide an insight into the state of the environment along the WAW during the year 2016. The results of these Macro Monitoring activities will be collated and presented to a monitoring group along with results of all other WAW monitoring activities.

The Environmental Surveying and Monitoring is an evolving tool that will be informed and updated by emerging findings. Presentation of all monitoring results should thus be presented to the monitoring group once a year. This information can be used by relevant members of the monitoring group to identify protective, remedial or improvement actions within their own areas of responsibility during the following year. An annual summary of the results of monitoring will be published on the Fáilte Ireland website at the end of each monitoring year.

Table 3.1 Summary of Indicator Results 2017

Site	Indicator 1 Water Quality	Indicator 2 Traffic	Indicator 3 Blue Flag Beach	Indicator 4 Green Coast Award	Indicator 5 Biodiversity	Indicator 6 Irelands Environment	Indicator 7 Status of Habits & Species	Indicator 8 Visitor Numbers*	Indicator 9 Planning Refusals
Dungloe	Non-Compliant	Increase in 24- hour traffic across all sites during weekends and summer months	N	N	Database exceeding 4 million records which is a Notable rise in data sets from 2014-2016	Overall Finding: Irelands Environment is in a generally good condition	<u>Status of Protected Habitats</u> Good - 5 Poor - 27 Bad - 25	2,553	Results show that every development in the six counties that was refused planning permission in 2016 as a result of tourism related reasons were all located along the WAW route.
Bundoran	Non-Compliant		Y	N				2,553	
Newport	Non-Compliant		N	N				4,828	
Galway Bay	Compliant		N	N				4,828	
Kilrush	N/A		N	N				3,077	
Cahersiveen	Compliant		N	N				6,041	
Bantry	Compliant		N	N				6,041	
Ballybofey	Compliant		N/A	N				2,553	
Gort	Non-Compliant		N/A	N				4,828	
Castleisland	N/A		N	N				6,041	
Lahinch	N/A	Y	N	3,077	<u>Status of Protected Species</u> Good -31 Poor-11 Bad -5				

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Way Operational Programme