Guidance for the Development of Bathing Water Profiles

For the
Bathing Water Quality Regulations, 2008 (as amended)

July 2025

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Disclaimer

Guidance for the development of Bathing Water Profiles For the Bathing Water Quality Regulations 2008 (as amended).

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Purpose of this Document

The purpose of this Guidance is to provide practical information, advice and guidance to Local Authorities in the preparation of the bathing water profiles to be prepared under the Bathing Water Quality Regulations, 2008 (S.I. No. 79 of 2008) (as amended).

This guidance note provides an overview of the legislative background and purpose of the profiles and sets out a recommended approach for their development. It offers practical advice on how the requirements of the Regulations in terms of the profiles may be met and provides a list of potential information sources to be used in the compilation of the required reports. Accompanying this Guidance Note is a Profile Reporting Template which is to be completed for each bathing site.

This document should be read in conjunction with the following:

- Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC;
- Bathing Water Quality Regulations, 2008 (S.I. No. 79 of 2008)
- Bathing Water Quality (amendment) Regulations 2024 (S.SI No. 322 of 2024); and
- European Commission: Bathing Water Profiles: Best Practice and Guidance. December, 2009.

This document contains guidance on the preparation of Bathing Water Profiles. However, users are reminded that the text of the Bathing Water Directive and Bathing Water Quality Regulations are the only authentic legal references and that the information in this document does not constitute legal advice.

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1.0 Introduction

1.1 Background

Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC came into force on the 24th of March 2006. The Directive gives stronger focus on the protection of public health, a proactive approach to the management of bathing water quality and greater public participation. It establishes stricter microbiological standards for two new parameters, *Intestinal enterococci* and *Escherichia coli* which will be used to classify bathing waters as "poor", "sufficient", "good" and "excellent". The classification of bathing waters will be determined, in general, on the basis of a four-year period instead of the monitoring results from a single bathing season. This means that the classification will give a balanced rating and be less susceptible to bad weather or one-off incidents.

This Directive also places a requirement on each Member State to prepare bathing water profiles for each of their designated bathing sites. Appendix A contains a copy of Annex III of the Directive which describes each of the elements required to be included in such profiles.

The Bathing Water Directive is implemented in Ireland through the Bathing Water Quality Regulations, 2008 (S.I. No. 79 of 2008) (as amended). Regulation 5(1) of these Regulations specifies that each Local Authority shall establish a bathing water profile for each of the designated bathing sites within their functional areas. Each bathing water profile may cover a single bathing water or two or more contiguous bathing waters.

In line with the Directive, a bathing water may form an element of surface water. It can form:

- Part of a surface water body;
- Cover the whole of the water body;
- Cover more than one water body or parts of more than one water body; and
- It can also be regarded as the limit (expanse/boundary) inside which most bathers frequent and for which a single monitoring point is considered as representative of the water quality.

The Directive also enables Member States to subdivide or group together existing bathing waters if the bathing waters are:

- Contiguous;
- Received similar assessments in the preceding four years; and
- Have bathing water profiles all of which identify common risk factors or the absence thereof.

The purpose of the bathing water profile is to provide a description of the bathing site and its surrounding area along with the identification and assessment of causes of pollution that may affect the quality of the bathing water and impair bather's health. If a risk of short-term pollution is identified, Local Authorities are required to include in the profiles, details in relation to the anticipated nature, frequency and duration of the pollution event and provide a description of management measures taken and/or proposed to be taken and a timescale for their elimination.

It should be noted that the profiles can be either "simple" or "complex" depending on the quality of the water at each site and the difficulty in identifying any potential key pressures affecting the site. Local Authorities should start simple and increase the level of complexity in line with the intricacies of the site.

A bathing water profile is primarily intended to gain an understanding of the faecal sources and routes of pollution. An estimate should be given of the sources of emissions negatively influencing bathing water quality and the pollution pathways. The nature of the emissions (e.g., continuous/episodic, point/diffuse source) and the characteristics of the bathing water (e.g. flowing/isolated, inland/coastal) should also be considered. The compilation of the bathing water profile should facilitate the selection of appropriate management measures to address potential water quality issues. The profile will help communicate bathing water quality and management measures to the general public.

Where relevant, information relating to potential adverse effects on human health from cyanobacteria and/or macro algae/marine phytoplankton should also be provided for the general public, as well as the measures taken/proposed to address this issue.

The profiles are first to be prepared and submitted to the EPA no later than the **24th of March** or prior to the commencement of the bathing season if earlier than that date. Local Authorities are then required to review and update them, in accordance with the frequencies specified in Annex III of the Directive (see Appendix A). A report of a review shall indicate the measures taken to improve water quality at the bathing site during the period since the most recent version or update of the bathing water profile. It shall also report on the effectiveness of those measures and any additional measures proposed.

1.2 The Role of the Guidance

The Regulations require that Local Authorities send a copy of the profile to the EPA in such form and manner as may be specified by the EPA. The EPA has developed this *Bathing Water Profile Guidance* to assist Local Authorities in the preparation of their profiles by specifying the information and the type of assessments that must be carried out in order to complete the relevant profiles. In addition, Local Authorities are requested to use the accompanying *Bathing Water Profile Template* for each profile and submit the profile to the EPA no later than the **24th of March** of each year as specified above, if the profile has been revised or updated**.**

Each profile should not exceed a maximum of **ten pages** in length. As the profiles will be made available to the public, they should be written in a non-technical manner, where appropriate.

1.3 Steps in the Development of a Profile

In order to simplify the process, the guidance has identified eight key steps in the development of the bathing water profile. These steps commence with a description of the bathing water and its contributing catchment and finishes with a description of the information, specifically relating to profiles, which must be provided to the public at each bathing site.

It should be noted that bathing water profiles should always start simply and only be complex where necessary. For bathing waters that historically have been consistently of a high standard in terms of water quality, or where the sources and routes that give rise to pollution problems are easy to identify, a simple profile is enough. If this is not the case then a more complex

profile, including more detailed assessments and management approaches, may be required. The eight steps to be undertaken are as follows:

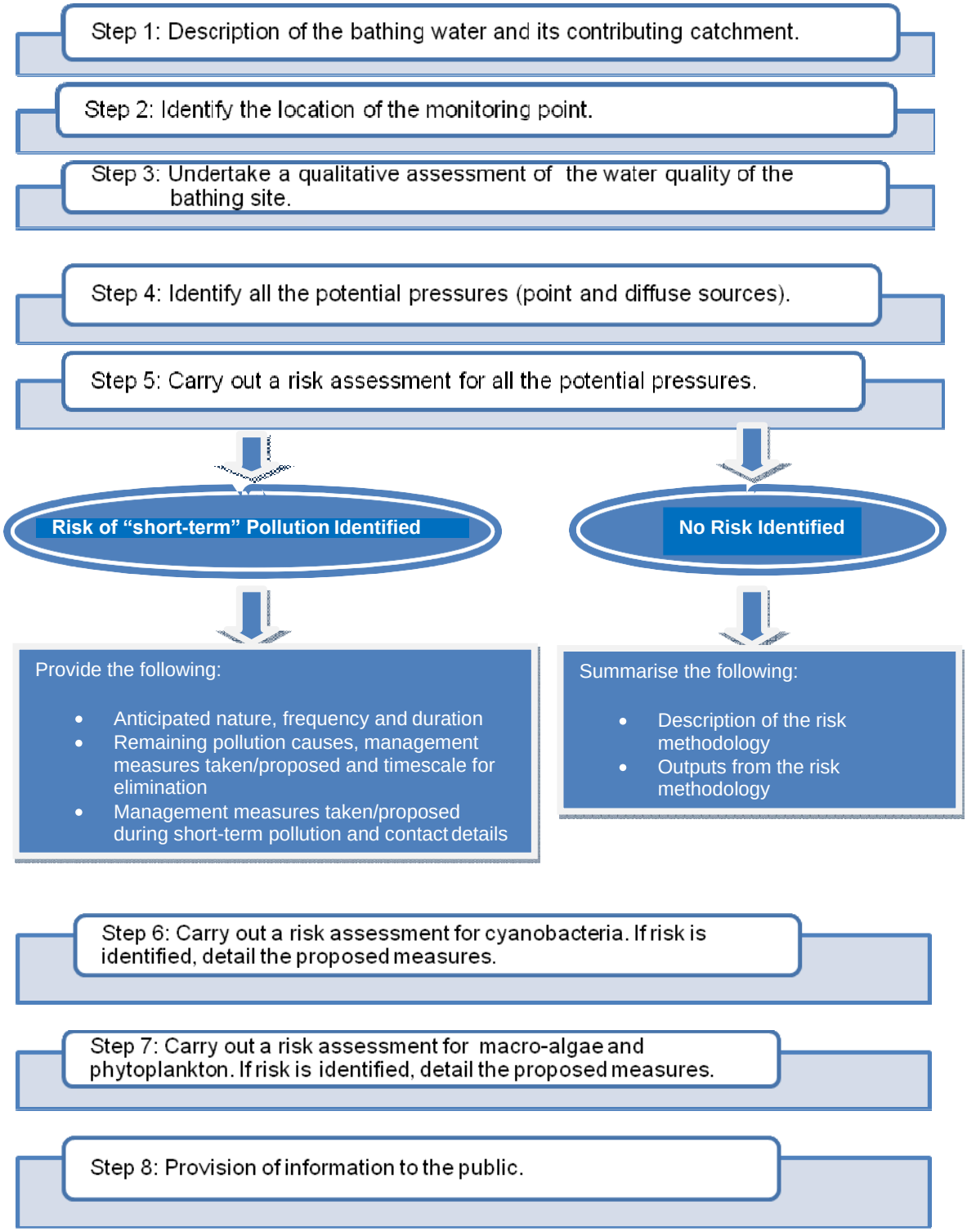

Figure 1: Eight Steps in the Development of a Bathing Water Profile

In as far as possible, the structure and flow of the information to be provided in the template reflects the eight steps identified above.

2.0 Description of the Bathing Water and the Contributing Catchment.

2.1 Introduction

This section provides guidance in relation to **Step 1: Description of the bathing water and its contributing catchment.**

It is to include a description of the bathing water and the contributing catchment including its physical, geographical and hydrological characteristics. The contents of this section are required to comply with the requirements of Schedule 1 of the Regulations as follows:

" (a) a description of the physical, geographical and hydrological characteristics of the bathing water, and of other surface waters in the catchment area of the bathing water concerned, that could be a source of pollution, which are relevant to the purpose of this Directive and as provided for in Directive 2000/60/EC".

Thus, Local Authorities are required to provide detailed descriptions of both the bathing water itself and the contributing catchment in terms of their physical, geographical and hydrological characteristics and are required to make use of appropriate data and information that has been generated under the Water Framework Directive (WFD). (Potential sources of information, including work carried out under the WFD are outlined in Section 9 of this Guidance.)

The profile will also include a general description of the water body (in accordance with the WFD), inside which the bathing water is a "protected area", and a general description of neighbouring waters receiving point and diffuse discharges, able to influence bathing water quality.

2.2 Description of the Bathing Water

A general description of the bathing water and its immediate environs are to be provided. The description should include the following, where relevant:

Location and Extent:

- The location of the bathing site at a national, regional and local level including the river basin district and the water body to which it belongs; and
- Its extent (meters) and size (km^2): This will give an indication of area available to bathers within the particular water body.

Main Features:

- The type of bathing water: The description should differentiate between sandy, rocky, muddy and marshy;
- Description of the main flora and fauna of the area;

- The description of the riparian zone: The description should differentiate between natural, semi-natural, modified, heavily modified and other. Details including the presence or absence of vegetation in the water along with a description of the emerged/submerged vegetation, should also be provided;
- The medium and maximum depth (meters) of the bathing water;
- The length of the water line (where appropriate);
- Details in relation to tidal ranges (microtidal = <2m; mesotidal = 2-4m and macrotidal = >4m) and any tidal influences;
- Land-use surrounding the site; and
- Any formal designations and/or aspects of particular interest either at the site or in its immediate vicinity (e.g., woodlands, wildfowl reserves, SAC's, SPA's).

Facilities and Activities:

- Description of the facilities available at the site (e.g., parking, toilets, showers, shops, ease of access, boat hire);
- Information in relation to the popularity of the beach including the approximate number of visitors during the bathing season and the maximum number of bathers during a day in high season;
- Description of what other activities take place either on the beach or in the water (e.g., windsurfing, fishing, canoeing); and
- Any activities which are prohibited at the bathing site (e.g., horse riding, use of motorised vehicles).

The following map should be provided:

Map 1: A map showing the location and extent of the bathing site within the particular water body. Alternatively, an aerial photograph could be used to define the location and the extent of the bathing site. The location of the monitoring point should be highlighted on the map/aerial photograph. A map indicating the location of the bathing site at national level should also be displayed in this figure (see template for example).

2.3 Description of the Contributing Catchment draining into the Bathing Water

A general description of the contributing catchment associated with the bathing water should be provided. The extent of this catchment should include the area associated with all sources (point and diffuse) that may directly influence the quality of the water at the bathing site. Again, use should be made of the information generated and the assessments carried out under the Water Framework Directive. Similarly, current as well as historical water quality data will help to inform this process. In addition, Local Authorities should consider other reports, investigations and assessments which have been carried out and which may be of relevance, for example assessments supporting the protection of nearby shellfish waters or drinking waters.

The identification and assessment of key pressures as described in section 3.2 will also help in identifying the extent of the contributing catchment. Thus, it may be worthwhile for Local Authorities to undertake these two steps in tandem with each other.

In addition to the above, the following may also be taken into consideration in defining the extent of the contributing catchment:

- The catchment associated with the bathing water;

- The water bodies which drain into it;
- The direction of flow in each of the rivers;
- The topography of the area;
- Consideration of the extent of tidal influences; and
- Consideration of the morphological characteristics of the coastline e.g., headlands etc.
- The natural dispersion and removal of bacteria, viruses and parasites by effect of UV rays (sun), osmotic shock (salt) and biological competition

Then using expert opinion and local knowledge, Local Authorities should delineate the extent of the contributing catchment associated with the bathing water.

The description of the contributing catchment should include the following, where relevant:

- The extent of the catchment (km^2);
- A brief description of the hydrological aspects of the catchment area including information in relation to all relevant water bodies that could be a source of pollution;
- Other water bodies exerting an influence on the bathing water. The extent of the network to be described should span the area where potential key pressures (both point and non-point source pollution) in the hydrological network may have an impact of the quality of the bathing water;
- The topography of the catchment;
- Information in relation to the soils, subsoils and bedrock;
- Information on landcover and landuse including ratio of landuse in the contributing catchment (urban/agricultural etc) (Corine Level 1 evaluation);
- Any formal designations and/or aspects of particular interest (e.g., SAC's, SPA's etc);
- The location of villages/towns along with their population equivalents;
- Precipitation details: Information in relation to the mean annual precipitation within the catchment, details of the month with the highest and lowest precipitation levels; and
- Details of any rain gauges located within the catchment or adjacent to the bathing site (also provide a six digit grid reference for each rain gauge).

The following map should be provided:

Map 2: Map showing the extent and details of the contributing catchment area. In addition, all the key pressures which are assessed as having an impact on the quality of the bathing water are to be clearly marked.

2.4 The Location of the Monitoring Point

This section provides guidance in relation to **Step 2: Identify the location of the monitoring point.**

Article 3.3 of the Directive requires that a unique representative monitoring point for each bathing site be identified. The location of this monitoring point shall be:

- Where most bathers are expected; or
- Where the greatest risk of pollution is expected according to the bathing water profile.

If the monitoring point is located where most bathers are expected then the sampling results are likely to be of increased relevance to the majority of people using the bathing water. The

monitoring would also assist in alerting potential concerns in relation to cross contamination between bathers in situations where renewal of water is either absent or limited. The problem of substrate suspension is also likely to be relevant at this point (mostly in freshwater bathing sites).

If the monitoring point is located where the greatest risk of pollution is expected, this would enable early detection and appropriate measures to be put in place. Thus, for those sites where there is historical evidence of issues in relation to water quality, early detection at a specific point where the greatest risk of pollution is expected (as identified by the profile) should be considered. Monitoring at the point of greatest risk provides the reassurance that if the bathing water is compliant there, it is likely that the whole area will be.

Local Authorities are in the best position to determine which of the above is most relevant to their particular bathing site.

Schedule 5 of the Regulations also require that where possible, samples are taken 30cm below the surface of the water and in water that is at least one meter in depth.

The template requires the Local Authority to identify the location of the monitoring point on Map 1, provide a six digit grid reference and to provide a reason for its selection.

2.5 Assessment of Water Quality at the Bathing Site

This section provides guidance in relation to **Step 3: Undertake a qualitative assessment of the water quality of the bathing site.**

An initial assessment of the water quality at the bathing site should be undertaken. All available information in relation to water quality should be considered for examination with particular focus on microbiological information. Information indicating a potential for proliferation of cyanobacteria, maco-algae and/or marine phytoplankton (e.g., high nutrient levels) and the presence of waste (e.g., tarry residues, glass, plastic, rubber) should also be considered.

Information in relation to water quality at existing bathing sites during previous bathing seasons is available on the EPA's data portal EDEN (www.edenireland.ie or the bathing water website www.beaches.ie.

Compliance rates as far back as 2003 are available for all the designated bathing sites. Local Authorities may also have supplementary information and data to add to this assessment. Where bathing sites have had issues in relation to compliance with the standards in the Directive (Mandatory and Guide) explanatory text should be provided, detailing the reasons for the non-compliances. In addition, Local Authorities may have carried out monitoring for other purposes e.g., Blue Flag Status and such data should also be examined (e.g., *Faecal Streptococci*).

For those sites which have not been previously designated under the Bathing Water Regulations, the Local Authorities may have data in relation to sampling that has been carried out for the two relevant or equivalent microbiological parameters, required for other purposes. Section 9 of this Guidance outlines other potential sources of information. While water quality assessments under the Water Framework Directive are more focused on nutrient and other pollution, and do not include assessments of microbiological conditions, in many cases the sources of microbiological and nutrient pollution are often the same. .

3.0 The Identification and Assessment of Pollution Sources That May Impact Bathing Waters and Impair Bather's Health.

3.1 Introduction

Annex III of the Directive requires the identification and assessment of causes of pollution that may affect bathing waters and impair bather's health. In this regard, the parameters to be monitored are *Intestinal enterococci and Escherichia coili* which are indicators of faecal contamination. This simplification of the parameters in comparison to the 1976 Bathing Water Directive recognises the fact that faecal material, for instance, due to inadequate sewage treatment and animal waste, is the primary health threat to bathers. Faecal contamination can arise from both point and diffuse sources. Appendix B lists some of the main potential sources of such contamination.

The two main routes that such contamination can reach bathing areas are either via direct discharge (e.g., wastewater outfall) or indirect discharges (e.g., run-off from land or percolation from septic tanks). Similarly, local conditions within the catchment can play a major role in the impact of such pollution e.g., topography and climatic conditions. In addition, the conditions of the bathing waters i.e., the water quality at the bathing site and its sensitivity to contamination, will determine the overall impact from such potential polluting sources. Thus, assessing all the relevant sources, pathways and receptors in combination with each other, will help determine the likelihood and impact of potential pressures.

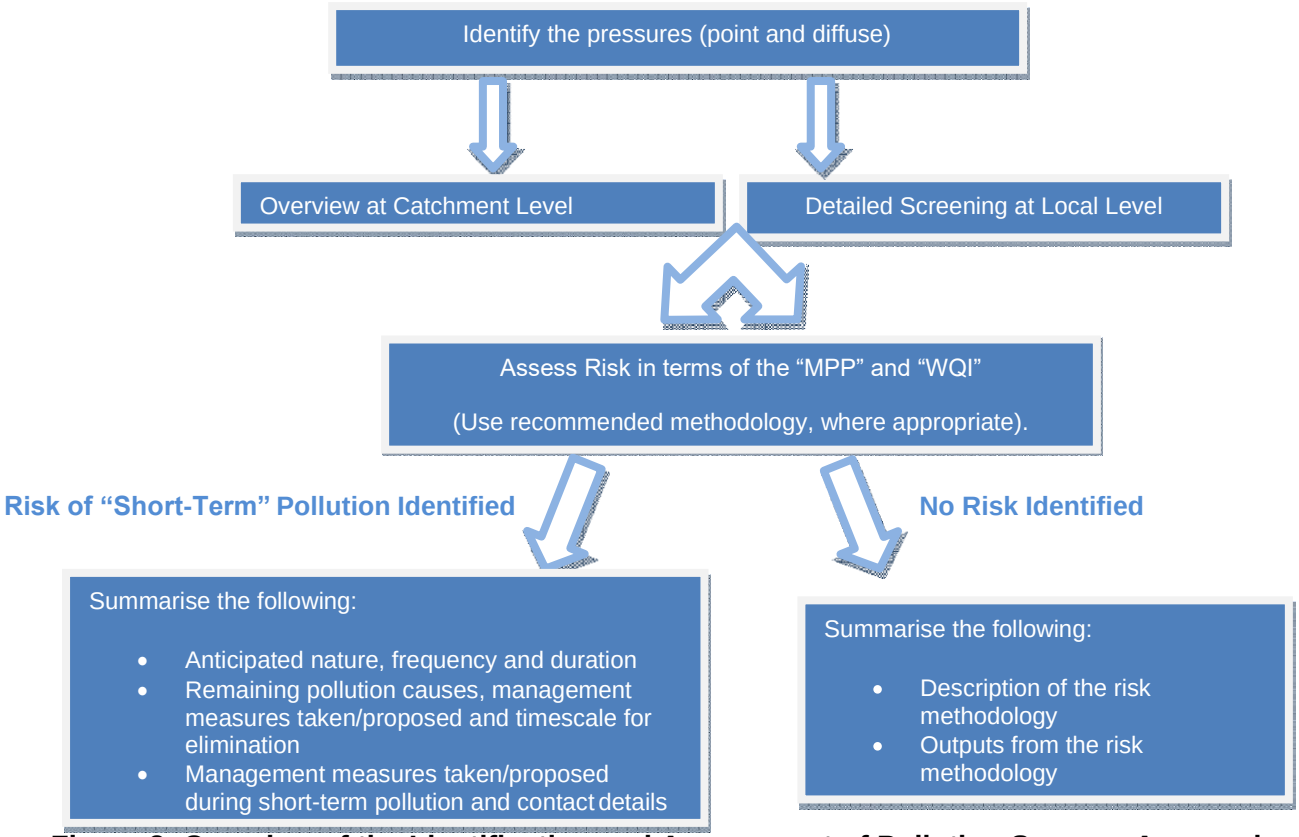

Figure 2: Overview of the Identification and Assessment of Pollution Sources Approach. (MPP = Microbial Pollution Potential; WQI = Water Quality Impact)

In this process, it should be noted that the level of identification and assessment of pressures to be undertaken by Local Authorities as part of the preparation of a profile should be proportional to the historical and current quality of the bathing water and the difficulty in identifying any potential key pressures affecting the site.

Figure 2 above describes the process to be used in the identification and assessment of potential pollution sources. The process recommends that the identification of potentially polluting sources occurs at two different levels, as follows:

- Overview at catchment level; and
- Detailed screening at local level.

Full use should be made of the information and data generated under the Water Framework Directive, particularly in relation to data at catchment level. A good source of this information is the www.catchments.ie/wfd-data-dashboards/. A more detailed examination may be required at the local level. Once all the key pressures have been identified, a risk assessment should be undertaken. The recommended methodology is described in the following section. This methodology has been adapted from a sanitary inspection method recommended by the World Health Organisation (WHO).

Where a pressure is identified as posing a direct risk to the bathing water and fulfills the criteria of "short-term pollution"[1], further information including the anticipated nature, frequency, duration, management measures taken/proposed to be taken and associated timescales, should be provided. In many cases, particularly at catchment level, these measures may have been included in the River Basin Management Plan produced under the WFD. It is planned that in time, 46 River Basin Management Work Plans will provide granular detail on a local level, providing another information resource to assist in developing effective profiles. In this case, a brief summary and a link to the relevant section in the associated plan/programme should be provided for in the profile.

Where no risk has been identified with a particular pressure, a simple description of the risk methodology undertaken and its outputs should be included.

3.2 Identification and Assessment

This section provides guidance in relation to **Step 4: Identify all the potential pressures (point and diffuse sources).**

3.2.1 Identify the Pressures:

Overview at Catchment Level

Using the extent of the catchment which influences the water quality at the bathing site, identify all the potential point and diffuse sources within the catchment area (see Appendix B for list of

[1] Short-term pollution is defined in S.I. 79 of 2008 as:
" microbiological contamination as referred to in Schedule 4, column A that has clearly identifiable causes, is not normally expected to affect bathing water quality for more than approximately 72 hours after the bathing water quality is first affected and for which the relevant local authority has established procedures to predict and deal with as set out in Schedule 6".

potential sources). Use should be made of the information collected under the Water Framework Directive as well as additional information held by the Local Authorities and various other bodies, such as the HSE. As the main focus of the Bathing Water Directive is on water quality based on microbiological parameters as well as risks from cyanobacteria, macroalgae and phytoplankton, the identification process should specifically include potential microbiological inputs as well as nutrient inputs in the form of both nitrogen and phosphorus.

Detailed Survey at Local Level

A detailed survey of the bathing site and its immediate environs should be undertaken to identify all potential sources of pollution within the immediate vicinity of the site. This is to ensure that any potential site specific sources which have not been identified under the above two mentioned Directives, are taken into consideration. Where possible, this survey should be undertaken during the bathing season to ensure that all potential sources of pollution which may impact bathers are identified. Some of these sources may only be prevalent during the summer months (e.g., discharges from caravan parks). Local Authorities should also take into consideration any relevant reports, investigations, complaints etc. at local authority level which may be impacting on water quality at the site. Where the bathing season is extended, the survey should consider any potential pollution sources present in the extended season.

Items for Consideration

Consideration may also be given to how changes in climatic conditions may influence the quality of bathing waters either directly or indirectly e.g., increased run-off from the surrounding land and storm water overflows which may be associated with heavy rainfall events. The impact should consider both the effects of climatic conditions both in the vicinity of the bathing site and upstream in the contributing catchment. Consideration should also be given to the effects of wind conditions, if considered appropriate.

Consideration should also be given to the potential seasonal impact that a source may have. Intermittent or seasonal activities including application of fertilizers, slurry spreading, silage cutting, breeding season of birds etc., may impact on bathing water quality. However these impacts may or may not fall within the Bathing Season. In this regard, the following should be considered:

- Could the impact be correlated with ongoing activities in the surrounding area?
- Does the impact occur during the bathing season or at another time of the year?
- Where an impact occurs during the bathing season, is it at the beginning or the end of the bathing season?

For those bathing waters where impacts from wastewater treatment discharges may be an issue, a map with the size and types of wastewater treatment plants in the contributing catchment and the agglomerations connected to these, can provide a good overview of the capacity and density of WWTP in each sub-catchment, and the level of microbiological performance linked with treatment. For bathing waters mainly influenced by wide urban areas, a schematic map of the wastewater network including the location of pumping stations, combined sewer overflows, the structure of storm water collection networks and the location of associated outfalls can provide a useful information source to identify potential pollution sources.

Where impacts from agricultural activities may be an issue, a schematic map of the densities of farm animals and of manure spreading can be useful, especially if combined with a topographic map. This may have been generated in the programme of work for the WFD. One map resource that might be particularly useful is the Pollution Impact Potential (PIP) maps (available on the catchments.ie website), particularly that for phosphate. This concerns largely overland flow pathways of nutrients and could also be considered as a proxy for bacteriological input into waterbodies, as overland flow is the predominant mechanism for pathogens from spread manures or biosolids to enter water. In this way, some of the microbiological risks from agricultural activities may be identified.

A view of the potential impact of the septic tanks of scattered rural dwellings can be obtained from human density maps for the catchment and using links with the risk assessment tools used to carry out DWWTS inspections.

It should be noted that this step may result in a modification to the extent of the contributing catchment which was identified in section 2.3. Thus, the Map 2 which details the contributing catchment may need to be modified and updated.

3.2.2 Risk Assessment:

This section provides guidance in relation to **Step 5: Carry out a risk assessment for all the potential pressures.**

For each of the point and diffuse sources identified above, the Local Authority needs to assess and quantify the potential risk that the particular sources may degrade the quality of the water at the bathing site. This will ensure that relevant warning systems and appropriate procedures and management measures can be put in place.

In certain circumstances, the tool developed below may assist in the risk assessment process. It may be particularly useful in the case where point source pollution is suspected as causing a decrease in water quality at the bathing site. In other cases, Local Authorities may have an alternative approach to assigning the risk status and its potential impact. This could relate to previous studies/investigations undertaken or be based on specific local knowledge. Local Authorities are in the best position to determine which risk assessment methodology should be used.

Proposed Risk Assessment Methodology

Where a direct risk to the quality of the water at the bathing site is identified, both the “magnitude of the risk” and the “magnitude of the impact” need to be determined.

The magnitude of a risk to the quality of the bathing water is represented as the ‘Microbial Pollution Potential’ (MPP). The MPP is graded “Very High”, “High” “Moderate”, “Low”, “Very Low” and “Nil” for a particular pollution source.

Where the most important source is a sewage outfall, its Microbial Pollution Potential should be graded according to Table 1. The grade depends on the type of discharge (directly onto the beach, short outfall discharging close to the shore, long outfall discharging far offshore), and on the type of treatment as indicated.

Where the source is sewage discharged to a river, the Microbial Pollution Potential should be graded according to Table 2. The grade depends on the type of sewage treatment prior to discharge, and on the degree of its dilution by the river as indicated.

The "magnitude of the impact" of the microbial pollution sources on an affected bathing water quality is represented as the Water Quality Impact (WQI). The Water Quality Impact is graded A to D and E to H based on 95 percentile *Faecal streptococci* and *Escherichia coli* concentration ranges for coastal and inland waters respectively (Table 3). The 95 percentiles should be calculated for the monitoring results for bathing waters aggregated over the most recent five bathing seasons.

Table 1: Microbial Pollution Potential (MPP) grades for sewage outfalls (adapted from WHO 2003[2]).

Discharge Type			
Treatment	***Directly onto beach***	***Short Outfall[a]***	***Long Outfall[b]***
None[c]	Very high	High	Moderate
Preliminary	Very high	High	Low
Secondary	High	High	Low
Secondary plus disinfection	Moderate	Moderate	Very low
Tertiary	Moderate	Moderate	Very low
Tertiary plus disinfection	Very low	Very low	Very low

a. For short outfalls, the MPP grades are for medium-size populations (c. 60,000). If possible, increase the MPP grade to the next highest grade for large populations, and decrease it to the next lowest grade for small populations.
b. Treat the discharge type as a short outfall where there is evidence that, in exceptional conditions, the bathing water receives microbial pollution originating from a long outfall.
c. Includes combined sewer overflows.

Table 2: Microbial Pollution Potential grades for sewage discharges to rivers (adapted from Bartram and Rees 2000[3]).

Dilution Capacity[a]			Sewage treatment		
Population Size[b]	***River Flow[c]***	***None***	***Primary***	***Secondary***	***Secondary plus disinfecton***
Large	Small	Very high	Very high	High	Low
Small	Small	Very high	High	Moderate	Very low
Medium	Medium	High	Moderate	Low	Very low
Large	Large	High	Moderate	Low	Very low
Small	Large	High	Moderate	Very low	Very low

d. No allowance is made for pollution reduction processes in the river.
e. Includes all the upstream population. As a general guide, population <10,000 = small, 10,000 – 100,000 = medium and >100,000 = large. It should be noted that for large population centres, a particular river may be affected by a particular section of the population and not by others. In general, Local Authorities with local knowledge, can evaluate the contribution population sizes for particular rivers, along these lines.
f. River flows are those experienced during the bathing season, taking into account increases in flow associated with high rainfall events.

[2] WHO (2003) Guidelines for Safe Recreational Water Environments, vol. 1: coastal and fresh waters. Geneva.

[3] Bartram, J. and Rees, G. (eds.) (2000) Monitoring Bathing Waters: a practical guide to the design and implementation of assessments and monitoring programmes. London, E and FN Spon.

Table 3: Water Quality Impact (WQI) grades for bathing waters. The values are the 95 percentiles for the monitoring results of the most recent five bathing seasons (adapted from WHO 2003, and Ministry for the Environment, New Zealand 2002[4]).

Bathing water	WQI grade	Intestinal enterococci cfu/(100ml)	Escherichia coli cfu/(100ml)
Coastal	**A**	0-40	
	B	41-200	
	C	201-500	
	D	>500	
Inland	**E**		0-130
	F		131-260
	G		261-550
	H		>550

Note: Faecal enterococci and Faecal coliform results may be taken as equivalent to Intestinal enterococci and Escherichia coli results respectively during the transition period for S.I. 79 of 2008.

The Microbial Pollution Potential and the Water Quality Impact grades are combined in a 'matrix' (Table 4) to yield Microbial Pollution Risk assessments. The effect of this combination is to adjust the pollution pressure in the light of the compliance experience to yield the required Microbial Pollution Risk assessment for the pollution source (see Appendix C for worked example).

Table 4: Microbial Pollution Risk (MPR) assessment for pollution sources affecting coastal (A-D) and inland (E-H) bathing waters (adapted from WHO 2003[5]).

		Water Quality Impact			
		A/E	**B/F**	**C/G**	**D/H**
Microbial Pollution Potential	**Very low**	Very low	Very low	Query[a]	Query[a]
	Low	Very low	Low	Moderate	Query[a]
	Moderate	Query[b]	Low	Moderate	High
	High	Query[b]	Query[b]	High	Severe
	Very high	Query[b]	Query[b]	Query[b]	Severe

a. Review this assessment: non-sewage sources of pollution may be dominant. If this is unchanged after reassessment, then make the more conservative assessment as the first one that appears below in the same column.

b. Review this assessment: the Microbial Pollution Potential and the Water Quality Impact seem inconsistent. If this is unchanged after reassessment, then make the more conservative assessment as the first one that appears to the right in the same row.

Where a source of microbial pollution has been identified and is not catered for in Table 1 or 2 and where the Water Quality Impact grade is greater than A or E, a preliminary conservative

[4] New Zealand Ministry for the Environment (2003) Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (www.mfe.govt.nz).

[5] See Footnote 2.

assessment of the Microbial Pollution Potential should be made for use in Table 4. Cross reference the remaining potential point and diffuse sources identified in step 4 with those identified and characterised under the Water Framework Directive, where relevant. Consideration should be given to the risk category assigned to each of the particular sources under the WFD and its appropriateness in estimating the Microbial Pollution Potential. Using all available information estimate the MPP and WQI grades for the source in question and determine the Microbial Pollution Risk assessment grade. A simple description of this preliminary assessment methodology and its output is to be provided in the profile. Further detailed investigations should be undertaken to better quantify the Microbial Pollution Potential (see reference to agricultural activities and septic tanks in Section 3.2.1).

Reporting of Results from the Risk Assessment

Where the output from the risk assessment process shows that a pressure does not pose a direct risk to the bathing water, a simple description of the risk methodology undertaken and its outputs is to be provided in the profile.

Where a risk of 'short-term pollution' is identified for any of the potential point and diffuse sources, the profile must set out the following:

- a description of the pressure;
- a description of the risk assessment methodology and its outcomes including the magnitude of the risk and impact (Where the proposed risk assessment has been used the Microbial Pollution Potential and the Water Quality Impact, should be provided);
- the anticipated nature, frequency and duration of the expected short-term pollution; and
- details of any remaining causes of pollution, including management measures taken/proposed to be taken and the time schedule for the elimination of these causes
- management measures taken during short-term pollution and the identity and contact details of bodies responsible for taking such action.

In terms of the proposed measures, some of these may have been addressed in the River Basin Management Plan, or Priority Areas for Action (PAA's) produced under the WFD and the Pollution Reduction Programmes under the now repealed Shellfish Directive. Where this is the case, it is sufficient to give a brief description in the profiles and provide a link to the relevant sections in the relevant reports.

Where risk of 'abnormal pollution'[6] arises from unexpected malfunctions or breakdowns of systems, e.g. wastewater treatment systems, Local Authorities should ensure that they have a warning procedure developed to ensure effective and timely communications between those responsible for wastewater treatment and those responsible for bathing water management.

Where a Local Authority is unable to either identify the source of pollution or assess its risk, further detailed investigations should be undertaken. Where these situations arise, they should

[6] Abnormal pollution is defined in S.I. 79 of 2008 as "..an event or combination of events impacting on bathing water quality at the location concerned and not expected to occur on average more that once in every four years"..

be described in the profile along with the measures proposed and timeframes for their completion.

Additional Item for Consideration

The definition of pollution in the Regulations also includes “waste”, thus there is a requirement to visually inspect the bathing sites for such materials including tarry residues, glass, plastic, rubber etc. When such pollution is found, adequate management measures shall be taken, including, if necessary, information to the public.

4.0 An Assessment of the Potential for the Proliferation of Cyanobacteria

This section provides guidance in relation to **Step 6: Carry out a risk assessment for cyanobacteria. If risk is identified, detail the proposed measures.**

4.1 Introduction

Cyanobacteria (formerly classified as Blue Green algae) are amongst the oldest organisms on the planet. They occur naturally in the vast majority of lakes in the world and are absent in rare cases only. They are for the most part free floating (planktonic) organisms but attached forms can also occur. Cyanobacteria have been present in Irish lakes since shortly after these lakes were formed and their presence has been recorded even in the most unenriched lakes in the west of Ireland. The organisms are generally present in small quantities; however, in recent years due mostly to nutrient (phosphorus) enrichment they have become more abundant in some lakes particularly during the summer and autumn months when water temperature and light are conducive to plant growth.

In the normal course of events the Cyanobacteria are well dispersed through the water column of lakes as a result of wind induced currents in the top ten meters of the lake. In periods of calm still weather these wind induced currents are absent and internal buoyancy in the organisms cause them to float to the surface forming surface scums or “blooms”. In enriched lakes these blooms are quite noticeable and unsightly, particularly when they are blown on to a shoreline by on-shore breezes. The attached forms can break off from their substrate and also form shoreline accumulations. At this stage the Cyanobacteria start to decompose and sometimes emit toxins which may result in illness or death to animals and illness in humans. In normal circumstances Cyanobacteria do not appear to emit toxins or do so at levels insufficient to cause illness but when they are concentrated and start to decompose the risk of toxin emission is considerably increased. In recent years a low number of incidents have occurred in which the demise of dogs has been attributed to the animals ingesting toxins emitted by cyanobacteria.

In the EPA Report 'Investigation of Toxins Produced by Cyanobacteria'[7] it was found that most algal blooms investigated in Ireland were non toxic; however, elsewhere up to 75% of sampled populations of *Microcystis aeruginosa*, a common cyanobacteria form, were acutely toxic. The report found that fully dispersed populations of Cyanobacteria do not present a serious threat of acute toxicity. It was calculated that a human would need to drink in excess of 40 litres of water with a dispersed cyanobacteria population in order to reach the lethal dose. However the investigation could not exclude the possibility of sub lethal or chronic effects from ingesting

[7] EPA, 1999. Investigations of Toxins Produced by Cyanobateria: Synthesis Report. Environmental Research R&D Report, Series No. 4. EPA.

water with low toxin doses. The report stated that the most serious danger to humans is to swallow water from a surface scum.

While the EPA has no plan to initiate a national monitoring programme specifically to identify cyanobacteria, it is proposed that in the current lake monitoring programme algal and cyanobacterial species identification will be performed in cases where the lakes are enriched. In addition, estimates are made of the abundance of algae and cyanobacteria populations in all lake samples analysed. Such identifications will be required routinely in the monitoring of lakes over 50 hectares in surface area under the terms of the WFD.

As part of the bathing water profile, Local Authorities are required to carry out an assessment of the potential for proliferation of cyanobacteria In addition, the Regulations require that where the profile indicates that a potential for cyanobacterial proliferation exists, that appropriate monitoring be carried out to enable the timely identification of health risks. It should be noted that the HSE have specific guidance for managing cyanobacteria in bathing waters. This is available here (https://www.hse.ie/eng/services/list/1/environ/water/microbiological-pollution-adverse-circumstances-saline-and-fresh-bathing-water.pdf)

4.2 Items for Consideration in Risk Assessments for Toxin Emission by Cyanobacteria

Local Authorities should first of all examine whether proliferation of cyanobacteria has previously occurred. If so, the following details should be examined:

- the conditions under which proliferation of cyanobacteria occurred;
- the time of year when it occurred;
- the duration of its presence;
- the details and results of any monitoring carried out;
- any health impacts which arose; and
- any actions/measures that the Local Authority took and the success or otherwise of those measures.

Based on the outcome of the above examination, Local Authorities should consider whether they need to develop an appropriate procedure for the early detection and management of any potential risks from cyanobacterial blooms. The development of such a procedure should include all interested bodies and may include: visual inspection and monitoring; assessment of results; and implementation of appropriate actions.

Visual Inspection and Monitoring: The frequency, duration and magnitude of such blooms will determine the need for visual inspections and appropriate monitoring. In general, cyanobacterial blooms occur in periods of calm, still weather when wind induced currents are absent or greatly reduced and internal buoyancy in the organisms cause them to float to the surface forming scums or blooms. It would be appropriate to monitor bathing areas when such weather conditions are predicted. Monitoring for toxins should be carried out when such blooms occur in the bathing areas.

It should be borne in mind that where monitoring is at fixed intervals, fixed monitoring schedules may miss the blooms, thus frequent visual inspection during periods of specific weather conditions and reactive monitoring may be of more benefit. In general monitoring and inspection requirements should be determined by local circumstances.

Assessment of Results:

Table 1 below recommends suggested actions to deal with cyanobacteria in recreational waters

Level of Cyanobateria	Action
Chlorophyll < 10µg Chl/l	None
Chlorophyll > 20µg Chl/l with the planktonic species composition dominated by Cyanobacteria spp.	a) Check regularly for climatic conditions[8] conducive to "bloom formation. b) When such climatic conditions are forecast discourage bathing. c) Erect temporary on-site, risk signs for the duration of the climatic conditions.
Cyanobacteria "blooms" in open water and shoreline accumulations	a) Prohibit bathing and other water contact activities. b) Take daily (or more frequent) water samples for toxin analysis. c) Erect temporary on site risk signs for the duration of the blooms and accumulations.

Table 1: Suggested Actions to Deal with Cyanobacteria in Recreational Water

Local Authorities should consider the recommended guidance levels and associated actions when either developing a procedure for the early detection and management of any potential risks from cyanobacterial blooms or in instances of bloom formations. Further HSE guidance on managing marine and freshwater algal blooms can be found in the guidance documents on EPA Bathing water website https://www.beaches.ie/epa-bathing-water-advice-guidance-documents/.

Actions: The Regulations require that when a cyanobacterial proliferation (accumulation of cyanobacteria in the form of a bloom, mat or scum) occurs and a health risk has been identified or presumed, that adequate management measures be taken immediately to prevent exposure, including the provision of information to the public. There are a number of different actions and measures that a Local Authority can take and these actions generally fall into one of two different categories: re-active actions and pro-active actions.

Re-active Actions: These are actions which are taken in response to a cyanobacterial bloom. Table 1 above summaries typical actions that may be taken in response to a cyanobacterial bloom. However, it should be noted that any actions taken by Local Authorities should be based on an assessment of the potential hazard that any individual bloom may pose to public health.

[8] Calm, weather lasting for 24 hours or longer without surface wave action.

The main actions relate to the provision of information and advice to discourage or prohibit water-contact activities e.g., swimming. In addition, advice should also be given to dog owners to ensure protection from the dogs ingesting the potentially hazardous material. Similar advice should also be given to farmers to ensure protection of livestock. Use should be made of the various different types of media available to inform the public e.g., internet resources, warning notices, leaflets, newspaper adverts, contact with other bodies which may use the water body, radio adverts.

If the water body is used as a source for drinking water, the Local Authorities may be required to take additional appropriate actions.

Consideration should be given to undertaking analysis for toxins at bathing areas where there is a cyanabacterial bloom or shoreline accumulation of cyanobacteria and that a bathing prevention sign be erected for the duration of the bloom and/or accumulation.

Consideration may also be given to carrying out a public health follow-up investigation or veterinary follow-up investigation. However this is a matter for the Local Authority and the relevant bodies including the Health Service Executive.

Pro-active Actions: If the initial assessment of the water body indicates that that there is a high probability of a proliferation of cyanobacteria occurring, it may be more appropriate for a Local Authority to undertake actions to help prevent their formation in the first place. Algal blooms result from a combination of various different factors. Although nutrients do not cause blooms, their input determines the biomass of cyanobacteria present in the water. As nutrients are required for plant growth, measures aimed at limiting the amount of nutrients entering the water body may assist in limiting the extent of such blooms. This requires the identification of nutrient sources and their pathways along with appropriate measures to address their reduction.

This work should have been addressed under Steps 4 and 5 of the development of the profile. If not, the Local Authority will be required to amend the Profile as appropriate and propose appropriate measures where a risk has been identified.

Local Authorities should also note that Article 15 of the Regulations places a requirement on the Local Authority to promptly notify the EPA and the Health Service Executive of any situation that has, or could reasonably be expected to have, an adverse impact on bathing water quality and on the health of bathers.

Reporting of the Results from the Risk Assessment for Cyanobacteria in the Bathing Water Profile Template

The bathing water profile template requires Local Authorities to describe both the assessment undertaken and detail any proposed measures. Proposed measures include the provision of information to the public.

5.0 An Assessment of the Potential for the Proliferation of Macro-Algae and Marine Phytoplankton

This section provides guidance in relation to **Step 7: Carry out a risk assessment for macro-algae and marine phytoplankton. If a risk is identified, detail the proposed measures.**

5.1 Introduction to Macro-Algae

Macro-algae, better known as seaweed, can be defined as large aquatic photosynthetic plants which can be seen without the aid of a microscope and are generally plant-like in appearance. They can come in many different colors including green, red, brown and blue, as well as in a variety of forms with some growing tall and others growing in mat formations. The most familiar types can be generally divided into three groups: Green (Chlorophyta), Red (Rhodophyta) and Brown (Phaeophyta).

Although macro-algae are naturally present within the marine environment, additional nutrient inputs into their environment can encourage significant growth and abundance. In general, nitrogen is the limiting factor in high salinity and oceanic water, whereas phosphorus is normally the limiting factor in fresh and low salinity sea water. Such inputs of nitrogen can come from point discharges, (e.g., UWWTPs) or diffuse sources (e.g., run-off from agricultural land and septic tanks). In addition to nutrient availability, particular conditions in relation to light and temperature must also be sufficient to sustain algal growth and hence the distinct seasonality of this species. In general, accelerated growth begins in late spring coinciding with a rise in water temperature and an increase in day light hours. Growth peaks in late summer and gradually decreases from the end of August into late October.

Excessive growth of macro-algae can accumulate on beaches. In some cases and in particularly in the case of sea lettuce (*Ulva* spp.), these accumulations can decompose rapidly. This may impact on amenity use and give rise to potential public health concerns due to the release of hydrogen sulphide (H_2S) gas which can also give rise to significant odour issues. In addition, they can pose an ecological risk to the flora and fauna of the area.

Due to the public health concerns associated with such accumulations and in response to a number of reported incidents across Europe, the Directive requires that the bathing water profile includes an assessment of the potential for the excessive growth of macro-algae. Where the assessment indicates a tendency for excessive growth, investigations are to be undertaken to determine their acceptability and health risks. In addition, adequate management measures are to be taken including the provision of information to the public.

There have been a number of reports of the occurrence of opportunistic species, most notably of sea lettuce, around the Irish coastline which has been posing a nuisance and a potential health risk due to its high accumulation on particular beaches.

5.1.1 Items for Consideration in Risk Assessments for Macro-algae

The approach being suggested for the assessment of risk from macro-algae is similar as that for cyanobacteria. Local Authorities should first of all examine whether proliferation of macro-algae has occurred in the past. If so, the following details should be examined:

- the conditions under which proliferation of macro-algae prevailed;
- the time of year when it occurred;
- the duration of its presence;
- the details and results of any monitoring carried out;
- any health impacts which arose; and
- any actions/measures that the Local Authority took and the success or otherwise of those measures.

Based on the outcome of the above examination, Local Authorities should consider whether they need to develop an appropriate procedure for the early detection and management of any potential risks from such proliferations. The development of such a procedure should include all interested bodies and may include: visual inspection and monitoring; and implementation of appropriate actions.

Visual Inspection: The frequency, duration and magnitude of such proliferations will determine the need for visual inspections and appropriate monitoring and management measures, where required. In particular, consideration should be given to the location and accessibility to the general public of such accumulations. Where a Local Authority is concerned with regard to the potential health risk associated with such accumulations, advice should be sought from the relevant Authorities including the HSE.

Actions: It should be noted that the Regulations require that where the profile indicates that there may be a tendency for such proliferations, that investigations shall be undertaken to determine their acceptability and health risks and that adequate management measures shall be undertaken by the local authority including the provision of information to the public.

Thus for those bathing areas where the assessment indicates that there is a tendency for such proliferations, Local Authorities should undertake investigations to determine the level of acceptability of such accumulations and any potential associated health risks. Local Authorities should also consult with the HSE regarding any concerns about potential health risks.

There are a number of different actions and measures that a Local Authority can take and these actions generally fall into one of two different categories: re-active actions and pro-active actions.

Re-active Actions: These are actions which are taken in response to a proliferation of macro-algae. However, it should be noted that any actions taken by Local Authorities should be based on an assessment of the potential hazard that any individual proliferation may pose to public health.

The main actions relate to the provision of advice and information to the general public and the removal of excessive accumulations of macro-algae, where deemed necessary. Information should be provided to the public warning them of any potential dangers associated with the

accumulations e.g., possible inhalation of poisonous gas, slippage. Such information may prohibit the public from accessing the areas where the greatest accumulations have occurred along with information on the associated potential risks. The public should also be informed regarding the impacts that the accumulations may have on dogs and horses who may gain access to such areas. Consideration should be given to the use of various media sources for the provision of such information.

In terms of management measures, based on the outcome of an assessment of the potential health risk from the accumulations, Local Authorities may consider the removal of such material. All relevant outlets for such material should be investigated and secured as part of the management measures to be undertaken. Local Authorities should also be aware of and take all appropriate precautions against exposure of either Council workers or contract workers who may be involved in the gathering or removing of such decaying material.

Pro-active Actions: If the initial assessment indicates that there is a potential risk from the proliferation of macro-algae, it may be more appropriate for a Local Authority to undertake actions to help prevent their formation in the first instance. As such proliferations generally arise from a combination of different factors, of which nutrient loading particularly nitrogen is a significant factor, measures aimed at limiting the amount of nutrients entering the water body may assist in limiting the occurrence of such proliferations, in the long-term. This requires the identification of nutrient sources and their pathways along with appropriate measures to address their reduction. This work should have been addressed under Steps 4 and 5 of the development of the profile. If not, a Local Authority will be required to amend the profile as appropriate and propose appropriate measures where a risk has been identified.

It has been shown that it can take a number of years after the introduction of appropriate measures to reduce nutrient loadings, for a reduction in such proliferations to occur. It is thought that this may in part be due to the supply of residual nutrients contained in the sediments which can be released into the water column and be made available for algal growth. In addition, the geographical location of the bathing area and its characteristics may also play a role. Thus, additional short-term measures may need to be considered in the intervening period.

Again, Local Authorities should also be aware of the requirement of Article 15 of the Regulations which places a requirement on the Local Authority to promptly notify the EPA and the Health Service Executive of any situation that has, or could reasonably be expected to have, an adverse impact on bathing water quality and on the health of bathers.

Reporting of the Results from the Risk Assessment for Macro-Algae in the Bathing Water Profile Template

The bathing water profile template requires Local Authorities to describe both the assessment undertaken and detail any proposed measures. Proposed measures include the provision of information to the public.

5.2 Introduction to Marine Phytoplankton

Phytoplankton are microscopic plant-like organisms of which there are many different species, each with their own characteristic shape. They grow naturally in the oceans around the world, where they are the foundation of the marine food chain. Most phytoplankton are too small to be seen with the naked eye, however, when present in high numbers, they may appear as a green (due to the presence of chlorophyll within their cells), grey, yellow/orange or brown discoloration of the water. This color may vary depending on the particular species of phytoplankton present.

5.2.1 Items for Consideration in Risk Assessments for Marine Phytoplankton

It has been shown that it is very difficult to predict the formation and occurrence of marine phytoplankton blooms. However, if such blooms have previously occurred at the bathing site, it may be worth examining the following:

- the conditions under which proliferation or marine phytoplankton prevailed;
- the time of year when it occurred;
- the duration of its presence;
- the details and results of any monitoring carried out;
- any health impacts which arose; and
- any actions/measures that the Local Authority took and the success or otherwise of those measures.

Based on the outcome of the above examination, Local Authorities should consider whether they need to develop an appropriate procedure for the early detection and management of any potential risks from such blooms. However again, it should be noted that it may be very difficult to predict such blooms. Thus, the main actions which Local Authorities may consider taking are re-active actions.

Re-Active Actions: If inspection of the bathing water and/or the water in the vicinity of the bathing site indicates the potential presence of phytoplankton blooms, the main action would be to identify the dominant bloom species and then the provision of appropriate advice to the public in a timely manner. Such identification should focus on the identification and enumeration of species that produce toxins. The type of advice to be given to the public would depend on the phytoplankton species present and the associated potential health risk.

The Marine Institute monitors phytoplankton under a national programme which has been in place since the 1980s. Particular emphasis is put on harmful species. Samples are taken from designated sampling areas and are sent to the Marine Institute laboratories where analysis is carried out. The presence of harmful or toxic species are then reported on the Marine Institute website (www.marine.ie). Although the sampling locations are not at specific bathing site locations (being located at shellfish/finfish production sites), they may be in the general vicinity of some of the bathing sites and thus their analysis may be of relevance.

The following two species are of particular importance:

- *Phaeocycstis*: This species has caused blooms in several areas in the past. Although this species is not toxic, it can cause an oily discoloration to the water, can produce a significant amount of mucilage and may be of concern to swimmers. In addition, it can lead to a lot of foam formation on beaches which although non-toxic can cause public

concern. Thus provision of information to the public should be undertaken during such occurrences.

- *Noctiluca scintillans*: This species has caused blooms in the past and results in an orange/yellow discoloration of the water. It can also result in bioluminescence at night. Identification of the planktonic species and the provision of relevant public information are the key management measures to be undertaken.

The Regulations require the Local Authority to promptly notify the EPA and the Health Service Executive of any situation that has, or could reasonably be expected to have, an adverse impact on bathing water quality and on the health of bathers.

Reporting of the Results from the Risk Assessment for Phytoplankton in the Bathing Water Profile Template

The bathing water profile template requires Local Authorities to describe both the assessment undertaken and detail any proposed measures. Proposed measures include the provision of information to the public.

6.0 Additional Information and Contact Details

Should the Local Authority consider that additional information sources be included, please provide the details in this section.

The profile is required to contain the contact details of the relevant bodies responsible for taking any such management measures required during periods of short-term pollution.

Thus, in the relevant section of the template, Local Authorities should provide all relevant details. This may include reference to the Local Authorities own websites, telephone hotlines, contact email address, twitter etc.

7.0 Reviews and Updates

Annex III of the Directive specifies the various different time periods for the reviews and/or updates of the bathing water profiles (see Appendix A).

In general, the differing time periods are based on the classification of each bathing sites as follows:

- Bathing sites classified “good”, reviews are to take place at least every four years;
- Bathing sites classified as “sufficient”, reviews are take place every three years; and
- Bathing sites classified as “poor”, reviews are to take place every two years.

The aspects to be reviewed are those listed under paragraph 1 of Schedule 1 of the Regulations as detailed in Appendix A of this Guidance. It should be noted that both the frequency and the scope of the reviews are to be determined on the basis of the nature and severity of the pollution. However, as a minimum, they are to comply with those specified above.

For those bathing sites classified as “excellent”, the profiles are only required to be reviewed and, if necessary, updated where the classification changes to “good”, “sufficient” or “poor”. Again the review is required to include all the items listed under paragraph 1 of Schedule 1 of the Regulations.

The Regulations also require that where there are significant construction works or significant changes in the infrastructure in or in the vicinity of the bathing water, the profile is to be updated before the start of the next bathing season.

8.0 Provision of Information to the Public

One of the main objectives of the Bathing Water Regulations is to improve communications with the general public by actively providing timely information using various different media including use of the internet and improved information at the bathing sites. Regulation 18 of the Regulations specifies the type of information which is required to be provided to the general public.

This guidance deals with the public information requirements which are specific to the profiles and does not provide guidance in relation to the wider public participation requirements of the Regulations. Local Authorities should familiarise themselves in particular with the provisions specified in Regulation 18 of the Bathing Water Regulations in this regard.

In relation to bathing water profiles, Regulation 18(1) specifically requires that Local Authorities provide a “general description of the bathing water, in non-technical language, based on the bathing water profile established in accordance with Regulation 5”. This information is to be “actively disseminated and promptly made available during the bathing season in an easily accessible place in the near vicinity of the bathing water”.

Local Authorities should thus provide a summary version of the bathing water profile in the form of a poster or notice at an easily accessible place in the vicinity of each bathing water throughout the bathing season. Box 1 below provides an example of such a summary profile.

In addition, the Regulations require that local authorities use appropriate media and technologies, including the internet, to actively and promptly disseminate profile information. In this regard the full version of the profile using the recommended template should be made available to the public via the internet. The Agency intends to make the profiles available on the EPA’s bathing water quality website (www.beaches.ie). However, Local Authorities should also consider making the profiles available through their own websites.

W bathing water comprises of a 3km stretch of sandy beach, located 3kms from the village of X, which lies in the south-east of Wexford. The beach is backed by an extensive dune system which forms part of a designated special protection area. The beach slopes gently/steeply towards the water. Strong tidal currents can occur. A small stream runs to the north of the site. The sampling point is located at the southern end of the beach as shown on Map Y

There is a threat to water quality at W bathing water from diffuse pollution and/or overflows arising from rainfall driven short-term pollution events. These events are expected to last only 1- 2 days depending on the duration of the rainfall. In general, such events may occur up to 5 times during the bathing season, but as they are dependent on the weather, they may occur more frequently.

Although rare, pollution events may occur which impact on bathing water quality. Z County Council will investigate and take all appropriate action including informing the public, should such an event happen.

Box 1. Example of the type of information to be presented in a summary beach profile for display at a bathing site.

9.0 Information Sources

9.1 EU Water Framework Directive

The Bathing Water Regulations specifically require that when establishing, reviewing and updating bathing water profiles, that adequate use is to be made of the data obtained from the monitoring and assessments carried out pursuant to the European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003) (as amended) or otherwise pursuant to the WFD.

A significant amount of information has been generated over the last number of years through the work undertaken under the WFD. The objective of the WFD is to protect and improve the quality of all waters (rivers, lakes, estuaries, groundwater, transitional waters and coastal waters up to one nautical mile from the shore). It aims at preventing any deterioration in the status of any waters and at achieving at least “good status” for all waters by 2015. It provides for co- ordinated water quality management based on natural river basins (i.e., catchments), through the development of three river basin management plans (RBMPs), eventually supplemented by 46 River Basin Management Work Plans.

Article 4(1)(c) and 4(2) of the WFD specify that in relation to protected areas, where more than one set of objectives relate to a given water body, the most stringent shall apply. Designated bathing waters are included in the WFD register of protected areas.

The programme of works under the WFD commenced in 2003 and has seen the finalization and revision of successive RBMPs. Each step of the process has generated various amount of data and information which may be relevant to the generation of the bathing water profiles. The steps taken along with their outputs include the following:

1. Delineation of the 3 River Basin Districts.
2. Identification of the various Water Bodies in each River Basin District.
3. Characterisation of each of the Water Bodies. Work included the identification of those Water Bodies which are at risk of failing to meet the water quality and quantity objectives

of the WFD by 2015. The main pressures causing those Water Bodies to be at risk were also identified.
4. Studies were undertaken to establish how the pressures result in changes in the quality of the water and appropriate management measures that can be taken.
5. Report on significant water management issues including cost considerations was prepared.
6. A Programme of Measures (POMs) through which the WFD will deliver on its water quality targets.
7. River Basin Management Plans (including the POMs).
8. Revision of the RBMP's in successive cycles of the WFD.

The outputs from the above steps can be accessed from the following website: www.catchments.ie and the WFD App located within EDEN (www.edenireland.ie).

The Water Framework Directive Monitoring Programme includes rivers, lakes, groundwaters and transitional and coastal waters and it became operational on 22 December 2006. The monitoring programme for transitional and coastal waters is carried out by the Environmental Protection Agency in collaboration with the Marine Institute, Inland Fisheries Ireland, Local Authorities and National Parks and Wildlife Service. In the monitoring programme, a total of 131 water bodies consisting of 84 transitional and 47 coastal are monitored.

Protection of shellfish areas are also part of the actions carried out under the WFD, specifically under the Areas for Action (AfA). A good resource on shellfish safety can be found on the Sea Fisheries Protection Authority website here (https://www.sfpa.ie/What-We-Do/Molluscan-Shellfish/Shellfish-Safety) and the Marine Institute website here (https://www.marine.ie/site-area/areas-activity/seafood-safety/seafood-safety).

9.2 Additional Information Sources

EPA Geoportal Site: A significant amount of data and information is available on the EPA;s Geoportal Site. This can be accessed from the EPA's website https://gis.epa.ie/ by clicking on "See Maps" at the top of the home page or "Get Data" and then water. A list of datasets which were generated under the WFD including the generators of the data and where they can be accessed from are listed under "Water/WFD". Catchments.ie is also a valuable data source.

Beaches.ie: Information in relation to the quality of the water at each of the designated bathing waters along with their compliance history is available on the EPA's Bathing Water Website available at www.beaches.ie.

Information in relation to phytoplankton: The Marine Institute monitors marine phytoplankton under a national programme. Particular emphasis is put on harmful species. Samples are taken from designated sampling areas and are sent to the Marine Institute laboratories where analysis is carried out. The presence of harmful or toxic species are then reported on the Marine Institute website. The development of potential outbreaks of harmful marine phytoplankton can be viewed on the weekly HAB Bulletins (https://www.marine.ie/site-area/data-services/interactive-maps/weekly-hab-bulletin).

Local Authorities may also have relevant information in the form of reports, investigations and assessments carried out in relation to issues which may have been affecting a bathing water and its surrounding environment.

Appendix A: Contents of a Bathing Water Profile

Schedule 1

The bathing water profile

1. The bathing water profile referred to in Regulation 5 is to consist of:

(a) a description of the physical, geographical and hydrological characteristics of the bathing water, and of other surface waters in the catchment area of the bathing water concerned, that could be a source of pollution, which are relevant to the purpose of this Directive and as provided for in Directive 2000/60/EC;

(b) an identification and assessment of causes of pollution that might affect bathing waters and impair bathers' health;

(c) an assessment of the potential for proliferation of cyanobacteria;

(d) an assessment of the potential for proliferation of macro-algae and/or phytoplankton;

(e) if the assessment under point (b) shows that there is a risk of short-term pollution, the following information:

— the anticipated nature, frequency and duration of expected short-term pollution,

— details of any remaining causes of pollution, including management measures taken and the time schedule for their elimination,

— management measures taken during short-term pollution and the identity and contact details of bodies responsible for taking such action,

(f) the location of the monitoring point.

2. In the case of bathing waters classified as ‘good’, ‘sufficient’ or ‘poor’, the bathing water profile is to be reviewed regularly to assess whether any of the aspects listed in paragraph 1 have changed. If necessary, it is to be updated. The frequency and scope of reviews is to be determined on the basis of the nature and severity of the pollution. However, they are to comply with at least the provisions and to take place with at least the frequency specified in the following table:

Bathing water classification	‘Good’	Sufficient’	‘ Poor’
Reviews are to take place at least every	four years	three years	two years
Aspects to be reviewed (points of para-graph 1)	(a) to (f)	(a) to (f)	(a) to (f)

In the case of bathing waters previously classified as ‘excellent’, the bathing water profiles need be reviewed and, if necessary, updated only if the classification changes to ‘good’, ‘sufficient’ or ‘poor’. The review is to cover all aspects mentioned in paragraph 1.

3. In the event of significant construction works or significant changes in the infrastructure in or in the vicinity of the bathing water, the bathing water profile is to be updated before the start of the next bathing season.

4. The information referred to in paragraph 1(a) and (b) is to be provided on a detailed map whenever practicable.

5. Other relevant information may be attached or included if the competent authority considers it appropriate.

6. When establishing, reviewing or updating a bathing water profile, adequate use shall be made of data obtained from monitoring and assessments carried out in accordance with the European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003) or otherwise pursuant to Directive 2000/60/EC.

7. A bathing water profile shall contain such other information as the relevant local authority considers appropriate.

Appendix B: Potential Sources of Pollution (non-exhaustive list)

Waste water treatment plants
Septic tanks
Sewer networks (combined surface overflows, outfalls, wrong connections etc.)
Recreational boating and charter shipping
Industrial discharges (e.g., agri-food industry)
Discharges from tourist resorts
Run-off from agricultural land
Rainwater discharge
Dairy farms with potential run-off from the yards into near-by watercourses
Bird colonies
Fauna (e.g., rats etc.)
Rivers, ditches, canals, groundwaters
Sediment disturbance, dredging
Bathers
Domestic animals on beach

Appendix C: Worked Example for Application of the Risk Assessment Methodology

Consider a coastal bathing water that has WQI grade C (see Table 3: say 220 cfu/(100 ml) Intestinal enterococci). A nearby CSO, discharges untreated sewage via a short outfall associated with an STP serving a small population centre. The MPP grade for this source is “High” (see Table 1).

According to Table 4, this source that has WQI grade C and MPP grade “High” is assessed as “High” MPR (Microbial Pollution Risk).